

R E P O R T
ON THE
REVISION OF SETTLEMENT
IN THE
KUMAON DISTRICT

CARRIED OUT BY

MR. J. O'B. BECKETT,

1863-1873.

North Western Provinces.

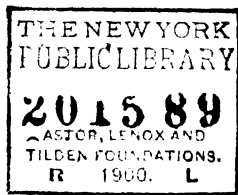
PART I.



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1874.



I N D E X.

	PARA.
Why the Settlement Officer does not submit a report, ...	1
Report confined to matters connected with the present revision, ...	2
Why the present settlement differs from such work in plains' districts,...	3
Field survey ; principles and procedure, ...	4
Schedule of holding ; its use, ...	5
Assessable area, ...	6
Average rates, how determined, ...	7
New demand submitted for sanction, ...	8
Remarkable increase explained, ...	9
Assessment ; procedure, ...	10
Expense of revision = three years' enhancement, ...	11
Duration of this work, ...	12
Resumed maafees, ...	13
Remission during last settlement, ...	14
Boundaries ; area ; rivers, ...	15
Pergunnahs, ...	16
Gungolee, ...	17
Choukote, Kutzoor, Salt, ...	18
Talooka Askote, ...	19
Share, ...	20
Tulla Churaal, Dharon, ...	21
Sudaburt puttees, ...	22
Maafee, ...	23
Goonth or temple lands, ...	24
Tenures, ...	25
Ditto in temple lands, ...	26
Enhancement of revenue, ...	27
Land measure, ...	28
Average holding of cultivator, ...	29
Malikana, ...	30
Johar Bhote, ...	31
Eastern Bhote, ...	32
Cess of 10 per cent., ...	33
Education, ...	34
District post, ...	35
Putwarees, ...	36
Police, ...	37
Thokdars, ...	38
Pudhans, ...	39
Population, ...	40
Tuhseels, ...	41
Cancoongoes, ...	42
Products, ...	43
Tea, ...	44
Tea plantations, ...	45
Tea available sites, ...	46
Markets, ...	47
Forests and waste lands, ...	48
Partitions, ...	49
Cattle, ...	50

INDEX.

	PARA.
Climate; sanitation, ...	51
Small-pox, ...	52
Polyandria, ...	53
Roads and bridges, ...	54
Repair of roads, ...	55
Minerals, ...	56
Spirituous liquor, ...	57
Wild beasts, ...	58
State of the district and people, ...	59
Castes, ...	60
Number of villages, ...	61
Waste villages, ...	62
Abstract of goonth assignments, ...	63
Fisheries, ...	64
Manufactures, ...	65
Implements of husbandry, ...	66
Water-mills, ...	67
Map of district, ...	68
Conclusion, ...	69

REPORT
ON THE
SETTLEMENT OF KUMAON DISTRICT.

No. 223 OF 1874.

FROM

MAJOR-GENERAL H. RAMSAY, C.B.,
Commissioner of the Kumaon Division,

TO

E. C. BUCK, Esq.,
Offg. Secretary to the Board of Revenue, N.-W. P.

DATED CAMP HULDWANE, THE 7TH MARCH, 1874.

SIR,

MR. BECKETT'S health has, I am sorry to say, compelled him to proceed at once to England before he could submit his final settlement report for the Kumaon District. The statements were nearly all ready, and Mr. Beckett had made rough notes from which his report would have been prepared; but as we arranged all general principles before the settlement commenced, and consulted freely how to meet difficulties as they occurred, I have from the first been acquainted with Mr. Beckett's work under report; and having seen some of the papers of almost every village in the district, I hope I shall be able to represent his views generally. Before he left, I discussed with him all the particulars which will here be brought under the notice of the Board; and as all alterations ordered on appeal have been made in the statements now submitted, this may be considered our joint report.

Explains why the Settlement Officer does not send his own report.

I regret extremely that after Mr. Beckett's five years of incessant hard work since his return from sick leave to England, I should have to commence this report by stating that he has again lost his health, and been obliged to go home suddenly, before his work could be reported.

2. It would be superfluous to allude here to the many interesting details usually given in settlement reports, because full information regarding history, snowy mountains, civil and military stations, temples, lakes, geology, wild animals, buildings, and every other subject of interest, had been collected from the admirable reports of my predecessors, Messrs. Traill and Batten, as well as from every other available source, and will soon appear at length in the valuable *Gazetteer* now being prepared by Mr. Atkinson; I shall therefore confine myself to the briefest notice of all matters that are not closely connected with the subject immediately under report, i. e., the revision of settlement in Kumaon for the ninth time.

Report confined to matters connected with revision of settlement.

3. The revision of settlement in a district like Kumaon is quite different from the work usually done by Settlement Officers in the plains. Average pergunnah rates, rent-rates, putwarees' village papers, and the other aids available in almost every district that comes under re-settlement, had no existence in Kumaon. The only record of any kind, as regards area, was the guess measurement book of 1823; and the only paper of last settlement giving any details connected with the payment of revenue or rent was the "*phurd phant*" or revenue and rent-roll, which showed how the *pudhan* (*malgoozar*) was to collect the revenue, and where rent was due from *assamees*. But the former paper was of little use except as regards boundaries. It was prepared in 1823 by native officials, who sat on commanding positions and summoned the *pudhans* of all villages within sight or easy distance, when they wrote down from their information the names of the *thokes* of land and their areas; and on these estimated areas all subsequent settlements were based. But even this was a vast improvement on the utter blank of former times.

Ninth revision.

Revision of settlement in the hills why so different from that in the plains.

Record-of-rights at last settlement, its character.

At the last or 20 years' settlement Mr. J. H. Batten is entitled to the credit of having created the *assameewar phant* which was supposed to show the shareholders and *khaikurs* (permanent tenants), and the quotas of revenue or rent paid by each. But these papers were prepared by the villagers themselves. Their object being to conceal their numbers, and make their villages appear as poor as possible, the revenue was divided among a very few of the shareholders in the *phurd phant*; and, except where the *khaikurs* were on bad terms with the proprietors, a very large portion of the tenants was omitted. It could not have been otherwise, as Mr. Batten had charge of the district while he revised the settlement; his establishment was no more than sufficient for the proper work of the office, and he was only able to call for information from those who derived most benefit by withholding the real state of the case.

Educating influence on the people of the last settlement.

The useful *phurd phant* which Mr. Batten did give prepared the way for more accurate details. The people acquired the knowledge that they had some rights capable of being defined and secured. They learned by degrees to assert those rights; and in their ascertainment they applied for field measurement. Before the close of the 20 years' settlement a great many villages had been measured in the adjustment of disputes; a large number of qualified ameens was educated for the work; the minds of the people were familiarized with *khusrah* measurement, and quite prepared to accept it as the basis of a new settlement; and thus they were by degrees educated to think that their rights ought to be correctly recorded, and for this purpose fully ascertained. This led to the necessity of a *khusrah* survey, which brought to light the actual area under cultivation, hitherto unknown, and supplied information from which a correct record could be prepared; and all this with the willing co-operation of the people.

Settlement based on a *khusrah* survey impossible 30 years ago.

In the backward state of the country, and the comparative poverty as well as ignorance of the people, I consider it would have been impossible to have made a settlement on the basis of the *khusrah* survey 30 years ago; and without the aid of Mr. Batten's *phurd phant* we probably could not have introduced it now without difficulty.

Survey—principles and procedure.

4. The measurement was commenced by Mr. B. W. Colvin in November, 1863, under the sanction of Government orders received with the Board's No. 48, dated 4th September, 1863. He left the hills in the spring of 1865, on getting a district in the plains, and the work was completed under the direction of Mr. Beckett, who has resettled the whole of the district.

The measurement was carried out on these principles:—

First,—All terraced land was to be measured, unless it had relapsed into forest; but forest clearings, and slopes cultivated only after a lapse of eight or ten years, known as *khil* or "*kanula*," were not to be measured. Each field to be measured separately.

Second,—The whole of the terraced land to be shown under four qualities—(1) irrigated, (2) good unirrigated, (3) second-rate unirrigated, and (4) casual cultivation (*ijran*).

The ameens and the villagers did not correctly observe these rules, and all the land included in the measurement was afterwards classified under the headings of—

- (1) Permanent cultivation,
- (2) Casual cultivation (*ijran*), and
- (3) Waste.

"Waste" as meant in the classification.

By "waste" is meant uncultivated terraced land, and does not refer to grassy slopes or forests included within the nominal boundaries of a village.

A measuring party.

A certain tract was made over to a measuring party, which consisted of one superintendent and clerk, officer purtal, purtal ameens, pairs of ameens with one chain-man to each pair, the other being given by the village.

The superintendent sent out his ameens, who were supplied with hempen ropes sixty feet long, and marked off into six feet lengths. One ameen on Rs. 12 per mensam made the map, on a scale of $\frac{1}{4}$ -inch to a chain,—intervening waste plots being merely shown, but not measured. The second ameen, Rs. 10, who acted as assistant, filled in the *khurrah*.

Its work detailed.

Any disputes that occurred were entered in the column of remarks. The ameens also prepared a census of the village. This return, with the completed map and *khurrah*, was sent to the superintendent, who marked a number of fields with blue chalk, and deputed a purtal ameen to test the measurement and the records of ownership, tenants, &c. The purtal ameen returned the papers with a written report to the superintendent, who made them over to an officer purtal. He tested the work a second time, and returned the papers with his written report. According to the reports of these two men the measurement papers were accepted or rejected, or submitted to the Settlement Officer.

When it is taken into consideration that the fields are often of the most irregular shapes on the side of a steep hill, the measurement must be accepted as only an approximation, and the papers are more valuable as a record-of-right as regards fields than an accurate return of the area.

Accuracy difficult.

The superintendent was expected to move about among his ameen parties, to closely supervise their work, and report men whom he considered, from any cause, incompetent.

His Honor the Lieutenant-Governor and the members of the Board have seen many of these village survey papers, and Sir W. Muir, when member of the Board, tested the similar work in Gurhwal. I consider that the work has been admirably done. Every field has been measured and shown in the map separately; many villages contain as many as 6,000 numbers, and yet there is no difficulty in finding out any field of the smallest size, though it contain only ten square yards.

Character of the work.

During the rains the measuring parties were employed in drawing out the *moon-takhib* and *teerij* of the villages measured in the working season, and in preparing schedules of holdings for each *assamee* named in the *khurrah*. These last were at once distributed.

Employment during the rains.

On the completion of the papers of a *puttee*, a *mouzalwar* abstract was made, giving all the information obtained as regards land and population; and this was entered in Mr. Beckett's book.

5. The schedule of holding given to every one named in the measurement papers known as *purcha*, made every *assamee* aware of the action of the ameens or others in regard to his land; and, if he took the trouble to know what was in it, qualified him to expose any roguery or incorrect entries before the papers passed out of the Settlement Officer's hands. It was so easy to compare the number of fields with entries in *purchas*, as regards quality or quantity, and, if there was ground for suspicion, to have them measured, that any one is inexcusable who remained silent and afterwards pleaded that his land had not been properly recorded. At any rate, this was the most likely way of making every *assamee* acquainted with his recorded possession; and the information thus imparted enabled the Settlement Officer to rectify many mistakes at the time of settlement.

Schedule of holding.

The use of the *purcha*, or schedule of holding.

The usual way of making a *tuhseeldar* or other subordinate communicate the result of measurement to *assamees*, by reading over the numbers and names in *khurrah*, would have been a farce,—it would have been no check, and could have given no information. By placing in the hands of every cultivator, except tenants-at-will, a list of the fields, and their size, recorded in his name, it could only be wilful and culpable

ignorance if he did not know before settlement if his rights had been correctly recorded.

Assessable area.

Quality.

Reduction to one standard.

6. The area of 1823, assumed as the assessable area in former settlements, as well as jummas of 20 years' settlement, were entered in Mr. Beckett's book, and he was able thus to see the prevailing rates per *beesee* (acre) under the old settlement, as well as according to the actual measured area. But before considering any other feature connected with the assessment, it was necessary to ascertain the quality as well as the quantity of land to be assessed; and the whole was reduced to one standard, i. e., to that of second-rate unirrigated land, known in the hills as *doweem oopraon*. The whole of the land subject to assessment in any village must come under one, or some, or all of the four heads—(1) irrigated, (2) first quality dry land, (3) second quality dry land, and (4) *ijran* (or casual cultivation). These were all reduced to the standard of No. 3, by trebling No. 1 (irrigated), by adding 50 per cent. to No. 2 (first quality dry land), and reducing No. 4 (*ijran*) to one-half.

For example:—

10	<i>Beesees</i> , irrigated, ...	... = 30
12	Ditto 1st quality, unirrigated, ...	... = 18
12	Ditto 2nd ditto, ditto, ...	... = 12
12	Ditto <i>ijran</i>, ...	... = 6

= *Beesees* 2nd quality unirrigated land, ... 66

and this calculation showed that, according to the measurement returns, the assessable area on this basis was equal to 66 acres of second quality unirrigated land.

Calculation of average rates.

Average produce.

7. As there were no putwarees' papers, rent-rates, or other previously recorded data from which information could be obtained, every endeavour was made to find the average yield of the different kinds of land. In irrigated land it is very common for the proprietor to take half of the gross produce; in first quality unirrigated land, it is usual to take a third; while in second rate unirrigated land, a fourth or a fifth of the gross produce is taken. The yield of a *beesee* of course varies much, according to position, land, culture, &c. In some places the best irrigated land gives as much as 60 maunds of *dhan* (rice in husk) per acre: 40 maunds is a common yield. Good first quality dry land in some places gives more than 20 maunds of wheat, or as much of *mundooa* (millet). In a village of pergunnah Gungolee, Mr. Beckett satisfied himself that an acre of first quality unirrigated land actually yielded 24 maunds of wheat (weighed). But this was unusually good.

It was ascertained in many ways that the following table fairly represents the average yield of the important crops grown in the hills. In a very unfavourable year it might be less: in a good season it would be very much in excess of what is given:—

Kind of grain.	Average yield per acre.			Average money value.			REMARKS.
	Irrigated.	1st quality dry land.	2nd quality dry land.	Of produce of 2nd quality dry.	Add half for 2nd crop wheat.	Total.	
	Mds.	Mds.	Mds. seers.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
<i>Dhan</i> (rice,) ...	20	12	8 @ 20	16 0 0	7 8 0	23 8 0	Rate per <i>beesee</i> 2nd quality, Re. 0-9-11.
Wheat, ...	16	12	6 @ 16	15 0 0	7 8 0	22 8 0	
<i>Mundooa</i>, ...	...	16	10 @ 30	13 0 0	7 8 0	20 8 0
<i>Mandira</i>, ...	...	16	10 @ 30	13 0 0	7 8 0	20 8 0
Pulse (<i>Oord</i>) ...	...	10	6 @ 16	15 0 0	7 8 0	22 8 0

Land is left fallow for one crop every second year, and in the second money column I have only given the return of half an acre. The total shows what may be considered the average yield in one year of an acre of the second quality (dry) land, to which standard all was reduced in calculating the assessment. No doubt, in some very bad fields the return in an unfavourable season will be less than has been given; but it is simply impossible to estimate the outturn of every field. Where the land was exceptionally bad its poverty was taken into consideration with the many other causes that affected the assessment.

But putting aside all special causes, Mr. Beckett and I agreed that, by giving up a great deal on the good land, irrigated and unirrigated, which would counterbalance any defect in especially bad land, Re. 1 per *beesee*, second quality dry land, would not be too much to assume as the standard rate.

One rupee deduced as an average rate per acre.

I may here observe that as a rule the good and bad land is so divided that each proprietor has a fair share of the second quality as well as of the others; consequently he has the advantage of the low rate placed on good land. Mr. Traill's assessment in 1823 gave a revenue rate of Re. 0-12-2 per *beesee*; Mr. Batten's revenue in 1842 is given at Re. 1-6-0 in Ramgurh, Re. 1-3-5 in Palee, Re. 1-0-11 in Baramandal, and Re. 0-11-9 per *beesee* on cultivation for the entire district; the proposed settlement rate now is Re. 0-13-10 per *beesee* on total *malgoozaree* area. The following statement shows what rates were supposed to have prevailed under former settlements, the actual rate of the Gurhwal settlement, and that proposed for Kumaon. Kumaon was always able to pay a much higher rate than Gurhwal, and I do not know why the latter was ever theoretically assessed higher than Kumaon:—

Comparison of former and present rates;

and with those of Gurhwal.

Mr. Traill's rate per <i>beesee</i> on total cultivation.		Mr. Batten's rate per <i>beesee</i> on total cultivation.		Present assessment on total cultivation.	Proposed assessment in Kumaon.		
Gurhwal.	Kumaon.	Gurhwal.	Kumaon.	Gurhwal.	Rate per <i>beesee</i> on <i>malgoozaree</i> area.	Rate per <i>beesee</i> on cultivation.	Rate per <i>beesee</i> standard on second-rate unirrigated land.
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
1 7 0	0 12 9	1 1 2	0 11 9	0 12 7	0 13 10	1 3 11	0 9 11

Since 1842 the country has undergone a great change. The people have become rich by the vast amount of money spent in the district, the price of grain has doubled in some places, in others trebled. Taking these facts into consideration, we assumed one rupee as a fair average revenue-rate per acre on second quality unirrigated land; and on this rate, in connection with other circumstances, and any exceptional causes, which were duly taken into account at the settlement of *every* village, all assessments were calculated.

Other considerations on which the average rate was fixed.

Another very important feature to be considered was the population.

Population.

In some parts of the district land was in abundance, but there were few inhabitants. Under such circumstances land is of little value. In some places it was still a struggle between man and beast, and the population was so important an item in estimating the *jumma* of a village, that Mr. Beckett valued it equally with land.

Population an important element in calculating average rates.

He first ascertained—(1) the population average per 100 acres of the actual measured area for the whole district, (2) the population average per 100 acres of the cultivated area, also (3) for the cultivated area with half of the *ijran*, and (4) on three-fourths of the total area. For example—under No. 1 the population average being 141, a village with a population of 70 per 100 acres would give a population rate of eight annas; the land rate would be one rupee; and the mean of these two, twelve annas, which would be an average rate. Had the population of the village been 280, the

How this test was applied.

population-rate would have been Rs. 2, the revenue-rate being Re. 1; the mean of these, Re. 1-8-0, would be the average rate. In both cases, of course, the jumma thus ascertained would be subject to further consideration in connection with existing circumstances.

Population-rates.

In the same way, in No. 2 the population average being 195 per 100 acres, and the revenue-rate only Re. 0-14-6 per acre, a population of 98 would give a population-rate of Re. 0-7-3, and the mean of the two would be eleven annas.

Under the third calculation the population average being 185 per 100 acres, and the revenue-rate Re. 0-13-6, if the population were 92, the population-rate would be Re. 0-6-9, and the mean, ten annas.

Land tables.

Mr. Beckett prepared tables showing the real state of the land in every village in four different ways, and a comparison of these guided him in determining the average jumma: No. 1 included all land that had been measured by the villagers; No. 2 contained only cultivated land + the addition for quality, i. e., the number of *beesees* reduced to second quality; No. 3 contained the same as above + half of *ijran* (casual cultivation); No. 4 contained three-fourths of No. 1 + addition for quality.

Structure and uses of these land tables.

Excess in No. 1 over No. 3 showed that there was much waste land. Excess in No. 2 over No. 3 showed a large proportion of permanent cultivation. If No. 2 exceeded No. 1, it would show that the land was exceptionally good, or that there was an unusual quantity of cultivation. Excess of No. 3 over No. 2 would indicate too much *ijran*. Excess of No. 4 over No. 3 would show much waste; and if No. 4 exceeded No. 1, it would show that the land was good.

Example.

A statement showing six villages of the same area, composed of the different qualities of land, and different states of cultivation, is annexed. This explains in figures and results how, independent of special causes, the different qualities are at once checked by these calculations, and how they affect the *jummas*. The cases given in this statement are imaginary, and the different kinds of land are shown in unusual proportions to explain the principle clearly. It would be almost impossible to find villages, with the populations given in Nos. 5 and 6, with so little cultivation:—

[illegible]

Illustrations.

Assuming the revenue-rate at Re. 1 per *beesee* on total area shown in No. 1, Nos. 2, 3 and 4 to realize the amount stated in No. 1 give the incidence per acre of Rs. 0-14-6 for No. 2, and Rs. 0-13-6 for Nos. 3 and 4. The average population per 100 *beesees* on the area of No. 1 is 141, on No. 2 it is 195, and on Nos. 3 and 4 it is 185. These population averages of 141, 195 and 185 represent a revenue-rate of Re. 1 for the first, Re. 0-14-6 for the second, and Re. 0-13-6 each for the third and fourth. When the population of a village varies from the average, the revenue-rate deduced from the population will vary accordingly ; but the assumed rate on the land being a constant one, a mean was taken between the revenue-rate and the population-rate.

The table prepared by Mr. Beckett gave full information regarding land and population-rates, and enabled him at a glance to see what, on these calculations, the average rate ought to be.

Complete data.

These calculations gave the fullest and only reliable information that could be derived from paper returns. Mr. Beckett had seen every village ; he had the people before him ; he could judge correctly how far their objections were reasonable ; and after giving full consideration to the results obtained from his tables of calculation and the circumstances he had ascertained from seeing the villages, or hearing all that the villagers had to say, the *jumma* was fixed.

Resulting variation in different villages.

There is, of course, a very great variety in the rates in different villages. Some are higher than the standard rates, some much lower. The high rate is in consequence of the land being wonderfully rich, well irrigated, thickly populated, and within easy reach of markets. The low rates may be attributed to poorness of land ; isolated position, and consequent injury to crops or cattle from tigers, bears, deer and pigs ; unhealthiness from dense jungle in low hot valleys ; want of cultivators and high altitude, which prohibits the growth of remunerative crops, and presents difficulty in disposing of what can be produced.

From what causes.

Pergunnah-rates.

A pergunnah-rate such as is usually submitted for the sanction of the Board was quite inapplicable to this district, and I personally explained to the Senior Member of the Board why such reports could not be made. For instance, take a line from the top of Cheenur at Nynee Tal to Raneebagh, both places and the country between being in pergunnah Chukhata ; Cheenur is too high for growing anything except barley or potatoes ; the Bullya valley above Raneebagh is very hot and unhealthy ; and the country half-way between these places has neither of these disadvantages. No one rate could be made applicable to the three localities, nor could villages about the same altitude be classified. Two villages about the same height, but on different sides of the hill, may have nothing in common ; and it was only possible to make a fair assessment by dealing with each village separately, by calculating what the *jumma* should be in the manner before explained, and, if necessary, modifying that according to the peculiar circumstances of each case.

Why.

The system adopted equally applicable to all pergunnahs except Bhote.

This system is equally applicable to all the pergunnahs of the district except those of Bhote, which will be noticed separately.

I am quite satisfied that the assessments shown in the accompanying statements are light, though in consequence of their having been raised so high compared with old *jummas*, I consider them sufficiently high.

New demand submitted for sanction.

8. Statements XIV. and XV. give in detail the *jummas*, *pergunnahwar*, *puttee-war*, and *mouzahwar* ; and the following statement shows, in abstract, the proposed demand, for which the sanction of Government is solicited for the term of 30 years from date of settlement, viz. :—

Proposed Jumma--Fuslee.

Settlement.	Jumma of last year of expired settlement.	1276.	1277.	1278.	1279.	1280.	1281.	1282.	1283.	1284.	1285.	1286.	1287.	1288.	1289.	1290.	1291.	1292.	1293.	1294.	1295, Kamit, or to end of settlement.
Kumaon District,	Rs. 1,27,115	7,380 8 0	32,963 0 0	60,511 0 0	1,28,747 0 0	2,22,131 6 0	2,30,179 0 0	2,30,184 0 0	2,30,184 0 0	2,30,363 8 0	2,30,369 0 0	2,30,369 0 0	2,30,369 0 0	2,30,269 0 0	2,30,298 0 0	2,30,323 0 0	2,30,348 0 0	2,30,431 0 0	2,30,436 0 0	2,30,463 0 0	2,30,628 0 0

$$\begin{array}{r} 127115 \\ 123747 \\ \hline 250862 \end{array}$$

$$\begin{array}{r} 1 \\ 6 \overline{) 62} \\ \underline{6} \\ 2 \end{array}$$

It is inconvenient for the settlement of a whole district to expire on the same date; I have therefore proposed that the 30 years' sanction now requested should date from time of settlement.

Term of settlement.

The sanctioned *jumma* of last settlement was Rs. 1,27,112. During the currency of that settlement, reductions by summary settlement were made to the amount of Rs. 192, while increases by *naiabad* amounted to Rs. 625-14-3. At time of settlement, villages which formerly represented Rs. 333-10-0 were struck out as waste, or included in Government forests, and villages assessed at Rs. 103 have been converted into fee-simple tenures. With these increases and decreases, the demand due on the old settlement was Rs. 1,27,109-4-3, and the new settlement *jumma*, for which sanction is now solicited, is Rs. 2,30,628, which gives an increase of Rs. 1,03,518-4-9, or 81.43 per cent.

Former demand.

Increase, 81.43 per cent.

9. A reference to statement No. XV. will show some striking increases in *jumma* which require explanation. In many cases these were *naiabad* at, or shortly before, last settlement. They are now highly cultivated villages, with a large number of *assamees*, not the property of one man, but most commonly such as may be called *bhyachara*. In others, the villages belonged to *amlah* connected with the courts or to *conoongoes*, or to their relatives, or to others who managed to conceal the extent of their cultivation and get it under-estimated. Again, many villages, surrounded by heavy jungle 30 years ago, suffered so much from the denizens of the forest that, after a continued struggle, the people probably could not harvest half their crops. Now these jungles, where remaining, are only occupied by, and useful for, cattle. Permanent cultivation has taken the place of forest, while streams of water which ran to waste have been made useful for irrigation. In the lower pergunnahs a great deal of land used for *kuldes* (turmeric) was formerly not taken into consideration at all; now it has come under measurement. Cultivation and population have increased everywhere. The whole of the former, unknown before, has now been ascertained; and, except for special reasons, all classes have been equally assessed. I remember a village in Gurhwal which, with a *jumma* of Rs. 2 under the old settlement, was assessed at Rs. 80 at the new; and even then its rate was lower than the *puttee* average. I consider that the fact of any one having managed to cultivate at rates far below the average because he got the state of his village misrepresented, is no reason why he should now continue to do so. To recognize such a system would be unjust to the cultivators whose land had been fairly estimated at former settlements.

Striking increases explained.

10. On taking up the papers of a village, Mr. Beckett, before calculating what the *jumma* should be, cut out all the waste land which the villagers had insisted on being measured, which ought not to have been measured at all. He also struck out a great deal of *kanla*, or temporary clearings; in fact, excluded all that, on the principles explained in paragraph 4, ought not to have come under measurement. The villagers have full power, however, to use such land as they like, as well as to extend their cultivation in the unmeasured or forest tracts; and they have the benefit of such extension without any increase of demand during the currency of the settlement. It is to this system, in a great measure, that we owe the immense increase of cultivation that has taken place; and no doubt in the less cultivated parts there will be much more new cultivation at the end of the present settlement. In the meantime, industry may increase the profits from land, and lighten the burthen of the people every year. The assessments, as now submitted for sanction, are, I consider, very light. The last two columns of statement No. XIV. show the incidence of revenue per *beesee* (reduced area) in any one village, as compared with others.

Assessment.

Procedure.

Exclusion of all land which should not have been measured. But villagers may extend cultivation on such waste, free of demand.

Results of this rule.

Assessments, light.

Among such a number of villages it is quite possible that summary settlements may be found necessary on many grounds. Land may be washed away by floods or destroyed by landslips. Cattle disease, or death of *assamees* or other necessity may arise for rendering relief, temporary or permanent, necessary. And in my opinion such relief ought to be afforded readily; because all cultivated land has been now

Summary settlements may become necessary.

From what causes.

Should be allowed freely.

assessed, and the loss of *assamees* or cattle might imperil the existence of a village, which could be averted by a little trouble, and at the expense of a few rupees. Small villages are more likely to require relief than large ones; but it must be remembered that one proprietor may lose *all* his land, and he can get no relief from the other shareholders; therefore *his* case ought to be considered, if necessary.

Cost of revision.

11. The statement of settlement expenses up to the end of 1873 shows a total of Rs. 3,38,871-15-10. The sum of Rs. 5,366-4-2 was deducted on account of bad work and recredited to Government. Allowing for this, and deducting the nominal charge of Rs. 24,967-11-10, the actual expenditure remains Rs. 3,08,537-15-10, sub-divided thus:—

	1.	2.	3.	4.	5.
	European officers, columns 1, 2, & 4.	Native superintendence of field and office work, columns 3 and 7.	Actual measurement, column 4.	Office clerks and job-work, columns 5 and 8.	Stationery and contingencies, columns 9 and 10.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Gross, ...	79,957 11 10	8,839 15 9	87,814 10 0	1,24,487 14 6	37,771 11 9
Deduct, ...	24,967 11 10	...	...	5,366 4 2	...
Actual, ...	54,990 0 0	8,839 15 9	87,814 10 0	1,19,121 10 4	37,771 11 9

I have deducted the amount shown under the head of Assistant Settlement Officer, because it was never drawn at all. The amount was entered in estimates to meet the pay of Mr. D. M. Gardener, but as that officer drew his pay from the district in the plains to which he belonged, no actual disbursement on his account took place. Therefore the actual cost is Rs. 3,08,537-15-10, but before all the papers are completed there will be a further expenditure of about Rs. 16,000.

Comparison of cost with revenue, unfair.

Why.

It would be unfair to estimate the cost of the work by considering the revenue of the district, because the labour of measuring 200 acres divided into 5,000 fields, is far greater than making a field survey of 2,000 acres in the plains; and the record papers are quite as troublesome, requiring accurate calculations in consequence of the minute sub-division. The pay of officers could not have been reduced by multiplying hands and completing the work rapidly, because with greater haste it could not have been done well; and a field survey was of little use without a correct record. The whole expense is only equal to about three years' increase of revenue; and that could only have been obtained by the laborious survey which is the basis of a correct record-of-rights.

Repaid by three years' enhancement.

Delay in completing revision.

12. The work of revision of settlement commenced in 1863, and was completed in 1873; but as it was necessary to show all alterations made on appeal, the statements could not be closed till the end of January, 1874.

Duration of work accounted for.

Necessarily there has been much time occupied in this settlement, which was somewhat increased by Mr. Beckett having to go home sick for about 18 months. It must, however, be remembered that every field in 6,333 villages, containing 286,670 *beesees*, besides thousands of *beesees* (measured but) struck out by the Settlement Officer, had to be measured by yards. After that was done the measurements and occupancy entries had to be carefully tested; and before fixing the *jummas* the Settlement Officer had to inspect every village, as well as to settle a great many questions very important to the cultivators, although they frequently referred to fractions of a *beesee*. Every objection urged by the villagers had to be heard and answered; every village had to be settled separately; and the 6,333 villages were scattered over about 6,000 square miles. No one could have worked harder than Mr. Beckett did. From his long residence in Kumaon, and having completed the settlement of Gurhwal, he had great experience. Almost the whole of the settlement work has been done by himself,

without any assistance from Deputy Collectors, and entirely without the intervention of native subordinates. I do not think this difficult and important undertaking, if thoroughly well done, could have been accomplished in a shorter time.

13. Appendix No. 2 gives a list of resumed *maafee* estates which, in the inquiry of 1855-56, were ordered to be brought under assessment at settlement.

Resumed *maafees*.

14. Appendix No. 3 shows remissions by summary settlement during the last settlement. Judging from the statement it would appear that there was no necessity for such remission except in the mouzah of Noula; but possibly the relief afforded enabled the villagers to break up new land. The total of the present *jummas* is almost equal to that of the former settlement.

Remissions during last settlement.

15. The Kumaon District is separated on the north from Hoondes or Thibet by the watershed of the snowy range; on the east from Nepaul by the Kalee (Sardah) river; on the south, including the Bhabur, which is excluded from settlement, from the Terai district by an irregular boundary, deviating only slightly from the line of springs at the lower edge of the Bhabur forests; and on the west from British Gurhwal by an irregular line starting from the Trisool snowy peak, crossing the Pindur river, and, lower down, the Ramgunga below the junction of the Kotkhunsar stream; and from this point, as far as the Muchlud river, the watershed of the Ramgunga may be called the boundary with Gurhwal, though each district possesses villages in some places beyond the watershed.

Boundaries.

The area of the district is about 6,000 square miles. Of this, three-fifths were estimated by Mr. Traill as barren, or incapable of cultivation, or snow, but in reality the area capable of being cultivated is, I think, very much less than two-fifths of the whole.

Area.

The more important rivers, which may be divided into two classes, the glacier and the non-glacier rivers, are —

Rivers.

(1.) The Kalee, with tributaries from the Byans and Darma; Goree, from Johar; Eastern Ramgunga; and the Pindur (which enters Gurhwal).

Glacier rivers.

(2.) Surjoo, which falls into the Kalee Kosee or Kosilla; Western Ramgunga; Luddya; Gola; Nundour; Bour; and Dubka.

Non-glacier rivers.

16. The district is divided into eighteen *pergunnahs*. The names of these, and the *puttees* included in them, are given in an appendix. One *pergunnah* is composed of the *sudaburt puttees* of Kutolee and Muhrooree, which have no clearly defined boundaries, but the villages intermingle with those of Baramandal, Ramgar, Dhyaneerow and Chowgurkha. It will be sufficient to notice briefly those *pergunnahs* which have undergone most changes since they were so accurately described in Mr. Batten's settlement report.

Pergunnahs.

Those only to be noticed which have undergone great changes.

17. Gungolee *pergunnah*, "the lower half of the mountainous Doab between the Ramgunga and the Surjoo," has undergone a wonderful change during the last thirty years. At the time of Mr. Batten's settlement, this *pergunnah* may be said to have been overrun with tigers, bears and deer; and the population, with some exceptions, unequal to the task of fighting against them. They were a wretchedly poor people, cowed by brahminical influence, without any independence, and apparently aspiring to no better state. But brahminical influence has greatly decreased, and Gungolee men have improved immensely. The *feræ naturæ* have been completely conquered. Shikarees are so abundant that deer can only be found in the forests on the high hills, at a great distance from cultivation. If a tiger strays up the valley of the Ramgunga or the Surjoo, it is generally disposed of on its killing the second or third buffalo. The Beneenag tea plantation, with several smaller gardens, offer employment to a large number of men, and throw much more money into the *pergunnah* than it is required to pay in revenue. Jungle has to a great extent disappeared, and cultivation

Gungolee.

Gungolee 30 years ago overrun by wild beasts.

Its people poor and priest-ridden.

Improvement.

By overcoming those evils.

Prospects.	has increased much. Gungolee is now connected with Almorah by good roads, and there is a large demand among the tea plantations on the spot for its surplus grain, as well as by the Bhooteas, and at Bagesur. I expect that this pergunnah will make great progress during the current settlement, by a yearly increase of cultivation and wealth.
Choukote—Kutyoor; Sult.	18. The <i>choukote puttees</i> in Palee pergunnah—Kutyoor in Danpore, and Sult—have also improved very much. A large hill in <i>choukote</i> , known as Lukhora, was almost a jungle 30 years ago; now it is studded with prosperous, growing villages. Kutyoor has improved solely from the benefit conferred on the country by tea plantations. At the time of the former settlement no one would take whole villages on Rs. 4 of <i>jumma</i> ; now the revenue-rate is of Re. 0-7-9 per <i>beeses</i> of <i>doween oopraon</i> , and land is fifty times more valuable than it has been for many generations. The people are not only out of debt, which used to keep them low, but well off—mere independent and hard working. In fact the cultivation of this formerly despised <i>puttee</i> pays so well, that the tea-planters cannot get sufficient labour from the surrounding country, and are obliged to procure men from other parts, or from Nepal.
Land valueless 30 years ago.	
Improved fifty fold.	
Talooka Askote.	19. The talooka of Askote at last settlement consisted of two estates; now the whole belongs to the Rajwar Pooskur Pal. It is situated north of Shore, on the banks of the Kalee river, and reaches up as far as Durma. The Rajwar was treated as a zemindar at the time of settlement; but on representing the political importance of maintaining the Rajwar's position, His Honor the Lieutenant-Governor was pleased, by G. O. No. 1950 A. dated 11th September, 1873, to sanction his retaining the whole talooka on the terms on which he had previously held his 84 villages, i. e., the Rajwar may increase the cultivation to his own profit, and make such arrangements as he thinks advantageous to the talooka; but he cannot interfere with the permanent tenants' possessions recorded in the <i>phants</i> .
The property of Rajwar Pooskur Pal.	
His position and privileges.	
	A full account of this estate is given in Mr. Batten's settlement report; and in concluding he entirely expresses my views in stating—"It has hitherto been assumed that so long as the Rajwar provides decently and respectably for his clan, he is himself entitled to the full enjoyment of all the profits and privileges accruing from the Rajwary estate."
Extent and assessment.	The talooka, containing 142 villages large and small, is assessed now at Rs. 1,250.
Shore.	20. This pergunnah has improved very much, though not quite in the same way as Gungolee. It was pretty well cultivated at last settlement. Prices have risen immensely; and in trying to ascertain the cause of grain having become so expensive, I am usually told that rupees have become cheap, which means that the people have become rich, and are not compelled to sell at low rates. Since I came to the province I remember wheat selling at a maund, and barley at 70 seers for the rupee at Petoragurh cantonment in this pergunnah. Of late years wheat has not been procurable in that cantonment at 20 seers; not because there is no wheat, but because the Bhooteea traders purchase it at a higher rate, and 15 or 16 seers of <i>atta</i> is now the common price.
Improvement due to the Bhooteea grain trade.	
Price of wheat risen from 40 to 16 seers.	
Tulla Charaal and Dharon	21. After the whole of the assessment had been completed, it appeared that the revenue of these two <i>puttees</i> might possibly press heavily on the people; and under the sanction of His Honor the Lieutenant-Governor I was authorised to reduce the revenue of the two <i>puttees</i> by one-fourth. I therefore remitted Rs. 692 in Charaal, and Rs. 424 in Dharon.
Reduction of assessment.	
Proprietors of Charaal reduced native gentlemen.	Tulla Churaal is the country near Champawut which at one time was the capital of Kumaon. The land is very good, but the proprietors of most of the villages belong to families of broken-down native gentlemen, who are unfit for hard work themselves, too proud to sell to others, and in consequence of the cattle remaining so long in the Bhabur to avoid the cold of Charaal, the land is not so productive as it might be. After long consideration I was satisfied that a bad year might break down some of the villages, and it appeared judicious to afford relief before it was actually found necessary.

In Dharon the land is very dry, and in case of drought the crops are not good. The people are backward, with little self-reliance, and more migratory than elsewhere. I was afraid that a bad season might compel some to dispose of their land, and timely relief appeared desirable, although the assessment only averaged Re. 0-7-8 per *beesee*.

Dharon.
Dry land—backward people.

22. The *sudaburt puttees* of Kutolee and Mahroree, containing 124 villages, with a cultivated area of 6,718 *beesees*, yielding a revenue of Rs. 5,800, formerly belonged to the temples of Budreenath and Kedarnath. The assignments were made for the purpose of distributing food gratis to indigent pilgrims visiting these shrines. Mr. Strachey, now Sir John Strachey, K.C.S.I., when in charge of the Gurhwal district, brought to the notice of Government how these funds were abused; and after full enquiry, the revenues of these puttees (together with those of Gurhwal, assigned for the same purpose) were, with the sanction of Government, placed under charge of local agents in 1852, and the revenue applied to the maintenance of dispensaries for the relief of pilgrims and others, which benefited these poor people much more than the name of "*sudaburt*," which had no real existence. The Kumaon *puttees* were at the same time taken charge of by the district authorities, and they now yield a revenue of Rs. 5,800, which, in the spirit of the original assignment, is expended on really charitable institutions, under the management of a local agency, of which the Rawuls of Budreenath and Kedarnath are members.

Sudaburt puttees.
Kutolee and Mahroree.

Purpose of the assignment.

Abused by temple officials.

Fund placed under local agents.

Puttees administered by district officers.

23. The *maafee* grants in Kumaon are 92 in number, aggregating 3,297 *beesees*. The largest *maafee* belongs to the Shastrees Ramaputtee, Neeladhur, &c. The revenue on which the cess has been levied amounts to Rs. 3,412. There are a few villages held *maafee* by residents in the districts, but most of them belong to brahmins who live at or in the vicinity of Almorah.

Maafees.
No. and extent.

By whom held.

The *maafees* of Kumaon were thoroughly investigated in 1855-56. Those recommended for resumption were not disturbed till the present settlement, when 41 *maafee* estates were resumed, and their revenue added to the *jummabundees*. It has been discovered that a few *maafeedars* who were absent from the district when the former enquiries were made escaped notice altogether at that time. They claim very small estates, and their cases have been reported separately to the Board. Had they been investigated in 1855-56 they would have been included in the list which accompanied the orders of the Government of India, No. 2044, dated 18th October, 1859.

Investigation.

Cases overlooked in 1855-56.

24. Assignments made in favour of temples are, even excluding the *sudaburt puttees*, numerous. All the *sunnuks* were carefully examined in 1855-56, and Government sanction (No. 2044, dated 18th October, 1859,) was obtained to all that were upheld. The temple assignments, whole or parts of villages, are altogether 444, with a cultivated area of 9,476 *beesees*, yielding Rs. 8,447. Thirty-five have been resumed.

Goonth or temple lands.
Title.

Number and value.

25. During an experience of 33 years, I have observed much change under the head of tenure, from the advancing positions of the parties concerned. It is useless trying to classify the hill tenures under the definitions given in the "Circular Directions." The terms "perfect" and "imperfect *putteedaree*," &c., are utterly unknown. As stated in Mr. Traill's report, the paramount property in the soil previous to 1815 rested with the sovereign,—not theoretically only; for the unrestricted power of alienation was exercised at the will of the ruling power in the time of the Rajahs, and to the end of the Goorkhalee Government. A village was given to an astrologer, a baid, a cook, or a barber; and the *assamees* in possession, whatever their former status, became to all intents and purposes the cultivators of the new owner. If they did not like the *maafeedar's* terms, they moved elsewhere, and they retained no rights in the land which they could assert to the prejudice of the grantee.

Tenures.

Tenure.

Under native rule absolute property belonged to the sovereign.

Illustrations.

Again, this grantee might be ousted in the same way, at the caprice of the ruling power, if the village was required for any other favourite. In those times land was abundant, *assamees* were scarce, and the cruel oppression to which the people had

been long accustomed, some times drove them away to parts of the districts where they could be comparatively free from the exactions of their oppressors. But the hill people are strongly attached to their land; and, as Mr. Traill observed in his report, throughout the greater part of the province landed property has been subjected to few violent changes, and by the process of the Hindoo law of inheritance it has now been reduced to the minutest degree of sub-division.

Attachment of the people to the soil.
Minute sub-division.

Oppressed state of the people.

Maafee villages which derived some protection from the grantees were more prosperous than *khalsa* villages; but the *maafee assamees* were only so far better than their neighbours that they had to please one who was to a great extent interested in their not running away, instead of being bullied by any official or soldier requiring their services. This state of government for a number of years took the spirit out of the people, and they were so accustomed to obey those immediately over them, that even those who had not been ousted became quite accustomed to obey the *thokedar* or headman of the village as if they were his slaves.

Mr. Traill's early settlements.

As a rule such was the state of the country on our conquest of the province in 1815. Mr. Traill at first realized the revenue through the *thokedars* and *syanas*. After he had seen the country he made *mouzahwar* settlements; but the people had recovered so little, that in those early settlements the lease was often supposed to include the proprietary right in the land. From 1825 to 1835 it is evident, from cases of that time, that the people had improved and begun more generally to feel that they had rights in the land, and this feeling grew with the prosperity of the country. At the 20 years' settlement the first record was attempted by Mr. Batten, who, hampered with the charge of the district, had to struggle against the ignorance of the people and to contend against the few who could appreciate the difference between *hissedar* (proprietor), *khaekur* (permanent tenant), and *sirthan* (tenant-at-will), and were quite ready to make use of their knowledge against those who were ignorant or apathetic.

Assamees' ignorance of their rights then.

Dawning intelligence 1825—1835.

The first record—Mr. Batten's.

The 20 years' settlement wakes up the people.

After the 20 years' settlement the revenue courts were flooded with cases about *hissedar* and *khaekuree*. These cases sharpened the intellect of the people, who, before the end of the settlement, thoroughly understood what was involved in these terms, which were little more than names in Mr. Traill's time. *Assamees* could then make their own terms. *Pudhans*, *thokedars*, or proprietors could not afford to displease their tenants, as they were too poor to pay on waste land, and could not easily replace *assamees* who left. Thus the undefined position of proprietor and tenant remained for about 20 years, or up to 1835. During that time Mr. Traill might have transferred even a whole village, and his right to do so would not have been questioned, except perhaps by very few. From the date of Mr. Traill's last settlement the people began to improve generally, and the 20 years' settlement enlightened them in many ways.

who resort to court to establish their rights,

and tenants become important.

The people's views of tenure at date of present term.

Difficulty of ascertaining rights claimed at settlement, under conflicting authorities.

The subsequent litigation made great changes; and when Mr. Beckett came to the work of settlement, he found every one wished to be recorded as proprietor. The old generation had passed away; the existing one could not realise the position of their ancestors of 50 years before; and it was a very difficult work to determine the real position of many who claimed under Mr. Traill's settlement, the measurement book of 1823, Mr. Batten's *phants*, decrees of court, or as relations of those who considered they had rights under any of these authorities. Mr. Beckett made every endeavour to put each man in his right place, and those who were dissatisfied were referred to the revenue courts.

Improved cultivation.

The state of cultivation in the best pergunnahs has entirely changed since Mr. Traill's time. *Assamees* are abundant in the well cultivated parts, and land is scarce. The *puharee* is extremely attached to his home, and it is difficult to induce a *khaekur* even to move to another part, although the change might carry with it proprietary rights. I do not now see the migratory spirit that appears to have prevailed in Mr. Traill's time; and my experience is, that villagers will put up with great hardship as

regards revenue rather than give up their village. If a tiger or sickness carry off shareholders, the remaining few will never give up if they can pay the revenue by any means. Some Kalee Kumaon people are exceptions to this rule. They are headstrong, obstinate, and spiteful. If they had a *thokedar* or *pudhan* whom they disliked, a whole village would resign and go elsewhere rather than be compelled to pay him recognized dues.

A home-loving people.

Unamiable exceptions in Kalee Kumaon.

Appendix No. 5 shows the state of cultivation, from which the Board will see that a large portion of the land is cultivated by the actual proprietors, and a great deal of that held by *khaekurs* most probably is the same. No doubt the greater part of them are the descendants of the cultivators in possession at the time of the conquest, but the superior intellect and position of others long ago established their (the *khaekurs*) position as that of tenants.

Cultivation chiefly by actual proprietors.

Excluding *maafee* holdings, and some of the more powerful proprietors whose ancestors, very influential men when Kumaon first came under British rule, had at once assumed the position of proprietors, which they steadily maintained and improved on every opportunity, it may be said that the proprietary right is vested in those whose ancestors occupied the land at the time the province was taken from the Goorkhas, and who have advanced the cultivation from its former backward state to its present prosperity. Or in another class who, by their influence and money, or by their own labour, have changed thick forests into prosperous villages. A great many years ago, former *maafeedars*, whose rent-free rights had been ignored by Mr. Traill, took advantage of the ignorance of the people to wheedle them out of their rights, at that time little understood, and perhaps as little valued. But this was done so effectually that when the old resident cultivators came to their senses, and tried to recover the rights they had given up, they found that the *ex-maafeedars* were too wise; and by decrees of court or registered deeds, many *joshes* and other brahmins had entangled the old cultivators in such a way that at the 20 years' settlement the *assamees* were, with the exception of being permanent, no better than tenants-at-will, so completely bound down by the payment of grain and other dues, that practically they were altogether powerless to oppose the new proprietors in any way. A few villages, by private transfer or sales in execution of decrees, have passed into *bunniahs*' hands. But, with such exceptions as I have explained, the proprietary right may be said to be vested in the descendants of those who cultivated the land under the Rajahs and Goorkha Government.

As a rule, proprietary right vests in descendants of actual occupiers at time of conquest.

How other proprietors acquired their rights. By subduing the forests.

By cheating.

The *khaekur* enjoys hereditary though not a transferable right in the land he cultivates; and on the death of a father the sons generally make a sub-division of the land, which not unfrequently reduces the holding of each so much that these *khaekurs* are obliged to cultivate other land as *sirthans* or in *paekashtee* in some distant village, where they make their own terms with the proprietor. *Paekashts* of long standing have now assumed the position of *khaekurs*. New *paekashts* are in the position of contractors or *sirthans*.

Khaekuree hereditary, not transferable. Leads to minute sub-division, and this to *khaekurs* becoming tenants-at-will elsewhere.

There is no tenure corresponding to what is known in the plains as *zemindaree*. Where *maafee* rights which had been undisturbed since the conquest of the province existed, they invariably include the proprietary right, and the cultivators are only *khaekurs*. Where proprietary rights which had been recognized at the 20 years' settlement, or rights of the same kind acquired by purchase, existed, they could not be interfered with; but, with these exceptions, the cultivators have been recorded as the owners of the land they occupy, while the permanent tenants can never be disturbed or interfered with by the enhancement of rent. In fact these tenants are in all respects equal to proprietors, with the exception that they cannot sell their holding; and they pay a small sum in addition to the quota of revenue due from the land recorded in their names. *Sirthans* must make their own arrangements.

Zemindaree unknown.

Tenants differ but slightly from proprietors.

The only other tenure requiring notice is that which exists in some parts of the district, where whole villages are in possession of the permanent tenants, *khaekurs*.

Khaekuree villages.

Non-resident proprietor who cannot interfere with these tenants. One of whom acts as *ghur pudhan*.

The position of such proprietors somewhat improved by this settlement.

Temple lands. *Goonth* tenures. The temple could not sell its land; but cultivators could sell their rights in it; and they have been recorded at settlement as proprietors.

Why.

Enhancement.

Land measure.

Bessee and acre almost alike.

Average holdings.

Of proprietors $2\frac{1}{2}$ *bessees*.
Tenants, $1\frac{1}{2}$ ditto.
Increasing cultivation.

Construction of terraced fields in ravines.

The proprietor residing in another part has no power to interfere with these *khaekurs* or their land, waste or cultivated. A sub-*malgoosar* or *ghur pudhan* realizes the revenue as well as *malikana* from his brother *assamees*, and makes the whole over to the proprietor, who is also the *suddur malgoosar*. In such a village the *khaekurs* were formerly the real proprietors, but somehow or other the proprietary right got vested in the *thokedar's* family, and they tried from time to time to establish full proprietary rights, which the old but defeated proprietors obstinately resented during the last settlement in the Dungwal Toke. The bad feeling between the two parties was so strong, that a summary arrangement had to be made; and at the present settlement an arrangement has been made by which the income of the proprietors is considerably in excess of what they received under the previous settlement.

26. The temple land tenure was a very doubtful one. It was often recognized by decrees of court that a "*goonth*" *assamee* had a right to sell his land. In other cases of the same nature, the proprietary right was considered vested in the temple. It appears altogether unnecessary to place temple lands on a different footing from the *khalsa* as regards proprietary right. The representatives of a temple could not sell its land. The temple, or its representatives only require the revenue to meet their wants. *Goonth* cultivators had often sold their land, and it could not matter to the temple authorities who cultivated so long as the revenue was paid. Under these circumstances, all the old cultivators in temple lands were recorded proprietors as in *khalsa* land. This will put an end to many disputes, and prevent troublesome *poojarees* giving needless annoyance.

At the time these villages were assigned, the property in the soil belonged to the ruling power everywhere in the province; and where the object of the endowment remains intact, it is only fair the *goonth* villages should be treated, as regards rights, the same as in *khalsa*; because the recognition of the old *assamee's* proprietary rights in no way affects the receipts of the temple, it only checks the unwarrantable interference of dishonest *mahunts* and *poojarees*. The same system was observed in Gurhwal.

27. This is unknown in Kumaon among permanent tenants. The Rent and Revenue Acts are not applicable.

28. In Mr. Traill's time the usual way of computing land was by estimating the quantity of seed required to sow it. The different terms used to denominate its divisions have gradually become obsolete; the most common terms of *nalee* and *bessee* alone remain. These also varied; but Mr. Traill made a standard *nalee* of yards $20 \times 12 = 240$; and as the *bessee* contained 20 *nalees*, a *bessee* was equal to 4,800, or only 40 yards short of an acre, therefore *bessee* and acre may be considered the same.

This system was fully recognized in any measurements made by Mr. Traill. It became more popular during the currency of last settlement; and now no other measure is known to the present generation, who never knew anything about the old terms of *jhula*, *ali*, &c.

29. Appendix No. 6. gives the number and castes of proprietors and permanent tenants. The number of tenants-at-will is not given. It appears that the average holding of each proprietor, if he dispensed with his tenant-at-will, would be nearly $2\frac{1}{2}$ *bessees*, while the average holding of a permanent tenant is only one and a half *bessees*. Many of these permanent tenants have been reduced, by repeated division, to such small holdings, that they frequently cultivate land in their own village as tenants-at-will, or in distant villages as *paekashts*; but nearly all over the district, cultivation increases every year; terraced walls are, by degrees, made on the steep side of a hill; the less steep parts are for some years gradually levelled by stones being placed at the lower end; and in a few years such places become as good as the permanent cultivation. Ravines are sometimes built up by throwing across, at the

distance of 20 to 50 feet, strong walls made of large pieces of rock. The ravine water assists in washing down loose earth, and in time the space is filled up, after which others are made as high up as the nature of the ground admits of. The ravine water, when no longer required in making fields, is turned into another ravine; or arrangements are made for its passing down without injury to the fields made; while it can be applied for irrigation purposes at pleasure. There is a great deal of most productive land which has been made in this way, and the quantity will increase every year. New clearings are also made in jungles, and thus proprietors, *khaekurs* and *sirthans*, cultivate as much land as they can manage. Sometimes a part of the family takes service while the others remain at home.

30. Under the old settlement the position of proprietor and tenant was very different from what it is now,—very few of the tenants were recorded at all, although their *khaekuree* rights were not interfered with. This gave the proprietor much power. The usual perquisite was a rupee on the marriage of each daughter, and other offerings, which were very vexatious, and could be made use of to bully any *assamee* who did not give what the proprietor asked. The perquisites of this class have now been commuted to 25 per cent. on the revenue, which is much more than the proprietor was legally entitled to under the former system. In other cases, where small payments of grain were made in addition to these perquisites, 50 per cent. has been given; and where large quantities of grain were given, and money in addition to other offerings, in some instances three and four times more than the *jumma*, 100 per cent. has been given, i. e., half of the gross rental has been divided equally between the Government and the proprietor.

Malikana perquisites formerly paid by tenants to proprietors.

Commuted to money rates varying from 25 to 100 per cent. on the revenue.

Under this system cultivators in many villages have been relieved, as they were required to give much more than they now pay. They are freed from indefinite demands, and at the same time the revenue has been increased.

Which prevent exactions.

31. The Bhote pergunnah of Johar, situated north of the outer snowy range, on the banks of the Goree river, has no land of any value, but a very thriving trade. During the rains the Bhotas families live in their villages in Johar, while the men are employed in going to and from Thibet with their *jooboo*s, goats and sheep. From October to May these are employed in bringing down borax and salt from the upper villages, which they deposit at different depôts; and in carrying up grain, *goor*, &c. For instance, they bring all their Thibetan products to Moonsheearie before they attempt to carry any part lower down. On leaving Moonsheearie they generally form depôts at Tejum, Buggar, Sera Gungolee, or other place, where their families are to live during the winter. At Tejum in Johar, Looathul, and at other places in Gungolee and elsewhere, they have built houses. Many of them erect temporary shelter, and while the women are occupied in weaving blankets, or looking after the ewes and cattle, some of the men are ever busy with their goats and sheep, carrying borax to Bagesur or Ramnuggur, and salt to the villages. The former is sold to bunniahs, or to Phuldakote men at Ramnuggur, and the Bhotas take back grain or *goor* to their depôts; and thus they go on till they have sold all their borax and collected as much grain as they are able to carry on to their homes in the snow. The salt is bartered for the grain in the villages.

Bhote—land of no value, but a good trade.

Depôts midway down, whence borax and salt are taken down for grain.

These Bhotas keep a few ewes themselves. They buy a great many Chumba sheep for lading, which are brought by Kangra men for sale at Ramnuggur, and all they can get from the Mulla Danpore pergunnah. A few ponies are brought down, but since the Seikhs invaded Thibet about thirty years ago, the pony trade has been ruined, from the Seikhs having carried off nearly all the good mares. A good pony now, such as would have been bought for Rs. 100 thirty years ago, costs Rs. 300.

Trade in live stock, sheep, ponies.

The pony trade ruined by the Seikh invasion of 30 years ago.

Some of the Johar Bhotas are well off. The old race, among whom Deboo (who assisted Moorcroft), Hugguroo, and Futteh Singh were well known, have passed away, and none of the present generation can exercise the power and influence they did; but the Joharees are decidedly the most intelligent and most wealthy of all the Bhotas

Joharees the best of their race.

Leading men.	of this province. Dhunnoo is a very enterprising man, and goes to Calcutta every year, to purchase his own supplies of cloth, corals, &c., for the Thibet market; Manee, son of Deboo, who distinguished himself with Schlagentmeit, and under the Great Trigonometrical Survey, is putwaree of Darma. He, Manee son of Futteh Sing, Dhunnoo Jangpanee, and Gyanee son of Hugguroo, are now the leading men among the Johar Bhoteas.
Murrain.	The murrain among cattle is very fatal this year in some places above Bagesur, and it is ever liable to carry off sheep by thousands.
Government demand fixed on trade profits as well as on land. Reasons.	The revenue fixed on these Bhotea villages is not on land only, but on their profits generally. It is quite fair they should pay, because they occupy an immense tract of country to the exclusion of all others. For six months they graze their sheep and cattle all over the country. They have the benefit of the roads and bridges, made at a great expense; and with these advantages they make large profits, while they pay almost <i>nil</i> to the Thibet Government.
They make their own <i>phant</i> . Why.	With their consent it was arranged that the villagers should make their own <i>phant</i> or distribution of <i>jumma</i> every year for all they had to pay in excess of the land revenue, as they knew who among them had suffered from the loss of sheep, or had been crippled in trade, and who had been able to make larger profits than usual.
Remissions should be given in bad seasons.	I think, however, that although fair <i>jummas</i> have been fixed, in the event of severe loss from murrain, remission should be freely made; because it is very disheartening in payment of this kind to be called on to pay on profits when murrain had caused actual loss. Strictness in demanding <i>jummas</i> now fixed in bad seasons, when murrain has destroyed their flocks, might throw the poorer Bhoteas into the hands of bunniahs, which would be a terrible calamity. But in the absence of murrain the <i>jummas</i> now fixed can be easily paid, and will be cheerfully given.
But for murrain the <i>jumma</i> can be easily paid.	
Eastern Bhote. Less civilized.	32. The eastern Bhoteas of Byans and Darma are very far behind those of Johar in every way. They are much more obedient, and pay a good deal to the Thibetan Government. They drink very much, and altogether are far less civilized than in Johar or Gurhwal. The Byans people, on the borders of Nepal, can easily evade any objectionable order by crossing over the border into Nepal, and they have no respect for law except in so far as they may be made to feel its power. The most enterprising men in this tract are the Kambas, who came originally from Thibet. These Kambas, who had long been traders in those parts, were located at the settlement in this part of Bhote, and made to contribute to the revenue like other Bhoteas. They were quite ready to do this to remove the objections brought by the Bhoteas, that the Kambas paid nothing and ought not to be allowed to trade.
The Kambas, immigrants from Thibet.	
Choudans.	Choudans is altogether different from Byans and Darma. Its climate is so mild that people can live there and cultivate throughout the year.
	These pergunnahs require no further notice here. Full particulars about passes, and other details, may be found in Mr. Batten's report or Mr. Atkinson's <i>Gazetteer</i> .
Ten per cent cess.	33. A ten per cent. cess has been levied, and is applied to education, district post, and <i>putwarees'</i> pay.
Education.	34. There is great difficulty in bringing education within reach of all, though we do not attempt to teach more than to read and write, and arithmetic of the simplest kind. Under present circumstances this is sufficient for the mass, and if any sharp boy wishes for a higher education, which his father cannot afford, he gets an allowance to admit of his attending the school at Almorah. A certain number, according to our funds, are provided for in this way on the recommendation of the inspector or district officer. There is a boarding-house under construction at Almorah where such boys will be looked after.
Elementary. Scholarships.	
Teachers' pay.	Teachers in the <i>hulkabundee</i> schools only receive Rs. 5 per mensem. This is sufficient to procure men capable of teaching all that is aimed at, and it is considered

more beneficial to impart to many the useful knowledge of reading and writing sufficient for their every day use, than to give a smaller number a better education by employing qualified but more expensive teachers. Expensive school-houses are not required. As a rule, sheds are erected by the people, and the school-masters can be removed to different localities from time to time as required.

The aim to diffuse simple knowledge among the many, rather than give a higher education to a few.

There are 99 *hulkabundee* and six *tuhseel* schools, which had an average daily attendance in 1872 of 2,014 boys. The schools are looked after by the inspector, but they ought to be carefully watched by the district officer, and no pundit should be allowed to draw his pay for doing nothing. The *hulkabundee* schools will prosper or decline according to the interest taken in them by the district officer.

Schools, attendance.

The better classes, who are desirous of educating their children well, can afford to pay for them; and though our education was said to be in a state of backward simplicity, Kumaon can, I believe, boast of a higher percentage who can read and write than any other district in the North-Western Provinces.

Results.

35. Without the district post, the police arrangements of the district would break down; and the certainty of information coming from all parts of the district keeps the *putwarees* and the rural police up to their work. About 6,000 square miles have to be looked after. In this area there are 91 *putwarees* located, through whom the police arrangements are carried out; and a great many men are required on the district post establishment to convey reports from all parts of the district to Almorah.

District post.

36 Previous to settlement there were 42 *putwarees* on Rs. 5 a month borne on the *tuhseel* establishment. The circles of some contained an area of 300 square miles, and the consequence was, that they could only do a part of what was required of them. Now there are 91 *putwarees*, the number having, as in Gurhwal, been increased at settlement, out of the cess then imposed. Those wholly paid from the cess get Rs. 10 per mensem, while an allowance of Rs. 5 each is given from the same source to such of the old *putwarees* borne on the *tuhseel* establishment as are qualified by a knowledge of survey work. Their circles are reduced to an average size of 50 square miles, paying a revenue of about Rs. 2,500.

Putwarees.

Numbers, emoluments, circles.

These *putwarees*, in addition to the duty of collecting the revenue and their ordinary police work, have to measure land when required, to execute decrees where land is concerned, to look after the repair of district roads, arrange for supplies to travellers, procure coolies when required, and keep the district officer informed of all that is going on. There are no village *putwarees* similar to the class of village accountants in the plains.

Duties.

No village accountants.

37. There is no regular police in the Kumaon hills, except a few at the stations of Nynee Tal and Raneekhet, and at Champawat; nor are there any chowkeedars. The few *chuprassees* attached to the courts and *tuhseels* are required to perform the police duties of escorting prisoners or apprehending criminals, which is done with the assistance of the *thokedars* and *pudhans*. The rural police are the *pudhans* of villages, who in heinous cases are required to apprehend criminals, report crime to the *putwarees*, and arrange for the safe transport and custody of the Government revenue from distant parts to Almorah. If they fail in making police reports, the *thokedar* is bound to bring to the *putwaree's* notice any serious crime committed that has been concealed or not reported by the *pudhan*. In all parts of the district every *thokedar* or *pudhan* has enemies who are ready to bring his neglect of duty to notice; crimes unreported soon get talked of in the village, and this extends to friends beyond the village, when some one is sure to make a report to the *putwaree* or the district officer. I believe our rural police system works better than any other in India; and it would be most unwise to interfere with it. It has the great merit of being cheap, i. e., costs the State nothing (I do not here include the Bhabur police, which is separate); and the absence of annoyance and worry inseparable from a paid police is not its smallest recommendation.

Police.

None save at stations.

Escort, arrest.

Pudhans the rural police. Their duties.

The *thokedar*.

How the system works. Character, good. Costs nothing.

Thokedars.

Local names meaning the same office.

Differences.

Notable men among *thokedars*.

Mulk Sing a king in his own *thoke*.

Thokedars once oppressive.

Their suppression determined on.

Altered circumstances required their retention.

Dues fixed at 3 per cent. by Mr. Traill. Seldom acted upon.

Dues recorded at the 20 years' settlement.

To reduce all to 3 per cent dues, impolitic.

The position of the most important men improved.

These dues deducted from the Government demand.

But the *jummabundee* not really reduced thereby.

Pudhans.

Under what circumstances a village had more than one.

38. I have already stated that at the conquest of the province *thokedars* were entrusted with the collection of the revenue. *Syanas*, *kumrens*, *thokedars*, and *booras* appear to be synonymous terms—local names for the same thing; although *syancharee* and *boorachuree* in time got mixed up with *hissedaree*, probably with the object of excluding land from the revenue demand. No doubt there was a very great difference between some of those called by these names. Tej Singh, *syana* of Kukurgaon, Narain Singh of Tamadhon, Kullyan Singh of Juspoor, Mulk Singh of Danpoor, and some others were quite different from the common *thokedars*. As Mr. Batten observed, they occupied a feudal place in the estimation of their subjects. When I came to the province Mulk Singh was a king; his word was law in upper Danpoor. He did what he liked: he took what he wanted, and the people did not grumble.

At one time it was found that the *thokedars* were oppressive, and on the representations of Mr. Strachey and Captain Ramsay, then in charge of the hill districts, it was ruled by Government order in 1856 that *thokedars* should be dispensed with as far as possible, and that at the settlement those who could not be so dispensed with, should get a percentage on the revenue of their *syancharee* villages.

Since that time I have been compelled to change my views. The people have altered so much since 1856, that it was absolutely necessary to maintain *thokedars* as far as possible, to ensure the due performance of police duties on the part of *pudhans*; and I saw that the abolition of the office of *thokedar*, which had existed so long, would be very unpopular with all except the democrats who, more than others, required to be kept in check. I accordingly represented to the Board and Government the necessity of keeping up all the old *thokedars*, and His Honor authorized me to do what I considered necessary. In the course of appeals, I had to go through nearly all the *thokedaree misls*; and my opinion is, that Mr. Traill's order, which reduced all *thokedaree* dues to 3 per cent., never was acted on except when a small *thokedar* came into court. The chief *thokedars* never required to apply to court, as in those times they made *assamees* do whatever they liked. At the 20 years' settlement the *thokedars* in many instances recorded very heavy payments in the *phants*. Others, resting on their *thokedaree sunuda*, felt it unnecessary to record their *thokedaree* dues at all.

Some of these *thokedars* are gentlemen, in the habit of being hospitable; and to reduce them to 3 per cent. at once was felt to be very hard indeed. I therefore, in consultation with Mr. Beckett, determined that some of the most important men should receive 10 per cent., and some 6 per cent., as in Gurhwal, on all villages where their *thokedaree* was entered in the 20 years' settlement *phant*, and that 3 per cent. should be given to all whose names were in *thokedaree puttis* if *thokedaree* was upheld among those who were descended from men in office when Kumaon was conquered.

No doubt this selection of the most influential men will make others envious; but I do not think any have been omitted who ought to be paid at the higher rate.

As all the settlements had been completed before these *thokedaree* claims were recognized, I directed the Settlement Officer to deduct the amount from the Government demand. In reality, if the *thokedars* had been given dues at first, the Government *jummas* would have been so much less; and the fact of the extra *thokedaree* dues having been given at the end, instead of during the settlement, makes no difference in the *jummabundees*. The sum required to meet these dues was Rs. 2,156-4-0.

39. With few exceptions there was only one *pudhan* of a village under the old settlement. At the 20 years' settlement some villages had as many as ten. The *assamees* found the mistake of having many *pudhans*, who created a great deal of mischief. When there were separate *dhurras* or clans in a village, each was allowed to have its *pudhan*; or where there were a very large number of proprietors of different castes, more than one *pudhan* was allowed; but as a rule no more *pudhans* were appointed than necessary. Where *pudhancharee* land existed in sufficient quan-

tity, that was the *pudhan's* remuneration. Where there was not enough, or none at all, 5 per cent. was given. In some cases sub-*pudhans*, i. e., *ghur pudhans*, were appointed, with the object of looking after the *assamees'* rights, and collecting the revenue. These *ghur pudhans* can at any time be removed by the district officer or Commissioner, on its being shown that they can be dispensed with without injury to the village.

Remuneration.
Ghur pudhans.

40. There is no correct return of the population in Mr. Traill's time. The first census was taken in 1852; not by counting all in one day, but by collecting the requisite information through *putwarees*. This was a work of months; but as the births were probably nearly equal to, and certainly not less than, the deaths during the time occupied, this return was more correct than any that could have been made on a particular day. The last census was attempted in the common way of counting all present on a certain day. The settlement census, including the town of Almorah, but not the stations of Nynsee Tal or Raneekhet, shows the population of each place as they were counted during the progress of the field survey, which extended over several years. All show a great increase in the agricultural population of the district.

Population.

First census, 1852.
Mode of taking it.

Last census.
Settlement census.

Population Return.

1852.			Settlement Census.			Census of 1871.		
Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
190,203	169,808	360,011	208,878	186,044	394,922	313,975	192,067	406,042

In my opinion the entries in the census return fall short of the actual population. The settlement statements certainly are said to include Almorah, but as they were prepared by the ameens conducting the survey, they no doubt left out many who had no interest in land. The census of 1871 was taken at a time when many hillmen and women are on pilgrimages to the plains; and my belief is, that this return includes *no travellers*: therefore all who were on journeys in the interior of the hills, on their way to local shrines or markets at the foot of the hills, or employed in the forests or otherwise in the Bhabur, are not reckoned; while a great many hill-people must at that time have been located in the Terai. The aggregate of all these would be very considerable.

Under-estimated.

41. There are two *tuhseels*—one at Almorah with a *peshkaree* at Palee; and the other at Champawut, with a *peshkaree* at Petoragurh.

Tuhseels.

42. There are five *canoongoes* in Kumaon, and they are made generally useful by the Senior Assistant Commissioner in the *tuhseels*, or in the district, or any other way that they can be best employed. The present men are better educated than the old class, and, with our present records, are very useful.

Canoongoes.

43. The principal crops in the hills are rice, wheat, and *mundooa* (millet). In some of the valleys, as in Puttee Salim in the Kosee valley, and in many other parts the finest (*basmuttee* and *hunsraj*) rice is produced, which sells at 5 or 6 seers per rupee. A list of the grains grown in the hills will be found in Appendix No. 9. In former years the people were content with the coarser grains—*mundooa*, *koonee*, and *joongra*, being most extensively used, and they consumed little good rice or wheat. But I think this is not so much the case now. A great deal of wheat and rice is eaten. The people can afford to sell at convenience, and they dispose of their spare grain in the best market, when prices are favourable. Grain from the west, which used to

Products.

The people now consume much of the fine grains, and can afford to wait for good prices for the surplus.

come to Almorah, now goes to Raneekhet. A good deal is taken at the tea gardens, and the Almorah bazaar is chiefly supplied from below.

Grain carrying.

A great many men are employed during the hot weather and rains in carrying grain from Huldwanee, Kaladoongee, and Ramnuggur to Almorah, Nynsee Tal or Raneekhet. There are thousands of ponies engaged in this trade, and at certain seasons they take down potatoes, which are carried to the plains.

**Cotton.
Sugarcane.**

Cotton is very little cultivated, and none exported from the hills. Sugarcane is grown in many places on a small scale. There are some sugar-mills in the eastern pergunnahs, but in the western the sticks are sold by retail in the bazaar to a considerable extent. Turmeric is a very important and remunerative article of export. Immense quantities of it are grown in the lower hills, and sold at the markets of Huldwanee, Ramnuggur, Burumdeo, &c. Very little ginger is produced. Hemp is cultivated to some extent in many parts, but more particularly in Chougurkha pergunnah. It is not so extensively grown in Kumaon as in Gurhwal. Most of the "*churus*" used at the drug shops is made in Chougurkha.

Turmeric.

Ginger.

Hemp.

The price of *huldee*, which according to Mr. Traill's report used to be about two rupees a maund, is now six rupees.

Exports and imports.

Articles of export and import will be found detailed in an appendix. Grain, as a rule, is not exported. The people were formerly so improvident, and so accustomed to regular seasons, they used to dispose of their surplus grain every year; but they have bought experience during the last ten years, and it is the custom now always to keep a stock in store.

Grain not exported.

Tea.

44. It gives me the greatest pleasure to say that the prospects of tea cultivation, which were so long gloomy and disheartening, have entirely changed, and there is, I trust, a good hope, not only of existing plantations yielding a satisfactory return, but that other capitalists may be encouraged by their success to establish new plantations. It would infuse life into eastern Kumaon if some large paying plantations were settled there, where land might be purchased, and labour is abundant.

**Room for new gardens in
East Kumaon.**

Kutyoor.

The Kousanee and Kutyoor companies have changed Kutyoor from a desert into a prosperous tract, which only requires time and men to convert much of the remaining jungle into fruitful fields. I see immense improvement in Kutyoor. The tea planters have done for Kutyoor what Mr. Batten in his settlement report anticipated; and I wish the people from over-crowded parts could be induced to settle in that *puttee*, where they would find good masters in the present tea-planters, and abundance of land on which they might locate their families. The Doonagiree plantation has thrown a vast amount of wealth into the surrounding country, from which it derives labourers. The Beneenag and other smaller plantations have done much for Gungolee. Julna has in the same way greatly benefited the country east of Almorah, and there are other smaller plantations which have been of immense value to the district.

Gungolee.

Tea market.

The difficulty in disposing of their produce was what hampered the planters. Now purchasers come to their doors, and readily make engagements for future years, at prices which, I believe, are considered remunerative.

Expenditure on production seen in the improved condition of the people.

The great expenditure of the tea-planters during the last fifteen years has thrown large sums of money into the district, which is quite apparent in the improved condition of the people and their houses in certain parts; and I trust the time has now come when the planters may reap the reward of their patience and industry.

Tea estates.

The appendix includes two that are mere gardens, not tea plantations.

Area and purchase money of fee simple estates.

45. A list of fee simple estates is given in appendix 10. There are 19* tea plantations in fee simple tenure, four grants, and 39 villages assessed in the usual way, belonging to tea-planters in the district. In some, little tea has as yet been planted, and in some none at all. The fee simple estates aggregate 13,942 *beesees*, which have been bought at a cost of Rs. 32,389, and they pay Rs. 182 under the 10 per

* Not including incomplete sales.

cent. cess. This cess was fixed by charging 10 per cent. on the amount given by 4 per cent. on the purchase money, i. e., if a fee simple had been purchased for Rs. 2,000, 4 per cent. on this would be Rs. 80, and 10 per cent. on that sum would give a cess of Rs. 8. The rule does not of course apply to the purchase money of a ready-made tea plantation, but merely to the value of the land, which was determined without reference to the value of the tea or buildings on it.

Cesses.

46. A list of tea sites set apart by Mr. Beckett will be found in appendix No. 11. Many of them are small, and in my opinion it would be far better for a tea planter to purchase a village with extensive pasturage ground than to attempt high cultivation on a small area, where manure in sufficient quantity would not be procurable. Small villages, with large tracts of jungle attached, might be purchased in Kalee Kumaon, Gungolee, Dhyaneerow, and other parts.

Land available for tea.

47. No district could be better off for markets. Nynee Tal, Raneekhet and Almorah would consume far more than the hills could supply. At the two former places there is a continual market for labour, and a man would probably pay the whole of his quota of revenue by carrying a load from Almorah to Nynee Tal and back, or by working a week between Nynee Tal and Kaladoongee, or at Raneekhet, or by serving a fortnight at a tea plantation. In the vicinity of Raneekhet the villages could pay their revenue by selling their *bhoos* (chaff) and rice straw. Milk has a fabulous price at all the stations. Vegetables and fruit sell equally well, fruit being eagerly bought. Rice or *atta* is seldom cheaper than ten seers per rupee, while turmeric, red pepper, pomegranite rind, and a great variety of jungle products are brought down during the cold season to the markets at the foot of the hills.

Markets.

Labour.

Prices.

Products.

It is estimated that, exclusive of borax, valued at Rs. 3,00,000, which comes from Thibet, the hill products, cultivated and natural, brought down to Ramnuggur alone every year, exceed Rs. 1,50,000, of which about Rs. 80,000 belong to red pepper and turmeric; and if grain is ever exported in consequence of high prices in the plains, a large sum may be added to this.

Value of some exports.

Bhagesur on the Surjoo river, 28 miles north of Almorah, is not so important as regards the borax trade as it used to be, though improved circumstances have added to the number of the houses, and these are better built than formerly. Still it is the principal borax mart, where the Almorah bunniahs purchase the tincal from the Bhoteas. A great deal of the raw material is now brought to Ramnuggur by Bhoteas themselves, without its passing through any bunniah's hands; and much of it which used to go to Bhagesur from the Durma side is taken down direct to Burumdeo, and sold in the raw state to Toola Ram of Champawut, or to Phillibheet bunniahs. There is a large collection of people at Bhagesur at the 12th of January fair, when ponies, beasts' and birds' skins, mats, baskets, blankets, &c., from the north; pots and pans, cloth, &c., from below; and oranges, grain, &c., from the surrounding country, change hands. There is also a fair at Thul in April, when extensive transactions are entered into between bunniahs and Bhoteas, for clearing up old accounts and making advances. Large sheep purchases are also made at Thul.

Decline of Bhagesur as a borax mart.

But in other respects improved.

The Bhagesur fair.

The Thul fair.

48. In the hills there is a recognized right of Government in all forests in common with the rights of the villages. If Government consider it necessary to take charge of certain forests, as in the vicinity of Raneekhet, this right would be admitted; but the villagers retain their right of grazing cattle, getting wood, grass, &c.; and if at any time the Forest Department wish to encourage the cultivation of potatoes, the village which owns the land by boundary should have the option of cultivating that land. It must be remembered that the villagers owned their jungles in a way before we came to Kumaon, and they have been accustomed to feel that they had a certain position, which no doubt enabled them to get petty dues from outsiders locating cattle; and in our recognizing their proprietary right in land,

Forests.

Rights of Government,
And of villages.

Government can dispose of forest in excess of village requirements.

Removal of some forests desirable.

Where village forests are conserved, the people should retain their privileges.

Waste lands.

Mr. J. H. Batten on rights in waste land in Gurhwal.

the people have acquired a certain right to the use of the forests. At the same time the Government has a right to preserve forests where necessary, or to dispose of waste land in excess of what the villages require. In many parts of the district it is desirable to get rid of jungles as fast as possible, in order that wild animals may be destroyed and the way prepared for cultivation. Forest clearances generally lead to the settlement of villages; but where it is not the interest of Government to have cultivation extended in a forest, it is quite just to prohibit it.

It is felt as a very great grievance if villagers cannot get wood for their ploughs, house-building, or fire-wood; and in depriving villages of their forests by placing them under the Forest Department, the inconvenience should be made as light as possible. The petty interference of native officials is looked upon as an intolerable nuisance.

The subject of forest and waste land was noticed in my report on the recent Gurhwal settlement, and I beg to quote paras. 7 and 8 therefrom, and para. 16 of Mr. Batten's Gurhwal settlement report, as equally applicable to Kumaon:—

(Mr. Batten's).—"16. Large portions of waste land, including whole ranges and their vast forests, have been included from olden time in the boundaries of adjacent villages, though not included in their recorded *ruqba*. No interference with this nominal allotment of waste (except in the case of the Terai lands) has been attempted at the present settlement of Gurhwal. Such a division has been found useful in giving separate tracts for pasture* for the cattle of different villages; but the inhabitants have been strictly forbidden, and the prohibition is particularized in the *pudhan's pottah*, and also in the several *ikrarnamahs* signed by the shareholders

* The Gurhwalees do not migrate annually to the Terai to graze their cattle, their own hills affording sufficient pasture.

of villages, from levying dues for the privilege of grazing within certain boundaries, unless the custom of paying and receiving them has been immemorial; the burden of the proof of this resting with those who demand such payments. Owing to the ignorance and retarded civilization of the communities, the absence of village accountants, and the great desire that I all along felt to leave the people as much as possible to themselves, and to inflict on them as little as possible the visitation of native officials, or the necessity of their own personal attendance at *tuhseeldarees* and *kutcherees* merely with the view to the manufacture of certain documents and statements, the record of village administration must necessarily be imperfect, and I hope that this report will be considered in a measure *declaratory*. I therefore take this opportunity of asserting that the right of Government to all the forests and waste lands not included in the assessable area of the estates remains utterly unaffected by the inclusion of certain tracts within the boundaries of *mouzahs*; and that no one has a right, merely on account of such inclusion, to demand payment for the use of pasture grounds, or for the permission to cut timber or firewood. Neither does such inclusion interfere necessarily with the right of Government to accept offers for *nia-abad* leases. But, as ordered in the case of the Terai forests, so in the hills (where, too, *zemdaree* claims are rare), the inhabitants of the villages most adjacent to the tract, or having it recorded within their boundary, should have the first refusal of all such leases; and no grant of the kind should be allowed within a certain distance of the cultivated and culturable waste lands of inhabited villages; the distance to be fixed by the district officer, after receiving the report of the local *putwaree* and *canoongoes* as to the position and extent of the proposed clearing. If proper attention is paid to the subject of waste lands in Gurhwal, and every application for the privilege of redeeming them be carefully considered and decided on with reference to the above-mentioned declaration now made by the Settlement Officer, I am of opinion that the prosperity of Gurhwal, and the advance of its population and agriculture, and finally of its revenue, will be for the future even more satisfactory than during the years that followed the expulsion of the Goorkhas, and the return of the peasantry to their ancient homes. In every *puttee* there are one or two villages very thriving in character, and with surplus members who are available to become *paekasht* cultivators of neighbour-

ing estates. I have purposely, in the wilder districts (Chandpoor, Budhan, Chuprakote, and lower Tullasulan, for instance), left such villages lowly assessed, in order to increase their wealth, and render them reservoirs, whence its currents can flow and fertilize the vicinity. Let the superfluous members of such communities be distinctly told that a good title will be given with the several patches of fine redeemable land in the forests, and that all fictitious claims to monopoly of the waste have been now repudiated as an usurpation of Government rights, and as only tending to injure the country by increasing the tigers and bears, and I am sure that the offers for new lands will increase ten-fold. The practice here pursued, of the European officer himself spending a large portion of the year in moving about the district, will enable him to make the *nia-abad* settlement almost always himself; and I hope I shall be excused for urging on those who may henceforth be connected with the administration of Gurhwal the immense importance of such personal investigation and arrangements on the spot."

Extract paras. 7 and 8 of my Report, submitting the recent settlement of Gurhwal.

Para. 7.—"The settlement report and statements now under submission prove satisfactorily, in my opinion, that Mr. Batten acted wisely in not interfering with the old village boundaries, which had been recognized by Mr. Commissioner Traill, and carefully recorded, seeing that the existence of those boundaries previous to the 20 years' settlement had not been found incompatible with an immense increase of cultivation, and with a doubling of the land revenue; and it being now acknowledged that during the period of the 20 years' settlement the agricultural prosperity of the country has immensely increased, enabling also the succeeding Settlement Officer to improve the Government fisc in a noticeable degree. The question arises—Did the fact of the attention of Government having been drawn to its own rights in the waste lands, by the application of European speculators for lands in which to grow the great staple product tea, necessitate or render advisable the actual demarcation of separate village boundaries, within which no new settlement could be made for the benefit of the State or the public at the revision now under report? I decidedly think not. If the tea-planting question had never been raised, it is obvious from the past fiscal history of the province, and from all which has hitherto been placed on record, that the tendency of actual demarcated limitation to the extension of tillage and clearing, would be to retard such agricultural progress among the present occupants of the soil. But the plantation question having been raised, has such a new element of value and importance been introduced into the country as to overbalance all the advantages of non-interference, that is, of leaving the rights of the State and the people commingled and undivided throughout the greater part of the mountain tract? Or does its introduction compel the enforced separation of those rights *everywhere and in all localities*? I think, certainly not. The real difference between the old *nia-abad* lease and the fee simple grant of recent years is, that the former created a new *muhal*, productive of future revenue to the State, and of proprietary right and profit to the clearer of the waste, but left the use of the adjacent forest in the same state as before; while the latter necessitates a far more careful preliminary examination than was previously required of all the existing circumstances of the neighbourhood; and when that investigation had been completed, and has resulted in favour of Government, as represented by the applicant, places the latter in full and exclusive possession of a demarcated tract. The existence of this difference, I conceive, does not justify any revolution in the whole agricultural status of the province. On the contrary, I feel confident that, in accordance with the clearly and strongly expressed orders of the Secretary of State in his despatch of 1862, and of the Governor-General's Rules of 1861, the new state of things renders it more than ever incumbent on the local officers to take care that colonization does not turn into confiscation. The best way to secure this result is for the district officer, if the site applied for was not set aside by the Settlement Officer, to settle each case on its own merits,—never without personal examination of the site applied for; leaving it to the appellate authority (if referred to) to decide whether, in any case, a village or a neigh-

Subject of waste lands.

bourhood has been too hastily declared to have claimed any tract beyond its real requirements for extension, pasture, or forest use; or whether a wise discretion has been used in giving a field for his industry to the introducer of foreign capital, the creator of valuable staples, and the employer of remunerated labour.

“ In all the discussions which have hitherto taken place, one fact has, I think, been too much lost sight of, *viz.*, that the demarcation of a reasonable and appropriate boundary for a village holding a nominal right to what may be considered an unreasonable and improper extent of waste land, does not dispose of the whole question of forest use. Many mountain tracts included within the nominal boundaries of particular villages are used by a whole neighbourhood of villages for the purposes of pasture, collecting of leaves, &c. This is more particularly the case in Central Kumaon (Palee and Baramundul) and in Lower Gurhwal, including the important pergunnahs of Barasen, and Choundkote. I hope I have said enough to prove that Mr. Beckett acted with judgment in following that part of his predecessor's policy which left Mr. Traill's recorded boundaries undisturbed, and which abstained from useless and perhaps mischievous demarcation which would have involved an enormous expenditure of money, time, and trouble, as this duty could only be performed by the Settlement Officer himself, and would alone have occupied his time for many years. At the same time, as shown by appendices 5 and 8, it is clear that care has been taken by the Settlement Officer to ascertain and record, for the benefit of Government and the public, all known sites of waste villages in the district, and all sites which, in his opinion, were suitable and available for tea planting. Mr. Beckett, however, has made a slight mistake in para. 8 of his report, where he says that the 4,417 mouzahs of his appendix No. 1 contain all the recorded 5,500 square miles of the district of Gurhwal. Some portion of this estimated area is represented by the waste and forest mouzahs, which he has himself noted in the same statement; and these so-called mouzahs have boundaries more or less accurately recorded.”

Concluding remarks on
waste lands.

Para. 8.—“ It is highly probable that disappointment may be felt at the promulgation of the fact that large tracts of country, with good soil, in the vicinity of markets, and with facilities of cheap labour, are not available for English settlers; and that, as I have heard it expressed, the latter can only get the ‘leavings of the *paharees*.’ But in reality such disappointment can only be felt by those who have used their imagination rather than their reason, or who have omitted to consult the most ordinary sources of information. The Central and Lower Himalayan pergunnahs are not howling wildernesses, but have been for ages occupied by an industrious agricultural population. This people is in possession of those tracts which are easiest of access, and which yield the least difficult and most profitable returns to industry. The country so occupied is therefore not available for foreign *colonization*, even if its climate were suitable, which it is not. The tracts of country lying between these richer slopes and valleys and the untillable waste of the more inaccessible heights, are those into which the old occupants have hitherto been gradually extending their possessions; and it is a new thing for them to be told that such extension is an usurpation of State rights, and that they ought to give place to the dominant stranger, merely because, to the latter, the climate and situation are suitable and pleasant. The surprise of the inhabitants at the expectations of foreign settlers is certainly quite as strong as the disappointment of the latter at not finding the best part of the country at their disposal. Under proper management, however, *i. e.*, under a proper carrying out of the waste land rules in those portions of the province where the risk of interference with an occupant population does not intervene as an obstacle, and where the comparative sparseness of the population has still left many good sites available for settlers, the introduction of capital and the demand for labour will go hand in hand; and while the settler will benefit by the free and unencumbered field for his money and industry, the peasant proprietor of a few terraces in the fully cultivated and over-crowded villages of the old occupied tracts will be too glad to procure at some distant, but not quite foreign, plantation a cash return for his labour, less burdensomely acquired, and more certain than his hire as a coolie at

Nynee Tal or Mussoorie. Already more than 1,000 *paharees* are drawing monthly wages in Kutyoore, in Kumaon,—the very *puttees* described by Mr. Batten in 1846 as waste, and *therefore* as the most available for the experiment of tea growing. I hope that his similar expectations for Gungolee and Seera in Kumaon, and such comparatively waste tracts, may be realized in due time; but before tea planting can be placed on a secure and sound footing, the dream of obtaining from Government, on fee simple terms, profitable estates in the heart of the occupied country, must be abandoned.”

49. Act XIX. of 1863 is not applicable to Kumaon. Separation of interests and responsibilities have never been recognized. The procedure of this Act is, however, observed in carrying out imperfect partitions among a brotherhood or in any village.

Partitions.

50. Cows and bullocks are small. They die off very much when disease comes to the district, and it is always most fatal when it has not come for some years. Cattle are not liable to get it a second time if they escape the first attack, but the loss is often very ruinous to the cultivator. No warning or expostulation will induce the people to take the most common precautions when the disease has attacked the cattle of a village; but if another village bring diseased cattle into their boundary, the whole village turns out at once to drive them off. I have seen the village cattle passing a sick animal dying from disease (*mdn*), and on my pointing out the folly and danger of allowing their healthy animals to get infection from the sick one, the people appeared to think it was unnecessary to adopt any precautionary measures.

Cattle.

Great loss by disease.

Apathy of the people.

From the southern and middle pergunnahs most of the cattle go to the Bhabur or Terai during the cold weather; and those people who do not cultivate in the Bhabur, generally go back in March to prepare for the khureef sowing and to reap the rubbee.

Grazing in the Bhabur.

The price of cattle has risen very much,—cows, which used to sell at Rs. 5 twenty years ago, now fetch Rs. 10; bullocks, formerly worth Rs. 10, cannot now be bought for less than Rs. 18 to 20; and female buffaloes, which sold in Mr. Traill's time at Rs. 15 to 20, now fetch as much as Rs. 30 to 35, and I have known one to fetch as much as Rs. 60; while ghee has gone up from four seers to a seer and a half per rupee.

Prices.

51. There are climates of every variety between 1,000 and 12,000 feet above sea level, but the filthy state of the villages too often prevents the people enjoying their fine climate. In low valleys it is very hot; and in the midst of rice cultivation, malaria is common. In some places the houses are built against the damp bank, as a protection against the cold winds of winter; in other parts the cucumber, gourd and other crops growing in front of the doors exclude all fresh air, and the dung heaps or manure pits immediately in front of the houses, in hot weather and during the rains emit a stench which would kill any except those who have been brought up in it. I do not think the villages are so filthy as they used to be, but there is much room for improvement. The *mahamuree*, which used to recur so often with fatal effect, has been rare the last few years, and its appearance is now looked on as a warning to clean up all the villages. The typhoid fever (*sunjur*) has also been much less common.

Climate.

Uncivilized habits.

Room for sanitary improvement.

52. Small-pox, which used to pass over the district with more or less severity every year, has entirely ceased, and if a case does appear, there is an immediate cry for vaccination. Dr. Pearson deserves great credit for his complete success in introducing vaccination all over the district; and has probably saved the lives of thousands during the last ten years, as formerly a great many children died of small-pox. The old inoculators, who spread lying reports about the inefficiency of the English system, are almost all dead or silent, and the people have not only lost their prejudices, but appreciate the advantages of vaccination.

Small-pox.

Extinct.

53. I have frequently been asked if much “polyandria” existed in the hills; I may therefore here mention that in Kumaon polyandria and infanticide are unknown.

Polyandria.

54. There is a cart-road *via* Raneekhet from the plains to Almorah, and a cart-road to Nynee Tal. All the important parts of the district are connected with

Roads and bridges.

Almorah by good bridle roads suited to laden ponies. Fair bridle roads are within easy reach of all the tea plantations. All the difficult rivers have been bridged on the main lines of road. There are 27 suspension bridges, and the new kind of wire rope bridge introduced by Mr. Lawder is admirably suited to a hill country like Kumaon. A list of roads will be found in appendix No. 13. There are 25 staging bungalows in Kumaon.

Repair of roads.

District roads repaired by the personal free labour of the people.

Old and new modes of utilizing this free labour.

55. The important lines of road are kept up at Government expense, but it has always been the custom for the people to keep the district roads in repair by giving personal service, on the principle that the road is chiefly for their benefit, and the advantages are equally enjoyed by all. For instance, if villagers from the west go to the east, they find roads ready for their use on which they expended no labour, and in the same way, roads in the west are of use to men coming from the east. It is impossible to expect the Government to repair cross roads, and it is essential to the prosperity of the district that all parts should, as far as possible, be connected with the main lines. It used to be the practice to send a road jemadar, armed with an order to the putwaree to supply coolies to repair roads: but it was found that the weak suffered from the strong, or the more wealthy induced the jemadar to release them. As soon, therefore, as we were in a position to know the resources of each village in men, the old system was so far improved that the roads were divided off to the villages within reasonable distance. This merely assigned to each village or plantation a part of what under the old system many were required to do collectively. The putwaree or a jemadar is entrusted with the duty of seeing the repairs done. If any one refuse or neglect to do his part, it can be done by paid coolies, and the cost realized from the village or fee simple estate.

The necessity and advantages of the custom.

As all derive benefit from the road, all must combine to keep it in order; and if this excellent system, which has intersected the country with roads, had not been always in practice, we should have had very few roads in Kumaon. When a new road is made for the benefit of the country, the people within an easy distance have often been compelled to give a week's labor gratis; and I think it essential to the existence of the present roads, and affords the only hope of getting new ones, that this long established custom should not be allowed to die out. The people appreciate good roads and useful bridges (in the rains), but their petty jealousies would never allow of their agreeing to any combined effort unless by an order.

Skilled labour and materials.

Minerals.
Mining much less remunerative.

Causes.

Capital and improved methods necessary.

Bridges requiring skilled labour are put up at Government expense.

56. Iron and copper abound, but at the present value of labour the mines are worth very little. The *sones* or miners have, as a rule, given up their old trade and taken to contracts. The great attraction to miners in former times was the cheapness of grain in the Khetsaree valley, where iron was most extensively manufactured. This advantage no longer exists, for the market at Raneekhet has doubled the price of grain, and the miners would be no longer content to exchange their labour for the small profits on iron. Copper mines are in no greater favour. Formerly some villages where the miners reside were included in the mining leases of Kumaon and Gurhwal. These villages have been settled with the miners, therefore they are no longer servants of the contractor. Tea gardens and other labour markets offer much better terms than a contractor, who, at the least possible expenditure, tries to make the greatest possible profit. These contractors know nothing about the science of mining, and they have no money to expend in penetrating beyond the worked-out galleries. In fact the mines have collapsed, and without considerable outlay no reasonable profit can be expected. Labour is expensive, and English copper can be bought at a cheaper rate in the Almorah bazaar than the local miners can produce it with profit. I expect nothing more from native petty contractors than a pittance which they can relize by the resident miners working when convenient to themselves, when they give half of the ore to the contractors and keep the other half. No doubt there is abundance of copper in Gungolee; but any mines, copper or iron, that are now worked, barely produce sufficient for local con-

sumption. Agricultural instruments are made for the people of the surrounding country, and a few copper vessels ; but all the mines in the interior are in remote places, and too far removed from a good market to be of much value. /

Interior mines valueless.

57. It is not the custom for hill-people in Kumaon to drink ; and unless they are taught, by having grog shops planted over the district, I do not think they will take to this demoralizing practice. I have always strictly prohibited the extension of grog shops, and limited them to stations where they cannot now be dispensed with. There is no doubt if grog shop contractors are not watched, they will, in a quiet way, encourage the habit of drinking beyond their licensed limits ; and having taught a few to drink, will apply for licenses. Such extensions should be vigorously opposed ; and, except at the stations hitherto supplied with liquor shops, I hope no others may ever be permitted in Kumaon. They are not required to check smuggling, and they cannot be required to introduce drinking habits among a people wondrously free from the vice.

Spirituous liquors.

Multiplication of shops deprecated.

Bhoteas are utterly beyond the check of grog shops. They make their own liquor wherever they halt, but they do not sell it, or encourage other castes to drink. It is impossible to prevent their making liquor, and therefore useless to attempt to do so.

Bhoteas beyond excise laws.

58. Appendix No. 15 shows the number of tigers, leopards and bears for which the Government reward has been paid during the last thirteen years. In some parts, such as in Danpoor, Gungolee, Seera, and Kalee Kumaon, where there are immense forests, bears are still numerous, but with these exceptions there are, as compared with former times, very few bears left. In Seera, while Mr. Beckett was settling the *puttee*, one shikarree killed 13 bears and brought the skins for reward. This gives a good idea of the numbers of these mischievous beasts. A man-eating tiger occasionally creates great alarm ; but this is rare, and, as a rule, tigers which kill cattle are soon shot. Shikarrees now hunt for these destructive animals, and this keeps up the numbers for which rewards are paid.

Wild beasts.

Wild animals rapidly disappearing.

During the last 13 years, 479 tigers, 1,886 leopards, and 2,869 bears have been paid for. A great many more must have been killed, but not found. The amount paid for the destruction of the tigers, leopards and bears in 13 years, i. e., from January, 1860, to December, 1872, was Rs. 20,413.

Number killed, and reward paid during 13 years.

59. Mr. Traill, in concluding a report on Kumaon and its inhabitants, wrote : —“ From the subdivided state of landed property which here exists, few individual land-holders have the means of acquiring wealth ; but though all connected with the soil are confined to a state of equality, their condition, as a body, is no doubt superior to that of any similar class of tenants in any part of the Company's territories.” If this was really the state of the Kumaonees upward of 40 years ago, it is much more applicable to them now. At the time Mr. Traill wrote as above, he stated that four lakhs of rupees had been expended in ten years among the labouring classes. I find that in addition to the revenue of the province—the abkaree, stamp revenue, the forest revenue, the revenue of the terai, and miscellaneous receipts—the large sum of 24 lakhs of rupees have been remitted in cash to Kumaon during the last three years, which gives an average of Rs. 8,00,000 for each year. No money is sent down to the plains. The large sums I have specified above, in addition to cash paid for remittances to other treasuries, and the probable amount expended on tea plantations, make a total of nearly 20 lakhs of rupees for each of the last three years ; and that sum has been expended in Kumaon. I entirely agree with Mr. Traill, and consider that Kumaonees are better off than any peasantry in the whole of India. With the increasing prosperity of Ranee-khet and Nynnee Tal, the price of grain or labour will not fall, while the prospects of tea cultivation are so hopeful that, as far as I can judge, there is every reason to look forward to still greater prosperity among the people.

State of the district and inhabitants 40 years ago.

Money spent in Kumaon in the past three years.

Kumaonees at the head of all Indian peasantry.

60. There is a great variety of castes if one were to attempt to subdivide them ; but the four classes, brahmin, rajpoot, bunniah, and low caste, embrace all. The largest

Castes.

Decline of brahminism.

class is that of rajpoot, in which kusea, and all between brahmin and bunniah, classify themselves. They are not much troubled with prejudices—a happy, good-natured set of people, more easy to lead than to drive. Brahminism is not so strong as it used to be. The brahmins are rapidly losing their power over the people; in fact, I believe that when those of the last generation still in existence pass away, their successors will feel at liberty to be much more liberal. The dooms are a very hard-working people, but their position has improved a great deal during the last twenty years, and they are certainly now very far removed from a state of slavery.

Dooms.

Munehars.

There are few Mahomedans except at the stations. There are only four villages of munehars (Mahomedans) in the district, descended from servants of the rajah's time, who were workers in horn. They call themselves Mahomedans; but, with the exception of acknowledging Mahomed, they are not much different from Hindoos, and I should say consult brahmins oftener than their prophet.

Territorial transfers.

61. Appendix No. 16 shows transfers of villages from one *puttee* and *pergunnah* to another; and the fact of villages in one *pergunnah* having been entered in another, from which they might have been several miles distant, is attributable in most cases to their having been in the *thokedaree* of one who lived in the other *pergunnah*. This has now been rectified as far as possible, so as to give a compact division to each *putwaree*.

Waste villages.

62. Appendix No. 17 gives a list of waste villages which were included in the last settlement. They are small, and probably never were, or if ever, very seldom, cultivated. In time they will be taken up on *nia-abad* leases.

Goonth assignments.

63. Appendix No. 18 gives an abstract of land assigned to temples. These religious endowments are very numerous. I have shown the large ones separately, and have only given the numbers of the smaller assignments.

Fisheries.

Very few exclusive rights.

64. The right of netting fish in a few parts of the western Ramgunga river, in *pergunnah* Palee, was sold to private parties by Mr. Traill, but, with these exceptions, no individuals have exclusive fishing rights in any rivers in Kumaon. It is usual for the villagers on either side of a river to kill the fish in any way they can; but they can only do this on small rivers like the western Ramgunga, Kosee, &c., and it is probable the long established custom would be considered by them a sufficient right to prevent strangers fishing within their boundaries.

Although the Kosee river bed is perfectly dry for months below Ramnuggur, the river is stocked with fish every year as soon as the rains commence.

Manufactures.

65. There are no manufactures worth noticing: good blankets are made, but none exported; hempen bags are made, and almost all are sold in the district, but few finding their way to the plains; very little cotton cloth, of the coarsest description, is made. The working classes are always employed in their fields, or in bringing fodder for cattle. There are no good artizans, except perhaps some fair masons; and yet the excellent buildings at Raneekhet, and the handsome mission school building at Almorah were the work of these common masons.

Implements of husbandry,
rude.

66. Implements of husbandry require no notice. They are of the rudest description; and, with the exception of the iron point to the plough, are made by the people themselves. The *hul*, or plough, generally lighter, is very similar to that used in the plains. The *maia*, a flat thick piece of wood on which the driver stands, is used to smooth uneven ground, and the *doormut*, to break the clods. The *dhungala*, like a large rake, is then employed to clear the weeds and rubbish, and when the grain is sown, a light *maia* is taken over it to give the seed a slight covering. A *kootela*, or hoe, is used to scrape the ground when too steep for bullocks to work.

Water mills.

67. Although water mills do not belong to land revenue, I would here explain that a small tax has been put upon such mills, and the amount thus realized should be

credited to local funds, by which means it may be used for the benefit of the people who contribute it. Hand mills are seldom used in Kumaon. A small mill is erected at the cost of Rs. 5 to 10 on any ravine or river from which a stream can be diverted so as to give the requisite fall, according to the volume of water. The villagers resorting to such mill have to pay $2\frac{1}{2}$ seers in every maund of grain they bring to it, and this payment gives a very large profit. No one has a better right to monopolize the water than another. At the same time, the man who erects such a mill asserts the right of preventing the erection of another which shall interfere with his. Thus the owner of a mill or mills collects from the villagers a large profit to which he had no more right than others; and, to prevent disputes, as also to ascertain how many mills existed, as well as their position, all mills have been taxed at the rate of Re. 1 to Rs. 3 per annum; and this money, realized indirectly from the whole of the people, should, I think, be devoted to their benefit.

Rights.

Mills, why taxed.

Proceeds should form a local fund.

This money might be expended in alleviating much suffering, by supplying medicines. A great many wished me to provide for this by adding a small percentage to the revenue; but as I was not Settlement Officer, I did not see clearly how this could be done. A few simple medicines, which could not be abused, would save hundreds of lives every year in distant parts, beyond the reach of dispensaries.

For what purposes.

1. Medical aid.

Rest-houses and a supply of water, where these are urgently required, would afford valuable relief in some places.

2. Rest-houses and water.

There are many parts of the district where the land might be irrigated; but in consequence of want of unanimity, and the inability of any one to advance the money, nothing is done. This fund might advance the money; water-courses might be constructed by which the land would be made more productive, and the return certain; and when such works were completed, those who received so much benefit would gladly repay the money, which would be similarly made useful elsewhere. There is practically no limit to these useful works, and no one could be more qualified for the work than Mr. Beckett, in charge of the district.

3. Irrigation works.

I have suggested a few of the many ways in which this local fund could be usefully applied, but all details might be left to the local funds committee, who would submit their proposals for the sanction of Government in the usual way.

Administrative control.

There are so many ways in which this money could be expended for the good of the people, that it will be necessary to consider them all, and adopt those by which the greatest possible advantage can be secured to the many by whom the contributions are made in the smallest dribblets.

68. I have not been able to furnish a map of the district, as it is not ready. A very complete one is being prepared by Colonel Walker, R.E., Superintendent of the Great Trigonometrical Survey, for Mr. Atkinson's *Gazetteer*, with all Mr. Beckett's corrections.

Map of Kumaon.

69. In conclusion, I would wish to bring prominently to the notice of His Honor the Lieutenant-Governor the eminently good services of Mr. Beckett, who, in bringing his very difficult work to a conclusion, has ruined his health. This excellent officer has the peculiar gift of devoting his whole mind to the work on which he is engaged. He came to Kumaon immediately after completing the revision of the Gurhwal settlement. He conscientiously and too zealously devoted himself entirely to the Kumaon settlement; in 1867 his health succumbed, and he was obliged to proceed home. He returned in 1868, and from that time to the end of September last he worked as few men can work, to complete the settlement. Having done so, his health has again failed, and he has been obliged to go home.

Mr. Beckett.

Mr. Beckett has done his work well, and it has the merit of being completely his own,—free from the defects of other influence. What he has done is clear and complete, and I am glad this most important work fell into the hands of one so well qualified to perform it.

I regret extremely that in benefiting the Government service and the people he has suffered himself, and I trust he may return to Kumaon with renewed health to enjoy the reward of his valuable services.

KUMAON COMMISSIONER'S OFFICE: }
The 7th March, 1874.

I have, &c.,
H. RAMSAY,
Commissioner.

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REPORT  
ON THE  
SETTLEMENT OPERATIONS

IN THE  
GURHWAL DISTRICT,

FROM 1856 TO 1864.

---

BY J. O'B. BECKETT, Esq.,  
*Senior Assistant Commissioner.*

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ALLAHABAD:  
PRINTED AT THE GOVERNMENT PRESS, N.-W. P.

1866.



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ON THE  
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GURHWAL DISTRICT,  
1856-64.

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By J. O'B. BECKETT, Esq.,

*Senior Assistant Commissioner.*

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FROM

J. O'B. BECKETT, Esquire,

*Senior Assistant Commissioner*

*of the Gurhwal District,*

TO

LIEUT.-COLL. H. RAMSAY, C. B.,

*Commissioner of Kumaon.*

DATED THE 25TH MARCH, 1865.

SIR,

HAVING completed the re-settlement of the district of Gurhwal, I have now the honor to submit Statements Nos. XIV. and XV. The  
*Introduction.* Police Statement, No. XVI., is not applicable to the district, because we have no paid Police in the Hills.

2. The Government demand of last settlement, which expired in 1860, was  
*Jumma of past and present settlement.* Rs. 68,630, which *minus* sanctioned reductions, and *plus* the increase from new cultivation (*naiabad*), became Rs. 69,274 at the close of the 20 years' settlement. The *kamil jumma* now proposed for the sanction of Government is Rs. 96,311, showing an increase in the Land Revenue of Rs. 27,037; and I trust it may be apparent to the Board, and to his Honor the Lieutenant-Governor, that in recommending sanction to this greatly enhanced jumma, I do so on reasonable grounds; that, while I have had due regard to the interests of

Government, I have not only been lenient in fixing the Motzahwar jummas generally, but have given relief to all who suffered from over-assessment during the last settlement.

3. The admirable Reports of Mr Traill, who was Commissioner of the province of Kumaon for nearly 20 years, and of Mr. Batten, who made the first settlement of the district with any record of rights, give full information on all subjects of interest connected with Gurhwal. These Reports give geographical limits, and classify the superficial area within the boundaries; they describe the trade and products of the district; its moral and physical state, from the time when the people had been reduced to the lowest depth of wretchedness by Goorkha oppression, to the commencement of the 20 years' settlement, when land first began to have any value, and the people to understand that they would reap the benefits of their own labor. They also give the fiscal changes that took place from 1814 to 1840 A. D. The revenue systems which prevailed during that period have been explained; the Rural Police has been noticed; the famous temples of Budreenath and Kidarnath, as well as all other places of importance or interest, have been described; rivers, hills, beasts, birds, timber trees, mines and geological features have been mentioned; and after these subjects, as well as all other worthy of notice, have been discussed by such able writers, I shall commence where their Reports end, and describe briefly what progress has been made since 1840, the present state of the district, and what has been accomplished during the settlement now submitted for sanction.

4. Before entering on details, I would bring to the notice of the Board, that it is not to be supposed the areas given in Mr. Batten's last Settlement Statements are correct; and that the increase of area shown in my Statements exhibits only land which had been brought under cultivation since 1840, or that I have raised the jumma by assessing at a high rate. Mr. Batten, in his Report, describes the impossibility of finding out the real state of the villages he was called on to settle. At that time he was entirely dependent upon the (guess) measurement book of 1823 as regards area, and on the reports of officials, who combining with Thokedars and Syanas (through whom former settlements had been made) tried to conceal the prosperity of good villages, to under-estimate the area of all, and to magnify difficulties, such as want of markets, destruction caused by wild animals, &c. &c. Under the former system, when Thokedars and Syanas held several villages under one lease, they highly assessed the villages in which their relations had shares; while others, which they considered their own, or in which they were not liable to be interfered with, carried only nominal jummas. This unequal assessment reached back to 1818, and had never been corrected. Mr. Batten could not, with all the officials and influential men against him, have found out the real state of villages. When the settlement was made he had had no experience in the Hills; and while I wish it to be understood that the old settlement records do not correctly show the real status of cultivation in 1840, (and I am sure Mr. Batten will readily admit this,) I am fully sensible that officer had no means of making them correct; and when he remembers his settlement labors, he may have the satisfaction of knowing that he did an invaluable service to the people in so far reducing the chaos that then existed to order as to produce the record of rights which he prepared. Without that record the people would not have been ready for a settlement based on a Khusrah Survey. By it the relative position of Hissahdar (proprietor), Khaekar (permanent occupant), and Sirthan (tenant-at-will) became known, and the light thrown on tenures by Mr. Batten's record so enlightened the people, that every man became wise enough to watch that his holding was correctly recorded at the present settlement. I would also acknowledge the great value of Mr. Batten's record of rights to me, as the ground-work of the more detailed record now prepared from data ascertained by Khusrah measurement.

5. In 1840 the people generally were very poor. There were no roads, no markets within reach, except in the vicinity of the pilgrim road from Hurdwar to Budreenath; and the working classes had scarcely recovered from the serfdom that followed a state of dependence little short of slavery, which had paralyzed their energies altogether. Since 1840 their condition in every way has steadily, and of late years rapidly, improved. They have provided themselves with fire-arms. They have made extensive clearings in the forests; and in some places the jungle of a whole hill-side has been swept away. They have killed thousands of wild beasts (*see* Appendix 15), which, previous to 1840, may be said to have held possession of the forests. They have destroyed the deer and pigs which used to eat the crops; and now they feel confidence in their own strength. They resort most freely to Ramnuggur, Kotedwara, Dharon, Puttea, and other markets at the foot of the Hills, where they sell or barter their spare grain, hemp, ginger, turmeric, pepper, and other Hill products. The facility of converting the produce of their labor into money stimulated them to further exertions and in the southern or lower half of the district the people are now quite comfortable and independent, as well as sufficiently enlightened to defend themselves against any attempt at oppression.

6. The boundaries of Gurhwal, as given in former Reports, are:—On the north the Snowy Range, supposed to mean the water-shed, with Hoondes in Thibet. On the east with Kumaon, an irregular line reaching from the slopes of the Nunda Dabee peak to Kote Rao in the Bhabur. On the south with Bijnour;—the cross road from Kote Rao has, I believe, recently been made the boundary as far as Lal Dhang, on the Rawason, and from Lal Dhang a varied line across Chandee to the Ganges. On the west with independent Gurhwal, the Ganges up to Deopryag, thence the Aluknunda to Roodurpryag, and from that a varied line to the Snowy Range west of Kedarnath. The area contained within these boundaries may be roughly estimated at 5,500 square miles.

7. Appendix No. 7 gives the names of the Pergunnahs, and number of Puttees, estates and villages into which they are sub-divided. The sub-divisions of Pergunnahs differ from those given in the last Settlement. This became necessary, from the impossibility of a Putwaree looking after so many villages scattered over several hundred miles. I have also transferred from one puttee to another (*see* Appendix 9) isolated villages many miles removed from the puttees in which they were formerly included; because they belonged to the Thokedarees of men who resided in the distant puttees. The number of Putwarees has been increased as far as means permitted, but every one (*see* Appendix 11, Part 2) has a large tract under his charge, and the average is more than 100 square miles to each.

8. Appendix No. 1 gives 4,417 villages, among which the 5,500 square miles are supposed to be divided; for every mile in the district is included within the *nominal* boundaries of some village; the snowy peaks are not even excepted. These boundaries have existed from time immemorial. During the currency of the settlement, all villages had the power of increasing cultivation, without being liable to any extra revenue. They had the right of pasturage, and of using the spontaneous products within their recorded boundaries; and this right was generally participated in by adjoining villages having little pasture-ground or forest within their boundaries. No villages had Zemindaree or manorial rights which authorized them to dispose of timber, claim pasturage fees, or exclude their neighbours, who from olden times had enjoyed the privilege of grazing their cattle, cutting wood, gathering leaves, &c. Under this system, cultivation increased very much during the last settlement. Small hamlets became large villages, and new settlements sprang up, which in 1840 probably only existed as cattle-sheds, if they had any existence at all.



9. After it had been proved by experience that a Khusrah Survey could be made, in which the smallest fields might be correctly shown, it was brought to the notice of His Honor the Lieutenant-Governor, Mr. Colvin, that without a field measurement there was no possibility of making a satisfactory settlement in Gurhwal; and it was estimated that the cost of such survey would be Rs. 75,000. The proposal met with His Honor's approval, and Jaikishen Joshee, who had had some experience in Kumaon, was appointed Deputy Collector, and placed in charge of the survey. The estimated amount was sanctioned, and monthly bills were paid on being passed by the Commissioner, who periodically satisfied himself that the work was being carried out economically and efficiently. The Deputy Collector commenced work in 1856; the mutiny put a stop to all operations from June, 1857, to December, 1858; but notwithstanding all stoppages, and other difficulties, the total cost of survey and preparation of record of rights was only Rs. 74,005-7-10 (*see* Appendix No. 16). The survey was finished in 1860, and the papers completed in 1861. The total cost of measurement and record of right was Rs. 74,005; the area measured was 1,49,379 Beesees (or acres); therefore the cost per Beesee is a little under 8 annas, and the total cost will be recovered from increase of revenue in less than three years. The cost of measurement in Goonth, Sudaburt, and Maafée holdings, was defrayed by the parties to whom they belonged.

When the measurement first commenced, there were few qualified Ameens, and the work progressed slowly; but this delay had also some advantages; it gave the people time to think and talk over this new process, to which they were not altogether strangers; because to prevent counter-suits for the same land in some villages, which were being ruined by litigation, some field measurements had been made. Qualified Ameens from Kumaon and Gurhwal soon became abundant, and when work recommenced in 1859, the Deputy Collector had as many Ameens as he could superintend. The maps showing cultivation are made to a scale, and having had the opportunity of testing a great many, I consider them most creditable. Mr. Muir, on his tour as Member of the Board, tested one or more of the Khusrah measurements and maps at Lohba, and expressed himself well pleased with their accuracy. I have every reason to believe, after having seen a large proportion of the cases, that the measurements and record of rights based on the Khusrah are most satisfactory.

10. The land measurement known in Gurhwal, and familiar to every cultivator, is the Nallee\* fixed by Mr. Traill at 20 yards by 12=240 square yards, which is supposed to be the area occupied by the quantity of (wheat) seed contained in the measure of capacity, peculiar to the Hills, called a Nallee. Although this Nallee measure varies in different parts of the district, and will not of course contain so much as 2 seers of rice in husk or barley, Mr. Traill's Nallee, 20 × 12, is now the standard land measure. Twenty Nallees are equal to one Beesee, 240 × 20=4,800, which is only 40 yards less than an acre. Beesees and Nallees are the measures recognized in the records and by the people. Fractions of a Nallee are shown in sixteenths as annas; so that 120 yards would be called 8 annas, 220 yards 15 annas, and so on. These calculations are thoroughly understood by the most ignorant Gurhwalee.

Each Ameen had a thin rope, 20 yards long, which was divided by marks easily recognized into half, quarters, and tenths, so that the length and breadth of fields were easily ascertained, entered in the book, and the area worked out at night. Every field, however small, was measured and numbered, and any one may readily be pointed out by reference to the Shujrah and Khusrah. Many contained less than 10 yards,

\* The local term *patha* is becoming officially obsolete in Gurhwal.

and some villages have upwards of 3,000 numbers in the Khusrah. Under such circumstances, it is not I think surprising that the cost of the work is close on 8 annas per Beesee.

11. The Pudhan, or Head of the village, was required to accompany the Ameen, and give any assistance in his power, where there were disputes; they were shown in the column of "remarks." The Ameen, when his papers were completed, sent them to the Deputy Collector's Office. A Pural Ameen was deputed to test the measurement, and return a Statement, showing certain Khusrah numbers given to him, with his own and the Ameen's measurement; this pural was further tested by a superior officer, and if the Ameen's work showed inaccuracies exceeding 5 per cent., the measurement was rejected and not paid for.

The Deputy Collector, by continually moving about, kept the different grades up to their work; he also disposed of the disputes, tested all the entries in the Moontukhib, and the case was complete. As regards the testing the record, I was not quite satisfied that the work was perfect. It is not possible I think for cultivators to recognize their own fields, by having the Moontukhib entries hurriedly read over to them. Probably the fact of some parties entered as tenant (Khaekar) having been admitted to Hissahdaree in some villages made others claim rights which they did not see their way to when the field measurement took place; and it is not unlikely that, as the work progressed, many acquired a knowledge about their own rights which they had not when they were written down as tenants in the Khusrah. At the settlement many objections not entered in the Khusrah were made to me. When the case was clear, I altered the record in presence of both parties; when there was a doubt, I recognized the superior right of the party I thought best entitled to it; leaving the other his remedy by a regular suit. And in order that there might be no ignorance in so important a point as the record of rights, every cultivator was supplied, at his own expense, with a list of his fields, showing the "Thokes" to which they belonged. These "Parchas" or (Schedules), "Eufz" as they are called, were most useful, and when each village was called up for settlement, all mistakes discovered by the aid of the "Parchas" were corrected. In transfers by sale or gift, or in execution of a decree, the numbers of the Khusrah are now specified, and in disputes a man files his "Parcha" to show what his fields are.

12. The Mouzahwar assessment at last settlement differed little from what it had been in all previous settlements subsequent to 1823. The measurement book of 1823 supplied the data on which all subsequent settlements were made. A comparison of the (guess) measurement of 1823, with the actual area now ascertained, proves that, in flat lands, the old reckoning rather over than under-estimated the area. It is said Mr. Traill suspected the accuracy of the returns for some puttees in Chandpore and Budhan, and doubled the estimated area. The Khusrah measurement has proved that these suspicions were without foundation; for their measured areas only show a small increase as compared with other puttees, although these puttees are in a more prosperous state now than they were in 1823. The following Statement shows the estimated area and revenue of Gurhwal at four periods during the last 42 years :—

| YEAR. | No. of Villages. | No. of Beesees. | Demand. | REMARKS.                                                                                                      |
|-------|------------------|-----------------|---------|---------------------------------------------------------------------------------------------------------------|
| 1822  | 2,929            | 57,432          | 58,511  | Mr. Traill's Statement D.<br>* This includes 30,135 Beesees of waste.<br>† This is exclusive of Bhoti Mehals. |
| 1824  | ...              | 76,340*         | 66,361  |                                                                                                               |
| 1840  | 4,103            | 89,653          | 68,682† |                                                                                                               |
| 1864  | 4,395            | 1,49,379        | 95,546  |                                                                                                               |

Omitting minute fractions, the assessment per Beesee under these four settlements may be called—

|                 | 1822. | 1824. | 1840. | 1864. |
|-----------------|-------|-------|-------|-------|
|                 | R. A. | R. A. | R. A. | R. A. |
| Rate per Beesee | 1 3   | 0 14  | 0 12  | 0 11  |

I do not mean it to be understood that these are the actual rates, but it is clear that Messrs. Traill and Batten, having no means of knowing the correct area, supposed that the number of Beesees given in their Statements represented the area they assessed. The experience of upwards of 40 years has proved that their assessment was not too high, and that cultivation has greatly increased. Therefore, under the many advantages and improved condition of the country, it cannot be said that my rate of assessment, which is lower than any previous one, is high. I am satisfied that my assessment is in no case high, and, generally speaking, exceedingly low. The highest assessed villages are those in which reductions were allowed on the old *jummas*.

13. Measurement, as a rule, only extended to terraced land; i. e., the villagers were only required to have *such* land measured. If they wished to have any cleared land, which was only occasionally brought under cultivation, included in the survey, they were at liberty to do so, but such land was not brought under assessment. On the other hand, they were required to have *all* the terraced land measured, and they were responsible for pointing it out to the Ameens. To prevent fraud, and consequent loss of revenue, it was proclaimed that all terraced land left unmeasured by the villagers would be considered to have been given up by them, and available for others who might offer for it. This measure was absolutely necessary for the protection of Government, and the number of cases in which land had been concealed, notwithstanding the proclaimed penalty proved the necessity of it. No less than 7,888 Beesees, which ought to have been, were not measured. Except where concealed lands could, with advantage, be given in separate leases, it was added to the village which had previously owned it, on the village paying a small fine to remunerate the informer, and the cost of the measurement. Amount of these fines credited to the Government Treasury was only Rs. 1,114.

14. Boundary disputes were settled by the Deputy Collector, but, as a rule, the boundaries described in the measurement book of 1823, which were also recognized at the 20 years' settlement, remained unaltered. They are well known, and, as a rule, villages are divided by ridges, rivers or ravines, which cannot be mistaken. Where small spurs, trees, rocks, &c., which interested parties could misrepresent, had been the boundaries, and disputes did occur, they were disposed of on the spot, and pillars erected to define the new boundaries. However, such cases were rare.

15. At the present settlement a good many Dakhilee villages have been made separate mouzahs, as per margin. This was done at the request of the proprietors, and because in some instances the Dakhilee had become almost as large as the village to which it had been attached. These new mouzahs not unfrequently were at a great distance from the estates to which they had belonged, though proprietors had separate interests altogether; and it appeared on every ground advisable to consider them distinct mouzahs.

|                        | Pottahs. | Villages. |
|------------------------|----------|-----------|
| Expired Settlement ... | 1,894    | 4,108     |
| New Settlement ...     | 3,116    | 4,417     |

16. After all the measurement papers had been completed, I prepared a book,

Measurements ascertained.  
A book was prepared, showing area, cultivation, past *jumma*, and census tables for determining the proper *jumma*.

- 1.—Area recorded in 1823.
- 2.—Revenue demand of expired settlement.
- 3.—Census in detail.
- 4.—Total area of measurement.
- 5.—Permanently cultivated.
- 6.—Ditto do. including half of periodical cultivation.
- 7.—Three-fourths of total area.

giving the information as per margin. I assumed that terraced land generally, with an average popula-

tion, was worth 0-11-6 per Beesee. The tables I had prepared enabled me at once, with the aid of my local knowledge, to determine the proper *jumma*. If there were any special causes, such as sparse population, vicinity to heavy jungle, high elevation, or undue proportion of periodical cultivation, or waste terraced land, &c., I made such alterations as appeared reasonable. Putting aside exceptional causes, my land tables enabled me to fix a *jumma* on sound data; while the information given in other columns enabled me to satisfy myself whether there were exceptional causes sufficient to enhance or reduce that *jumma*. Having announced the *jumma* to the villagers, I had to listen to the same pleas in almost every case; if any reasonable objection was brought to my notice I readily gave a reduction; in other cases I answered the objections, and after a little discussion the *durkhast* was signed, and the parties retired. In one case only was there a refusal to take the lease of a cultivated village, and that was in consequence of a feud between two Thokedars. Some waste villages (*see* Appendix 8) with a few acres of cultivation were thrown up at first, because I would not give a whole hill-side for Rs. 2; but most of these have since been taken up.

17. Previous to making the settlement of any puttee I inspected every village

Personal inspection of each puttee previous to its Settlement procedure.

in it, so far as to make myself acquainted with its position, the nature of the houses, its vicinity to jungle, &c.; and the Pudhans were with me to point out every conceivable drawback or difficulty. Having prepared myself in this way to give a reply to every objection that was urged, the villagers of one or two or more puttees, according to size, assembled at a convenient spot, and when I had disposed of their cases I proceeded to make myself acquainted with the villages of another puttee. While I was looking at new villages, my Office was employed in finishing off the papers connected with those recently disposed of. As a rule, every man whose name was recorded in the *Tehrij* was present when the settlement was made. A mark X was put opposite to those who were absent; but if many were absent, I postponed the settlement to a future day. Specimens of the skeleton maps prepared by me, filled in and colored, will be found in Appendix 25.

18. The increase of revenue in some villages was rather startling to those who

Startling changes in some cases on former rates. *Jummas* of new villages.

had been accustomed to increases varying from 1 to 5 Rs. But it appeared to me most unjust that a village, which by official influence or other means, without any ostensible reason, had hitherto been altogether under-estimated and under-assessed, should continue to have the benefit of a low assessment; while others, perhaps in less prosperous circumstances, had been paying an average *jumma* for 40 years. On such cases I made no allowance, but in new villages, where cultivation had greatly increased during the last settlement, I invariably gave them more favorable rates, because in such cases the villages were not firmly established, and high rates might have checked their progress. *Russudee jummas* in such cases were also frequently given.

19. Only three qualities of land were shown in the Khusrah measurement. This

Qualities of land.

system was observed with the object of preventing Ameens misrepresenting the quality of land; (1) irrigated; (2) first

class, unirrigated; and (3) second-class unirrigated lands, are the three divisions which, as a rule, represent the assessed cultivated area. The produce of irrigated is considered equal to double that of second-rate dry land, and that of first-class dry was, as compared with second-class land, more valuable by one-third, as shown in

|                     |               |
|---------------------|---------------|
|                     | <i>Acres.</i> |
| Irrigated, ...      | 3= 6          |
| 1st Class dry ...   | 3= 4          |
| 2nd Class dry ...   | 3= 3          |
| 2nd Class dry land, | <u>9=13</u>   |

margin. In a favorable year this calculation may not correctly represent the yield of the three lands above specified, but considering that in dry seasons second-class land produces proportionately less than the good unirrigated land, and that land capable of being irrigated is so far independent of rains as to give, under unfavorable circumstances, even a fair crop, I thought the estimate of the produce of these three qualities of land was sound. I am now of opinion that I should have assessed the irrigated land more highly.

20. In fixing the jumma, I took into consideration all particulars affecting the present and the future prosperity of every village. Where a hill-side is steep, the terrace walls require extra labor. Where the women were in excess of the men; where the men were generally old, or the male population consisted chiefly of boys; where the land was too extensive for the village community to cultivate, and its isolated position put it beyond the reach of non-resident cultivators (Paekasts); where the vicinity of heavy jungle rendered the crops liable to destruction by bears and deer, and the cattle were likely to suffer from tigers; these, and other reasons, which it is unnecessary to detail, induced me, in many instances, to assess land far below the average rate. The increase of Land Revenue is Rs. 27,037, which is at the rate of 39 per cent. on the former Jumma-bundee; but I am perfectly confident that every jumma which I have fixed is even now very low, and I have no hesitation in stating that, during the currency of the present settlement, the prosperity of the people will increase, and a large extent of new cultivation will again admit of increment of the Land Revenue at the next settlement.

21. Hitherto no charge has ever been made for water-mills. As water-mills are very profitable, and usually the property of private individuals who monopolize the water, and claim rights in it, I thought it only fair the proprietor, who realized profits, should pay a small rent. Where mills belonged to the village community, and no charge for grinding was levied, these were not assessed. In private water-mills a charge of one-sixteenth of the grain ground is made. A mill ought to grind at least two maunds in 24 hours; so that the proprietor would get five seers a day. The mill commonly used can be put up for a trifle; in fact the cost of it would be repaid by the receipts of one month. As the tax was new to the people, I only charged one rupee for a mill, liable to any interruption, and two Rupees on those which are at constant work throughout the year. The rates at Sreenuggur, Roodurpryag, and some places on the pilgrim road, are a little higher. As this item of revenue is liable to change, I would recommend that it be shown as Sayer. I have excluded mill-rents from village jummas, because mills are liable to be destroyed by floods; and the present mill-rent will greatly increase as soon as the novelty of the charge has passed away.

22. The temple land claims had been fully investigated previous to settlement, and those whose rights had been established were confirmed under the orders of Government, No. 2044, dated 18th October, 1859. It was ruled under Government orders issued in connection with the enquiry about temple lands, that very small grants of Goonth land were to be investigated at the settlement. Under these orders I recognized the small Goonth holdings which were supported by competent authority; while those for which sufficient proof was not

forthcoming were resumed; Goonth assignments made by villages were upheld or not according to the wishes of the villagers; and, where assessed, the revenue due on such land was charged to the village. All existing Goonth villages have been measured, and the number of Beesees thus alienated is 8,078; while 181 Beesees have, under orders quoted, been resumed. Under the sub-settlement the Goonth revenue amounts to Rs. 7,139.

23. At the time Goonth land claims were investigated, those held as maâfee also came under consideration. In this district there are very few Maâfee Estates. of these; only six maâfee estates, containing 366 Beesees, were upheld; while 108 Beesees, hitherto held rent-free, were assessed as Khalsah. The maâfee estates pay an assigned revenue of Rs. 263, under the sub-settlement made for them.

24. The *Sudaburt* assignments in favor of certain temples\* were fully reported on by Mr. J. Strachey in 1850, and the revenues of the estates from which *Sudaburt* funds were provided, were by Government orders placed under the control of a Local Agency, and devoted to the construction and maintenance of Dispensaries. These have been erected at suitable spots on the pilgrim road, the lowest being at Sreenuggur, and are so situated, that a pilgrim is never more than two marches from a Dispensary from the time he leaves Sreenuggur, till he again descends to the plains. These valuable institutions have saved a great many lives. Before their erection, sick pilgrims were left by their friends, whose means did not permit of their halting, to die. A great many of them got swollen legs from the bite of a small fly; now they are treated and fed at the Dispensaries, and on recovery many, instead of going on to Budrinath, return at once to the plains. Before these Branch Dispensaries were instituted, these unhappy creatures, unable to move from swollen legs, were left to die of starvation.

25. The *Sudaburt Puttee* of Dussowlee is the only part of the district which has not been correctly measured. In 1852, Mr. Strachey had it measured in blocks, but the people are dissatisfied with the result. Such a measurement is not only incorrect, but a correct record of rights cannot be prepared from it. Mr. Strachey's measurement has not, as a rule, been interfered with, though in some instances the villagers have, at their own expense, applied for re-measurement, and a few of them have been re-measured at the expense of the *Sudaburt* funds.

26. In investigating the Kumlesur temple lands, I found that a considerable portion of them were not temple, *i. e.*, Goonth, but charitable, or *Sudaburt* assignments, and a recommendation that the villages so assigned be taken charge of by the Local Agents, and the proceeds applied to the construction of another Branch Dispensary, has been submitted to you for the consideration of Government.

27. The tenure question has undergone many changes since the introduction of British rule in Gurhwal. At first Thokedars, or Syanas, were the prominent characters. They assumed to some extent the position which had been held by various parties, who, under the Government of Rajahs, and of the Goorkhas, had been responsible for the revenue, or who had held the land rent-free. Mr. Traill, after having made use of the Syanas, until experience made him independent of them, recorded his opinion that three-fourths of the villages were wholly cultivated by the actual proprietors of the land; and that of the remaining fourth, the right of property and occupancy was vested in the same individuals. Since Mr. Traill's Report was written (1824), thousands of acres of jungle have been re-claimed, and the proprietary class has consequently increased. The Gurhwal settlement

may therefore, to a great extent, be considered Ryotwaree, as individuals only pay their quotas of revenue due, plus cesses and Malgoozaree fee. Where hereditary tenants occupied land, they had, during the past settlement, paid small fees, such as one rupee on the marriage of a daughter, a leg or breast, or both, of every goat killed, and other indefinite cesses, which caused great litigation, when ill-will grew up between a proprietor and his tenants; the former tried to ruin the latter by perpetual suits for perquisites, and the tenant continued to deprive him of his rights by trying to prove that the proprietor had received all he was entitled to. These perquisites were very well when the people were quite uncivilized, and required the support of a man more intelligent than themselves. Practice has proved that these perquisites could not now be upheld, and I commuted them to a payment of 20 per cent. on the revenue, which gives the proprietor more than he was ever entitled to demand; while without adding to his former actual payments, it made the tenant safe against all irregular indefinite demands. The hereditary tenant is called Khaekar in Gurhwal; he holds a hereditary but not a transferable right, though he may sub-lease his land to a tenant-at-will. The Khaekar's rent cannot be increased under any circumstances; and, as long as he pays the rent and share of cess recorded in the Furd Phaut, he cannot be interfered with by the proprietor. The Paekast or non-resident cultivator has also hereditary rights not transferable; in fact his position as regards the land is the same as Khaekar; the only difference is, the Paekast resides in one village and cultivates the land of another.

Sirthan, or tenant-at-will, has no permanent rights whatever. He makes his own arrangements with the proprietor, usually only for one crop. He pays in money or in kind, and Sirthans are not entered in the record of rights. Khaekars and Paekasts are protected by having their holdings and the demands they are liable to clearly defined in the record. Tenants-at-will are rare in Gurhwal. Khaekars sometimes cultivate in "Sirthee" a field or fields adjoining their own.

28. Pudhan is the hill term for Sudder Malgoozar. In appointing Pudhans I was guided by two principles: 1st, that the Pudhan ought to be a shareholder in the village; 2nd, that as few Pudhans as were compatible with efficiency should be appointed. When a Pudhan was non-resident, from his being a Pudhan in several villages, I kept such a man Pudhan for the collection of revenue, but nominated a resident Khaekar "Ghurpudhan," for the performance of police duties; where there was land set apart at the former settlement for the remuneration of Pudhans, I did not interfere with it, but, estimating it at the rate of the revenue it equalled, I added so much more as made the Pudhan's perquisites equal to five per cent., or *vice versa*. Existing Pudhans were not interfered with, except where they had been found utterly untrustworthy, or inefficient, in paying the revenue. The office of Pudhan is hereditary, except in special cases, when, from the son of the former Pudhan having been a child at his father's death, a relative had been appointed to the duty; that man's possession was not disturbed, but it was declared that, on a vacancy occurring, the representative of the old Pudhan might urge his claim. When it became necessary to diminish the number of existing Pudhans, those whose services were no longer required were allowed to remain during lifetime, to prevent their being called on to serve as coolies.

29. Syanas and Thokedars became prominent characters in the early part of British rule, and they did not fail to avail themselves of their superior knowledge to improve their position. They were at first Revenue as well as Police Officers. Their revenue duties were transferred to Pudhans; and as police they were found to be much worse than useless. They, to a certain extent, did away with village responsibility, and as it paid them best always

to let off a criminal, they generally made themselves so obnoxious that, in 1856, the Senior Assistants of Kumaon and Gurhwal drew up a joint Memorandum, recommending that this class of officials should be relieved of all police duties, and, as far as possible, be absorbed on casualties occurring, or at the next settlement. I carefully examined every *misl* and order of Mr. Traill connected with all the Thokedars of the district. Every case was considered separately, and a *roobakaree*, giving all particulars regarding each Syana or Thokedar, was recorded for every puttée. Those who, under Government order, No. 871A. of 1856, could not be upheld, were struck off; while those who were upheld were paid in lieu of irregular cesses at the rates of 3, 6, or 10 per cent., according to rights established. This Malikana is entered in the *Phaut*, and will be collected with the revenue.

30. Cesses have not been levied at any previous settlement, because, I presume, they were not necessary. There were 21 Putwarees, who were only required to perform Government service. Villagers were required to make arrangements for carrying dâks; Chowkeedars or District Police of any kind had no existence; and schools were unheard of. Road Funds never had been collected, because any reasonable percentage on the *Jummabundee* would effect no good. Personal service for the repairs of roads has always been required, and that system which contributes so much to the general prosperity as well as the convenience of every village has been maintained.

31. The duties of Putwarees have now become more responsible, and so much more difficult than before that a better class of men are required.  
1.—Putwarees. Every Putwaree now must be thoroughly acquainted with Khusrah measurement, and his duties are so many more that he cannot attend to villages scattered over hundreds of miles as before.

Increased duties, consequent on the measurement, induced me to fix a Putwaree cess = 4 per cent., which is not too high, as there are no village Putwarees. The amount realized by this cess, added to the sum sanctioned by Government, enabled me to increase the number of Putwarees, so as to give each a manageable charge, and to fix the salary of these officials at 10 Rs., which is no more than sufficient to procure competent men, leaving a small balance to cover the expense of a Mohurrir to look after the accounts (*vide* Appendix No. 17). For some years this change had been anticipated, and Putwareeships were filled up, as vacancies occurred, by qualified men.

Those who were capable of learning were required to qualify themselves; and only four old servants, incapable of learning, were kept on their former pay, while two Ameens are employed to do their survey duties. On these old men going, the establishment will be completed.

32. Of late years time has acquired a value with the people, and they have such a dislike to making arrangements for carrying the District Dâks, which  
2.—Dâk. under the Putwaree system had become so numerous, that I did away with all personal service in this Department, and fixed a cess of 3 per cent.,—a much more popular arrangement with the people, when it is considered that villages on a high road had to carry a dâk every day, if they received no aid from those more distant; and if the latter did aid in the transmission of letters, they had to send men to a considerable distance. It will be seen that the cess I have raised to meet all dâk requirements is cheap to the villagers. But this is the smallest advantage; it makes all contribute to the discharge of a duty which might fall very heavily on some. It prevented unnecessary interference by means of Putwarees or Chuprasees in arranging dâks on lines perpetually changing, as the District Authorities moved in different directions. The expedition in despatch of reports and receipt of orders has added much to Police efficiency; and last, not least, every village may, without charge, communicate by letter



with any part of the district, which is an advantage that will be more appreciated every year. The estimate of receipts and disbursements of the Dâk Fund is shown in Appendix No. 17.

33. The necessity of a school cess cannot be questioned. The people themselves are not everywhere sufficiently advanced to see the advantage of a little education even; but, in consideration of a small trifle, which no one can have difficulty in paying, this cess of 3 per cent. on the *junma* places the opportunity of learning to read and write within reach of the large mass of the people. School-masters only receive Rs. 5 per mensem, as they are not expected to teach more than reading, writing, and a little figuring. Any intelligent boy who wishes to learn more can go to a superior school. The schools are located so as, with the aid of the Tehseelee schools, to bring the greatest number of villages within reach of one; and it is most satisfactory to find they are generally well attended. A Sub-Deputy Inspector superintends all these schools; and the Inspector, on his tours, examines and exercises a general superintendence over them. The Pundits are paid through me; and I take every opportunity of visiting the schools. I also fix the localities of schools, and consider it is necessary to their prosperity that they remain under me; so far as to make the Pundit feel that the District Officer is to some extent his master. School-masters have a fair chance of succeeding to Putwareeships; and this hope makes them zealous in the discharge of their educational duties. All the money realized by this cess is expended as shown in Appendix 17.

34. The trade of Bhoti and of the lower Hills has been fully noticed in the printed Reports already referred to. Of late years, the value of borax has fallen so low that a very limited quantity is brought from Hoondes. The Gurhwal Bhootea traders seldom came lower than Nundpryag some years ago, but Nundpryag, which used to be a busy place during the cold weather, has lost its importance from the Bhooteas carrying their borax down to Ramnuggur in Kumaon, where they sell it to the traders at that mart, and purchase goor (coarse sugar) and other articles without the expensive intervention of the *Bunniah*. Immense quantities of red pepper and turmeric are exported from the lower puttees; the latter remunerative articles are grown in jungles where nothing else can be grown. They are not liable to injury by pigs, bears, or other animals. No article of commerce has undergone such a change as copper pice. In Mr. Traill's Report it is stated 176 were equal in value to one rupee. Of late years, these shapeless pice have been exported in large quantities to the plains; and, when very cheap, not more than 80 pice can be now bought for a rupee. The present price is 64.

35. During the last ten years, middlemen who used to draw large profits from Bhoti and the Northern Puttees, in consequence of the people of these parts being afraid to come down, lest they should get small-pox, have disappeared. The whole of Gurhwal has been inoculated or vaccinated, and the northern men have no longer any fear of going even to the marts at the foot of the Hills.

36. The revenue from the sale of spirituous liquors in Gurhwal is almost entirely confined to the town of Sreenuggur. The Bhooteas make their own drink, but they don't sell it, or attempt to induce others to drink. I hope and think there is no prospect of an increase of Abkaree Revenue, which now realizes only Rs. \*

37. Wild animals of all kinds have been immensely reduced during the last 20 years. No less than 3,993 tigers', leopards', and bears' skins have been brought in for reward during the last 14 years. How many more must

have been wounded and died ? With few exceptions, men are not required now to guard their fields at night in the lower half of the district. The only very large jungle still in possession of wild animals is the Doodootolee Range in Chandpore, with its spurs running down to Dharjoollee, north and west.

38. All money-payments by Government to temples have ceased. One lump-sum, equal to 20 years' payment, was given some years ago, and since the money was expended the temples appear to have lost much of their value in the eyes of the priests as well as of the people.

39. In Appendix No. 4 I have given a list of existing tea plantations ; and Appendix 5 gives a list of waste lands which may be offered for sale. I was much disappointed at finding so little good waste land ; and in order that none should escape notice, I crossed every ridge and hill, in the hope of discovering good tea sites, as I am fully alive to the advantage of having a thriving plantation in every puttee if possible. I am afraid many of the sites specified in Appendix 5 will be found too high for tea.

40. Roads have made good progress during the last ten years. The Statement herewith forwarded shows the different lines of communication that have been made, and all are of a gradient suited to laden ponies. The roads no doubt have added very much to the prosperity of the district. The iron suspension bridges at Sreenuggur, Roodurpryag, and Kurnpryag are very valuable ; but more bridges and more roads are much required.

41. The Deputy Collector Jaikishen deserves much credit for unwearied zeal and tact in accomplishing the survey of the district. He had to make men for the work, and exercise an active superintendence over a very extended field. He did his duty right well, and, considering all difficulties, made an excellent survey, and a good record of rights, in little more than three years.

42. In the forms of Appendices I have given much information which was collected while I was ascertaining other points useful to know at the settlement. Although all these Statements are not purely revenue ; they are so connected with the district, that I have forwarded them with my Report.

43. I have now briefly noticed all that bears on the settlement submitted for sanction. I have not attempted to enter on general subjects of interest, because, as already stated, every pergunnah has been described, every peculiarity noticed ; in fact, full particulars on all subjects have already been published in the interesting and full Reports of Messrs. Traill and Batten.

I have, &c.,

J. O'B. BECKETT,  
Senior Asstt. Commr., Settlement Officer.

#### ABSTRACT OF CONTENTS.

- Para. 1. Introduction.
- „ 2. Jumma of past and present Settlement.
- „ 3. Information given in the Reports of Messrs. Traill and Batten.
- „ 4. Incorrectness of the areas given in Mr. Batten's Settlement Report.
- „ 5. Condition of the district in 1840, and progress of the people since.

**Para. 6. Boundaries of the district.**

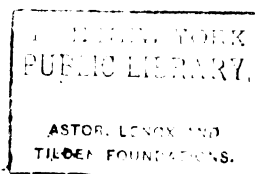
- „ 7. New sub-division of Pergunnahs necessary.
- „ 8. The entire of Gurhwal is included within village boundaries.
- „ 9. Necessity for a field measurement; its sanction by Lieutenant-Governor, Mr. Colvin; and commencement of operations in 1856.
- „ 10. The land measurement known in Gurhwal. Procedure of Ameens.
- „ 11. Pural superintendence. Settlement of disputes.
- „ 12. Comparison of guess measurement of 1823, with actual areas now ascertained. Estimated area and revenue at four periods during the past 42 years.
- „ 13. Terraced land only was measured. Means used for prevention of fraud.
- „ 14. Boundaries are, as a rule, the same as in 1823.
- „ 15. Dakhlee villages made separate Mouzahs.
- „ 16. Measurements ascertained; a book was prepared, showing area, cultivation, past jumma, and census.
- „ 17. Personal inspection of each Puttee previous to its Settlement procedure.
- „ 18. Startling changes in some cases on former rates. Jumma of new villages.
- „ 19. Qualities of land.
- „ 20. Considerations in fixing the jumma. Increase of Land Revenue on former Settlement.
- „ 21. Rent fixed on water-mills for the first time to be shown as Sayer.
- „ 22. Temple land claims.
- „ 23. Maâfee estates.
- „ 24. Sudaburt estates.
- „ 25. Sudaburt Puttee of Dussowlee, the only part of the district incorrectly measured by Mr. Strachey.
- „ 26. Part of Kumlesur temple land found, on investigation, to be Sudaburt, not Goonth, and recommended to be taken charge of by Local Agents.
- „ 27. Changes of tenure since introduction of British rule.
- „ 28. Pudhancharee.
- „ 29. Syanas and Thokedars.
- „ 30. Cesses not levied at former settlements.
- „ 31. Putwarces. Increase of numbers, efficiency, and pay, and a cess of 4 per cent. levied.
- „ 32. District Dâk at 3 per cent. cess, in lieu of personal service.
- „ 33. Schools, cess, teachers, superintendence.
- „ 34. Trade.
- „ 35. Bhooteas no longer fear visiting the lower marts on account of small-pox.
- „ 36. Abkaree Revenue insignificant.
- „ 37. Destruction of wild animals during past 20 years.
- „ 38. Money-payments to temples have ceased.
- „ 39. Tea plantations and waste lands available.
- „ 40. Roads made; many more required.
- „ 41. Services of Deputy Collector Jaikishen Joshee.
- „ 42. Information not purely revenue given in the Appendices.
- „ 43. Conclusion.

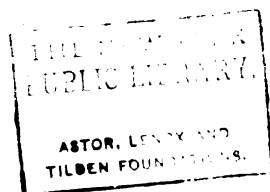
I N D E X .

- No.
1. General abstract of area, revenue, and census, &c.
  2. Resumed Goonth and Maâfee.
  3. Historical and chronological list of Kings of Gurhwal.
  4. Tea plantations.
  5. Lands available for tea plantations.
  6. Remissions of revenue by summary settlement and by temporary remissions.
  7. List of Pergunnahs and Puttees, forming Index of Map, No. 23.
  8. List of villages waste.
  9. Ditto ditto transferred from one Puttee to another.
  10. Census Tables.
  11. Number and position of Schools, Part I.  
Number and districts of Putwarees, Part II.
  12. Time-tables of District Dâk.
  13. Plants cultivated in the district.
  14. Number of disputes decided during 20 years.
  15. Coroner's inquests, Part I.  
Rewards paid for destruction of wild animals.
  16. Expenses of settlement.
  17. Estimate of income and expenditure of cesses.
  18. Mines.
  19. Roads ; cost of construction.
  20. List of routes.
  21. Abstract of Goonth and Maâfee tenures.
  22. Wild animals, &c., of the chace.
  23. Skeleton map of the district, showing divisions and sub-divisions, with Index.
  24. Ditto ditto Putwarees' Hulkas ; position of Schools ; roads.
  25. Sample Pergunnah Map, showing every village.

J. O'B. BECKETT,  
Senior Assistant Commissioner.







No. 2.

STATEMENT of Resumptions of *Madfee* and *Goonth* lands.

| Pergunnah.          | Puttee.      | Settlement Number. | Village.         | Area of 80 Ga. |            |            | Settlement |            | REMARKS.                                            |
|---------------------|--------------|--------------------|------------------|----------------|------------|------------|------------|------------|-----------------------------------------------------|
|                     |              |                    |                  | Beesee As.     | Beesee As. | Beesee As. | Area       | Rs. As. P. |                                                     |
| Baruhyoon           | Late Madfee. | ...                | Pokhree P.       | 7 0            | 14 1       | 11 0 0     | ...        | ...        | A.—Direct orders for resumption.                    |
|                     |              |                    | Choorat P.       | 13 12          | 15 6       | 11 8 0     | ...        | ...        | P.—Means part of village.                           |
|                     |              |                    | Chirto           | 14 0           | 11 3       | 5 0 0      | ...        | ...        | B.—Discretionary.                                   |
|                     |              |                    | Bedoola          | 11 8           | 6 0        | 2 8 0      | ...        | ...        | C.—Not in list, and no Sunnuds.                     |
|                     |              |                    | Total            | 45 4           | 46 10      | 30 0 0     | ...        | ...        | X.—No separate sum included in rest of Khalsa rent. |
| Dewulgurh           | Late Madfee. | ...                | Kyark            | 31 6           | 53 8       | 35 0 0     | ...        | ...        | Bs. As.                                             |
|                     |              |                    | Wedula           | 5 0            | 8 5        | 4 0 0      | ...        | ...        | Chintamunee ... 8 2 A.—Still left to Masfoedar.     |
|                     |              |                    | Madfee Total     | 81 10          | 108 7      | 69 0 0     | ...        | ...        | Ditto ... 13 12 A.—Ditto.                           |
| Baruhyoon Budhan    | Late Goonth. | ...                | Hansoor          | 13 8           | 15 3       | 9 0 0      | ...        | ...        | Ditto ... A.                                        |
|                     |              |                    | Bedoola P.       | 0 3            | 0 3        | X.         | ...        | ...        | Budreenath ... A.                                   |
|                     |              |                    | Jubarkote P.     | 0 1            | 0 1        | X.         | ...        | ...        | Ditto ... A.                                        |
|                     |              |                    | Makoor P.        | ...            | ...        | X.         | ...        | ...        | Ditto ... A. Not found.                             |
|                     |              |                    | Pastolee P.      | 0 3            | 0 3        | X.         | ...        | ...        | Ditto ... A.                                        |
| Chandpore Dewulgurh | Late Goonth. | ...                | Tutasoo P.       | 75 0           | 43 0       | 27 0 0     | ...        | ...        | Goonsayee ... A.                                    |
|                     |              |                    | Chumdang         | ...            | 3 7        | 3 0 0      | ...        | ...        | Dewul ... C. } Still left to Temple, Bs. 5, As. 1.  |
|                     |              |                    | Dowlgurh         | 2 0            | 2 0        | 1 0 0      | ...        | ...        | Ditto ... C. } This Goonth was resumed in 1815,     |
| Nagpore             | Late Goonth. | ...                | Doongree Punt P. | 1 12           | 1 1        | 2 0 0      | ...        | ...        | C. } but this bit was concealed.                    |
|                     |              |                    | Phugiyana        | 8 6            | 0 6        | X.         | ...        | ...        | Muhadeb ... A.                                      |
|                     |              |                    | Poundar          | 9 4            | 4 14       | 2 0 0      | ...        | ...        | Nagrajah ... A.                                     |
|                     |              |                    | Barakote P.      | 4 8            | 3 7        | X.         | ...        | ...        | Lulita, &c. ... A.                                  |
|                     |              |                    |                  |                |            |            |            |            | Silesur ... A.                                      |



No. 2.

STATEMENT of Resumptions of Madfee and Goonth lands—(Concluded.)

| Pergunnah.  | Puttee.   | Settlement number. | Village.                 | Area of 80 Sal. | Settlement    |            | REMARKS.                                                                    |
|-------------|-----------|--------------------|--------------------------|-----------------|---------------|------------|-----------------------------------------------------------------------------|
|             |           |                    |                          |                 | Area.         | Sum.       |                                                                             |
|             |           |                    |                          | Besess. As.     | Besess. As.   | Ra. As. P. |                                                                             |
|             |           | 51                 | Nakot                    | 69 8            | 49 8          | 40 0 0     | A.—Direct orders for resumption.                                            |
|             |           | 52                 | Seeloesera               | 10 8            | 10 13         | 13 0 0     | P.—Means part of village.                                                   |
|             |           | 55                 | Seela Bumungaon          | 4 0             | 6 10          | X.         | B.—Discretionary.                                                           |
|             |           | 70                 | Phulai Turyal            | 6 0             | 10 0          | X.         | C.—Not in list, and no Sunnuds.                                             |
|             |           | 28                 | Unota                    | 36 0            | 20 12         | 12 0 0     | X—No separate sum included in rest of Khalsa rent.                          |
|             |           | 37                 | Mut                      | 7 12            | 9 14          | 6 0 0      |                                                                             |
| Gunga Sulan | Ujmer     | ...                | Lokwara P.               | 9 8             | Not measured. | X.         | A.—No possession and no claimant.                                           |
| Tulla Sulan | Bijlot W. | ...                | Choolaya P.              | 2 2             | †             |            | B.—* Not separate from Khalsa.                                              |
|             |           |                    |                          |                 |               |            | Mahabeswar ... A.—Left unassessed for Encamping; and † for the Annual Fair. |
|             |           |                    |                          |                 |               |            | Suldeswar ...                                                               |
|             |           |                    | Goonth Total             | 260 3           | 181 6         | 115 0 0    |                                                                             |
|             |           |                    | Goonth and Madfee Total, | 341 13          | 289 13        | 184 0 0    |                                                                             |

Besides these, wherever the recorded Goonth was higher than that sanctioned, allowing for difference of measurement, the surplus was incorporated in the Khalsa; and little petty plots in villages, not mentioned in the Commissioner's miscellaneous list, were either left as village Goonth or incorporated in the Khalsa at the wish of the villagers.



## SITES available for Tea Plantations.

| No.                                                                                                                                      | Pergunnah.      | Puttee.                    | PARTICULARS.                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------|--------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                          | Gunga Sulan ... | Ujmer ...                  | Western slope of Ujmergurh peak.                                                                                   |
|                                                                                                                                          |                 | Kurondoo P. ...            | Above the villages Duameere and Khetotiya.                                                                         |
|                                                                                                                                          | Tulla Sulan ... | T. Seela ...               | On the Churekh hill.                                                                                               |
|                                                                                                                                          |                 | Painaon ...                | The top of the ridge separating Painaon from Iriakote.                                                             |
|                                                                                                                                          | Mulla Sulan ... | Googuroo Khatter, &c.      | Along the top of the range between Googuroogurh and Iriakote.                                                      |
|                                                                                                                                          | Baruhsyoon ...  | Bunelsyoon ...             | } Eastern and Northern slopes of Udwanee hill.                                                                     |
|                                                                                                                                          |                 | Putwalsyoon ...            |                                                                                                                    |
|                                                                                                                                          | Budhan ...      | Lohba ...                  | Northern slope between Rohira and Hurgudh villages. Reserved at settlement for Tea.                                |
|                                                                                                                                          |                 | Khunsur ...                | Head of the valley above Mutkota village, in the Lundanda valley, near Jhoomakhet. Reserved at settlement for Tea. |
|                                                                                                                                          |                 | Pindur War ...             | The head of the Goomtee river, near Koonjajhalee village.                                                          |
|                                                                                                                                          |                 | Do. ...                    | All the top of the Northern slope between Kimolee and Lottee.                                                      |
|                                                                                                                                          |                 | Pindur Par ...             | In the Solputtee, near Sunkot, between and above Moondolee and Ichholee villages.                                  |
|                                                                                                                                          |                 | Nundak ...                 | The head of the Chookla valley.                                                                                    |
|                                                                                                                                          | Chandpore ...   | Teilee ...                 | At Chourasain. Bottom of site, 5,700 feet, near Munjyasee village. (Doubtful.)                                     |
|                                                                                                                                          |                 | Seelee ...                 | Above Kimolee.                                                                                                     |
|                                                                                                                                          |                 | Ranegudh ...               | Sukund waste village.                                                                                              |
|                                                                                                                                          |                 | Dhaijyolee ...             | Wherever the forest is not too high.                                                                               |
|                                                                                                                                          |                 | Choopurakote ...           | Between Murwara and Doodurtolee peak.                                                                              |
|                                                                                                                                          |                 | Chouthan ...               | Between Boongedar and Lohba.                                                                                       |
|                                                                                                                                          | Dewulgurh ...   | Kundarsyoon ...            | Bhainswara, waste village.                                                                                         |
|                                                                                                                                          |                 | Goordoorsyoon ...          | Slope of hill between.                                                                                             |
|                                                                                                                                          | Dussowlee ...   | Tulla Do. ...              | Above the villages Pulnaon and Sainj.                                                                              |
|                                                                                                                                          | Nagpore ...     | Bichla N. ...              | The head of the Ningol river.                                                                                      |
|                                                                                                                                          |                 | T. Kaleephat ...           | The head of the Kyoongjgudh river.                                                                                 |
|                                                                                                                                          |                 | Bamsir ...                 | The forest above Toolunga village, 5,600 feet bottom of site. Scarcity of labor.                                   |
|                                                                                                                                          | Choundkote ...  | Kungudeegar Muwalsyoon ... | Forest land, all too steep.                                                                                        |
|                                                                                                                                          | Painkhunda ...  | T. Painkhunda ...          | Forest land, too high and cold.                                                                                    |
| N. B.—It is impossible to estimate the area of forest lands. Some estimates I have made turned out to be very far from the real measure. |                 |                            |                                                                                                                    |

## LIST of Divisions and Sub-Divisions, Index to Map No. 23.

| Pergunnah and Number. | No. | Name of Puttee.   | Pergunnah and Number.   | No. | Name of Puttee.                 |
|-----------------------|-----|-------------------|-------------------------|-----|---------------------------------|
| <i>Borahsyoon I.</i>  | 1   | Bunelsyoon.       | <i>Nagpore VII.</i>     | 1   | Bamsoo.                         |
|                       | 2   | Bungurhsyoon.     |                         | 2   | Kaleephat Mulla.                |
|                       | 3   | Gugwarsyoon.      |                         | 3   | Kaleephat Tulla.                |
|                       | 4   | Idwalsyoon.       |                         | 4   | Maikhunda.                      |
|                       | 5   | Khatsyoon.        |                         | 5   | Nagpore Mulla.                  |
|                       | 6   | Kundwalsyoon.     |                         | 6   | Nagpore Bichla.                 |
|                       | 7   | Kupholsyoon.      |                         | 7   | Nagpore Tulla.                  |
|                       | 8   | Muniyarsyoon.     |                         | 8   | Ooegum.                         |
|                       | 9   | Nadulsyoon.       |                         | 9   | Purkundee. 54                   |
|                       | 10  | Paidoolsyoon.     | <i>Painkhunda VIII.</i> | 1   | Painkhunda Mulla.               |
|                       | 11  | Putwalsyoon.      |                         | 2   | Painkhunda Tulla. 56            |
|                       | 12  | Rawutsyoon.       |                         |     |                                 |
|                       | 13  | Sitonsyoon.       |                         |     |                                 |
|                       | 14  | Uwalsyoon.        |                         |     |                                 |
| <i>Budhan II.</i>     | 1   | Khunsur.          | <i>Gunga Sulan IX.</i>  | 1   | Dhangoo Mulla, or Dobryalsyoon. |
|                       | 2   | Kupeeree.         |                         | 2   | Dhangoo Tulla.                  |
|                       | 3   | Kurakote.         |                         | 3   | Kurondoo Wulla.                 |
|                       | 4   | Nundak.           |                         | 4   | Kurondoo Pulla.                 |
|                       | 5   | Pindur War.       |                         | 5   | Lungoor.                        |
|                       | 6   | Pindur Par. 60    |                         | 6   | Oodepore Mulla.                 |
| <i>Chandpore III.</i> | 1   | Chandpore Seelee. |                         | 7   | Oodepore Bichla.                |
|                       | 2   | Chandpore Teilee. |                         | 8   | Oodepore Tulla.                 |
|                       | 3   | Choopurakote.     |                         | 9   | Ujmer. 65                       |
|                       | 4   | Chouthan.         | <i>Mulla Sulan X.</i>   | 1   | Bungarsyoon.                    |
|                       | 5   | Dhaijyoolee.      |                         | 2   | Dhondyalsyoon.                  |
|                       | 6   | Lohba.            |                         | 3   | Goojuroo.                       |
|                       | 7   | Raneegudh.        |                         | 4   | Iriyakote.                      |
|                       | 8   | Sirgoor.          |                         | 5   | Khatlee.                        |
| <i>Chowdote IV.</i>   | 1   | Gorarsyoon.       |                         | 6   | Kolagar.                        |
|                       | 2   | Jamtolsyoon.      |                         | 7   | Meldhar.                        |
|                       | 3   | Kingudeegar.      |                         | 8   | Sablee.                         |
|                       | 4   | Moundarsyoon.     |                         | 9   | Saindhar.                       |
|                       | 5   | Muwalsyoon.       |                         | 10  | Tulayee. 75                     |
|                       | 6   | Pingla Pakha.     | <i>Tulla Sulan XI.</i>  | 1   | Bhabur.                         |
|                       | 7   | Ringwarsyoon.     |                         | 2   | Bijlot Wulla.                   |
| <i>Chowdote V.</i>    | 1   | Bidolsyoon.       |                         | 3   | Bijlot Pulla.                   |
|                       | 2   | Buchhunsyoon.     |                         | 4   | Bongee.                         |
|                       | 3   | Chuloonsyoon.     |                         | 5   | Budulpore Mulla.                |
|                       | 4   | Dhumpore.         |                         | 6   | Budulpore Tulla.                |
|                       | 5   | Goordoorsyoon.    |                         | 7   | Kourea Wulla.                   |
|                       | 6   | Kundarsyoon.      |                         | 8   | Kourea Pulla.                   |
|                       | 7   | Kuthoolsyoon.     |                         | 9   | Painaon.                        |
| <i>Dussewlee VI.</i>  | 1   | Bund.             |                         | 10  | Seela Mulla.                    |
|                       | 2   | Dussewlee Mulla.  |                         | 11  | Seela Tulla.                    |
|                       | 3   | Dussewlee Tulla.  |                         |     |                                 |

No. 8.

STATEMENT of Villages Waste at New Settlement.

| Pargunnah.    | Puttee.      | Number. | Village.          | Past Settlement. |       | Measured area. | Subsequently let for. | REMARKS.                                                              |
|---------------|--------------|---------|-------------------|------------------|-------|----------------|-----------------------|-----------------------------------------------------------------------|
|               |              |         |                   | Estimated area.  | Rent. | Rs. As.        | Rs. As.               |                                                                       |
| BANGURHAYOON. | Bangurhayoon | 4       | Delgaon           | 10 0             | 1 0   | 19 8           | ...                   | Refused to pay Rs. 3.                                                 |
|               |              |         | Dhoulce           | 22 0             | 2 0   | 10 9           | ...                   | No offer.                                                             |
|               |              |         | Gwar              | 19 8             | 3 0   | 30 9           | ...                   | The bridge lessee, an old man, unable to cultivate it.                |
|               |              |         | Gorsoo            | 9 4              | 2 0   | 5 13           | ...                   | Heat and scorpions prevent assamees setting.                          |
|               |              |         | Ootrasoo          | 10 12            | 3 0   | 15 4           | ...                   |                                                                       |
|               |              |         | Silakotee         | 10 12            | 2 0   | 24 15          | ...                   |                                                                       |
|               |              |         | Total             | 82 4             | 13 0  | 106 10         | ...                   |                                                                       |
| KUPPEREE.     | Kupeeree     | 8       | Bangurce          | 12 8             | 3 0   | ...            | ...                   | Applied for ; being measured.                                         |
|               |              |         | Doongra N.        | 9 0              | 1 0   | 10 1           | ...                   | No offer.                                                             |
|               |              |         | Gobthula N.       | 5 0              | 2 0   | ...            | ...                   | Applied for ; being measured.                                         |
|               |              |         | Goul M. T., N.    | 6 0              | 0 8   | ...            | ...                   | Do.                                                                   |
|               |              |         | Koond N.          | 8 0              | 1 0   | ...            | ...                   | Unmeasured.                                                           |
|               |              |         | Kutolee M. T., N. | 4 0              | 0 8   | ...            | ...                   | Applied for ; being measured.                                         |
|               |              |         | Sitalee N.        | 8 8              | 2 0   | ...            | ...                   | Do.                                                                   |
|               |              |         | Pwan              | 33 0             | 12 0  | 55 0           | { 12<br>20            | After 15 years let to new man ; remissions granted for several years. |
|               |              |         | Total             | 86 0             | ...   | ...            | ...                   |                                                                       |
| PINDUR WAR.   | Pindur War   | 2       | Harchund          | 105 0            | 2 0   | 23 8           | 10 0                  | Refused to take at Rs. 9.14.                                          |
|               |              |         | Kupholee T.       | 14 0             | 6 4   | 9 12           | 4 0                   | No offer.                                                             |
|               |              |         | Total             | 119 0            | 8 4   | 33 4           | 14 0                  |                                                                       |

|              |                |     |   |                 |     |       |      |       |     |
|--------------|----------------|-----|---|-----------------|-----|-------|------|-------|-----|
| CHANDPORA.   | Seclee         | ... | 4 | Boowarkote N.   | ... | 6 4   | 2 0  | ...   | ... |
|              |                | ... |   | Sirsolee N.     | ... | 16 0  | 2 0  | ...   | ... |
|              |                | ... |   | Rilamungree     | ... | 11 0  | 2 0  | ...   | ... |
|              |                | ... |   | Tirkote         | ... | 22 0  | 4 0  | ...   | ... |
|              | Total          | ... |   |                 | ... | 59 4  | 10 0 | ...   | ... |
| DEWULGURH.   | Choopurakote   | ... | 1 | Choonkhet       | ... | 3 8   | 2 0  | 8 4   | ... |
|              | Raneegudh      | ... | 1 | Sukund          | ... | 11 0  | 5 0  | ...   | ... |
|              | Buchhunsyoon   | ... | 2 | Nougaon N.      | ... | 10 0  | 2 0  | ...   | ... |
|              |                | ... |   | Dhoowakholee N. | ... | 8 0   | 3 0  | 9 1   | ... |
|              | Total          | ... |   |                 | ... | 18 0  | 5 0  | ...   | ... |
| NAGPORE.     | Kundarsyoon    | ... | 1 | Bhainswara N.   | ... | 19 0  | 6 0  | 14 4  | ... |
|              | Mulla Nagpore  | ... | 1 | Khikhun N.      | ... | 5 8   | 5 0  | ...   | ... |
|              | Bichla Nagpore | ... | 1 | Dilaoon         | ... | 5 0   | 2 0  | ...   | ... |
|              | Total          | ... |   |                 | ... | 10 8  | 7 0  | ...   | ... |
| TULLA SULAY. | Budulpore      | ... | 1 | Iriya           | ... | 10 0  | 0 12 | ...   | ... |
|              | Bhabur         | ... | 2 | Jeetpore N.     | ... | 200 0 | 15 0 | ...   | ... |
|              |                | ... |   | Punyalee        | ... | 60 0  | 15 0 | ...   | ... |
|              | Total          | ... |   |                 | ... | 260 0 | 30 0 | ...   | ... |
| GURGA SULAY. | Oodepore M.    | ... | 1 | Gurhwalee N.    | ... | 2 0   | 2 0  | 26 13 | 6 0 |
|              | Ujmer          | ... | 2 | Bhurpoie        | ... | 5 8   | 2 0  | 14 1  | ..  |
|              |                | ... |   | Dhoora          | ... | 3 12  | 1 0  | 8 3   | ... |
|              | Total          | ... |   |                 | ... | 9 4   | 3 0  | 22 4  | ... |
| DUSOWLEE.    |                |     |   | SUDABURT.       |     |       |      |       |     |
|              | Dussowlee T.   | ... | 8 | Rhoomula        | ... | 12 0  | 4 14 | 19 12 | 6 0 |
|              |                | ... |   | Bhountee        | ... | 13 8  | 4 0  | 17 5  | ... |
|              |                | ... |   | Bedoola         | ... | 23 4  | 1 0  | 5 6   | ... |
|              |                | ... |   | Kanchoola       | ... | 10 4  | 3 0  | 15 12 | ... |
|              |                | ... |   | Dul             | ... | 5 0   | 2 0  | 4 12  | ... |
|              |                | ... |   | Naeetolee       | ... | 9 0   | 4 3  | 10 11 | ... |
|              |                | ... |   | Sena            | ... | 16 0  | 3 0  | 15 15 | ... |
|              |                | ... |   | Ungooles        | ... | 5 0   | 5 0  | 15 10 | 6 0 |
|              | Total          | ... |   |                 | ... | 94 0  | 27 1 | 105 3 | ... |

Unmeasured.

Do.  
Do.  
Do.

No offer.

Three assamees settling killed by tigers. Reserved for tea.

Unmeasured.

No offer.

A large quantity of forest land. Reserved for tea.

A new village taken in exchange.  
Waste.

Unmeasured.

To be held Kham till Canal is made.

Do. do. offer of Rs. 85 refused.

Refused to pay more than Rs. 4.

} The owner had too much other land.

No offer.

"  
"  
"  
"  
"  
"  
"

No. 8—(Continued.)  
STATEMENT of Villages Waste at New Settlement.

| Pergunnah.                 | Puttee.         | Number. | Village.                   | Past Settlement. |            | Measured area. | Subsequently let for. | REMARKS.                  |
|----------------------------|-----------------|---------|----------------------------|------------------|------------|----------------|-----------------------|---------------------------|
|                            |                 |         |                            | Estimated area.  | Rent.      |                |                       |                           |
|                            |                 |         |                            | Rs. As.          | Rs. As.    | Rs. As.        | Rs. As.               |                           |
| NAGPORE.                   | Bansoo          | 2       | Lumolee N.<br>Singolee N.  | 10 8<br>6 0      | 5 0<br>4 0 | 13 12<br>...   | ...                   | No offer.<br>Unmeasured.  |
|                            |                 |         | Total                      | 16 8             | 9 0        | ...            | ...                   |                           |
|                            | Purkundee       | 1       | Buchhela N.                | 7 5              | 2 0        | 7 6            | ...                   | A Naiabad of 3 years ago. |
| BUDHAN.                    |                 |         | GOONTH.                    |                  |            |                |                       |                           |
|                            | Kapereee        | 2       | Rangadee Part<br>Raneegaon | 6 0<br>7 0       | ...<br>... | ...<br>12 10   | ...                   |                           |
|                            |                 |         | Total                      | 13 0             | ...        | ...            | ...                   |                           |
| DEWUL-CHAND-<br>GUH. POOR. | Tailee          | ...     | Jaspore Part               | 1 0              | ...        | 0 12           | ...                   |                           |
|                            | Chuloonsyoon    | ...     | Soonkolee                  | 6 8              | ...        | 5 4            | ...                   |                           |
|                            | Dussowlee Tulla | 2       | Rhountee Part<br>Mathurpal | 2 8<br>3 0       | ...<br>... | 3 2<br>3 5     | ...                   |                           |
|                            |                 |         | Total                      | 5 8              | ...        | ...            | ...                   |                           |

| Bund                   | 2   | Chapur Oodear<br>Soreeance | ... | X.<br>X. | ... | ...   | ... | ... | Waste portion of Kuniyar village.<br>Do. Sulla do. |
|------------------------|-----|----------------------------|-----|----------|-----|-------|-----|-----|----------------------------------------------------|
| Dussowlee.             | ... | ...                        | ... | ...      | ... | ...   | ... | ... | ...                                                |
| Kalcephat Mulla        | 1   | Total                      | ... | ...      | ... | ...   | ... | ... | ...                                                |
| Purkundee              | 2   | Kuntha                     | ... | 5 8      | ... | ...   | ... | ... | ...                                                |
|                        | ... | Gewangaon                  | ... | 4 0      | ... | ...   | ... | ... | ...                                                |
|                        | ... | Gwar Luchmun               | ... | 2 0      | ... | ...   | ... | ... | ...                                                |
|                        | ... | Total                      | ... | 6 0      | ... | ...   | ... | ... | ...                                                |
| Langoor                | 1   | Mutyalee Chour             | ... | 1 12     | ... | ...   | ... | ... | ...                                                |
|                        | ... | MAAFEE.                    | ... | ...      | ... | ...   | ... | ... | ...                                                |
| Kuthoolsoyon           | 1   | Gouchur                    | ... | 10 0     | ... | ...   | ... | ... | ...                                                |
|                        | ... | ...                        | ... | ...      | ... | ...   | ... | ... | ...                                                |
| PERGUNNAHWAR ABSTRACT. |     |                            |     |          |     |       |     |     |                                                    |
|                        | ... | KHALSA.                    | ... | ...      | ... | ...   | ... | ... | ...                                                |
| Baruhsyon              | 4   | ...                        | ... | 32 4     | ... | 13 0  | ... | ... | ...                                                |
| Budhan                 | 10  | ...                        | ... | 205 0    | ... | 30 4  | ... | ... | ...                                                |
| Chandpore              | 6   | ...                        | ... | 73 4     | ... | 17 0  | ... | ... | ...                                                |
| Dewulgurh              | 3   | ...                        | ... | 37 0     | ... | 11 0  | ... | ... | ...                                                |
| Nagpore                | 2   | ...                        | ... | 10 8     | ... | 7 0   | ... | ... | ...                                                |
| Gunga Sulan            | 3   | ...                        | ... | 11 4     | ... | 5 0   | ... | ... | ...                                                |
| Tulla Sulan            | 3   | ...                        | ... | 270 0    | ... | 30 12 | ... | ... | ...                                                |
|                        | ... | Total                      | ... | 689 4    | ... | 114 0 | ... | ... | ...                                                |
| Dussowlee              | 8   | SUDABURT.                  | ... | 94 0     | ... | 27 1  | ... | ... | ...                                                |
| Nagpore                | 3   | ...                        | ... | 23 13    | ... | 11 0  | ... | ... | ...                                                |
|                        | ... | Total                      | ... | 117 13   | ... | 38 1  | ... | ... | ...                                                |

Grazing ground of townspeople of Sreenuggur.

Rs. 2 of this Naibad of 1369 Fuzles.



No. 8—( Concluded.)  
 STATEMENT of Villages Waste at New Settlement.

| Pergunnah. | Puttee.     | Number. | Village.  | Old Settlement. |       | Measurement area | Subsequently let for. | REMARKS. |
|------------|-------------|---------|-----------|-----------------|-------|------------------|-----------------------|----------|
|            |             |         |           | Estimated area. | Rent. |                  |                       |          |
|            |             |         | GOONTH.   |                 |       |                  |                       |          |
|            | Budhan      | 2       | ...       | 13 0            | ...   | ..               | ..                    |          |
|            | Chandpore   | 1       | ...       | 1 0             | ...   | ..               | ..                    |          |
|            | Dewulgurh   | 1       | ...       | 6 8             | ...   | ..               | ..                    |          |
|            | Dussowlee   | 4       | ...       | 5 8             | ...   | ..               | ..                    |          |
|            | Nagpore     | 8       | ...       | 11 8            | ...   | ..               | ..                    |          |
|            | Gunga Sulan | 1       | ...       | 1 12            | ..    | ..               | ..                    |          |
|            |             | 12      | Total     | 39 4            | ...   | ..               | ..                    |          |
|            | Dewulgurh   | 1       | MAAFEE.   | 10 0            | ...   | ..               | ..                    |          |
|            |             |         | ABSTRACT. |                 |       |                  |                       |          |
|            | Khalsa      | 31      | ...       | 689 4           | 114 0 | ..               | ..                    |          |
|            | Sudaburt    | 11      | ...       | 117 13          | 38 1  | ..               | ..                    |          |
|            | Goonth      | 12      | ...       | 39 4            | ...   | ..               | ..                    |          |
|            | Maafee      | 1       | ...       | 10 0            | ...   | ..               | ..                    |          |
|            | GRAND TOTAL | 55      | Total     | 856 5           | ...   | ..               | ..                    |          |

## STATEMENT showing the Villages transferred from one Puttee to another.

| From Puttee      | No. | Name of Village. | Transferred to Puttee | Cause of transfer.                                        |
|------------------|-----|------------------|-----------------------|-----------------------------------------------------------|
| Bungurhsyoon ... | 5   | Dhumond          | ... Sitonsyoon        | ... To make a well-defined boundary.                      |
| Gugwarsyoon ...  | 4   | Dewar            | ... Ditto             | ... Ditto.                                                |
| Idwalsyoon ...   | ... | Phutepore        | ... Kuthoolsyoon      | ... Cultivated by new Puttee.                             |
| Khatsyoon ...    | 17  | Puligaon         | ... Pydoolsyoon       | ... To make a well-defined boundary.                      |
| Kundwalsyoon ... | 11  | Chilah           | ... Bunelsyoon        | ... Ditto.                                                |
|                  | 37  | Oomrasoo         | ...                   | ...                                                       |
|                  | 45  | Pokhree          | ...                   | ...                                                       |
| Kapholsyoon ...  | 22  | Simtolee         | ... Khatsyoon         | ...                                                       |
| Muniyarsyoon ... | 4   | Bhundaldoo       | ... Bunelsyoon        | ... enveloped by the new Puttee.                          |
|                  |     | Matolee          | ...                   | ...                                                       |
|                  |     | Semulya          | ...                   | ...                                                       |
|                  | 20  | Khalyoon         | ...                   | ...                                                       |
|                  | 21  | Paidool          | ...                   | ...                                                       |
| Paidoolsyoon ... | 1   | Bhainswara W. P. | ... Khatsyoon         | ... Ditto.                                                |
| Uswalsyoon ...   | 2   | Bedgaon Neree    | ... Muniyarsyoon      | ... Ditto and for burdaish.                               |
|                  | 3   | Bedulgaon        | ...                   | ...                                                       |
|                  | 4   | Berpanee         | ...                   | ...                                                       |
|                  | 21  | Dhaura           | ...                   | ...                                                       |
|                  | 40  | Nougaon          | ...                   | ...                                                       |
|                  | 54  | Sainar           | ...                   | ...                                                       |
|                  | 68  | Umelee           | ...                   | ...                                                       |
| Kurakote ...     | 9   | Mokh M.          | ... Nundak            | ... Enveloped by new Puttee.                              |
|                  |     | Dhurmakoondoo    | ...                   | ...                                                       |
| Pindur Par ...   | 2   | Bursalee         | ... Kupeeree          | ... Distant 2 days' march from old Puttee.                |
|                  | 4   | Bhutya           | ... Karakote          | ... Ditto 1 ditto ditto.                                  |
|                  | 10  | Koldeo Chirkhon  | ...                   | ...                                                       |
|                  | 11  | Kote Molee       | ...                   | ...                                                       |
|                  | 12  | Kothura          | ...                   | ...                                                       |
|                  | 13  | Kotlee           | ...                   | ...                                                       |
|                  | 14  | Kuphardeer       | ...                   | ...                                                       |
|                  | 23  | Soonbhooyee      | ...                   | ...                                                       |
| Chandpore ...    | 21  | Khund M.         | ... Kundarsyoon       | ... To define a proper boundary, and for burdaish.        |
|                  | 22  | Khund T.         | ...                   | ...                                                       |
|                  | 41  | Syoulee M.       | ...                   | ...                                                       |
|                  |     | Kimolee          | ...                   | ...                                                       |
|                  | 42  | Syoulee T.       | ...                   | ...                                                       |
|                  | 43  | Seela Bumort     | ...                   | ...                                                       |
| Choopurakote ... | 5   | Bunekh           | ... Ditto             | ... For burdaish.                                         |
|                  |     | Kalgudee         | ...                   | ...                                                       |
|                  | 10  | Dhounr           | ...                   | ... Ditto, formerly belonging to this Puttee.             |
|                  |     | Dhounrkolee      | ...                   | ...                                                       |
|                  | 26  | Kooee            | ...                   | ... Ditto.                                                |
|                  | 34  | Paibar           | ...                   | ...                                                       |
| Dewulgurh ...    | 5   | Biroun           | ... Dhunpore          | ... Ditto.                                                |
|                  |     | Chooeeth         | ...                   | ...                                                       |
|                  | 7   | Chilungwarchura  | ...                   | ...                                                       |
|                  | 18  | Gwar Thaplee     | ...                   | ...                                                       |
|                  | 27  | Lolee Raintolee  | ...                   | ...                                                       |
|                  | 33  | Peera Putolee    | ...                   | ...                                                       |
|                  | 45  | Sweensera        | ...                   | ...                                                       |
|                  | 10  | Gwar             | ... Khatsyoon         | ... Situated in the midst of new Puttee.                  |
| Dhunpore ...     | 11  | Dobree           | ... Kundarsyoon       | ... Ditto do.                                             |
| Lohba ...        | 5   | Chirounda        | ... Pindurwar         | ... Ditto do.                                             |
|                  | 3   | Bonga            | ... Seelee Chandpore  | ... Ditto do.                                             |
|                  | 1   | Mouna            | ... Sirgoor           | ... Ditto do.                                             |
|                  |     | Swan M.          | ...                   | ... Ditto do.                                             |
| Kurondoo ...     | 5   | Punyalee         | ... Bhabur            | ... Ditto do. to include it in forest                     |
|                  |     | Dhoora           | ... Ujmer             | ... Ditto do. [tract.                                     |
|                  |     | Genthala         | ...                   | ...                                                       |
|                  |     | Poolenda         | ...                   | ...                                                       |
|                  |     | Ramree           | ...                   | ...                                                       |
|                  |     | Syalunga         | ...                   | ...                                                       |
|                  |     | Tuchyalee        | ...                   | ...                                                       |
| Lungoor ...      | 9   | Burswar          | ... Seela M.          | ... Originally belonging to and separated in this Puttee. |
|                  | 14  | Butkholoo        | ... Muniyarsyoon      | ... Separated from old Puttee by Nyar river.              |
|                  | 51  | Routela          | ...                   | ... Ditto.                                                |
| Ujmer ...        | 4   | Muwakot          | ... Bhabur            | ... To include it in forest tract.                        |

## No. 9.

STATEMENT showing the villages transferred from one Puttee to another—(Concluded.)

| From Puttee     | No. | Name of Village.   | Transferred to Puttee | Cause of transfer.                                    |
|-----------------|-----|--------------------|-----------------------|-------------------------------------------------------|
| Bungarsyoon ... |     | Kumulya ...        | Dhondyalsyoon ...     | Cultivated by new Puttee.                             |
|                 |     | Sera Purinda ...   | Sablee ...            | Separated from old Puttee by 6 miles.                 |
|                 | 8   | Busyoor ...        | Tulayee ...           | Ditto do. by 16 ditto.                                |
|                 | 19  | Khundnee ...       |                       | Ditto do. by 10 ditto.                                |
|                 |     | Pudyargoan ...     |                       | Ditto do. by 10 ditto.                                |
|                 | 12  | Kyoonka ...        | Kimgudugar ...        | Ditto do. by 14 ditto.                                |
| Khatlee ...     |     | Kandnee ...        | Budulpore M. ...      | Separate from its old Puttee a day's march.           |
|                 | 5   | Gorinda ...        | Kolagar ...           | Ditto "                                               |
|                 |     | Kuntgaon ...       |                       | Ditto "                                               |
|                 | 7   | Guwana M. ...      |                       | Ditto "                                               |
|                 |     | Bhairgaon ...      | Gorarsyoon ...        | Ditto "                                               |
|                 |     | Koleegaon ...      |                       | Ditto "                                               |
|                 |     | Chhaindhar M. ...  |                       | Ditto "                                               |
|                 |     | Chhaindhar T. ...  |                       | Ditto "                                               |
|                 |     | Sunglakotee ...    |                       | Ditto "                                               |
| Sablee ...      | 26  | Musmolee ...       | Tulayee ...           | Ditto 6 miles.                                        |
| Tulayee ...     |     | Bijolee ...        | Gorarsyoon ...        | To make a defined boundary and for burdaish.          |
|                 |     | Ghudolee ...       |                       | "                                                     |
|                 |     | Duhelee ...        |                       | "                                                     |
|                 |     | Kunsar ...         |                       | "                                                     |
|                 |     | Tolee ...          |                       | "                                                     |
|                 |     | Kandnee ...        |                       | "                                                     |
|                 |     | Bhudmolee ...      |                       | "                                                     |
|                 |     | Borigaon ...       |                       | "                                                     |
|                 |     | Mugyakodhyo ...    |                       | "                                                     |
|                 |     | Retail ...         |                       | "                                                     |
|                 |     | Semee ...          |                       | "                                                     |
|                 |     | Kooreekhal ...     |                       | "                                                     |
|                 |     | Palee M. ...       |                       | "                                                     |
|                 |     | Palee T. ...       |                       | "                                                     |
| Bijlot ...      |     | Negyana ...        | Budulpore T. ...      | Separate from old Puttee 3 days' march.               |
| Budulpore ...   | 8   | Guwana T. ...      | Kolagar ...           | Ditto by Nyar river.                                  |
|                 | 11  | Huloonee ...       | Gorarsyoon ...        | Ditto ditto also distant.                             |
|                 | 1   | Bhundargaon ...    | Moundarsyoon ...      | Ditto by Nyar river.                                  |
|                 | 7   | Buntholee ...      |                       | "                                                     |
|                 | 8   | Chhuretee ...      |                       | "                                                     |
|                 | 11  | Chouthee M. T. ... |                       | "                                                     |
|                 | 15  | Eera M. ...        |                       | "                                                     |
|                 | 16  | Eera T. ...        |                       | "                                                     |
|                 | 25  | Kubra Ukra ...     |                       | "                                                     |
|                 | 26  | Kubra Sukra ...    |                       | "                                                     |
|                 | 27  | Kukhtoona ...      |                       | "                                                     |
|                 | 31  | Moltee ...         |                       | "                                                     |
|                 | 40  | Nundolee ...       |                       | "                                                     |
|                 | 50  | Seela ...          |                       | "                                                     |
| Painaon ...     | 3   | Bhughwan ...       | Iryakote ...          | In the middle of new Puttee distant 6 miles from old. |
|                 | 30  | Kotnalee ...       |                       | "                                                     |
|                 | 57  | Tuleree ...        |                       | "                                                     |
| Pindur War ...  | 3   | Bumyala ...        | Sirgoor ...           | Ditto.                                                |
|                 | 5   | Choola ...         |                       | "                                                     |
|                 | 6   | Gubeena W. P. ...  |                       | "                                                     |
|                 | 7   | Gundik M. ...      |                       | "                                                     |
|                 |     | Gundik T. ...      |                       | "                                                     |
|                 | 14  | Kundwalgaon ...    |                       | "                                                     |
|                 | 15  | Kupholee M. ...    |                       | "                                                     |
|                 | 17  | Nulgaon ...        |                       | "                                                     |
|                 | 14  | Sonula ...         | Kupeeree ...          | Distant 2 days' march from old Puttee.                |







No. 1.  
List of Schools.

No. 11.  
GURHWAL.

No. 2.  
List of Putwarees and their Hulkas.

| No. of Scholars. | REMARKS. | Position of School. |         |     | Pergunnah. |                 | Number of Putwaree. | Puttee Number in Map. | Resident in Puttee. | Other Puttees under the same Putwaree. | Revenue.          |     | Census. |     |     |     |     |
|------------------|----------|---------------------|---------|-----|------------|-----------------|---------------------|-----------------------|---------------------|----------------------------------------|-------------------|-----|---------|-----|-----|-----|-----|
|                  |          | Village.            | Puttee. | No. | Name.      | Khalas and Sub. |                     |                       |                     |                                        | Makfee and Gouth. |     |         |     |     |     |     |
| 1.               | 2.       | 3.                  | 4.      | 5.  | 6.         | 7.              | 8.                  | 9.                    | 10.                 | 11.                                    | 12.               | 13. | 14.     | 15. | 16. | 17. | 18. |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   |     |         |     |     |     |     |
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|                  |          |                     |         |     |            |                 |                     |                       |                     |                                        |                   | </  |         |     |     |     |     |

• Numerals refer to Puttee No.—See Map.

† Roman numerals refer to Pergunnah No.

## No. 13.

## LIST of Plants, &amp;c., cultivated for food in Gurhwal.

| Autho-<br>rities. | NAMES.                              |                    |                                              | Parts used for food. |           | Months of ripening.   |
|-------------------|-------------------------------------|--------------------|----------------------------------------------|----------------------|-----------|-----------------------|
|                   | Botanical.                          | English.           | Hindeo.                                      |                      |           |                       |
| M.                | Triticum Vulgare                    | Red wheat-bread    | Lall Gehoon                                  | Cereals.             | Seed.     | May.                  |
|                   | Ditto                               | White wheat        | Daoodkhanee, or Sufed Gehoon                 |                      | "         | "                     |
| "                 | Hordeum Hexastichyum                | Barley             | Jou, 2 varieties                             |                      | "         | October.              |
| "                 | " Celeste                           | Celestial Ditto    | Ooajou, in Bhote                             |                      | "         | September, end.       |
| "                 | Oryza Sativa                        | Rice               | Dhan, G. Satee                               |                      | "         | October, middle.      |
| "                 | Eleusine Corocana                   | Millet             | Mundova, G. Koda                             |                      | "         | September, beginning. |
| "                 | Panicum Frumentaceum                | "                  | Mandira, G. Jhungora                         |                      | "         | "                     |
| "                 | " Italicum                          | "                  | Konee, G. Kungnee                            |                      | "         | August, end.          |
| "                 | " Miliaceum                         | "                  | Cheena                                       |                      | "         | April.                |
| P.                | " Uliginosum ?                      | "                  | Gunara                                       |                      | "         | "                     |
| M.                | Zea Mays                            | Maize              | Bhootta Muknee, G. Moongree, G. Joonala      |                      | "         | October, beginning.   |
| "                 | Amaranthus Anardana                 | Prince's feather   | Chooa Marcha                                 |                      | "         | "                     |
| "                 | " (Candatus)                        | Love lies bleeding | Kedaree Chooa                                |                      | "         | September, end.       |
| "                 | Eragrostis Vulgare                  | Buck-wheat         | Ogul                                         |                      | "         | "                     |
| "                 | " Tataricum ?                       | "                  | Kotoo                                        |                      | "         | October.              |
| R.                | "                                   | "                  | Phaphur, in higher hills                     |                      | "         | April.                |
| M.                | Pisum Avense                        | Field Pea          | Kulon                                        | Pulse.               | "         | "                     |
| "                 | Ervum Lens                          | "                  | Musoor                                       |                      | "         | "                     |
| "                 | Cicer Arietinum                     | Gram               | Chunna                                       |                      | "         | October.              |
| "                 | Phaseolus Radiatus                  | "                  | Oord                                         |                      | "         | "                     |
| "                 | " Mungo                             | "                  | Moong                                        |                      | "         | "                     |
| "                 | " Torosus                           | "                  | Gooronsh                                     |                      | "         | "                     |
| "                 | Dolichos Uniflorus                  | "                  | Guhut, Koolthee                              |                      | "         | "                     |
| "                 | " Catjang                           | "                  | Recaish, 3 varieties                         |                      | "         | "                     |
| "                 | Soja Hispida (Dolichos Soja)        | "                  | Bhut                                         |                      | "         | November.             |
| P.                | Cytisus Cajan                       | "                  | Urhur, G. Tor                                |                      | Seed pod. | Rains.                |
| M.                | Dolichos Lignosus (Labialcultratum) | French bean        | Chemees                                      | Vegetables.          | "         | "                     |
| P.                | " Sinensis                          | "                  | Lobya                                        |                      | "         | April.                |
| "                 | Phaseolus Vulgaris Vicia Fabe?      | Bean               | G. Sheochuna Bakoola                         |                      | "         | June to October.      |
| M.                | Solanum Melongena                   | Egg-plant          | Baingun, G. Bhutta, purple and white variety |                      | Root.     | October.              |
| "                 | " Tuberosum                         | Potatoes           | Aloo                                         |                      | "         | Rains.                |
| "                 | Colocasia Himalensis                | "                  | Ghooya, G. Pinaloo, white leaf Papur         |                      | "         | "                     |
| "                 | "                                   | "                  | Guderee, red                                 |                      | "         | "                     |
| P.                | Butatas Edulis                      | Yam                | Shukurkund                                   |                      | "         | "                     |
| M.                | Dioscorea                           | "                  | Gunjar                                       |                      | "         | "                     |
| "                 | "                                   | "                  | Genthee                                      |                      | "         | "                     |
| "                 | "                                   | "                  | Turoor                                       |                      | "         | June.                 |
| P.                | Allium Cepa                         | Onion              | Peeaj                                        |                      | "         | "                     |
| "                 | " Sativum                           | Garlic             | Lusun                                        |                      | "         | "                     |
| "                 | Raphanus Sativus                    | Radish             | Moollee                                      |                      | "         | "                     |
| "                 | Brassica Rapa                       | Turnip             | Sulgun                                       |                      | "         | "                     |

G.—Stands for local name.



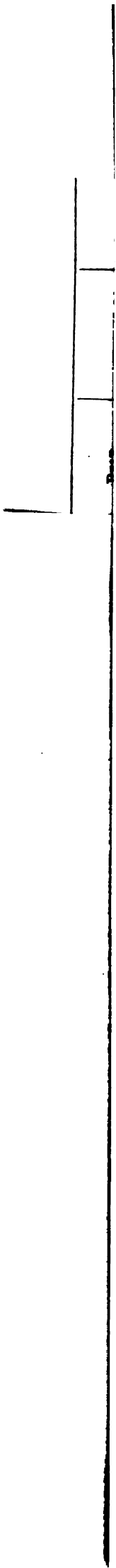
No. 13.  
List of Plants, &c., cultivated for food in Gurhwal.—(Concluded.)

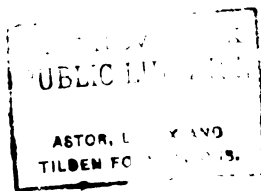
| Autho-<br>rities. | Botanical.                                    | Names.     |     | Hindee.                                                   | Parts used for food. |                     | Months of ripening.  |
|-------------------|-----------------------------------------------|------------|-----|-----------------------------------------------------------|----------------------|---------------------|----------------------|
|                   |                                               | English.   |     |                                                           |                      |                     |                      |
| P.                | Beta ? Spinacea Oleracea ?                    | Spinach    | ... | Palung                                                    | ...                  | Leaf.               | June.                |
|                   | Lepidium Sativum...                           | Cress      | ... | Halung                                                    | ...                  | "                   | "                    |
| M.                | Rheum Hybridum...                             | Rhubarb    | ... | Doloo (red), Tartaree green, at 11 and 16,000 feet, wild, | ...                  | Stalk.              | April.               |
| P.                | Frigonella Fenumgrocum                        | ...        | ... | Methee                                                    | ...                  | Leaf                | "                    |
|                   | Papaver Somniferum                            | Poppy      | ... | Posht                                                     | ...                  | Seed and ditto.     | April, May.          |
| M.                | Saccharum Officinatum                         | Sugarcane  | ... | Rikhoo, Poona                                             | ...                  | Stalk.              | "                    |
| "                 | Momordica Charantia                           | ...        | ... | Kurela                                                    | ...                  | Seed Pod.           | Rains,               |
| "                 | Luffa Acutangula                              | ...        | ... | Torya                                                     | ...                  | "                   | "                    |
| "                 | " Pentandra                                   | ...        | ... | Gheeatoye                                                 | ...                  | "                   | "                    |
| P.                | Tricosanthus Anguina                          | ...        | ... | Chichinda                                                 | ...                  | "                   | "                    |
| "                 | Cucumis Sativus                               | Cucumber   | ... | Kheera                                                    | ...                  | "                   | "                    |
| M.                | " Utilissimus                                 | "          | ... | Kukree                                                    | ...                  | "                   | "                    |
| B.                | Lagenaria Vulgaris                            | Gourd      | ... | Loukee (Toomree, not edible)                              | ...                  | "                   | "                    |
| B.                | Cucurbita Maxima                              | Pumpkin    | ... | Gudooa                                                    | ...                  | "                   | "                    |
|                   | "                                             | "          | ... | Turbhooj G.                                               | ...                  | "                   | "                    |
| B.                | " Pepo                                        | "          | ... | Bhooja                                                    | ...                  | "                   | "                    |
|                   | Asparagus Officinalis                         | Asparagus  | ... | Kairooa                                                   | ...                  | Stalk.              | April and Rains.     |
| P.                | Sinapis Dichotoma                             | Mustard    | ... | Iaee, Dain                                                | ...                  | Seed.               | April.               |
| B.                | " Glauca                                      | "          | ... | G. Ratha Surson                                           | ...                  | "                   | May.                 |
| B.                | " Erysimoides                                 | "          | ... | Raee                                                      | ...                  | "                   | "                    |
| B.                | " Dichotoma                                   | "          | ... | Jureea                                                    | ...                  | "                   | "                    |
| B.                | " Ramosa                                      | "          | ... | Borsee                                                    | ...                  | "                   | April.               |
| B.                | " Rugosa                                      | "          | ... | Toree                                                     | ...                  | "                   | October.             |
| B.                | Linum Usitatissimum                           | Linseed    | ... | Ulaee                                                     | ...                  | "                   | May.                 |
| M.                | Sesamum Orientalee                            | Sesame     | ... | Til                                                       | ...                  | "                   | August.              |
| "                 | Perilla Ocimoides                             | ...        | ... | Bhunjeeera                                                | ...                  | "                   | "                    |
| P.                | Cannabis Sativa                               | Hemp       | ... | Jhutela, a shrub wild                                     | ...                  | Fruit.              | June.                |
| "                 | Laurus Cassia                                 | Cinnamon   | ... | Bhang, for clothing and drug and oil                      | ...                  | Fibre, juice, seed. | November, beginning. |
| "                 | Capsicum Frutescens                           | Red pepper | ... | Tejpat, wild                                              | ...                  | Leaf, bark.         | "                    |
| "                 | Cardamomum Aromaticum                         | Cardamum   | ... | Lail Mirch, Koorsyane                                     | ...                  | Seed Pod.           | November.            |
| "                 | Curcuma Longa                                 | Turmeric   | ... | Elaichee                                                  | ...                  | Ditto.              | "                    |
| M.                | Zinziber Officinalis                          | Ginger     | ... | Huldee                                                    | ...                  | Root.               | "                    |
| P.                | Anethum Feniculum                             | Caraway    | ... | Udhruk, Ada                                               | ...                  | "                   | "                    |
| "                 | Coriandrum Sativum                            | Coriander  | ... | Souf, Jeera                                               | ...                  | Seed.               | May.                 |
| "                 | Piper longum Silvaticum                       | ...        | ... | Dhunneea                                                  | ...                  | "                   | "                    |
| "                 | Nicotiana Tabacum                             | Tobacco    | ... | Pipulmor, Pipulee                                         | ...                  | Fruit.              | "                    |
|                   | My authorities for the botanical names are :— |            | ... | Tamakoo                                                   | ...                  | Leaf.               | "                    |

G.—Stands for local name.









*Cost of Settlement of Gurhwal district.*

| SURVEY KHALSA, INCLUDING PORTIONS OF GOONTH.                                                                             |                      |               |                         |                                       |                    | GRAND TOTAL<br>EXPENSE. |
|--------------------------------------------------------------------------------------------------------------------------|----------------------|---------------|-------------------------|---------------------------------------|--------------------|-------------------------|
|                                                                                                                          | Fixed Establishment. |               | Temporary.              |                                       | Total<br>Expenses. |                         |
|                                                                                                                          | Dy. Collec-<br>tor.  | Office.       | Surveyors &<br>Writers. | Stationery<br>and Contin-<br>gencies. |                    |                         |
|                                                                                                                          | Rs. As. P.           | Rs. As. P.    | Rs. As. P.              | Rs. As. P.                            | Rs. As. P.         | Rs. As. P.              |
| A. D. 1856 ...                                                                                                           | 161 4 8              | 55 7 7        | ...                     | 200 0 0                               | 416 12 3           |                         |
| 1857 ...                                                                                                                 | 3,000 0 0            | 1,607 4 0     | 3,324 6 4               | 558 0 11                              | 8,439 11 3         |                         |
| 1858 ...                                                                                                                 | 3,000 0 0            | 1,699 0 0     | 5,286 5 1               | 1,203 0 6                             | 11,183 5 7         |                         |
| Deputy Collector drew<br>pay on the Estab-<br>lishment, 1859 ...                                                         | 2,000 0 0            | 2,515 12 0    | 26,308 12 9             | 4,054 7 2                             | 34,878 15 11       |                         |
| Of the district, his pay<br>amounting to, 1860,<br>Rs. 4,185-7-9 was in-<br>cluded in 1861, ...                          | ...                  | 2,331 5 0     | 12,747 12 0             | 2,671 3 5                             | 17,750 4 5         |                         |
| Rs. 74,005-7-10 Settle-<br>ment bill at first. ...                                                                       | ...                  | 276 13 4      | 660 12 3                | 343 12 10                             | 1,281 6 5          |                         |
| Rs. 78,190-15-7 which<br>was equal to ...                                                                                | ...                  | ...           | ...                     | ...                                   | ...                |                         |
| Totals ...                                                                                                               | 8,161 4 8            | 8,485 9 11    | 48,328 0 5              | 9,020 8 10                            | 74,005 7 10        | 74,005 7 10             |
| SETTLEMENT KHALSA.                                                                                                       |                      |               |                         |                                       |                    |                         |
|                                                                                                                          |                      |               | No. of months.          | Monthly pay.                          | Total pay.         |                         |
|                                                                                                                          |                      |               |                         |                                       | Rs. As. P.         | Rs. As. P.              |
| Stationery and Contingencies ...                                                                                         |                      |               |                         |                                       | ...                | 641 9 7                 |
| Preparation of Naibad Measurement papers ...                                                                             |                      |               |                         |                                       | 56 11 6            |                         |
| Ditto of Abstract of measurement of whole<br>measurement ...                                                             |                      |               |                         |                                       | 30 0 0             |                         |
| Ditto of Hindee Statement No. XIV. ...                                                                                   |                      |               |                         |                                       | 53 15 0            |                         |
| Superintendence in preparation of Rent-rolls<br>(Phauts) ...                                                             |                      |               | 31                      | 8                                     | 248 0 0            | 388 10 6                |
| Total Hindee writers ...                                                                                                 |                      |               | 8½                      | 40                                    | 340 0 0            |                         |
| Preparation of English Statements, Nos. XIV. and<br>XV. ...                                                              |                      |               | 8½                      | 20                                    | 170 0 0            |                         |
|                                                                                                                          |                      |               | 7                       | 15                                    | 105 0 0            | 615 0 0                 |
|                                                                                                                          |                      |               |                         |                                       |                    | 1,645 4 1               |
|                                                                                                                          |                      |               |                         |                                       |                    | 75,650 11 11            |
| Measurement and Settlement of<br>Goonth Sudaburt.                                                                        | By Wages.            | By Piecework. |                         | Stationery.                           |                    |                         |
|                                                                                                                          | Servants.            | Surveyors.    | Writers.                |                                       |                    |                         |
|                                                                                                                          | Rs. As. P.           | Rs. As. P.    | Rs. As. P.              | Rs. As. P.                            |                    |                         |
| Services of Government servants not<br>charged.                                                                          |                      |               |                         |                                       |                    |                         |
| Maafee and Goonth ...                                                                                                    | 199 3 1              | 1,273 10 11   | 987 10 3                | 303 8 8                               | 2,842 8 1          |                         |
| Sudaburt ...                                                                                                             | 102 8 6              | ...           | ...                     | 21 3 6                                | 123 12 0           |                         |
| 72-8 per cent. of one year's<br>revenue, or two seven-<br>tenths of the increase of<br>revenue for one year. } Total ... | ...                  | ...           | ...                     | ...                                   | 78,617 0 0         |                         |
| Deduct fines from villagers for concealment in measurement of acres 7,888 ...                                            |                      |               |                         |                                       | 1,114 0 0          |                         |
|                                                                                                                          |                      |               |                         |                                       | Balance, Rs. ...   | 77,503 0 0              |

*Receipts—Estimate of*

| Cess of 10 per cent. on Revenue. |                       |                    |                 | Sources.                                        | Revenue.      |
|----------------------------------|-----------------------|--------------------|-----------------|-------------------------------------------------|---------------|
| Total 10 per cent.               | Putwarees 4 per cent. | School 3 per cent. | Dak 3 per cent. |                                                 |               |
| 1.                               | 2.                    | 3.                 | 4.              | 5.                                              | 6.            |
| Rs. As. P.                       | Rs. As. P.            | Rs. As. P.         | Rs. As. P.      |                                                 | Rs. As. P.    |
| 9,633 11 8                       | 3,853 7 9             | 2,890 1 9          | 2,890 1 9       | Khalsa ... ..                                   | 96,337 0 0    |
| 421 4 0                          | 168 8 0               | 126 6 0            | 126 6 0         | Sudaburt ... ..                                 | 4,212 8 0     |
| 713 11 1                         | 285 7 7               | 214 1 9            | 214 1 9         | Goonth ... ..                                   | 7,136 14 11   |
| 26 3 10                          | 10 8 0                | 7 3 11             | 7 3 11          | Maafes ... ..                                   | 262 6 4       |
| 10,794 14 2                      | 4,317 15 4            | 3,238 7 5          | 3,238 7 5       | Total ... ..                                    | 1,07,949 13 3 |
| 0 4 10                           | 0 2 0                 | 0 1 5              | 0 1 5           | Loss by fractions ... ..                        |               |
| 10,794 9 4                       | 4,317 13 4            | 3,238 6 0          | 3,238 6 0       | Government grant to 21 Putwarees at Rs. 5 each, |               |
| 1,260 0 0                        | 1,260 0 0             | ...                |                 |                                                 |               |
| 12,054 9 4                       | 5,577 13 4            | 3,238 6 0          | 3,238 6 0       | Total ... ..                                    |               |
| 12,054 9 4                       |                       |                    |                 |                                                 |               |

NOTE.—A. and A., one individual

17.

## County Cesses—Expenditure.

|           |                           | Particulars.                                  |                      | Servants. | Monthly rate of Pay. |     |     | Monthly expenses. |     |     | Months.   | Total yearly expenses. |           |  |
|-----------|---------------------------|-----------------------------------------------|----------------------|-----------|----------------------|-----|-----|-------------------|-----|-----|-----------|------------------------|-----------|--|
| 7.        |                           | 8.                                            |                      | 9.        | 10.                  |     |     | 11.               |     |     | 12.       | 13.                    |           |  |
|           |                           |                                               |                      | No.       | Rs. As. P.           |     |     | Rs. As. P.        |     |     | No.       | Rs. As. P.             |           |  |
| PUTWAREE. | A.                        | Dukl Putwaree                                 | ... ..               | 1         | 13                   | 0   | 0   | 10                | 0   | 0   | ...       | ...                    |           |  |
|           |                           | 2 Dukl Assistants                             | ... ..               | 2         | 10                   | 0   | 0   | 20                | 0   | 0   | ...       | ...                    |           |  |
|           |                           | District Putwarees                            | ... ..               | 40        | 10                   | 0   | 0   | 400               | 0   | 0   | ...       | ...                    |           |  |
|           |                           | Ditto ditto not Surveyors                     | ... ..               | 1         | 7                    | 8   | 0   | 7                 | 8   | 0   | ...       | ...                    |           |  |
|           |                           | Ditto ditto ditto                             | ... ..               | 3         | 5                    | 0   | 0   | 15                | 0   | 0   | ...       | ...                    |           |  |
|           |                           | Total                                         | ...                  | 47        | ...                  |     |     | 452 8 0           |     |     | 12        | 5,430 0 0              |           |  |
|           |                           | Budreenath                                    | ... } Costs of Col-  | ...       | ...                  |     |     | 58 1 6            |     |     | ...       | ...                    |           |  |
|           |                           | Kedarnath                                     | ... } lection        | ...       | ...                  |     |     | 17 2 3            |     |     | ...       | 75 3 9                 |           |  |
|           |                           | Balance for Stationery, &c.                   | ...                  | ...       | ...                  |     |     | ...               |     |     | ...       | 71 9 7                 |           |  |
|           |                           | Total                                         | ...                  | ...       | ...                  |     |     | ...               |     |     | ...       | 5,577 13 4             |           |  |
| DAK.      |                           | Jemadars                                      | ... ..               | 1         | 9                    | 0   | 0   | 24                | 0   | 0   | 12        | 288 0 0                |           |  |
|           |                           |                                               | ...                  | 1         | 8                    | 0   | 0   |                   |     |     |           |                        |           |  |
|           |                           |                                               | ...                  | 1         | 7                    | 0   | 0   |                   |     |     |           |                        |           |  |
|           |                           | Dak-runners                                   | ... ..               | 36        | 4                    | 0   | 0   | 144               | 0   | 0   | ...       | ...                    |           |  |
|           |                           |                                               | ...                  | 20        | 3                    | 8   | 0   | 70                | 0   | 0   | ...       | ...                    |           |  |
|           |                           |                                               | ...                  | 3         | 3                    | 0   | 0   | 9                 | 0   | 0   | ...       | ...                    |           |  |
|           |                           |                                               | ...                  | 2         | 2                    | 0   | 0   | 4                 | 0   | 0   | ...       | ...                    |           |  |
|           |                           | Total runners                                 | ...                  | 61        | ...                  |     |     | 227 0 0           |     |     | 12        | 2,724 0 0              |           |  |
|           |                           | Dak Moonshee A.                               | ...                  | 1         | 10                   | 0   | 0   | 10                | 0   | 0   | 12        | 120 0 0                |           |  |
|           | SCHOOL.                   |                                               | Fixed Expenses Total | ...       | ...                  | ... |     |                   | ... |     |           | ...                    | 3,132 0 0 |  |
|           |                           | Extra Camp Daks and Stationery                | ...                  | ...       | ...                  |     |     | ...               |     |     | ...       | 106 6 0                |           |  |
|           |                           | Total                                         | ...                  | ...       | ...                  |     |     | ...               |     |     | ...       | 3,238 6 0              |           |  |
|           |                           | Sub-Deputy Inspector                          | ... ..               | 1         | 25                   | 0   | 0   | 25                | 0   | 0   | 12        | 300 0 0                |           |  |
|           |                           | Pundits                                       | ... ..               | 43        | 5                    | 0   | 0   | 215               | 0   | 0   | 12        | 2,580 0 0              |           |  |
|           |                           | Travelling allowance of Sub-Deputy Inspector, | ... ..               | ...       | 7                    | 8   | 0   | ...               | ... | ... | 10        | 75 0 0                 |           |  |
|           |                           | Stationery, fixed                             | ... ..               | ...       | 1                    | 8   | 0   | ...               | ... | ... | 12        | 18 0 0                 |           |  |
|           |                           | Yearly Scholarships                           | ... ..               | 1         | 3                    | 0   | 0   | 20                | 0   | 0   | 12        | 240 0 0                |           |  |
|           |                           | To 14 best Pundits                            | ... ..               | 4         | 2                    | 0   | 0   |                   |     |     |           |                        |           |  |
|           |                           |                                               | ...                  | 9         | 1                    | 0   | 0   |                   |     |     |           |                        |           |  |
|           | Balance for Contingencies | ...                                           | ...                  | ...       |                      |     | ... |                   |     | ... | 25 6 0    |                        |           |  |
|           |                           |                                               | ...                  | ...       |                      |     | ... |                   |     | ... | 3,233 6 0 |                        |           |  |
|           |                           | GRAND TOTAL                                   | ...                  | ...       | ...                  |     |     | ...               |     |     | ...       | 12,054 9 4             |           |  |

called Cess Mohurrir.





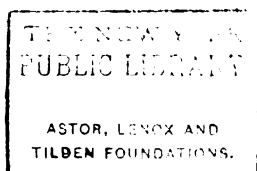
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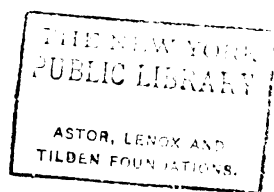
## Abstract of lands alienated in Goonth and Maáfee grants.

|         | REVENUE. |        |                   | Name of Grantee.         | MEASUREMENT. |           | RENT.      |            |                             | No.                                                                  | REMARKS. |
|---------|----------|--------|-------------------|--------------------------|--------------|-----------|------------|------------|-----------------------------|----------------------------------------------------------------------|----------|
|         | Below.   | Above. | No. of Grantees.  |                          | Of 1823.     | Of 1863.  | Former.    | New Kamil. | Mouzahs.                    |                                                                      |          |
|         | Rs.      | Rs. |  |  |  |  |  |  |  |  |  | B. A. | B. A. | Rs. As. P. | Rs. As. P. |
| GOONTH. | ...      | ...    | 1                 | Budreenath A. ...        | 4,784 14     | 4,371 14  | 3,777 4 0  | 3,943 7 2  | 262                         | Of this, 1R. less<br>Russudee for 15<br>years.                       |          |
|         | ...      | ...    | 1                 | Kedarnath A. ...         | 775 9        | 967 8     | 948 3 0    | 856 9 0    | 54                          |                                                                      |          |
|         | ...      | ...    | 1                 | Kumlesur ...             | 231 11       | 266 9     | 185 12 0   | 247 8 3    | 14                          |                                                                      |          |
|         | ...      | ...    | 1                 | Luchmee Narain,          | 102 0        | 125 10    | 77 5 0     | 109 5 6    | 5                           |                                                                      |          |
|         | ...      | ...    | 1                 | Rugonath A. ...          | 108 8        | 166 5     | 67 7 0     | 107 8 0    | 8                           |                                                                      |          |
|         | ...      | ...    | 1                 | Toongnath ...            | 132 14       | 139 8     | 80 11 0    | 122 10 10  | 9                           |                                                                      |          |
|         | ...      | ...    | 1                 | Gopeswur, Roodernath ... | 221 12       | 253 14    | 232 5 0    | 243 0 0    | 6                           |                                                                      |          |
|         | ...      | 100    | 7                 | Total ...                | 6,357 4      | 6,291 4   | 5,368 15 0 | 5,631 0 9  | 358                         |                                                                      |          |
|         | 90       | 80     | 2                 |                          | 149 4        | 195 2     | 99 10 0    | 168 0 0    | 10                          |                                                                      |          |
|         | 80       | 70     | 4                 |                          | 281 15       | 322 5     | 213 6 0    | 296 0 0    | 20                          |                                                                      |          |
|         | 70       | 60     | 2                 |                          | 130 7        | 140 0     | 90 14 0    | 123 5 0    | 9                           |                                                                      |          |
|         | 60       | 50     | 2                 |                          | 87 8         | 147 1     | 77 14 0    | 109 8 0    | 6                           |                                                                      |          |
|         | 50       | 40     | 4                 |                          | 127 8        | 214 0     | 83 2 0     | 160 0 0    | 6                           |                                                                      |          |
|         | 40       | 30     | 6                 |                          | 165 4        | 253 4     | 61 6 0     | 195 0 0    | 13                          |                                                                      |          |
|         | 30       | 20     | 5                 |                          | 122 12       | 136 3     | 38 0 0     | 115 0 0    | 5                           |                                                                      |          |
|         | 20       | 10     | 9                 |                          | 115 12       | 132 2     | 20 11 0    | 117 1 3    | 12                          |                                                                      |          |
|         | 10       | ...    | 77                |                          | 268 5        | 242 14    | *3 3 0     | 222 0 0    | 84                          | * Former re-<br>venue not ascer-<br>tained.                          |          |
| ...     | ...      | 118    | Total cultivated, | 7,805 15                 | 8,074 3      | 6,057 1 0 | 7,136 15 0 | 523        | Of the Temples<br>marked A. |                                                                      |          |
| ...     | ...      | ...    | Waste A. ...      | 39 4                     | ...          | ...       | ...        | 12         |                             |                                                                      |          |
| ...     | ...      | 118    | Total Goonth...   | 7,845 3                  | ...          | ...       | ...        | 535        |                             |                                                                      |          |
| MAAFEE. | ...      | 100    | 1                 | J. Henry ...             | 62 8         | 163 2     | 18 0 0     | 115 0 0    | 1                           | Late Govern-<br>ment Tea Plan-<br>tation; revenue<br>fixed for eess. |          |
|         | 60       | 50     | 1                 | Balmookund ...           | 35 0         | 58 11     | 39 8 0     | 56 0 0     | 2                           |                                                                      |          |
|         | 40       | 30     | 1                 | Umur Singh ...           | 77 8         | 92 9      | 32 0 0     | 36 0 0     | 1                           |                                                                      |          |
|         | 20       | 10     | 1                 | Chintamunee ...          | 19 12        | 20 14     | 25 7 0     | 15 15 0    | 2                           |                                                                      |          |
|         | 10       | ...    | 12                | ...                      | 21 12        | 25 7      | ...        | 40 7 4     | 1                           |                                                                      |          |
|         | ...      | ...    | 16                | ...                      | 216 8        | 365 11    | 114 15 0   | 263 6 4    | 7                           |                                                                      |          |
|         | ...      | ...    | 1                 | Waste ...                | 10 0         | ...       | ...        | ...        | 1                           |                                                                      |          |
|         | ...      | ...    | 17                | Total Maafee ...         | 226 8        | 365 11    | 114 15 0   | 263 6 4    | 8                           |                                                                      |          |
|         | ...      | ...    | 135               | GRAND TOTAL ...          | 8,071 11     | ...       | 6,172 0 0  | 7,400 5 4  | 563                         |                                                                      |          |













From Commissioner of Kumaon, to Secretary to the Board of Revenue, North-Western Provinces (No. 200B.).—Dated 25th July, 1865.

SIR,—I have now the honor to forward, for the consideration and approval of the Board, the accompanying Report on the re-settlement of the district of Gurhwal by Mr. J. O'B. Beckett, Senior Assistant Commissioner and Settlement Officer of that district, and to request that the sanction of His Honor the Lieutenant-Governor, North-Western Provinces, may be obtained to the settlement. Statements XIV. and XV. have this day been despatched packed in tin.

2. Statement No. XV. fully shows in a Pergunnahwar, Putteewar, and Mouzahwar form, the distribution of the proposed Government demand for 30 years. For the whole district, the demand for which sanction is solicited is exhibited in the following tabular form :—

STATEMENT showing proposed demand, from commencement to end of 30 years' Settlement.

|                           | Fuslee<br>1269. | Fuslee<br>1270. | Fuslee<br>1271. | Fuslee<br>1272 to<br>1274. | Fuslee<br>1274 to<br>1284. | Fuslee<br>1285 to end of<br>Settlement. |
|---------------------------|-----------------|-----------------|-----------------|----------------------------|----------------------------|-----------------------------------------|
|                           | Rs. As. P.      | Rs. As. P.      | Rs. As. P.      | Rs. As. P.                 | Rs. As. P.                 | Rs. As. P.                              |
| Government demand ...     | 76,701 4 0      | 90,387 12 0     | 95,626 8 0      | 95,563 0 0                 | 95,643 0 0                 | 96,311 0 0                              |
| Sudaburt (Local Agency) } | 3,051 5 0       | 3,320 12 0      | 3,598 0 0       | 3,598 0 0                  | 3,598 0 0                  | 3,626 0 0                               |

3. Mr. Beckett has also prepared a most valuable set of Appendices as follows :—

- No. 1. General abstract of area, revenue, and census, &c.
- „ 2. Resumed Goonth and Maâfee.
- „ 3. Historical and chronological list of Kings of Gurhwal.
- „ 4. Tea Plantations.
- „ 5. Lands available for Tea Plantations.
- „ 6. Remissions of revenue by summary settlement, and by temporary remissions.
- „ 7. List of Pergunnahs and Puttees forming Index of Map, No. 23.
- „ 8. List of Villages, waste.
- „ 9. List of Villages transferred from one Puttee to another.
- „ 10. Census Tables.
- „ 11. { Number and position of Schools, Part I.  
Number and Districts of Putwarees, Part II.
- „ 12. Time Tables of District Dâk.
- „ 13. Plants cultivated in the district.
- „ 14. Number of disputes decided during 20 years.
- „ 15. { Coroner's Inquest, Part I.  
Rewards paid for destruction of wild animals.
- „ 16. Expenses of Settlement.
- „ 17. Estimate of Income and Expenditure of Cesses.
- „ 18. Mines.
- „ 19. Roads, cost of construction, &c.

- No. 20. List of routes.
- „ 21. Abstract of Goonth and Maâfee tenures.
- „ 22. Wild animals, &c., of the chace.
- „ 23. Skeleton Map of the District showing divisions and sub-divisions, with Index.
- „ 24. Ditto ditto ditto Putwarees and Hulkas ; position of School ; Roads.
- „ 25. Sample Pergunnah Map, showing every village.

Of these, I would respectfully recommend that Nos. 1, 2, 4, 5, 7, 8, 9, 10, 11, 13, 15, 16, 17, 18, 21, 23, and 24, as appertaining more or less to matters connected with Land Revenue, be published together with the Settlement Report, in case its publication should be ordered. The remaining papers, I have reason to believe, will be welcomed, with others, also compiled by Mr. Beckett, as useful additions to a general account of the province of Kumaon and Gurhwal, which is under preparation, and which will form a supplementary part of Colonel Richard Strachey's forthcoming work on the physical geography of the Himalayas.

4. The Statistical Sketch of Mr. Traill, originally published in Vol. XVI. of the Asiatic Researches, and reprinted as the first paper in the volume entitled "The Official Reports on the province of Kumaon," edited under the order of Mr. Thomason, Lieutenant-Governor, North-Western Provinces, by Mr. J. H. Batten, Commissioner of Kumaon in 1851, and the Reports on Gurhwal and Kumaon by the latter gentleman forming a part of the same collection, but now re-published by the Board in the separate volumes of Settlement Reports, contain all the necessary information on the subject of the Revenue History of these hill districts, from the commencement of British rule in 1815 to the completion of the 20 years' settlement of Kumaon Proper in 1846 ; and Mr. Batten has quoted all the important portions of Mr. Traill's unpublished papers which referred more particularly to revenue matters. It would therefore be a work of supererogation either for Mr. Beckett or myself to go over the old ground. The great feature of the present revision of settlement is the field measurement, which has been made in all the villages of Gurhwal, with the exception of those belonging to the upper or Bhote portion of Pergunnah Pynkhunda, where the operation would obviously have been useless. Fortunately for the success and cheapness of the Gurhwal Revenue Survey, there had been created a class of Native Surveyors or Ameens within the province itself, by the measuring operations in the Sudaburt puttees of Kotolee and Muhreoree, which, with the sanction of Government, I myself, as District Officer of Kumaon, conducted as a tentative measure in the year 1852, and which were extended to the Sudaburt puttee of Dussowlee, in Gurhwal, by Mr. J. Strachey, when Senior Assistant Commissioner in that district. These Ameens had also been employed, during recent years, in measuring sites of land under dispute in the Courts, and many other young men had, subsequently to 1852, qualified themselves for the duties of Ameens. When Mr. Batten had to make his 20 years' settlement in Gurhwal, no such instructed local establishment was in existence ; while the importation to these regions of a regular Revenue Survey Establishment from the plains would have involved an enormous expense, without, at that time, the remotest chance of any corresponding fiscal advantages, and would not have met with the approval of the people, even if the foreign Surveyors could themselves have overcome the local difficulties, the language of the hill-men, and the peculiarities of the survey. Even with the nucleus of an establishment existing as above mentioned, and with all the aid derived from the able superintendence of the Deputy Collector, Jykishen Joshee, Mr.

Beckett, as will be seen in the 9th paragraph of his Report, did not find the measurement operations, which had been commenced in 1856, quite completed before 1861. I myself am entirely satisfied with the honesty and accuracy of the work, supervised and tested as it has been by Mr. Beckett's own unwearying and watchful care; and the people themselves have learnt to understand and look after all measurement operations. On this account, if for no other reason, the retention of the local *beesee* and *nallee*, instead of the introduction of the English acre measurement, is not only defensible, but a matter for congratulation; though at the same time, with a view to comparison and general reference, it is fortunate that the *beesee* of 4,800 square yards is only 40 yards less than an acre. It is quite superfluous to dwell upon the immense boon conferred on the people of Gurhwal by the creation of a field map as the basis for a record of rights and possessions, or upon the aid afforded thereby to those employed in adjudicating land disputes; while the value of the new survey record, as embodying real and tangible facts in the place of a *fictitious* record of guess-work (correctly termed *muzzur-andazee*) to the Settlement Officer, has been fully demonstrated by the successful revenue results arrived at by Mr. Beckett, as shown by his Report and Statements; and this brings me to the subject of assessment itself.

5. Mr. Batten, in the 6th paragraph of his Gurhwal Report, has thus stated the principles of the assessment made by him for the 20 years preceding the present revision :—

Assessment.

“ The Jummaabundee now forwarded for the approval of the Board and Government has been founded on the past payments of each estate, or set of estates, viewed in relation to its present state of prosperity, as shown by the state of cultivation; the number, character, and health of the inhabitants; the locality of their possession, and their general resources, whether mercantile or agricultural, as fairly proved, according to the opinion of their influential neighbours, consulted in open Panchayat on the subject.”

The *modus operandi* or plan of actual assessment adopted by Mr. Beckett in the resettlement under review is laid down in the 16th, 17th, and following paragraphs of his Report. I myself may generally remark that, as compared with preceding settlements, the present one eliminated to a great degree from its calculations the item of *previous demand*; that in the highly cultivated and agriculturally prosperous parts of the country, the bearing of acreage on population, and *vice versa*, was a main item of calculation; and that in the less populous tracts, or where agricultural assets were found to be subordinate to trading and other casual capabilities, the *census*, combined with an estimate of the character of the population, afforded the main basis of the revenue assessment. In the Bhote tract of Mulla Pynkhunda, the Revenue may be almost strictly called a poll-tax. A more fair mode of taxation for that tract, and the similar tracts in Kumaon Proper, might be on a correct enumeration of herds of cattle and flocks of sheep; but Mr. Beckett, with all his personal activity and local knowledge, found that concealment of such assets was possible to a large extent, and that the counting of the profit-earning and revenue-yielding human item was an easier task. I may further remark that, in addition to the new item of accurate or approximately accurate field measurement, the local experience of the Settlement Officer, rendering him to a great extent independent of interested parties, combined with his own almost universal personal inspection of villages, in company with the parties so interested (as described in Mr. Beckett's 17th paragraph) has formed the main noticeable and novel element in the recent Gurhwal operations. An examination of nearly 2,000 cases of assessment, added to my own knowledge of the country, enables me confidently to support the present Settlement Officer in his revenue assessment, and to countersign his demand for the confirmation of his proceedings.

6. Remembering the correspondence and controversies which have taken place of late years concerning waste land in this province, the attention of the Board will probably be drawn to what they may consider the slight notice of this subject by the Settlement Officer. The 8th paragraph of his Report, when viewed in connection with paragraph 39 and Appendix No. 5, is perfectly intelligible to those who know the real circumstances connected with village boundaries, with *naiabad* or new assessable cultivation in waste tracts, and with common right of pasture and forest use, as existing in Kumaon and Gurhwal, but may require explanation for the enlightenment of those who only read the statement that the whole district, as contained in geographical square miles, is parcelled out among existing villages, and that, nevertheless, there are available public sites for tea plantations and other settlements, which the District Officer had taken great personal pains to ascertain and record. Before offering to the Board and Government any further solution on my own part of the apparent anomaly, I think it most proper and convenient to transcribe *in extenso* the 15th and 16th paragraphs of Mr. Batten's Report, so that the Board and Government may be saved the trouble of referring to the printed volume; and that in case it should be thought proper to publish this Report, together with that of the Settlement Officer, the whole subject may be fully represented in one place.

“ XV.—Boundary disputes in Gurhwal were found of far less frequent occurrence than at an early period of the settlement I had anticipated. Boundaries of estates, and settlement of disputes concerning them. “ At least three-fourths of the boundaries have been settled without the intervention of authority. In such cases, the Razeenamahs of the parties have sometimes been separately filed, but in general the Chuknamahs, or sketch drawn up by the Canoongoe for each village, *Uslee* and *Dakhu-lee*, showing its boundaries on every side, has been attested by the Pudhan of the village delineated, and by the Pudhans of each village lying on its borders. In the book of ‘great measurement’ as it is called, drawn up by Mr. Traill’s orders for the whole province, the boundaries were described; but this record in no instance showed on what grounds, and by whose attestation, the description was entered. Accordingly the Native officials who prepared the work in question, and whose seals are attached to each copy thereof, are often accused of having made a false record. The present plan has this advantage over the former, that there is now forthcoming for every mouzah a document accompanied with the proper attestations, showing the actual determination of the boundaries by the people themselves at a given period. Cases of disputes were decided by Punchayut, according to the spirit of Board’s instructions, chiefly under the superintendence of the Canoongoes. Along the line of the Kumaon frontier, and near Sreenuggur, some of the disputes, being virulent and difficult of settlement, required their adjudication by myself or by the Deputy Collector. Mr. Commissioner Traill also, during the long course of his administration, had himself decided on the spot numerous boundaries; and such decisions were notorious and final. The Fyzulnamahs of the Punchayut, with all the proceedings connected with them, were drawn up with proper attention to forms; and such Misl, together with the Razeenamahs and Chuknamahs above described, has been for some time separately forwarded to the Gurhwal Record Officer at Paoree. Actual demarcation of boundaries by stone Chubootras always took place, whenever recourse to a legal settlement of disputes had been found necessary. But in the case of amicable agreements among themselves, such demarcation, though always recommended, was not insisted on. Indeed, on account of the villages being placed in such scattered situations, and being so numerous, it would have been very difficult to find officials adequate to superintend this kind of work, and the progress of it would undoubtedly have excited, in many instances, the very doubts and disputes which the measure was intended to guard against. In the Gurhwal moun-

“ tains, moreover, Nature herself still prescribes boundaries not difficult of discovery ;  
 “ and she represents, in distinct and notable characters to the eye, the limits of men’s  
 “ respective dominions. High peaks and ranges, forests, rivers, rocks, glens, and  
 “ ravines, are at present sufficient landmarks for the simple and peaceable Gurhwalees,  
 “ and will be so still, till the progress of population and agriculture shall bring them  
 “ nearer in resemblance to their Kumaon neighbours ; who in Palee, and other parts  
 “ of the country, have partitioned among themselves every foot of land, and whose  
 “ terraces of cultivation extend often uninterruptedly from the very summit of a  
 “ mountain to its base. In some parts of Barashewn, Chound Kote, and the northerly  
 “ puttees of Tulla Sulan, the Gurhwal hills resemble in this respect the fertile parts of  
 “ Kumaon ; and there, as a matter of course, the contentions concerning boundaries  
 “ were most frequent, and their adjustment most difficult. At the time of settlement,  
 “ the Gurhwalees of every pergunnah were distinctly informed, that even where no  
 “ demarcation had been insisted on, the present determination of their respective boun-  
 “ daries was final ; that no further discussions on the subject would in future be al-  
 “ lowed ; and that henceforth the presentation of petitions referring to dispossession of  
 “ one village by another would generally end by involving some party or other dis-  
 “ agreeably in the proceedings of the Criminal Court.

Right to waste lands, pas-  
 ture-grounds, and forests.

“ XVI.—Large portions of waste land, including  
 “ whole ranges and their vast forests, have been included  
 “ from olden time in the boundaries of adjacent villages, though not included in their  
 “ recorded Ruqba. No interference with this nominal allotment of waste (except in  
 “ the case of the Turai lands) has been attempted at the present settlement of Gurh-  
 “ wal. Such a division has been found useful in giving separate tracts for pasture\*  
 “ for the cattle of different villages ; but the inhabitants have been strictly forbidden,  
 “ and the prohibition is particularized in the Pudhan’s pottah, and also in the several  
 “ Ikrarnamahs signed by the shareholders of villages, from levying dues for the privi-  
 “ lege of grazing within certain boundaries, unless the custom of paying and receiving  
 “ them has been immemorial ; the burden of the proof of this resting with those who  
 “ demand such payments. Owing to the ignorance and retarded civilization of the  
 “ communities, the absence of Village Accountants, and the great desire that I all along  
 “ felt to leave the people as much as possible to themselves, and to inflict on them as  
 “ little as possible the visitation of Native officials, or the necessity of their own per-  
 “ sonal attendance at Tehseeldarees and Cutcherries, merely with the view to the  
 “ manufacture of certain documents and statements, the record of village administra-  
 “ tion must necessarily be imperfect ; and I hope that this Report will be considered in  
 “ a measure declaratory. I therefore take this opportunity of asserting that the  
 “ right of Government to all the forests and waste lands, not included in the assessable  
 “ area of the estates, remains utterly unaffected by the inclusion of certain tracts within  
 “ the boundaries of mouzahs, and that no one has a right, merely on account of such  
 “ inclusion, to demand payment for the use of pasture grounds, or for the permission  
 “ to cut timber or firewood. Neither does such inclusion interfere necessarily with  
 “ the right of Government to accept offers for Naiabad leases. But, as ordered in the  
 “ case of the Turai forests, so in the Hills (where, too, Zemindaree claims are rare),  
 “ the inhabitants of the villages most adjacent to the tract, or having it recorded within  
 “ their boundary, should have the first refusal of all such leases ; and no grant of the  
 “ kind should be allowed within a certain distance of the cultivated and culturable  
 “ waste lands of inhabited villages ; the distance to be fixed by the District Officer,  
 “ after receiving the report of the local Putwaree and Canoongoe, as to the position  
 “ and extent of the proposed clearing. If proper attention is paid to the subject of

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\* “The Gurhwalees do not migrate annually to the Turai to graze their cattle, their own hills af-  
 fording sufficient pasture.”

“ waste lands in Gurhwal, and every application for the privilege of redeeming them  
 “ be carefully considered, and decided on with reference to the abovementioned de-  
 “ claration now made by the Settlement Officer, I am of opinion that the prosperity of  
 “ Gurhwal, and the advance of its population and agriculture, and finally of its re-  
 “ venue, will be for the future even more satisfactory than during the years that  
 “ followed the expulsion of the Goorkhas, and the return of the peasantry to their  
 “ ancient homes. In every puttee there are one or two villages, very thriving in cha-  
 “ racter, and with surplus members who are available to become Paekast cultivators  
 “ of neighbouring estates. I have purposely, in the wilder districts (Chandpoor,  
 “ Budhan, Chuprakote, and lower Tulla Sulan, for instance) left such villages lowly  
 “ assessed, in order to increase their wealth, and render them reservoirs, whence its  
 “ currents can flow and fertilize the vicinity. Let the superfluous members of such  
 “ communities be distinctly told, that a good title will be given with the several  
 “ patches of fine redeemable land in the forest, and that all fictitious claims to  
 “ monopoly of the waste have now been repudiated as an usurpation of Government  
 “ rights, and as only tending to injure the country, by increasing the tigers and bears ;  
 “ and I am sure that the offers for new lands will increase tenfold. The practice here  
 “ pursued of the European Officer himself spending a large portion of the year in  
 “ moving about the district will enable him to make the Naiabad settlements almost  
 “ always himself ; and I hope I shall be excused for urging on those who may hence-  
 “ forth be connected with the administration of Gurhwal, the immense importance of  
 “ such personal investigation and arrangements on the spot.”

7. The Settlement Report and Statements now under submission prove satisfac-  
 torily, in my opinion, that Mr. Batten acted wisely in not inter-  
 Subject of Waste Lands. fering with the old village boundaries, which had been recog-  
 nized by Mr. Commissioner Traill, and carefully recorded, seeing that the existence of  
 those boundaries, previous to the 20 years' settlement, had not been found incompatible  
 with an immense increase of cultivation, and with a doubling of the Land Revenue ;  
 and it being now acknowledged that, during the period of the 20 years' settlement, the  
 agricultural prosperity of the country has immensely increased, enabling also the  
 succeeding Settlement Officer to improve the Government fisc in a noticeable degree.  
 The question arises,—Did the fact of the attention of Government having been drawn  
 to its own rights in the waste lands, by the application of European speculators for  
 lands on which to grow the great staple product, tea, necessitate or render advisable  
 the actual demarcation of separate village boundaries, within which no new settlement  
 could be made for the benefit of the State or the public at the revision now under  
 report ? I decidedly think not. If the tea-planting question had never been raised, it  
 is obvious from the past fiscal history of the province, and from all which has hitherto  
 been placed on record, that the tendency of actual demarcated limitation to the exten-  
 sion of tillage and clearing, would be to retard such agricultural progress among the  
 present occupants of the soil. But the plantation question having been raised, has  
 such a new element of value and importance been introduced into the country as to  
 overbalance all the advantages of non-interference,—that is, of leaving the rights of  
 the State and the people commingled and undivided throughout the greater part of  
 the mountain tracts ? Or does its introduction compel the enforced separation of  
 those rights *everywhere and in all localities* ? I think certainly not. The real difference  
 between the old Naiabad lease, and the fee-simple grant of recent years, is that the  
 former created a new mehal, productive of future Revenue to the State, and of pro-  
 prietary right and profit to the clearer of the waste, but left the use of the adjacent  
 forest in the same state as before ; while the latter necessitates a far more careful  
 preliminary examination than was previously required, of all the existing circumstances  
 of the neighbourhood ; and when that investigation has been completed, and has result-

ed in favor of Government, as represented by the applicant, places the latter in full and exclusive possession of a demarcated tract. The existence of this difference, I conceive, does not justify any revolution in the whole agricultural status of the province. On the contrary, I feel confident that, in accordance with the clearly and strongly expressed orders of the Secretary of State in his despatch of 1862, and of the Governor-General's Rules of 1861, the new state of things renders it more than ever incumbent on the local officers to take care that colonization does not turn into confiscation. The best way to secure this result is for the District Officers, if the site applied for was not set aside by the Settlement Officer, to settle each case on its own merits,—never without personal examination of the site applied for,—leaving it to the appellate authority (if referred to) to decide whether, in any case, a village or a neighbourhood has been too hastily declared to have claimed any tract beyond its real requirements for extension, pasture, or forest use ; or whether a wise discretion has been used in giving a field for his industry to the introducer of foreign capital, the creator of valuable staples, and the employer of remunerated labor.

In all the discussions which have hitherto taken place, one fact has I think been too much lost sight of, *viz.*, that the demarcation of a reasonable and appropriate boundary for a village holding a nominal right to what may be considered an unreasonable and improper extent of waste land, does not dispose of the whole question of Forest use. Many mountain tracts included within the nominal boundaries of particular villages are used by a whole neighbourhood of villages for the purposes of pasture, collecting of leaves, &c. This is more particularly the case in Central Kumaon (Palee and Baramundul) and in Lower Gurhwal, including the important pergunnahs of Barasewn and Choundkote. I hope I have said enough to prove that Mr. Beckett acted with judgment in following that part of his predecessor's policy which left Mr. Traill's recorded boundaries undisturbed, and which abstained from useless and perhaps mischievous demarcation, which would have involved an enormous expenditure of money, time, and trouble.\* At the same time, as shown by Appendix, Nos. 5 and 8, it is clear that care has been taken by the Settlement Officer to ascertain and record, for the benefit of Government and the public, all known sites of waste villages in the district, and all sites which, in his opinion, were suitable and available for tea-planting. Mr. Beckett however has made a slight mistake in paragraph 8 of his Report, where he says that the 4,417 mouzahs of his Appendix, No. 1, contain all the recorded 5,500 square miles of the district of Gurhwal. Some portion of this estimated area is represented by the waste and forest motzahs, which he has himself noted in the same Statement, and these so-called mouzahs have boundaries more or less accurately recorded.

8. It is highly probable that disappointment may be felt at the promulgation of the fact that large tracts of country with good soil, in the vicinity of markets, and with facilities of cheap labor, are not available for English settlers ; and that, as I have heard it expressed, the latter can only get the "leavings of the Puharees." But in reality such disappointment can only be felt by those who have used their imagination, rather than their reason ; or who have omitted to consult the most ordinary sources of information. The Central and Lower Himalayan pergunnahs are not howling wildernesses, but have been for ages occupied by an industrious agricultural population. This people is in possession of those tracts which are easiest of access, and which yield the least difficult and most profitable returns to industry. The country so occupied is therefore not available for foreign colonization, even if its climate were suitable, which it is not. The tracts of country lying

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\* As this duty could only be performed by the Settlement Officer himself, and would alone have occupied his time for many years.



between these richer slopes and valleys, and the untillable waste of the more inaccessible heights, are those into which the old occupants have hitherto been gradually extending their possessions; and it is a new thing for them to be told that such extension is an usurpation of State rights, and that they ought to give place to the dominant stranger, merely because, to the latter, the climate and situation are suitable and pleasant. The surprise of the inhabitants, at the expectations of foreign settlers, is certainly quite as strong as the disappointment of the latter at not finding the best part of the country at their disposal. Under proper management, however, *i. e.*, under a proper carrying out of the Waste Land Rules in those portions of the province where the risk of interference with an occupant population does not intervene as an obstacle, and where the comparative sparseness of the population has still left many good sites available for settlers, the introduction of capital, and the demand for labor, will go hand in hand; and while the settler will benefit by the free and unencumbered field for his money and industry, the peasant proprietor of a few terraces in the fully cultivated and over-crowded villages of the old occupied tracts will be too glad to procure at some distant but not quite foreign plantation a cash return for his labor, less burdensomely acquired, and more certain than his hire as a coolie at Nynce Tal or Mussoorie. Already more than 1,000 Puharees are drawing monthly wages in Kutyoor, in Kumaon, the very puttees described by Mr. Batten in 1846 as waste, and *therefore* as the most available for the experiment of tea-growing. I hope that his similar expectation for Gungolee and Seera in Kumaon, and such comparatively waste tracts, may be realized in due time; but before tea-planting can be placed on a secure and sound footing, the dream of obtaining from Government, on fee-simple terms, profitable estates in the heart of the occupied country, must be abandoned.

9. Paragraph 24 of Mr. Batten's Gurhwal Settlement Report contains full extracts on the subject of the Hill tenures, from a Revenue Report of Mr. Traill, who had also previously touched upon property in the soil, and rents paid by the actual cultivators, in connection with the Government demand, in his Statistical Sketch. Mr. Batten has also given his own account of the hill tenures, in his Reports on Gurhwal and Kumaon. As no controverted points have now been raised, which require discussion by myself, I am content generally to refer the Board to the published papers, for information as to the state of superior and inferior holdings, previous to the present revision of settlement, and to confine myself to the following remarks:—In his 27th paragraph, Mr. Beckett rightly designates the general character of his own settlement as *ryotwaree*, in accordance with the actual status of affairs. In Gurhwal, revenue and rent are almost convertible terms, and the great mass of the cultivators may be considered as proprietors of the plots of ground which they cultivate, liable only for the payment of their quota of the Government demand, plus the fee which they contribute to their Pudhan or Sudder Malgoozar for the trouble and risk of collection. Where superior rights, carrying with them the realization of rent, or, in its place, dues representing rent as formerly existing, these, under the revised arrangements, which have been gradually anticipated during the period of the 20 years' settlement, have been substituted by a Malikana never exceeding 20 per cent. on the Government demand as a fixed and certain amount collected under authority; and thus a vast amount of intestine disputes and vexatious litigation has been got rid of. I will not say that all the proprietor landlords are content with the new arrangement, but there has been no noticeable opposition to a change which the advance of events, and the increasing intelligence and means of the cultivating classes must sooner or later have brought about. Even to the plaintiff, *Syunas* or *Hissedars*, suits for the realization of miscellaneous dues, such as are detailed in Mr. Batten's Reports, were becoming highly inconvenient and irksome; and it has for some time been felt by both payers and receivers, that a time was coming when a fixed rate of cash percentage must be substituted for legs and breasts of goats, fees of three-anna

pieces (Seemashees), and other offerings. In the case of the Thokdars Mr. Beckett, both as District Senior Assistant and as Settlement Officer, took the greatest pains to carry out the spirit of the Government orders of 1856, and to ascertain and decide, from the examination of reliable records, who amongst the holders of Thok-daree pottahs were parties really entitled, by prescriptive right, to be considered proprietary superiors, who were only the creation of Mr. Traill's later years, or of his successor's, brought into existence by the supposed necessities of village police duties, now no longer required at their hands. In regard to the inferior or nominally inferior tenants of the soil, the *Khaekur* of the hills stands out as the representative of the *Kudeemee* or *Mouroosee Kastkar* of the plains, with this essential difference, that in no instance does he own his position to any legislative enactment like Act X. of 1859, and that, to the best of my belief, he has not been created by the spontaneous proceedings of the local authorities. If the Board will take the trouble to consult the data recorded by Mr. Traill a very few years after the introduction of British rule, they will find that the right of cultivating occupancy remained with the descendants of former grantees (*Thatwans*) even where the *that* or grant of proprietary right had been conferred by the sovereign power on new superiors; and that, in all cases, whether of such descendants or of ordinary cultivators continuing from father to son in the undisturbed use of their ploughs, the contracted state of the laboring population, as compared with the extent of arable land, has always been sure to secure the most favorable terms to the occupant tenants of the soil.

Practically, therefore, the latter, if found to be rightfully claimants of the title *Khaekur*, whether as *ex-Thatwans* or as uninterfered with and necessary cultivators, are kept in possession so long as they pay their quotas of Government revenue, plus a small amount of *Malikana*, including *Malgozaree* fees, though they so far differ from their *Thatwan* co-villagers, inasmuch as they cannot alienate this holding.

*Paekast* cultivators for the most part cultivate in villages adjacent to their homes on the most favorable terms, and indeed they may almost be considered as proprietary occupants of the soil which they cultivate, except that they cannot claim it as belonging to their own village, and of course cannot alienate it.

In Gurhwal, the *Sirthan* tenant corresponds with the tenant-at-will of the plains, and, as a general rule, holds by an annual written agreement. The *Sirthan* of one shareholder in a village is often found to be a co-sharer himself, who has spare time to devote to work beyond his own (perhaps too few) fields, and the whole arrangement of proprietary and non-proprietary holding is thoroughly understood by the people themselves. Moreover, the Settlement Officer has not recorded such temporary holdings in his *Furd Phaut*, or record of revenue and rent liabilities. Under these circumstances suits similar to those triable under Act X. of 1859 in the plains are not likely to arise in Gurhwal; and if they do occur, can be disposed of in the easiest manner as matters of simple contract between man and man; while a reference to the village record (a copy of which, so far as it affects himself, is eagerly taken and zealously preserved by every villager) at once enables the Revenue Officer to dispose of every case similar to those triable in the plains under Act XIV. of 1863.

10. I trust sanction will be accorded to the cesses in the margin, amounting

|              |              |                                                                                        |
|--------------|--------------|----------------------------------------------------------------------------------------|
| Cesses.      |              | altogether to 10 per cent. on the Government jumma, which,                             |
| Putwaree ... | 4 per cent.  | with the assent of the people, and with my approval, the Settlement                    |
| Dak cess ... | 3 per cent.  | Officer has at the present revision fixed to be collected                              |
| School ...   | 3 per cent.  | at the same time with, and in excess of, the Government de-                            |
|              | —            | mand. With the exception of <i>Pudhancharee</i> or <i>Syancharee</i>                   |
| Total,       | 10 per cent. | fees, there are no village expenses in hill mouzahs falling on the profits of the vil- |
|              | —            | lagers. The altogether new state of village records, consequent on the land measure-   |

ment, rendered it absolutely necessary not only to have more Putwarees, but to have a better class of men thoroughly acquainted with Khusrah Survey. The Government pay of Putwarees under the old system was Rs. 5 per mensem. During the last six years the old servants, who were incapable of learning Khusrah work, were, as opportunities offered, replaced by qualified men; while those who were capable of learning were required to qualify themselves. There are no village Putwarees in the Hills similar to those in the plains; and by the economical arrangement of a cess, the Settlement Officer has organized an establishment of Putwarees who are in every respect more efficient as Government servants, for the discharge of their various revenue and police duties, and at the same time a valuable responsible agency, which can be employed for the correction of village records. With the aid of this cess, Putwarees now receive Rs. 10 per mensem. There appeared no prospect whatever of any extra establishment being sanctioned from the Imperial Funds, and therefore it became necessary here, as elsewhere, to look to the Native community for the payment of expenses. No objections have been made, although the people were fully aware of the arrangement before they agreed to it. The fact is, they felt the danger of allowing unscrupulous and irresponsible men to interfere with their recorded rights; they have been accustomed to look to the District Officer for protection in every way, and they no doubt saw the advantage of maintaining their connection with the Officer, without the intervention of any middle men; and the only way this difficulty could be met, was by the people paying a cess to cover the extra expense requisite to procure a sufficient number of qualified Putwarees. The arrangement has been successfully made by the Settlement Officer, with the assent of the people; and I trust it may meet with the approval of the Board and Government. Henceforth the Putwaree, in addition to his usual Revenue, Police and Municipal duties, will have much work connected with the record of rights and measurement in case of disputes, and will altogether act as a superior kind of Ameen. I do not think 4 per cent. (which is a trifle only for each village) can be considered a disproportionate or excessive call on the several village communities. This rate is as nothing compared with the cess sanctioned by the Rural Police Act.

The Dâk cess, by providing an establishment of paid runners (themselves the inhabitants of the country), has relieved the people from the irksome duty of passing on from village to village, anyhow and at any time, and without method or rule, the public reports to and from the several Putwarees and other officials; while it has provided a convenient and safe means of private letter communication between the inhabitants of the whole district, free of postage.

The School cess in the Hills is only a carrying out of the Lieutenant-Governor Mr. Colvin's principle, first enunciated in the case of the Seharunpore Settlement Rules. One per cent. however would not have provided for a sufficient number of Schools in the large tract of country, where education is so urgently required; and I trust that sanction may be given to the School cess, as established by Mr. Beckett, and as defraying the expense of the excellent Hulkabundee scheme now in operation.

11. The Settlement Officer is of opinion that the Sudaburt puttee of Dussowlee requires to be re-measured before a correct record of rights can be prepared. The villages were measured when Mr. Strachey was Senior Assistant Commissioner, in charge of Gurhwal, in blocks; there is no field measurement, and the *Furd Phaut* was prepared by the villagers, quite independent of the measurement; consequently the record is most imperfect. The Sudaburt Funds are disposed of, and the present distribution cannot be interfered with, without closing one of the established Branch Dispensaries, which would be very undesirable; therefore, unless a grant of Rs. 1,500 be sanctioned this,

Dussowlee Sudaburt Pergunnah.

puttee must remain as it is, the only one in Gurhwal which has not a complete record of rights. The Dussowlee people complain very much of having been denied the advantages which have been so fully secured to every other puttee of the district.\*

12. No. 25 Appendix is a Pergunnah Map, showing pretty correctly the position and name of every village in the pergunnah of Choundkote.

Maps.

Mr. Beckett has prepared similar maps for the whole district; they have not all yet been colored, or quite completed. These maps would have been valuable, were it not certain that the information they give will be more correctly, because more scientifically, given in the topographical maps of the Survey Establishment now employed in Gurhwal; and Mr. Beckett will, if the Board does not wish to have them, make over his maps to the Officer in charge of the Survey, to whom they will be useful in many ways,—especially in giving the correct spelling of the names of the villages.

13. I have not thought it necessary in my Report to discuss paragraph by paragraph every topic mentioned in Mr. Beckett's Report. Some of

Conclusion.

the subjects left untouched by me on the present occasion have formed the subject of previous correspondence existing in the Offices of the Board and Government. I have now openly declared my own sentiments on all points which I have considered to be of prominent importance, and I can only further add the expression of my hope that superior authority will sanction the re-settlement as it stands, and join with me in sincere and unaffected thanks to Mr. Beckett for the care, zeal, and ability which have characterized his "labor of love" among the Gurhwalees, and in congratulations at the prospect of his similar success in Kumaon Proper. I cannot conclude this Report without also hoping that the acknowledgments of the Board and Government will be liberally given to the indefatigable and upright Deputy Collector, Jaikishen Joshee, who has afforded the most valuable services to Government during the Gurhwal operations.

I have, &c.,

H. RAMSAY, *Lieut.-Col.*,

Commissioner.

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From Secretary to the Board of Revenue, to Secretary to Government, North-Western Provinces (No. 773).—Dated Allahabad, the 27th November, 1865.

SIR,—I am desired by the Board of Revenue to submit, for the approval of

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|---------------------------------------------------------------------------------------|----------------------|
| 1.—Commissioner of Kumaon to Board, dated 25th July, 1865, No. 200B.                  | His Honor the        |
| 2.—Senior Assistant Commissioner of Gurhwal, to Commissioner, dated 25th March, 1865. | Lieutenant-Governor, |
| 3.—Appendices, Nos. 1 to 19, and 21 and 22.                                           | the Reports          |
| 4.—List of Routes, Appendix, No. 20.                                                  | of the Commis-       |
| 5.—Skeleton Map, showing Divisions and Sub-Divisions, with Index, Appendix No. 23.    | sioner and of the    |
| 6.—Do. do. Putwarees' Hulka, Appendix, No. 24.                                        | Senior Assistant     |
| 7.—Sample Pergunnah Map, showing every village, Appendix, No. 25.                     | Commissioner (Mr.    |
| 8.—Statement, No. XIV.—Abstract Pergunnahwar Settlement Statement.                    | Beckett), with the   |
| 9.—Statement, No. XV.—General Settlement Statement of the Mouzahwar Annual Jumma.     |                      |

Tabular Statements detailed in the margin, of the settlement of the district of Gurhwal, and to recommend for sanction the revised jumma as follows :—

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\* With reference to Mr. Beckett's 26th paragraph, I have reported to Government, after carefully examining all the Sunnuds, that the Kumlesur assignment is not purely "Sudaburt," and therefore it cannot be interfered with.

|                               | F. S. 1269,<br>1861-62. |     |    | F. S. 1270,<br>1862-63. |     |    | F. S. 1271,<br>1863-64. |     |    | 1272 to 1274,<br>1864-65<br>to<br>1866-67. |     |    | 1275 to 1284,<br>1867-68<br>to<br>1876-77. |     |    | 1285 to 1298,<br>1877-78<br>to<br>1890-91. |     |    |
|-------------------------------|-------------------------|-----|----|-------------------------|-----|----|-------------------------|-----|----|--------------------------------------------|-----|----|--------------------------------------------|-----|----|--------------------------------------------|-----|----|
|                               | Rs.                     | As. | P. | Rs.                     | As. | P. | Rs.                     | As. | P. | Rs.                                        | As. | P. | Rs.                                        | As. | P. | Rs.                                        | As. | P. |
| Government demand,            | 76,701                  | 4   | 0  | 90,337                  | 12  | 0  | 95,626                  | 8   | 0  | 95,563                                     | 0   | 0  | 95,643                                     | 0   | 0  | 96,311                                     | 0   | 0  |
| Sudaburt (Local Agency) ... } | 3,051                   | 5   | 0  | 3,320                   | 12  | 0  | 3,593                   | 0   | 0  | 3,593                                      | 0   | 0  | 3,593                                      | 0   | 0  | 3,626                                      | 0   | 0  |

2. The demand of the last year of the expired settlement was Rs. 69,274 ; and the increase effected by the present settlement is Rs. 27,037, or 39 per cent. The principles by which Mr. Beckett was guided in making his assessment are described in paragraphs 19th and 20th of his Report, and the Board have every reason to believe that the demand is moderate and equably apportioned.

3. The former settlement was made without a survey, the extent of cultivated area having been assumed arbitrarily ; but it was represented to Government that a khusrakh survey, in which the smallest fields should be correctly shown, might be made without difficulty, and that without such a survey there was no possibility of making a satisfactory settlement.

An expenditure of Rs. 75,000 was sanctioned for the purpose, and the duty was entrusted to Jykishen Joshee, Deputy Collector, lately deceased.

The work was commenced in 1856, and, after having been interrupted by the mutiny, was completed in 1861, at a total cost of Rs. 74,005, which included the preparation of the record of rights. This will be recovered in less than 3 years by the increase of revenue under the present settlement.

4. The Board had been led to consider the expediency of effecting such an exact demarcation of village boundaries as should exclude and leave clearly defined all tracts that might be made available to settlers under the Waste Land Rules ; but the Commissioner, in the 8th and 9th paragraphs of his Report, where the subject is treated in all its details, has shown that the measure would be incompatible with the maintenance of the prescriptive rights of the people, and would exclusively occupy for many years the time of a European officer, who would require to be specially deputed for the purpose.

5. Mr. Batten's long experience and intimate knowledge of the district pointed to him as an officer peculiarly qualified to furnish a trustworthy opinion on the subject, and the Board therefore sent him extracts of those portions of the Reports of the Commissioner and Settlement Officer which related to village boundaries, and requested him to favor them with an expression of his views on the points under discussion. From his reply, of which copy is annexed, it appears that he entirely concurs in the opinions recorded by the Commissioner, and, in fact, that Colonel Ramsay and himself had arrived at the same conclusions after mutual consultation.

6. Assuming that to apportion to each village the precise amount of uncultivated land to which it might be held to be entitled and to mark off separately all such lands as were supposed to be the exclusive property of the State would be inexpedient, if not impracticable, no exact demarcation of boundaries was attempted. Mr. Beckett reports that the 5,500 square miles comprised within the limits of the district are apportioned to the 4,417\* villages which it contains ; every mile, including the snowy

\* The Commissioner observes that these 4,417 villages are exclusive of the waste and forest Mouzahs.

peaks, being within the *nominal* boundaries of some village or other. "These boundaries," he writes, "have existed from time immemorial. During the currency of the settlement, all villages had the power of increasing cultivation without being liable to any extra revenue. They had the right of pasturage, and of using the spontaneous products within their recorded boundaries, and this right was generally participated in by adjoining villages having little pasture-ground or forest within their boundaries. No villages had zemindaree or manorial rights, which authorized them to dispose of timber, claim pasturage fees, or exclude their neighbours, who from olden times had enjoyed the privilege of grazing their cattle, cutting wood, gathering leaves, &c. Under this system cultivation increased very much during the last settlement. Small hamlets became large villages, and new settlements sprang up, which in 1840 probably only existed as cattle-sheds, if they had any existence at all."

7. The boundaries described in the Measurement Book of 1823 were recognized at Mr. Batten's 20 years' settlement, and have, as a rule, been retained unaltered. They are rivers, ridges or ravines, or other natural features, which cannot be mistaken. Disputes were of rare occurrence; but where any were found to exist, they were adjusted on the spot, and the boundaries defined by pillars. These arrangements the Board do not hesitate to recommend for the approval of Government.

8. A revised sub-division of *pergunnahs* was required in order to render the villages of the several *puttees* accessible to their respective *Putwarees*. The arrangements are detailed in Appendix 7 of the Settlement Officer's Report.

9. In his Appendix, No. 5, Mr. Beckett has furnished a list of waste lands which may be offered for sale and be made available as sites for tea plantations. He writes:—"I was much disappointed at finding so little good waste land; and in order that none should escape notice, I crossed every ridge and hill, in the hope of discovering good tea sites, as I am fully alive to the advantage of having a thriving plantation in every *puttee* if possible. I am afraid many of the sites specified in Appendix 5 will be found too high for tea."

10. The orders of Government, No. 2044, dated 18th October, 1859, directed that claims to the rent-free holding of small grants of *Goonth* or *Temple* lands should be investigated at the settlement. Invalid tenures, with an aggregate area of 181 *beesees* or acres, have been resumed. In some cases, in accordance with the wishes of the villagers, the grants have been left in the possession of the grantees, the assessed revenue being borne by the village at large. Six *mañfee* estates, with an area of 366 *beesees*, have been left rent-free, and 108 *beesees* have been resumed and included in the *Khalsa*.

11. There are no paid Village Police in the district, and therefore the usual Police Statement has not been furnished with the Settlement Report.

12. The settlements have been made with the resident proprietors. The cultivating and proprietary tenures are described in the 27th, 28th, and 29th paragraphs of Mr. Beckett's and the 9th paragraph of the Commissioner's Report. Colonel Ramsay states that the great mass of the cultivators may be regarded as the proprietors of the plots of ground which they cultivate, liable only for the payment of their quota of the Government demand, with the addition of the fees payable to the *Sudder Malgoozar* for the trouble and risk of collection.

13. The cesses which have been imposed amount to ten per cent. on the Government demand. Of these, the *Putwaree* cess is four per cent. The *Putwarees* were formerly paid by Government. They received the very inadequate salary of Rs. 5 per mensem, and were generally incompetent. Competent men, each of whom has the superintendence of a circle of villages, have now been appointed on monthly salaries

of Rs. 10. Their duties are much more multifarious than those of Putwarees in the plains, and the remuneration which has been provided for them is not more than sufficient.

14. Before the present settlement, the villagers were required to provide for the conveyance of all letters sent by post, and this duty fell very heavily on villages situated in the vicinity of lines of communication. The Dāk cess of Rs. 3 per cent. on the jumma, which has now been imposed, has made provision for regular postal communication throughout the district, and the burthen of the cess, which is very light, falls equably on all.

15. A school cess of Rs. 3 per cent. on the jumma furnishes a fund for the payment of village school-masters at Rs. 5 per mensem, and has placed the means of learning to read and write within reach of the large mass of the people. The Schools are reported to be well attended.

The Tehseelee Schools are open to boys who desire a higher class of education.

16. The Commissioner, in his 11th paragraph, recommends a re-measurement of the Sudaburt puttee of Dussowlee, as a correct record of rights cannot otherwise be prepared. The inhabitants of the puttee complain much of having been denied the advantages which have been secured to every other puttee in the district. As the Sudaburt funds have been assigned to special purposes, and any appropriation from them would involve the closing of one of the Branch Dispensaries, the Commissioner desires sanction to a grant of Rs. 1,500 to effect the measurement. It is very desirable that the tenures in Dussowlee should be as correctly defined as they have been elsewhere, and the Board therefore support the Commissioner's recommendation.

17. The Board would invite His Honor's attention to the very pleasing picture of the increased prosperity of the district which Mr. Beckett has drawn in the 5th paragraph of his Report.

18. They concur with the Commissioner in recommending that the Statements 1, 2, 4, 5, 7, 8, 9, 10, 11, 13, 15, 16, 17, 18, 21, 23, and 24, should be printed with the Settlement Report.

19. In Jykishen Joshee, who was indefatigable in superintending the measurements on which the settlement has been based, the Government has lost the services of a very valuable officer.

20. In carrying through the work of which the Board submit this brief Report, the Senior Assistant Commissioner, Mr. Beckett, has displayed unwearied zeal and considerable intelligence, and they trust that His Honor will award to him the high credit to which, in their opinion, he has entitled himself.

I have, &c.,

W. C. PLOWDEN,

Secretary.

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#### RESOLUTION,—No. 309.

REVENUE DEPARTMENT.

*Dated Allahabad, the 24th April, 1866.*

READ again the Report on the settlement of the district of Gurhwal, in the Province of Kumaon, by Mr. J. H. Batten, dated the 15th August, 1842.

Read the following Proceedings in this Department :—

- Nos. 146 to 152, dated 18th October, 1859.
- Nos. 22 to 29, dated 5th November, 1864.
- Nos. 49 and 50, dated 24th December, 1864.
- Nos. 41 to 43, dated 12th August, 1865.
- Nos. 16 to 18, dated 16th December, 1865.

Read a letter, No. 773, dated the 27th November, 1865, with its enclosures, from the Secretary to the Board of Revenue, North-Western Provinces.

**OBSERVATIONS.**—The published Reports of Messrs. Traill and Batten, on the occasion of previous settlements, fully detail the former state of Gurhwal, its trade and physical condition, and the Revenue and Police systems previously in force; Mr. Beckett has therefore, in his present Report, confined himself chiefly to a description of the settlement which has now been completed, and to a narration of the progress effected in the district since 1840.

At the previous settlements no measurement even of the cultivated areas of the villages was found practicable; and the areas recorded were founded on the results of local enquiries, and on the statements of officials, whose opinions could not be implicitly relied upon; for the new settlement a regular field measurement of the whole cultivated area was therefore considered necessary: this was commenced in 1856, and after being interrupted for 18 months by the mutinies, was completed in 1861, at a cost of Rs. 74,005, the total measured area being 1,49,787 acres.

The Government demand in 1860, the last year of the former settlement, was Rs. 69,274, and the highest jumma now proposed is Rs. 96,311, showing an increase of Rs. 27,037, or 39 per cent.

In fixing the present demand, the chief elements taken into consideration have been the population in relation to the total area and cultivation, permanent and occasional, together with any special features, such as position, vicinity to jungle or otherwise, extent of culturable land, &c.

The entire area of the Gurhwal district is roughly estimated at 5,500 square miles, including every description of land cultivated, culturable and unculturable. The whole of this area is said by Mr. Beckett to be included within the nominal boundaries of the different villages which have existed from time immemorial, the villagers during the last settlement having the right to extend their cultivation within these limits, without payment of extra revenue, and also the right of pasturage, and of using the spontaneous products of the soil; but not to sell timber, claim pasturage fees from other villages, or exercise such like Zemindaree or manorial rights.

The Commissioner is of opinion that Mr. Beckett has acted rightly in adhering to these nominal boundaries. It is a continuation of the policy adopted by Mr. Batten in 1842; and Colonel Ramsay considers that the great increase of cultivation, and of agricultural prosperity generally in Gurhwal since 1842, proves that Mr. Batten was right in not disturbing the old boundaries. He is also of opinion that the introduction of the tea-planting element since 1842 affords no ground whatever for reversing the former policy on this subject; and that the proper course to pursue, when any site applied for has not previously been set apart by the Settlement Officer, is for the District Officer to take up the case, and decide it upon its merits, after local enquiry and personal examination of the place. He observes, also, that many of these



mountainous tracts included within the nominal boundaries of some village are and have been used for many other neighbouring villages for the purposes of pasturage, collecting of leaves, and the like, and that such rights also require consideration.

The great expense and the enormous labor and time which would be required to demarcate for every village the reasonable and proper limits within which the inhabitants should in future enjoy zemindaree rights are additional arguments against any change in this matter.

The Board of Revenue, though at first inclined to think that exact village boundaries might be demarcated, after consulting Mr. Batten, have come to the conclusion that this would be inexpedient; and they approve therefore of Mr. Beckett's proceedings, by which the ancient nominal boundaries have been retained unaltered.

The sub-divisions of pergunnahs have however been revised, in order to facilitate the creation of convenient circles of villages for Putwarees.

This important question of demarcation of boundaries has been separately considered and disposed of by the Lieutenant-Governor in my letter, No. 259A., of the 7th instant; it is therefore sufficient to observe here that Mr. Beckett's treatment of the subject in Gurhwal has been judicious, and harmonizes with the views adopted by Government in respect of the same question in Kumaon.

It is observed that water-mills, the property of private individuals, have been for the first time assessed. The temple land grants and maâfee claims have also been investigated; 8,136 acres of temple land grants have been upheld, and 182 acres resumed, the sub-settlement of the former amounting to Rs. 7,139; 369 acres of maâfee lands were excluded from settlement, 108½ acres being resumed.

The Sudaburt assignments have been separately reported upon and disposed of by Government; the proceeds of the estates have been devoted, under the control of the Local Agency, to the erection and maintenance of Dispensaries established mainly for the benefit of the numerous pilgrims to the shrines at Budreenath and Kedarnath. The great utility of these institutions is unquestionable.

The settlements made are stated to be to a great extent Ryotwaree, the cultivators who comprize the great majority of the people paying their quota of revenue cesses and malgoozaree fees direct to this Government.

Cesses of 4 per cent. for Putwarees, 3 per cent. for Dâks, and 3 per cent. for Schools, have been imposed; the old arrangement of giving personal service for the repairs of roads being retained, as at once the most equitable and convenient under the peculiar circumstances of this district.

With reference to the reports now submitted, the Lieutenant-Governor regards as matter of congratulation the very satisfactory completion for the first time, and under difficult circumstances, of a trustworthy Khusreh survey of the cultivated area of the district, which has been in the majority of instances personally checked and tested by the Settlement Officer.

The assessment has proceeded in the better cultivated portions of the district, upon a calculation of averages in relation to population, and in the less populous pergunnahs, upon the character and number of the population, amounting in fact somewhat to a poll-tax. The chief reasons which recommended such an estimate as more accurate in respect of the paying powers of the people, than a census of the flocks and herds, were the facilities for concealment of the latter; and the action of the Settlement Officer, which was in accordance with the traditions of the people, is considered to have been judicious.

The Commissioner forming his opinion after personal observation, and from long experience of the district, affirms the fairness of the assessment, which is further attested by the ease and punctuality with which the revenue of the past and preceding years has been paid up.

The omission of Mr. Beckett to include the Government Forest lands in his enumeration of villages has been duly noticed by the Board.

The conversion of miscellaneous or manorial dues, hitherto paid in kind or by personal service, into fixed cash payments not exceeding 20 per cent. of the rent, is a very useful and proper measure.

The traces noticeable in this remote district of the original Hindoo agricultural system in the still subsisting landed tenures are interesting, from their similarity to those found in Central and Southern India, where the pure village system still to some extent prevails.

The proprietary Ryotwaree holdings are evidently the result of the Hindoo Law of Inheritance, acting on the original Bhyachara tenure; and the existence of the Khaekars with similar rights, excepting only that of alienation, affords satisfactory evidence that the Mouroosee ryot is not, as has been affirmed, a novelty of our own creation.

The measures taken by the Settlement Officer for recording and maintaining existing rights of all descriptions appear to have been very carefully and judiciously carried out, and may be accepted as sufficient and satisfactory. The several cesses imposed for the maintenance of Putwarees, Postal services and Schools, amounting to 10 per cent. upon the jumma, appear necessary and moderate in amount, and are sanctioned.

The re-measurement of the Sudaburt Puttee Dussowlee, at an estimated cost of Rs. 1,500, is obviously desirable; and, under the circumstances explained, is approved.

The printing of the Reports, and certain of the Appendices, as recommended by the Commissioner and the Board, is also approved.

It affords the Lieutenant-Governor great pleasure to record his full approval and sanction to this settlement for a period of 30 years, at the revised jumma recommended in paragraph 1 of the Board's letter. His Honor does this with the less hesitation because Mr. Beckett's Report, and the useful Appendices and Statements which accompany it, sufficiently testify to the care and ability with which this important duty has been accomplished; while the testimony of the Commissioner, whose great local experience and knowledge of the people render his opinion especially valuable, is an additional guarantee for the character of the work.

It remains only to convey to Mr. Beckett the cordial thanks of the Government for the energy, ability and judgment, with which he has so well and thoroughly completed the duty assigned to him.

Mr. Beckett is now engaged in the probably still more difficult task of the re-settlement of Kumaon, in the execution of which the Lieutenant-Governor is satisfied that he will exhibit the same valuable qualities as have proved so useful in Gurhwal; and that if his health and strength are spared, he will not fail to bring it to a conclusion as creditable to himself, and equally advantageous to Government and the people.

To Colonel Ramsay the thanks of the Government are also due for his careful and able supervision of these proceedings.

The death of Deputy Collector Jaikishen Joshee, an able and honest officer, is greatly to be regretted. His services, especially in superintending the field measurements, appear to have been very useful to the State, and fully to have merited the commendation bestowed upon him.

By order of the Hon'ble the Lieutenant-Governor.

R. SIMSON,

Secretary to Govt., N. W. P.

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ORDERED, also, that copy of this Resolution be forwarded to the Secretary to the Board of Revenue, North-Western Provinces, for information and guidance, and for communication to the Commissioner of Kumaon.

*This title page should follow the doc.<sup>t</sup> stands in front of.*

**REPORT**

**ON THE**

**SETTLEMENT OF DEHRA DOON:**

**EXCLUSIVE OF JOUNSAR BAWUR:**

**NORTH-WESTERN PROVINCES.**

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**ALLAHABAD:**

**PRINTED AT THE GOVERNMENT PRESS, NORTH-WESTERN PROVINCES.**

























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41

G U N G A S  
B R I T I S H

| TOPOGRAPHICAL REFERENCES                                                            |                                     |
|-------------------------------------------------------------------------------------|-------------------------------------|
|  | Pergunnah Capital .....             |
|  | Tcheeldaree .....                   |
|  | Police Station .....                |
|  | Outpost .....                       |
|  | Dak Station .....                   |
|  | Several of the above united .....   |
|  | Principal Station & T. Survey ..... |
|  | Village Site .....                  |
|  | Fort .....                          |
|  | Temple (Hindoo) .....               |
|  | Musjid (Mahomedan) .....            |
|  | Church .....                        |
|  | Metalled Road .....                 |
|  | Unmetalled Road .....               |
|  | River .....                         |
|  | Nuddee or Kuvul .....               |
|  | High Bank .....                     |
|  | Sand .....                          |
|  | Sheet or Swamp .....                |
|  | Tank .....                          |
|  | Canal .....                         |
|  | Pergunnah boundary .....            |
|  | Village boundary .....              |
|  | Hills .....                         |

42

R M O O R J O U N S U

A DOON

with

E AND LANDOUR



Miles = 1 Inch



*H. C. Wain*

*Secretary Board of Revenue N.W.P.*

DRAWN ON TRANSFER PAPER BY M. DEROSAIRE

DEHR

MUSSOORI



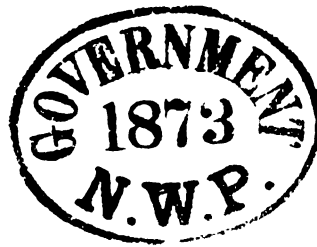
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*Compiled in the Office of the Board of Revenue N.W.P  
and Lithographed by M. Derosaire, Mappist  
Allahabad, January 1872*



PER BY M. DEROSAIRE



RESOLUTION No. 1245A. OF 1873.

N.W. Provinces — REVENUE DEPARTMENT.

*Dated Nynee Tal, 14th June, 1873.*

READ—

Letter from Board of Revenue, No. 714, dated 2nd August, 1871, forwarding the Settlement Report of the Dehra Doon District.

OBSERVATIONS.—The papers now before Government contain an account of the resettlement of the Dehra Doon District, completed by Mr. C. A. Daniell in 1866. The report has been submitted after a very great delay.

2. The first regular settlement of the district was made in 1840 by the Superintendent, Colonel Young, who settled with the cultivators as proprietors each of his own holding, and imposed on them an assessment of three annas per local beegah, or 14½ annas per acre on all land, good or bad alike. The history of the proprietary and cultivating rights thus created will be referred to afterwards. The assessment worked ill,—(1) because it was unequal in its pressure; (2) because the measurements were very inaccurate; (3) because it took no account of the uncultivated land. In 1848 the settlement was revised by Mr. Ross, who corrected these errors. Colonel Young's gross assessment in 1840 was Rs. 26,644; but, deducting the allowance of proprietors, and remissions subsequently made, the actual demands of 1847-48 appear to have been Rs. 19,264. Mr. Ross's revision raised this to Rs. 19,590, besides which he fixed a revenue, beginning with Rs. 1,180 and rising to Rs. 8,526, on 11 grants. The revenue of the Khalsa villages in 1863 appears to have stood at Rs. 20,505. The cultivated area of the Khalsa villages in 1848 was 29,884 acres, of which 7,356 were irrigated. The revenue rate on cultivation was, therefore, 10 annas 6 pie.

3. Mr. Daniell commenced the work of assessment in 1862 (the khusrah survey having been completed in 1860-62 under Mr. Manderson's supervision), and finished it in 1864. In that year Sir William Muir, then the Senior Member of the Board of Revenue, visited the district and found that (1) his assessments, at least of the better classes of villages, were too light; (2) that he had not fixed any demand on the culturable waste and forest areas included in the village boundaries. Mr. Daniell accordingly went over his work again, and finished it in 1866.

4. His system of assessment was to impose rates on three classes of soil (meesun, roslee-dakur, and sankra, or manured, common loam, and sandy soil), the rates varying according as the soils are irrigated and unirrigated. There were thus six rates in all. The villages, again, he divided into three classes—good, middling, and bad,—and drew out different sets of rates for each class of villages. His report nowhere shows what were the areas of each soil, nor yet what villages or how many were placed in each class.

5. The manner in which he worked out his average rates is shown in his paras. 23 to 37. It appears to have been this:—In a certain number of selected villages he ascertained the area of land held by cultivators on pottahs (*i. e.*, leases fixed or sanctioned by the Courts or leases given by the zemindars), and he estimated the value of the produce in lands which paid rent in kind. Having obtained this figure as an actual, he took it as the sum which his soil rates multiplied into soil areas must produce, and he distributed the rates over the soils so that the rate on each soil should bear the same proportionate relation to the rates on the other soils which their known relative fertility bears to each other. It does not appear that this system of fixing rent-rates on the natural soils is that which is adopted among the people themselves.

6. Mr. Daniell nowhere states what the assumed assets resulting from his assumed soil-rates are, and it is, therefore, impossible to tell how far he adhered rigidly to his

average rates, or how far he allowed free play to his own judgment. Nor does his report anywhere state what his assessment on the cultivated land actually was, as distinguished from that on the waste lands and forests. The total assessment on Khalsa villages was Rs. 31,637. From a report quoted by the Board (para. 25), it appears that of this a sum of Rs. 4,666 was due to waste land, forests, and sayer assets, leaving the assessment derived from cultivated land at Rs. 26,971. The cultivated area of the 339 Khalsa villages in 1866 was 37,181 acres, and the incidence of the revenue on it was 11 annas 7 pie, which is a rise of 1 anna 1 pie over the revenue rate of 1848. Of these 37,181 acres, 12,663, or one-third, were irrigated. In 1848, 7,326 acres, or one-fourth of the cultivation, was irrigated. This increase (due to new canals) would alone account for a large part of the rise in the general revenue rate. Mr. Daniell calculates that, of the revenue as fixed by him, Rs. 4,747 are due to canals, which irrigate 8,085 acres. The irrigation rate is, therefore, 9 annas 4 pie, and this rate multiplied into the increased proportion of irrigation (one-twelfth of the cultivated area) accounts for a rise of 9 pie per acre. The entire rise, therefore, attributable to improvement in the climate, increase of population, and rise on prices, is only 4 pie per acre.

7. Besides the 339 Khalsa villages, there are ten grants of land which were assessed by Mr. Daniell at Rs. 4,333 rising to Rs. 7,058; and 24 maafee villages on which a nominal revenue of Rs. 3,855 was assessed. The total nominal revenue is thus Rs. 39,825 rising to Rs. 42,550, and the actual payable amount Rs. 35,970 rising to Rs. 38,695. There are also 12 estates the revenue of which has been redeemed under Lord Canning's rules, and three grants of land revenue-free made by Government in reward to loyal subjects. These have not been assessed.

8. In a return submitted in 1866, with the view of showing the amount and distribution of produce, Mr. Daniell drew up the following estimate:—

| Paying—     |     |     |     | Area in acres. | Value of produce. | Zemindar's share, or rent. | Rent-rate per acre. |
|-------------|-----|-----|-----|----------------|-------------------|----------------------------|---------------------|
|             |     |     |     |                | Rs.               | Rs.                        | Rs. a p.            |
| In kind,    | ... | ... | ... | 24,828         | 75,042            | 24,922                     | 1 0 0               |
| Money-rent, | ... | ... | ... | 15,993         | ...               | 31,623                     | 1 15 10             |
| Total,      |     |     |     | 37,727*        | ...               | 56,545                     | 1 7 11              |

9. This would make the rent of lands paying in kind to fall at about one rupee, and of lands paying money-rents to fall at about two rupees per acre, the average being Re. 1-7-11. The assessment thus falls a little below half-assets. But no information is given as to the data on which this calculation is made, and as three-fifths of the entire area pays in kind, the estimate must be to a considerable extent conjectural.

10. Upon the whole, the settlement must be held to be light, but not too light to warrant its being sanctioned. There is much to be said in favour of low assessments in the Doon. The climate in most places is bad, and it is difficult to tempt cultivators to settle there. The soil is shallow and stony, and excepting where irrigation from rivers or canals exists, it produces light returns. The backwardness of the valley is evidenced by the large proportion of holdings which pay rent in kind. On these grounds the Lieutenant-Governor is prepared to confirm the settlement, but only for a period of 20 years. That period will be sufficient to allow for much development of agricultural means and wealth, and for extension of cultivation, while a longer term would involve an unnecessary sacrifice of the Government revenue. The settlement is accordingly confirmed till the 30th June, 1886.

11. Adverting now to the topic of tenures and cultivating rights, His Honor is constrained to remark with surprise that Mr. Daniell's report contains no information whatever about the many interesting questions that have arisen in the Doon. Indeed, so meagre is the report that it was necessary to delay this review till further information on the subject could be collected, and advantage was taken of His Honor's tour through the district in December, 1872, to do this.

\* This is the real area, excluding crops growing two harvests.

12. When Colonel Young's ryotwarie settlement was annulled in 1848, all ryots of standing anterior to 1830,—those, namely, who had formerly been treated as proprietors,—were ordered to be maintained in their rights as hereditary tenants holding at 14½ annas per acre, and nothing but the right of transfer was to be withdrawn. In his 59th and 60th paragraphs, Mr. Ross says that all that was valuable to them as ryot-proprietors was retained by them under the new settlement, and consequently the same title to hold on at what he calls the “jumma rate,” or the rate of 3 annas per local beegah. Some of the old cultivators, however, it is stated, did not avail themselves of the privilege of paying this low rate, and continued to hold on to their old system of paying rents in kind.

13. Besides this privileged class, the cultivators of more recent standing than 1830 were classified by Mr. Ross either as mouroosee (hereditary) or ghair-mouroosee (not hereditary) according to the length of their tenancy. There was also a peculiar but small class of tenants in and round Dehra, who had sub-let their lands on building leases at a considerable profit without sanction from the proprietors. For these Mr. Ross arranged that one-third of the profit on the sub-lease should go to the proprietor in return for his consent.

14. Regarding none of these classes does Mr. Ross's report show the number of tenants or the area held on these different tenures. Mr. Daniell's report is entirely silent on the subject; it does not allude to these different classes of tenants at all; still less does it give the required statistics of their tenancies and information as to the arrangements made for their protection.

15. It was ascertained during the Lieutenant-Governor's tour in the Doon that, in Mr. Ross's original khuteonees (or lists of cultivators in each village), no distinction was made between the “privileged” tenants who held before 1830 and the “mouroosee” tenants who date from after 1830; all alike were set down as mouroosees paying the “jumma rate,” or 3 annas per beegah. The same practice has been followed now, and in Mr. Daniell's khuteonees three classes of tenants are recorded. First, the mouroosees, most of whom pay in cash, and whose rents were generally fixed by Mr. Daniell himself (he says in para. 16 that he decided 2,000 cases in two months) at rates based on his assumed average rates, but varying according to the circumstances of the land, and fixed as a rule with the consent of both parties. The permanency of these rates is secured by a stipulation in all the “Records of Rights” that they shall not be disturbed during the currency of the settlement. Second, the “ghair-mouroosees” (not hereditary), who all pay rents in kind, the rate varying from one-third to one-seventh of the produce, according to the nature of the soil, the neighbourhood of jungle and wild animals, &c. Some mouroosees also pay in kind. The quantity of produce to be paid over is fixed, not by measurement and division of the crop when harvested, but by appraisement (kun-butai) before it is cut. Third, lease-holders, who are most common in the grant villages, and who receive leases from the proprietors for short terms of years at money rates. The building leases round Dehra also constitute a separate class, but their number is small. It is understood that Mr. Daniell did not make any alteration in them, but took half the rent as he found it for revenue.

16. The amalgamation of the different classes of old cultivators under the one head of “mouroosees” is an error greatly to be regretted, for the pledge given to the oldest class of ryot proprietors does not appear to have been fulfilled; and now that Act X. of 1859 has become the Rent Law of the district, they are only protected from its enhancement clauses by the stipulation in the Record of Rights, a stipulation which (even if no flaw be found in it) may be overlooked by the courts of law. It seems necessary that a special inquiry should be set on foot to ascertain what tenants belong to this class, and to record them as privileged tenants (under the Rent Bill now before the Legislative Council), or otherwise to secure their rights.

17. In a report recently submitted to the Government of India, the area actually under tea cultivation was estimated to be 1,801 acres, and the produce of the crop of

1872 to be 411,548lbs., giving an average of 228·5lbs. per acre. Almost all the tea made is green, and a great part bought up by Cabul merchants for Central Asia and Persia. This important staple is now in a more prosperous condition, and is cultivated with greater profit to the growers than at any previous time.

18. A statement has been furnished by the Irrigation Department, and is printed at the close of this review, showing the area irrigated by canals and the revenue derived therefrom. There are five canals in the district, of which the Beejapore and Rajpore are the oldest. They were laid out by Sir P. Cautley in 1837, and finished in 1844. The other three are of later date. The area they each irrigate is as follows, taking the average of the seven years 1865-72 :—

|               |     |     |     | <i>Area.</i> |
|---------------|-----|-----|-----|--------------|
| Beejapore,    | ... | ... | ... | 3,819        |
| Rajpore,      | ... | ... | ... | 1,731        |
| Kutta Puthur, | ... | ... | ... | 2,229        |
| Kullunga,     | ... | ... | ... | 1,571        |
| Jakhun,       | ... | ... | ... | 1,190        |
| Total, ...    |     |     |     | 10,540       |

19. His Honor fears that there is not much room for the further development of irrigation. Something may be done towards extending the area irrigated from the Kutta Puthur Canal in the Western Doon, and also for making the Jakhun Canal irrigate a larger area when the Forest Department (as they are about to do) relinquishes a portion of their reserves for this purpose. But the porous shingly soil of the torrent-beds by which the streams descend from the Himalayas, and the small volumes of water contained in those streams, do not afford much hope that further schemes for the irrigation of the valley will really be to any large extent feasible.

20. There have been great strides made towards the clearance and reclamation of the Western and Central portions of the Doon, but there is still much opportunity for increased cultivation, the cultivable waste being by the settlement records 45,435 acres, against only 47,846 acres of cultivation combined with recent fallow. The Eastern Doon is still very backward, and contains a great extent of forest and swamp. Much might be done here by well-considered schemes of drainage, and portions of the forest, in which valuable timber cannot grow, are about to be thrown open for cultivation by means of grants given to persons prepared to reclaim the land. There is no apparent reason why the Eastern Doon should not in course of time rival the Western Doon in healthiness and fertility. The next ten or twelve years will probably see a great increase in agricultural enterprise and in the capital invested; and at the close of the present settlement the Lieutenant-Governor expects that the Doon will be found able to contribute much more largely than it now does to the revenue of the State.

21. In conclusion, His Honor desires to put on record that, although some material points were omitted in Mr. Daniell's proceedings, still that officer deserves credit for the faithful discharge of his duties, and for a fair assessment and adjustment of rights, which upon the whole deserve commendation. The Lieutenant-Governor also thanks the Board of Revenue for their clear and able summing-up of the settlement proceedings, in which great pains have been taken to supply the statistical deficiencies of Mr. Daniell's report, and without which indeed that report would have been in some parts obscure.

C. A. ELLIOTT,  
Secretary to Government, N.-W. P.

## DHOON CANALS.

*Return of Areas and Classes irrigated, Revenue realized for the same, and Miscellaneous Revenue during the past seven official years.*

Invested capital up to the end of 1871-72, Rs. 5,57,860.

| Seasons.               | AREAS IRRIGATED BY CLASSES.                                                                       |                                                                                      |                                                                                        |                       | REVENUE IRRIGATION AND ALL OTHER SOURCES. |                         |                       |              |                  |                     |                                 |               |  |  | Total annual expenditure, repairs, plantations, contingencies, &c., &c. |
|------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------|-------------------------------------------|-------------------------|-----------------------|--------------|------------------|---------------------|---------------------------------|---------------|--|--|-------------------------------------------------------------------------|
|                        | 1st Class.<br>Sugar-cane and land<br>requiring water all<br>the year round at<br>Rs. 5. per acre. | 2nd Class.<br>1st class rice, tobacco,<br>and gardens per fual<br>at Rs. 3 per acre. | 4th Class.<br>2nd class rice, wheat,<br>and all other crops,<br>at Rs. 1-4-0 per acre. | Total area irrigated. | Revenue from assessed areas.              | Water sold by contract. | Manufacture, &c., &c. | Mill-rents.  | Sale of produce. | Fines and sundries. | Total Revenue from all sources. | Rs. a. p.     |  |  |                                                                         |
|                        |                                                                                                   |                                                                                      |                                                                                        |                       |                                           |                         |                       |              |                  |                     |                                 |               |  |  |                                                                         |
|                        |                                                                                                   |                                                                                      |                                                                                        |                       |                                           |                         |                       |              |                  |                     |                                 |               |  |  |                                                                         |
| Acres.                 | Acres.                                                                                            | Acres.                                                                               | Acres.                                                                                 | Rs. a. p.             | Rs. a. p.                                 | Rs. a. p.               | Rs. a. p.             | Rs. a. p.    | Rs. a. p.        | Rs. a. p.           | Rs. a. p.                       | Rs. a. p.     |  |  |                                                                         |
| 1865-66, ...           | 896                                                                                               | 3,467                                                                                | 2,626                                                                                  | 6,989                 | 9,462 0 3                                 | 4,428 8 0               | 1,938 4 7             | 12,788 1 8   | 314 9 10         | 24 0 0              | 28,955 8 4                      | 19,289 1 0    |  |  |                                                                         |
| 1866-67, ...           | 1,815                                                                                             | 1,862                                                                                | 5,175                                                                                  | 8,852                 | 16,599 4 3                                | 4,426 0 0               | 1,920 14 3            | 11,485 12 11 | 374 12 0         | 12 4 0              | 34,818 11 9                     | 18,946 5 9    |  |  |                                                                         |
| 1867-68, ...           | 1,105                                                                                             | 2,922                                                                                | 6,667                                                                                  | 10,694                | 19,673 3 1                                | 3,505 0 0               | 1,487 12 7            | 13,623 7 5   | 444 4 0          | 4 0 0               | 38,737 11 1                     | 19,634 9 11   |  |  |                                                                         |
| 1868-69, ...           | 677                                                                                               | 2,832                                                                                | 10,508                                                                                 | 14,017                | 23,335 11 7                               | 1,795 0 0               | 1,084 6 2             | 11,946 4 10  | 517 10 0         | 25 8 0              | 38,704 8 7                      | 21,360 8 3    |  |  |                                                                         |
| 1869-70, ...           | 723                                                                                               | 3,130                                                                                | 6,448                                                                                  | 10,301                | 20,570 5 5                                | 2,147 8 0               | 1,416 6 4             | 13,783 6 3   | 301 10 0         | 62 4 3              | 38,281 8 3                      | 19,935 13 9   |  |  |                                                                         |
| 1870-71, ...           | 856                                                                                               | 3,314                                                                                | 7,522                                                                                  | 12,192                | 24,507 12 7                               | 2,432 8 0               | 1,304 5 7             | 14,604 15 9  | 208 11 0         | 54 9 11             | 43,112 14 10                    | 20,650 1 3    |  |  |                                                                         |
| 1871-72, ...           | 647                                                                                               | 3,587                                                                                | 6,502                                                                                  | 10,736                | 20,361 13 6                               | 2,331 1 0               | 1,238 5 1             | 19,398 4 9   | 575 8 3          | 9 5 0               | 43,854 5 7                      | 20,913 10 11  |  |  |                                                                         |
| Total for seven years, | 6,719                                                                                             | 21,614                                                                               | 45,448                                                                                 | 73,781                | 1,34,510 2 8                              | 21,065 9 0              | 10,380 6 7            | 97,570 5 7   | 2,787 1 1        | 191 15 2            | 2,66,465 4 5                    | 1,40,730 2 10 |  |  |                                                                         |
| Mean annual total,     | 960                                                                                               | 3,088                                                                                | 6,493                                                                                  | 10,540                | 19,216 0 0                                | 3,009 0 0               | 1,484 0 0             | 13,940 0 0   | 381 0 0          | 27 0 0              | 38,066 0 0                      | 20,104 0 0    |  |  |                                                                         |



*Title-page bound before the preceding article -*

REPORT  
OF THE  
SETTLEMENT OF DEHRA DOON.

No. 7// of 1871.

FROM

A. COLVIN, Esq.,  
*Secy. to the Board of Revenue, N.-W. Provinces,*

TO

C. A. ELLIOTT, Esq.,  
*Offg. Secretary to Government, N.-W. Provinces.*

DATED ALLAHABAD, THE 2ND AUGUST, 1871.

SIR,

*Present:*

MR J. F. D. INGLIS.  
MAYNE, Esq., C.B.

I AM directed by the Board of Revenue to forward, for the orders of His Honor the Lieutenant-Governor, the accompanying report by Mr. C. A. Daniell, on the resettlement of the Dehra Doon District, with the remarks of Mr. Williams, the late Commissioner, and the usual settlement statements. The report is confined for the most part to description of the actual process of settlement as recently effected; and the Board will endeavour to give in their review a succinct account of the tract under consideration, and of the settlements previously made, as well as of the revision of which the results are now submitted for approval.

2. The Doon Valley, bounded on the north, east, south, and west by the Himalayas, the Ganges, the Sewalik range of hills, and the Jumna, lies between  $30^{\circ}$ — $30^{\circ} 32'$  of latitude, and  $77^{\circ} 43'$ — $78^{\circ} 24'$  of longitude. Its highest point is 2,369 feet above the level of the sea—being near the town of Dehra itself, situated on a ridge which runs transversely from the Sewalik hills to the Himalayas on the north-east boundary. This ridge divides the valley into two basins. The valley is drained on the east by the streams Song and Suswa into the Ganges; on the west by the Asun into the Jumna; the drainage of the lower slopes of the Himalayas and of the Sewalik running also into these streams respectively. The district consists of three pergunnahs—the Eastern Doon, the Western Doon, and the hill pergunnah of Jounsar Bawur. With the last the Board have at present no concern, as it is under a separate revision of Settlement. The area of the Eastern Doon is 324 square miles, of the Western 353, in all 677 square miles—little more than the single tehseel of Saharunpore in the adjoining district of that name. The length of the valley from East to West is forty-five miles, and its breadth varies from fifteen to twenty. The population of the Eastern Doon is 13,606; of the Western 52,693; in all 66,299, or 98 to the square mile: the average population to the square mile in the North-Western Provinces being 361. Of the population, 990 are European, 41 of these being landholders concerned in agriculture. In 1845 the population was 32,083—a difference, if the former figures are correct, of 34,216. There is but one large town, viz., Dehra, situated on the crest of the watershed, and containing a population of 6,847 souls. There are in the Eastern Doon 3,246 houses, and in the Western 11,711; the average to a house in either pergunnah being 4. The mean temperature of the valley is about  $72^{\circ}$ , ranging from  $52^{\circ}$  to  $86^{\circ}$ . The average rain-fall is little less than 80 inches. Wells are scarce: but small artificial canals irrigate a considerable part of the cultivated area. The surface of the pergunnahs is largely

Description



covered with forests, the clearings being mainly occupied with the usual autumn and spring-crops, and with the tea-plant. The climate, otherwise extremely healthy, is, during a great part of the year, prejudicial to life and health in the forest tracts. The *flora*, as is well known, is extremely varied, including many English as well as tropical plants. To clear the too abundant vegetation, the Government in 1837 arranged for a system of extensive grants. But from sickness and other causes unnecessary now to detail, the grantees were unsuccessful, and much of the land then taken into cultivation was shortly after abandoned.

From a report by Dr. Jameson for 1862-63, on the North-West Tea Plantations, it appears that about the period of Settlement there were twenty-one plantations in the Doon, covering an area of 18,786 acres; 2,572 acres being actually under tea, with an average outturn of 56,540 lbs.; 1,254 labourers being employed on the plantations. The Board have not before them any very recent statistics of the tea cultivation; but it has not made much advance during the last few years, and the figures given above are probably in excess of the actual state of affairs now existing.

The soil of the Doon is generally considered inferior in productive power to that of the adjoining Trans-Sewalik districts. But the style of cultivation is inferior, and the soil is capable of very considerable development.

A metalled road passes from Roorkee through the district to Rajpore, at the foot of the Himalayas. Another good road connects Dehra with Hurdwar and the heads of the Ganges Canal. A branch line of railway, connecting Hurdwar with the line from Meerut to Umballa, is in contemplation. The markets of the large hill sanitarium of Mussoorie and Landour are close at hand, and easily accessible.

The previous history of the Doon need only be glanced at here. Held during the earlier part of the 18th century by the Rajah of Gurhwal, it was wrested from him in 1744 by the Rohillahs. These in turn ceded it in 1760 to the Maharattas; and, passing from hand to hand during the latter years of the decline and fall of the Mogul Empire, it was again recovered in 1788 by the Gurhwal Rajah, from whom in 1803 it was taken by the Goorkhas. In 1815 it was absorbed into the British empire. A map of the pergunnahs under review is appended.

3. This is the seventh time, since British rule in 1815, that a Settlement of the land-revenue of the Doon has been effected. It was held under direct management till 1816, when the first assessment was made. Then followed the Settlements of 1820, 1825, 1830, and 1840. This latter settlement, framed for twenty years by Colonel Young (who had also made the 1830 settlement), was in 1845 subjected to revision by Mr. Ross, and on expiry of the original twenty years, *viz.*, in 1860, the seventh resettlement commenced, of which the report is now before the Board.

4. It is unnecessary to enter at any length into the causes and results of the revision which took place in 1845. But in order to make clear the remarks of Mr. Daniell and the Commissioner, a brief summary of its history is necessary.

5. In making the Settlement of 1840, Colonel Young had continued the policy originally adopted by him in 1830. He had made a Ryotwaree Settlement. He believed that the tenures in the Doon were similar to the tenures still acknowledged in the neighbouring hill territories. The Government was, according to him, the zemindar and proprietor of all land; the persons engaging for the revenue of the village, whether one or several, being called "Thekadars," or contractors, who were not acknowledged to possess any indefeasible rights in the lands they cultivated, and the revenue of which they paid. But in 1845, Government, on full enquiry and consideration, came to the conclusion that proprietary rights in the land were in abeyance only. To the Government of that day it appeared that, except when arbitrarily disregarded by the Native princes in the exercise of their irresponsible and unlimited power, subordinate proprietary rights possessing much value existed in the Doon, as elsewhere, and that

practically the rights possessed by the " thekadars " of the Doon under the first three settlements were of this description. These men exercised unlimited control over their villages ; they could sell and mortgage them ; they alone provided for their cultivation ; and they were responsible with their persons and property for the Government revenue. They were, in fact, the zemindars.

6. The proprietary rights conferred in 1830 upon the cultivators had never been generally assumed. The measure, sweeping as it was in its character, was to a very great extent practically inoperative. The rights conferred by it were little valued or understood. In 73 out of 183 estates in which the proprietary right had been thrust on the cultivators, it was never claimed. The right lay in abeyance, and the cultivators continued to pay the proportion of the gross produce payable as rent from year to year, according to the agreement made with the acknowledged proprietors.

Tenures as fixed in 1845.

7. The Settlement Officer entrusted with the revision, ruled, in accordance with the orders of the Government, that cultivators claiming proprietary right who had been recorded as proprietors in 1830, and who had since exercised their proprietary rights, should continue to be regarded as proprietors. All cultivators settled since 1830 were recorded as tenants only ; all settled previous to 1830 who had exercised proprietary rights were recorded either as subordinate proprietors or as cultivators, according to the wish expressed by them. The result was that the whole of the villages in the Doon, 170 in number, presented only six instances in which the cultivators expressed their desire to be recorded as subordinate proprietors. The reasons for this need not be dwelt upon here, and are amply explained in paras. 59-63 of Mr. Ross' report. The result was a settlement similar in most respects to those concluded throughout the remainder of the provinces.

"The tenures of the Doon present but few peculiarities. They do not differ materially from those prevailing in other parts of the country, while they are marked by the ordinary diversities apparent in the tenures of the neighbouring hills and plains. The ancestors of the present Rajpoots, Kulals, Rangurs, Goojurs, &c., inhabiting the villages of the southern or lower parts of the Doon, brought with them and naturalized the village constitutions with which they were familiar, while the emigrants from the hills transplanted and established in the semi-mountainous tracts of the district the village constitution under which they had lived in their own country. Hence, in the former class of villages the prevailing tenures are found to be pure zemindaree, hissahdaree, putteedaree, and imperfect putteedaree—tenures of the ordinary type ; none of them present any instances of the pure bhyacharah tenure properly so called. In the villages of hill origin, on the other hand, the tenures of the more recently established villages are found to be pure zemindaree, while those of the older villages, although many of them were of a broken character, present all the peculiarities which mark the constitutions of those curious talookas or clusters of several villages, so general in the neighbouring hills, which are cultivated by a numerous community of zemindars, all enjoying separate and independent proprietary right, but at the same time all bound together by joint responsibility for the revenue assessed on the whole mehal. These tenures, except that they are found in mehals in which two distinct species of proprietary right exist, would be instances of the pure bhyacharah tenures of the plains, and may be so regarded with reference to each of the component villages separately."

The above remarks will be borne in mind when reading Mr. Daniell's remarks on the preparation of the record of rights, which will be adverted to hereafter.

8. So much for proprietary rights. But the assessment of 1840, though partly opened to revision in 1845, was in considerable measure upheld. (1) The rental had been calculated at an uniform rate of 3 annas per local beegah, or 14 annas and 6 gundas per acre, on all cultivated land, without regard to its quality ; and the returns of the English professional survey had been accepted as the standard of the assessable area of each village, instead of those of the khusrah measurement, which alone gave

Extent of revision of assessment in 1845.

the area of each field. (2) The nature of the terms known as grant terms had not been properly defined, according to which all the culturable land of a village in excess of the one-fourth given free of assessment, was liable to be assessed. Revision of assessment was effected, firstly, by retaining the assumed rental of 14 annas 6 gundas on the cultivated land, as exhibited by the returns of the professional survey of 1838; secondly, by the assignment of cultivable land equal to one-fourth the assumed quantity of cultivated land free of assessment; and thirdly, by the assessment of the remainder of the cultivable land, as shown by the returns of the re-survey concluded by Mr. Ross, at Rs. 7 per 15 acres for each year of the remaining period of the settlement.

9. The progress and results of the settlement now under review may be sketched and contrasted with the settlement which expired in 1860.

10. Operations commenced in 1860, under the charge of the late Mr. Manderson. The survey and preparation of preliminary papers was carried on by him till 1st July, 1862, when, on Mr. Manderson being transferred to another district, the Settlement work was placed in charge of Mr. Cairnes Daniell.

On 22nd February, 1864, Mr. Daniell submitted to the Commissioner a report of the result of his operations. During that year, the present Lieutenant-Governor, then Senior Member of the Board of Revenue, visited the district; and conferred with the local officers. The conclusions he arrived at were embodied in a memorandum, dated 6th July, 1864, copy of which is herewith forwarded. Three points required further action: the one, that a review should be made of the work with regard to the orders of the Secretary of State concerning Permanent Settlement; a second, that further attention should be paid to the case of considerable waste lands included in village areas which it was believed had not always been adequately assessed; and a third, that the disposal and assessment of extensive forest tracts included within the village area should be re-considered.

Mr. Daniell, accordingly, returned to the Doon in October, 1865, completed the further inquiries prescribed for him, and embodied the results of his inquiries in the Report now before the Board.

11. It will be convenient to notice successively the several steps of adjustment of Boundaries, Measurements, Assessments, including under this head the consideration of Permanent Settlement and Record of Rights.

Boundaries.

12. *Boundaries* were laid down *de novo*, by the aid of the plane-table. The survey-maps of 1838 were of little use except in the defining of forest tracts, as the boundaries there shown were not supported by any local marks. In cultivated tracts boundaries could be more easily identified; but in villages bordering on waste lands and forests, and in all places where the actual division of cultivated fields did not define the village boundary, a systematic adjustment of the boundaries was necessary. The only cases in which a boundary survey has not been made have been in certain hill tracts, where the boundaries were undisputed and clearly defined by natural landmarks, such as ravines, streams, &c. In all the cases the Board's sanction was obtained.

"Nothing, however," the Settlement Officer states, "can possibly be of any avail to render either the professional or the present map of any use, unless the most stringent measures are taken for the preservation of proper boundary-marks. As long as the waste lands exist, so long will the preservation of proper boundary-marks require careful attention. Much expense has already been incurred in laying down boundaries during the last 25 years, and it is very necessary that they should be always correctly kept up."

Measurements.

13. *Measurements*.—These were conducted by the plane-table. The standard of measurement was the British statute acre. The scale of the maps is 139 yards and 6 inches

to one inch. The Commissioner says of these maps,—“country has been specially difficult, Mr. Daniell’s field-map of the comparison with maps based on survey with the they answer their purpose, i.e., they are good index-maps, been easy, they are very complete village maps, showing with an accuracy which is most creditable to Mr. Daniell, this degree of success, to make the survey himself through over hills and up and down ravines infested by tigers.” boundary of the two pergunnahs composing the Doon has this must be borne in mind in comparing the figures of given in para. 24.

14. Mr. Daniell does not give any comparative table shown in Mr. Ross’ report, and as returned by Mr. Daniell

| Year.     | Total area. | Revenue-free. | Barren. | Cultivable. | Fallow. |
|-----------|-------------|---------------|---------|-------------|---------|
| 1845, ... | 208,212     | 93            | 119,895 | 48,157      | 5,...   |
| 1860, ... | 207,581     | 188           | 105,816 | 49,304      | ...     |

15. The details of the area shown in 1860 are:—

|                                      | Total.  | Revenue-free. | Barren. |
|--------------------------------------|---------|---------------|---------|
| Western Doon, ...                    | 118,969 | 62            | 60,539  |
| Grants in ditto, ...                 | 17,327  | ...           | 3,957   |
| Eastern Doon, ...                    | 52,354  | 38            | 31,065  |
| Grants in ditto, ...                 | 6,496   | ...           | 1,204   |
| Revenue-free Villages, Western Doon, | 11,218  | 61            | 7,069   |
| Ditto, Eastern Doon,                 | 6,217   | 27            | 1,982   |
| Grand Total, ...                     | 207,581 | 188           | 105,816 |

Relative area of grants.

16. There were 5,877 acres fallow as marginally under the total of cultivation. T added 25,438 acres, viz., in W Eastern Doon 5,659, being grant on the old terms; making the =233,019. It is not easy to asc in area shown by the measure villages entered in “General Statement No. I.” of Mr. those only which were on the revenue-roll; revenue- lands being excluded from the list, but the grants of those

|                      |       |
|----------------------|-------|
| Western Doon, ...    | 3,512 |
| Grants in ditto, ... | 778   |
| Eastern Doon, ...    | 1,166 |
| Grants in ditto, ... | 209   |
| Revenue free, ...    | 222   |
| Total, ...           | 5,877 |

17. Excluding grants of all kinds from both stat the Western Doon, and No. 36 in the Eastern Doon,

\* The total of cultivation does not agree with the totals of irriga grants the Settlement Officer shows no detail of irrigation. The fallow vation in 1860.

Area irrigable from n  
canals. o:  
o:

to have been shown in Appendix I., Mr. Ross' report), the result is as follows :—

|       |     |     | Total area. | Revenue-free. | Barren. | Cultivable. | Fallow. | Cultivated. |              |        |
|-------|-----|-----|-------------|---------------|---------|-------------|---------|-------------|--------------|--------|
|       |     |     |             |               |         |             |         | Irrigated.  | Unirrigated. | Total. |
| 1845, | ... | ... | 166,190     | 93            | 105,966 | 25,661      | 4,586   | 7,356       | 22,528       | 29,884 |
| 1860, | ... | ... | 166,323     | 100           | 91,604  | 32,760      | 4,678   | 12,663      | 24,518       | 37,181 |

18. The decrease under barren (14,362 acres) is doubtless to be accounted for by a more correct classification, under which much of this land has now been classed as cultivable. Cultivable thus shows an increase of 7,099 acres; irrigation of 5,307 acres, or 72 per cent; cultivation of 7,297 acres, or 24 per cent. Cultivation bears the same ratio to cultivable as at the last settlement. It will be seen that the whole area is now composed as follows :—

Progress of Settlement  
operations from 1860.

|             |     |     |     |     |       |
|-------------|-----|-----|-----|-----|-------|
| Barren,     | ... | ... | ... | ... | 55.0  |
| Cultivable, | ... | ... | ... | ... | 19.8  |
| Fallow,     | ... | ... | ... | ... | 2.9   |
| Cultivated, | ... | ... | ... | ... | 22.3  |
|             |     |     |     |     | 100.0 |

Of the cultivable area, 53 per cent. only is cultivated; no less than 12 per cent. being fallow; and cultivation, again, consists of—

|              |     |     |     |     |    |
|--------------|-----|-----|-----|-----|----|
| Irrigated,   | ... | ... | ... | ... | 34 |
| Unirrigated, | ... | ... | ... | ... | 66 |

The relative area of the grants is as follows—

|                     |                      |     | Total. | Barren. | Fallow. | Cultivable. | Irrigated. | Unirrigated. | Cultivation. |
|---------------------|----------------------|-----|--------|---------|---------|-------------|------------|--------------|--------------|
| 1845,               | } Held on old terms, | ... | 42,022 | 13,929  | 1,247   | 22,496      | 162        | 4,188        | 4,350        |
| 1860,               |                      | ... | 23,832 | 5,161   | 987     | 12,675      | ...        | ...          | 5,009        |
| Other grants, 1860, |                      | ... | 25,488 | ...     | ...     | ...         | ...        | ...          | ...          |

Boundaries.

The grand total of grants, therefore, is 49,270 acres, against 42,022 in 1845, an increase of 16 per cent. The total area being 233,019 acres, grants occupy 21 per cent. of the whole. The number of revenue-paying estates, exclusive of grants, is 339; 188 in the Western, 151 in the Eastern Doon. At last settlement 169 only are recorded; 134 in the Western, 35 in the Eastern Doon. The difference is owing mainly to the method now adopted of dealing with the Daeen estates, as mentioned in para. 30 of this letter: to the splitting up into 27 estates of Malkote, formerly one estate: and in small measure to the growth of new estates since the Settlement of 1845.

There are 25 grants in all; 10 held on the old terms, *i.e.*, on a progressive demand, 12 in fee simple, 3 as rewards. There are 24 revenue-free estates, and 10 patches of revenue-free lands in revenue-paying estates. 19,451 acres have been sold in fee simple in the Doon for Rs. 77,012: and the land-revenue of 1,065 acres has been redeemed, fetching Rs. 10,208.

19. The area irrigable by canal in the khalsa villages is estimated by the Settlement Officer at 8,085 acres, and returned for 1865-66 by the Canal Officers for villages of all kinds at 10,577. This includes land irrigated in both harvests. Irrigation from other sources is rare; water being generally at a very great depth from the surface.

Measurements.

*Assessments.*—Mr. Daniell explains in the 21st and following report the mode in which his assessments were framed. Five classes formed, each class with rates for 6 soils; in all, 30 rates. The Doon divided into 3, the Eastern into 2 classes.

20. The number of villages and amount of acres falling under (except in the first class) stated in the report: though shown in the table but the rent-rates are as follows:—

|                      | <i>Meesun per acre.</i> |                    | <i>Roslee and Dakur per acre.</i> |                    |
|----------------------|-------------------------|--------------------|-----------------------------------|--------------------|
|                      | Irrigated.              | Dry.               | Irrigated.                        | Dry.               |
| <i>Western Doon.</i> |                         |                    |                                   |                    |
| Class I., ... ..     | Rs. a. p.<br>3 8 0      | Rs. a. p.<br>2 0 0 | Rs. a. p.<br>2 4 0                | Rs. a. p.<br>1 4 0 |
| Class II., ... ..    | 3 0 0                   | 1 8 0              | 1 12 0                            | 1 2 0              |
| Class III., ... ..   | 2 8 1                   | 1 4 0              | 1 8 0                             | 0 14 6             |
| <i>Eastern Doon.</i> |                         |                    |                                   |                    |
| Class II., ... ..    | 2 8 0                   | 1 6 0              | 1 8 0                             | 0 15 0             |
| Class III., ... ..   | 2 8 0                   | 1 4 0              | 1 8 0                             | 0 14 6             |

Village statements.

21. These rates were sanctioned by the Board in their November, 1866, copy of which and of Mr. Daniell's report is forwarded for discussion. The Doon stands by itself, and comparing on the other side of the Sewaliks is impossible. The Commission to admit any relative inferiority in the soil of the Doon, and as to the poverty of its produce (though here, again, he questions the extent of the Doon is supposed to go) to inferior tillage, the result of an unhealthy soil on this head will be recurred to in connection with the question of the Doon. On the adequacy of the rent-rates assumed for cultivation of the Commission, whose large experience of the Doon renders his statements valuable, are as follows:—

Assessment of forest lands.

“ Mr. Daniell completed his final assessment under the circumstances. Remarks of the supervising authorities had drawn his attention to his first assessment; carefully revised rates prepared to guide the Board. Already well acquainted with the country, he had re-examined the rents in about 2,000 cases; he had, after much inquiry, returned the agricultural produce of the district, and was thus able to give the latest information.

“ I believe the fullest confidence may be placed in his judgment. The very good grounds for having limited the Government demand are universally low, and, in some cases, almost nominal.

“ The country is in every way in a backward state; manured and healthy that, even if cultivators could be got, which is not the case, they would be kept alive. Even in the tracts the climate of which has been a difficulty in getting cultivators. The consequence is that the rents, with those which prevail in the lower districts, are remarkably low.

“ The average rate for irrigated and manured land is as follows:—Rs. 2 4 0 per acre in the first class of villages in the western, i.e., the healthy part of the Doon.

Results of assessment.

“ The only indication of any approach to the rent-rates of such lands—i.e., manured and irrigated—in every other district is mentioned in the 26th paragraph, that in some instances the rents are contracted, or short-term leases for one or two years, may be

Rs. 10 to 15 per acre; but this is evidently a very exceptional case—as exceptional, probably, as the cases in other districts in which the rate of rent has risen above Rs. 30 per acre.

“Another consideration prevents full assessment—that is, the very low standard of the Government demand at the last Settlement. Even where capabilities permit of a higher assessment, it would be very unadvisable to demand much more than double what the people have been in the habit of paying.

“Altogether, I think Mr. Daniell has been most judicious in being very moderate. He has given good reasons generally when he has fixed his demand at what appears to be far too low a rate, even if present assets alone are considered.”

The two volumes of No. II. Statements, submitted with the Settlement Report, give ample proof of the care and judgment with which assessments have been framed. The measure of its capacities is recorded against each estate, with the considerations by which the Settlement Officer has been guided, and if the particulars are not, in every instance, as full as those recorded in more recent settlements, the reason is to be found rather in the exceptional nature of the tract under settlement than in any want of carefulness in the Settlement Officer. The Board have no hesitation in endorsing the Commissioner's remarks. Experience has shown the justness of Mr. Daniell's assessments, and they may be confirmed without question.

22. But beside the assessment on cultivation, there had to be made a valuation survey of all waste lands, chiefly with regard to the forest lands included within village boundaries. Though careful to show the precautions which he adopted in estimating the annual value of such waste and forest tracts, Mr. Daniell has not stated in every case with distinctness the data on which his assessments were actually framed. He admits that, “as a rule, his forest assessments are low.” “He would certainly have pitched the rates higher had he felt confident that it would have been proper to do so.” “The present occasion,” he points out, “is the first in which the Doon Zemindaree forests have been taxed in Settlement, and as I have settled no villages having large tracts of forests in perpetuity, the Government will not in the end be any loser by my having adopted a mild scale of assessment.” The Commissioner adds,—“In many cases he would appear not to have made sufficient allowance for possible income from forests, for future improvements, for the possibility of bringing large waste tracts under cultivation; but his remarks justify his moderation, if they are carefully considered. The almost nominal assessments in some cases in the Eastern Doon are generally where the estates are in the hills and cultivation difficult, or in very unhealthy places. These forests and waste lands have for ages been used only for grazing cattle. Hitherto they have been of no value, and yielded little or nothing. It must be remembered that at previous settlements none of these were assessed at all.”

23. The details of assessment on cultivated and forest lands are, as a general rule, separately shown in the Nos. II. and III. Statements. But it would have been satisfactory if Mr. Daniell had submitted a statement showing for each circle the area respectively under cultivation and under forest, with the sums severally assessed on either class of land. Inspection of the No. II. Statement shows that assessment of the forest tracts varies from 4 annas to fractions of an anna per acre, and averages about 2 annas.

24. The successive previous settlements in the Doon have given, as shown in Mr. Ross' report, the following results :—

|               |          |     |     |     |     |           |
|---------------|----------|-----|-----|-----|-----|-----------|
| Measurements. | 1st, ... | ... | ... | ... | ... | Rs. 8,971 |
|               | 2nd, ... | ... | ... | ... | ... | „ 9,471   |
|               | 3rd, ... | ... | ... | ... | ... | „ 9,835   |
|               | 4th, ... | ... | ... | ... | ... | „ 18,625  |
|               | 5th, ... | ... | ... | ... | ... | „ 20,770  |

The comparative results of the last and the revised assessment are as follows :—  
The former assessment shows the final demand, not the initial, many of the assessments having been progressive, and some fresh villages having been assessed during currency of the settlement. Grants are in either case excluded :—

|                     |        | <i>Rate on<br/>total area.</i> | <i>On culti-<br/>vable.</i> | <i>On culti-<br/>vation.</i> |
|---------------------|--------|--------------------------------|-----------------------------|------------------------------|
| Western Doon, —Old, | 15,273 |                                |                             |                              |
| —New,               | 24,887 | 3·6                            | 7·4                         | 13·1                         |
| Eastern Doon, —Old, | 5,232  |                                |                             |                              |
| —New,               | 6,750  | 2                              | 5                           | 9·5                          |
| Grand Total, —Old,  | 20,505 | 1·11                           | 5·5                         | 10·11                        |
| —New,               | 31,637 | 3                              | 6·9                         | 12·1                         |
| Increase, ...       | 11,132 | = 54 per cent.                 |                             |                              |

25. The assumed rental of the expired Settlement, at four-fifths\* of the rental assets is Rs. 25,631. The assumed rental of Mr. Daniell's demand at 50 per cent. is Rs. 63,274—an increase of Rs. 37,643, or 146 per cent. The incidence of the demand on cultivation has increased 10 per cent., but the former rate is the result of the final assessments, and the initial area of cultivation of the old Settlement. The rate of incidence of the initial assessment, excluding grants (*viz.*, Rs. 19,590), on the cultivated acre, was 10·6.

Assumed rentals of former and present assessment.

Besides the above, the demand on account of grants amounts to Rs. 7,058 : making a total demand, including grants, of Rs. 38,695.

Total demand, including grants.

In a return submitted to the Board in 1866 by the Settlement Officer, the landholder's share in the profits of crops then under cultivation is estimated at Rs. 56,545 ; the Government demand on the same area, exclusive of cesses, and demand on account of forest-produce, &c., being Rs. 26,971. The cultivated area forming the subject of the above calculation amounted to 40,813 acres, the *bona fide* area being 37,727, and 3,086 the area cropped in both harvests. Of this total, 24,820 acres were paid for in kind, giving a total value of Rs. 75,042 ; the profits on which to the landlord are estimated at Rs. 24,922, or about a rupee an acre, and to the cultivator, after deducting cost of cultivation, at Rs. 17,614 ; the rent of the remaining 15,993 acres, paid for at cash rates, amounted to Rs. 31,623, or 1·15 per acre : in all 40,813 acres, and Rs. 56,545, or a rent of 1·6 per acre. The Government demand at 50 per cent., inclusive of *sayer* assets, falls at 12·1 per acre.

Estimated value of produce.

26. With regard to permanent settlement, Mr. Daniell's remarks will be found in paras. 40—55 of his report. 110 estates in all—73 in the Western Doon and 37 in the Eastern Doon—fulfil the conditions as at present laid down by the Secretary of State. Those villages only which have reached their full and best capabilities in not less than 80 per cent. of their full cultivable areas are recommended under the rules as then existing for permanent settlement. To none of these estates is canal-irrigation, so far as can be foreseen, likely to be extended, excepting in three cases only. These three are estates held by Europeans. They have a prospect of further development, but they are peculiarly placed. The owners are willing to pay an advanced sum on the whole assessable area now in permanency, rather than by paying a lower temporary assessment now, be subject to future settlements. These estates are all tea-plantations.

Permanent settlement.

\* This was about the proportion, judging from para. 44, page 11, of Mr. Daniell's report :—"The assessments were made on the village assets: from which, after deducting fees and cesses, one-fifth was set apart for the *semindar*, and the remainder taken as *jumma*."



Commissioner's remarks  
regarding Permanent Set-  
tlement.

27. The Commissioner, in the forcible remarks contained in paras. 80—84, and in para. 110 of his review, has pointed out the inexpediency of a permanent settlement:—

“ I hope I have not misunderstood the instructions. In interpreting them I have been guided by the consideration that the average rates, though fair and proper under the present circumstances of this district, are very much too low for the basis of a Permanent Settlement. The highest rate for manured and irrigated land in the first-class villages is only Rs. 3-8-0 per acre. Late enquiries in a district below, and information gained in other districts, show that a general average rate of Rs. 12 per acre for such soil is too low. Mr. Daniell indicates that a rate approaching to this is not unknown in the Doon, where he states that short leases and contracts may be given for from Rs. 10 to 15 per acre.

“ There is no reason why the rate of rent in the Doon should be one-third of the rates of other districts. I am aware that it is supposed that the produce in the Doon is one-third less than that of the soil beyond the Sewalik range; but that this is the case I doubt, and, if it is, it can hardly be ascribed to want of fertility in the soil of the Doon.

“ No one who compares the richness and strength of spontaneous vegetation in the Doon, the size of the trees and bamboos, the rank nature of the reeds and rushes and grasses, with the stunted growth of spontaneous products in the adjoining district below, would readily admit that there can be any natural defect in the soil. No one who has seen the luxuriance of the Otaheite sugar-cane, to take a highly cultivated crop, or the great height to which the rhea (the China grass-plant) reaches in the Doon, or the height and dense growth of the tor dal (*Cuterolia*?), in what is classed as inferior land, dependent only on the rain, can doubt the fertility of the soil.

“ In all tracts, as far as my experience goes, which have been unhealthy as the Doon has been, a slovenly style of tillage (the result originally of prostration from continued sickness) prevails for a long time.

“ When man improves his work, it can hardly be doubted that the soil will respond, and as the population increases rents will rise, if not to treble what they now are, which would be about the present standard of rent below, certainly to double the present rates. Probably the anticipation of this had some weight in the instructions given regarding Permanent Settlement in the Doon.

“ Finally, as far as this subject is concerned, Permanent Settlement surely should not be made in a district the rates of settlement of which are, on the total area, 3 annas 6 pies—i.e., not six pence per acre; on the productive area, 7 annas 4 pies and a fraction, not a shilling per acre; and on the cultivated area, 13 annas 1 pie, a little over one shilling and six pence per acre.

“ It rests with the Board and Government to decide whether there should be any permanent assessments in the Doon. I most strongly deprecate such a course. I think that the landholders have not responded to the offer of Government. There is no compensation for the sacrifice of the future increase of revenue, which, if the Doon advances only to something much below the present status of the other districts of the division, would be 100 per cent. The immediate increase which would be gained by granting permanent settlement would be the ridiculously small sum of Rs. 141.”

28. The Commissioner's remarks on the permanent settlement of the three exceptional estates above noted, and the 4th, “Bulundawala,” noted in para. 72 of his review, appear correct. The terminal settlement of these estates being revised accordingly, the demand of the new settlement for the whole district will be Rs. 31,637—141: or Rs. 31,496.

Permanent Settlement  
inexpedient.

29. There can be no question whatever, the Board consider, as to the soundness of the Commissioner's views regarding permanent settlement. The Doon is in every respect a backward tract. There are fine capabilities and improving communications. But there is a miserably-inadequate population, cultivation slovenly beyond comparison, rents

most exceptionally depressed, while labour is difficult to procure and costly. Had there been a prospect of a marked extension of European enterprise in the valley, the expediency of permanent settlement would have been open to consideration on wholly different grounds. But it has been abundantly shown that the extension of such enterprise on any considerable scale is not to be looked for in the Doon. What a canal does for other districts drainage will effect in this; and it is understood that schemes for drainage are now on foot. The Settlement might, in the opinion of the Board, be sanctioned for a period of at the most thirty years—i.e., to 30th June, 1893—though, taken into consideration the backwardness of the tract, and the transition state through which the Doon, in common with other parts of these Provinces, is passing, the Board submit, for the consideration of Government, whether a term of 20 years, expiring on 30th June, 1883, will not be sufficient.

The revised settlement came into force from 1st July, 1866.

30. *Record of Rights.*—There is little to notice under this head.

There are 339 ordinary revenue-paying estates in the Doon : 188 in Western, and 151 in Eastern Doon. Of these 294 are Zemindaree, 40 are Putteedaree, and 5 are Bhyacharah. The only peculiarity in the tenures is that known as the "Daeen tenure." This was fully discussed and explained in Mr. Ross' Settlement Report, and in the late Mr. Thomason's note printed with that report. Mr. Daniell, at page 46 of the present report, explains the measures he has adopted in dealing with these tenures at the present Settlement. Briefly, Daeen holdings were village community talookas, extending over 109 villages, each talooka having an interest in some or all of the villages. The last settlement was made mehalwar. In each village each Daeen estate was separately assessed; but changes in proprietorship and partitions destroyed this arrangement. Now, Mr. Daniell has made the settlement village by village—the several shareholders being separately recorded according to the extent of their holdings. The Daeen holdings have been made thokes, and the Daeen shareholders putteedars within such thokes. A very similar tenure exists in the Allahabad District, where the holdings of the brotherhoods are known as Kutrees.

Record of rights.

No details are given in the present report as to the relative areas held by the several classes of cultivators, but in the return alluded to in para. 25, a total cultivated area of 37,727 acres is distributed as follows:—

|                                                                                     | Acres. | Per cent. |
|-------------------------------------------------------------------------------------|--------|-----------|
| 1. Cultivated by tenants paying in kind, ... ..                                     | 16,547 | 43·8      |
| 2. Cultivated by tenants with rights of occupancy paying in cash, ...               | 7,510  | 19·9      |
| 3. Cultivated by other tenants paying under terms of lease or contract in cash, ... | 5,416  | 14·4      |
| 4. Cultivated by proprietors, ... ..                                                | 8,254  | 21·9      |
|                                                                                     | 37,727 | 100·      |

31. Out of the Government demand for 1866-67 of Rs. 35,687, Europeans paid Rs. 9,546; Rajpoots, Rs. 12,173; Brahmins and Muhajuns, Rs. 8,678; other Hindoos, Rs. 4,739; and Mahomedans, Rs. 451. Of the twelve grants purchased under Lord Canning's Rules, one is owned by a Mahomedan and eleven by Europeans.

Distribution of Government demand.

*Transfers.*—These have been rather numerous. They extend to 131 estates of a total of 339. In these estates there have been 259 cases of transfer, in the following detail, viz.:—

Transfers of proprietary right.

|                                               | Cases. |
|-----------------------------------------------|--------|
| Of whole estates, ... ..                      | 60     |
| „ portions „ ... ..                           | 81     |
| „ shares expressed in fractions (biswas,) ... | 118    |
|                                               | 259    |

3 were by order of Civil Court, 246 by private sale, 10 by free gift.

32. The rate at which these transfers were effected may be noticed. They amount to thirteen years' purchase of the land-revenue as now assessed. In the 60 cases where the whole estates were transferred, the average price per assessable acre was Rs. 5-8-10; the land-revenue, as now revised, falling on the assessable acre at 6 annas 9 pies only.

Pay of putwarees.

33. There seems some confusion in the Commissioner's remarks in paras. 106—8 regarding the remuneration to putwarees. He observes that 6 per cent. on the demand is an exceptionally high rate, and propose 12 per cent. on the assests, which would be 24 per cent. on the demand. The Board would allow 3 per cent. on the assets, or 6 per cent. on the demand.

Local cesses.

34. Government have been separately addressed regarding the imposition of cases and rates for the payment of village watchmen in the Doon : and the subject need not be dissussed here.

Cost of Settlement.

35. The cost of the settlement operations from first to last has been Rs. 45,083 : equivalent to nearly one and a-half year's revenue. This must not, however, be for a moment regarded as representing the ordinary ratio of the cost of settlement operations to the amount of land-revenue. The district, in respect of its assets, is altogether exceptionally backward ; but the cost and labour of measurement, and other operations, was relatively greater than in other more populous and prosperous tracts.

Conclusion.

36. With these remarks, the Board desire to recommend the settlement for approval, for a term of years as stated in para. 29. And they beg to bring to His Honor's favourable notice the exertions of Mr. Daniell, the Settlement Officer. The settlement effected by him has been thoroughly and intelligently completed. The interests of the Government have been carefully guarded, while the danger of adopting the rates of assessment to the higher scale prevailing in neighbouring but dissimilar districts has been kept uniformly in view. The late Commissioner, Mr. Williams, is also deserving of the cordial acknowledgments of this Board.

I have the honour to be,

SIR,

Your most obedient Servant,

A. COLVIN,

*Secy. to the Board of Revenue, N.-W. P.*

## CONTENTS.

| PARAS. |                                              | PARAS.  |                                                                                                                  |
|--------|----------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------|
| 2.     | Description of the Doon.                     | 22, 23. | Assessment of forest lands.                                                                                      |
| 3.     | Previous Settlements.                        | 24.     | Results of assessment.                                                                                           |
| 4.     | Revision of 1845.                            | 25.     | Assumed rentals of former and present assessments : total demand, including grants : estimated value of produce. |
| 5.     | Causes which led to the revision of 1845.    | 26.     | Permanent settlement.                                                                                            |
| 6, 7.  | Tenures as fixed in 1845.                    | 27, 28. | Commissioner's remarks regarding permanent settlement.                                                           |
| 8.     | Extent of revision of assessment in 1845.    | 29.     | Permanent settlement inexpedient.                                                                                |
| 9-11.  | Progress of settlement operations from 1860. | 30.     | Record of rights.                                                                                                |
| 12.    | Boundaries.                                  | 31, 32. | Distribution of Government demand : transfers.                                                                   |
| 13.    | Measurements.                                | 33.     | Pay of putwarrees.                                                                                               |
| 14-16. | Area.                                        | 34.     | Local cesses.                                                                                                    |
| 17.    | Area exclusive of grants of all kinds.       | 35.     | Cost of settlement.                                                                                              |
| 18.    | Relative area of grants.                     | 36.     | Conclusion.                                                                                                      |
| 19.    | Area irrigable from canals.                  |         |                                                                                                                  |
| 20.    | Assessments.                                 |         |                                                                                                                  |
| 21.    | Assumed rent-rates—village statements.       |         |                                                                                                                  |

# INDEX

TO THE

## SETTLEMENT REPORT OF DEHRA DOON.

| Page. | From.                                                                                                                                             | Subject.                                                                                              |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 1     | F. Williams, Esquire, Commissioner of the Meerut Division.                                                                                        | Settlement of Dehra Doon proper.                                                                      |
| 27    | C. A. Daniell, Esquire, Superintendent of Dehra Doon, to Commissioner of Meerut Division, No. 113, dated 25th April, 1867.                        | Submitting report on the revised and permanent Settlement.                                            |
|       | (ENCLOSURE.)                                                                                                                                      |                                                                                                       |
| 42    | Extract, paras. 5 to 43, from letter No. 40, dated 22nd February, 1864, from Settlement Officer, Dehra Doon, to Commissioner of the 1st Division. | Description of the last or 6th Settlement of the Dehra Doon District.                                 |
| 50    | Statement No. IV, or General Statement of Khaliseh Mehals.                                                                                        | Settlement of Pergunnah Western Doon.                                                                 |
| 56    | Statement of Grant lands other than those held on the old Russudee terms.                                                                         | Ditto ditto.                                                                                          |
| 57    | Statement No. IV, or General Statement of Khaliseh Mehals.                                                                                        | Settlement of Pergunnah Eastern Doon.                                                                 |
| 62    | Statement of Grant lands other than those held on the old or Russudee terms.                                                                      | Ditto ditto.                                                                                          |
| 63    | Appendix to Statement No. IV, or the General Statement of Maafee Villages in Dehra Doon.                                                          | Do. of Pergunnahs Eastern and Western Doon.                                                           |
| 64    | Jumma Statement No. V., ... ..                                                                                                                    | Pergunnah Western Doon.                                                                               |
| 70    | Ditto ditto, ... ..                                                                                                                               | Pergunnah Eastern Doon.                                                                               |
| 76    | Statement No. VII.—Form A. of Canal Irrigation, ...                                                                                               | Pergunnahs Western and Eastern Doon.                                                                  |
| 77    | Statement (Form B.) showing the total area Irrigated by Canals and Income from Irrigation for 1865-66.                                            | Ditto ditto.                                                                                          |
|       | STATEMENT No. VIII.                                                                                                                               |                                                                                                       |
| 78    | A.—Statement showing the result of alienation of Estates, 1848-66.                                                                                | Zillah Dehra Doon.                                                                                    |
| „     | B.—Statement showing the circumstances of the Value and Jumma.                                                                                    | Ditto ditto.                                                                                          |
| „     | C.—Statement of Rates realized in certain sales, ...                                                                                              | Ditto ditto.                                                                                          |
| „     | D.—Statement of Cases of parties to the alienations, ...                                                                                          | Ditto ditto.                                                                                          |
| 79    | Board, to Commissioner of Meerut Division, No. 75, dated 28th February, 1866.                                                                     | Sanctioning the rates proposed to be adopted for the revision of the Settlement of Zillah Dehra Doon. |
| „     | Commissioner of Meerut Division, to Board, No. 64, dated 19th February, 1866.                                                                     | Proposed rates to be adopted for the revision of the Doon Settlement.                                 |
| „     | Settlement Officer, Dehra Doon, to Commissioner, Meerut Division, No. 450, dated 9th February, 1866.                                              | Ditto ditto.                                                                                          |



## REPORT BY COMMISSIONER, MEERUT DIVISION, ON THE SETTLEMENT OF DEHRA DOON PROPER,

*Containing the area bounded on the south by the watershed of the Sewalik range; on the east by the Ganges; on the west by the Jumna; on the north by the Tehereee Rajah's territory and the Mussoorie Settlement.\**

*Adjustment of boundaries and survey.*—The data available as foundations for this work were the maps of Major Browne's professional survey, and the sight-drawn field maps of Mr. Ross' settlement.

2. Unfortunately no attempt had ever been made to record on Major Browne's maps the changes that in course of time occurred.

3. The boundaries of estates had been altered; new estates had been given out of the waste and forest lands. No trace of such alterations existed, and Major Browne's survey village maps had ceased to be correct village boundary maps. Even his district map had ceased to be a correct index map.

4. There are numerous new estates, which have no place in the district map.

5. Attempts to re-trace Major Browne's boundaries by a plane-table survey failed, and the attempt was abandoned.

6. Though Major Browne's work was excellent, the only use that could be made of his maps was to detect by them gross encroachments on forests.

7. In adjusting and demarcating forest boundaries they have been invaluable; the Forest Officers having been able, with better instruments, to do what the Settlement Officer with the plane-table failed to do. The forest maps show the original boundaries of the Government forest according to Browne's maps, all alterations that have been made, and the new forest boundaries.

8. The survey district map has become merely a valuable topographical map.

9. The sight-drawn maps of Mr. Ross' settlement were of some little use in some cases.

10. But the preparation of entirely new field maps was a necessity.

11. This work was commenced by Mr. Manderson, but done principally by Mr. Daniell.

12. In a country like the Doon, intersected by hills and ravines, the plane-table is a very inferior instrument to work with, and where the nature of the country has been specially difficult, Mr. Daniell's field maps would not stand the test of the comparison with maps based on survey with the theodolite; but everywhere they answer their purpose, i. e., they are good index maps, and where the ground has been easy, they are very complete village maps, showing boundaries and fields, &c., with an accuracy which is most creditable to Mr. Daniell, who had often, to secure this degree of success, to make the survey himself through forests and grass jungles, over hills and up and down ravines infested by tigers.

13. Such field maps have been prepared in all villages in the Doon Proper. There has been no new survey of the higher estates in the hills; but Browne's survey

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\* The hill portion of the district, the Jounsar Bawar tract, is not included in this Settlement.

maps, in which all the topographical features are given with great accuracy, show sufficiently clearly the boundaries of these estates, as the boundaries are rivers or ravines, or peaks or ridges, or such natural features which can be easily traced. The great Trigonometrical Survey Officers have had no difficulty in laying down on the ground from Browne's survey maps the boundary of the Mussoorie settlement.

14. The forest boundaries are now so clearly marked by broad clearings or lines of trees, and the forest Officers have such good maps of them, that there is no danger of any question arising regarding them.

15. *The standard of measurement.*—The standard of measurement adopted is the British statute acre.

16. The old standard of measurement was the large or pukka beegah, the length of the side of which was  $52\frac{1}{2}$  yards, which was the length of the old full chain. For easy work in a rough country, quarter chains were in use. The old quarter chain was 13 yards and  $4\frac{1}{2}$  inches long. The new quarter chain is 13 yards, 2 feet, 9 inches, and the full chain 69 yards, 1 foot, 9 inches.

17. The scale of the maps is 2 full chains, or 139 yards 6 inches to the inch.

18. The Doon consists of two petty sub-divisions,\* the Eastern and Western Doon, formerly separated by an irregular line running about 8 miles east of Dehra.

\* Pergunnahs.

The boundary of the sub-division has been altered. The Ruspunna river, which issues from the hills east of Rajpore, runs close east of Dehra and joins the Sooswa in the bottom of the valley, opposite the western point of the Nagh-sidh or Nawada hills, i. e., the new boundary to that point; thence the Asororee torrent bed, which comes down from the tunnel on the Dehra and Roorkee road, is the boundary. It is a matter of little moment, as both sub-divisions form one main sub-division, "Tehseelee;" but the new line is a well marked natural boundary.

19. *Record of rights.*—Mr. Ross had done much to define the position of the holders and occupiers of land, and the rights of those who were, and of those who were not, under engagements to pay the Government revenue. He had practically recognized the persons by whom the revenue was paid into the Government Treasury, as proprietors of the estates, and decided that those who paid to them were tenants. In fact, he created in the Doon what is known as the zemindaree system.

20. The proprietors of estates thus recognized have been undisturbed by any dispute on the subject. The cultivators have settled down as hereditary tenants with right of occupancy, or tenants-at-will.

21. The only claims that have been brought forward are those made by some tenants of a peculiar set of villages to share in the products of waste and forest lands. Mr. Ross had, at his settlement, ruled, and his ruling was sanctioned by Government, that whatever the rights of these tenants might be, they were confined to the cultivated lands. Nothing had transpired since then to alter the position of these claimants, who have been at this settlement recorded to be what they throughout the last settlement have been, simply hereditary tenants.

22. Mr. Ross left one peculiar tenure very much as he found it. I mean that of the daens.

23. To make Mr. Daniell's account intelligible to those who may not be acquainted with technical vernacular terms, it is necessary to quote the definition of "mouzah," or as it has been translated "village," and "mehal," estate.

A mouzah or village is a parcel or parcels of lands having a separate name in the revenue records and known limits.

A mehal or estate consists of any number of such parcels of lands.

24. There were eight daens : *i. e.*, proprietary communities or brotherhoods. They were composed of 109 separate villages with known names and limits.

25. Some of the villages contained lands belonging to the entire communities of two or more daens : or brotherhoods ; some contained lands belonging to certain sharers in two or more communities. In each village one field might belong to one community or the sharer of one community ; another field to another sharer or another community. The fields were intermingled.

26. At the survey the villages were not mapped according to their recognized limits. It was of course impossible to give a map of an estate which consisted of separate fields situated in many villages. Eventually they were surveyed and mapped in blocks ; these blocks being named after daens : though the lands so blocked and mapped did not belong to the daen : or brotherhood, the name of which was in the survey record attached to the block.

27. At the last settlement the village measurements were given according to the aggregate of the lands included in the village boundaries, *i. e.*, the area of each of the 109 villages was recorded, not by professional or boundary survey, but by interior measurements ; but the assessments were not made according to the measurements,—an assessment was fixed on each *estate*, and the record of rights was prepared for each estate.

28. The arrangement as it was made was intricate enough, but when strangers become purchasers of patches of land and further partitions took place, the records became utterly confused and valueless. The holdings of the brotherhoods were broken to pieces, and the shareholders were all at variance.

29. Mr. Daniell has measured and mapped each village, *i. e.*, parcel of lands with known names and boundaries separately, and has assessed each village separately as a separate estate ; the property of each shareholder in each village has been recorded according to the share of land and interest which each holds in each village.

30. The lands in each village, which originally formed part of each daen : or brotherhood, have been arranged into a group bearing the original name of the brotherhood, and the shareholders have been similarly grouped. Thus a record of the original tenure is maintained as far as can be.

31. The advantages of this new arrangement are :—that a correct set of records can be kept ; all disputes are adjusted ; the value of the property is enhanced ; any one can now buy a village, and be his own master in that estate, whereas formerly, he was let into being a minute sharer in a brotherhood, and a sharer in all the family disputes.

32. The objections are :—The dissevered responsibilities ; the increased number of revenue collections to be made.

33. Formerly, a shareholder in a brotherhood paid his share of the assessment on that brotherhood under all circumstances ; the failure of any parcel or parcels of lands relieved the shareholder of his responsibility no more than the failure of a field or fields in an ordinary estate would relieve the proprietor or manager of his responsibility for the revenue on the whole estate.

34. Now, though a shareholder may hold the same lands as heretofore, he has a right to relief in one village that may fail, notwithstanding that he may be reaping large profits in another village.

35. But this is a matter of no importance. In the first place, the assessment on each village or estate is so moderate, that there is no chance of failure ; and in the second, each estate is hypothecated for the revenue assessed upon it.



36. The second main objection is limited to the increased labour of making more entries in the rent-roll of the district. The actual number of managers from whom collections have to be made remains much as before.

37. I need not repeat the remarks in Mr. Daniell's reports in paragraphs 34 to 42 of Appendix, regarding the tenures and arrangements in certain hill estates; but I may briefly notice that of the Malkote estates, 8,051 acres; all that contained anything like valuable forest have been made over to the Forest Department. The waste lands which could not be separated from the patches of cultivation remain the property of Government; but till such time as Government may wish to reclaim or use, or otherwise dispose of these waste lands, the village communities may graze and hut their cattle on the lands. The area of this portion is 12,677 acres, but in this are the small cultivated patches of many villages, and the waste lands which have been proved to belong to, and have been included in, four villages, viz., Akurbanee Bhilung, Sowra, Seroulee.

38. With this sole exception, the tenures in the Doon have become almost exactly similar to the tenures which may be met with in ordinary districts.

The maps and papers of all sorts which are prescribed, have been prepared with great care by Mr. Daniell, and henceforth the Doon may be considered a regularly settled district.

39. *Assessment.*—Mr. Daniell had made the settlement according to the rules then in force, and had reported his proceedings in 1864. But the receipt of the orders regarding Permanent Settlement necessitated a complete revision of the work, which, during his absence from the Doon, when he was employed in the Saharanpore District, remained in abeyance. Mr. Daniell returned finally to the Doon in October, 1865. He then revised all the rates and re-considered the assessments of all the villages.

40. In paragraphs 21 to 38 of his final report, Mr. Daniell gives full details of the data on which he fixed his average rates, which were approved by the Board of Revenue.

41. On receipt of the first report, objection was made that a sufficient charge had not been made on account of land which was lying waste, and on account of the tracts of forest and jungle which were included in the village boundaries. The revision involved a re-examination and re-assessment of such lands.

42. The question of canal irrigation in the Doon is free from the difficulties which beset it in the plains.

43. In the Doon there are small canals, the capabilities of which are known, each having a circumscribed area to which the water can be applied, and beyond

\* The possible extension of irrigation by canals from the Asun, Song and Sooswa rivers has not been taken into account here, as no steps have been taken to utilize the waters of these rivers.

which, as a general rule, under existing arrangements, irrigation cannot be extended,\* owing to the peculiar nature of the country,

which is intersected by deep broad ravines or torrent beds, over which the water could not be carried with any prospect of remunerative results. The lay of the land is so well marked that a Settlement Officer can satisfy himself what lands can, and what lands cannot, be irrigated.

44. Mr. Daniell completed his final assessment under the most favorable circumstances. Remarks of the supervising authorities had drawn his attention to defects in his first assessment; carefully revised rates prepared to guide him had been approved of; already well acquainted with the country, he had re-examined it; he had adjusted the rents in about 2,000 cases; he had, after much enquiry, drawn up a statistical

return of the agricultural produce of the district, and was thus supplied with the best and latest information.

45. I believe the fullest confidence may be placed in his judgment, and that he has very good grounds for having limited the Government demand to a standard which is universally low, and, in some cases, almost nominal.

46. The country is in every way in a backward state ; many parts of it are so unhealthy that, even if cultivators could be got, which is not the case, they could hardly be kept alive. Even in the tracts the climate of which has improved there is great difficulty in getting cultivators. The consequence is that the rates of rent, compared with those which prevail in the lower districts, are remarkably low.

47. The average rate for irrigated and manured land is assumed to be Rs. 3-8 per acre in the first class of villages in the Western, *i. e.*, the healthiest and most advanced part of the Doon.

48. The only indication of any approach to the rent-rates which are common for such lands, *i. e.*, manured and irrigated, in every other district in the Division is the mention in the 26th paragraph ; that in some instances the rent of land held under contract or short term leases for one or two years may possibly be as high as from Rs. 10 to 15 per acre ; but this is evidently a very exceptional case,—as exceptional probably as the cases in other districts in which the rate of rent has risen above Rs. 30 per acre.

49. Another consideration prevents full assessment, that is, the very low standard of the Government demand at the last settlement. Even where capabilities permit of a higher assessment, it would be very inadvisable to demand much more than double what the people have been in the habit of paying.

50. Altogether I think Mr. Daniell has been most judicious in being very moderate. He has given good reasons generally, when he has fixed his demand at what appears to be far too low a rate, even if present assets alone are considered.

51. In many cases he would appear not to have made sufficient allowance for possible income from forests, for future improvements, for the possibility of bringing large waste tracts under cultivation ; but his remarks justify his moderation if they are carefully considered.

52. I may instance Bunahur, No. 31 W. D. A demand of Rs. 420 for an estate containing 7,825 acres, of which 1,200 acres bear sâl, the best timber tree, with 292 acres of cultivation already, seems to be very low ; but the demand at the last settlement was Rs. 150. The proprietor will be pressed as close as he should be to pay treble what he has been accustomed to pay.

Kanswalee Kotree, No. 97, is another. Dhukraree, No. 46, is a similar case, but in the open plains:

Burrowwalee, No. 33, Rampore kalan, No. 164, are cases in which good reasons are given for fixing a low demand.

The almost nominal assessments in some cases in the Eastern Doon are generally where the estates are in the hills and cultivation difficult, or in very unhealthy places.

53. These forests and waste lands have for ages been used only for grazing cattle. Hitherto they have been of no value and yielded little or nothing.

54. It must be remembered that at previous settlements none of these were assessed at all. I desired that where the waste area in an estate was excessive, it should be treated under Section 8, Regulation VII. of 1822, and transferred to the Forest Department. But the legality of this was doubtful, and eventually it was determined to assess the lands. But altogether about 25,000 acres have been reserved as Government property.

55. I have not the slightest hesitation in recommending that Mr. Daniell's proposed demand should be sanctioned for the term of settlement, *i. e.*, to 1893.

56. The only cases in which I have had any doubt I have marked "demand too low." They are Nos. 120, 121, and 122 E. D. ; the three portions or new estates into which Raepore has been partitioned. But looking to the circumstances of the adjoining estates on the south, and to the fact that they are in a part of the Doon into which cultivation has been pushed in my time, and that I have known it when it was almost all waste, I think Mr. Daniell has erred on the right side, if he has erred in making his demand low. There has been little, if any, improvement in the last 20 years, and it is safest not to enhance too much on what is possible in the next 20 years.

57. *Permanent Settlement.*—I now come to Mr. Daniell's propositions regarding Permanent Settlement.

58. The instructions of His Excellency the Governor-General in Council were to the effect, that if the existing average rates of assessment on land fit for tea or other cultivation be one rupee per acre during the term of 20 or 30 years' settlement, and for the sake of obtaining a final assessment the proprietor shall agree to pay Rs. 2 per acre for ever, the compromise should be sanctioned ; for while the proprietor is thus secured from all future enhancement of revenue, the Government is compensated by an immediate or early moderate increase.

59. It was assumed that the intelligent Anglo-Saxon settlers, duly appreciating the advantages of Permanent Settlement, would be ready to pay an enhanced assessment in order to secure the great boon.

60. There have been three exceptional cases, as Mr. Daniell writes:—"The owners had the option of a Terminal Settlement at ordinary rates on present cultivation, with a mild charge on the culturable waste or of a Permanent Settlement, on the terms I now propose, and they preferred the Permanent Settlement on the advanced terms."

61. The estates are Umbaree, No. 7 ; Bholakeewalla, No. 27 ; and Dyrham town puttee Lukunwallah, No. 58.

62. Umbaree is an estate exactly corresponding to the case supposed in the instructions ; land fit for tea cultivation. At the time of measurement the productive area was 297 acres, of which 62 were cultivated, 8 fallow and 227 culturable. At the time of "assessment" the land had been considerably brought under cultivation, the rates are based on the present status with a fair estimate for future improvement.

The status and rates are :—

|                                             |              |     |     |         |
|---------------------------------------------|--------------|-----|-----|---------|
| 100 acres cultivated, manured and irrigated | at Rs. 3 per |     |     |         |
| acre (2nd class rates)=                     | ...          | ... | ... | Rs. 300 |
| 140 *acres at Re. 1-8=                      | ...          | ... | ... | ,, 210  |
|                                             |              |     |     | —       |
| Total                                       |              |     |     | Rs. 510 |

Leaving a balance of 57 acres of culturable waste (20 per cent. on the whole productive area) unassessed. The demand is fixed at Rs. 250. There is now a plentiful supply of water from the Kuttur Puthur Canal.

There are, I may observe, 43 acres, the slopes down from one step to another (the ground lies in natural terraces) containing common scrub jungle, which, with care, might be made good use of.

The entire area might be irrigated.

63. I interpret the instructions to mean that to secure to the proprietor the boon of permanent settlement, and to Government the compensation of an immediate or

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\* Culturable.

early moderate increase, the proprietor should have agreed to pay for the 100 acres Rs. 300. I suppose it is fair to put the general district productive area rate, which is close upon 8 annas per acre on the culturable area, and in this case it certainly would be moderate to assess the culturable waste at 8 annas per acre. Then the proprietor should pay 1 rupee, which makes Rs. 140 for the 140 acres, which, *plus* 300, makes Rs. 440,—a proper demand to be paid for the boon of Permanent Settlement, instead of Rs. 250, at which low figure Permanent Settlement certainly should not be granted.

64. As this demand of Rs. 250 was accepted conditionally, it is necessary, if the above view is correct, and Permanent Settlement is not granted, to revise the assessment.

In my opinion it should be—

|                                              |     |     |     |                |
|----------------------------------------------|-----|-----|-----|----------------|
| For 100 acres at Re. 1-8                     | ... | ... | ... | Rs. 150        |
| For 140 acres culturable at 8 annas per acre | ... | ... | ... | 70             |
| Total                                        | ... | ... | ... | <u>Rs. 220</u> |

65. The next case is Bholakeewallah, No. 27 :—

The area at measurement was, total productive, 229 Acres.

|                                    |            |     |            |
|------------------------------------|------------|-----|------------|
| 45 acres irrigated from the canal. | Cultivated | ... | 77         |
|                                    | Fallow     | ... | 8          |
|                                    | Culturable | ... | <u>144</u> |
| Total                              | ...        | ... | <u>229</u> |

At the time of assessment the cultivation had become 80 acres. The demand for permanency was fixed at Rs. 180.

66. In this case, according to my view, the proprietor should have paid—

|                               |     |                  |     |            |
|-------------------------------|-----|------------------|-----|------------|
| For 80 at $3 = \frac{240}{2}$ | ... | $120 \times 2 =$ | ... | Rs. 240    |
| For 120 at 8 annas =          | ... | $60 \times 2 =$  | ... | <u>120</u> |
| Total                         | ... | ...              | ... | <u>360</u> |

67. It is not clear why Mr. Daniell rates the culturable area in this case at 1 rupee per acre, and not 1-8 per acre, as he did in Umbaree. The circumstances of the two estates are almost precisely similar; but that there may be no ground for complaint in proposing the terminal assessment, I will put 6 annas per acre on the culturable waste.

Then the terminal demand should be—

|                     |     |     |     |     |            |
|---------------------|-----|-----|-----|-----|------------|
| For cultivated area | ... | ... | ... | ... | 120        |
| For culturable      | ... | ... | ... | ... | <u>45</u>  |
| Total               | ... | ... | ... | ... | <u>165</u> |

68. The third estate is Dyrham, town puttee of Lukunwala :—

At the measurement the area was, total productive, 331 acres.

|            |     |     |     |            |
|------------|-----|-----|-----|------------|
| Cultivated | ... | ... | ... | 106        |
| Fallow     | ... | ... | ... | 105        |
| Culturable | ... | ... | ... | <u>120</u> |
|            |     |     |     | <u>331</u> |

At the time of assessment there were 100 acres of tea and other crops grown on manured land. Canal irrigation had also extended to about one-third of the area.

The owner was offered the option of paying Rs. 290 for Permanent Settlement, or a demand equal to the average rates, with a small charge on the culturable waste for the term of settlement. He accepted Rs. 290.

69. According to my calculations the boon of Permanent Settlement should not have been granted unless the proprietor had agreed to pay—

|                                                         | Rs. |
|---------------------------------------------------------|-----|
| For 100 at $3 = \frac{300}{2} = 150 \times 2 =$ ... ..  | 300 |
| For 181* culturable at 8 annas $= 90 \times 2 =$ ... .. | 180 |
| Total ... ..                                            | 480 |

70. Assuming that Permanent Settlement will not be granted for Rs. 290, revision is necessary. Here again I would rate the culturable at 6 annas per acre.

|                                          | Rs. |
|------------------------------------------|-----|
| Then 100 at $3 = \frac{300}{2} =$ ... .. | 150 |
| 181 at 6 annas $=$ ... ..                | 61  |
| Revised demand ... ..                    | 211 |

I may note that the proprietor of this estate has given up tea as a failure, and farming of any sort altogether in disgust; but Rs. 211 is a very moderate assessment for 331 acres.

71. The amount to be deducted from the total demand of the district for the reduction in these 3 estates is  $30 + 15 + 79 = 124$  Rupees.

72. There is an exceptional case in the Eastern Doon which Mr. Daniell has not noticed in his report, No. 22, Boolundawala.

The terminal demand fixed was Rs. 48. The proprietor offered Rs. 65 for permanent Settlement.

|                                  |              |     |     |     |    |
|----------------------------------|--------------|-----|-----|-----|----|
| The productive area was 136. ... |              |     |     |     |    |
| Irrigable 111.                   | { Cultivated | ... | ... | ... | 98 |
|                                  | { Fallow     | ... | ... | ... | 13 |
|                                  | Culturable   | ..  | ... | ... | 25 |

The assessment at average revenue-rates should be Rs. 87.

73. To secure Permanent Settlement, the owner should have given Rs. 174, omitting the culturable area. His offer of Rs. 65, i. e., a demand actually *under* what the demand at average revenue rates should be, was accepted.

74. Unless Permanent Settlement is to be made at any sacrifice, this is simply preposterous.

75. The assessment of Rs. 65 is low for a terminal settlement anywhere but in the Eastern Doon; as it was conditionally accepted, it must be reduced and the demand fixed at Rs. 48.

76. This makes the total reduction to be made from the district total demand  $124 + 17 = 141$ .

77. Mr. Daniell in his report and in Statement No. IX. rightly gives the number of permanently settled estates at Rs. 110. There are some mistakes in the statement which I have corrected. I have fully discussed 4 cases; there remain 106 to be considered.

78. I believe I need enter into details of one more only.

No. 143. Productive area 11 acres; cultivated 9; fallow 1; culturable 1. All irrigated; proposed permanent demand 22.

The demand at average revenue-rates should have been Rs. 17-8. If the proprietor wished for Permanent Settlement, he should have given Rs. 35 instead of only Rs. 22.

\* Deducting and leaving unassessed 20 per cent.

The estate is close to Dehra, and in any other district would be assessed at even a higher rate than Rs. 35.

79. Of the remaining 105 estates, I believe it will be enough to state that the proposed permanent demand is—

|                       |     |     |                           |
|-----------------------|-----|-----|---------------------------|
| In 1 estate           | ... | ... | Rupee 1-8 per acre        |
| In 16 estates between | ... | ... | Rupee 1 and 1-8 „         |
| In 9 estates          | ... | ... | only 1 rupee „            |
| In 36 estates between | ... | ... | 8 annas and 1 rupee „     |
| In 43 estates         | ... | ... | 8 annas per acre or less. |

I believe I need add no more than that not one of these estates should be permanently settled.

80. I hope I have not misunderstood the instructions. In interpreting them I have been guided by the consideration that the average rates, though fair and proper, under the present circumstances of this district, are very much too low for the basis of a Permanent Settlement. The highest rate for manured and irrigated land in the 1st class villages is only Rs. 3-8 per acre. Late enquiries in a district below and information gained in other districts show that a general average rate of Rs. 12 per acre, for such soil is too low. Mr. Daniell indicates that a rate approaching to this is not unknown in the Doon, where he states that short leases and contracts may be given for from Rs. 10 to 15 per acre.

81. There is no reason why the rate of rent in the Doon should be one-third of the rates of other districts. I am aware that it is supposed that the produce in the Doon is one-third less than that of the soil beyond the Sewalie range; but that this is the case I doubt, and if it is, it can hardly be ascribed to want of fertility in the soil of the Doon.

82. No one who compares the richness and strength of spontaneous vegetation in the Doon, the size of the trees and bamboos, the rank nature of the reeds and rushes and grasses with the stunted growth of spontaneous products in the adjoining district below, would readily admit that there can be any natural defect in the soil. No one who has seen the luxuriance of the Otahrite sugar-cane, to take a highly cultivated crop, or the great height to which the Rhea (the China grass plant) reaches in the Doon, or the height and dense growth of the Tor Dal (*Cuterolia*?) in what is classed as inferior land, dependent only on the rain, can doubt the fertility of the soil.

83. In all tracts, as far as my experience goes, which have been unhealthy as the Doon has been, a slovenly style of tillage (the result originally of prostration from continued sickness) prevails for a long time.

When man improves his work, it can hardly be doubted that the soil will respond, and as the population increases, rents will rise, if not to treble what they now are, which would be about the present standard of rents below, certainly to double the present rates. Probably the anticipation of this had some weight in the instructions given regarding Permanent Settlement in the Doon.

84. Finally, as far as this subject is concerned, Permanent Settlement surely should not be made in a district the rates of settlement of which are, on the total area, 3 annas 6 pie, i. e., not six pence per acre; on the productive acre, 7 annas 4 pie and a fraction, not a shilling per acre; and on the cultivated area, 13 annas 1 pie, a little over one shilling and six pence per acre.

85. I have stated above that, for a terminal settlement, the assessment may be accepted. In the proposed demand there is an increase of  $54\frac{1}{2}$  per cent. on the demands of the past settlement, which is as great a rise perhaps as the present assets could stand.

86. I have touched slightly on the subject of canal irrigation above ; on the grounds there detailed, I see no special necessity for separating the ordinary revenue from revenue due to the canal in this district.

87. I believe that, when the water is everywhere conveyed to the fields in masonry channels, there will be an extension of canal irrigation, and when the waters of the Asun, Song and Sooswa rivers are taken in hand by the Canal Department (which they should be soon, for private parties are beginning to use them, and should not be allowed to acquire prescriptive rights, which may cause difficulty hereafter) much land, which is now dry, will be irrigated.

88. Mr. Daniell has not been able to give such a clear and accurate account of the land actually under irrigation at the time of his assessment in each estate, see paras. 71 to 78, as would prevent any question regarding the extra area on which canal water rent might be levied ; but he has shown exactly the area which he has assessed as irrigable by canals in every estate.

89. Were the canal officer furnished with a copy of the Statement No. VII., he could, on comparing with it the out-turn of his annual measurements of irrigated land, fix beyond dispute the excess of the actually irrigated (over Mr. Daniell's irrigable area) on which an acreage rate might be levied.

90. In that statement Mr. Daniell has shown the portion of the assessment which is attributable to canal irrigation, so that if it were decided to make the assessment independent of the canals, the ordinary revenue could be at once separated.

91. In this case the deduction to be made from the total demand in the ordinarily settled estates, which is 31,496, would be Rs. 4,747, leaving the ordinary revenue demand Rs. 26,749.

92. Whether the canal officer should realize Rs. 4,747 or more would depend on what acreage rate was fixed.

93. Whatever may be the decision regarding assessments being inclusive or exclusive of canal assets, there will be no difficulty in carrying it out.

94. If it should be decided generally that the assessment should be separate, the rule should be adopted in the Doon.

95. The income from the extraordinary or canal revenue would be more certain than in most parts of other districts where wells are practicable.

In the Doon there can be very few wells. The success of well-sinking is very uncertain. In some cases water is just reached at a depth of 200 feet.

96. There are 24 rent-free estates—12 in the Western, 12 in the Eastern Doon. Mr. Daniell has in each case fixed the nominal demand on which he thinks the cesses should be charged.

97. There are 10 acres of patches of rent-free lands within the boundaries of revenue paying estates.

98. Besides these, and three grants bestowed for good services, there are no other rent-free lands in the Doon.

99. There are the following grants :—1st, old grants, 10 in the Western Doon, 7 in the Eastern Doon, 3 given out of waste lands in former days, and held subject to a progressive demand, which will become the property of the grantees on their fulfilling the terms of the grants. Mr. Daniell has shown the highest rate per acre to which the demand should rise, and given his reasons for considering the rates so fixed fair and proper. 2nd. There are eleven estates purchased out of the waste lands under the fee-simple rules in the Western Doon, and one in the Eastern Doon, total 12.

There are also the three good service grants mentioned above.

100. For the 12 estates purchased under fee-simple rules, containing an area of 20,801 acres, Rs. 79,423 was the price paid or to be paid.

101. The demand of the revenue paying grants was in 1866-67 Rs. 4,338; in 1892-93, the term of the settlement, the demand will be 7,058.

102. Supposing Permanent Settlement is not granted, deducting the alterations in the estates the settlement of which was conditionally proposed to be permanent, the demand of the district will be for the settlement now made Rs. 31,496 for revenue paying estates, and when the grants reach the highest assessment, to this must be added the Rs. 7,058, making Rs. 38,554.

103. European residents of the Doon have increased. There are now 990, of whom 83 are owners of lands or houses, but only 41 landholders concerned in agriculture.

104. *Cesses.*—The engagements must be revised. The last orders were received after the agreements had been taken. New agreements to pay 55 per cent. of Mr. Daniell's assets, or 10 per cent. on the demands which he fixed must be taken. This can be done by the District Officers.

105. *Village Watchmen.*—The mode of payment of village watchmen was the subject of a protracted correspondence. It was a difficult matter in the Doon to make provision for a sufficient rural constabulary. The question has been lately settled. It has been decided to have the municipal cess combined with a house assessment. This gives the best provision for the greatest number of watchmen. The income from house assessments will expand as population and wealth increase.

106. *Village Accountants.*—The provision that Mr. Daniell has made for the village accountants is one anna in the rupee, i. e., a little over 6 per cent. of the Government demand. Even this leaves the rate of salary very low, and the number of estates in the charge of most of the accountants too large. The circles have been re-arranged, and everything that can be done to secure a resident Accountant in each circle has been done; but from some unhealthy tracts the Accountant must retire to healthier sites during the malarious season.

107. In my opinion it would be much better to make the provision 10 per cent. on the assets instead of 6 per cent. on the demand. This may appear to be a present sacrifice. The assets being supposed to be double the demand, the percentage should be 12 per cent. of the assets; but 6 per cent. on the demand is an exceptionally high rate.

108. The demand is rigidly fixed for at least the term of settlement, and there can be no expansion of such a provision. The assets will increase enormously, and 10 per cent. on the assets will give an elastic and annually increasing income, and very shortly a suitable provision for efficient accountants in properly sized circles. The new arrangements regarding this could be prepared by the District Officers.

109. In order to save the Board the trouble of turning over the pages of the volumes containing the II. and III. Statements, I have condensed into an abstract form, the points that have principally to be looked to, to show at a glance the productive area, the proportion cultivated and culturable, the hills and ravines, the forest and jungle, and what has been called the otherwise barren land, which generally might be turned to account, and the proposed demand. The estates the settlement of which Mr. Daniell proposed to be permanent are marked. [?] Those that are to be temporarily settled are marked [T.] Where there seems to be need of explanation I have given a few short explanatory remarks regarding estates in the Western Doon. I have seldom made such remarks on the Eastern Doon estates, because it is almost



superfluous to account for the lowness of the demand in this backward and unhealthy tract.

110. It rests with the Board and Government to decide whether there should be any permanent assessments in the Doon. I most strongly deprecate such a course. I think that the landholders have not responded to the offer of Government. There is no compensation for the sacrifice of the future increase of revenue, which, if the Doon advances only to something much below the present status of the other districts of the Division, would be 100 per cent. The immediate increase which would be gained by granting Permanent Settlement would be the ridiculously small sum of of (141) one hundred and forty-one rupees.

F. WILLIAMS,  
Commissioner.

#### WESTERN DOON.

P. A. Productive area, vernacular malgozareae.

C. Cultivated.

C. C. Culturable.

O. B. Otherwise Barren.

P. D. Proposed Demand.

Pt. Permanent.

C. I. Canal Irrigation.

?. Indicates those estates in which Mr. Daniell proposed permanent settlement.

T. Ditto ditto temporary settlement.

These abbreviations are used to save writing.

No. 1 T. *Aadhoowalla*.—Unaccountable increase of area at Browne's survey 342 acres, last settlement 406, now 529 acres, but this is common.

There are 413 acres cultivated or culturable and 112 forest. The demand is fixed at Rs. 70. Only 36 acres irrigated, though all these western estates on the Asun river might be fully irrigated.

I cannot agree that the future capabilities of this estate have been considered, and that a higher demand than 70 should not be made. Hereafter the demand might be quintupled; but in the present state of the locality and climate, 70 may be enough for a temporary demand.

No. 2 ?. *Aamwalla*.—There are 106 acres of cultivation, and above 200 of forest, which will become either valuable in itself or cultivated to some extent. Mr. Forest, formerly Canal officer in the Doon, has suggested that irrigation is practicable from the west tributary of the Song by Shahausurdhara. The estate is close to Dehra. I cannot agree that such an estate should be settled permanently for Rs. 62, that is a small enough demand for a temporary settlement.

No. 3 T. *Abdollahpore*.—75 acres culturable, 78 cultivated. But that the demand has been nearly doubled, it would be too low for a temporary settlement.

No. 4 ?. *Chuck Addoeewalla*.—6 acres all cultivated, demand Rs. 6. I cannot assent in a proposition to assess permanently at 1 Re. per acre.

No. 5 ?. *Ajjubpore Kulan*.—64 acres of first class land; 601 cultivated; 295 now irrigated by canal. The estate is close to Dehra, and the best crops are grown.

Considering the demand at the last settlement was only Rs. 405, and 675 is a large increase, the assessments is reasonable, as a temporary measure; but I cannot concur in settling any estate for ever at about Re. 1 or 2 shillings an acre.

- No. 6 ? *Ajjubpore Khoord*.—In every way similar. The demand has been enhanced from 188 to 350. Productive area 392 acres. See next above canal irrigation, 304.
- No. 7 ? *Ambarree*.—This is an excellent specimen of a class of estates, the future of which is to be decided. The productive area is 297 acres, all irrigable from the canal. At present nearly the entire area is under tea. The estate is situate in the north-west corner of the Doon, on the road to the new hill Cantonment of Chukratta. Setting tea aside, with such a market accessible by a good cart road, as it will be, within 30 miles, are these 297 acres to be permanently settled for Rs. 250 ? I cannot recommend it. It does not appear what lower temporary demand Mr. Daniell would have fixed ; but, as Rs. 250 were assessed on condition of permanent settlement, the demand must be reduced (?), but 220 should be the lowest limit.
- No. 8 ? *Ambeewalla*.—156 productive acres ; 142 cultivated ; 118 canal irrigated. Is this estate to be permanently assessed at only 115 ? I cannot recommend it.
- No. 9 ? *Bajawala*.—Very similar ; 280 productive acres ; 277 cultivated ; all irrigated. Is an assessment, of 260 to be permanent ? I cannot recommend it.
- No. 10 ? *Bahmunwalla*.—206 productive acres ; 195 cultivated ; 90 irrigated. The canal water-course runs through the estate, and the whole area might be irrigated, Assessment 180. Is this to be permanent ? I recommend it.
- No. 11 T. *Bahadurgurh*.—Productive area 127 ; C. 18 ; culturable 109 ; sâl and other forest 154. The assessment has been doubled, and more could hardly be demanded.
- No. 12 ? *Bahadurpore*.—Cultivated 156 ; culturable 32 ; total productive 188. Groves 4 ; hills 28. Is a demand of Rs. 98 to be permanent ? I say, decidedly not.
- No. 13 T. *Benaspore*.—20 culturable ; demand 6 ; new location.
- No. 14 T. *Betwalla*.—340 culturable ; proposed demand Rs. 55,—3 annas 3 pies per acre ; a jungle swamp.
- No. 15 ? *Belaspore Kandlee*.—214 cultivated ; hills 192. Is the proposed demand (138) to be permanent ? I say, decidedly not.
- No. 16 ? *Bejapore Gopeewalla*.—Productive area 296 ; cultivated 249 ; culturable 47 ; hills 75. Is 112 to be permanent ? I say, decidedly not.
- No. 17 ? *Bejapore Halhee Burkalla*.—Productive area 449, all C. ; groves 4 ; hills 64 ; Is 190 to be permanent ? Decidedly not.
- No. 18 T. *Bhanwalla*.—Productive area 158 ; cultivated 80 ; culturable 78 ; hills and jungles 47 ; demand 50 ; mostly dry.
- No. 19 T. *Bharooowalla*.—Productive area 106 ; C. 65 ; C. C. 41 ; O. B. 10<sup>9</sup> ; demand 40 ; poor land.
- No. 20 T. *Bheeturwalla*.—P. A. 98 ; C. 80 ; C. C. 18 ; tanks ; hills otherwise barren, and forest 2,577 ; demand 130 ; for cultivation 50 ; forest 80 ; mostly bare, precipitous hills.
- No. 21 T. *Bhugwanpore Julom*.—P. A. 230 ; C. 100 ; C. C. 130 ; P. D. 90 ; two-thirds of the area inferior.
- No. 22 T. *Bhugwantpore*.—P. A. 61 ; C. 27 ; C. C. 34 ; P. D. 21 ; Pt. D. of 24 rejected ; high, dry, and stony.
- No. 23 T. *Bhidowlee*.—P. A. 277 ; C. 249 ; C. C. 28 ; hills 332 ; covered with sâl, demand 114. For cultivation 80 ; forest 34. Crops frequently fail entirely.
- No. 24 ? *Birgirwalla*.—P. A. 19 ; C. 12 ; C. C. 7 ; jungle 10 ; O. B. 8 ; 22 acres pay rent, part of Rajpore bazar. Is 38 to be permanent ? I say, decidedly not.

- No. 25 T. *Birsanee*.—P. A. 512; C. 458; C. C. 54; hills 41; bear sâl; demand 84; cultivation very fluctuating.
- No. 26 T. *Bisunpore*.—P. A. 76; C. 17; C. C. 59; demand 11; cultivation precarious.
- No. 27 ? *Boolakeewalla*.—P. A. 229; C. 77 now 80; C. C. 152 now 120; canal irrigated 48, now 80. More possible? Assets of cultivation estimated at 3 per acre; of culturable only 1. Is 180 to be permanent? Certainly not.—(See Ambaree.)
- No. 28 ? *Bugrial*.—P. A. 30; all C.; all irrigated in Dehra Municipality. Is 50 to be permanent? I cannot recommend it.
- No. 29 T. *Bukarnah*.—P. A. 74, all C. hills 2,002, part sâl forest, demand 70, former demand was 20; mostly high rising hills, and crags land, poor and stony.
- No. 30 T. *Bunseewalla*.—P. A. 104, C. 16, C. C. 80, P. D. 90.
- No. 31 T. *Birnahur*.—P. A. 292, al. C. hill 7,825; about 1,200 acres sâl forest, the rest lofty hills and crags P. D. 420, viz., 120 for C., 300 for forest, former demand 150; could not be pressed higher.
- No. 32. ? *Burkulla*.—P. A. 26; C. 22; C. C. 4. Is 22 to be permanent? I cannot recommend it.
- No. 33 T. *Burronwalla*.—P. A. 235; C. 225; C. C. 10; jungle 5; P. D. 56; cultivation fluctuating; land weak; great want of water; crops suffer from animals.
- No. 34 T. *Burwah*.—P. A. 386; C. 180; C. C. 206; hills 130; other jungle 111; P. D. 75; for C. 50; for forest 25; land high and indifferent.
- No. 35 T. *Byrageewalla*.—P. A. 195; C. 73; C. C. 122; hills 9; demand 45, former 26; land mostly dry.
- No. 36 T. *Chandpore Kulan*.—P. A. 144; C. 25; C. C. 119; demand 30; present assets very small.
- No. 37 T. *Chandpore Khoord*.—P. A. 145; C. 2; C. C. 143; demand proposed 29; present assets nil.
- No. 38 T. *Chundurbanee*.—C. C. 75; demand 28.
- No. 39. ? *Chookhoowalla*.—P. A. 596; C. 366; C. C. 230; hills 44; Canal irrigated 99. In Dehra.—Is 380 to be permanent? With 230 C. C., certainly not.
- No. 40 T. *Chowkee*.—P. A. 131; C. 92; C. C. 39; hills 552; forest 376; P. D. 86; for C. 40; for forest 46; assets poor.
- No. 41. *Dalunwalla Khas*.—P. A. 381; C. 338; C. C. 43; Canal irrigated 106; Fee-simple. P. D. 292; cesses 69? 298·9 purchased in fee-simple?
- No. 42 ? *Dalunwalla Gopal*.—C. 7. Is 8 to be permanent? It is in Dehra. I cannot recommend it.
- No. 43 T. *Daneonka Danda*.—C. 35; sâl forest thin 90; proposed demand 25, including 8 for forest.
- No. 44 ? *Dhakee*.—P. A. 95; C. 94; C. C. 1. Is 75 to be permanent? I cannot recommend it.
- No. 45 ? *Dhakputtee*.—P. A. 223; C. 212; C. C. 11; hills and forest 160; thin sâl, is partly in Rajpore; P. D. 210, of which 25 for forest. Is this to be permanent? I say, decidedly not.
- No. 46 T. *Dhakranee*.—P. A. 2,619; C. 520; C. C. 2,089; O. B. 236; Canal irrigated 17; P. D. 900; former 396.
- No. 47 T. *Dholanee*.—P. A. 268; C. 174; C. C. 94; hills 988; O. B. 49; sâl forest 170; P. D. 86; for C. 46; for forest 40; cultivation precarious and poor.

- No. 48 T. *Dholass*.—P. A. 285; C. 227; C. C. 58; fair sâl forest 508; P. D. 150; for C. 100; for forest 50. Crops inferior.
- No. 49 T. *Dholcote*.—C. C. 39; hills 21; P. D. 8. Very little cultivation, land poor.
- No. 50 T. *Dhoomsepora Gungbewa*.—P. A. 231; C. 41; C. C. 190; Canal irrigated 31; P. D. 55. Present assets very small.
- No. 51 T. *Dhoomnuggur*.—P. A. 83; C. 32; C. C. 51; hills 12; P. D. 20. Cultivation fluctuating.
- No. 52 T. *Dhurmauwalla*.—P. A. 367; C. 120; C. C. 227; P. D. 110. Present assets low.
- No. 53. ? *Dhurmpore*.—P. A. 452; C. 394; C. C. 58; groves 5; O. B. 56; Canal irrigated 245. Is 475 to be permanent? I cannot recommend it.
- No. 54 T. *Dhurtawalla*.—C. C. 176; sâl forest 83; P. D. 40.
- No. 55 T. *Dodhay*.—P. A. 179; C. 173; C. C. 6; hills, &c., 883; P. D. 96; for C. 56; for forest 40. Present assets low.
- No. 56 T. *Domeith*.—P. A. 610; C. 87; C. C. 523; forest 444; mostly khyr, but some sâl; can be canal irrigated; P. D. 130; for C. 90; for forest 40. Crops subject to injury.
- No. 57 T. *Donkwalla*.—P. A. 80; C. 43; C. C. 37; P. D. 26. Present assets only 28.
- No. 58. ? *Dyrham Town*.—*P. Luchewalla*.—P. A. 331; C. 106; C. C. 225; Canal irrigation commenced. Is 290 to be permanent? Certainly not. The 290 were agreed to conditionally on Permanent Settlement. The demand should be reduced to 211.
- No. 59 T. *Futtehpore*.—P. A. 715; C. 392; C. C. 323; hills, &c., 143; P. D. 260. Land high, dry, and poor.
- No. 60. ? *Gadjeeawalla*.—C. 29; hills 35. Is 14 to be permanent? Certainly not.
- No. 61 T. *Ghumolon*.—P. A. 251; C. 88; C. C. 163; hills 14; P. D. 78. Assets low; crops inferior.
- No. 62. ? *Gunghoree*.—P. A. 105; C. 92; C. C. 13; hills 35; irrigation 58 to be permanent? Certainly not.
- No. 63. ? *Gopeewala Khas*.—P. A. 94; C. 90; C. C. 4; hills 54; C. I. 59. Is 90 to be permanent? I cannot recommend it.
- No. 64 T. *Gopeewala, Futteh Singh*.—P. A. 861; C. 445; C. C. 416; hills 1085; P. D. 222. Land generally poor.
- No. 65 T. *Gopeewala, Kullun Singh*.—P. A. 296; C. 171; C. C. 125; hills 369. Is 94 to be permanent? Certainly not.
- No. 66 T. *Gopeewala, Man Singh*.—P. A. 500; C. 215; C. C. 285; hills 185; P. D. 100.
- No. 67 T. *Gujrara Kurumpore*.—P. A. 162; C. 141; C. C. 21; hills 154; P. D. 60. Cultivation poor; income precarious.
- No. 68 T. *Guljwaree*.—P. A. 343; C. 111; C. C. 232; hills 1,722; some fair sâl; P. D. 150; for C. 60; for forest 90. Land yields very indifferently.
- No. 69. ? *Gurhee*.—C. 655; O. B. 182; Canal irrigated 373. Is 680 to be permanent? I cannot recommend it.
- No. 70. ? *Hatkeeburkala Khas*.—P. A. 434; C. 358; C. C. 76; hills 51. Is 180 to be permanent? Certainly not.

- No. 71 T. *Hathareewala*.—C. C. 1 ; hills 23 ; P. D. 4.
- No. 72 T. *Horawala*.—P. A. 646 ; C. 619 ; C. C. 27 ; hills 195 ; forest 1,261 ; of this 800 sâl ; P. D. 360—of this for forest 100. Demand low, but see Mr. Daniell's remarks.
- No. 73 T. *Hukoomutpore Shukurpore*.—P. A. 1,811 ; C. 334 ; C. C. 1,477 ; P. D. 180 ; a dry tract of poor land. Assets low.
- No. 74 T. *Hurbhujwala*.—P. A. 256 ; C. 139 ; C. C. 117 ; C. I. 139 ; P. D. 200. Owners rejected Permanent Settlement.
- No. 75. ? *Hurbunswala*.—P. A. 276 ; C. 219 ; C. C. 57 ; C. I. 253. Is P. D. 380 to be permanent ? I cannot recommend it.
- No. 76. T. *Hurnoul*.—P. A. 65 ; C. 44 ; C. C. 21 ; hills, &c., 76, P. D. 15. Land poor.
- No. 77. ? *Hurreeawala Kalan*.—P. A. 59 ; C. 53 ; C. C. 6 ; hills 264, with fair sprinkling of sâl. Is 45 to be permanent ? Certainly not.
- No. 78. ? *Hurreeawala Khoord*.—C. 57 ; jungle 270. Is 50 to be permanent ? Certainly not.
- No. 79. ? *Hurreepore Jodh*.—P. A. 310, now 233 ; C. 182 ; C. C. 128 ; C. I. 287. Is 410 to be permanent ? I cannot recommend it.
- No. 80. ? *Hureepore Zaharea*. P. A. 309 ; C. 193 ; C. C. 116 ; C. I. 291. Is 41 to be permanent ? I cannot recommend it.
- No. 81 T. *Hussunpore*. C. C. 446 ; O. B. 115 ; P. D. 46 ; a dry tract not likely for many years to yield a certain income.
- No. 82. T. *Indreepore*.—C. 87 ; O. B. 65 ; P. D. 45. Lands high ; crops weak.
- No. 83. ? *Jhakun Azmut*.—C. 171 ; O. B. 66 ; C. I. 14. Is 92 to be permanent ? I cannot recommend it.
- No. 84. ? *Jhakun Kurmpore*. C. 22. Is 12 to be permanent ? No.
- No. 85. ? *Jhakun Nuthoo*. C. 52 ; O. B. 39 ; C. I. 2. Is to be permanent ? I cannot recommend it.
- No. 86. ? *Jhakun Oodeewala*.—C. 45 ; C. I. 4. Is 24 to be permanent ? I cannot recommend it.
- No. 87. ? *Jhakun Shibdutt*.—C. 124 ; O. B. 62 ; C. I. 7. Is 64 to be permanent ? I say, certainly not.
- No. 88 T. *Jatonwalla*.—P. A. 331 ; C. 33 ; C. C. 298 ; waste land very poor ; P. D. 42.
- No. 89 T. *Jeereepanee*.—P. A. 155 ; C. 13 ; C. C. 142 ; hills 186 ; P. D. 60.
- No. 90 T. *Jessoowalla*.—P. A. 690 ; C. 380 ; C. C. 310 ; O. B. 79 ; P. D. 275.
- No. 91 T. *Jhajra, Puttee Dabeesingh*.—P. A. 298 ; C. 23 ; C. C. 275 ; P. D. 50. Culturable area stony.
- No. 92 T. *Jhajra, Puttee Dhoomsingh*.—P. A. 328 ; C. 127 ; C. C. 201 ; P. D. 60. Waste, stony and poor.
- No. 93 T. *Juggutpore Laddawala*.—P. A. 316 ; C. 222 ; C. C. 94 ; hills, &c., 158. A considerable portion sâl and other trees. P. D. 120 ; of this 20 for forest. No certain return to be depended on.
- No. 94. ? *Jumooleewala*.—P. A. 32 ; C. 28 ; C. C. 4 ; hills, &c., 16. Is 16 to be permanent ? I say, certainly not.

- No. 95. ? *Kaonlee Gohur*.—P. A. 353 ; C. 280 ; C. C. 73 ; C. I. 338. Is 425 to be permanent ? I cannot recommend it.
- No. 96. ? *Kaonlee Wazeer*.—P. A. 356 ; C. 282 ; C. C. 74 ; hills 8 ; C. I. 331 ; Is 425 to be permanent ? I cannot recommend it.
- No. 97 T. *Kanswalee Kotree*.—P. A. 947 ; C. 459 ; C. C. 488 ; hills, &c. 657, mostly sâl ; P. D. 150 ; of this 50 for forest, former demand 47. Land hilly, stony ; income uncertain, could not be pressed higher.
- No. 98 T. *Kearkolee Bhutta*.—P. A. 191 ; C. 136 ; C. C. 55 ; hills 3,889 ; of this 6 or 700 bearing forest ; P. D. 280 ; for C. 140 ; for forest 140. Mostly hill-side, steep and bare.
- No. 99 T. *Kissonwala*.—P. A. 103 ; C. 70 ; C. C. 33 ; hills 3 ; P. D. 48.
- No. 100 T. *Kharakhhet*.—P. A. 54 ; C. 47 ; C. C. 7 ; hills 185, in part sâl forest ; P. D. 26 ; for C. 16 ; for forest 10. Assets precarious.
- No. 101. ? *Khemadoz*.—P. A. 45 ; C. 38, C. C. 7 ; C. I. 45. Is P. D., at  $\frac{1}{2}$  per acre, 68 to be permanent ? I cannot recommend it.
- No. 102 T. *Khera Puchwa*.—P. A. 412 ; C. 19 ; C. C. 393 ; O. B. 58 ; P. D. 50. A dry tract. Assets low.
- No. 103. ? *Khera Mansinghwalla*.—P. A. 17 ; C. 10 ; C. C. 7 ; canal 10 ; in Dehra M. Is 33 to be permanent ? I cannot recommend it.
- No. 104 T. *Khoosalpore*.—P. A. 469 ; C. 64 ; C. C. 405 ; O. B. 147 ; P. D. 120 ; C. C. high and poor.
- No. 105 T. *Kidarawalla, P. Murray, S.*—P. A. 552 ; C. 26 ; C. C. 495 ; P. D. 70. A dry tract hitherto, a simple loss to the owners.
- No. 106 T. *Kidarawal, P. Summon Lall*.—P. A. 528 ; C. 20 ; C. C. 508 ; P. D. 60. See 105.
- No. 107. ? *Kidarpore*.—P. A. 203 ; C. 167 ; C. C. 36 ; O. B. 73 ; C. I. 159. Should P. D. 160 be permanent ? I cannot recommend it.
- No. 108. ? *Kirsalee*.—P. A. 25 ; C. 22 ; C. C. 3 ; O. B. 5. Should P. D. 11 be permanent Eight annas per acre ! Certainly not.
- No. 109. ? *Kishenpore*.—P. A. 100 ; C. 86 ; C. C. 14 ; canal 5. Should 40 P. D. be permanent ? Certainly not.
- No. 110 T. *Kotee*.—P. A. 96 ; C. 81 ; C. C. 15 ; hills, &c., 433 ; P. D. 40 ; C. 25 ; forest 15 ; former demand 10.
- No. 111 T. *Kotra Kulleanpore*.—P. A. 215 ; C. 210 ; C. C. 5 ; hills, &c., forest 119 ; P. D. 66 ; C. 50 ; for forest 16. A high lying tract with indifferent land of the poor class.
- No. 112 T. *Kotra Kullian Shuntore*.—P. A. 313 ; C. 88 ; C. C. 225 ; O. B. 120 ; jungle 23 ; former demand 126 ; P. D. 98. Mr. Daniell does not give any reasons for lowering the demand, but the proposed demand is double the half rental at average rates.
- No. 113. ? *Kowlagir*.—P. A. 243 ; C. 225 ; C. C. 18 ; C. I. 123 ; P. D. 200. I cannot recommend that this should be permanent.
- No. 114 T. *Kalahul Mattuk Majree*.—P. A. 351 ; C. 19, C. C. 332 ; P. D. 30. Mr. Daniell remarks the assets are very low, the land poor, and yields but inferior crops.
- No. 115 T. *Kullyanpore*.—P. A. 203 ; C. 49 ; C. C. 157 ; P. D. 25. Assets low and precarious ; crops inferior and suffer from wild animals ; land poor.

- No. 116 T. *Kundhowlee*.—P. A. 804 ; C. 209 ; C. C. 595 ; sâl forest 2,429 ; P. D. 420 ; for cultivation 130 ; forest 290. Mr. Daniell remarks the present assets do not allow for a demand equivalent to half-assets average rates,—former demand 89 should not be pressed higher.
- No. 117 T. *Koonja Khalisa*.—P. A. 514 ; C. 92 ; C. C. 422 ; former demand 173 ; P. D. 140 ; C. C. land poor and not likely to be brought under the plough. Mr. Daniell remarks that 140 is as high as he can demand.
- No. 118 ? *Kurreempore*.—P. A. 98 ; C. 48 ; C. C. 50 ; P. D. 38. Mr. Daniell estimates the rent-roll at 70 to 80 P. I cannot recommend permanent settlement at 8 annas per acre.
- No. 119 ? *Kurunpore Khas*.—P. A. 168 ; C. 158 ; C. C. 10 ; Canal Irr. 67 ; P. D. 220. This estate is close to Dehra. I cannot recommend permanent settlement at such a low rate in such a situation.
- No. 120 T. *Kathur Pathur*.—P. A. 218 ; C. 40 ; C. C. 178 ; P. D. 60. Former demand was 38.
- No. 121 T. *Langha*.—P. A. 505 ; C. 197 ; C. C. 308 ; hills and ravines 229 ; O. B. 197 ; P. D. 105 ; former demand 49. Income from cultivation precarious and low.
- No. 122 T. *Loharwalla*.—P. A. 18 ; C. 8 ; C. C. 10 ; P. D. 12.
- No. 123 T. *Lukunwalla Dhoomsingh*.—P. A. 282 ; C. 148 ; C. C. 134 ; P. D. 130. Mr. Daniell remarks the estate is worked with some difficulty.
- No. 124 T. *Luchmeepore*.—P. A. 314 ; C. 181 ; C. C. 133 ; P. D. 55. Land poor ; crops weak and inferior, subject to destruction by wild animals ; assets precarious.
- No. 125 T. *Majhond*.—P. A. 86 ; C. 22 ; C. C. 64 ; sâl and other forest 407 ; P. D. 80 ; 30 on cultivation ; 50 on forest.
- No. 126. ? *Majrah*.—P. A. 704 ; C. 512 ; C. C. 192 ; C. I. 265 ; P. D. 575. The assets have considerably risen of late. Irrigation has increased, the manured area has risen in 4 years from 35 to 140. The full area for cultivation estimated at 600 acres, the rest apparently inferior, but with canal irrigation and manuring possible. I cannot recommend permanent settlement.
- No. 127 T. *Majree*.—P. A. 179 ; C. 57 ; C. C. 122 ; P. D. 64.
- No. 128. ? *Mukhawalla*.—P. A. 27 ; C. 24 ; C. C. 3 ; hills and ravines 11 ; P. D. 10, not 8 annas per acre ; should not be permanent.
- No. 129. ? *Mukraytee*.—P. A. 13 ; all cultivated hills and ravines 159 ; running up the lower face of the Himaylayan hills ; P. D. 12. I cannot recommend permanency.
- No. 130. ? *Malookawalla*.—P. A. 235 ; C. 218 ; C. C. 17 ; Canal Irr. 235 ; P. D. 260. I cannot recommend this low demand for permanency.
- No. 131 T. *Malsee*.—P. A. 146 ; C. 102, C. C. 46 ; hills and ravines 105, covered with sparse sâl forest ; P. D. 35 ; 25 for cultivation ; 10 for forest. Assets at present said to be very low.
- No. 132 T. *Mandhoowalla*.—P. A. 537 ; C. 121 ; C. C. 416 ; P. D. 70 ; former demand 26.
- No. 133 T. *Mednipore Budrepore*.—P. A. 477 ; C. 204 ; C. C. 273 ; P. D. 168 ; C. C. poor, jungly, and stony ; crops subject to destruction by wild animals.
- No. 134 T. *Meonwalla*.—P. A. 382 ; C. 89 ; C. C. 293 ; jungle 14 ; Canal Irrigation 22 ; former demand 48 ; P. D. 80.

- No. 135 T. *Mehra-ka-Gaon*.—P. A. 82 ; C. 25 ; C. C. 57 ; hills and ravines 18 ; P. D. 16. Cultivation poor and weak.
- No. 136 T. *Misras Puttee*.—P. A. 237 ; C. 103, C. C. 134, hills and ravines 5,781, about 1,200 forest, rest bare ; P. D. 210 ; for cultivation 50 ; for forest 160 ; former demand 36.
- No. 137 ? *Mitheebeharee*.—P. A. 290 ; C. 191 ; C. C. 99 ; Canal Irrigation 251. By last return C. 276 ; P. D. 330. I cannot recommend permanent settlement.
- No. 138 ? *Mohibbawala*.—P. A. 126 ; C. 82 ; C. C. 44 ; sâl forest 13 ; O. B. 8 ; P. D. 65. I cannot recommend permanent settlement.
- No. 139 T. *Mothronwalla*.—P. A. 470 ; C. 319 ; C. C. 151 ; hills and ravines 317 ; Canal Irrigation 304 ; P. D. 275. Income variable.
- No. 140 T. *Nardh*.—P. A. 138 ; C. 116 ; C. C. 22 ; hills and ravines 20 ; P. D. 25. Income very precarious.
- No. 141 ? *Neerunjunpore, Puttee Butt Sahib*.—P. A. 253 ; C. 224 ; C. C. 29 ; Canal Irrigation 191 ; P. D. 285. I cannot recommend permanent settlement at a little over 1 rupee per acre.
- No. 142 ? *Neerunjunpore, Puttee Kunhia Lall*.—P. A. 273 ; C. 223 ; C. C. 50 ; Canal Irrigation 223 ; P. D. 800. See other half of this estate.
- No. 143 ? *Nowanuggur Dhorun*.—P. A. 11 ; C. 9 ; C. C. 2 ; Canal Irrigation 10 ; P. D. 22. This patch is within the municipality of Dehra. Seeing that the rent of the land near other towns is Rs. 20, 30, 40, per acre, I cannot recommend permanent settlement at Rs. 2 per acre.
- No. 144 ? *Nowanuggur Kulalomwalla*.—P. A. 37 ; C. 32 ; C. C. 5 ; Canal Irrigation 20 ; P. D. 55. See 143. Here the rate is still less, little over Re. 1-8 per acre.
- No. 145 T. *Nowgaon*.—P. A. 384 ; C. 175 ; C. C. 209 ; hills, &c., 11 ; former demand 50 ; P. D. 84. Assets uncertain—a nearly located village.
- No. 146 ? *Oodiwalla Khas*.—P. A. 83 ; C. 79 ; C. C. 4 ; Canal Irrigation 83 ; P. D. 110. When the Revenue rate of inferior unirrigated land in other districts is Re. 1 to Re. 1-8, I cannot recommend permanent settlement of a fully irrigated estate at Re. 1-5.
- No. 147 ? *Oodeewalla Adhooiwalla*.—P. A. 37 ; C. 37 ; Canal Irrigation 37 ; P. D. 50. See 146.
- No. 148 ? *Oodeewalla Kurnpore*.—P. A. 180 ; C. 162 ; C. 118 ; O. B. 25 ; Canal Irrigation 180 ; P. D. 280. See 144.
- No. 149 ? *Oodeewalla Mansinghwalla*.—P. A. 192 ; C. 192 ; Canal Irrigation 192 ; P. D. 260. See 146.
- No. 150 T. *Peerwalla*.—P. A. 69 ; C. 16 ; C. C. 53 ; P. D. 12. A recent location ; assets at present almost nil.
- No. 151 T. *Peleon Nathoowala*.—P. A. 256 ; C. 227 ; C. C. 29 ; hills and ravines 163 ; former demand 93 ; P. D. 145.
- No. 152 T. *Phoolsanee*.—P. A. 176 ; C. 130 ; C. C. 46 ; hills and ravines 19 ; O. B. 18 ; sâl forest 18 ; other forest 27. The land high and dry ; crops suffer from wild animals ; P. D. 50.
- No. 153 T. *Pirohutwalla*.—P. A. 632 ; C. 578 ; C. C. 54 ; sâl forest 124 ; C. I. 17, P. D. 380. Owner refused permanent settlement at 420 ; all but the few Canal Irrigation acres are dry out of 380. For cultivation 350 ; forest 30.
- No. 154 ? *Pirtheepore*.—P. A. 111 ; C. 105 ; C. C. 6 ; C. I. 75 ; P. D. 95. I cannot recommend permanent settlement of an irrigated estate at less than Re. 1 per acre.



- No. 155 T. *Pithoowala*.—P. A. 224 ; C. 112 ; C. C. 112 ; C. I. 87 ; P. D. 112 ; The owner, a European, refused permanent settlement, declining to give 60, or even 50 per cent. of assests of 180 acres calculated at average rates.
- No. 156 T. *Pourwala*.—P. A. 101 ; C. 33 ; C. C. 68 ; P. D. 16. Assets very low. Recent location ; crops suffer from wild animals.
- No. 157 T. *Poundah*.—P. A. 403 ; C. 386 ; C. C. 17 ; sâl forest 263 ; hills and ravines and other jungle 608 ; former demand 83 ; P. D. 190 ; for cultivation 130 ; forest 60. Assets low, land high and dry ; crops suffer from wild animals.
- No. 158 ? *Pursooleewala*. P. A. 38 ; C. 31 ; C. C. 7 ; C. I. 4. Is in the Dehra Municipality. P. D. 32. Not one rupee per acre. Cannot recommend permanent settlement.
- No. 159 T. *Purteetpore Kullianpore*.—P. A. 281 ; C. 213 ; C. C. 68 ; P. D. 120. The low lands have become poor ; higher land not of a good description.
- No. 160 ? *Purteetpore Suntore*.—P. A. 7 ; hills and ravines  $2\frac{1}{2}$  ; P. D. 8. I cannot recommend permanent settlement at a little over Re. 1 per acre.
- No. 161 T. *Qutubpore*.—P. A. 61 ; C. 30 ; C. C. 31 ; P. D. 15. Assets low ; land dry.
- No. 162 T. *Rajawala*.—P. A. 453 ; C. 68 ; C. C. 385 ; hills and ravines 9 ; P. D. 55. New location ; assets precarious ; land high and dry.
- No. 163 T. *Rampore Bhaowala*.—P. A. 465 ; C. 245 ; C. C. 220 ; former demand 40 ; P. D. 100.
- No. 164 T. *Rampore Kulan*.—P. A. 645 ; C. 140 ; C. C. 505 ; O. B. 59 ; P. D. 161. New location ; it will take years to make a culturable soil good.
- No. 165 T. *Rampore Khoord*.—P. A. 27 ; C. 6 ; C. C. 21 ; hills and ravines 20 ; irrigable from Sourna stream ; P. D. 8.
- No. 166 ? *Ramsahaiwala*.—P. A. 28 ; C. 27 ; C. C. 1 ; P. D. 18. Far under Re. 1 per acre ; should not be permanent.
- No. 167 ? *Ranghurwala*.—P. A. 338 ; C. 253 ; C. C. 85 ; C. I. 268 ; former demand 153 ; P. D. 330. Not Re. 1 per acre. Fine soil, well irrigated ; certainly should not be permanent.
- No. 168 T. *Rikhawalee*.—P. A. 80 ; C. 77 ; C. C. 3 ; hills and ravines 4,159 ; P. D. 180 ; for cultivation 50 ; hills and forest 130. This demand seems ridiculous for above 4,000 acres, but the hill-side can hardly be assessed higher.
- No. 169 T. *Rudharpore*.—P. A. 917 ; C. 93 ; C. C. 824. At the survey by Major Brown there were 468 acres forest, of which 291 contained sâl. Mr. Daniell appears to have included all in culturable ; P. D. 120 ; for cultivation 90 ; for forest 30. This is a low estimate for the forest, but the yield for cultivation is at present almost *nil*. It will take years and considerable expenditure to locate cultivators.
- No. 170 T. *Sobhawala*.—P. A. 1,116 ; C. 494 ; C. C. 622 ; O. B. 60 ; former demand 192 ; P. D. 400. Culturable waste, poor. Upper lands high and stony, and crops suffer from wild animals.
- No. 171 T. *Sahenspore*.—P. A. 679 ; C. 512 ; C. C. 167 ; O. B. 176 ; former demand 224 ; P. D. 330. Mr. Daniell considers this increase as much as the estate can stand.
- No. 172 ? *Salahwalla Dhorun*.—P. A. 37 ; C. 36 ; C. C. 1 ; hills and ravines 3. In the Dehra Municipality P. D. 28. Not a rupee per acre ; should not be permanent.

- No. 173 ? *Salasawala Oodeewala*.—P. A. 85 ; C. 79 ; C. C. 6 ; hills and ravines 81, which contain some sâl forest and common trees ; P. D. 45. A little over 8 annas per acre ; should *not* be permanent.
- No. 174 ? *Salasoonwala*.—P. A. 45 ; C. 37 ; C. C. 8 ; hills and ravines 41 ; P. D. 22. Not 8 annas per acre ; should *not* be permanent.
- No. 175 ? *Selangaon*.—P. A. 58 ; C. 46 ; C. C. 12 ; hills and ravines 48 ; P. D. 26. See 174.
- No. 176 ? *Seolah Kulan*.—P. A. 448 ; C. 336 ; C. C. 112 ; C. I. 347 ; P. D. 400. Not 1 rupee per acre ; should *not* be permanent.
- No. 177 ? *Seolah Khoord*.—P. A. 130 ; C. 120 ; C. C. 10 ; hills and ravines 3 ; C. I. 66. Not 1 rupee per acre ; should *not* be permanent.
- No. 178 T. *Shapore Kullianpore*.—P. A. 621 ; C. 186 ; C. C. 435 ; O. B. 375 ; P. D. 154. Land poor ; crops suffer from wild animals.
- No. 179 ? *Shapore Luntore*.—P. A. 210 ; C. 182 ; C. C. 28 ; C. I. 162 ; P. D. 260. Much too low for permanent settlement.
- No. 180 T. *Sheirpore*.—P. A. 522 ; C. 249 ; C. C. 273 ; O. B. 25 ; former demand 53 ; P. D. 100. Culturable waste, poor and stony.
- No. 181 T. *Sheshumbara*.—P. A. 817 ; C. 335 ; C. C. 482 ; O. B. 250 ; P. D. 205. Was part of a grant ; 4 annas per acre on the P. A. is low.
- No. 182 T. *Soornah*.—P. A. 1,361 ; C. 236 ; C. C. 1,082 ; hills and ravines 313 ; other jungle 308 ; containing sâl and other trees ; P. D. 200 ; for cultivation 110 ; for forest 90. See 169 ; land high, cut up by ravines.
- No. 183 T. *Sudhonoalla*.—P. A. 277 ; C. 40 ; C. C. 237 ; former demand 18 ; P. D. 50. Assets low ; considerable portion of C. C. wretched land.
- No. 184 T. *Sunolah*.—P. A. 338 ; C. 83 ; C. C. 256 ; hills and ravines, &c., 65 ; part bearing sâl. Assets now low.
- No. 185 ? *Tilwaree*.—P. A. 164 ; C. 82 ; C. C. 82 ; sâl forest 82 ; jungle 267 ; P. D. 100 ; for cultivation 80 ; for forest 20. Far too low for permanent settlement.
- No. 186 T. *Tintlee and Chuk Chirebelee*.—P. A. 104 ; C. 55 ; C. C. 49 ; sâl and other jungle 99. Suffers from wild animals, great want of water ; P. D. 40.
- No. 187 T. *Tippurpore*.—P. A. 365 ; C. 122 ; C. C. 243 ; hills, ravines, &c., 213. Some sâl cultivation fluctuating ; P. D. 104
- No. 188 T. *Towlee*.—P. A. 215 ; C. 83 ; C. C. 132 ; hills and ravines 193 ; P. D. 35 ; culturable area inferior ; returns from cultivation very small.

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#### EASTERN DOON.

P. A.—Productive area, vernacular *malgoozaree*.

C.—Cultivated.

C. C.—Culturable.

O. B.—Otherwise barren.

P. D.—Proposed demand.

Pt.—Permanent.

Canal Irrigation.—Canal Irrigation.

? Indicates those estates in which Mr. Daniell proposed permanent settlement.

T. Ditto ditto temporary settlement.

[THESE ABBREVIATIONS ARE USED TO SAVE WRITING.]

- No. 1 T. *Adooewalla khas*.—P. A. 577 ; C. 289 ; C. C. 308 ; O. B. 33 : 25 irrigated from Ruspunna river ; P. D. 190. About 5 annas per acre.

- No. 2 T. *Akarbanee Bhilung of Malkote*.—C. 39; P. A. 39; ravines, forest, and jungle 790; P. D. 40: 25 for jungle; 15 for cultivation.
- No. 3 ? *Amwalla Khurrunpore*.—P. A. 23; C. 18; C. C. 5; P. D. 10. Not 8 annas per acre; should *not* be permanent.
- No. 4 ? *Amwalla Upurla*.—P. A. 61; C. 48; C. C. 13; hills and ravines, &c., 6½; P. D. 22. Not 8 annas per acre; should *not* be permanent.
- No. 5 ? *Amwalla Majla*.—P. A. 46; C. 46; O. B. 1; P. D. 22. Not 8 annas per acre; should *not* be permanent.
- No. 6 ? *Amwalla Dalunwalla Turla*.—P. A. 215; C. 205; C. C. 10; hills and ravines, 40; P. D. 90. Not 8 annas per acre; should *not* be permanent.
- No. 7 ? *Asthul*.—P. A. 33; C. 31; C. C. 2; hills and ravines 55; fairly wooded with some sâl forest; P. D. 16. Not 8 annas per acre; should *not* be permanent.
- No. 8 T. *Bandawala*.—P. A. 41; C. 22; C. C. 19; hills and ravines, &c., 189; mostly covered with scrub wood; P. D. 11.
- No. 9 T. *Baota*.—P. A. 13; C. 10; C. C. 3; hills and ravines 455, thin scrub; P. D. 14.
- No. 10 T. *Beebeewalla*.—P. A. 44; C. 24; C. C. 20; P. D. 12.
- No. 11 T. *Beerpore Khoord*.—P. A. 53; C. C. 53; P. D. 10.
- No. 12 T. *Bhaneewala*.—P. A. 369; C. 191; C. C. 176; O. B. 30; P. D. 90.
- No. 13 T. *Bhogpore*.—P. A. 412; C. 358; C. C. 54; hills and ravines and jungle 489+490=979; canal irrigation 72, otherwise irrigated 45; P. D. 220.
- No. 14 T. *Bhoputwala*.—P. A. 289; C. 47; C. C. 242; O. B. 9; P. D. 36.
- No. 15 T. *Bhoputwala Khoord*.—P. A. 31; C. 20; C. C. 11; O. B. 13; P. D. 10.
- No. 16 T. *Bhundareewala*.—P. A. 37; C. 20; C. C. 17; hills and ravine, &c., 34; P. D. 12.
- No. 17 T. *Bhunglona*.—P. A. 34, C. × C. C. 34; P. D. 10.
- No. 18 T. *Bhuthar*.—P. A. 378; C. 283; C. C. 115; hills 2,265, bare and rocky; P. D. 200.
- No. 19 T. *Bhuthonwala*.—P. A. 75; C. 18; C. C. 57; P. D. 16.
- No. 20 ? *Birmawala*.—P. A. 23; C. 23; P. D. 10. Not 8 annas per acre; should *not* be permanent.
- No. 21 T. *Bishengurh*.—P. A. 47; C. 24; C. C. 23; P. D. 10.
- No. 22 ? *Boolundawala*.—P. A. 139; C. 98; C. C. 38; O. B. 8; Irrigable 111; P. D. 65. Mr. Daniell first proposed a demand of 48. The owner offered 65 to get a permanent settlement, which would be a little under 8 annas per acre on the productive area. Should *not* be permanent, but the demand must be reduced to 48.
- No. 23 T. *Boxerwala*.—P. A. 70; C. 16; C. C. 54; O. B. 1; irrigable 20; P. D. 11.
- No. 24 ? *Buddreepore*.—P. A. 483; C. 371; C. C. 32; hills and ravines 6—100; a considerable portion canal irrigated; P. D. 275. Far too low for permanent settlement.
- No. 25 T. *Buderna Kalan of Malkote*.—P. A. 19; C. 19; O. B. 4; P. D. 8.
- No. 26 T. *Buderna Khoord of Malkote*.—P. A. 21; C. 21; O. B. 6; P. D. 5.
- No. 27 T. *Buderna Munjla of Malkote*.—P. A. 6; C. 2; C. C. 4; P. D. 2.

- No. 28 ? *Bugdah*.—P. A. 14 ; C. 12 ; C. C. 2 ; hills and ravines, &c., 42 ; P. D. 7.  
Should *not* be permanent at 8 annas per acre.
- No. 29 T. *Bujheet*.—P. A. 52 ; C. 43 ; C. C. 9 ; hills and ravines, and forests, 402 ;  
P. D. 50. For cultivation 20 ; forests 30.
- No. 30 T. *Burronwala*.—P. A. 204 ; C. 56 ; C. C. 158 ; P. D. 45. Assets precarious.
- No. 31 ? *Chalung*.—P. A. 219 ; C. 177 ; C. C. 42 ; hills and ravines 341 ; P. D. 80.  
Less than 8 annas per acre ; should *not* be permanent.
- No. 32 ? *Chironwalee*.—P. A. 71 ; C. 70 ; C. C. 1 ; O. B. 1 ; P. D. 36. Eight annas  
per acre ; should *not* be permanent.
- No. 33 T. *Chowkee Seron of Malkote*.—P. A. 175 ; C. 116 ; C. C. 59 ; hills and  
ravines, and O. B. 26 ; P. D. 40.
- No. 34 ? *Dalumaala Chuk*.—P. A. 14 ; C. 13 ; C. C. 1 ; O. B. 13 ; P. D. 6. Under 8  
annas per acre ; should *not* be permanent.
- No. 35 ? *Danda Dhorun*.—P. A. 81 ; C. 59 ; C. C. 22 ; O. B. 20 ; P. D. 30. Full culti-  
vation ; area said to be 70. Under 8 annas per acre ; should *not* be permanent.
- No. 36 ? *Danda Kudanewala*.—P. A. 95 ; C. 88 ; C. C. 7 ; hills and ravines 42 ; P. D.  
40. Under 8 annas per acre ; should *not* be permanent.
- No. 37 ? *Danda Lakhond*.—P. A. 270 ; C. 232 ; C. C. 38 ; hills and ravines, and  
O. B. 60 ; P. D. 130 ; 35 acres bear sâl forest. Should *not* be permanent.
- No. 38 T. *Deewala*.—P. A. 104 ; C. 11 ; C. C. 93 ; P. D. 18.
- No. 39 T. *Dhahwala*.—P. A. 46 ; C. 13 ; C. C. 38 ; O. B. 6 ; P. D. 10.
- No. 40 T. *Dharkote of Malkote*.—P. A. 8 ; C. 8 ; P. D. 2.
- No. 41 ? *Dhorun Khas*.—P. A. 283 ; C. 275 ; C. C. 8 ; hills and ravines, and O. B. 60 ;  
P. D. 130. Under 8 annas per acre ; should *not* be permanent.
- No. 42 T. *Dhundaola*.—P. A. 70 ; C. 37 ; C. C. 33 ; hills and ravines, and O. B.,  
240 ; P. D. 16 ; hills ; common wood and scrub.
- No. 43 T. *Doodlee*.—P. A. 209 ; C. 103 ; C. C. 106 ; O. B. 7 ; P. D. 50.
- No. 44 T. *Doowala*.—P. A. 124 ; C. 12 ; C. C. 112 ; P. D. 20.
- No. 45 T. *Dwara*.—P. A. 240 ; C. 221 ; C. C. 19 ; hills and ravines, and O. B.,  
4,381 ; P. D. 200. For cultivation 90 ; for jungle 110 ; 2,106 acres bear forest of  
sorts, the rest barren.
- No. 46 T. *Futtehpore Tanda*.—P. A. 143 ; C. 14 ; C. C. 129 ; O. B. 116 ; P. D. 45.
- No. 47 T. *Gheesurparlee*.—P. A. 114 ; C.  $\times$  C. C. 114 ; hills and ravines 3 ;  
P. D. 21.
- No. 48 T. *Goomaneewala*.—P. A. 215 ; C. 51 ; C. C. 165 ; P. D. 35.
- No. 49 T. *Gudhool*.—P. A. 825 ; C. 345 ; C. C. 470 ; hills and forest 3,205 ; of this  
600 has forest with a sprinkling of sâl ; the rest bare, steep, and barren ; P. D.  
290 : for cultivation 170 ; for forest 120.
- No. 50 T. *Gujrara Mansingwala*.—P. A. 188 ; C. 121 ; C. C. 67 ; O. B. 28 ;  
P. D. 50.
- No. 51 ? *Gujurumee*.—P. A. 40 ; C. 37 ; C. C. 3 ; hills and ravines, and O. B., 24 ;  
P. D. 16. Under 8 annas per acre ; should *not* be permanent.
- No. 52 T. *Gurhee*.—P. A. 260 ; C. 107 ; C. C. 153 ; O. B. 13 ; P. D. 80.
- No. 53 T. *Haldancaree of Malkote*.—P. A. 20 ; C. 20 ; O. B. 3 ; P. D. 10.

- No. 54 T. *Hansowala*.—P. A. 167 ; C. 27 ; C. C. 140 ; P. D. 40.
- No. 55 T. *Hatwall*.—P. A. 5 ; C. 4 ; C. C. 1 ; P. D. 3.
- No. 56 T. *Hurchawala*.—P. A. 28 ; C. 14 ; C. C. 14 ; H. & R. 34 ; P. D. 6.
- No. 57 T. *Hurrawala*.—P. A. 409 ; C. 199 ; C. C. 210 ; canal irrigated 203 ; P. D. 120.
- No. 58 T. *Hurreepore Kalan*.—P. A. 582 ; C. 10 ; C. C. 572 ; P. D. 72.
- No. 59 T. *Hurreepore Khoord*.—P. A. 61 ; C.  $\times$  C. C. 61 ; O. B. 9 ; P. D. 10.
- No. 60. ? *Hurreepore Nuwada*.—P. A. 85 ; C. 70 ; C. C. 15 ; hills and ravines 12 ; P. D. 36. Eight annas per acre ; should *not* be permanent.
- No. 61 T. *Indurpore*.—P. A. 68 ; C. 32 ; C. C. 36 ; O. B. 3 ; P. D. 20.
- No. 62 T. *Jugut Khana*.—P. A. 35 ; C. 24 ; C. C. 11 ; hills and ravines, and O. B., 52 ; P. D. 8.
- No. 63 T. *Jewunwalla*.—P. A. 48 ; C. 29 ; C. C. 19 ; P. D. 8.
- No. 64. ? *Jhakur of Malkote*.—P. A. 6 ; C. 6 ; P. D. 2. Should *not* be permanent.
- No. 65. ? *Kalagaon*.—P. A. 49 ; C. 43 ; C. C. 6 ; hills and ravines, and O. B., 71 ; slightly covered with mixed trees and scrub ; P. D. 24. Should *not* be permanent.
- No. 66. ? *Kalee Mithee*.—P. A. 79 ; C. 54 ; C. C. 25 ; hills and ravines, and O. B., 52 ; P. D. 28. Should *not* be permanent.
- No. 67 T. *Kalereregard*.—P. A. 31 ; C. 26 ; C. C. 5 ; hills and ravines, and O. B., 491 ; greater part high, barren hill-side ; P. D. 16.
- No. 68 T. *Kaloovala*.—P. A. 191 ; C. + C. C. 191 ; P. D. 25.
- No. 69 T. *Kanhurwala*.—P. A. 251 ; C. 175 ; C. C. 176 ; O. B. and Jungle 76 ; P. D. 80.
- No. 70 T. *Khorawah*.—P. A. 60 ; C. 39 ; C. C. 21 ; hills and ravines, and O. B., 192 ; P. D. 12.
- No. 71 T. *Khuthor of Malkote*.—P. A. 19 ; C. 17 ; C. C. 2 ; P. D. 10.
- No. 72 T. *Khuthore Kalan of Malkote*.—P. A. 9 ; C. 9 ; P. D. 3.
- No. 73 T. *Khuthore Khoord*.—Do. P. A. 7 ; C. 7 ; O. B. 1 ; P. D. 3.
- No. 74 T. *Khyree Kalan*.—P. A. 92 ; C. 83 ; C. C. 9 ; Jungle, &c., 42 ; P. D. 35.
- No. 75 T. *Khyree Mansingwala*.—P. A. 67 ; C. 42 ; C. C. 25 ; hills and ravines, &c., 307 ; P. D. 30.
- No. 76 T. *Khyrwan Kurrumpore*.—P. A. 63 ; C. 29 ; C. C. 34 ; hills and ravines, 256, precipitous ; P. D. 20.
- No. 77 T. *Khyrwan of Malkote*.—P. A. 16 ; C. 16 ; P. D. 6.
- No. 78. ? *Kirsalee*.—P. A. 125 ; C. 97 ; C. C. 28 ; hills and ravines, &c., 53 ; P. D. 52. Eight annas per acre ; should *not* be permanent.
- No. 79 T. *Kishenpore*.—P. A. 81 ; C. 33 ; C. C. 48 ; P. D. 20.
- No. 80 T. *Koodall*.—P. A. 90 ; C. 39 ; C. C. 51 ; O. B. 2 ; P. D. 18.
- No. 81 T. *Kotes of Malkote*.—P. A. 117 ; C. 31 ; C. C. 86 ; jungle 139 ; P. D. 32.
- No. 82 T. *Kotela of Malkote*.—P. A. 9 ; C. 9 ; hills and ravines 4 ; P. D. 3.
- No. 83 T. *Kuhiwala Kuhirwala*.—P. A. 211 ; C. 72, C. C. 139 ; hills and ravines 97 ; P. D. 44.

- No. 84 T. *Kuknawah*.—P. A. 76; C. 16; C. C. 60; hills and ravines 27; P. D. 18.
- No. 85 T. *Kulhan Kurrupore*.—P. A. 78; C. 54; C. C. 24; P. D. 26.
- No. 86 ? *Kulhan Munsingwala*.—P. A. 42; C. 41; C. C. 1; hills and ravines 24; P. D. 20. 8 annas per acre; should *not* be permanent.
- No. 87. ? *Kundholee Dalunwala*.—P. A. 96; C. 96; O. B. 8; Irrigation 28; P. D. 52. About 8 annas per acre; should *not* be permanent.
- No. 88 T. *Ladhpore*.—P. A. 160; C. 105; C. C. 155; hills and ravines 143; P. D. 65.
- No. 89 T. *Ladwakote of Malkote*.—P. A. 23; C. 23; P. D. 12.
- No. 90 T. *Luchewala*.—P. A. 173; C. 49; C. C. 124; hills and ravines 12; P. D. 38.
- No. 91 T. *Mohomedpore*.—P. A. 100; C. 36; C. C. 64; hills and ravines, &c., 76; Irrigation 67; P. D. 30.
- No. 92 T. *Meanwala*.—P. A. 398; C. 239; C. C. 159; Canal Irrigation 40; P. D. 75; present income only 110.
- No. 93 ? *Mirotah*.—P. A. 84; C. 78; C. C. 6; hills and ravines, &c., 67; P. D. 32. Not 8 annas per acre; should *not* be permanent.
- No. 94 T. *Missurwala Kalan*.—P. A. 202; C. 59; C. C. 143; P. D. 48.
- No. 95 T. *Missurwala Khoord*.—P. A. 77; C. 65; C. C. 12; P. D. 28.
- No. 96. ? *Mokhumpore Kalan*.—P. A. 36; C. 26; C. C. 10; P. D. 22; Canal Irrigation 20. Too low for permanent settlement.
- No. 97 T. *Mokhumpore Khoord*.—P. A. 231; C. 181; C. C. 59; hills and ravines 142; P. D. 90.
- No. 98 T. *Mujhara*.—P. A. 26; C. 8; C. C. 18; hills and ravines 67; P. D. 5; 67 high rising barren slopes.
- No. 99 T. *Mungloowala*.—P. A. 88; C. 20; C. C. 68; hills and ravines 149; P. D. 14.
- No. 100 T. *Nahen Kalan of Malkote*.—P. A. 33; C. 31; C. C. 2; P. D. 14.
- No. 101 T. *Nahen Khoord of Malkote*.—P. A. 10; C. 10; P. D. 3.
- No. 102. ? *Nagul Hutwala*.—P. A. 28; C. 21; C. C. 7; hills and ravines 20; P. D. 24. I do not think permanent settlement should be given even *at* one rupee per acre.
- No. 103 T. *Nagul Jowalapore*.—P. A. 344; C. 181; C. C. 243; hills and ravines 8; P. D. 48. Assets very poor.
- No. 104 T. *Nalapinee*.—P. A. 52; C. 21; C. C. 31; hills and ravines and jungle 315; 304 sâl forest; P. D. 36: for cultivation 16; for forest 20.
- No. 105 T. *Nalee Kalan*.—P. A. 62; C. 60; C. C. 2; hills and ravines 2,252, rugged slopes of the Himalayas with wood and scrub; P. D. 105: for cultivation 50, for jungle 55.
- No. 106. ? *Nalee Khoord*.—P. A. 9; C. 7; C. C. 2; hills and ravines 17; P. D. 3. Should certainly *not* be permanent.
- No. 107 T. *Nawadah*.—P. A. 287; C. 99; C. C. 188; P. D. 54.
- No. 108. ? *Nooreewala*.—P. A. 76; C. 75; C. C. 1; P. D. 35. Under 8 annas per acre; should *not* be permanent.
- No. 109 T. *Nukeonda alias Fuzulgurh*.—P. A. 789; C. 18; C. C. 771; P. D. 72.

- No. 110 T. *Nunoorghera*.—P. A. 90 ; C. 34 ; C. C. 56 ; P. D. 25.
- No. 111. ? *Nuthunpore*.—P. A. 374 ; C. 291 ; C. C. 83 ; hills and ravines 33 ; Canal Irrigation 121 ; P. D. 240. Too low for permanent settlement.
- No. 112 T. *Nuthwala*.—P. A. 1,154 ; C. 231 ; C. C. 923 ; hills and ravines 26 ; P. D. 140 ; land dry and stony.
- No. 113 T. *Palee*.—P. A. 24 ; C. 10 ; C. C. 14 ; hills and ravines, 62 ; P. D. 12.
- No. 114 T. *Phagsee*.—P. A. 53 ; C. 24 ; C. C. 29 ; hills and ravines, &c., 81 ; P. D. 12.
- No. 115 T. *Phandoh*.—P. A. 44 ; C. 24 ; C. C. 20 ; hills and ravines, &c., 8 ; P. D. 12.
- No. 116 T. *Phulswa*.—P. A. 36 ; C. 19 ; C. C. 17 ; hills and ravines 46 ; P. D. 15.
- No. 117 T. *Phurteel of Malkote*.—P. A. 16 ; C. 15 ; C. C. 1 ; hills and ravines 4 ; P. D. 5.
- No. 118 T. *Poostaree*.—P. A. 21 ; C. 10 ; C. C. 11 ; hills and ravines 71 ; bare hill-side ; P. D. 4.
- No. 119 T. *Puleyd of Malkote*.—P. A. 35 ; C. 22 ; C. C. 13 ; P. D. 10.
- No. 120 T. *Raepore Jowala*.—P. A. 551 ; C. 258 ; C. C. 293 ; hills and ravines 5 ; sâl 29 ; Canal Irrigation 43 ; P. D. 180 ; rivers and streams 411 ; has jungle, too ; demand low.
- No. 121 T. *Raepore Hursurun*.—P. A. 607 ; C. 176 ; C. C. 433—536 ; river bed with jungle 408 ; jungle some sâl ; P. D. 150 ; low.
- No. 122 T. *Raepore Mehur*.—P. A. 579 ; C. 241 ; C. C. 337 ; river bed 633, with jungle ; canal irrigated 28 ; P. D. 160 ; low.
- No. 123 T. *Raewala*.—P. A. 451 ; C. 98 ; C. C. 353 ; O. B. sâl and jungle 516 ; P. D. 130. Jungle nearly all grass ; waste ; unhealthy.
- No. 124 T. *Ramnuggur Danda*.—P. A. 605 ; C. 79 ; C. C. 526 ; ravines 54 ; P. D. 90 ; demand doubled.
- No. 125. ? *Raneepokree*.—P. A. 361 ; C. 293 ; C. C. 68 ; Canal irrigable 140 ; P. D. 180. Should not be permanent. The only healthy part of the Eastern Doon commanded by the canal.
- No. 126. ? *Raneewala*.—P. A. 12 ; C. 12 ; hills and ravines 17 ; Irrigated 12 ; P. D. 10. Too low for permanent settlement.
- No. 127 T. *Rethwagaon of Malkote*.—P. A. 7 ; C. 5 ; C. C. 2 ; hills and ravines 3 ; P. D. 3.
- No. 128 T. *Sahabnuggur*.—P. A. 123 ; C. 69 ; C. C. 54 ; P. D. 34 ; unhealthy.
- No. 129 T. *Samyandgon Malkote*.—P. A. 8 ; C. 8 ; O. B. 3 ; P. D. 2.
- No. 130 T. *Sangteeawala Kalan*.—P. A. 111 ; C. 85 ; C. C. 26 ; O. B. 19 ; P. D. 55.
- No. 131 T. *Sangteeawala Khoord*.—P. A. 152 ; C. 83 ; C. C. 69 ; P. D. 48.
- No. 132. ? *Sarungdhurwala*.—P. A. 37 ; C. 30 ; C. C. 7 ; O. B. 10 ; Canal Irrigation 35 ; P. D. 20. Too low for permanent settlement.
- No. 133 T. *Sateonwala*.—P. A. 184 ; C. C. C. 184 ; P. D. 30.
- No. 134 T. *Serkhee*.—P. A. 22 ; C. 18 ; C. C. 4 ; hills and ravines 180 ; high, steep land, mostly bare ; P. D. 12.
- No. 135. T. *Serkhet*.—P. A. 20 ; C. 18 ; C. C. 2 ; hills and ravines 212 ; bare scrub, but yields no income ; P. D. 8.

- No. 136. ? *Shahnuggur Khas*.—P. A. 179 ; C. 161 ; C. C. 18 ; P. D. 120. Too low for permanent settlement.
- No. 137 T. *Shahnuggur Chuk*.—P. A. 31 ; C. 6 ; C. C. 25 ; subject to injury from the river, and therefore to revision ; P. D. 10.
- No. 138 T. *Shampore*.—P. A. 266 ; C. 161 ; C. C. 105 ; P. D. 100 ; unhealthy.
- No. 139 T. *Sindhwalgaon Malkote*.—P. A. 46 ; C. 45 ; C. C. 1 ; hills and ravines 13 ; P. D. 18.
- No. 140 T. *Sondhomwalee Dhorun*.—P. A. 25 ; C. 14 ; C. C. 11 ; O. B. 9 ; P. D. 6.
- No. 141 ? *Sondhomwalee Mansingwala*.—P. A. 34 ; C. 29 ; C. C. 5 ; P. D. 15. 8 annas per acre ; should *not* be permanent.
- No. 142 T. *Sowra Serowlee Malkote*.—P. A. 32 ; C. 32 ; hills and ravines 788 ; P. D. 40 : 15 for cultivation ; 25 for jungle.
- No. 143 ? *Sundhurwalee Mansingwala*.—P. A. 107 ; C. 72 ; C. C. 35 ; O. B. 46 ; P. D. 46. 8 annas per acre ; should *not* be permanent.
- No. 144 T. *Sungaon Circle Malkote*.—P. A. 57 ; C. 55 ; C. C. 2 ; P. D. 18.
- No. 145 T. *Suteylee Ghirwal Malkote*.—P. A. 17 ; C. 15 ; C. C. 2 ; O. B. 8 ; P. D. 6.
- No. 146 T. *Telay Malkote*.—P. A. 34 ; C. 33 ; C. C. 1 ; P. D. 15.
- No. 147 T. *Thanoh Hatnala*.—P. A. 4 ; C. 4 ; P. D. 4. I think it would be a mistake to settle even such a patch at one rupee per acre.
- No. 148 T. *Thewah*.—P. A. 135 ; C. 55 ; C. C. 80, hills and ravines 108 ; scrub ; P. D. 40.
- No. 149 T. *Timlee Mansingwala*.—P. A. 107 ; C. 46 ; C. C. 61 ; hills and ravines 296 ; bare hills ; other forest 46 ; sāl forest 129 ; but scrub ; P. D. 12.
- No. 150 T. *Tungoleeghur Malkote*.—P. A. 14 ; C. 14 ; P. D. 5.
- No. 151 T. *Turla Nagul*.—P. A. 218 ; C. 134 ; C. C. 84 ; hills and ravines, and O. B. 117 ; P. D. 60.

F. WILLIAMS,  
Commissioner.

## REPORT BY THE SUPERINTENDENT OF THE DOON.

No. 113 of 1867.

FROM

C. A. DANIELL, ESQUIRE,

*Superintendent of Dehra Doon,*

TO

F. WILLIAMS, ESQUIRE,

*Commissioner of 1st Division, Meerut.*

DATED THE 25TH APRIL, 1867.

SIR,

I HAVE the honour to submit the report on the Revised and Permanent Settlement of the Doon.

2. The statements noted marginally accompany this report.

3. I also append a portion of the Settlement Report submitted in letter No. 40,

Statements II. and III. of Western and Eastern Doon *khatia* villages, and of rent-free villages.

Statement IV. General Statement with Appendix.

Statement V. Juma Statement.

Statement VI. of Tenures.

Statement VII. Forms A. and B. of Canal Irrigation.

Statement VIII. of Alienations.

Statement IX. List of Villages settled permanently.

Statement X. The Census.

Statement XI. Classes of Proprietors.

dated 22nd February, 1864, paragraphs 5-43 inclusive. That report was furnished concerning the settlement originally made for thirty years, and the



paragraphs herewith appended include the preliminary remarks as well as a full report on the 'Survey' and 'Record of Rights,' as completed at the time of that settlement.

4. The present report takes up the subject from the point where the appended extract leaves off, namely, from the subject of 'Assessments.'

5. The original settlement was made for the term of thirty years, commencing from the 1st July, 1863, A.D., and closing on the 30th June, 1893, A.D.

6. The causes for the present revision of the settlement are shown in the memorandum written by Sir William Muir, then Senior Member of the Board of Revenue, and dated 20th June, 1864.

7. The points concerning which a review and, where necessary, a revision was proposed were as follows:—

*Concerning the Permanent Settlement.*—A review and, where necessary, a revision of assumed average rates was to be made.

It being the opinion of Sir William Muir and the Commissioner that the rates for the better lands of the higher class of villages in which mostly a permanent settlement would be made were cast too low.

8. *Concerning the waste and forest lands.*—It having been considered that there had not been a sufficient charge made on account of land which was lying waste, and on account of tracts of jungle which were included within village boundaries, I was directed to re-examine, and, where necessary, re-assess such lands.

9. At the time of Sir William Muir's writing the memorandum referred to, the despatch of the Governor-General, No. 544, dated 8th June, 1864, had just then been published; and it was in accordance with the especial note made regarding the Doon that I was ordered to introduce a Permanent Settlement wherever practicable in the Doon. Subsequently, the despatch of the Secretary of State, No. 11, dated 24th March, 1865, was published, conveying certain modifications to the former despatch, and, in accordance with the rules of these two despatches, I proceeded to carry out the work required.

10. My work, therefore, was as follows:—

*1stly,*—To revise the assumed average rates on which the assessments were to be based, with a view of introducing, where practicable, a Permanent Settlement.

*2ndly,*—To examine all cases where any considerable tracts of waste land or forest were included in village areas, and to assess the same wherever I found these lands to be inadequately assessed.

11. Before I was able to take up the subjects above-noted, I was called upon to fix definitely the rent-rates of the district wherever cash rents prevailed. The case occurred from the following circumstances:—

12. At the beginning of the twenty years or previous settlement, a uniform rate of three annas per local beegah was fixed as the rent to be paid by all tenants entitled to hold land on cash rents; and, as may well be imagined, this uniform rate required total revision. Accordingly, in 1862, when the preliminary papers of the settlement (as originally done) were completed, I was prepared to revise the rates according to the nature of the lands cultivated. The zemindars, however, were anxious to have the jumas fixed first, and stated that they would then arrange the rates without trouble.

13. Just at that time Sir William Muir was on a tour in the Doon. I brought the subject up before him. He was of opinion that I should give out the assessments after completing the average rates, and should leave the adjustment of rent-rates to the parties concerned, interfering only when I found that amicable arrangements could not be arrived at.

14. Before leaving the Doon in April, 1864, I had seen that some of the rates were fixed, that others were in the course of settlement, and in such instances as came before me in which the parties could not agree, I had settled the rates myself. However, after my departure, a considerable number of cases were brought to Court; but Act XIV. of 1861 was not in force in the Doon, and Mr. Melville and his Assistants appeared to have no alternative but to refer the contending parties to the Civil Courts.

15. In the meanwhile, I had been directed to take up the Permanent Settlement work; and I, therefore, wrote and requested that the rent cases might stand over until I could come to the Doon.

16. During the cold season of 1864-65, I was employed on settlement duty in Saharunpore. In May, 1865, I took up the work in the Doon for two months, and then had up the rents' cases before me. All persons entitled to hold lands as hereditary tenants having rights of occupancy had their lands secured to them at equitable rates. Every case was decided by myself, and to each cultivator a *pottah* was given, and to each zemindar a counterpart of the *pottah*. In all upwards of 2,000 cases passed through my hands in May and June, 1865.

17. While on the subject of rent-rates, I may report that all the *pottahs* given by me are made out without term or limit of time. The *pottah* is, in fact, a certificate, that at the time of issue the holder of the *pottah* is a recorded hereditary tenant, having a right\* of occupancy in the lands entered in the *pottah*, and that he is thereby bound to pay a certain equitable rent, the rate of which is at the time of issue fixed at *so much*.

\* Note by Commissioner.  
These leases are given only to tenants with right of occupancy.

18. From July to October, 1865, I was employed at Saharunpore, and returned to the Doon at the end of October, to take up and complete the Permanent Settlement work. During the early part of the cold season of 1865-66, I had to prepare the statistical returns of the agriculture for the year. I prepared all these statements myself on the spot, and on their completion found myself supplied with the latest and best information I could collect for the purpose of preparing the revised average rates.

19. These rates I made out, and reported to the Board of Revenue in my letter No. 450, dated 9th February, 1866. These rates were approved of, and sanctioned by the Board in their Secretary's letter No. 75, dated 28th February, 1866.

20. Having accepted the necessity of re-casting the jumas of the 1st class villages, I found it expedient to open out the re-adjustment of *jumas* universally. The waste land tracts and forest tracts in a large portion of the lower classed villages obliged me to apply new assessments, and I therefore went through the whole district, and from first to last took fresh agreements throughout, and made up fresh statements, Nos. II. and III., and new administration and *khewut* papers.

21. The following table shows the rates on which the revision of settlement has taken place. I have provided three classes of villages for the Western, and two classes for the Eastern Doon, and each description of soil is divided into two portions, one for lands irrigated, and the other for unirrigated lands. I have fixed the same rates throughout for *Roslee* and *Dakur*, because I can find no appreciable difference in the rents appertaining to these two soils. There are, therefore, for each class of villages six distinct rates, viz. :—

## Average rent-rates per acre of cultivation including fallow :—

| Western Doon. | Meassun per acre. |              | Roslee and Dakur per acre. |              | Sankra per acre. |              |
|---------------|-------------------|--------------|----------------------------|--------------|------------------|--------------|
|               | Irrigable.        | Unirrigable. | Irrigable.                 | Unirrigable. | Irrigable.       | Unirrigable. |
|               | R. A. P.          | R. A. P.     | R. A. P.                   | R. A. P.     | R. A. P.         | R. A. P.     |
| Class I.      | 3 8 0             | 2 0 0        | 2 4 0                      | 1 4 0        | 1 4 0            | 0 12 0       |
| Class II.     | 3 0 0             | 1 8 0        | 1 12 0                     | 1 2 0        | 1 2 0            | 0 12 0       |
| Class III.    | 2 8 0             | 1 4 0        | 1 8 0                      | 0 14 6       | 1 0 0            | 0 12 0       |

| Eastern Doon. | Meassun per acre. |              | Roslee and Dakur per acre. |              | Sankra per acre. |              |
|---------------|-------------------|--------------|----------------------------|--------------|------------------|--------------|
|               | Irrigable.        | Unirrigable. | Irrigable.                 | Unirrigable. | Irrigable.       | Unirrigable. |
|               | R. A. P.          | R. A. P.     | R. A. P.                   | R. A. P.     | R. A. P.         | R. A. P.     |
| Class II.     | 2 8 0             | 1 6 0        | 1 8 0                      | 0 15 0       | 1 0 0            | 0 12 0       |
| Class III.    | 2 8 0             | 1 4 0        | 1 8 0                      | 0 14 6       | 1 0 0            | 0 12 0       |

22. There are no villages in the Eastern Doon which have yet acquired the status and value of 1st class villages ; I have, therefore, left out a 1st class for the Eastern Doon, and recorded the best Eastern Doon villages as II. class only, they being, as the rates show, nearly equal to the Western Doon II. class.

23. These rates are formed from the following calculations, viz. :—

In class I., Western Doon, there are 8,923 acres detailed as follows :—

| Soil.                |                   |     |     | Area in acres | Rate per acre. | Value. |
|----------------------|-------------------|-----|-----|---------------|----------------|--------|
|                      |                   |     |     |               | R. A. P.       | Rs.    |
| 1.—Meassun.          | { Irrigable ...   | ... | ... | 2,072         | 3 8 0          | 7,252  |
|                      | { Unirrigable ... | ... | ... | 30            | 2 0 0          | 60     |
| 2.—Roslee and Dakur. | { Irrigable ...   | ... | ... | 4,460         | 2 4 0          | 10,035 |
|                      | { Unirrigable ... | ... | ... | 1,856         | 1 4 0          | 2,320  |
| 3.—Sankra.           | { Irrigable ...   | ... | ... | 233           | 1 4 0          | 291    |
|                      | { Unirrigable...  | ... | ... | 272           | 0 12 0         | 204    |
| TOTAL                |                   |     |     | 8,923         | ...            | 20,162 |

24. In order to prove the above rates, the same area of 8,923 acres is divided into the following portions, viz. :—

|                                                                                                                                                                                       |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| (a.) 1,635 acres held under <i>pottahs</i> yielding an average rate of Re. 1-15-1 per acre, give a total of ... ..                                                                    | Rs. 3,178  |
| (b.) 1,700 acres held under lease or contract, and 1,300 acres of the same description held in <i>seer</i> for which I estimate a rate at Rs. 3-8-0 per acre, yield a value of ... .. | „ 10,500   |
| (c.) 4,288 acres, I have estimated to yield throughout an average of Re. 1-8-0 per acre, which returns a value of ... ..                                                              | „ 6,482    |
| Total 8,923 acres yield an average value of ... ..                                                                                                                                    | Rs. 20,110 |

25. The rates as distributed over the classes of soils, *vide* paragraph 23, give a total value of Rs. 20,162, or Rs. 52 in excess of the estimated value as shown in paragraph 24.

26. In portion (a) I have a fixed income, that is, an income resulting from rents fixed at equitable rates. In some instances under *b*) the rents of land held under contract or short term leases for one or two years may be as high as from Rs. 10 to 15 per acre; but that same land for the next few years succeeding will probably yield an average of not more than Rs. 2 to Rs. 2-8 per acre; also a considerable portion of the land under (*b*) may never yield an average rate of more than Rs. 2-8 to Rs. 3 an acre, and a fair average proportion is left fallow for one out of 3 or 4 years. On the whole, I have not been able to ascertain that a higher average rate than Rs. 3-8 per acre for the 3,000 acres (*b*) could be expected. As regards portion (*c*), I have estimated the rates to yield an average of Re. 1-8 per acre, on the grounds that the *Batae* lands, or lands in which rents are paid in 'kind' or by appraisement, yield an annual *average* income throughout the whole district to the zemindar from Re. 1 to Re. 1-4 per acre; the rates then to be allotted for the 1st class of villages may fairly be estimated to yield an average of Re. 1-8 per acre.

27. These rates, it will be remembered, are now distributed over all the lands cultivated and fallow, and allow of no set-off on account of failure of crop or abandonment for a time by tenants-at-will. Therefore I was bound to make a rate which will prove itself during a course of years to be equitable on the whole of the areas, subject, from time to time, as some portions must be, to adverse circumstances.

28. In class II., Western Doon, I selected 27 villages of average quality, having a total area of 6,339 acres, over which area the rates were distributed according to the different classes of soil, and resulted in a total income of Rs. 8,686.

29. To arrive at the grounds for the above rates, the area was divided into the following details:—

|      |                                                                 |     |     |     |     |       |
|------|-----------------------------------------------------------------|-----|-----|-----|-----|-------|
| (a.) | 343 acres held under pottahs at an average rate of              |     |     |     |     |       |
|      | Rs. 1-12-10 per acre, yield                                     | ... | ... | ... | Rs. | 618   |
| (b.) | 484 acres held under leases at an average rate of               |     |     |     |     |       |
|      | Rs. 1-13-3 per acre, yield                                      | ... | ... | ... | ,,  | 886   |
| (c.) | 480 acres of higher class of soil and cultivation, for which    |     |     |     |     |       |
|      | I estimate an average rate of Rs. 2-13-6 per                    |     |     |     |     |       |
|      | acre, yield                                                     | ... | ... | ... | ,,  | 1,365 |
| (d.) | 5,030 acres of " batae " lands of lower quality estimated at an |     |     |     |     |       |
|      | average rate of Re. 1-2-6 per acre, yield                       | ... | ... | ... | ,,  | 5,818 |

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Total 6,339 acres yield ... .. Rs. 8,687

or one rupee more than the income arrived at by the distribution of the rates over different classes of soils in the villages.

30. As regards the estimate for the area under portion (*d*), the remarks made in paragraphs 26 and 27 apply to this estimate.

31. In class II. of the Eastern Doon, 21 average villages were selected, having an area of 3,933 acres, over which the rates were distributed according to the different classes of soils, and the income arrived at was Rs. 4,465.

32. In order to prove these rates, the same area was divided into the following details, viz. :—

|      |                                                            |     |     |     |     |          |
|------|------------------------------------------------------------|-----|-----|-----|-----|----------|
| (a.) | 664 acres held in pottahs, at an average rate per acre of  |     |     |     |     |          |
|      | Re. 1-6-9, yield                                           | ... | ... | ... | ... | Rs. 938  |
| (b.) | 590 acres held on leases, at an average rate of Re. 1-8-0  |     |     |     |     |          |
|      | per acre, yield                                            | ... | ... | ... | ... | ,, 885   |
| (c.) | 2,679 acres estimated at an average rate of 15 annas 9 pie |     |     |     |     |          |
|      | per acre, yield                                            | ... | ... | ... | ... | ,, 2,638 |

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Total 3,933 acres yield ... .. Rs. 4,461

which differs by Rs. 4 from the income accruing from the distributed rates.

33. The rates proposed and adopted for the III. class of both the Western and Eastern Doon pergunnahs are the same. Eighty-five average villages were selected (42 from Western and 43 from Eastern Doon), having an area of 6,626 acres. According to the present rates, the income produced by the distribution of these rates over the different classes of soils amounted to Rs. 5,710.

34. In order to prove the rates, the lands were divided into the following details viz. :—

|      |                                                                  |     |     |     |     |           |
|------|------------------------------------------------------------------|-----|-----|-----|-----|-----------|
| (a.) | 2,029 acres (Western Doon) held on pottahs at an average rate    |     |     |     |     |           |
|      | of a fraction above one rupee per acre, yield                    | ... | ... | ... | ... | Rs. 2,033 |
|      | 1,712 acres (Eastern Doon) held on pottahs at an average rate of |     |     |     |     |           |
|      | 14 annas 9 pies per acre yield                                   | ... | ... | ... | ... | ,, 1,578  |
| (b.) | 1,877 acres (Western Doon) estimated at an average rate per acre |     |     |     |     |           |
|      | of 12 annas, yield                                               | ... | ... | ... | ... | ,, 1,408  |
|      | 1,008 acres (Eastern Doon) estimated at an average rate per acre |     |     |     |     |           |
|      | of 11 annas, yield                                               | ... | ... | ... | ... | ,, 693    |

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Total 6,626 acres yield ... .. Rs. 5,712

showing a difference of Rs. 2 over the income accruing from the distributed rates.

35. In showing the result of the distribution of the rates over the soils of the 1st class villages of the Western Doon, together with the results of the detailed average rates, according to the classes of land such as those held under *pottahs* or '*leases*' or *Batae*, I carried out the operations over the whole area of the 1st class villages. It was necessary for me to determine, as well as circumstances would admit, what was the highest scale to be secured, and having to my own mind fairly ascertained the scale of rates which should be adopted for the whole of the 1st class villages, the rating of the II. and III. class villages became much more a matter of simple detail.

36. The II. class villages as a whole are difficult to treat, their number is large, and they comprise villages of very varying qualities both in situation, class of soil, and means of irrigation. I had a direct guide in the lands held under *pottahs* and in such lands held under leases as I could certify by the record of the leases, but I had a large area of *Batae* lands of varying quality to deal with, for which I could only form an estimate rate. Accepting ( viz. paras. 26 and 27) Re. 1-8-0 per acre as the average rate for this class of land in I. class villages, I considered the rate for these lands in II. class villages not to exceed Re. 1-2-6 per acre in the Western Doon and 15 annas 9 pies in the Eastern Doon.

37. The rates of III. class villages of both Pergunnahs could be more readily proved, because out of an area of 6,626 acres (*vide* para. 34) an area of 3,906 acres was held under *pottahs*, and the assets were properly ascertainable.

38. The rates, as above detailed and deduced, have been approved of by the Board of Revenue. I have had several opportunities since February 1866 (when these rates were prepared), of judging how far they have proved satisfactory, and I have every reason to be satisfied with the result of my observations.

39. On completing the rates I proceeded at once to examine the details of each village, and to re-set the Government demand according to the revised rates in each village. This entailed a preparation *de novo* of the No. II. Statements, and eventually the preparation of new agreement papers or *durkhoasts* of all the villages of the district. This was made the more necessary consequent on the orders conveyed in Board's Circular No. 6, dated 22nd April, 1864, which was then in force.

40. *Villages settled in perpetuity.*—In forming permanent settlements, I have adhered entirely to the principle laid down in the Governor-General's minute, and have accepted villages only which in my opinion had reached not less than 80 per cent. of their full cultivation; in fact, as the cases when examined in the No. II. Statement will show, I have accepted only those villages which had reached their *full and best capabilities* in not less than 80 per cent. of their full culturable area.

41. Each case is fully detailed in the remarks in the Nos. II. and III. Statements,\* and I trust these settlements will meet with the approval and sanction of the Government.

\* Not printed.

42. As regards the *Canal irrigation* in the villages settled in perpetuity, I have carefully considered the present irrigation and future irrigable capabilities. In my letter to your address, No. 161, dated 10th July, 1866, I entered fully into this subject. I, however, for the better completion of the present report, beg to give the following extract from that letter:—

43. “With very few exceptions, the villages permanently settled in which Canal irrigation runs, have been under irrigation since the early canal works began, also the extent of irrigation *possible to be taken* is much the same now as it was ten years ago; and, as a rule, in irrigated villages where the cultivation has reached 80 per cent. of the assessable area, the irrigated area has kept pace with the cultivation, so far as the village capabilities for irrigation are concerned, and therefore villages which are ready on account of full cultivation for a permanent settlement are equally fit as regards irrigation.

44. “I have to deal with such small numbers that I will give details of my cases: I have included in the Permanent Settlement operations in the Western Doon 73 estates, and in the Eastern Doon 37 estates.

45. “Of the 73 Western Doon estates, thirty-one are beyond the reach of all present irrigation and without any probability, as far as human foresight can reach, of ever being within reach of any canal. Five villages are irrigated only in small portions lying low and near a canal, the rest of the cultivation being on high dry plateaux; twenty-one have the whole assessable area recorded as irrigable; three only (partially irrigated now,) have a prospect of further extension; but in these three estates a permanent settlement has been introduced under exceptional circumstances. These villages are behind hand in cultivation equally as in irrigation; and the owners—European gentlemen—are glad to pay a fair assessment on the whole assessable area now in permanency, rather than by paying a lower temporary assessment now be subject to future settlements. In these cases the question of extension of irrigation has been included in that of extension of cultivation.

46. “Thirteen estates remain, in which, although the cultivation is up to 80 percent., the irrigation is only in part applied. In all of these the cause of non-extension of irrigation up to now arises from distinct local causes. As a rule, all the irrigable capabilities to be ascertained from the situation of the land, as regards the canal and channels, have come under review. If irrigation does extend, it will only be in a few fields which, from want of signs of irrigation at the time of survey, or from accident, may have escaped

being numbered as irrigated, and the increase would be so small as to call for no notice.

47. "The areas entered in the papers as under irrigation, are, strictly speaking, 'irrigable' rather than 'irrigated;' and in a village watered by canal, the 'dry' or *bārani* lands are, as a rule, decidedly so, being cut off by position or intervening local difficulties from irrigation.

48. "These 13 villages are the only ones which come under consideration in this subject, and I myself believe that their present status in irrigation as in cultivation fit them for Permanent Settlement.

49. "Of the 37 Eastern Doon estates settled permanently, five only are within reach of canal irrigation, the remaining thirty-two are all villages to which canal irrigation cannot extend.

50. "The introduction of water into the Jakun and Kallunga Canals of late years has affected these five irrigated villages; and, in forming my permanent settlement, I have considered the irrigable capabilities of these estates.

51. "I cannot bring forth any instance among the estates I have settled in permanency in which the partial existence of irrigation now should cause postponement of the Permanent Settlement, nor in which I could make any estimate for future increase. The fact as above stated of the 'irrigation area' being based on *irr'gable* rather than *irrigated* lands has led to simplify the subject."

52. The above extract shows how the Permanent Settlement of the villages does not become burdened by the question of irrigation. I have avoided giving a Permanent Settlement to any village where I had a serious doubt as to the improvement in capabilities and cultivation in future standing in the way of a Permanent Settlement.

53. I have been most careful in each case, and have had to refuse many applications for Permanent Settlement where I had a doubt on the subject of future improvement; and in no case has a Permanent Settlement been *thrust* on a village.

54. In the three exceptional cases mentioned in paragraph 45, and noted marginally, the owners had the option of a terminal settlement at ordinary rates on present cultivation, with a mild charge on the culturable waste or of a Permanent Settlement on the terms I now propose; and they preferred the Permanent Settlement on the advanced terms. These estates are all plantations, and the acquisition of a Permanent Settlement was considered to convey a better marketable property to the estates. I may mention that on the occasion of the Lieutenant-Governor visiting Dehra, in 1866, I was able to ascertain His Honor's views on the subject, and learnt that my proposals were considered to be satisfactory.

Ambaree.  
Boolakeewala.  
Dyrham town, puttée  
Lukunwala.

55. I have carefully enquired into and watched the results of the permanent demands during the past year, and I am satisfied that the permanent arrangements made for these 110 villages are very equitable and proper.

56. *Of villages settled for the term of the Settlement, (i. e., to June, 1893, A.D.)*—All villages which I have found not to be in a fit state for Permanent Settlement, have been re-settled up to the end of the term of the 30 years' settlement, dating from 1st July, 1863. The present settlement for these villages will therefore terminate on the 30th June, 1893, A.D., the revised jummas coming in force from 1st July, 1866.

57. As noted early in this report, one of the operations to be performed was to make a valuation survey of all waste lands, chiefly with regard to the forest lands included within village boundaries; I have done this carefully, and have in each instance where a sufficient charge had not been made on the waste lands, revised the jummas.

58. As regards the assessment on the forests, I found very considerable difficulty in fixing a standard by which to be guided. Having once made an approximate

rate for one forest of an average description, I was then able to make a fair assessment throughout.

59. I may here note the difficulties which I met with when collecting information on which to base my demands. I have found that 500 acres of forest twelve years ago would not fetch Rs. 500; six years ago the same would fetch perhaps Rs. 1,000; and now the same would fetch five times that amount, for a three years' or five years' cutting of the forest. During the time of my inspection of the forests, the value of the timber was improving marvelously.

60. A few forests had been let out or farmed for the term of the settlement. I would have had from these a fair basis for assessment in taking the rental as foundation for my rates, but I found that there was so much doubt as to the truth of the price given, that I was obliged to abandon that foundation. For example, 1,000 acres of forest land might be recorded and registered as having been rented for the 30 years for Rs. 2,000, and perhaps Rs. 2,000 was the cash paid down; but there was very little doubt but that the bargain included the settlement of some ancient loan account, and that the 1,000 acres of forest really relieved the owner of Rs. 3,000 of debt besides placing Rs. 2,000 in his pocket. Had I assumed the recorded cash price as the *value* and based the assessment on that, the 1,000 acres of forest would have yielded an annual juma of about Rs. 33; whereas, although from want of proper proof, I may not have assessed the forest at two and a half times that amount, yet I have fixed an assessment for that particular forest at a rate which I believe it ought fairly to bear in comparison with other forests of the same description.

61. In some instances I have had to be careful in looking to the future of any forest which had been let out for a three or five years' cutting. In most instances such a cutting could not take place more than once during the term of settlement, therefore a needy zemindar who greedily seized his Rs. 5,000 for a three or five years' cutting of his forest would be certain to get to the end of his money in a very short time, and would find himself at the end of the three or five years with a tract of waste land on his hands from which no further income could be expected for say fifteen to twenty years, and on account of which he had to pay up his annual Government demand to the end of the settlement.

62. Again, in another case, the best timber in a forest may have been cut at a time when timber was one-tenth the value it now is, and the small income therefrom had, of course, been spent; and from the forest it was evident that no considerable profit could be reaped for a few years.

63. In a third case, I may have had evidence that no timber was being cut and probably no timber would be cut for sometime because the owner was wise enough to preserve his forest, and therefore I had no price to lead me. In all these cases the assessment to be spread annually over the twenty-seven years had to be fixed with great caution; and I found it better in all these instances to accept an average rate for the forest as my basis for assessment, rather than follow entirely the peculiar circumstances of each case.

64. Of course, I had various kinds of forests, some bearing but little good timber and that scattered over large tracts of hill country; others with considerable forest area on record but only in a very few patches could be found any tract of forest at all fitted for market; in others, again, there would be a considerable area of fine timber, but growing in a country cut up by ravines and on precipitous hill-sides, and so far away from all means of carriage as to reduce the marketable value of the timber considerably.

65. Before finally concluding my assessments in any case, I made out a list of the principal ones and went over the rates with the Commissioner, whose own local knowledge in some instances was a good check to my proposals. The cases were fairly discussed, and the Commissioner approved of the demands I proposed to make in the cases I showed him. In all other cases which were of smaller consequence the same



scale has been followed. I am aware that as a rule my forest assessments are low. I would certainly have pitched the rates higher had I felt confident that it would have been proper to do so.

66. The present occasion is the first in which the Doon *zemindaree* forests have been taxed in settlement; and, as I have settled no villages having large tracts of forests in perpetuity, the Government will not in the end be any loser by my having adopted a mild scale of assessment.

67. In the Nos. II. and III. Statements I have remarked especially concerning the forest lands, and the extra or *sayer* demand fixed on the same.

68. *Of villages having lands subject to fluvial action.*—In accordance with the late order of the Board, a survey was made in 1865-1866 of all villages bordered by or intersected by rivers. There were 122 villages in all; and in fixing the assessments of these villages care has been taken to consider the probabilities of loss by cutting from streams. As the cases stand now the assessments are made in accordance with the latest returns, and I do not anticipate any loss amounting to 10 per cent. of the assessable area accruing to any of these villages.

69. In only one village where the lands are affected, or are likely to be affected by fluvial action has a permanent settlement been made, namely, Shahnugger, in the Eastern Doon. In this case I have settled the main or *Bángur* lands in perpetuity, having made an entirely separate assessment for the term of the settlement for the small quantity of low or *khádir* lands.

70. In any cases where notice of fluvial action had to be taken, the circumstances are detailed in my remarks in Nos. II. and III. Statements.

71. *Of Irrigation by Canals.*—During the last four years there has been considerable improvement made in the Canal Irrigation. The certainty of water-supply has been increased, the amount of water-supply has been enlarged, and the improved rates which have now been in force a year and a half will tend to a more careful use of the water by the cultivators. The system introduced by the Canal Officer, Mr. Eckford, R.E., of taking water by contract is popular with European landlords, and is certainly advantageous to the Canal revenue. The three older canals, viz., Rajpore, Beejapore and Kuthurputhur, have been doing their best, and the two newer water-courses of Kalunga and Jakun have been brought into good working order. (In para. 43 my remarks concern villages *permanently* settled; the above remarks (para. 71) refer to the District generally).

72. I have stated in the remarks added to the Nos. II. and III. Statements\* the portion of the Government demand or juma attributable to Canal Irrigation. In placing the figures on record, I have deduced them by means of applying the average 'dry' rates over the irrigated lands, the difference between the irrigated and dry rates being the 'average' portion attributable to Canal Irrigation in the income of the village. In each case, however, the portion of juma shown has had to be slightly reduced or increased, according as the juma or demand fixed varied above or below the half-assets rates.

73. The Canal Statements No. VII.\* A. and B. show in Statement A. the details of irrigated villages with the area recorded as 'irrigable,' and the portion of juma of each village attributable to Canal Irrigation; and in Statement B. the estimated amount of land actually irrigated in 1865-66, and the actual income or Canal revenue.

74. The total results of Statement A. are as follows:—

|                                                                  |            |          |
|------------------------------------------------------------------|------------|----------|
| The total area of villages in which Canal Irrigation exists, ... | 14,975     | } Acres. |
| Actual area recorded as irrigable within those villages ...      | 8,085      |          |
| Proposed juma or demand of the above villages ...                | Rs. 14,831 |          |
| Portion of juma attributable to Canal Irrigation ...             | ,, 4,747   |          |

75. The Statement B. gives the following results which I have taken from the Canal office records :—

|                                               |     |     |        |
|-----------------------------------------------|-----|-----|--------|
| Total area irrigated in acres                 | ... | ... | 10,577 |
| Total income or revenue derived from the same | ... | Rs. | 15,828 |

76. I have, however, to make the following remarks regarding this Statement B. as follows :—The area irrigated in the two crops, and *ascertained by measurement*, comes to 6,391 acres, on account of which the revenue is to Rs. 9,462. These figures are ascertained and correct; but, as regards the area entered under the heading of 'contract,' this is only approximate: in fact, I have deduced this area from the income, *e. g.*, 1,000 *measured* acres yield Rs. 1,250, therefore Rs. 1,250 income by 'contract' should afford the irrigation to 1,000 acres. I have had no other means of arriving at the sum total of the irrigated lands, because there is no account made of the area actually irrigated by 'contract.'

77. The results or totals of the Statements A. and B. do not bear comparison. In the first place, Statement A. is given to show the 'effect of Canal Irrigation on the Government demand or juma,' and is therefore only recorded in the *khalisa* villages. The irrigation in 'Grants' and rent-free villages does not affect in any way the Government land revenue demand; and, in the second place, as before stated, the recorded area is irrigable and not actually irrigated: while in Statement B. the area shown is actual (or approximate) area put *under irrigation* in the year in the whole district, including the 'Grants,' fee-simple lands, and rent-free villages; also this area includes some land twice watered.

78. In sending up these two forms, I have given the results of Canal Irrigation (1) as it affects the land revenue; and (2) showing the total effects produced by Canal Irrigation, in the best way I could, and I hope these forms will be accepted.

79. I now beg to make the following remarks concerning the English Statement<sup>s</sup> which accompany the report :—

80. Of Statements\* Nos. II. and III. These, as previously noted, have been prepared *de novo*, and I have been careful to give in the body and in the remarks all the details and information required. I have detailed in the body of the No. II. Statement the areas of waste lands. In No. III. the Statement of proprietary rights and shares, and responsibilities of proprietors, is duly recorded.

81. Of Statement No. IV., being the General Statement of the District. This Statement contains the figured details of the *khalisa* villages, as also of the Grants held on *russuddie* terms, *i. e.*, Grants held on what is known as the old Grant terms. Also of Grants of lands purchased from jungle tracts, or in which the fee-simple has been purchased and 'good service' Grants. In the appendix to this Statement are shown the details of the 'maāfee' or rent-free tenures.

82. There are 188 *khalisa* mehals in the Western Doon, and 151 in the Eastern Doon, making a total of 339 mehals held in ordinary 'zemindaree' or 'puttee-daree' tenures.

83. The totals of the said 339 mehals are as follows :—

| Western Doon 188 estates—    |     |     | Acres.   |
|------------------------------|-----|-----|----------|
| Total area                   | ... | ... | 1,13,969 |
| Barren and forest            | ... | ... | 60,539   |
| Culturable waste             | ... | ... | 22,943   |
| Cultivated, including fallow | ... | ... | 30,425   |
| Rent-free patches            | ... | ... | 62       |

The proposed juma or Government demand amounts to Rs. 24,887, giving the following rates :—

|                                  |     | As. | Ps.    |               |
|----------------------------------|-----|-----|--------|---------------|
| On whole area of                 | ... | 3   | 6      | } per acre.   |
| On malgoozaree area of           | ... | 7   | 4·86   |               |
| On cultivated area of            | ... | 13  | 1      |               |
| <i>Eastern Doon 151 estates—</i> |     |     |        | <i>Acres.</i> |
| Total area                       | ... | ... | 52,354 |               |
| Barren and forest                | ... | ... | 31,065 |               |
| Culturable waste                 | ... | ... | 9,817  |               |
| Cultivated, including fallow     | ... | ... | 11,434 |               |
| Rent-free patches                | ... | ... | 38     |               |

The proposed 'juma' or Government demand amounts to Rs. 6,750, giving the following rates :—

|                     |     | As. | Ps.   |             |
|---------------------|-----|-----|-------|-------------|
| On whole area       | ... | 2   | 0·75  | } per acre. |
| On malgoozaree area | ... | 5   | 0·985 |             |
| On cultivated area  | ... | 9   | 5·43  |             |

The grand totals of the two pergunnahs are as follow :—

|                               |     |     | <i>Acres.</i> |
|-------------------------------|-----|-----|---------------|
| Total area                    | ... | ... | 1,66,323      |
| Barren and forest             | ... | ... | 91,604        |
| Culturable waste              | ... | ... | 32,760        |
| Cultivated (including fallow) | ... | ... | 41,859        |
| Rent-free patches...          | ... | ... | 100           |

The total juma or Government demand amounts to Rs. 31,637, giving the following rates :—

|                        |     | As. | Ps.   |
|------------------------|-----|-----|-------|
| On the whole area      | ... | 3   | 0·521 |
| On malgoozaree area    | ... | 6   | 9     |
| On the Cultivated area | ... | 12  | 1     |

85. I wish to point out that I have throughout all the settlement operations included the fallow (or *judeed*) lands with cultivated lands. The reasons for so doing are as follows :—At the time of commencing the survey, Mr. Manderson, then Superintendent of the Doon, decided that all lands which were proved to have been for more than three consecutive *fusls* or seasons out of cultivation should be recorded as culturable waste, and all lands which had been fallow for a less period should be recorded as fallow. I found that the lands recorded as fallow covered a small area, and belonged to that portion of the village which was generally under cultivation.

86. It was, in fact, almost impossible in the numerous villages in which jungle abounded to determine the record of fallow land otherwise. Lands in many instances left uncultivated for two or more successive rainy seasons became covered with jungle; and while these lands, from having lost all traces of cultivation, would naturally be recorded as 'culturable waste,' it would have been unfair to have included in the list of 'fallow' lands the lands of less jungly villages which, though left uncultivated for more than three *fusls*, showed traces of former cultivation.

87. Moreover, previous to the commencement of the settlement operations the village papers had been prepared so loosely that they could not be depended on to show the latest *fusl* or crop in which the lands had been tilled when that tillage went back any length of time.

88. By the arrangements, as they have been carried out, injustice has been done to no one. The Zemindars have been willing to accept the arrangement, and Govern-

ment has been no loser. It is not an uncommon practice in the Doon for some lands to be left untilled after two *fusls* or crops for one *fusl*, or sometimes for one year after two years' cultivation; I have nowhere found it the practice for lands to be left for more than two or three *fusls* without being cultivated, unless the land has been given up as unfit for cultivation.

89. The method adopted with regard to the fallow lands has prevented the chance of loss to Government, because, although a zemindar to induce the assessing officer to deal lightly with his village, would leave a considerable area for one, two, or three crops out of cultivation (that is, for such term or period as the village was being surveyed and examined, and the preliminary papers were being prepared), yet he could not afford to leave the land untilled for a longer term without incurring more loss than he could well afford. I have found that a considerable quantity of land in some of the better villages was recorded as *judeed* or fallow, at the time of survey, but which shortly after was brought again entirely under cultivation, and these lands are very justly included in the cultivated area.

90. There are instances, of course, where I have found the fallow or *judeed* lands, so recorded, to have remained from some local cause for several consecutive *fusls* or seasons out of cultivation, and which are proved to be poor lands, and which are only cultivated when there happen to be particularly good seasons or some especial demand for increased cultivation, and which again in poor seasons are deserted. In these cases I have made allowances in fixing the Government demand. Except in such cases, I have never found the demand calculated on both cultivated and fallow to press heavily on the village.

91. For the Statement No. IV., there are added at the end of the details of each *pergunnah* the lists of the old 'Daen' tenures. I have been obliged to add these, because without them I could not show the totals of the former *jumas*. The component parts of each 'Daen' were mere portions of the whole estate, and the former assessments were made purely 'Daenwar,' that is, the Daen was one *mehal*, and no separate *juma* was formerly given to any of the villages or parts of villages which formed the Daen; also against all present *mehals* or estates which formerly were portions of any Daen is entered the letter "D" in the place of the former *jumas* to denote that the village was formerly a portion of a Daen, which is the reason for non-entry of the *jumas* of former years. The same has been done with the villages which formerly formed a portion of the "Malkote" estate.

92. For convenience of reference, I have entered the villages *permanently* settled in red ink; and those settled for the term of the settlement, that is, to 1893 A.D., are entered in black ink.

93. Leaving the *khalisa* villages, the Statement No. IV. shows the details of the grants held on *russuddee* terms. Of these there are now left seven in the Western and three in the Eastern Doon.

94. I have also added a list of Grants of land which have been sold out of the forest or waste lands, or which have been purchased under the fee-simple rules. Of these there are eleven in the Western and one in the Eastern Doon, besides which there are three 'good service' Grants in the Eastern Doon.

95. There is, then, a total of ten Grants held on *russuddee* terms, twelve Grants for which the price has been paid, or is in course of payment, under Lord Canning's rules, and three Grants given rent-free on account of 'good service.' These three latter are given to the heirs of the late Captains Forrest and Raynor, and to Mohundur, Scobadar-Major of the 2nd Goorkha Regiment.

96. This Statement shows that the twelve Grants purchased contain a total area of 20,801 acres, and were sold for Rs. 79,423.

97. The Appendix Statement to No. IV. gives a list of the *madfee* or rent-free villages of which there are 24; that is, in the Western Doon 12, and in the Eastern Doon 12. The *jumas* of these are 'nominal.'

98. The titles to the above *madfee* villages were all definitely settled previous to the last settlement; and with these 24 exceptions, and 100 acres of patches of *madfee* lands situate within the boundaries of *khalisa* villages and the three Grants above-noted, there are no lands held rent-free in the district.

99. Statement V. gives the *juma* statement of the 339 *khalisa* estates and of the ten Grants which yield annual revenue.

100. The *khalisa* 'jumas' from 1st July, 1866, to 30th June, 1893 (the date of the termination of the present settlement), of the Western Doon, amount to Rs. 24,887, while the last 'juma' of the old settlement amounted to Rs. 15,273; and in the Eastern Doon the 'jumas' for the term of the settlement amount to Rs. 6,750 against Rs. 5,232 of the last settlement. In the two purgunnahs the grand total 'juma' of *khalisa* villages for the present settlement amounts to Rs. 31,637 against Rs. 20,505 of the previous settlement, which shows an increase of Rs. 11,132 annually, being an increase of Rs. 54,289 (or 54½) per cent. on the old 'juma.'

101. The 'jumas' in the Grants of the Western Doon for 1866-67 amount to Rs. 3,488, and for the year 1892-93, or the last year of the settlement, will amount to Rs. 4,070; and in the Eastern Doon the Grants for the present year will yield a 'juma' of Rs. 845, and in 1892-93 will yield a 'juma' of Rs. 2,988. The whole ten Grants therefore yield in 1866-67 Rs. 4,333, and in 1892-93 will yield Rs. 7,058.

102. The following are the circumstances of above Grants in the Western Doon:—

| Name of Grant.       | Year of highest juma. | Highest rate per acre of Malgoozaree. |    |
|----------------------|-----------------------|---------------------------------------|----|
|                      |                       | As.                                   | P. |
| Aunxield ... ..      | 1869-70               | 2                                     | 9½ |
| Jewungurh ... ..     | 1873-74               | 8                                     | 0  |
| Kooloopanee ... ..   | 1879-80               | 9                                     | 3  |
| Koonja-kargee ... .. | 1870-71               | 6                                     | 1½ |
| Mirzapore ... ..     | 1873-74               | 9                                     | 2½ |
| Telpoora ... ..      | 1878-79               | 9                                     | 2½ |
| West Hopetown ... .. | 1869-70               | 4                                     | 8  |

103. The average Western Doon rate on *malgoozaree* or assessable land is a fraction under 7 annas 5 pies per acre. The four Grants of Jewungurh, Kooloopanee, Mirzapore, and Telpoora, are slightly above the average; but in the case of Jewungurh, which can be held as a fair 2nd class village, the rate of 8 annas is considerably below the rate of many villages of that class, and somewhat below the average rate of that class. As regards the three Grants of Kooloopanee, Mirzapore, and Telpoora, I consider the rate of their highest 'juma' to be fully as much as should be demanded; but I see no reason whatever to interfere in these cases.

104. In the Eastern Doon, Markham grant was only settled five years ago; of the other two, Chuktoonwala reaches its highest 'juma' in 1869-70, at a *malgoozaree* rate of 9 annas 2½ pies. This rate is fully as much as should be demanded, but is in no way severe; and Raneepokri, which reaches its highest 'juma' in 1873-74, will have to bear a *malgoozaree* rate of 7 annas 6 pies, which is by no means heavy for this village.

105. I would, therefore, beg to recommend that the ten Grants should be left as they are.

106. The Statement No. VI.\* shows the details of the different tenures in the *khalisa* villages, and gives the following results:—

\* Not printed.

|                     |     |     |     |     |
|---------------------|-----|-----|-----|-----|
| Zemindaree villages | ... | ... | ... | 294 |
| Putteedaree ditto   | ... | ... | ... | 40  |
| Bhyacharee          | ... | ... | ... | 5   |
| Total               | ... | ... | ... | 339 |

107. Statement No. VII.\* (Forms A. & B.) gives the details of Canal Irrigation.

\* Not printed. This subject has been already fully reported on in paragraphs 71 to 78 inclusive.

108. Statement VIII.\* shows in four forms the full circumstances of Alienation of estates up to the present year. This Statement is made in

\* Not printed. accordance with Circular P. of 29th May, 1861, of the Board of Revenue. I have adopted the present four forms, as by means of these forms the cases are better shown than in any other way.

109. Form A. shows the results of Alienations from 1848 A.D. to 1866 A.D., as follows :—There have been alienations in 131 estates. There have been in these estates 259 cases of transfer, in the following details, viz. :—

|                        |     |     |     |     |          |
|------------------------|-----|-----|-----|-----|----------|
| Of whole estates       | ... | ..  | ... | 60  | } cases. |
| Of portions of estates | ... | ... | ... | 81  |          |
| Of biswas' shares      | ... | ... | ... | 118 |          |

The causes of Alienation show that 3 were ordered by Civil Courts in execution of decree; 2 occurred through failure; 244 by private sale; and 10 by free-gift.

110. Form B. shows that in the forced sales the value realized was Rs. 5,251, and the juma Rs. 426, in which the juma stands at Rs. 8-1-9 per cent. of the amount realized; and in private sales the amount realized was Rs. 88,662 on land yielding a juma of Rs. 8,884, in which the juma stands at Rs. 10-0-4 per cent. of the value realized.

111. Form C. shows the rate per acre of the value obtained for the land, as follows :—

In the 60 cases where whole estates were transferred, the average rate per *mal-goosaree* (or assessable) acre was Rs. 5-8-10, and in the 81 cases where patches of land (mostly cultivated) were transferred, the average rate attained was Rs. 17-10-0 per acre.

112. Form D. gives details of the classes of persons who were parties to the transfer. There are 141 Rajpoot and 49 Brahmins among the sellers; while among the purchasers the Europeans amount to 91, Bunyahs to 55, Brahmins to 51, and Rajpoots to 31. The returns show, among the principal parties concerned, that there is an increase since 1848 of 83 Europeans land-owners, and of 37 Bunyahs, with a decrease of 110 Rajpoots, who are the main class to be met with in the village proprietaryships.

113. Statement IX.\* gives a list of the estates permanently settled, being 110 in number.

\* Not printed.

114. Statement X.\* shows a summary of the different chief classes in the district under the chief headings of European, Hindoo, and Mahomedan, with the sub-divisions of 'cultivators and non-cultivators.'

\* Not printed.

This return shows a total of 990 Europeans, of 54,959 Hindoos, and of 10,954 Mahomedans, making a total of 66,543, of which 21,953 are engaged in agriculture and 44,590 are not.

115. I would note that the number of agricultural Europeans (41) must not be confounded with the number of 'land-owning' Europeans as shown in Statement VIII., Form D. There are 41 Europeans whose profession is entered as 'agricultural,' while there are many more who own land especially in the towns of Dehra and Rajpore, and who have no concern with 'agriculture.'

116. Statement XI.\* I have drawn up this Statement with the view of showing the property held by the chief classes in the Doon, as certified by the amount of Government demand paid. Out of the

\* Not printed.

'juma' or Government demand for 1866-67, of Rs. 35,687, Europeans pay Rs. 9,546, Rajpoots Rs. 12,173, Brahmins and Mahajuns, between them, Rs. 8,678, other Hindoos Rs. 4,739, and Mahomedans Rs. 451 only. The above figures are taken from among the proprietary communities. Besides these, out of the twelve Grants purchased under Lord Canning's rules there is one owned by a Mahomedan, and the other

eleven by Europeans; and out of the sum total paid (or in course of payment) for these grants of Rs. 79,423, the sum of Rs. 78,246 has been paid (or is being paid) by Europeans.

117. All the above statements and forms have been prepared with considerable care; and I hope they will be found to give all the necessary information.

118. *Cesses.*—The agreement papers, or *durkhwasts*, were all taken according to the orders of Circular No. 6, dated 22nd April, 1864, which was in force at the time, and it was not until the whole of the agreements had been taken that Circular No. 3, dated 13th June, 1866, was published. The agreements have been taken for the 'juma,' plus the minor cesses in one sum, with the details recorded in the body of the paper; that is, for every Rs.100 of 'juma,' the agreement is made for Rs. 102-4-0.

119. *Chowkeedars.*—The principal feature in Circular No. 3, dated 13th June, 1866, is that the whole demand should include the actual 'juma,' plus the minor cesses, plus the chowkeedaree tax at a rate of Rs. 55 per centum of the assets. As above stated, this Circular did not come into force until after my work was done. Moreover, I had before me then the subject of the chowkeedars, and, until the question of the chowkeedars is finally disposed of, it would be not only worrying to the zemindars to take agreements for a fresh chowkeedaree tax, but useless if it is decided that the chowkeedars are to be kept up on other terms.

120. In my letter to address of the Commissioner, No. 69, dated 16th March, 1867, the whole case of the chowkeedars is laid out, and I need not enlarge on this subject now, while the matter is pending before the Government.

121. *Putwarees or village accountants.*—Consequent on the changes which took place in the village arrangements in 1863, a fresh distribution of putwarees' circles was then made; and now that there have been still further changes, a re-distribution of the circles is being made. The fees, collected at the rate of one anna for every rupee of 'juma,' are placed in a fund, and each circle has its particular income attached to it; the highest paid being at Rs. 10 per mensem, and the lowest at Rs. 6 per mensem. A detailed statement of the case will be shortly forwarded in a separate letter.

122. Since the revision of the vernacular records, extracts from the *Kheerut* or 'paper of shares and responsibilities' have been prepared for distribution to each recorded owner and shareholder of land; and to each hereditary tenant a *pottah* has been supplied.

123. I have no further remarks to make on the subject of this report; and I trust that the work herein reported on will meet with the approval of the Government.

I have, &c.,  
C. A. DANIELL,  
*Superintendent.*

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( ENCLOSURE. )

*Extract paras. 5 to 43 from letter No. 40, dated 22nd February, 1864, from the Settlement Officer, Dehra Doon, to the Commissioner of the 1st Division.*

PARA. 5. Before entering into the matter of the present settlement, I think it necessary to review briefly certain matters connected with the last or 6th settlement of the district, which has just come to a close, being the revision of the 20 years or 5th settlement.

6. The theory of land tenures, and the former systems of settlements with their results and defects, are ably shown by Mr. Ross, in his report, letter No. 110, dated 12th June, 1850, where are shown the immediate causes which led to the

revision of the 20 years' settlement of 1840, and the measures adopted by Mr. Ross for remedying the evils which existed.

7. It will be sufficient here to note the results of the revision of the 20 years' settlement, so far as they affect the operations and measures of the present settlement—

*Firstly*,—The Re-survey of the district, both of boundaries, and the internal arrangement of the villages.

*Secondly*,—The proper Record of Rights by which the position of the *Mokudums* was clearly defined, and the rights and privileges of the cultivating community finally settled.

*Thirdly*,—The complete re-distribution of the assessment or revenue, by which the system which had been adopted of levying an even rate of assessment from lands of all descriptions whatsoever, was altered and modified, and the unsatisfactory state in which the assessment on the culturable waste lands had been left was put to rights.

8. First, regarding the Survey by Mr. Ross. The Boundary Survey was made for the purpose of defining boundary lines, and thereby permanently fixing the extent and limit of the area of each village. This was very much needed, for the lines laid down by Captain Browne, in his survey in 1838, had not been supported by any local marks. It is a matter of great regret that such was the case, and the result is that the professional maps as 'Village maps' have lost a great deal of their value. In the eight drawn boundary maps of Mr. Ross' settlement, the lines were allowed to differ very materially from those laid down in 1838; and, while a certain possession was fixed by the erection of boundary marks, this possession did not agree with that recorded by the professional survey. The immediate effect of this on the new survey has been felt in the difficulty in assimilating the lines of a sight drawn map to the actual boundary of the lands themselves, where they differ materially from the professional map.

Regarding the *Kishtwar* or internal measurement of the villages. This portion of the survey settled finally the difficulties which had arisen in consequence of the difference existing between the cultivated area as shown in the professional survey, and that of the *khusrak*; the assessment having been made according to the professional returns. The *khusrak* survey of the last settlement has been of value as a warranty of title, and record of the assessable qualities of the lands, as then existed. These papers, however, have lost much of their value in consequence of a want of care in keeping up the record of mutations, and furnishing correct annual *nikasees*.

9. Secondly, in clearly defining the position of the *Mokudums*, Mr. Ross practically introduced the *zemindaree* system into the settlement. He considered the former *Thekedars* or lessees who had latterly been treated as Managers or *Mokudums*, actually held the title to pure proprietaryship; and, in settling the *Mokuddums*' position, the several *mehals* were made the distinct property of the several *malgoozars*. The measures taken up were doubtless much needed, and the result of Mr. Ross' disposal of the matter has shown the arrangements to have been well judged in the undisputed and undisturbed possession held by the proprietary community. Mr. Ross' opinion that the ryots did not appreciate or understand the powers and privileges which had been vested in them in 1830, has been generally well borne out. In certain instances it has been found necessary, during the present operations, to revise the Record of Rights.

These, and all other cases of this sort, will be brought to your notice further on.

10. Thirdly, regarding the 20 (twenty) years' settlement, on all lands held by tenants having hereditary rights of occupancy, a rate of 3 annas per *kutcha* or local beegah was fixed. This rate, as would naturally be supposed, fell very unfairly



throughout. In the Hill villages the rate was high, while in the lands situated in the Doon proper the rate was ridiculously low. The terms of the settlement did not allow of any increase to this rate; but it was in the lands held in 'Seer of proprietors' or cultivated by tenants-at-will paying in 'kind,' that an opening presented itself for revision, and allowed for a thorough revision of the assessment or 'juma' over the District.

11. The assessments were made on the village assets, from which after deducting Putwarees' fees and the minor cesses, one-fifth was set apart for the *Zemindar*, and the remainder taken as 'juma.' These assessments have been a fair test of the assessable qualities of mediocre and inferior villages. The very small amount of 'failures' and 'balances,' and the steadily rising demand for land, show the last settlement to have been a successful one.

12. The present settlement operations were commenced in November, 1860, under the superintendence of Mr. Manderson, under whose orders the survey and preparation of preliminary papers were carried on until the 1st of July, 1862; when, on Mr. Manderson being appointed to another District, the settlement work was placed in my charge. I will proceed to this subject, and detail in turn the matters connected with the three heads of settlement work—

1st,—The Survey.

2nd,—The Record of Rights.

3rd,—The Assessments.

13. *I. Survey.*—The reasons and considerations for carrying out afresh throughout the District a Boundary Survey and Internal Field Measurement, are fully shown in the set of notes prepared by Mr. Muir, dated 26th October, 1859, and in the letter of the Secretary to Government, No. 218A, dated 28th March, 1860, in which letter were laid down rules for guidance, and determining disputes, and settling matters of doubt.

14. Previous to the regular operations of the present settlement, an attempt, such as is described in para. 2 of the Secretary's letter No. 218A, had been made to follow out by 'plane-table' and compass the lines of boundary as defined by Captain Browne on the original *kishtwar* maps, and boundary lines of the last survey; the object being to revise Captain Browne's lines, if possible, on the foundation laid by Mr. Ross, and in cases where such could not be to correct the sight-drawn maps of 1848 by a 'plane-table' survey. The result was not satisfactory, and the method was abandoned on Mr. Edmonstone visiting the District early in 1860.

15. The Divisions of Pergunnahs of the District were at the last settlement irregularly formed by an imaginary line running north and south, about eight miles east of Dehra. At the commencement of the present settlement, the Divisions of the District were formed at a point passing nearer to the city. The river Rispāna emerging from the south-east of the neck of land joining the Himalayas to the Rajpore hill, at the centre of the north face of the District, runs across to the Sooswa under the slope of the Sewalics, and thence a stream runs up to under Shorepore. The Division is thereby complete, and the work for present and future purposes better distributed than heretofore.

16. The measurements began with the old *pucka beegah* chains. This system was, however, abandoned after about three months, and the British statute acre measurement was introduced. It was necessary in adopting the acre measurement to secure a light chain which could be readily worked in a rough country like this, and to have some system of computation introduced, such as would suit the capabilities of the hands at work. The system which has been used was introduced by Mr. Manderson, and has worked admirably. The old *pucka beegah* 'Jureeb' was composed of 20 *guttahs* or links, and was divided into 4 'powa' chains of 5 *guttahs* each. The length of each 'powa' chain was 13 yards  $4\frac{1}{2}$  inches, and the full 'jureeb' was  $52\frac{1}{2}$  yards; this being the side of a

*pucka beegah*. The present acre jureeb is composed of 25 *guttahs* or links, and is divided into 5 'powa' chains, each having 5 *guttahs*. The length of each 'powa,' i. e., chain 13 yards, 2 feet, 9 inches; the full jureeb being 69 yards, 1 foot, 9 inches in length—this being the side of an acre. The whole of the work is done in *guttahs* or links, and the area afterwards extracted by means of the accompanying table into acres, and the acres reduced to local *beegahs* for the purpose of completing the requirements of the *Khusra*. The scale of the present maps is of 2 jureeb or 139 yards 6 inches, to one inch:—

| Square links. | Poles. Yards. | Square links. | Poles. Yards. | Square links. | Roods. | Poles. | Yards. |                      |
|---------------|---------------|---------------|---------------|---------------|--------|--------|--------|----------------------|
| 1             | 0·8           | 10            | 2·17          | 100           | ...    | 25     | 18     | Roods. Poles. Yards. |
| 2             | 0·15          | 20            | 5·4           | 200           | 1      | 11     | 6      | * 600 = 3 33 18      |
| 3             | 0·23          | 30            | 7·21          | 300           | 1      | 36     | 24     | 20 = 0 5 1           |
| 4             | 1·1           | 40            | 10·7          | 400           | 2      | 22     | 12     | 5 = 0 1 8            |
| 5             | 1·8           | 50            | 12·24         | 500           | 3      | 7      | 3      |                      |
| 6             | 1·16          | 60            | 15·11         | 600           | 3      | 33     | 18     | 4 0 0 = 1 acre       |
| 7             | 1·24          | 70            | 17·28         | 625*          | 4 =    | 1 acre |        |                      |
| 8             | 2·1           | 80            | 20·15         |               |        |        |        |                      |
| 9             | 2·9           | 90            | 23·1          |               |        |        |        |                      |

17. The Adjustment and Demarcation of Boundaries proceeded simultaneously with the measurements. I refer now to the boundaries of villages bordering on waste lands and forests, and in all places where the actual divisions of cultivated fields did not define the village boundary. On the other hand, in villages bearing a large average of cultivation, where land is of greater value, the boundary demarcation was already existing, it had always been well defined either from the original possession never having changed, or the settlement of disputes or wish to avoid disputes having caused a permanent demarcation.

18. In Villages bordering on waste lands, the state of the boundaries was such as I have mentioned in para. 8. Every boundary had to be carefully laid down while the measurements were going on; and it was not until the complete boundary had been mapped that it was possible to know how far the possession and bounds claimed could be relied on. Possession in Waste and Forest lands was better certified by reliable boundary marks agreeing with the lines of the last settlement maps, or by the agreement of the present lines to those of the professional survey than by any other sort of evidence, and in the present boundary arrangements this principle has been acted up to.

19. The result of the present settlement of boundaries is that wherever the professional survey lines could with justice be followed, they have been so followed, as far as was possible with the materials used, and after so long a time; in other cases, where Captain Browne's lines did not suit present possession or could from any other cause not be followed, it will be tolerably easy to show on comparing the professional with the new maps on what point the boundaries do differ. Nothing, however, can possibly be of any avail to render either the professional or the present map of any use, unless the most stringent measures are taken for the preservation of proper boundary marks. I beg to bring this to your especial notice, and to remark that, as long as the waste lands exist, so long will the preservation of proper boundary marks require careful attention. Much expense has already been incurred in laying down boundaries during the last twenty-five years, and it is very necessary that they should be always correctly kept up.

20. In some few instances of large Hill tracts, a boundary survey has not been made. The instructions for this omission were given in the Secretary to the Board

of Revenue's letter No. 156, dated 21st of March, 1861. In these instances the boundaries were undisputed and clearly defined by ravines, streams, and so forth, and the expense of mapping out these lines in rough hilly lands would have been but ill met by the result.

21. The *kishtwar* or measurement of the internal arrangements of the villages was done without any difficulty. In cases where changes of property, increase of irrigation, extended cultivation, and so forth, had taken place, the nature of the *kishtwar* had naturally considerably changed, otherwise these minute holdings were of an old and undisturbed standing; and, as a rule, there was very little difficulty informing correct maps and framing a true record of occupancy.

22. The laying down of boundaries, correction of errors, settlement of disputes, and testing the survey and its papers were carried on by Mr. Manderson and myself in person.

23. In connection with the survey, the preparation in rough of all the preliminary papers was carried on, and tested simultaneously with the measurements. There has been some time and labour spent in the complete and correct preparation of these papers in consequence of the general want of interest shown by the villagers during the early operations, and the consequent difficulty the Ameens met with in carrying out their work properly.

24. This portion of the operations was completed generally when the Settlement Office was put into my charge.

25. *II. Record of Rights.*—I treat this subject now as in the Settlement operations. This portion of the work was dealt with previous to the assessments.

26. I have stated, in paragraph 9, how Mr. Ross decided the *Zemindaree* titles, and practically introduced the *Zemindaree* system. From that time to this the *Zemindars* have held almost undisputed possession; and the aboriginal cultivating community, who form the mass of the ryots, have held as simple hereditary tenants.

27. There have been lately very many petitions from the hereditary cultivators of the *Daens* called 'Rouleas.' Their claims were disposed of by Mr. Ross (Settlement Report, paragraph 72), and his ruling sanctioned by Government. Nothing has transpired in any way to alter their position, and they are recorded as they have always hitherto been, as simple hereditary tenants. I believe the chief object of their claims now is to be allowed to participate in small *Sayer* or other irregular produce; but they have nowhere acquired any such proprietary right. Even taking the orders by which in 1830 proprietary privileges were given to the cultivating hereditary community, it was there distinctly recorded that they had title to their 'cultivated' land alone.

28. I will now review the tenures of the *Daens*. These peculiar tenures have often been the subject of discussion, and their settlement has been difficult to deal with. The subject was treated by the late Mr. Thomason in a set of notes prepared previous to the last settlement, dated Landour, April 9th, 1847. In the survey of 1838, they were not mapped *mouzawar* and as they could not be mapped *mehahwar*, a quantity of land was marked off in 'puthras' or blocks, and named erroneously enough after the *Daens*, for the land so mapped did not belong to the *Daens* so called.

29. The eight *Daens*, noted marginally, were composed of 109 separate *dakhilee* villages, having defined boundaries; several of the villages containing lands belonging to the whole communities of two or more *Daens* but others with lands belonging to certain 'shares' of two or more *Daens*. In the last settlement the measurements were *mouzahwar*. The settlements were made *mehahwar*. It was not long before the several proprietary communities were disturbed, and the lands were further distributed by partitions. In lands of value, strangers became purchasers of portions or patches of land. The records became

|             |                |
|-------------|----------------|
| Oodoeewala. | Kurrumpore.    |
| Adhoeewala. | Gopeewala.     |
| Dalanwala.  | Mansingwala.   |
| Dhorun.     | Hatheeburkula. |

confused and valueless, the *Daenwar* properties were broken up into pieces, and the several shareholders at variance with one another.

30. In my present operations, I have made the settlement *mouzahwar*, the several shareholders in each village having recorded to them their property in that village according to the share of land and interest they hold. In those villages where Daen interests are mixed or clash, I have separated the lands *Daenwar*, forming each daen community into a "thoke," taking the name of the daen, and the several daen sharers becoming "putteedars." Each mouzah has been treated as a distinct mehal, and the properties recorded according to the case of each.

31. *Oodeewala Jakun*.—In Oodeewala and Jakun I have had to dis sever the daen interests, and in fact form complete partitions of the separate daens (during the later operations of 1865, I have grouped the villages composing the daen of Gopeewala into three groups, each group belonging to one distinct brotherhood, and each group holding land only belonging to the owners of that group).

32. The beneficial results of the re-arrangement of the daens are these—

1st,—The being able to secure and keep up a correct set of records.

2nd,—The determination of disputes.

3rd,—Securing a more valuable property in the lands; for any one can now buy a village and be his own master; whereas, formerly he was led into being a minute sharer in a daen and a sharer in all the family disputes. The objections to my plan are—1st, the dis severed responsibilities; and, 2nd, "the increased number of collections." Of the former there is certainly this danger, that where formerly a daen sharer paid his lump juma under all circumstances, since the failure of an entire village would be considered in his case no more than the failure of a few fields in an ordinary mehal, now, although he may own the same lands as heretofore, he has certainly a right to relief on one village that may fail, notwithstanding he reaps large profit on another in his possession. I do not, however, anticipate any loss. The poorer villages are held wholly by hereditary tenants of old standing. I have made light arrangements for them, and the zemindars therefore can hardly suffer. The second objection is actually very slight, the increase of labour being only in the actual lengthened kistbundee. The number of lumberdars (in persons) is much the same as it has been since the partitions of 1855.

33. In villages where the lands of several daens mix, or where the lands of a partitioned daen are, there is this anomaly that the tenure, though of a nominal putteedaree nature, does not contain the putteedaree element of undivided (joint) responsibility. The lands, however, under each *malgoozar* are held hypothecated for their distinct demand, and that is all that the system requires.

*Malkote Illaqua.*  
Bhogpore.  
Ghundool.

Dewara.  
Bhutber.  
Kyarkoollee.

34. The tenures noted marginally require especial notice.

35. *Malkote*.—The subject of this hill tenure was reported, No. 253, dated 28th November, 1862, and instructions received in the Secretary to Board of Revenue's letter No. 16, dated 12th January, 1863, have been carried out. The former farmer, Shibboo Nagee, having of his own accord, early after the commencement of the last settlements, disconnected himself from the Illaqua, the engagements have now been made with the several cultivating communities, and the settlement is nearly *ryotwarry*. The lands are parcelled out into 27 *mehals*, containing 38 separate holdings. The cultivators have been recorded as proprietors in their own several holdings, and the 20 per cent. *mokuddumee* and *lumberdaree* allowance enjoyed during the last settlement by Shibboo Nagee has been cut off, since the remuneration was only for service rendered, which service he, of his own free will, in 1849, ceased to give.

36. While on the subject, I think it right briefly to record the arrangements I have made for the distribution of the waste lands referred to in the above letter No. 16, paragraph 35.

37. The Malkote Illâqua is a large hill tract in the Eastern Doon, situate on the borders of the Teree territory. I have divided the Illâqua into three blocks. (1.) The South portion has been carefully marked off, and all the waste lands outside the boundaries of the villages, noted marginally, have been given over to the Forest Department. The area of this block is 8,051 acres, and the five villages composing two *mehals* are mapped off within defined boundaries. Whatever property had been actually acquired and rights exercised, these have been reserved to the proprietors to such an extent as I considered just and proper within the defined boundaries. (2.) The North and Eastern portion, or Malkote proper, contains an area of 12,677 acres, and holds within its area the mass of the small holdings. In this block each owner has his cultivated land marked off, of which he is sole proprietor. The remainder of the land, composed of rocky hills, is recorded as the entire property of Government; but, until such time as Government may wish to reclaim, or use any portion or the whole of it, the waste area is put at the disposal of the cultivating community for grazing and hut-building purposes. It was impossible, from the nature of the land and the scattered patches of cultivation, to assign any particular portion of waste land to the several cultivators. The land is purely barren and bleak, and the only chance of the men gaining a livelihood rests in the land being open all over for grazing purposes. (3) There is a third block marked off and containing the villages marginally noted. The owners have

|               |          |  |
|---------------|----------|--|
| Kotee ... ..  | No. 127. |  |
| Chowkee Seron | }        |  |
| Gundhole      |          |  |
| Kundaghul     |          |  |
| Berwala Sowra |          |  |
|               | No. 115. |  |

by purchase and use acquired a certain proprietary title to the waste lands, and I considered it just to allow them possession. The principle under which I have acted in adopting these measures is, that from the recorded state of the tenure, and the general custom of the villages, the cultivating community have had hitherto no proprietary title, and the disposal of the waste lands lay in the hands of Government. (Since furnishing this report, these lands have been personally examined by the Commissioner; and, excepting a slight alteration in boundary, the arrangements have met with Mr. Williams' approval.)

|          |   |          |
|----------|---|----------|
| Akrbanee | } | No. 106. |
| Bhelung  |   |          |
| Sowra    | } | No. 121. |
| Seroulee |   |          |

38. *Bhogpore*.—Bhogpore consists of two *Usli* and six *Dakhilee* villages. The tenure is of a hill nature, and the system is 'putteedaree' of a mixed sort. The six *Dakhilee* villages are held by six several proprietary communities; the two *Usli* ones being held by the persons hitherto recorded as sole Zemindars. Though their relative position is that of 'sudder malgoozars,' they have had nothing whatever to do with the *Dakhilee* villages, except collect the rents distributed by the village *Phant-bundee* or Rent-roll, the several communities, though recorded hitherto as *mowrosee assamees*, or *zerdust* Zemindars, being sole proprietors in all the lands comprising their several villages: I have, therefore, recorded the state of the tenure as it has always existed, the arrangement of the last settlement being contrary to what then and before then existed, and to what has existed up to now.

39. *Gudhool*.—This was evidently of hill origin; but, whatever may have been the original customary system, it has throughout very many years been in abeyance, and the tenure is recorded as simple 'Zemindaree,' the cultivating community owning themselves to have never exercised any proprietary rights.

40. *Dwara*.—This hill tract contains five villages. The tenure has been considered of a 'Bhyachara' nature, and at the last settlement was recorded as such. I do not, however, see this tenure to be other than Zemindaree; the land (with the exception of a few acres held in 'seer') is held in common, and the interests of the proprietary com-

munity are divided into 14 shares, locally termed *Dehrees*. I have recorded the former proprietors according to their rights as sharers of a zemindaree tenure.

41. *Bhutber*.—Bhutber presents features similar to Bhogpore, the only difference being that the superior community, or in fact, the 'Sudder Malgoozars' instead of holding villages separate from the general 'Bhyacharah' community, have mixed holdings over the Illàqua. The records in this instance have been adjusted to suit the circumstances of the Illàqua.

42. *Kearkolee*.—Kearkolee, formerly one mixed *mehal*, is now composed of three several *mehals*, noted marginally. The tenures of each are distinct and separate—the former being of a 'Bhyacharah' character, the other two each pure 'Zemindaree.'

Kearkoolee Bhutta.  
Bhiturlee.  
Rekhowlee.

43. In carrying out the measures in these tenures, all the parties concerned agree to the arrangements.

(Sd.) C. A. DANIELL,  
*Asstt. Superintendent,*  
*and Settlement Officer.*

(True Extract),  
C. A. DANIELL,  
*Superintendent.*







Statement No. IV. or General Statement of Khatisah Melals, Zillah Dehra Doon. — (Continued.)

| Pergunnah. | Number. | Name of villages.       | Highest Jumma of former Settlements. |                  |                  |                  |                  |                  | Proposed Jumma. | Total area in acres. | Minhas    |         | MALGOOZAREE.      |         |            |              | Average rate per acre according to the proposed Jumma. |                         |                                |                              |
|------------|---------|-------------------------|--------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|----------------------|-----------|---------|-------------------|---------|------------|--------------|--------------------------------------------------------|-------------------------|--------------------------------|------------------------------|
|            |         |                         | 1st, 1224 Rupee.                     | 2nd, 1228 Rupee. | 3rd, 1233 Rupee. | 4th, 1238 Rupee. | 5th, 1248 Rupee. | 6th, 1256 Rupee. |                 |                      | Lakheraj. | Barren. | Culturable waste. | Fallow. | Irrigable. | Unirrigable. | Total.                                                 | Per acre of total area. | Per acre of malgooza-ree area. | Per acre of cultivated area. |
| 1          | 2.      | 3.                      | 4.                                   | 5.               | 6.               | 7.               | 8.               | 9.               | 10.             | 11.                  | 12.       | 13.     | 14.               | 15.     | 16.        | 17.          | 18.                                                    | 19.                     | 20.                            | 21.                          |
|            | 72      | Horawala                | 90                                   | 95               | 135              | 138              | 181              | 173              | 360             | 2,218                | ...       | 1,572   | ...               | 27      | 321        | 298          | 646                                                    | 0 2 7                   | 0 8 11                         | 0 8 11                       |
|            | 73      | Hukomutpore Shunkerpore | ...                                  | ...              | ...              | ...              | ...              | 86               | 180             | 1,878                | ...       | 67      | 1,477             | ...     | ...        | 334          | 334                                                    | 0 1 6                   | 0 1 7                          | 0 8 7                        |
|            | 74      | Hurbhujwala             | ...                                  | ...              | ...              | ...              | ...              | 65               | 200             | 288                  | ...       | 32      | 117               | ...     | ...        | ...          | 139                                                    | 0 11 1                  | 0 12 6                         | 1 7 0                        |
|            | 75      | Hurbuswala              | 25                                   | 26               | 50               | 156              | 170              | 162              | 380             | 301                  | ...       | 25      | 23                | 34      | 219        | ...          | 253                                                    | 1 4 2                   | 1 6 0                          | 1 8 0                        |
|            | 76      | Hurnoul                 | D.                                   | ...              | ...              | ...              | ...              | ...              | 15              | 145                  | ...       | 80      | 21                | ...     | 10         | ...          | 44                                                     | 0 1 8                   | 0 3 8                          | 0 5 5                        |
|            | 77      | Hurreeawala Kulian      | D.                                   | ...              | ...              | ...              | ...              | ...              | 45              | 326                  | ...       | 267     | 6                 | ...     | ...        | 53           | 53                                                     | 0 2 3                   | 0 12 3                         | 0 13 7                       |
|            | 78      | Hurreeawala Khoord      | D.                                   | ...              | ...              | ...              | ...              | ...              | 50              | 327                  | ...       | 270     | ...               | ...     | 12         | 45           | 57                                                     | 0 2 5                   | 0 14 0                         | 0 14 0                       |
|            | 79      | Hurreepore Jodh         | ...                                  | ...              | ...              | ...              | ...              | ...              | 410             | 426                  | ...       | 116     | ...               | 126     | 182        | ...          | 308                                                    | 0 15 5                  | 1 5 2                          | 1 5 4                        |
|            | 80      | Hurreepore Zahareea     | 400                                  | 410              | 325              | 462              | 431              | 410              | ...             | 755                  | ...       | 111     | 9                 | 107     | 193        | ...          | 300                                                    | 0 15 7                  | 1 5 3                          | 1 5 10                       |
|            | 81      | Hussunpore              | ...                                  | ...              | ...              | ...              | ...              | ...              | 46              | 755                  | ...       | 309     | 446               | ...     | ...        | ...          | ...                                                    | 0 1 0                   | 1 8 0                          | ...                          |
|            | 82      | Indreepore              | ...                                  | ...              | ...              | ...              | ...              | ...              | 45              | 160                  | ...       | 73      | ...               | ...     | 8          | 79           | 87                                                     | 0 4 6                   | 0 8 3                          | 0 8 3                        |
|            | 83      | Jakun Azmutt            | D.                                   | ...              | ...              | ...              | ...              | ...              | 93              | 279                  | ...       | 108     | ...               | ...     | 14         | 157          | 171                                                    | 0 5 3                   | 0 8 7                          | 0 8 7                        |
|            | 84      | Jakun Kurrupore         | D.                                   | ...              | ...              | ...              | ...              | ...              | 12              | 22                   | ...       | ...     | ...               | ...     | ...        | 22           | 22                                                     | 0 8 9                   | 0 8 9                          | 0 8 9                        |
|            | 85      | Jakun Nithoo            | D.                                   | ...              | ...              | ...              | ...              | ...              | 30              | 95                   | ...       | 43      | ...               | ...     | 2          | 50           | 52                                                     | 0 5 1                   | 0 9 3                          | 0 9 3                        |
|            | 86      | Jakun Oodcewala...      | D.                                   | ...              | ...              | ...              | ...              | ...              | 24              | 48                   | ...       | 3       | ...               | ...     | 4          | 41           | 45                                                     | 0 8 0                   | 0 8 4                          | 0 8 4                        |
|            | 87      | Jakun Shibdutt          | D.                                   | ...              | ...              | ...              | ...              | ...              | 64              | 215                  | ...       | 91      | ...               | ...     | 7          | 117          | 124                                                    | 0 4 9                   | 0 8 3                          | 0 8 3                        |
|            | 88      | Jatonwala               | 28                                   | 28               | 21               | 25               | 38               | ...              | 42              | 369                  | ...       | 38      | 291               | ...     | 13         | 20           | 40                                                     | 0 1 10                  | 0 2 0                          | 0 2 0                        |
|            | 89      | Jeerepanee              | D.                                   | ...              | ...              | ...              | ...              | ...              | 40              | 841                  | ...       | 186     | 127               | ...     | ...        | 13           | 28                                                     | 0 2 10                  | 0 6 2                          | 2 2 3                        |
|            | 90      | Jessoowala              | 30                                   | 35               | 41               | 110              | 212              | ...              | 276             | 857                  | ...       | 167     | 267               | 23      | 126        | 254          | 403                                                    | 0 5 2                   | 0 6 4                          | 0 10 10                      |
|            | 91      | Jhajra Debee Singh      | ...                                  | 7                | 13               | 116              | 172              | ...              | 50              | 375                  | ...       | 77      | 260               | 15      | ...        | 23           | 38                                                     | 0 2 2                   | 0 2 8                          | 1 5 1                        |
|            | 92      | Jhajra Dhoom Singh      | ...                                  | ...              | ...              | ...              | ...              | ...              | 60              | 376                  | ...       | 48      | 189               | 12      | ...        | 127          | 139                                                    | 0 2 7                   | 0 2 11                         | 0 6 11                       |
|            | 93      | Juguthpore Laddawala    | ...                                  | ...              | ...              | ...              | ...              | ...              | 120             | 484                  | ...       | 168     | 69                | 25      | 36         | 186          | 247                                                    | 0 4 0                   | 0 6 1                          | 0 7 9                        |
|            | 94      | Jumoolcewala            | D.                                   | ...              | ...              | ...              | ...              | ...              | 16              | 53                   | ...       | 21      | 4                 | ...     | ...        | 28           | 28                                                     | 0 4 10                  | 0 8 0                          | 0 9 2                        |
| Dgon.      |         |                         |                                      |                  |                  |                  |                  |                  |                 |                      |           |         |                   |         |            |              |                                                        |                         |                                |                              |

|     |                          |     |     |     |     |     |     |     |       |     |       |     |     |     |     |     |        |   |       |         |
|-----|--------------------------|-----|-----|-----|-----|-----|-----|-----|-------|-----|-------|-----|-----|-----|-----|-----|--------|---|-------|---------|
| 95  | Kānlee Gohur ...         | 240 | 245 | 290 | 423 | 472 | 447 | 425 | 461   | ... | 108   | 10  | 63  | 280 | ... | 343 | 0 14   | 9 | 1 3 3 | 1 3 10  |
| 96  | Kānlee Wazeer ...        | ... | 7   | 15  | 18  | 48  | 47  | 425 | 442   | ... | 126   | 16  | 58  | 282 | ... | 341 | 0 14   | 1 | 1 3 1 | 1 4 0   |
| 97  | Kānlee Kotree ...        | 120 | 125 | 152 | 215 | 223 | 102 | 150 | 2,054 | ... | 1,107 | 473 | 15  | ... | 455 | 474 | 0 1 1  | 2 | 0 2 6 | 0 5 1   |
| 98  | Kearkoolle Bhutta ...    | 75  | 75  | 85  | 38  | 41  | 32  | 280 | 4,080 | ... | 3889  | 55  | ... | 37  | 99  | 136 | 0 1 1  | 1 | 1 7 5 | 2 0 11  |
| 99  | Keshonwala ...           | ... | ... | ... | 38  | 25  | 11  | 48  | 117   | ... | 14    | 25  | 8   | 70  | ... | 78  | 0 6 7  | 0 | 0 7 5 | 0 10 11 |
| 100 | Kharakheth ...           | ... | ... | ... | 9   | 25  | 31  | 26  | 270   | ... | 216   | 7   | ... | ... | 47  | 47  | 0 1 6  | 0 | 0 7 8 | 0 8 10  |
| 101 | Khemadaz ...             | ... | ... | ... | 42  | 32  | 44  | 68  | 53    | ... | 8     | ... | 7   | 38  | ... | 45  | 1 4 6  | 1 | 1 8 2 | 1 8 2   |
| 102 | Khera Puchehwa... ..     | ... | ... | ... | ... | ... | ... | 50  | 507   | ... | 95    | 388 | 5   | ... | 19  | 24  | 0 1 7  | 0 | 1 1 1 | 2 1 4   |
| 103 | Khera Mān Singhwala      | D.  | 115 | 100 | ... | ... | ... | 83  | 507   | ... | 95    | ... | ... | ... | ... | 94  | 1 1 7  | 0 | 1 1 1 | 2 1 4   |
| 104 | Khoshalpore ...          | ... | ... | ... | 68  | 69  | 87  | 120 | 881   | ... | 362   | 7   | ... | 10  | ... | 10  | 1 1 7  | 0 | 1 1 1 | 2 1 4   |
| 105 | Kidarwala, Captain Sahib | ... | ... | ... | ... | ... | ... | 83  | 80    | ... | 362   | 373 | 32  | 64  | ... | 96  | 0 2 4  | 0 | 1 1 1 | 1 4 0   |
| 106 | Kidarwala Summun Lall    | ... | 25  | ... | 211 | 270 | 100 | 70  | 532   | ... | 11    | 413 | 82  | ... | 26  | 108 | 0 2 1  | 0 | 0 2 2 | 0 10 4  |
| 107 | Kidarwala Summun Lall    | ... | 10  | 100 | 95  | 131 | 125 | 60  | 532   | ... | 11    | 413 | 82  | ... | 20  | 108 | 0 2 1  | 0 | 0 2 2 | 0 10 4  |
| 108 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 160 | 532   | ... | 130   | 14  | 22  | 167 | ... | 189 | 0 7 8  | 0 | 1 2 7 | 0 13 7  |
| 109 | Kidarwala Summun Lall    | D.  | ... | ... | ... | ... | ... | 11  | 31    | ... | 6     | ... | ... | ... | 22  | 92  | 0 5 8  | 0 | 0 7 0 | 0 8 0   |
| 110 | Kidarwala Summun Lall    | D.  | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 111 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 112 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 113 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 114 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 115 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 116 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 117 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 118 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 119 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 120 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 121 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 122 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 123 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 124 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 125 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 126 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 127 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 128 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 129 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 130 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 131 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 132 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 133 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 134 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 135 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 136 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 137 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 138 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 139 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 140 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 141 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |
| 142 | Kidarwala Summun Lall    | ... | ... | ... | ... | ... | ... | 40  | 166   | ... | 66    | 6   | 6   | ... | 81  | 92  | 0 3 10 | 0 | 0 6 5 | 0 6 11  |



[illegible]

*Grant lands other than those held on the old or Russaudes terms. — ( Western Doon. )*

| No. | Names.                 |     |     |     | Nature of Grant.                                             | Area in acres. | Amount of purchase-money. |          |          | Remarks. |
|-----|------------------------|-----|-----|-----|--------------------------------------------------------------|----------------|---------------------------|----------|----------|----------|
|     |                        |     |     |     |                                                              |                | Rs.                       | As.      | P.       |          |
| 1   | Arcadia ...            | ... | ... | ... | Government Resolution No. 8264, dated 17th October, 1861 ... | 5,499          | 23,730                    | 0        | 0        |          |
| 2   | Attic Farm (New) ...   | ... | ... | ... | Ditto ...                                                    | 2,123          | 7,845                     | 0        | 0        |          |
| 3   | Boodhee ...            | ... | ... | ... | Ditto ...                                                    | 754            | 3,255                     | 0        | 0        |          |
| 4   | Bukhtawarpore ...      | ... | ... | ... | Ditto ...                                                    | 264            | 2,410                     | 10       | 6        |          |
| 5   | Chunderbunnee ...      | ... | ... | ... | Ditto ...                                                    | 710            | 1,595                     | 0        | 0        |          |
| 6   | Dhoolcote ...          | ... | ... | ... | Ditto ...                                                    | 253            | 1,250                     | 0        | 0        |          |
| 7   | Macpherson's Grant ... | ... | ... | ... | Ditto ...                                                    | 591            | 1,300                     | 0        | 0        |          |
| 8   | Mulhan ...             | ... | ... | ... | Ditto ...                                                    | 313            | 1,177                     | 8        | 0        |          |
| 9   | Sweetenham's Grant ... | ... | ... | ... | Ditto ...                                                    | 2,513          | 9,887                     | 8        | 0        |          |
| 10  | Central Hopetown ...   | ... | ... | ... | Ditto ...                                                    | 3,327          | 7,703                     | 8        | 0        |          |
| 11  | East Hopetown ...      | ... | ... | ... | Ditto ...                                                    | 3,503          | 14,885                    | 0        | 0        |          |
|     |                        |     |     |     | <b>TOTAL</b> ...                                             | <b>19,779</b>  | <b>74,438</b>             | <b>2</b> | <b>6</b> |          |

Statement No. IV., or General Statement of Khateeh Mehale, Zillah Dehra Doon.—(Continued.)

| Pergunnah. | Number of villages. | Name of village.     | Highest Jumma of former settlements. |                  |                  |                  |                  |                  | Proposed Jumma. | Total area in acres. | Miahaie.   |         | Culturable waste. | MALGOOZAREE. |            |              |        | Average rate per acre according to the proposed Jumma. |                                       |        |
|------------|---------------------|----------------------|--------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|----------------------|------------|---------|-------------------|--------------|------------|--------------|--------|--------------------------------------------------------|---------------------------------------|--------|
|            |                     |                      | 1st, 1224 Rupee.                     | 2nd, 1228 Rupee. | 3rd, 1233 Rupee. | 4th, 1238 Rupee. | 5th, 1248 Rupee. | 6th, 1256 Rupee. |                 |                      | Lakhersaj. | Barren. |                   | Fallow.      | Irrigable. | Unirrigable. | Total. | Per acre of total area.                                | Per acre of malgooza-cultivated area. |        |
| 1.         | 2.                  | 3.                   | 4.                                   | 5.               | 6.               | 7.               | 8.               | 9.               | 10.             | 11.                  | 12.        | 13.     | 14.               | 15.          | 16.        | 17.          | 18.    | 19.                                                    | 20.                                   | 21.    |
|            |                     |                      | D. with Mal kote.                    | ...              | ...              | ...              | ...              | ...              | 190             | 723                  | ...        | 146     | 207               | 101          | 25         | 244          | 370    | 0 4 3                                                  | 0 5 3                                 | 0 8 3  |
|            | 1                   | Adooewala Khas...    | ...                                  | ...              | ...              | ...              | ...              | ...              | 40              | 830                  | ...        | 791     | ...               | ...          | ...        | 39           | 39     | 0 0 9                                                  | 1 0 5                                 | 1 0 5  |
|            | 2                   | Akurbancee Bhilung   | D.                                   | ...              | ...              | ...              | ...              | ...              | 10              | 25                   | ...        | 2       | ...               | ...          | ...        | 18           | 23     | 0 6 5                                                  | 0 6 11                                | 0 6 11 |
|            | 3                   | Anwala Kurrunpore    | D.                                   | ...              | ...              | ...              | ...              | ...              | 22              | 67                   | ...        | 21      | ...               | ...          | ...        | 46           | 46     | 0 5 3                                                  | 0 7 8                                 | 0 7 8  |
|            | 4                   | Anwala Upurila ...   | D.                                   | ...              | ...              | ...              | ...              | ...              | 22              | 76                   | ...        | 15      | ...               | ...          | ...        | 43           | 48     | 0 4 7                                                  | 0 5 9                                 | 0 7 4  |
|            | 5                   | Anwala Majla ...     | D.                                   | ...              | ...              | ...              | ...              | ...              | 90              | 367                  | ...        | 152     | ...               | ...          | ...        | 205          | 210    | 0 3 11                                                 | 0 6 8                                 | 0 6 10 |
|            | 6                   | Anwala Turia ...     | D.                                   | ...              | ...              | ...              | ...              | ...              | 16              | 168                  | ...        | 97      | ...               | ...          | ...        | 31           | 31     | 0 1 6                                                  | 0 7 9                                 | 0 8 3  |
|            | 7                   | Asthull              | D.                                   | ...              | ...              | ...              | ...              | ...              | 11              | 223                  | ...        | 282     | ...               | ...          | ...        | 22           | 33     | 0 0 7                                                  | 0 4 4                                 | 0 5 4  |
|            | 8                   | Bandawala            | D.                                   | ...              | ...              | ...              | ...              | ...              | 14              | 526                  | ...        | 513     | ...               | ...          | ...        | 10           | 13     | 0 0 5                                                  | 1 1 3                                 | 1 1 3  |
|            | 9                   | Baota ...            | ...                                  | ...              | ...              | ...              | ...              | ...              | 12              | 46                   | ...        | 2       | ...               | ...          | ...        | ...          | 24     | 0 4 2                                                  | 0 4 4                                 | 0 8 0  |
|            | 10                  | Beebeewala           | ...                                  | ...              | ...              | ...              | ...              | ...              | 10              | 54                   | ...        | 1       | 45                | ...          | ...        | ...          | 8      | 0 3 0                                                  | 0 3 0                                 | ...    |
|            | 11                  | Beerpoore Khoord ... | ...                                  | ...              | ...              | ...              | ...              | ...              | 8               | ...                  | ...        | ...     | ...               | ...          | ...        | ...          | ...    | ...                                                    | ...                                   | ...    |
|            | 12                  | Bhanceawala          | ...                                  | 125              | 125              | 78               | 111              | ...              | 90              | 418                  | ...        | 51      | 159               | 17           | 159        | 32           | 308    | 0 3 5                                                  | 0 3 11                                | 0 6 0  |
|            | 13                  | Bhoggore             | ...                                  | 211              | 202              | 263              | 237              | ...              | 220             | 1,427                | ...        | 1,016   | 54                | ...          | 117        | 241          | 368    | 0 2 5                                                  | 0 3 6                                 | 0 9 10 |
|            | 14                  | Bhoputwala Kunan     | ...                                  | ...              | ...              | ...              | 46               | ...              | 36              | 383                  | ...        | 96      | 242               | ...          | 4          | 43           | 47     | 0 1 6                                                  | 0 2 0                                 | 0 12 3 |
|            | 15                  | Bhoputwala Khoord    | ...                                  | 55               | 56               | ...              | ...              | ...              | 10              | 49                   | ...        | 18      | 10                | ...          | 5          | 15           | 21     | 0 3 3                                                  | 0 5 2                                 | 0 7 7  |
|            | 16                  | Bhundareewala        | D.                                   | ...              | ...              | ...              | ...              | ...              | 12              | 86                   | ...        | 49      | 17                | ...          | ...        | 20           | 20     | 0 2 3                                                  | 0 5 2                                 | 0 9 7  |
|            | 17                  | Bhungilana           | ...                                  | ...              | ...              | ...              | ...              | ...              | 10              | ...                  | ...        | ...     | 34                | ...          | ...        | ...          | ...    | 0 4 8                                                  | 0 4 8                                 | ...    |
|            | 18                  | Bhutber              | ...                                  | 70               | 75               | 120              | 192              | ...              | 200             | 3,968                | ...        | 3,570   | 87                | 28           | 35         | 247          | 311    | 0 0 10                                                 | 0 8 0                                 | 0 10 3 |
|            | 19                  | Bhutonwala           | ...                                  | ...              | ...              | ...              | ...              | ...              | 16              | 76                   | ...        | 1       | 56                | 1            | 18         | ...          | 19     | 0 3 4                                                  | 0 3 4                                 | 0 13 5 |
|            | 20                  | Birnawala            | D.                                   | ...              | ...              | ...              | ...              | ...              | 10              | 32                   | ...        | 9       | ...               | ...          | ...        | ...          | 23     | 0 5 0                                                  | ...                                   | 0 6 11 |
|            | 21                  | Bishengurh           | ...                                  | ...              | ...              | ...              | ...              | ...              | 10              | 54                   | ...        | 7       | ...               | ...          | ...        | 24           | 24     | 0 2 11                                                 | 0 3 5                                 | 0 6 8  |
|            | 22                  | Bolundawala Nagla    | ...                                  | 340              | 345              | 275              | 175              | 48               | 65              | 148                  | ...        | 12      | 25                | ...          | ...        | ...          | 111    | 0 7 0                                                  | 0 7 8                                 | 0 9 4  |
|            | 23                  | Boxerwala            | ...                                  | ...              | ...              | ...              | ...              | ...              | 11              | 78                   | ...        | 3       | 50                | 4            | 16         | ...          | 30     | 0 2 3                                                  | 0 2 6                                 | 0 8 9  |

Eastern Doon.

Statement No. IV, or General Statement of Khaliseh Mehals, Zillah Dehra Doon. — (Continued.)

| 1. | Pergunnah.        | Number of villages. | Name of village. | Highest Jumma of former settlements. |                  |                  |                  |                  |                  | 11. | Minhaie. |         | MALGOOZAREE.      |         |            |              | Average rate per acre according to the proposed Jumma. |        |        |        |
|----|-------------------|---------------------|------------------|--------------------------------------|------------------|------------------|------------------|------------------|------------------|-----|----------|---------|-------------------|---------|------------|--------------|--------------------------------------------------------|--------|--------|--------|
|    |                   |                     |                  | 1st, 1224 Rupee.                     | 2nd, 1226 Rupee. | 3rd, 1233 Rupee. | 4th, 1238 Rupee. | 5th, 1248 Rupee. | 6th, 1256 Rupee. |     | Lakhrae. | Barren. | Culturable waste. | Fallow. | Irrigable. | Unirrigable. | Total.                                                 | 19.    | 20.    | 21.    |
| 24 | Buddreepore       | ...                 | ...              | 40                                   | 42               | 120              | 265              | 174              | 182              | 275 | ...      | 16      | 33                | 19      | ...        | 371          | 390                                                    | 0 10 0 | 0 10 5 | 0 11 3 |
| 25 | Buderna Kulun     | ...                 | ...              | with Mal kote.                       | ...              | ...              | ...              | ...              | ...              | 8   | 4        | ...     | ...               | ...     | ...        | 16           | 19                                                     | 0 5 7  | 0 6 9  | 0 6 9  |
| 26 | Buderna Khoord    | ...                 | ...              | Ditto                                | ...              | ...              | ...              | ...              | ...              | 5   | 7        | ...     | ...               | ...     | ...        | 21           | 21                                                     | 0 2 10 | ...    | 0 3 10 |
| 27 | Buderna Majla     | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 2   | ...      | ...     | ...               | ...     | ...        | 2            | 6                                                      | 0 5 4  | 0 5 4  | 1 0 0  |
| 28 | Bugdah            | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 17  | 55       | ...     | 1                 | 1       | 5          | 7            | 13                                                     | 0 1 7  | 0 8 0  | 0 8 7  |
| 29 | Buiheet           | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 50  | 605      | ...     | 8                 | 1       | ...        | 43           | 44                                                     | 0 1 8  | 1 0 0  | 1 2 2  |
| 30 | Burrowala Rampore | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 217 | 3        | ...     | 155               | 3       | 46         | 10           | 59                                                     | 0 3 4  | 0 3 4  | 0 12 2 |
| 31 | Chailung          | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 80  | 446      | ...     | 14                | 28      | 6          | 171          | 205                                                    | 0 1 11 | 0 5 10 | 0 6 3  |
| 32 | Churunwalee       | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 36  | 39       | ...     | ...               | 1       | 13         | 57           | 71                                                     | 0 5 3  | ...    | 0 8 1  |
| 33 | Chowkee Seron     | ...                 | ...              | with Mal kote.                       | ...              | ...              | ...              | ...              | ...              | 40  | 44       | ...     | 27                | 32      | ...        | 116          | 148                                                    | 0 2 1  | 0 3 7  | 0 4 4  |
| 34 | Dalunwala Chuk    | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 6   | 20       | ...     | 1                 | ...     | ...        | 13           | 13                                                     | 0 2 10 | 0 6 10 | 0 7 4  |
| 35 | Danda Dhorun      | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 30  | 31       | ...     | 20                | 2       | ...        | 59           | 61                                                     | 0 4 3  | 0 5 11 | 0 7 10 |
| 36 | Danda Kudanewala  | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 40  | 79       | ...     | ...               | 7       | ...        | 88           | 95                                                     | 0 3 8  | ...    | 0 6 9  |
| 37 | Danda Lakhoord    | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 130 | 146      | ...     | 35                | 3       | ...        | 232          | 235                                                    | 0 5 0  | 0 7 8  | 0 8 10 |
| 38 | Deeswala          | ...                 | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 18  | 12       | ...     | 93                | ...     | 11         | ...          | 11                                                     | 0 2 6  | 0 2 9  | 1 10 2 |
| 39 | Dialwala          | ...                 | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 10  | 6        | ...     | 33                | ...     | ...        | 13           | 13                                                     | 0 3 1  | 0 3 6  | 0 12 4 |
| 40 | Dharkote          | ...                 | ...              | with Mal kote.                       | ...              | ...              | ...              | ...              | ...              | 2   | ...      | ...     | ...               | ...     | ...        | 8            | 8                                                      | 0 4 0  | ...    | 0 4 0  |
| 41 | Dhorun Khas       | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 130 | 187      | ...     | 1                 | 7       | ...        | 275          | 282                                                    | 0 4 5  | 0 7 4  | 0 7 4  |
| 42 | Dhundaolah        | ...                 | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 16  | 268      | ...     | 33                | 1       | 10         | 37           | 38                                                     | 0 0 9  | 0 3 8  | 0 6 9  |
| 43 | Doodlee           | ...                 | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 50  | 10       | ...     | 100               | 6       | 103        | ...          | 109                                                    | 0 3 8  | 0 3 10 | 0 7 4  |
| 44 | Doocewala         | ...                 | ...              | 115                                  | 95               | 50               | 57               | 63               | 60               | 20  | 2        | ...     | 112               | ...     | ...        | ...          | 12                                                     | 0 2 6  | 0 2 7  | 1 10 8 |
| 45 | Dwara             | ...                 | ...              | 100                                  | 102              | 92               | 32               | 32               | 20               | 20  | 4,321    | ...     | 14                | ...     | ...        | ...          | 12                                                     | 0 0 8  | 0 13 4 | 0 14 2 |
| 46 | Futtehpore Tanda  | ...                 | ...              | 60                                   | 62               | 100              | 155              | 114              | 88               | 300 | 116      | ...     | 109               | 90      | 14         | 217          | 236                                                    | 0 3 9  | 0 5 0  | 1 5 2  |
|    |                   |                     |                  | ...                                  | ...              | ...              | ...              | ...              | 50               | 45  | ...      | ...     | ...               | ...     | ...        | ...          | 34                                                     | ...    | ...    | ...    |

Doon.

| No. | Name               | Males | Females | Total |
|-----|--------------------|-------|---------|-------|
| 47  | Ghesurpuhee        | ...   | ...     | ...   |
| 48  | Goomaneewala       | ...   | ...     | ...   |
| 49  | Gudhoor            | ...   | ...     | ...   |
| 50  | Gujara Mansinghwa  | ...   | ...     | ...   |
| 51  | Gujurumee          | ...   | ...     | ...   |
| 52  | Gurhee             | ...   | ...     | ...   |
| 53  | Haldawaree         | ...   | ...     | ...   |
| 54  | Hansowala          | ...   | ...     | ...   |
| 55  | Hatwall            | ...   | ...     | ...   |
| 56  | Huchawala          | ...   | ...     | ...   |
| 57  | Hurrwala           | ...   | ...     | ...   |
| 58  | Hurreepore Kulan   | ...   | ...     | ...   |
| 59  | Hurreepore Khoord  | ...   | ...     | ...   |
| 60  | Hurreepore Nawadah | ...   | ...     | ...   |
| 61  | Indurpure          | ...   | ...     | ...   |
| 62  | Jaghat Khana       | ...   | ...     | ...   |
| 63  | Jewanwala          | ...   | ...     | ...   |
| 64  | Jhakur             | ...   | ...     | ...   |
| 65  | Kalagaon           | ...   | ...     | ...   |
| 66  | Kalemithees        | ...   | ...     | ...   |
| 67  | Kalereegard        | ...   | ...     | ...   |
| 68  | Kaloowla           | ...   | ...     | ...   |
| 69  | Kanhurwala         | ...   | ...     | ...   |
| 70  | Khorawah           | ...   | ...     | ...   |
| 71  | Khotkar            | ...   | ...     | ...   |
| 72  | Khutkore Kulan     | ...   | ...     | ...   |
| 73  | Khutkore Khoord    | ...   | ...     | ...   |
| 74  | Khyree Kulan       | ...   | ...     | ...   |
| 75  | Khyree Mansinghwa  | ...   | ...     | ...   |
| 76  | Khyrwan Kurrunpore | ...   | ...     | ...   |
| 77  | Khyrwan Malkote    | ...   | ...     | ...   |
| 78  | Kirsallee          | ...   | ...     | ...   |
| 79  | Kishenpore         | ...   | ...     | ...   |
| 80  | Koihall            | ...   | ...     | ...   |
| 81  | Kotee ...          | ...   | ...     | ...   |
| 82  | Kotela             | ...   | ...     | ...   |
| 83  | Kuhiwala           | ...   | ...     | ...   |
| 84  | Kuknawah           | ...   | ...     | ...   |
| 85  | Kulhan Kurrunpore  | ...   | ...     | ...   |
| 86  | Kulhan Mansinghwa  | ...   | ...     | ...   |
| 87  | Kundhowlee         | ...   | ...     | ...   |
| 88  | Ladhpore           | ...   | ...     | ...   |
| 89  | Lutcheewala        | ...   | ...     | ...   |
| 90  | Lutcheewala        | ...   | ...     | ...   |
| 91  | Mahomedpore        | ...   | ...     | ...   |
| 92  | Meanwala           | ...   | ...     | ...   |
| 93  | Mirostah           | ...   | ...     | ...   |
| 94  | Misurwala Kulan    | ...   | ...     | ...   |



Statement No. 1 V. or General Statement of Khateeh Mahals, Zillah Dehra Doon.—(Concluded.)

| Pergunnah. | Number of villages. | Name of village. | Highest Jumma of former settlements. |                  |                  |                  |                  |                  | Proposed Jumma. | Total area in acres. | Minhaie.  |         | MALGOOZAREH.      |         |            |              | Average rate per acre according to the proposed Jumma. |                         |                                       |        |
|------------|---------------------|------------------|--------------------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|----------------------|-----------|---------|-------------------|---------|------------|--------------|--------------------------------------------------------|-------------------------|---------------------------------------|--------|
|            |                     |                  | 1st, 1224 Rupee.                     | 2nd, 1228 Rupee. | 3rd, 1233 Rupee. | 4th, 1238 Rupee. | 5th, 1248 Rupee. | 6th, 1256 Rupee. |                 |                      | Lakheraj. | Barren. | Culturable waste. | Kallow. | Irrigable. | Unirrigable. | Total.                                                 | Per acre of total area. | Per acre of malgooza-cultivated area. | 21.    |
| 1.         | 2.                  | 3.               | 4.                                   | 5.               | 6.               | 7.               | 8.               | 9.               | 10.             | 11.                  | 12.       | 13.     | 14.               | 15.     | 16.        | 17.          | 18.                                                    | 19.                     | 20.                                   | 21.    |
| 95         | Misurwala Khoord    | ...              | 24                                   | 25               | ...              | 4                | 17               | 11               | 28              | 102                  | ...       | 25      | 11                | 1       | 65         | ...          | 66                                                     | 0 4 5                   | 0 5 10                                | 0 6 9  |
| 96         | Mokhumpore Kulian   | ...              | 80                                   | 100              | 75               | 14               | 17               | 16               | 23              | 47                   | ...       | 11      | 9                 | 1       | ...        | 26           | 27                                                     | 0 7 6                   | 0 9 9                                 | 0 13 0 |
| 97         | Mokhumpore Khoord   | ...              | ...                                  | ...              | ...              | ...              | 31               | 56               | 90              | 443                  | ...       | 212     | 40                | 10      | ...        | 181          | 191                                                    | 0 3 8                   | 0 6 3                                 | 0 7 6  |
| 98         | Mujhara             | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 5               | 175                  | ...       | 149     | 18                | ...     | 4          | 4            | 8                                                      | 0 5 0                   | 0 3 1                                 | 0 10 0 |
| 99         | Mungloowala         | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 14              | 249                  | ...       | 161     | 68                | ...     | 1          | 19           | 20                                                     | 0 0 11                  | 0 2 7                                 | 0 11 3 |
| 100        | Naheen Kulian       | ...              | with Mal kote.                       | ...              | ...              | ...              | ...              | ...              | 14              | 36                   | ...       | 3       | ...               | 2       | ...        | 31           | 33                                                     | 0 6 3                   | 0 6 9                                 | 0 6 9  |
| 101        | Naheen Khoord       | ...              | dit to.                              | ...              | ...              | ...              | ...              | ...              | 3               | 13                   | ...       | 3       | ...               | ...     | ...        | 10           | 10                                                     | 0 3 4                   | 0 4 5                                 | 0 4 5  |
| 102        | Nagul Hatnala       | ...              | 5                                    | 6                | 25               | 13               | 21               | ...              | 24              | 69                   | ...       | 41      | 5                 | ...     | ...        | 21           | 23                                                     | 0 5 7                   | 0 13 8                                | 1 0 9  |
| 103        | Nagul Jowalapore    | ...              | 5                                    | 6                | ...              | ...              | ...              | ...              | 48              | 368                  | ...       | 24      | 224               | 19      | 101        | ...          | 120                                                    | 0 2 1                   | 0 2 3                                 | 0 6 4  |
| 104        | Nalapanee           | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 36              | 369                  | ...       | 317     | 16                | 15      | ...        | ...          | 36                                                     | 0 1 7                   | 0 11 1                                | 1 0 0  |
| 105        | Nalee Kulian        | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 105             | 2,355                | ...       | 2,293   | ...               | 2       | ...        | 60           | 62                                                     | 0 0 9                   | 1 11 1                                | 1 11 1 |
| 106        | Nalee Khoord        | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 8               | 27                   | ...       | 18      | ...               | 1       | ...        | 7            | 8                                                      | 0 1 9                   | 0 5 4                                 | 0 6 0  |
| 107        | Nawadah             | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 54              | 311                  | ...       | 24      | 185               | 3       | ...        | 99           | 102                                                    | 0 2 9                   | 0 3 0                                 | 0 8 3  |
| 108        | Noorewala           | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 35              | 128                  | ...       | 52      | 1                 | ...     | ...        | 75           | 75                                                     | 0 4 4                   | 0 7 4                                 | 0 7 5  |
| 109        | Nukronah            | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 72              | 927                  | ...       | 138     | 726               | ...     | ...        | 18           | 68                                                     | 0 1 3                   | 0 1 6                                 | 1 2 3  |
| 110        | Nunoorkhara         | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 25              | 165                  | ...       | 75      | 33                | 28      | ...        | 34           | 57                                                     | 0 2 5                   | 0 4 5                                 | 0 7 0  |
| 111        | Nuthunpore          | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 240             | 668                  | ...       | 182     | 72                | 11      | 121        | 170          | 302                                                    | 0 6 11                  | 0 10 3                                | 0 12 8 |
| 112        | Nuthawala           | ...              | 5                                    | 7                | ...              | 156              | 176              | 60               | 140             | 1,220                | ...       | 66      | 829               | 94      | ...        | 281          | 325                                                    | 0 1 10                  | 0 1 11                                | 0 6 10 |
| 113        | Palce               | ...              | 12                                   | 12               | 12               | 5                | 11               | 8                | 12              | 88                   | ...       | 64      | 8                 | 6       | ...        | 10           | 16                                                     | 0 2 2                   | 0 8 0                                 | 0 12 0 |
| 114        | Phageee             | ...              | ...                                  | ...              | ...              | 15               | ...              | 7                | 12              | 136                  | ...       | 83      | 29                | ...     | 1          | 23           | 24                                                     | 0 1 5                   | 0 3 7                                 | 0 8 0  |
| 115        | Phandoh             | ...              | ...                                  | ...              | ...              | ...              | ...              | 10               | 12              | 85                   | ...       | 41      | 18                | ...     | 24         | ...          | 26                                                     | 0 2 3                   | 0 4 4                                 | 0 7 4  |
| 116        | Phulawa             | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 15              | 93                   | ...       | 57      | 11                | 6       | ...        | 15           | 95                                                     | 0 2 7                   | 0 6 8                                 | 0 9 7  |
| 117        | Phurtee             | ...              | with Mal kote                        | ...              | ...              | 7                | 10               | ...              | 5               | 20                   | ...       | 4       | ...               | 1       | ...        | 10           | 11                                                     | 0 4 0                   | 0 5 0                                 | 0 5 0  |
| 118        | Postaree            | ...              | D.                                   | ...              | ...              | ...              | ...              | ...              | 10              | 119                  | ...       | 98      | 10                | ...     | ...        | 10           | 11                                                     | 0 6 0                   | 0 3 0                                 | 0 5 9  |
| 119        | Puleyd              | ...              | with Mal kote                        | ...              | ...              | ...              | ...              | ...              | 10              | 37                   | ...       | 3       | ...               | 18      | ...        | 22           | 28                                                     | 0 4 4                   | 0 4 7                                 | 0 4 7  |
| 120        | Raepore Jowala      | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 180             | 1,015                | ...       | 464     | 263               | 30      | 43         | 215          | 288                                                    | 0 2 10                  | 0 5 3                                 | 0 10 0 |
| 121        | Raepore Hursurun    | ...              | 200                                  | 205              | 172              | 400              | 384              | 367              | 150             | 1,559                | ...       | 953     | 358               | 63      | ...        | 239          | 239                                                    | 0 1 6                   | 0 3 11                                | 0 10 1 |
| 122        | Raepore Mehur       | ...              | ...                                  | ...              | ...              | ...              | ...              | ...              | 160             | 1,325                | ...       | 645     | 325               | 13      | 28         | 213          | 254                                                    | 0 2 1                   | 0 4 5                                 | 0 10 1 |

Doon.



*Grant Lands other than those held on the old or rissudee terms. Eastern Doon.*

| No. | Name.          | Nature of Grant.                                         | Area. | Amount of purchase-money. |  |
|-----|----------------|----------------------------------------------------------|-------|---------------------------|--|
|     |                |                                                          |       | Rs. As. P.                |  |
| 1   | Ballawala      | Good service                                             | 2,050 | ...                       |  |
| 2   | Burrusee       | Ditto                                                    | 545   | ...                       |  |
| 3   | Lyster's Grant | Government Resolution No. 3264, dated 17th October, 1861 | 1,022 | 4,985 0 0                 |  |
| 4   | Raynorpore     | Good service                                             | 2,003 | ...                       |  |
|     |                | Total                                                    | 5,619 | 4,985 0 0                 |  |

C. A. DANIELL,  
Superintendent.

## Appendix to Statement No. IV. or the General Statement of Maafee Villages in Dehra Doon.

| Pergunah.     | Number of Villages. | Name of Village.                   | Full area. | Minhaie.  |         | Culturable waste. | Cultivated including fallow. |            |              |        | Nominal Jumma. | Remarks. |
|---------------|---------------------|------------------------------------|------------|-----------|---------|-------------------|------------------------------|------------|--------------|--------|----------------|----------|
|               |                     |                                    |            | Lakheraj. | Barren. |                   | Judeed or fallow.            | Irrigated. | Unirrigated. | Total. |                |          |
| 1.            | 2.                  | 3.                                 | 4.         | 5.        | 6.      | 7.                | 8.                           | 9.         | 10.          | 11.    | 12.            | 13.      |
| Ra.           |                     |                                    |            |           |         |                   |                              |            |              |        |                |          |
| Western Doon. | 1                   | Banjerawala ...                    | 503        | ...       | 60      | 153               | 2                            | 133        | 155          | 290    | 175            |          |
|               | 2                   | Chamassaree ...                    | 6,563      | 4         | 6,288   | 3                 | 34                           | 8          | 226          | 268    | 300            |          |
|               | 3                   | Dehra Khas ...                     | 1,902      | 19        | 436     | 94                | 6                            | 977        | 370          | 1,353  | 1,500          |          |
|               | 4                   | Dhurtawala ...                     | 304        | 14        | 54      | 27                | 5                            | 199        | 5            | 209    | 220            |          |
|               | 5                   | Dobhalwala ...                     | 147        | 13        | 26      | 20                | 10                           | ...        | 78           | 88     | 80             |          |
|               | 6                   | Goruckpore ...                     | 26         | ...       | 11      | ...               | ...                          | 3          | 12           | 15     | 20             |          |
|               | 7                   | Jakun ...                          | 19         | ...       | ...     | ...               | ...                          | ...        | 19           | 19     | 10             |          |
|               | 8                   | Meonwala ...                       | 975        | ...       | 80      | 381               | 25                           | ...        | 489          | 514    | 320            |          |
|               | 9                   | Mulhawala ...                      | 227        | ...       | 13      | ...               | 2                            | 202        | 10           | 214    | 160            |          |
|               | 10                  | Prempore ...                       | 129        | ...       | 15      | ...               | ...                          | 78         | 36           | 114    | 75             |          |
|               | 11                  | Punditwaree ...                    | 367        | ...       | 57      | 49                | 17                           | 238        | 6            | 261    | 250            |          |
|               | 12                  | Rajpore ...                        | 56         | 11        | 29      | 5                 | 3                            | ...        | 8            | 11     | 60             |          |
|               |                     | Total Western Doon...              | 11,218     | 61        | 7,069   | 732               | 104                          | 1,888      | 1,414        | 3,356  | 3,170          |          |
| Eastern Doon. | 1                   | Bungayn ...                        | 50         | ...       | 11      | 2                 | 2                            | ...        | 35           | 37     | 35             |          |
|               | 2                   | Burkote ...                        | 839        | 19        | 211     | 204               | 21                           | ...        | 384          | 405    | 150            |          |
|               | 3                   | Byragra ...                        | 29         | 2         | 9       | ...               | ...                          | 17         | 1            | 18     | 20             |          |
|               | 4                   | Gohree ...                         | 766        | ...       | 231     | 497               | 13                           | 25         | ...          | 38     | 40             |          |
|               | 5                   | Jogeewala ...                      | 129        | ...       | 1       | 80                | 5                            | 43         | ...          | 48     | 40             |          |
|               | 6                   | Khurkurree ...                     | 129        | ...       | 35      | 50                | 11                           | 33         | ...          | 44     | 40             |          |
|               | 7                   | Khuruk ...                         | 955        | ...       | 192     | 705               | 52                           | 6          | ...          | 58     | 40             |          |
|               | 8                   | Khyree Khoord ...                  | 227        | 3         | 25      | 142               | 2                            | 55         | ...          | 57     | 40             |          |
|               | 9                   | Majree ...                         | 252        | ...       | 71      | 1                 | ...                          | ...        | 180          | 180    | 90             |          |
|               | 10                  | Purteednuggur ...                  | 810        | ...       | 102     | 570               | 6                            | 120        | 12           | 138    | 100            |          |
|               | 11                  | Rikikase ...                       | 1,908      | 3         | 1,085   | 820               | ...                          | ...        | ...          | ...    | 50             |          |
|               | 12                  | Tuppobun ...                       | 123        | ...       | 9       | 66                | 6                            | 40         | 2            | 48     | 40             |          |
|               |                     | Total of Eastern Doon,             | 6,217      | 27        | 1,982   | 3,137             | 118                          | 339        | 614          | 1,071  | 685            |          |
|               |                     | Total of Western Doon,             | 11,218     | 61        | 7,069   | 732               | 104                          | 1,838      | 1,414        | 3,356  | 3,170          |          |
|               |                     | Grand Total of Maafee villages ... | 17,435     | 88        | 9,051   | 3,869             | 222                          | 2,177      | 2,028        | 4,427  | 3,855          |          |

C. A. DANIELL,

Superintendent.

STATEMENT  
Jumma Statement of

| 1.            | 2.      | 3.                                   | 4.                              | 5.             | 6.       | 7.       | 8.       | 9.       | 10.      | 11.      | 12.      | 13.      | 14.      |
|---------------|---------|--------------------------------------|---------------------------------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Pergunnah.    | Number. | Name of Village.                     | Last year of former Settlement. | A. D. 1866-67. | 1867-68. | 1868-69. | 1869-70. | 1870-71. | 1871-72. | 1872-73. | 1873-74. | 1874-75. | 1875-76. |
| Western Doon. | 1       | Adhoowala ...                        | 54                              | 70             | 70       | 70       | 70       | 70       | 70       | 70       | 70       | 70       | 70       |
|               | 2       | Amwala Puchchwa ...                  | 35                              | 62             | 62       | 62       | 62       | 62       | 62       | 62       | 62       | 62       | 62       |
|               | 3       | Abdoollapore ...                     | 20                              | 38             | 38       | 38       | 38       | 38       | 38       | 38       | 38       | 38       | 38       |
|               | 4       | Adhoowala Chuck ...                  | ...                             | 6              | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
|               | 5       | Ajjubpore Kulan ...                  | 405                             | 675            | 675      | 675      | 675      | 675      | 675      | 675      | 675      | 675      | 675      |
|               | 6       | Ajjubpore, Khoord ...                | 188                             | 350            | 350      | 350      | 350      | 350      | 350      | 350      | 350      | 350      | 350      |
|               | 7       | Ambaree ...                          | 80                              | 250            | 250      | 250      | 250      | 250      | 250      | 250      | 250      | 250      | 250      |
|               | 8       | Ambeewala ...                        | 68                              | 115            | 115      | 115      | 115      | 115      | 115      | 115      | 115      | 115      | 115      |
|               | 9       | Bajawala ...                         | 98                              | 260            | 260      | 260      | 260      | 260      | 260      | 260      | 260      | 260      | 260      |
|               | 10      | Bahmunwala ...                       | 127                             | 180            | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      |
|               | 11      | Bahadurgurh ...                      | 32                              | 62             | 62       | 62       | 62       | 62       | 62       | 62       | 62       | 62       | 62       |
|               | 12      | Bahadurpore ...                      | 100                             | 98             | 98       | 98       | 98       | 98       | 98       | 98       | 98       | 98       | 98       |
|               | 13      | Benespore ...                        | 6                               | 6              | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
|               | 14      | Betwala ...                          | ...                             | 55             | 55       | 55       | 55       | 55       | 55       | 55       | 55       | 55       | 55       |
|               | 15      | Belaspore Kandlee ...                | 155                             | 138            | 138      | 138      | 138      | 138      | 138      | 138      | 138      | 138      | 138      |
|               | 16      | Beejapore Gopeewala ...              | ...                             | 112            | 112      | 112      | 112      | 112      | 112      | 112      | 112      | 112      | 112      |
|               | 17      | Beejapore Hatheburkula ...           | ...                             | 190            | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      |
|               | 18      | Bhanwala ...                         | 50                              | 50             | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
|               | 19      | Bharooowala ...                      | 43                              | 40             | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 20      | Bheturlee ...                        | 42                              | 130            | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      |
|               | 21      | Bhugwanpore Julon ...                | 57                              | 90             | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       |
|               | 22      | Bhugwantpore ...                     | 21                              | 21             | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       |
|               | 23      | Bidhowlee ...                        | 114                             | 114            | 114      | 114      | 114      | 114      | 114      | 114      | 114      | 114      | 114      |
|               | 24      | Birgirwalee ...                      | ...                             | 38             | 38       | 38       | 38       | 38       | 38       | 38       | 38       | 38       | 38       |
|               | 25      | Birsanee ...                         | 32                              | 84             | 84       | 84       | 84       | 84       | 84       | 84       | 84       | 84       | 84       |
|               | 26      | Bishenpore ...                       | 8                               | 11             | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       |
|               | 27      | Bolakeewala ...                      | 32                              | 180            | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      |
|               | 28      | Bugrial Mutussil Paltan ...          | ...                             | 50             | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
|               | 29      | Bukarna ...                          | 20                              | 70             | 70       | 70       | 70       | 70       | 70       | 70       | 70       | 70       | 70       |
|               | 30      | Bunseewala ...                       | 17                              | 19             | 19       | 19       | 19       | 19       | 19       | 19       | 19       | 19       | 19       |
|               | 31      | Bunahur ...                          | 150                             | 420            | 420      | 420      | 420      | 420      | 420      | 420      | 420      | 420      | 420      |
|               | 32      | Burgulla ...                         | 20                              | 22             | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       |
|               | 33      | Buronwala ...                        | 30                              | 56             | 56       | 56       | 56       | 56       | 56       | 56       | 56       | 56       | 56       |
|               | 34      | Burwa ...                            | 32                              | 75             | 75       | 75       | 75       | 75       | 75       | 75       | 75       | 75       | 75       |
|               | 35      | Byrageewala ...                      | 26                              | 45             | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       |
|               | 36      | Chandpore Kulan ...                  | 30                              | 30             | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       |
|               | 37      | Chandpore Khoord ...                 | 29                              | 29             | 29       | 29       | 29       | 29       | 29       | 29       | 29       | 29       | 29       |
|               | 38      | Chunderbunnee ...                    | 20                              | 28             | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       |
|               | 39      | Chookoowala ...                      | 229                             | 380            | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      |
|               | 40      | Chowkee ...                          | ...                             | 86             | 86       | 86       | 86       | 86       | 86       | 86       | 86       | 86       | 86       |
|               | 41      | Dalunwala Khas ...                   | ...                             | 292            | 292      | 292      | 292      | 292      | 292      | 292      | 292      | 292      | 292      |
|               | 42      | Dalunwala Gopal ...                  | ...                             | 8              | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
|               | 43      | Daneouka Danda ...                   | ...                             | 25             | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       |
|               | 44      | Dhakee ...                           | 43                              | 75             | 75       | 75       | 75       | 75       | 75       | 75       | 75       | 75       | 75       |
|               | 45      | Dhak Puttee ...                      | ...                             | 210            | 210      | 210      | 210      | 210      | 210      | 210      | 210      | 210      | 210      |
|               | 46      | Dhakranee ...                        | 396                             | 900            | 900      | 900      | 900      | 900      | 900      | 900      | 900      | 900      | 900      |
|               | 47      | Dholanee ...                         | 24                              | 86             | 86       | 86       | 86       | 86       | 86       | 86       | 86       | 86       | 86       |
|               | 48      | Dholass ...                          | ...                             | 150            | 150      | 150      | 150      | 150      | 150      | 150      | 150      | 150      | 150      |
|               | 49      | Dholkote ...                         | 6                               | 8              | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
|               | 50      | Dhomeepoora Gunghbawa, ...           | 62                              | 55             | 55       | 55       | 55       | 55       | 55       | 55       | 55       | 55       | 55       |
|               | 51      | Dhoom Nuggur ...                     | 20                              | 20             | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
|               | 52      | Dhuramawala ...                      | 102                             | 110            | 110      | 110      | 110      | 110      | 110      | 110      | 110      | 110      | 110      |
|               | 53      | Dhurmipore ...                       | 279                             | 475            | 475      | 475      | 475      | 475      | 475      | 475      | 475      | 475      | 475      |
|               | 54      | Dhurtawala ...                       | 17                              | 40             | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 55      | Dodhay ...                           | 26                              | 96             | 96       | 96       | 96       | 96       | 96       | 96       | 96       | 96       | 96       |
|               | 56      | Domeith ...                          | 22                              | 130            | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      |
|               | 57      | Donkwala ...                         | 15                              | 26             | 26       | 26       | 26       | 26       | 26       | 26       | 26       | 26       | 26       |
|               | 58      | Dyrhamtown Puttee La-<br>kunwala ... | 98                              | 290            | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      |
|               | 59      | Futtehpore ...                       | 250                             | 260            | 260      | 260      | 260      | 260      | 260      | 260      | 260      | 260      | 260      |
|               | 60      | Gadjeewalla ...                      | ...                             | 14             | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       |
|               | 61      | Ghomolon ...                         | 46                              | 78             | 78       | 78       | 78       | 78       | 78       | 78       | 78       | 78       | 78       |
|               | 62      | Ghungora ...                         | 70                              | 58             | 58       | 58       | 58       | 58       | 58       | 58       | 58       | 58       | 58       |
|               | 63      | Gopeewala Khas ...                   | ...                             | 90             | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       |
|               | 64      | Gopeewala Futteh Singh...<br>...     | ...                             | 222            | 222      | 222      | 222      | 222      | 222      | 222      | 222      | 222      | 222      |
|               | 65      | Gopeewala Kallan Singh...<br>...     | ...                             | 94             | 94       | 94       | 94       | 94       | 94       | 94       | 94       | 94       | 94       |
|               | 66      | Gopeewala Mausingh ...               | ...                             | 100            | 100      | 100      | 100      | 100      | 100      | 100      | 100      | 100      | 100      |
|               | 67      | Gujrara ...                          | ...                             | 60             | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       |
|               | 68      | Guljwaree ...                        | ...                             | 150            | 150      | 150      | 150      | 150      | 150      | 150      | 150      | 150      | 150      |
|               | 69      | Gurhee ...                           | ...                             | 680            | 680      | 680      | 680      | 680      | 680      | 680      | 680      | 680      | 680      |
|               | 70      | Hatheburkulla Khas ...               | ...                             | 180            | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      |
|               | 71      | Hathareewala...<br>...               | ...                             | 4              | 4        | 4        | 4        | 4        | 4        | 4        | 4        | 4        | 4        |
|               | 72      | Horawala ...                         | 173                             | 360            | 360      | 360      | 360      | 360      | 360      | 360      | 360      | 360      | 360      |

No. V.—JUMMA.

*Zillah Dehra Doon.*

[illegible]

## STATEMENT

Jumma Statement of Zillah

| 1.            | 2.      | 3.                            | 4.                              | 5.             | 6.       | 7.       | 8.       | 9.       | 10.      | 11.      | 12.      | 13.      | 14.      |
|---------------|---------|-------------------------------|---------------------------------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Pergunnah     | Number. | Name of Village.              | Last year of former Settlement. | A. D. 1866-67. | 1867-68. | 1868-69. | 1869-70. | 1870-71. | 1871-72. | 1872-73. | 1873-74. | 1874-75. | 1875-76. |
| Western Doon. | 73      | Hukoomutpore Shunkur pore ... | 86                              | 180            | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      |
|               | 74      | Hurbhujwala ...               | 65                              | 200            | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      |
|               | 75      | Hurbunswala ...               | 162                             | 380            | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      |
|               | 76      | Hurnoul ...                   | ...                             | 15             | 15       | 15       | 15       | 15       | 15       | 15       | 15       | 15       | 15       |
|               | 77      | Hurreeawala Kuln ...          | ...                             | 45             | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       |
|               | 78      | Hurreeawala Khoord ...        | ...                             | 50             | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
|               | 79      | Hurreepore Jodh ...           | 410                             | 410            | 410      | 410      | 410      | 410      | 410      | 410      | 410      | 410      | 410      |
|               | 80      | Hurreepore Zahareea ...       |                                 | 410            | 410      | 410      | 410      | 410      | 410      | 410      | 410      | 410      | 410      |
|               | 81      | Husunpore ...                 |                                 | 46             | 46       | 46       | 46       | 46       | 46       | 46       | 46       | 46       | 46       |
|               | 82      | Indreepore ...                | ...                             | 45             | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       |
|               | 83      | Jakhnn Azmutt ...             | ...                             | 92             | 92       | 92       | 92       | 92       | 92       | 92       | 92       | 92       | 92       |
|               | 84      | Jakhun Kurrunpore ...         | ...                             | 12             | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 85      | Jakhun Nithoo ...             | ...                             | 30             | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       |
|               | 86      | Jakhun Oodeewala ...          | ...                             | 24             | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       |
|               | 87      | Jakhun Shibdut ...            | ...                             | 64             | 64       | 64       | 64       | 64       | 64       | 64       | 64       | 64       | 64       |
|               | 88      | Jatonwala ...                 | 38                              | 42             | 42       | 42       | 42       | 42       | 42       | 42       | 42       | 42       | 42       |
|               | 89      | Jeereepanee ...               | ...                             | 60             | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       |
|               | 90      | Jessoowala ...                | 311                             | 275            | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      |
|               | 91      | Jhajra Debee Singh ...        | 101                             | 50             | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
|               | 92      | Jhajra Dhoom Singh ...        |                                 | 60             | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       |
|               | 93      | Juguthpore Laddawala ...      |                                 | 53             | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      |
|               | 94      | Jumoolleewala ...             | ...                             | 16             | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
|               | 95      | Kaonlee Gohar ...             | 447                             | 425            | 425      | 425      | 425      | 425      | 425      | 425      | 425      | 425      | 425      |
|               | 96      | Kaonlee Wuzeer ...            |                                 | 425            | 425      | 425      | 425      | 425      | 425      | 425      | 425      | 425      | 425      |
|               | 97      | Kaawalee Kotree ...           |                                 | 47             | 150      | 150      | 150      | 150      | 150      | 150      | 150      | 150      | 150      |
|               | 98      | Kear Kooles Bhutta ...        | 102                             | 280            | 280      | 280      | 280      | 280      | 280      | 280      | 280      | 280      | 280      |
|               | 99      | Keshonwala ...                | 32                              | 48             | 48       | 48       | 48       | 48       | 48       | 48       | 48       | 48       | 48       |
|               | 100     | Khara Kheth ...               | 11                              | 26             | 26       | 26       | 26       | 26       | 26       | 26       | 26       | 26       | 26       |
|               | 101     | Khemadaz ...                  | 31                              | 68             | 68       | 68       | 68       | 68       | 68       | 68       | 68       | 68       | 68       |
|               | 102     | Khera Puchchwa ...            | 41                              | 50             | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
|               | 103     | Khera Mansinghwala ...        | ...                             | 33             | 33       | 33       | 33       | 33       | 33       | 33       | 33       | 33       | 33       |
|               | 104     | Khosalpore ...                | 87                              | 120            | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      |
|               | 105     | Kidarawala Captain Sahib, ... | 100                             | 70             | 70       | 70       | 70       | 70       | 70       | 70       | 70       | 70       | 70       |
|               | 106     | Kidarawala Summun Lal ...     |                                 | 60             | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       |
|               | 107     | Kidarpore ...                 |                                 | 125            | 160      | 160      | 160      | 160      | 160      | 160      | 160      | 160      | 160      |
|               | 108     | Kirsalee ...                  | ...                             | 11             | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       |
|               | 109     | Kishenpore Dhorun ...         | ...                             | 40             | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 110     | Kotee ...                     | 10                              | 40             | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 111     | Kotra Kullianpore ...         | 38                              | 66             | 66       | 66       | 66       | 66       | 66       | 66       | 66       | 66       | 66       |
|               | 112     | Kotra Suntore ...             | 128                             | 98             | 98       | 98       | 98       | 98       | 98       | 98       | 98       | 98       | 98       |
|               | 113     | Kowlaghir ...                 | 144                             | 200            | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      |
|               | 114     | Kulahul ...                   | 30                              | 30             | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       |
|               | 115     | Kullianpore ...               | 20                              | 25             | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       |
|               | 116     | Kundholee ...                 | 89                              | 420            | 420      | 420      | 420      | 420      | 420      | 420      | 420      | 420      | 420      |
|               | 117     | Kunjah Khalisa ...            | 173                             | 140            | 140      | 140      | 140      | 140      | 140      | 140      | 140      | 140      | 140      |
|               | 118     | Kurreeempore ...              | 25                              | 38             | 38       | 38       | 38       | 38       | 38       | 38       | 38       | 38       | 38       |
|               | 119     | Kurrunpore Khas ...           | ...                             | 220            | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      |
|               | 120     | Kuthurputhur ...              | 30                              | 60             | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       |
|               | 121     | Langha ...                    | 49                              | 105            | 105      | 105      | 105      | 105      | 105      | 105      | 105      | 105      | 105      |
|               | 122     | Loharwala ...                 | 65                              | 12             | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 123     | Lukunwala Dhoom Singh ...     | 98                              | 130            | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      |
|               | 124     | Lutchmeepore ...              | 29                              | 55             | 55       | 55       | 55       | 55       | 55       | 55       | 55       | 55       | 55       |
|               | 125     | Majhond ...                   | ...                             | 80             | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       |
|               | 126     | Majrah ...                    | 343                             | 575            | 575      | 575      | 575      | 575      | 575      | 575      | 575      | 575      | 575      |
|               | 127     | Majree ...                    | 80                              | 64             | 64       | 64       | 64       | 64       | 64       | 64       | 64       | 64       | 64       |
|               | 128     | Makhawala ...                 | ...                             | 10             | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 129     | Makhraytee ...                | ...                             | 10             | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 130     | Malookawala ...               | 110                             | 260            | 260      | 260      | 260      | 260      | 260      | 260      | 260      | 260      | 260      |
|               | 131     | Malsee ...                    | ...                             | 35             | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       |
|               | 132     | Mandhoowala ...               | 26                              | 70             | 70       | 70       | 70       | 70       | 70       | 70       | 70       | 70       | 70       |
|               | 133     | Mednipore Budreepore ...      | 149                             | 168            | 168      | 168      | 168      | 168      | 168      | 168      | 168      | 168      | 168      |
|               | 134     | Mehunwala ...                 | 48                              | 80             | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       |
|               | 135     | Mehra-ka-gaon ...             | 11                              | 16             | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
|               | 136     | Misraa Puttee ...             | 36                              | 210            | 210      | 210      | 210      | 210      | 210      | 210      | 210      | 210      | 210      |
|               | 137     | Mitheebheri ...               | 163                             | 350            | 350      | 350      | 350      | 350      | 350      | 350      | 350      | 350      | 350      |
|               | 138     | Mohibbawala ...               | 34                              | 65             | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       |
|               | 139     | Mothronwala ...               | 254                             | 275            | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      |
|               | 140     | Nardh ...                     | 16                              | 25             | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       |
|               | 141     | Nirunjunpore Batt Sahib ...   | 287                             | 285            | 285      | 285      | 285      | 285      | 285      | 285      | 285      | 285      | 285      |
|               | 142     | Nirunjunpore Kunhaya Lal ...  |                                 | 300            | 300      | 300      | 300      | 300      | 300      | 300      | 300      | 300      | 300      |
|               | 143     | Nowanuggur Dhorun ...         |                                 | 22             | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       |

No. V.—JUMMA.

*Dehra Doon.*—(Continued.)

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STATEMENT  
Juma Statement of Zillah

| 1.            | 2.      | 3.                          | 4.                                   | 5.       | 6.       | 7.       | 8.              | 9.            | 10.      | 11.      | 12.           | 13.      | 14.      |
|---------------|---------|-----------------------------|--------------------------------------|----------|----------|----------|-----------------|---------------|----------|----------|---------------|----------|----------|
| Pergunnah.    | Number. | [Name of Village.           | Last year of form-<br>er Settlement. | 1866-67. | 1867-68. | 1868-69. | 1869-70.        | 1870-71.      | 1871-72. | 1872-73. | 1873-74.      | 1874-75. | 1875-76. |
| Western Doon. | 144     | Nowanuggur Kalalowalee...   | 24                                   | 55       | 55       | 55       | 55              | 55            | 55       | 55       | 55            | 55       | 55       |
|               | 145     | Nowagaon ...                | 50                                   | 84       | 84       | 84       | 84              | 84            | 84       | 84       | 84            | 84       | 84       |
|               | 146     | Oodeewala Khas ...          | ...                                  | 110      | 110      | 110      | 110             | 110           | 110      | 110      | 110           | 110      | 110      |
|               | 147     | Oodeewala Adhooeewala ...   | ...                                  | 50       | 50       | 50       | 50              | 50            | 50       | 50       | 50            | 50       | 50       |
|               | 148     | Oodeewala Kurrupore ...     | ...                                  | 280      | 280      | 280      | 280             | 280           | 280      | 280      | 280           | 280      | 280      |
|               | 149     | Oodeewala Mansinghwal.      | ...                                  | 260      | 260      | 26       | 260             | 260           | 260      | 260      | 260           | 260      | 260      |
|               | 150     | Peerwala ...                | 8                                    | 12       | 12       | 12       | 12              | 12            | 12       | 12       | 12            | 12       | 12       |
|               | 151     | Peleon Nathowala ...        | 93                                   | 145      | 145      | 145      | 145             | 145           | 145      | 145      | 145           | 145      | 145      |
|               | 152     | Phoolsunnee ...             | 38                                   | 50       | 50       | 50       | 50              | 50            | 50       | 50       | 50            | 50       | 50       |
|               | 153     | Pirohutwala ...             | 350                                  | 380      | 380      | 380      | 380             | 380           | 380      | 380      | 380           | 380      | 380      |
|               | 154     | Pirtheepore ...             | 48                                   | 95       | 95       | 95       | 95              | 95            | 95       | 95       | 95            | 95       | 95       |
|               | 155     | Pithowala ...               | 68                                   | 112      | 112      | 112      | 112             | 112           | 112      | 112      | 112           | 112      | 112      |
|               | 156     | Poorwala ...                | ...                                  | 16       | 16       | 16       | 16              | 16            | 16       | 16       | 16            | 16       | 16       |
|               | 157     | Pondeh ...                  | 83                                   | 190      | 190      | 190      | 190             | 190           | 190      | 190      | 190           | 190      | 190      |
|               | 158     | Pursooleewala ...           | ...                                  | 32       | 32       | 32       | 32              | 32            | 32       | 32       | 32            | 32       | 32       |
|               | 159     | Purdeedpore Kullianpore...  | 131                                  | 120      | 120      | 120      | 120             | 120           | 120      | 120      | 120           | 120      | 120      |
|               | 160     | Purdeedpore Suntore ...     | 10                                   | 8        | 8        | 8        | 8               | 8             | 8        | 8        | 8             | 8        | 8        |
|               | 161     | Qutubpoora ...              | ...                                  | 15       | 15       | 15       | 15              | 15            | 15       | 15       | 15            | 15       | 15       |
|               | 162     | Rajawala ...                | ...                                  | 55       | 55       | 55       | 55              | 55            | 55       | 55       | 55            | 55       | 55       |
|               | 163     | Rampore Bhaowala ...        | 40                                   | 100      | 100      | 100      | 100             | 100           | 100      | 100      | 100           | 100      | 100      |
|               | 164     | Rampore Kulan ...           | 120                                  | 161      | 161      | 161      | 161             | 161           | 161      | 161      | 161           | 161      | 161      |
|               | 165     | Rampore Khoord ...          | 5                                    | 8        | 8        | 8        | 8               | 8             | 8        | 8        | 8             | 8        | 8        |
|               | 166     | Ramsahaywala ...            | 14                                   | 18       | 18       | 18       | 18              | 18            | 18       | 18       | 18            | 18       | 18       |
|               | 167     | Ranghurwala ...             | 163                                  | 330      | 330      | 330      | 330             | 330           | 330      | 330      | 330           | 330      | 330      |
|               | 168     | Rikhowlee ...               | 28                                   | 180      | 180      | 180      | 180             | 180           | 180      | 180      | 180           | 180      | 180      |
|               | 169     | Rudharpore ...              | 150                                  | 120      | 120      | 120      | 120             | 120           | 120      | 120      | 120           | 120      | 120      |
|               | 170     | Sabhwala ...                | 192                                  | 400      | 400      | 400      | 400             | 400           | 400      | 400      | 400           | 400      | 400      |
|               | 171     | Sahunspore ...              | 224                                  | 330      | 330      | 330      | 330             | 330           | 330      | 330      | 330           | 330      | 330      |
|               | 172     | Salawala Dhorun ...         | ...                                  | 28       | 28       | 28       | 28              | 28            | 28       | 28       | 28            | 28       | 28       |
|               | 173     | Saliawala Oodeewala ...     | ...                                  | 45       | 45       | 45       | 45              | 45            | 45       | 45       | 45            | 45       | 45       |
|               | 174     | Selaneonwala ...            | ...                                  | 22       | 22       | 22       | 22              | 22            | 22       | 22       | 22            | 22       | 22       |
|               | 175     | Selangaon ...               | ...                                  | 26       | 26       | 26       | 26              | 26            | 26       | 26       | 26            | 26       | 26       |
|               | 176     | Seola Kulen ...             | 228                                  | 400      | 400      | 400      | 400             | 400           | 400      | 400      | 400           | 400      | 400      |
|               | 177     | Seola Khoord ...            | 74                                   | 120      | 120      | 120      | 120             | 120           | 120      | 120      | 120           | 120      | 120      |
|               | 178     | Shahpore Kullianpore ...    | 120                                  | 154      | 154      | 154      | 154             | 154           | 154      | 154      | 154           | 154      | 154      |
|               | 179     | Shahpore Suntore ...        | 113                                  | 260      | 260      | 260      | 260             | 260           | 260      | 260      | 260           | 260      | 260      |
|               | 180     | Sherepore ...               | 53                                   | 100      | 100      | 100      | 100             | 100           | 100      | 100      | 100           | 100      | 100      |
|               | 181     | Sheshumbara ...             | ...                                  | 205      | 205      | 205      | 205             | 205           | 205      | 205      | 205           | 205      | 205      |
|               | 182     | Soornah ...                 | 82                                   | 200      | 200      | 200      | 200             | 200           | 200      | 200      | 200           | 200      | 200      |
|               | 183     | Sudhonwala ...              | 18                                   | 50       | 50       | 50       | 50              | 50            | 50       | 50       | 50            | 50       | 50       |
|               | 184     | Sunola ...                  | ...                                  | 70       | 70       | 70       | 70              | 70            | 70       | 70       | 70            | 70       | 70       |
|               | 185     | Tilwuree ...                | 89                                   | 100      | 100      | 100      | 100             | 100           | 100      | 100      | 100           | 100      | 100      |
|               | 186     | Timlee Chireebeylee ...     | 36                                   | 40       | 40       | 40       | 40              | 40            | 40       | 40       | 40            | 40       | 40       |
|               | 187     | Tipperpore ...              | 83                                   | 104      | 104      | 104      | 104             | 104           | 104      | 104      | 104           | 104      | 104      |
|               | 188     | Towlee ...                  | 26                                   | 35       | 35       | 35       | 35              | 35            | 35       | 35       | 35            | 35       | 35       |
|               | DAENS.  |                             |                                      |          |          |          |                 |               |          |          |               |          |          |
|               |         | Adhooeewala ...             | 580                                  | ...      | ...      | ...      | ...             | ...           | ...      | ...      | ...           | ...      | ...      |
|               |         | Dalunwala ...               | 645                                  | ...      | ...      | ...      | ...             | ...           | ...      | ...      | ...           | ...      | ...      |
|               |         | Gopeewala ...               | 750                                  | ...      | ...      | ...      | ...             | ...           | ...      | ...      | ...           | ...      | ...      |
|               |         | Hatheeburkulla ...          | 588                                  | ...      | ...      | ...      | ...             | ...           | ...      | ...      | ...           | ...      | ...      |
|               |         | Kurrupore ...               | 729                                  | ...      | ...      | ...      | ...             | ...           | ...      | ...      | ...           | ...      | ...      |
|               |         | Oodeewala Daen ...          | 576                                  | ...      | ...      | ...      | ...             | ...           | ...      | ...      | ...           | ...      | ...      |
|               |         | Total Khaliseh villages ... | 15,273                               | 24,887   | 24,887   | 24,887   | 24,887          | 24,887        | 24,887   | 24,887   | 24,887        | 24,887   | 24,887   |
|               | GRANTS. |                             |                                      |          |          |          |                 |               |          |          |               |          |          |
|               |         | Annfield ...                | ...                                  | 337      | 438      | 553      | Kamil.<br>589   | 589           | 589      | 589      | 589           | 589      | 589      |
|               |         | Jewungurh ...               | ...                                  | 400      | 401      | 439      | 453             | 463           | 473      | 474      | Kamil.<br>478 | 478      | 478      |
|               |         | Koloopani ...               | ...                                  | 73       | 80       | 87       | 94              | 100           | 108      | 114      | 121           | 126      | 129      |
|               |         | Koonjakargee ...            | ...                                  | 367      | 375      | 382      | 386             | Kamil.<br>387 | 387      | 387      | 387           | 387      | 387      |
|               |         | Mirzapore ...               | ...                                  | 255      | 267      | 277      | 287             | 293           | 298      | 302      | Kamil.<br>303 | 303      | 303      |
|               |         | Tilpoora ...                | ...                                  | 68       | 73       | 79       | 87              | 92            | 98       | 105      | 111           | 114      | 118      |
|               |         | West Hopetown ...           | ...                                  | 1,988    | 2,022    | 2,043    | Kamil.<br>2,051 | 2,051         | 2,051    | 2,051    | 2,051         | 2,051    | 2,051    |
|               |         | Total ...                   | ...                                  | 3,488    | 3,676    | 3,846    | 3,947           | 3,975         | 4,004    | 4,022    | 4,040         | 4,048    | 4,055    |

[illegible]

## STATEMENT

## Jumma Statement of Zillah

| 1.            | 2.      | 3.                       | 4.                              | 5.             | 6.       | 7.       | 8.       | 9.       | 10.      | 11.      | 12.      | 13.      | 14.      |
|---------------|---------|--------------------------|---------------------------------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Pergunnah.    | Number. | Name of Village.         | Last year of former Settlement. | A. D. 1866-67. | 1867-68. | 1868-69. | 1869-70. | 1870-71. | 1871-72. | 1872-73. | 1873-74. | 1874-75. | 1875-76. |
| Eastern Doon. | 1       | Adooceewala Khas ...     | ...                             | 190            | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      |
|               | 2       | Akurbanee Bhilung ...    | ...                             | 40             | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 3       | Amwala Kurrumpore ...    | ...                             | 10             | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 4       | Amwala Upurila ...       | ...                             | 22             | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       |
|               | 5       | Amwala Mujla ...         | ...                             | 22             | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       |
|               | 6       | Amwala Turila ...        | ...                             | 90             | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       |
|               | 7       | Asthul ...               | ...                             | 16             | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
|               | 8       | Bandawala ...            | ...                             | 11             | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       |
|               | 9       | Baota ...                | ...                             | 14             | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       |
|               | 10      | Beebeewala ...           | ...                             | 10             | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 11      | Beerpore Khoord ...      | ...                             | 8              | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 12      | Bhaneewala ...           | ...                             | 85             | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       |
|               | 13      | Bhogpore ...             | ...                             | 158            | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      |
|               | 14      | Bhoputwala Kulan ...     | ...                             | 40             | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       |
|               | 15      | Bhoputwala Khoord ...    | ...                             | 8              | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 16      | Bhundareewala ...        | ...                             | ...            | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 17      | Bhungghana ...           | ...                             | 10             | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 18      | Bhutber ...              | ...                             | 164            | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      |
|               | 19      | Bhuttanwala ...          | ...                             | 20             | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
|               | 20      | Birmawala ...            | ...                             | ...            | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 21      | Bishenghur ...           | ...                             | 11             | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 22      | Bolundawala Nagla ...    | ...                             | 36             | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       |
|               | 23      | Boxorwala ...            | ...                             | 10             | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       |
|               | 24      | Buddreepore ...          | ...                             | 182            | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      |
|               | 25      | Buderna Kulan ...        | ...                             | ...            | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
|               | 26      | Buderna Khoord ...       | ...                             | ...            | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        |
|               | 27      | Buderna Munjla ...       | ...                             | ...            | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
|               | 28      | Bugdah ...               | ...                             | ...            | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        |
|               | 29      | Bujheet ...              | ...                             | ...            | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
|               | 30      | Burronwala Rampore ...   | ...                             | 31             | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       |
|               | 31      | Chalung ...              | ...                             | ...            | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       |
|               | 32      | Chironwala ...           | ...                             | ...            | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       |
|               | 33      | Chowkeo Seron ...        | ...                             | ...            | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 34      | Dalunwala Chuk ...       | ...                             | ...            | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
|               | 35      | Dauda Dhorun ...         | ...                             | ...            | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       |
|               | 36      | Ditto Kudaneewala ...    | ...                             | ...            | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 37      | Ditto Lakhond ...        | ...                             | ...            | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      |
|               | 38      | Deeswala ...             | ...                             | 20             | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       |
|               | 39      | Dhalwala ...             | ...                             | 9              | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 40      | Dharkote ...             | ...                             | ...            | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
|               | 41      | Dhorun Khas ...          | ...                             | ...            | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      |
|               | 42      | Dhundakolah ...          | ...                             | ...            | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
|               | 43      | Doodlee ...              | ...                             | 60             | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
|               | 44      | Dooceewala ...           | ...                             | 20             | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
|               | 45      | Dwara ...                | ...                             | 88             | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      |
|               | 46      | Futtehpore Tanda ...     | ...                             | 50             | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       |
|               | 47      | Ghesurpurhee ...         | ...                             | 14             | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       |
|               | 48      | Goomaneewala ...         | ...                             | 30             | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       |
|               | 49      | Gudhool ...              | ...                             | 238            | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      |
|               | 50      | Gujrara Mansinghwala ... | ...                             | ...            | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
|               | 51      | Gujrumee ...             | ...                             | ...            | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
|               | 52      | Gurhee ...               | ...                             | 81             | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       |
|               | 53      | Haldawaree ...           | ...                             | ...            | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 54      | Hansowala ...            | ...                             | 30             | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 55      | Hatwala ...              | ...                             | ...            | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
|               | 56      | Hurchawala ...           | ...                             | ...            | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
|               | 57      | Hurrawala ...            | ...                             | 24             | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      |
|               | 58      | Hurreepore Kulan ...     | ...                             | 74             | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       |
|               | 59      | Hureepore Khoord ...     | ...                             | 5              | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 60      | Hureepore Nawada ...     | ...                             | 17             | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       |
|               | 61      | Indurpore ...            | ...                             | 20             | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
|               | 62      | Jagathkhana ...          | ...                             | ...            | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
|               | 63      | Jewanwala ...            | ...                             | 8              | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
|               | 64      | Jhakur ...               | ...                             | ...            | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
|               | 65      | Kalagnon ...             | ...                             | ...            | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       |
|               | 66      | Kalee Mithee ...         | ...                             | 32             | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       |
|               | 67      | Kalereegard ...          | ...                             | ...            | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
|               | 68      | Kaloowala ...            | ...                             | 15             | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       |
|               | 69      | Kanhurwala ...           | ...                             | 96             | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       |
|               | 70      | Khorawala ...            | ...                             | ...            | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 71      | Khothar ...              | ...                             | ...            | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 72      | Khutkore, Kulan ...      | ...                             | ...            | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
|               | 73      | Khutpore Khoord ...      | ...                             | ...            | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |

No. V.—JUMMA.

Dehra Doon.—(Continued.)

| 15.      | 16.      | 17.      | 18.      | 19.      | 20.      | 21.      | 22.      | 23.      | 24.      | 25.      | 26.      | 27.      | 28.      | 29.      | 30.      | 31.      |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1876-77. | 1877-78. | 1878-79. | 1879-80. | 1880-81. | 1881-82. | 1882-83. | 1883-84. | 1884-85. | 1885-86. | 1886-87. | 1887-88. | 1888-89. | 1889-90. | 1890-91. | 1891-92. | 1892-93. |
| 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      | 190      |
| 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       |
| 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       |
| 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       |
| 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
| 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       |
| 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       |
| 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       |
| 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      | 220      |
| 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      |
| 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       |
| 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       | 11       |
| 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      | 275      |
| 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
| 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        |
| 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
| 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        | 7        |
| 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
| 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 44       | 45       | 45       | 45       | 45       | 45       | 45       | 45       |
| 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       |
| 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       |
| 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
| 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
| 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       |
| 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
| 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      |
| 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
| 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      |
| 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
| 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
| 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
| 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      |
| 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       |
| 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       | 21       |
| 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       |
| 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      | 290      |
| 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       | 50       |
| 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
| 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
| 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
| 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
| 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      |
| 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       |
| 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
| 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
| 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
| 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
| 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       |
| 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       |
| 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       | 16       |
| 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       |
| 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       | 80       |
| 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
| 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
| 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
| 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |

## STATEMENT

## Jumma Statement of Zillah

| 1.            | 2.      | 3.                           | 4.                              | 5.             | 6.       | 7.       | 8.       | 9.       | 10.      | 11.      | 12.      | 13.      | 14.      |
|---------------|---------|------------------------------|---------------------------------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Pergunnah.    | Number. | Name of Village.             | Last year of former Settlement. | A. D. 1866-67. | 1867-68. | 1868-69. | 1869-70. | 1870-71. | 1871-72. | 1872-73. | 1873-74. | 1874-75. | 1875-76. |
| Eastern Doon. | 74      | Khyree Kulan ...             | 35                              | 35             | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       |
|               | 75      | Khyree Mānsinghwalā ...      | ...                             | 30             | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       |
|               | 76      | Khyrwan Kurrupore ...        | ...                             | 20             | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
|               | 77      | Khyrwan Malkote ...          | ...                             | 6              | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
|               | 78      | Kirsalee ...                 | ...                             | 52             | 52       | 52       | 52       | 52       | 52       | 52       | 52       | 52       | 52       |
|               | 79      | Kishenpore ...               | 15                              | 20             | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
|               | 80      | Kodhall ...                  | 6                               | 18             | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       |
|               | 81      | Kotee ...                    | ...                             | 32             | 32       | 32       | 32       | 32       | 32       | 32       | 32       | 32       | 32       |
|               | 82      | Kotela ...                   | ...                             | 3              | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
|               | 83      | Kuhiwala ...                 | 37                              | 44             | 44       | 44       | 44       | 44       | 44       | 44       | 44       | 44       | 44       |
|               | 84      | Kuknawah ...                 | 12                              | 18             | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       |
|               | 85      | Kulhan Kurrupore ...         | ...                             | 26             | 26       | 26       | 26       | 26       | 26       | 26       | 26       | 26       | 26       |
|               | 86      | Kulhan Mānsinghwalā ...      | ...                             | 20             | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
|               | 87      | Kundholee ...                | ...                             | 52             | 52       | 52       | 52       | 52       | 52       | 52       | 52       | 52       | 52       |
|               | 88      | Ladhpore ...                 | 30                              | 65             | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       | 65       |
|               | 89      | Ludwakote ...                | ...                             | 12             | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 90      | Lutcheewalā ...              | 25                              | 38             | 38       | 38       | 38       | 38       | 38       | 38       | 38       | 38       | 38       |
|               | 91      | Mahomedpore ...              | 15                              | 30             | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       |
|               | 92      | Meanwala ...                 | 33                              | 75             | 75       | 75       | 75       | 75       | 75       | 75       | 75       | 75       | 75       |
|               | 93      | Mirota ...                   | ...                             | 32             | 32       | 32       | 32       | 32       | 32       | 32       | 32       | 32       | 32       |
|               | 94      | Missurwalā Kulan ...         | 32                              | 48             | 48       | 48       | 48       | 48       | 48       | 48       | 48       | 48       | 48       |
|               | 95      | Missurwalā Khoord ...        | 11                              | 28             | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       | 28       |
|               | 96      | Mohkumpore Kulan ...         | 16                              | 22             | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       | 22       |
|               | 97      | Mohkumpore Khoord ...        | 56                              | 90             | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       |
|               | 98      | Mujhara ...                  | ...                             | 5              | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        |
|               | 99      | Mungloowalā ...              | ...                             | 14             | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       |
|               | 100     | Naheen Kulan ...             | ...                             | 14             | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       | 14       |
|               | 101     | Naheen Khoord ...            | ...                             | 3              | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
|               | 102     | Nagul Hatnala ...            | 20                              | 24             | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       | 24       |
|               | 103     | Nagul Jowalapore ...         | 34                              | 48             | 44       | 44       | 44       | 44       | 44       | 44       | 44       | 44       | 44       |
|               | 104     | Nalapanee ...                | ...                             | 36             | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       | 36       |
|               | 105     | Nalee Kulan ...              | 50                              | 105            | 105      | 105      | 105      | 105      | 105      | 105      | 105      | 105      | 105      |
|               | 106     | Nalee Khoord ...             | 2                               | 3              | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
|               | 107     | Newadah ...                  | 61                              | 54             | 54       | 54       | 54       | 54       | 54       | 54       | 54       | 54       | 54       |
|               | 108     | Nooreewalā ...               | ...                             | 35             | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       |
|               | 109     | Nukrondah ...                | 100                             | 72             | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       | 72       |
|               | 110     | Nunoor Khera ...             | ...                             | 25             | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       | 25       |
|               | 111     | Nuthunpore ...               | 154                             | 240            | 240      | 240      | 240      | 240      | 240      | 240      | 240      | 240      | 240      |
|               | 112     | Nuthwawalā ...               | 60                              | 140            | 140      | 140      | 140      | 140      | 140      | 140      | 140      | 140      | 140      |
|               | 113     | Palee ...                    | 8                               | 12             | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 114     | Phagsee ...                  | 7                               | 12             | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 115     | Phandoh ...                  | 10                              | 12             | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 116     | Phulswa ...                  | 10                              | 15             | 15       | 15       | 15       | 15       | 15       | 15       | 15       | 15       | 15       |
|               | 117     | Phurtee ...                  | ...                             | 5              | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        |
|               | 118     | Poostaree ...                | ...                             | 4              | 4        | 4        | 4        | 4        | 4        | 4        | 4        | 4        | 4        |
|               | 119     | Puleyd ...                   | ...                             | 10             | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 120     | Raepore Jowala ...           | ...                             | 180            | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      |
|               | 121     | Raepore Hursurun ...         | 367                             | 150            | 150      | 150      | 150      | 150      | 150      | 150      | 150      | 150      | 150      |
|               | 122     | Raepore Mehur ...            | ...                             | 160            | 160      | 160      | 160      | 160      | 160      | 160      | 160      | 160      | 160      |
|               | 123     | Raewalā ...                  | 142                             | 130            | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      | 130      |
|               | 124     | Ramnuggur Danda ...          | 45                              | 90             | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       | 90       |
|               | 125     | Raneepokree ...              | 98                              | 200            | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      | 200      |
|               | 126     | Raneewalā ...                | ...                             | 10             | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 127     | Rethwangaon ...              | ...                             | 3              | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        | 3        |
|               | 128     | Sahubnuggur ...              | ...                             | 34             | 34       | 34       | 34       | 34       | 34       | 34       | 34       | 34       | 34       |
|               | 129     | Samyandgaon ...              | ...                             | 2              | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
|               | 130     | Sangteeawalā Kulan ...       | 55                              | 55             | 55       | 55       | 55       | 55       | 55       | 55       | 55       | 55       | 55       |
|               | 131     | Sangteeawalā Khoord ...      | 39                              | 48             | 48       | 48       | 48       | 48       | 48       | 48       | 48       | 48       | 48       |
|               | 132     | Sarnugdhurwalā ...           | 18                              | 20             | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       | 20       |
|               | 133     | Sateonwalā ...               | 35                              | 30             | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       | 30       |
|               | 134     | Serkee ...                   | ...                             | 12             | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
|               | 135     | Serkhett ...                 | ...                             | 8              | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        | 8        |
|               | 136     | Shahnuggur Khas ...          | ...                             | 120            | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      | 120      |
|               | 137     | Shahnugger Chuk ...          | 121                             | 10             | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       | 10       |
|               | 138     | Shampore ...                 | 103                             | 100            | 100      | 100      | 100      | 100      | 100      | 100      | 100      | 100      | 100      |
|               | 139     | Sindhwalgaon ...             | ...                             | 18             | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       |
|               | 140     | Sondhonwalā Dhorun ...       | ...                             | 6              | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
|               | 141     | Sondhonwalā Mānsinghwalā ... | ...                             | 15             | 15       | 15       | 15       | 15       | 15       | 15       | 15       | 15       | 15       |
|               | 142     | Sowra Seroolee ...           | ...                             | 40             | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
|               | 143     | Sundhurwalā ...              | ...                             | 45             | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       | 45       |
|               | 144     | Sungaon ...                  | ...                             | 18             | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       |
|               | 145     | Suteylee Ghirwall ...        | ...                             | 6              | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        | 6        |
|               | 146     | Telay ...                    | ...                             | 15             | 15       | 15       | 15       | 15       | 15       | 15       | 15       | 15       | 15       |



2

STATEMENT  
Jumma Statement of Zillah

| 1.            | 2.      | 3.                                           | 4.                              | 5.            | 6.       | 7.       | 8.            | 9.       | 10.      | 11.      | 12.           | 13.      | 14.      |
|---------------|---------|----------------------------------------------|---------------------------------|---------------|----------|----------|---------------|----------|----------|----------|---------------|----------|----------|
| Pergunnah.    | Number. | Name of Village.                             | Last year of former Settlement. | 1866-67 A. D. | 1867-68. | 1868-69. | 1869-70.      | 1870-71. | 1871-72. | 1872-73. | 1873-74.      | 1874-75. | 1875-76. |
| Eastern Doon. | 147     | Thanah Hatnala ...                           | 3                               | 4             | 4        | 4        | 4             | 4        | 4        | 4        | 4             | 4        | 4        |
|               | 148     | Thewah ...                                   | ...                             | 40            | 40       | 40       | 40            | 40       | 40       | 40       | 40            | 40       | 40       |
|               | 149     | Timlee Mānsinghwala ...                      | ...                             | 12            | 12       | 12       | 12            | 12       | 12       | 12       | 12            | 12       | 12       |
|               | 150     | Tungoleeghur ...                             | ...                             | 5             | 5        | 5        | 5             | 5        | 5        | 5        | 5             | 5        | 5        |
|               | 151     | Turla Nagul...                               | ...                             | 60            | 60       | 60       | 60            | 60       | 60       | 60       | 60            | 60       | 60       |
|               |         | <b>DARGS.</b>                                |                                 |               |          |          |               |          |          |          |               |          |          |
|               |         | Dhorun Daen...                               | 719                             | ...           | ...      | ...      | ...           | ...      | ...      | ...      | ...           | ...      | ...      |
|               |         | Mānsinghwala ...                             | 702                             | ...           | ...      | ...      | ...           | ...      | ...      | ...      | ...           | ...      | ...      |
|               |         | Malkote Illaqua ...                          | 247                             | ...           | ...      | ...      | ...           | ...      | ...      | ...      | ...           | ...      | ...      |
|               |         | <b>Total of Khaliseh villages,</b>           | 5,232                           | 6,750         | 6,750    | 6,750    | 6,750         | 6,750    | 6,750    | 6,750    | 6,750         | 6,750    | 6,750    |
|               |         | <b>GRANTS.</b>                               |                                 |               |          |          |               |          |          |          |               |          |          |
|               |         | Chuktoonwala ...                             | ...                             | 331           | 336      | 340      | Kamil.<br>341 | 341      | 341      | 341      | 341           | 341      | 341      |
|               |         | Markham ...                                  | ...                             | 147           | 147      | 147      | 589           | 589      | 589      | 589      | 589           | 1,179    | 1,179    |
|               |         | Banipokrie ...                               | ...                             | 367           | 385      | 402      | 414           | 424      | 431      | 436      | Kamil.<br>437 | 437      | 437      |
|               |         | <b>Total Eastern Grants ...</b>              | ...                             | 845           | 868      | 889      | 1,344         | 1,354    | 1,361    | 1,366    | 1,367         | 1,957    | 1,957    |
|               |         | <b>Grand Totals of Khaliseh villages ...</b> | 20,505                          | 31,637        | 31,637   | 31,637   | 31,637        | 31,637   | 31,637   | 31,637   | 31,637        | 31,637   | 31,637   |
|               |         | <b>Of Grants on Russudee Terms ...</b>       | ...                             | 4,333         | 4,544    | 4,735    | 5,291         | 5,329    | 6,368    | 5,388    | 5,407         | 6,005    | 6,012    |
|               |         | <b>Total ...</b>                             | 20,505                          | 35,970        | 36,181   | 36,372   | 36,928        | 36,966   | 37,002   | 37,025   | 37,044        | 37,642   | 37,649   |

## No. V.—JUMMA.

Dehra Doon.—(Concluded.)

| 15.      | 16.      | 17.      | 18.      | 19.      | 20.      | 21.      | 22.      | 23.             | 24.      | 25.      | 26.      | 27.      | 28.      | 29.      | 30.      | 31.      |
|----------|----------|----------|----------|----------|----------|----------|----------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1876-77. | 1877-78. | 1878-79. | 1879-80. | 1880-81. | 1881-82. | 1882-83. | 1883-84. | 1884-85.        | 1885-86. | 1886-87. | 1887-88. | 1888-89. | 1889-90. | 1890-91. | 1891-92. | 1892-93. |
| 4        | 4        | 4        | 4        | 4        | 4        | 4        | 4        | 4               | 4        | 4        | 4        | 4        | 4        | 4        | 4        | 4        |
| 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40              | 40       | 40       | 40       | 40       | 40       | 40       | 40       | 40       |
| 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12              | 12       | 12       | 12       | 12       | 12       | 12       | 12       | 12       |
| 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5        | 5               | 5        | 5        | 5        | 6        | 5        | 5        | 5        | 5        |
| 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60              | 60       | 60       | 60       | 60       | 60       | 60       | 60       | 60       |
| ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...             | ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...      |
| ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...             | ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...      |
| ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...             | ...      | ...      | ...      | ...      | ...      | ...      | ...      | ...      |
| 6,750    | 6,750    | 6,750    | 6,750    | 6,750    | 6,750    | 6,750    | 6,750    | 6,750           | 6,750    | 6,750    | 6,750    | 6,750    | 6,750    | 6,750    | 6,750    | 6,750    |
| 341      | 341      | 341      | 341      | 341      | 341      | 341      | 341      | 341             | 341      | 341      | 341      | 341      | 341      | 341      | 341      | 341      |
| 1,179    | 1,179    | 1,179    | 1,768    | 1,768    | 1,768    | 1,768    | 1,768    | kamil.<br>2,210 | 2,210    | 2,210    | 2,210    | 2,210    | 2,210    | 2,210    | 2,210    | 2,210    |
| 437      | 437      | 437      | 437      | 437      | 437      | 437      | 437      | 437             | 437      | 437      | 437      | 437      | 437      | 437      | 437      | 437      |
| 1,957    | 1,957    | 1,957    | 2,546    | 2,546    | 2,546    | 2,546    | 2,546    | 2,988           | 2,988    | 2,988    | 2,988    | 2,988    | 2,988    | 2,988    | 2,988    | 2,988    |
| 31,637   | 31,637   | 31,637   | 31,637   | 31,637   | 31,637   | 31,637   | 31,637   | 31,637          | 31,637   | 31,637   | 31,637   | 31,637   | 31,637   | 31,637   | 31,637   | 31,637   |
| 6,018    | 6,023    | 6,026    | 6,616    | 6,616    | 6,616    | 6,616    | 6,616    | 7,058           | 7,058    | 7,058    | 7,058    | 7,058    | 7,058    | 7,058    | 7,058    | 7,058    |
| 37,655   | 37,660   | 37,663   | 38,253   | 38,253   | 38,253   | 38,253   | 38,253   | 38,695          | 38,695   | 38,695   | 38,695   | 38,695   | 38,695   | 38,695   | 38,695   | 38,695   |

C. A. DANIELL,

Superintendent.



## STATEMENT NO. VII.—FORM A.

CANAL IRRIGATION FORMS A. AND B.

| Pergunnah.    | Number of Village. | Names of Villages.           | Area cultivated, including fallow. | Area irrigable by canal. | Proposed jumma. | Portion of jumma attributable to canal irrigation. | Remarks. |
|---------------|--------------------|------------------------------|------------------------------------|--------------------------|-----------------|----------------------------------------------------|----------|
|               |                    |                              | Acres.                             | Acres.                   | Rs.             | Rs.                                                |          |
| WESTERN DOON. | 5                  | Ajjubpore Kulan, ...         | 636                                | 295                      | 675             | 210                                                |          |
|               | 6                  | Ajjubpore Khoord, ...        | 361                                | 304                      | 350             | 150                                                |          |
|               | 7                  | Ambaree, ...                 | 70                                 | 49                       | 250             | 150                                                |          |
|               | 8                  | Ambeewala, ...               | 118                                | 118                      | 115             | 45                                                 |          |
|               | 9                  | Bajawala, ...                | 277                                | 223                      | 260             | 117                                                |          |
|               | 10                 | Bahmunowala, ...             | 189                                | 90                       | 180             | 55                                                 |          |
|               | 12                 | Bahadurpore, ...             | 161                                | 26                       | 98              | 10                                                 |          |
|               | 27                 | Bolakeewala, ...             | 85                                 | 45                       | 180             | 80                                                 |          |
|               | 28                 | Bugrial Mutursil Pultun, ... | 30                                 | 30                       | 50              | 22                                                 |          |
|               | 39                 | Chookowala, ...              | 377                                | 94                       | 380             | 60                                                 |          |
|               | 41                 | Dalunwala Khas, ...          | 138                                | 106                      | 292             | 62                                                 |          |
|               | 46                 | Dhakranee, ...               | 634                                | 17                       | 900             | 150                                                |          |
|               | 50                 | Dhoomipora Gungbewa, ...     | 44                                 | 31                       | 55              | 10                                                 |          |
|               | 53                 | Dhurmipore, ...              | 435                                | 245                      | 475             | 150                                                |          |
|               | 63                 | Gopeewala Khas, ...          | 91                                 | 59                       | 90              | 35                                                 |          |
|               | 69                 | Guhree, ...                  | 655                                | 373                      | 680             | 230                                                |          |
|               | 74                 | Hurbhujwala, ...             | 139                                | 139                      | 200             | 75                                                 |          |
|               | 75                 | Hurbunwala, ...              | 253                                | 253                      | 380             | 170                                                |          |
|               | 79                 | Hurreepore Jodh, ...         | 308                                | 287                      | 410             | 190                                                |          |
|               | 80                 | Hurreepore Zaharea, ...      | 300                                | 291                      | 410             | 180                                                |          |
|               | 83                 | Jakun Azmutt, ...            | 171                                | 14                       | 92              | 6                                                  |          |
|               | 85                 | Jakun Nithoo, ...            | 52                                 | 2                        | 30              | 2                                                  |          |
|               | 86                 | Jakun Oodeewala, ...         | 45                                 | 4                        | 24              | 2                                                  |          |
|               | 87                 | Jakun Shibdutt, ...          | 124                                | 7                        | 64              | 3                                                  |          |
|               | 95                 | Kaonlee Gohur, ...           | 343                                | 338                      | 425             | 200                                                |          |
|               | 96                 | Kaonlee Wuzir, ...           | 340                                | 331                      | 425             | 200                                                |          |
|               | 101                | Khemadoz, ...                | 45                                 | 45                       | 68              | 30                                                 |          |
|               | 103                | Khera Mansingwala, ...       | 10                                 | 10                       | 33              | 8                                                  |          |
|               | 107                | Kidarpor, ...                | 189                                | 189                      | 160             | 70                                                 |          |
|               | 109                | Kishenpore, ...              | 92                                 | 5                        | 40              | 2                                                  |          |
|               | 113                | Kowlagir, ...                | 225                                | 123                      | 200             | 70                                                 |          |
|               | 119                | Kurrumpore Khas, ...         | 158                                | 67                       | 220             | 60                                                 |          |
|               | 122                | Loharwala, ...               | 8                                  | 8                        | 12              | 5                                                  |          |
|               | 126                | Majra, ...                   | 545                                | 265                      | 575             | 175                                                |          |
|               | 130                | Malookawala, ...             | 235                                | 235                      | 260             | 116                                                |          |
|               | 134                | Meonwala, ...                | 188                                | 22                       | 80              | 5                                                  |          |
|               | 137                | Mitheeberee, ...             | 251                                | 251                      | 350             | 150                                                |          |
|               | 139                | Mothronwala, ...             | 336                                | 304                      | 275             | 90                                                 |          |
|               | 141                | Nirunjunpore Batt Sahib, ... | 224                                | 191                      | 285             | 125                                                |          |
|               | 142                | Nirunjunpore Kanyha Lal, ... | 223                                | 223                      | 300             | 130                                                |          |
|               | 143                | Nowanuggur Dhorun, ...       | 10                                 | 10                       | 22              | 8                                                  |          |
|               | 144                | Nowanuggur Kalalonwala, ...  | 37                                 | 20                       | 55              | 15                                                 |          |
|               | 146                | Oodiwala Khas, ...           | 83                                 | 23                       | 110             | 50                                                 |          |
|               | 147                | Oodiwala Adhoeewala, ...     | 37                                 | 37                       | 50              | 20                                                 |          |
|               | 148                | Oodiwala Kurunpore, ...      | 180                                | 180                      | 280             | 120                                                |          |
|               | 149                | Oodiwala Mansingwala, ...    | 192                                | 192                      | 260             | 110                                                |          |
|               | 153                | Pirohutwala, ...             | 611                                | 17                       | 380             | 8                                                  |          |
|               | 154                | Pirtheepore, ...             | 109                                | 75                       | 95              | 32                                                 |          |
|               | 155                | Pithooowala, ...             | 156                                | 87                       | 112             | 32                                                 |          |
|               | 158                | Pursoolleewala, ...          | 31                                 | 4                        | 32              | 2                                                  |          |
|               | 167                | Ranghurwala, ...             | 268                                | 268                      | 330             | 140                                                |          |
|               | 176                | Seola Kulan, ...             | 347                                | 347                      | 400             | 177                                                |          |
|               | 177                | Seola Khoord, ...            | 121                                | 66                       | 120             | 40                                                 |          |
|               | 179                | Shahpore Suntore, ...        | 188                                | 162                      | 260             | 105                                                |          |
|               |                    | Total of Western Doon, ...   | 11,475                             | 7,267                    | 12,854          | 4,459                                              |          |
| EASTERN DOON. | 13                 | Bhogpore, ...                | 358                                | 72                       | 220             | 18                                                 |          |
|               | 24                 | Buddreepore, ...             | 390                                | 100                      | 175             | 75                                                 |          |
|               | 31                 | Chalung, ...                 | 205                                | 5                        | 80              | 2                                                  |          |
|               | 49                 | Gudhool, ...                 | 376                                | 2                        | 290             | 1                                                  |          |
|               | 50                 | Gujurumnee, ...              | 146                                | 1                        | 50              | 1                                                  |          |
|               | 57                 | Hurrawala, ...               | 203                                | 203                      | 120             | 35                                                 |          |
|               | 92                 | Meanwala, ...                | 244                                | 40                       | 75              | 12                                                 |          |
|               | 96                 | Mohkumpore Kulan, ...        | 27                                 | 20                       | 22              | 6                                                  |          |
|               | 97                 | Mohkumpore Khoord, ...       | 191                                | 8                        | 90              | 4                                                  |          |
|               | 111                | Nuthunpore, ...              | 302                                | 121                      | 240             | 60                                                 |          |
|               | 120                | Raepore Jowala, ...          | 288                                | 43                       | 180             | 16                                                 |          |
|               | 122                | Raepore Mehur, ...           | 254                                | 28                       | 160             | 10                                                 |          |
|               | 125                | Raneepokeree, ...            | 328                                | 140                      | 200             | 40                                                 |          |
|               | 132                | Sarungdhurwala, ...          | 35                                 | 35                       | 20              | 8                                                  |          |
|               |                    | Total of Eastern Doon, ...   | 3,460                              | 818                      | 1,977           | 288                                                |          |
|               |                    | Total of Western Doon, ...   | 11,475                             | 7,267                    | 12,854          | 4,459                                              |          |
|               |                    | Grand Total, ...             | 14,935                             | 8,085                    | 14,831          | 4,747                                              |          |

C. A. DANIELL,  
Superintendent.



## STATEMENT NO. VIII.

## ALIENATIONS.

A.—Statement showing the result of Alienation of Estates, 1848—1866, in Zillah Dehra Doon.

| 1<br>Number of Mehals in<br>Zillah, 1848—1866. | 2<br>Number of Mehals in which<br>alienation took place. | 3<br>Number of cases of alie-<br>nation on transfer. | 4<br>DETAILS OF CASES. |                           |                      |        | 5<br>DETAILS OF CAUSES OF ALIENATIONS. |                |                      |            |
|------------------------------------------------|----------------------------------------------------------|------------------------------------------------------|------------------------|---------------------------|----------------------|--------|----------------------------------------|----------------|----------------------|------------|
|                                                |                                                          |                                                      | Of whole mahal.        | Of portions of<br>mehals. |                      | Total. | By decree<br>of Civil<br>Court.        | By<br>failure. | By private transfer. |            |
|                                                |                                                          |                                                      |                        | In patches<br>of land.    | In biswas<br>shares. |        |                                        |                | Sale.                | Free gift. |
| 350                                            | 131                                                      | 259                                                  | 60                     | 81                        | 118                  | 259    | 3                                      | 2              | 244                  | 10         |

B.—Statement showing the Circumstances of the Value and Jumma.

| 1                                  |    |    | 2               |    |    | 3                             |    |    | 4                 |    |    | 5      |    |    | 6                             |    |    | 7        |  |  |
|------------------------------------|----|----|-----------------|----|----|-------------------------------|----|----|-------------------|----|----|--------|----|----|-------------------------------|----|----|----------|--|--|
| OF SALES BY DECREE OF CIVIL COURT. |    |    |                 |    |    |                               |    |    | OF PRIVATE SALES. |    |    |        |    |    |                               |    |    | Remarks. |  |  |
| Jumma.                             |    |    | Value realized. |    |    | Percentage of Jumma to value. |    |    | Jumma.            |    |    | Value. |    |    | Percentage of jumma to value. |    |    |          |  |  |
| Rs.                                | a. | p. | Rs.             | a. | p. | Rs.                           | a. | p. | Rs.               | a. | p. | Rs.    | a. | p. | Rs.                           | a. | p. |          |  |  |
| 426                                | 0  | 0  | 5,251           | 0  | 0  | 8                             | 1  | 9  | 8,884             | 0  | 0  | 88,662 | 0  | 0  | 10                            | 0  | 4  |          |  |  |

C.—Statement of Rates Realized in certain Sales in Zillah Dehra Doon.

| 1                                    | 2                          |   |   | 3                            |         |         | 4                             |         |          | 5                                                        | 6                                                | 7               |         |         | 8              |          |         | 9 |  |          |
|--------------------------------------|----------------------------|---|---|------------------------------|---------|---------|-------------------------------|---------|----------|----------------------------------------------------------|--------------------------------------------------|-----------------|---------|---------|----------------|----------|---------|---|--|----------|
| Cases of alienation of whole Mehals. |                            |   |   |                              |         |         |                               |         |          | Cases of alienation of small patches of cultivated land. |                                                  |                 |         |         |                |          |         |   |  | Remarks. |
| Number of cases.                     | Malgoozaree area in acres. |   |   | Value obtained on the whole. |         |         | Rate per acre of Malgoozaree. |         |          | Number of cases.                                         | Area alienated, being all cultivated and fallow. | Value obtained. |         |         | Rate per acre. |          |         |   |  |          |
|                                      |                            |   |   |                              |         |         |                               |         |          |                                                          |                                                  |                 |         |         |                |          |         |   |  |          |
|                                      |                            |   |   |                              |         |         |                               |         |          |                                                          |                                                  |                 |         |         |                |          |         |   |  |          |
| 60                                   | 13,197                     | 0 | 0 | Rs.<br>73,243                | a.<br>0 | p.<br>0 | Rs.<br>5                      | a.<br>8 | p.<br>10 | 81                                                       | 11,38                                            | Rs.<br>20,087   | a.<br>0 | p.<br>0 | Rs.<br>17      | a.<br>10 | p.<br>0 |   |  |          |

D.—Statement of Cases of Parties to the Alienations.

| 1                                  | 2          | 3       | 4        | 5       | 6       | 7      | 8        | 9       | 10      | 11   | 12      | 13      | 14      | 15      | 16     | 17      | 18        | 19      | 20       | 21     | 22     |
|------------------------------------|------------|---------|----------|---------|---------|--------|----------|---------|---------|------|---------|---------|---------|---------|--------|---------|-----------|---------|----------|--------|--------|
| Details of sellers and purchasers. | Europeans. | Rajput. | Brahmin. | Bunyah. | Faqeer. | Kalal. | Bunjara. | Goojar. | Mehreh. | Jat. | Sheikh. | Kayuth. | Barhal. | Soonar. | Talee. | Kumboh. | Khuthree. | Hujjam. | Chammar. | Blwar. | Total. |
| Sellers, ... ..                    | 8          | 141     | 49       | 18      | 7       | 10     | 5        | 5       | 4       | 1    | 3       | 1       | 2       | 1       | 1      | 1       | ...       | ...     | 1        | 1      | 259    |
| Purchasers, ... ..                 | 91         | 31      | 51       | 55      | 14      | 3      | 1        | 1       | ...     | 1    | 5       | 1       | 1       | 1       | ...    | ...     | 2         | 1       | ...      | ...    | 259    |
| Total, ... ..                      | 99         | 172     | 100      | 73      | 21      | 13     | 6        | 6       | 4       | 2    | 8       | 2       | 3       | 2       | 1      | 1       | 2         | 1       | 1        | 1      | 518    |

C. A. DANIELL,  
Superintendent.

From Secretary to Board of Revenue, North-Western Provinces, to the Commissioner, Meerut Division (Docket No. 75).—Dated Allahabad, the 28th February, 1866.

IN reply to No. 64, dated the 19th February, 1866, conveys the Board's approval of the rates proposed to be adopted for the revision of the settlement of Zillah Dehra Doon.

W. C. PLOWDEN,  
*Secretary.*

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From Commissioner, Meerut Division, to Secretary to Board of Revenue, North-Western Provinces, Allahabad (No. 64).—Dated Meerut, the 19th February, 1866.

SIR,—I have the honour to forward for the orders of the Board of Revenue, a letter, in original, from Mr. C. A. Daniell, Settlement Officer of Dehra Doon, on the subject of the rates proposed to be adopted for the revision of the Doon Settlement.

Revenue Department.

2. I beg to add that I have full confidence in the correctness of the rates now proposed by Mr. Daniell, after much experience, and the acquirement of much minute local information.

3. The return of the original enclosure when no longer required is solicited.

I have, &c.,

F. WILLIAMS,  
*Commissioner.*

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From Settlement Officer, Dehra Doon, to Commissioner, Meerut Division, (No. 450).—Dated 9th February, 1866.

SIR,—I have the honour to submit the statement of village "rates" which I propose should be adopted for the revision of the Settlement of the Doon, especially, with reference to the introduction of the permanent settlement in certain portions of the district, and in all other circumstances, to make the "rates" more suitable to the rents which have been judicially fixed, as well as to certain contract or "theka" rates which have come lately considerably into use. I have to note that there are still 14,938 acres held by cultivators who pay in "kind;" to 12,693 acres held by cultivators who pay cash rents, either determined by "pottahs" or held under lease or contract; also that 7,688 acres are held in "seer," i.e., cultivated direct by the proprietors—the total cultivation being 35,319 acres.

2. At the time of settlement in 1862-63, assumed rent-rates were fixed, from which revenue rates were deduced; these were sent up together with the usual settlement papers and report to you. I have had many opportunities since 1863 of ascertaining how far these rates suited the circumstances of the district, particularly in determining the cash rents in 1865; and, as far as I can judge, they appear to have fallen very fairly on the ordinary, and by far the greater number of the villages. I am, however, not satisfied with them for the 1st-class, or best class of villages; and as it is with this class especially that revision of assessment for permanency will be made, I have carefully tested the rates of the settlement, and now offer for approval a new scale, which I feel sure will answer well for the basis of the permanent assessment of the villages especially under review.

3. You, Sir, are aware, that the determination of equitable rates for the Doon at the time of the settlement was a difficult operation. I had to lean entirely on my local knowledge, and experience gained in the settlement work, and on what I could gather from close inquiry, and such tests as I could make in comparing various villages with each other. There were no "rates" existent to act as a guide. Previous to the Survey of 1839, all hereditary tenants became entitled to hold their lands at three annas per local beegah—no matter of what class the land was, or where situated. It was of course, necessary, to fix fresh rents, but I found that nothing satisfactory could be done until the assessments were made. I mentioned this to Mr. Muir, who was of opinion, that it would be better to fix assessments from which rates would be amicably determined than to force rates to which neither party would agree; therefore, I had in that instance no determined or customary rates of any value as a guide to go upon: also two-thirds of the cultivation was carried on by tenants paying in "kind," and about one-fifth was held in "seer." I had certainly the statements of the former assessments, but these were of no value where the village "status" had altered considerably during the last 10 or 20 years, which was the case with all the 1st, and very many of the 2nd-class villages.

4. In working out the village rates of settlement, I selected a batch of average villages of each class—each having average quantities of each sort of soil and crops—and estimated for each batch of villages of each class separately approximate "jummabundees" or "rent-rolls," and distributed the sum total of the "rent-rolls" of each batch of villages over the different sorts of soil in that batch, and formed thereby the "soil" rates. These, again, were applied to several other villages which had not been included in the original batches, and, where necessary, were modified or improved, and in the end the corrected "rates" were adopted for the basis of assessments.

5. In fixing the settlement rates, I made them out according to the "sorts of soil" only, without recording rates for "irrigated" and "unirrigated" lands separately, and made a note on the English statement of each village, showing how much of the whole I attributed to canal-irrigation. In forming the new proposed rates, I have made them out for each soil under the headings of "irrigated" and "unirrigated." As will be seen, I have kept to one set of rates for each class of villages in "roslee" and "dakur" soils; their similarity for assessment is in fact borne out by the results of rent-rates lately judicially fixed, and by what I have learnt by observation. At the time of settlement I recorded separate rates, but the difference was little more than nominal when the rates were applied; and now that I have doubled the former details by separating the "irrigated" from the "dry" rates, I find the details are as minute as can be wished for. I have also, in the present proposed rates, included all the former 4th-class villages in the 3rd class, for much of the difference in the rates of settlement resulted from there being no irrigation at all in the 4th-class villages; and now, that I have separated the "dry" from the "irrigated" rates, and, as will be seen, have brought the poorer "roslee" rather more on a par with the "sankra" soil, I find I can readily take in the 4th class and amalgamate it with the 3rd, and I have, therefore, done so.

6. I wish to bring the subject of "tea" rates to your notice. The orders under which I work declare that tea shall be charged no more than cereals. At settlement, as a rule, I estimated the rate at Rs. 2 as a "rents" rate—making a jumma of Re. 1 per acre. This was considered by Mr. Muir and yourself to be low. I have in the new proposed rates classed "tea" with the better descriptions of crops grown in manured or "meesun" lands, and "tea" lands will fall under the "meesun" rates. I would urge that no especial rate be made for tea, but would recommend that tea-land should be classed, as I have done, with ordinary "meesun," and bear the same rate as garden produce, tobacco, and manure-grown wheat and oats. It is quite sufficient for the records to show that at the time of assessment the land is manured, and, therefore, it is classed with, and bears the rate of "meesun" land, rather than base a particular portion of the assessment on the fact of certain lands being under tea cultivation.

7. The following forms give the rates I fixed at settlement and the revised rates which I now propose, together with certain details showing on what basis the several rates are formed for each class of villages :—

### 1ST CLASS VILLAGES.

#### FORM A.

*Showing the Rates proposed for 30 years in 1862-63.*

| Soil.             |     |     |     | Area.  | Rate. |    |    | Value. |
|-------------------|-----|-----|-----|--------|-------|----|----|--------|
|                   |     |     |     | Acres. | Rs.   | a. | p. | Rs.    |
| Meesun,           | ... | ... | ... | 2,102  | 2     | 8  | 0  | 5,255  |
| Roslee and Dakur, | ... | ... | ... | 6,316  | 1     | 10 | 5  | 10,428 |
| Sankra,           | ... | ... | ... | 505    | 0     | 12 | 0  | 379    |
| Total,            | ... | ... | ... | 8,923  | ...   |    |    | 16,062 |

#### FORM B.

*Showing the Rates now proposed for Permanent Settlement.*

| Soil.          |     |                |     | Area.  | Rate. |    |    | Value. |
|----------------|-----|----------------|-----|--------|-------|----|----|--------|
|                |     |                |     | Acres. | Rs.   | a. | p. | Rs.    |
| Meesun,        | ... | { Irrigated,   | ... | 2,072  | 3     | 8  | 0  | 7,252  |
|                | ... | { Unirrigated, | ... | 30     | 2     | 0  | 0  | 60     |
| Roslee and Da- | ... | { Irrigated,   | ... | 4,460  | 2     | 4  | 0  | 10,035 |
| kur,           | ... | { Unirrigated, | ... | 1,856  | 1     | 4  | 0  | 2,320  |
| Sankra,        | ... | { Irrigated,   | ... | 333    | 1     | 4  | 0  | 291    |
|                | ... | { Unirrigated, | ... | 272    | 0     | 12 | 0  | 204    |
| Total,         | ... | ...            | ... | 8,923  | ...   |    |    | 20,162 |

(a) From out of the above area, there are 1,635 acres held under "pottahs," at an average of Re. 1-15-1 per acre, and yielding Rs. 3,178.

(b) Also an area of 3,000 acres, having a portion (1,700 acres) held under lease or contract, and the remainder (1,300 acres) held in "seer" or khodkasht by the proprietors, and bearing the same class of crops. This area I estimate yields an average income of Rs. 3-8-0 per acre, giving a value of Rs. 10,500. These portions (a and b), include all the best lands and highest class of crops (including 1,046 acres of tea, 386 acres of cane, 350 acres of garden produce, tobacco).

(c) The remaining area of 4,288 acres, I estimate yields an average of Re. 1-8-0 per acre throughout, and gives a value of Rs. 6,432.

The result is as follows :—

|        |              |     |                  |     | Valued at. |
|--------|--------------|-----|------------------|-----|------------|
| (a)    | 1,635 acres, | ... | ...              | ... | Rs. 3,178  |
| (b)    | 3,000 "      | ... | ...              | ... | " 10,500   |
| (c)    | 4,288 "      | ... | ...              | ... | " 6,432    |
| Total, | 8,923 acres, |     | Estimated value, | ... | Rs. 20,110 |

In Statement (B) the area of 8,923 acres, when distributed and rated according to the soils, was estimated to yield Rs. 20,162. The difference on the whole, between the "soils rates" and the estimated value of land according to (a), (b), (c), being Rs. 52.

### 2ND CLASS, WESTERN DOON.

#### (A) Rates proposed in 1862-63.

| Soil.             |     |     |     |     |     |     |     | Rate.     |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----------|
|                   |     |     |     |     |     |     |     | Rs. a. p. |
| Meesun,           | ... | ... | ... | ... | ... | ... | ... | 1 12 0    |
| Roslee and Dakur, | ... | ... | ... | ... | ... | ... | ... | 1 5 5     |
| Sankra,           | ... | ... | ... | ... | ... | ... | ... | 0 12 0    |

## (B) Rates now proposed.

| Soil.             |     |     |     |                |     |     | Rate. |    |    |
|-------------------|-----|-----|-----|----------------|-----|-----|-------|----|----|
|                   |     |     |     |                |     |     | Rs.   | a. | p. |
| Meesun,           | ... | ... | ... | { Irrigated    | ... | ... | 3     | 0  | 0  |
|                   |     |     |     | { Unirrigated, | ... | ... | 1     | 8  | 0  |
| Roslee and Dakur, | ... | ... | ... | { Irrigated,   | ... | ... | 1     | 12 | 0  |
|                   |     |     |     | { Unirrigated, | ... | ... | 1     | 2  | 0  |
| Sankra,           | ... | ... | ... | { Irrigated,   | ... | ... | 1     | 2  | 0  |
|                   |     |     |     | { Unirrigated, | ... | ... | 0     | 11 | 0  |

*Exemplar.*—Twenty-seven average villages of this class contain as follows, according to (A) Statement :—

| Soil.             |     |     |     | Acres. | Rate. |     |     | Value. |
|-------------------|-----|-----|-----|--------|-------|-----|-----|--------|
|                   |     |     |     |        | Rs.   | a.  | p.  | Rs.    |
| Meesun,           | ... | ... | ... | 272    | 1     | 12  | 0   | 476    |
| Roslee and Dakur, | ... | ... | ... | 5,878  | 1     | 5   | 5   | 7,868  |
| Sankra,           | ... | ... | ... | 189    | 0     | 12  | 0   | 142    |
| Total,            | ... | ... | ... | 6,339  | ...   | ... | ... | 8,486  |

In the same villages, according to (B) Statement :—

| Soil.             |     |                |     | Acres. | Rate.        |    |    | Value. |
|-------------------|-----|----------------|-----|--------|--------------|----|----|--------|
|                   |     |                |     |        | Rs.          | a. | p. | Rs.    |
| Meesun,           | ... | { Irrigated,   | ... | 102    | 3            | 0  | 0  | 306    |
|                   |     | { Unirrigated, | ... | 170    | 1            | 8  | 0  | 255    |
| Roslee and Dakur, | ... | { Irrigated,   | ... | 2,184  | 1            | 12 | 0  | 3,822  |
|                   |     | { Unirrigated, | ... | 3,694  | 1            | 2  | 0  | 4,156  |
| Sankra,           | ... | { Irrigated,   | ... | 16     | 1            | 2  | 0  | 18     |
|                   |     | { Unirrigated, | ... | 173    | 0            | 12 | 0  | 129    |
| Total,            | ... | ...            | ... | 6,339  | Yielding Rs. |    |    | 8,686  |

In these villages there are (a) held under pottahs 343 acres, yielding Rs. 618, averaging Re. 1-12-10 per acre; and (b) 484 acres held in lease, yielding Rs. 886, averaging Re. 1-13-3 per acre; and (c) 480 acres of highest class of crops cultivated in "seer," valued at Rs. 1,365, averaging Rs. 2-13-6 per acre; and lastly (d) Rs. 5,032 acres "batae" lands, averaging Re. 1-2-6 per acre, and valued at Rs. 5,818. The result is as follows :—

|        |              |     |     |        | Value.    |
|--------|--------------|-----|-----|--------|-----------|
| (a)    | 343 acres,   | ... | ... | Rs.    | 618       |
| (b)    | 484 "        | ... | ... | "      | 886       |
| (c)    | 480 "        | ... | ... | "      | 1,365     |
| (d)    | 5,032 "      | ... | ... | "      | 5,818     |
| Total, | 6,339 acres, |     |     | Value, | Rs. 8,687 |

According to the (B) Statement, the rated sum is Rs. 8,686, or Re. 1 less than the sum deduced above.

## 2ND CLASS, EASTERN DOON.

## (A) Rates proposed in 1862-63.

| Soil.             |     |     |     |     |     |     | Rate. |    |    |
|-------------------|-----|-----|-----|-----|-----|-----|-------|----|----|
|                   |     |     |     |     |     |     | Rs.   | a. | p. |
| Meesun,           | ... | ... | ... | ... | ... | ... | 1     | 4  | 0  |
| Roslee and Dakur, | ... | ... | ... | ... | ... | ... | 1     | 2  | 0  |
| Sankra,           | ... | ... | ... | ... | ... | ... | 0     | 12 | 0  |

## (B) Rates now proposed.

| Soil.             |     |   |              |     |     |     | Rate per acre. |
|-------------------|-----|---|--------------|-----|-----|-----|----------------|
|                   |     |   |              |     |     |     | Rs. a. p.      |
| Meesun,           | ... | { | Irrigated,   | ... | ... | ... | 2 8 0          |
|                   |     |   | Unirrigated, | ... | ... | ... | 1 4 0          |
| Roslee and Dakur, | ... | { | Irrigated,   | ... | ... | ... | 1 8 0          |
|                   |     |   | Unirrigated, | ... | ... | ... | 0 15 0         |
| Sankra,           | ... | { | Irrigated,   | ... | ... | ... | 1 0 0          |
|                   |     |   | Unirrigated, | ... | ... | ... | 0 12 0         |

*Exemplar.*—Twenty-one average villages of this class, contain as follows :—

*Under (A) Statement.*

| Soil.             |     |     |     | Acres. | Rate.     | Value. |
|-------------------|-----|-----|-----|--------|-----------|--------|
|                   |     |     |     |        | Rs. a. p. | Rs.    |
| Meesun,           | ... | ... | ... | 365    | 1 4 0     | 456    |
| Roslee and Dakur, | ... | ... | ... | 2,750  | 1 2 0     | 3,094  |
| Sankra,           | ... | ... | ... | 818    | 0 12 0    | 614    |
| Total,            |     |     |     | 3,933  | ...       | 4,164  |

Again, under (B) Statement the same villages are rated as follows :—

| Soil.             |     |   |              | Acres. | Rate.     | Value. |
|-------------------|-----|---|--------------|--------|-----------|--------|
|                   |     |   |              |        | Rs. a. p. | Rs.    |
| Meesun,           | ... | { | Irrigated,   | 176    | 2 8 0     | 440    |
|                   |     |   | Unirrigated, | 189    | 1 4 0     | 236    |
| Roslee and Dakur, | ... | { | Irrigated,   | 963    | 1 8 0     | 1,443  |
|                   |     |   | Unirrigated, | 1,787  | 0 15 0    | 1,675  |
| Sankra,           | ... | { | Irrigated,   | 139    | 1 0 0     | 139    |
|                   |     |   | Unirrigated, | 679    | 0 12 0    | 509    |
| Total,            |     |   |              | 3,933  | ...       | 4,442  |

In the above villages there are (a) 664 acres held under pottahs, yielding Rs. 938, average Re. 1-6-9 per acre ; and (b) 590 acres on contract and lease valued at Rs. 885, average Re. 1-8-0 per acre ; and (c) 2,679 acres estimated to yield Rs. 2,595, bearing an average rate of Re. 0-15-6 per acre. The result is as follows :—

|                     |            |     |     |     | Value.           |
|---------------------|------------|-----|-----|-----|------------------|
| (a)                 | 664 acres, | ... | ... | ... | Rs. 938          |
| (b)                 | 590 "      | ... | ... | ... | " 885            |
| (c)                 | 2,679 "    | ... | ... | ... | " 2,595          |
| Total, 3,933 acres, |            |     |     |     | Value. Rs. 4,418 |

According to (B) Statement the sum required being Rs. 4,442 ; difference Rs. 24 on the whole.

## 3RD CLASS, WESTERN DOON.

## FORM A.

*Showing Rates proposed in 1862-63.*

| Soil.             |     |     |     |     |     |     | Rate per acre |
|-------------------|-----|-----|-----|-----|-----|-----|---------------|
|                   |     |     |     |     |     |     | Rs. a. p.     |
| Meesun,           | ... | ... | ... | ... | ... | ... | 1 8 0         |
| Roslee and Dakur, | ... | ... | ... | ... | ... | ... | 0 15 10       |
| Sankra,           | ... | ... | ... | ... | ... | ... | 0 10 0        |

## FORM B.

*Showing Rates proposed now.*

| Soil.             |     |   |              |     |     |     | Rate per acre. |
|-------------------|-----|---|--------------|-----|-----|-----|----------------|
|                   |     |   |              |     |     |     | Rs. a. p.      |
| Meesun,           | ... | { | Irrigated,   | ... | ... | ... | 2 8 0          |
|                   |     |   | Unirrigated, | ... | ... | ... | 1 6 0          |
| Roslee and Dakur, | ... | { | Irrigated,   | ... | ... | ... | 1 8 0          |
|                   |     |   | Unirrigated, | ... | ... | ... | 0 14 6         |
| Sankra,           | ... | { | Irrigated,   | ... | ... | ... | 1 0 0          |
|                   |     |   | Unirrigated, | ... | ... | ... | 0 12 0         |



*Exemplar.*—Forty-two villages, containing a cultivated area of 3,906 acres, return according to Form A. Rs. 3,320, and under Form B. Rs. 3,828. Out of the 3,906 acres, 2,029 acres are held under “pottah,” and return Rs. 2,033—bearing an average value of Re. 1 per acre. I estimate the remainder, or 1,877 acres, to bear a value of 12 annas per acre, yielding thereby Rs. 1,395. Nearly all the better class of lands are those

which\* are held under pottah, and much of the land included in the 1,877 acres is land which has been deserted by hereditary occupants, and thrown on the zemindar’s hands for cultivation.

The result of the above is :—

|                     |     |     |     |            | Value.    |
|---------------------|-----|-----|-----|------------|-----------|
| 2,029 acres,        | ... | ... | ... | ...        | Rs. 2,033 |
| 1,877 „             | ... | ... | ... | ...        | „ 1,395   |
| Total, 3,906 acres, | ... | ... | ... | Value, ... | Rs. 3,428 |

which sum agrees with the sum rated in Form B.

### 3RD CLASS, EASTERN DOON.

#### FORM A.

*Showing Rates proposed in 1862-63.*

| Soil.             |     |     |     |     |     |     | Rate per acre. |
|-------------------|-----|-----|-----|-----|-----|-----|----------------|
|                   |     |     |     |     |     |     | Rs. a. p.      |
| Meesun,           | ... | ... | ... | ... | ... | ... | 1 2 0          |
| Roslee and Dakur, | ... | ... | ... | ... | ... | ... | 0 15 9         |
| Sankra,           | ... | ... | ... | ... | ... | ... | 0 10 0         |

#### FORM B.

*Showing the Rates now proposed.*

| Soil.             |     |     |                |     |     |     | Rate.     |
|-------------------|-----|-----|----------------|-----|-----|-----|-----------|
|                   |     |     |                |     |     |     | Rs. a. p. |
| Meesun,           | ... | ... | { Irrigated,   | ... | ... | ... | 2 8 0     |
|                   |     |     | { Unirrigated, | ... | ... | ... | 1 6 0     |
| Roslee and Dakur, | ... | ... | { Irrigated,   | ... | ... | ... | 1 8 0     |
|                   |     |     | { Unirrigated, | ... | ... | ... | 0 14 6    |
| Sankra,           | ... | ... | { Irrigated,   | ... | ... | ... | 1 0 0     |
|                   |     |     | { Unirrigated, | ... | ... | ... | 0 12 0    |

Being the same as for the Western Doon.

*Exemplar.*—Forty-three villages, containing a cultivated area of 2,720 acres, are estimated under Form A. to yield Rs. 2,126, and under Form B. Rs. 2,281.

Out of 2,720 acres, there are 1,712 acres held under pottahs, and yielding Rs. 1,581—giving an average of Re. 0-14-9 per acre. I estimate the remainder, or 1,008 acres, to yield a value of Rs. 700, giving an average of Re. 0-11-1 per acre. The result is as follows :—

|                         |     |     |            | Value.    |
|-------------------------|-----|-----|------------|-----------|
| 1,712 acres,            | ... | ... | ...        | Rs. 1,582 |
| 1,008 „                 | ... | ... | ...        | „ 700     |
| Total, ... 2,720 acres, | ... | ... | Value, ... | Rs. 2,282 |

which agrees with Form B.

I have, &c.,

C. A. DANIELL,

Settlement Officer, Dehra Doon.

# REPORT

ON THE

## DIRECT MANAGEMENT OF THE TERAJ DISTRICT

FOR THE

### REVENUE YEAR 1873-74.

No. 64, dated Allahabad, the 2nd February, 1875.

*From*—E. C. BUCK, Esq., *Offg. Secretary to the Board of Revenue, N.-W. Provinces,*  
*To*—C. A. ELLIOTT, Esq., *Secretary to Government, North-Western Provinces.*

SIR,—I am desired to submit for the information and orders of His Honor the Lieutenant-Governor the report on the direct management of the Tarai district for 1873-74.

2. The Superintendent argues, and the Commissioner agrees with him, that the present system of direct management is far preferable to that of zemindari tenure, and holds that Government having for so many years carried on such management “is bound to continue it until it can be fairly established as almost a ryotwari system,” or in other words until the tenants are prepared to accept in a body a fixed rent in money on their holdings with heritable and transferable rights therein; but many years will elapse before the tenants are ready for this.

3. The Board consider that the Superintendent’s disquisition is hardly in its place in an administration report. But he is right in pointing out how the management differs from that of estates held *kham* in the ordinary acceptation of the term. The estate is virtually a Government one—i.e., Government is directly the landlord, and certainly the time has not yet come for the conferment of the proprietary rights now vested in Government on other parties.

4. The income of 1873-74 is made up of the following sums:—

|                                                              |     |     |     |              |
|--------------------------------------------------------------|-----|-----|-----|--------------|
| Land revenue,                                                | ... | ... | ... | Rs. 1,71,704 |
| Excise,                                                      | ... | ... | ... | „ 15,710     |
| Drugs,                                                       | ... | ... | ... | „ 3,162      |
| Registration fees,                                           | ... | ... | ... | „ 315        |
| Judicial fines,                                              | ... | ... | ... | „ 766        |
| Ten per cent. cess in Kashipur,                              | ... | ... | ... | „ 10,039     |
| Income of direct management after payment of revenue demand, | ... | ... | ... | „ 1,42,811   |

The last item is credited under “miscellaneous land revenue” and brings up the total to Rs. 3,44,508.

5. On the expenditure side Rs. 98,301 represent the cost of direct management while the surplus of the income of the direct management (less Rs. 50, paid as a pension to the widow of a native doctor) is credited to the Tarai Surplus Fund, the moneys of which are spent in improvements in the district.

6. The decrease in gross receipts as compared with the previous year is Rs. 4,149-2-10, of which Rs. 2,000 is due to decrease in excise, and the rest to a falling off in some items derived from direct management.

7. The income of 1281 is over Rs. 30,000 less than that of 1279.

8. A balance of Rs. 946-7-9 on the current year’s revenue demand is outstanding in some villages which have been resigned by Raja Sheoraj Singh of Moradabad.

These villages were with one exception entirely waste, the only item of income having been sayer receipts. Claimants for them have however appeared, and should they be put in possession they will pay in the balances.

9. The ten per cent. cess has been included under head "land revenue." This course is open to objection, and the Superintendent has been desired to avoid it in future.

10. The excess *rents* after payment of land revenue were Rs. 11,845 over those of last year and the increase is attributed—(1) to the favourable weather which resulted in bumper crops and no failures; (2) to higher prices, for where rents are taken by *kankut* they are affected by such rise; and (3) to higher rents, which were generally freely accepted and were rendered advisable by the heavy canal water rent due to Government, which is collected in a lump sum with land rent.

11. There were no land revenue balances outstanding at the commencement of 1281 Fasli, but there were rent balances amounting to Rs. 1,035-13-0 of which Rs. 589-7-9 were collected during the year.

12. The receipts from forests were less by Rs. 9,530 than in the previous year. This decrease is attributed to the necessity of closing all timber cutting and giving the forests rest.

13. The advances made for seed in 1868 were all collected last year.

14. The decrease under excise and drugs is about Rs. 2,000, and is attributed to the gloomy prospects of the rice crop at the time the auctions were held.

15. At the close of para. 5 the items in which there was decrease or increase are shown, and in para. 6 is shown the income of each pargana for the year under report as compared with that of the two preceding years.

16. Paras. 7 to 29 contain a very interesting description of each pargana, the tenure of the land comprised in it, its population, area, number of villages, state of crops therein, during the year, system of collection of rent (in cash by *kankut* or by plough rate) and financial results which for the whole district, including cesses, are thus summarised "revenue" (including cesses) was Rs. 1,81,743-10-3 collected from 648 villages, and after payment of revenue the surplus rents from 424 villages amounted to Rs. 88,387-5-1.

17. Para. 30 deals with a comparative statement showing the entire expenditure of the district for the past three years.

18. In para. 31 the Superintendent explains his system of advances which are made in sums varying from Rs. 7 to 12, and in para. 32 he describes the nature of his charges for "thatching." On a new arrival determining to settle, a hut is built for him, and one for his cattle. He has to thatch these, and sometimes advances are made to enable him to purchase bamboos and grass. These huts cost from Rs. 2-8-0 to Rs. 4 each.

19. Paras. 34 to 37 relate to salaries and allowances and the two succeeding ones to canal arrangements.

20. In paraganas Rudarpur and Kilpuri the canals are supervised by the Public Works Department, and in all other paraganas by the Superintendent himself. In villages under direct management, land and water rents are collected in one sum.

21. Repairs of the village channels are executed in all paraganas under the Superintendent's orders. Each village is responsible for the clearance of the channels within its boundary, and the headman is responsible if the charges made for the work are found excessive.

22. The total outstandings of rent revenue, takavi, thatching, and loans amount to about Rs. 40,000, and the whole sum is considered "easy of collection."

23. "The year of report was a favourable one for immigration," and there has been an increase in the number of ploughs in each pargana. The number in 1281 was 14,996 against 13,952 in 1280 Fasli.

24. It is this immigration of which the district officers in Rohilkhand complain, and which makes it so difficult for zemindars to meet the Government demand in the Pilibhit and Paranpur Tahsils.

25. Details of the rainfall are given in para. 51, from which it will be seen that the fall was barely half that of 1280 Fasli. The rains, however, are described as having been timely though small; securing the cotton, sugarcane, and maize, while irrigation helped on rice where water was available.

26. The death rate was 32·2 per mille.

27. The cultivated area in 1281 was 619,873 bighas, or 18,860 bighas in excess of the area cultivated in 1280 Fasli. Thus, it appears that the number of bighas to each plough is over 41, but the size of the bigha is not stated, and the Superintendent has been asked to furnish this information.

28. Mr. Macdonald's report is a very interesting one, giving an excellent account of the Tarai country, and of his judicious administration of it. The results of his management have been most successful, and the Tarai parganas are fortunate in their Collector. The report, which is pleasant reading as well as instructive, will be printed in the "Revenue Reporter."

I have the honour to be,

SIR,

Your most obedient Servant,

E. C. BUCK,

*Officiating Secretary.*

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No. 1267, dated Camp Huldwani, the 16th December, 1874.

*From—THE COMMISSIONER, Kamaun Division,*

*To—THE SECRETARY TO BOARD OF REVENUE, North-Western Provinces.*

SIR,—I have the honour to forward Mr. Macdonald's report on the direct management of the Tarai District for the year 1873-74. Revenue Dept.

2. I quite agree with Mr. Macdonald in considering that the only hope of making the Tarai what it may and ought to be is to keep it under direct management until the acclimatized cultivators are prepared for a ryotwari settlement, and any attempt to sell in zemindari tenure, by which speculators only look to interest on the money paid, would be the ruin of the parganas. Under such a system it would only require about ten years to make it the shooting-ground it used to be 25 years ago; whereas by good direct management the Tarai will improve every year.

3. Mr. Macdonald has gone into details so fully that it appears unnecessary to offer any further remarks. The Board will perceive what an intimate knowledge this officer has of his work, and that extends to every village. The peculiarities of every one are so well known that Mr. Macdonald has no difficulty in disposing correctly of every report that is submitted during the months he is absent from the Tarai, and the people have such perfect confidence in his arrangements that they feel satisfied whatever he orders is the best arrangement that could be made.

I have the honour to be,

SIR,

Your most obedient Servant,

H. RAMSAY,

*Commissioner.*

No. 403, dated Camp, Kashipur, the 24th November, 1874.

From—J. C. MACDONALD, ESQ., *Superintendent, Tarai District,*

To—MAJOR-GENERAL H. RAMSAY, C. B., *Commissioner, Kumaun Division.*

SIR,—I have the honour to forward the administration report on the direct management of this district for the year 1873-74, ending 30th September, 1874.

Revenue and Rent.

2. It is necessary to explain that I have already submitted the revenue administration report with statements for the revenue year as required by the Board, with my No. 337, dated 19th ultimo, and that this might more properly be termed a report on the rent administration of these tracts under direct management. Yet, practically speaking, it is next to impossible to separate revenue and rent in these tracts, where they are both paid in together. There is also very great advantage in reviewing the entire transactions of the district, inasmuch as the figures of each branch of the administration can, for the year under report as well as the previous year, be explained; and yourself, the Board of Revenue, and Government, have before them statements which show what the district pays to the State under land revenue, excise, Registration, and the other imperial items; what those tracts under direct management pay as rent, what the cost of such direct management is, and what remains after defraying the cost of such management to be spent on improvements, such as drainage, roads, dispensaries, &c.

Direct management as opposed to zemindari.

3. It is not uncommon to speak of this rent management in the Tarai district as "kham tahsil"; and to do so is perhaps to mislead, leaving some, perhaps, under the impression that the period fixed by law (Section 159, Act XIX. of 1873), viz., fifteen years, under which estates are generally directly managed, would see the close of such management, and that there were parties to whom the estates under direct management would, at the term of such period, be made over. This is not the case in these tracts. The management is certainly direct, and it is so because those parties with whom the estates were first settled failed to carry out their engagements and resigned their rights—being too glad to get rid of them. Government found itself encumbered with the management of properties almost ruined by want of supervision, and inhabited by a population reduced by grinding landlords to penury. This, coupled with a total neglect of the simplest engineering rules, had covered the district with swamps which increased the unhealthiness of a sickly tract, and had filled it with wild animals. The Government took the properties in hand, and, after a most liberal expenditure of capital, have so established them that they now pay the State its revenue demand in each branch, defray the cost of a management conducted with a view to provide liberally for such management, and give a surplus for improvement.

I am aware that this success has aroused perhaps feelings of jealousy on the part of those holding small property in a somewhat similar climate, and bordering on the Tarai; and they have, with some support on the part of their own officers, argued that the time has arrived when these tracts should, like those in their neighbourhood, be settled, and that Government should retire from holding them directly. The financial result of this arrangement would be that, of every hundred rupees of income Government now receives, forty-five would be handed over to some one who would be responsible for the payment of the other fifty-five. And more than this; there being none on the properties themselves who have a right to such a position, the estates would probably be put up to auction, and the purchasers would generally be of the *Sahukár* class. The money brought in by such auction would no doubt be a handsome sum, and a return, to some extent, for the sacrifice of the 45 per cent.

Direct management or zemindari.

But the result to the tract would be that a great number of the Tharus in the east would return to Nipal, and the new settlers of the west, seeing no chance of obtaining that for which they migrated, would become disheartened and look out for other homes. I do not contend that the residents of the tract are yet prepared for any other management than that which at present exists; but I hold that Government having for so many years carried on such management, is bound to continue it until it can be fairly established as almost a ryotwari system; or, in other words, until the

tenants are prepared to accept in a body a fixed rent in money on their holdings, with heritable and transferable rights therein. At present many of the tenants are not ready for this; and assessments actually take place on each crop, so that many years must elapse ere they will be ready.

Further, under the present management, funds are available to provide against any emergency. If seed fails, it can be arranged for; if cattle die, advances can be made at once for the purchase of fresh stock; and if crops fail, the assessment made at once provides for such failure.

I consider it most fortunate for the district itself, that there are so many estates in which the profits are available for their improvement, instead of being swallowed up by a useless and generally discontented portion of the community; and that a management which has for so many years succeeded, should be left to work out the object for which it was started, *viz.* the general improvement of the tract, and the education of its tenants until the latter may hold landed rights in the former.

4. The entire income and expenditure of the district were each Rs. 3,44,508-5-3, and are thus compared with the totals of previous years:—

Total income and expenditure.

| Fasli.    | A. D.        | Income.  |    |    | Expenditure. |    |    |
|-----------|--------------|----------|----|----|--------------|----|----|
|           |              | Rs.      | a. | p. | Rs.          | a. | p. |
| 1278, ... | 1870-71, ... | 2,95,869 | 8  | 11 | 2,95,869     | 8  | 11 |
| 1279, ... | 1871-72, ... | 3,74,719 | 14 | 5  | 3,74,719     | 14 | 5  |
| 1280, ... | 1872-73, ... | 3,48,657 | 8  | 1  | 3,48,657     | 8  | 1  |
| 1281, ... | 1873-74, ... | 3,44,508 | 5  | 3  | 3,44,508     | 5  | 3  |

The income of 1873-74 is made up of the following sums:—

|                                        |     |     |     |          |    |   |
|----------------------------------------|-----|-----|-----|----------|----|---|
| 1. Land Revenue,                       | ... | ... | ... | 1,71,704 | 8  | 3 |
| 2. Excise, (and balances Rs. 15-15-3), | ... | ... | ... | 15,710   | 5  | 6 |
| 3. Drugs (and fines Rs. 50),           | ... | ... | ... | 3,162    | 0  | 0 |
| 4. Registration fees,                  | ... | ... | ... | 314      | 10 | 0 |
| 5. Judicial fines,                     | ... | ... | ... | 766      | 3  | 3 |
| 6. Ten per cent. cess,                 | ... | ... | ... | 10,039   | 2  | 0 |
|                                        |     |     |     | 2,01,696 | 13 | 0 |

having been paid into the treasury during the year, under their different heads of account, and agree with the statements forwarded to the different controlling authorities; and the sum of Rs. 1,42,811-8-3 (the income of the direct management after payment of the revenue demand) being credited in treasury under "Miscellaneous Land Revenue," making the total of Rs. 3,44,508-5-3.

Of the expenditure, Rs. 98,300-12-11 represents the cost of direct management, and is debited in treasury under the head of "Charges on account of Government Estates;" while the surplus of Rs. 44,460-11-4 has been debited in treasury under the head of "Allowances to District Officers" in the imperial accounts, and credited to the Tarai Surplus Fund in deposit account in the treasury; the moneys of which fund are spent in improvements in the district, and are separately reported upon. The charge of Rs. 50 is the pension of the widow of a native doctor, and is shown under the head of "Pensions" in the imperial accounts. These make a total expenditure of Rs. 1,42,811-8-3, being equal to the income from direct management after payment of the revenue demand; and when added to the items of imperial revenue—*viz.*, Rs. 2,01,696-13-0 paid into treasury, make the total expenditure Rs. 3,44,508-5-3. The decrease in gross revenue or income, as compared with the previous year, is Rs. 4,149-2-10. Of this nearly Rs. 2,000 is due to decrease in excise, and the rest to a falling off in some items derived from direct management.

Details of income.

5. The following statement exhibits the income in detail under the several heads of account :—

*Comparative Statement of Income in detail.*

| Year.     | Land revenue, including 10 per cent. cess. | Excess rents after payment of land revenue. | Balance of land revenue and rents. | Forest dues. | Pasturage dues. |
|-----------|--------------------------------------------|---------------------------------------------|------------------------------------|--------------|-----------------|
|           | Rs. a. p.                                  | Rs. a. p.                                   | Rs. a. p.                          | Rs. a. p.    | Rs. a. p.       |
| 1278, ... | 1,57,786 0 0                               | 46,472 3 1                                  | 5,119 6 7                          | 18,243 6 9   | 5,332 1 10      |
| 1279, ... | 1,72,091 0 0                               | 73,477 7 11                                 | 13,859 6 0                         | 25,754 9 7   | 6,860 3 0       |
| 1280, ... | 1,82,690 2 0                               | 76,542 4 3                                  | 1,749 2 7                          | 17,089 0 11  | 6,518 1 3       |
| 1281, ... | 1,81,743 10 3                              | 88,367 5 1                                  | 589 7 9                            | 7,559 1 0    | 5,941 1 2       |

| Year.     | Bazars.     | Takavi advances recovered. | Thatching advances recovered. | Seed advances recovered. | Recredits.  | Excise.     |
|-----------|-------------|----------------------------|-------------------------------|--------------------------|-------------|-------------|
|           | Rs. a. p.   | Rs. a. p.                  | Rs. a. p.                     | Rs. a. p.                | Rs. a. p.   | Rs. a. p.   |
| 1278, ... | 1,012 13 10 | 32,371 13 2                | 615 3 11                      | 4,910 2 10               | 2,766 4 7   | 7,983 4 0   |
| 1279, ... | 1,925 14 3  | 48,749 11 6                | 2,586 13 8                    | 5,425 14 3               | 4,335 9 9   | 13,620 0 0  |
| 1280, ... | 1,852 15 10 | 30,495 10 1                | 672 6 8                       | 1,575 11 8               | 3,612 12 11 | 17,466 10 8 |
| 1281, ... | 2,239 5 2   | 27,530 15 5                | 478 8 7                       | ...                      | 6,570 4 7   | 15,710 5 4  |

| Year.     | Drugs. | Income-tax. | Registration dues. | Judicial fines. | Miscellaneous. | Total.        |
|-----------|--------|-------------|--------------------|-----------------|----------------|---------------|
|           | Rs.    | Rs. a. p.   | Rs. a. p.          | Rs. a. p.       | Rs. a. p.      | Rs. a. p.     |
| 1278, ... | 2,304  | 3,173 13 4  | 206 4 0            | 56 0 0          | 7,516 4 0      | 2,95,869 8 11 |
| 1279, ... | 2,544  | 3,228 15 2  | 216 8 0            | 645 9 9         | 3,718 2 4      | 3,74,719 14 5 |
| 1280, ... | 3,570  | 92 3 6      | 327 6 0            | 480 8 0         | 3,922 7 9      | 3,48,657 8 1  |
| 1281, ... | 3,162  | ...         | 314 10 0           | 766 3 3         | 3,515 7 6      | 3,44,508 5 3  |

I have altered this statement slightly this year in accordance with the orders of the Board of Revenue contained in para. 4 of their No. 19, dated 21st February, 1874, to your address, and received with your No. 174, dated 24th idem, ordering me to show revenue and rent distinct. Under land revenue (see my revenue administration report) there is a balance of Rs. 946-7-9. Last year the revenue collected was Rs. 1,82,690-2-0 or the full demand. There remains to be collected in Pargana Kashipur a balance of Rs. 946-7-9, which accounts for the difference in this year's collections—viz., Rs. 1,81,743-10-3. I have entered fully into the reasons for this balance in my revenue report, and it will be sufficient to state here that it was owing to some villages having been resigned by Rajah Sheoraj Singh, C.S.I., at term of settlement, which has expired in that pargana. The villages were made over to him some ten years ago in farm by the Collector of Moradabad, in consequence of the default in part of the original holders. When the rajah, at the expiration of his farm, resigned them there were numerous claimants, and I found it necessary to examine closely into the title of claimants ere I put them in possession. I therefore myself held possession of them, and had not, at the close of the year, concluded the enquiry. The villages were, with one exception, entirely waste, the only item of income having been sayer receipts. This caused a balance at the close of the year. Should the claimants be put in possession they will pay in the balances. Should their titles not prove sufficiently clear, the case will form the subject of a separate report.

With the exception thus noticed, the revenue demand is the same as that of the previous year. I have included the 10 per cent. cess under this head, because by having a separate column for it the statement is unnecessarily lengthened.

The column to which I have alluded as entered under orders is headed "excess rent after payment of land revenue." In parts of the tract under direct management the revenue demand is assessed in one lump sum. The collections are of course made for each village separately as per rent-rolls; and as my other expenditure permits, I pay the instalments of land revenue. When I say "other expenditure," I mean the canal officer's water rents, takavi advances, repairs to irrigating channels, repairs to wells, feed of elephants, &c. For instance, supposing the land revenue instalment for December on estates under direct management is Rs. 5,000, and my collections are Rs. 7,000; but I have to meet the following demands for December:—

Water-rents Rs. 1,000, takavi Rs. 2,000, elephants Rs. 500, salaries Rs. 400, and other items Rs. 100. These must be paid, otherwise the current work stops. From the Rs. 7,000 collected, after paying this Rs. 4,000, I have only Rs. 3,000 left to meet the land revenue instalment of Rs. 5,000, which must consequently be paid in the following month. Under the old system, I mean before all the receipts and expenditure were passed through the treasury books, these moneys were kept in the deposit account, and I paid in my revenue demand from it. The change was made under the orders of Government No. 28A., dated 11th January, 1886, when it became necessary to show all transactions in the imperial accounts. The old system may have been irregular, but it was very convenient. I therefore term these sums "excess rents" after paying land revenue. For the year under review these amount to Rs. 88,387-5-1, as against Rs. 76,542-4-3 of last year, or an increase of Rs. 11,845-0-10. There are three reasons for this increase, which briefly summarized are—(1) less rain, (2) higher prices, and (3) higher rents.

*Less rain.*—The rainfall in the district being less where irrigation was available, the rice crop was fair, and the cotton and maize a bumper crop. Cotton and maize pay from three to five annas per acre, and in many villages the custom is, with both these crops, that in event of their failing suddenly when young from excessive rain the cultivator is allowed to plough up his land sharp for some other crop. This year there were no failures, and the rents were paid by most with ease, so that where irrigation was available, as it is in Parganas Gudarpur, Rudarpur, and Kilpuri, the rents were of course larger; for we had rice crops as well as cotton and maize. Again, less rain gave a good spring crop. Cultivators who had prepared their land for the late rice, but owing to a failure of rain did not plant, reploughed the land for wheat. This reploughing improved the land, it had rest, and the wheat was good. Again, in the Tarai, a small rainfall means less sickness, and if at the time of ploughing for spring crops there is less sickness, the result is a larger area cropped.

*Higher prices.*—Prices rose, and where rents are taken in kind, or after the kankut fashion, they are affected by such rise. Accurate data will be found further on.

*Higher rents.*—I found it advisable to raise rents in some villages. I had a heavy canal water rent to pay to the canal officer, and after examination of the villages affected, and consultation with the tenants and their headmen, I raised my rents without a single objection of any weight. Objections were made both on paper to me while camped in the parganas, and *visà voce* while in the villages. Where made by the better class of cultivators, the reasons were explained why the rents were raised, and they were generally satisfied. Where made by the very poor class, a reference was made to headmen of villages in person, and if necessary the rise was put off; and in some cases the land, on examination, was found so very inferior to other lands that the holders were allowed to pay old rates.

In some cases the tenants gave petitions in a vague way, with a hope that they might by some strange chance or fate get off this rise. When this was the case, a summary order to the effect to pay up sharp was sufficient.



Balances.

*Balances of land revenue and rent.*—On the land revenue demand of last year there were no balances. There were rent balances entered by me last year, thus :—

|                                    |     |     |                       |
|------------------------------------|-----|-----|-----------------------|
| Land rent balances for 1280 Fasli, | ... | ... | Rs. 862 14 0          |
| Ditto ditto for previous year,     | ... | ... | Rs. 172 15 0          |
|                                    |     |     | <u>Rs. 1,035 13 0</u> |

Of this Rs. 589-7-9 have been collected, as will be explained further on.

Forest dues and pasturage.

The receipts from forest dues and pasturage show a decrease. It is sufficient here to say that for the benefit of the district, I have found it necessary to close all timber cutting. There are places where, as in Bilheri, some fine timber. sufficient for some of the wants of the Tharu community, can be grown if the forest has rest; and to produce this it must have rest.

Bazars.

The rise under "Bazars" is due to an increased number of shops rented, as well as the imposition of the usual zemindari cess on one situated in Bazpur.

Takavi recovered.

The recredits under "takavi" and "thatching" are slightly under those of last year. In some villages where no irrigation was available it was not advisable to press for payment. This was chiefly in Bilheri, and some villages in Kilpuri where the crops were light.

Seed advances.

The advances made for seed in the year 1868, were all collected last year.

Excise and drugs.

Under excise and drugs the decrease is about Rs. 2,000. At the time when the auctions were held for the farms, the idea prevailed that the rainfall had so affected the rice crop that cultivators would not be able to afford to spend the usual amount at marriages and fairs. This told on the auctions, and resulted in the decrease.

Miscellaneous.

Registration fees are stationary. Fines show higher, and miscellaneous, which includes the balance of the pound fund, is slightly under last year.

On the total income there is a decrease on last year of Rs. 4,149-2-10. Under some heads there is an increase, while under others the decrease is larger. It is thus seen :—

*Decrease.*

|                |     |     |     |     | Rs.               | a.        | p.        |
|----------------|-----|-----|-----|-----|-------------------|-----------|-----------|
| Revenue,       | ... | ... | ... | ... | 946               | 7         | 9         |
| Rent balances, | ... | ... | ... | ... | 1,159             | 10        | 10        |
| Forest dues,   | ... | ... | ... | ... | 9,529             | 15        | 11        |
| Pasturage,     | ... | ... | ... | ... | 577               | 0         | 1         |
| Takavi, ...    | ... | ... | ... | ... | 2,964             | 10        | 8         |
| Thatching,     | ... | ... | ... | ... | 193               | 14        | 1         |
| Seed, ...      | ... | ... | ... | ... | 1,575             | 11        | 8         |
| Excise, ...    | ... | ... | ... | ... | 1,756             | 5         | 2         |
| Drugs, ...     | ... | ... | ... | ... | 408               | 0         | 0         |
| Income Tax,    | ... | ... | ... | ... | 92                | 3         | 6         |
| Registration,  | ... | ... | ... | ... | 12                | 12        | 0         |
| Miscellaneous, | ... | ... | ... | ... | 407               | 0         | 3         |
|                |     |     |     |     | <u>Rs. 19,623</u> | <u>11</u> | <u>11</u> |

*Increase.*

|             |     |     |     |     |                   |          |          |
|-------------|-----|-----|-----|-----|-------------------|----------|----------|
| Rents, ...  | ... | ... | ... | ... | 11,845            | 0        | 10       |
| Bazars, ... | ... | ... | ... | ... | 386               | 5        | 4        |
| Recredits,  | ... | ... | ... | ... | 2,957             | 7        | 8        |
| Fines, ...  | ... | ... | ... | ... | 285               | 11       | 3        |
|             |     |     |     |     | <u>Rs. 15,474</u> | <u>9</u> | <u>1</u> |

Decrease on last year, ... 4,149 2 10

Total, Rs. 19,623 11 11

Comparative statement of income.

Parganawar.

6. The income of each pargana for the year under report, as compared with that for the two preceding years, is exhibited in the following statement :—

| 1.                  | 2.        | 3.                             | 4.           | 5.                                 | 6.           | 7.              | 8.          |
|---------------------|-----------|--------------------------------|--------------|------------------------------------|--------------|-----------------|-------------|
| Pargana.            | Year.     | Land revenue including cesses. | Rents.       | Balance of land revenue and rents. | Forest dues. | Pasturage dues. | Bazar.      |
|                     |           | Rs. a. p.                      | Rs. a. p.    | Rs. a. p.                          | Rs. a. p.    | Rs. a. p.       | Rs. a. p.   |
| Kashipur, {         | 1279, ... | 1,05,303 1 9                   | ...          | ...                                | 1,409 13 3   | ...             | ...         |
|                     | 1280, ... | 1,15,427 2 0                   | ...          | ...                                | 1,248 15 11  | ...             | ...         |
|                     | 1281, ... | 1,14,460 10 3                  | ...          | ...                                | 1,495 2 6    | ...             | ...         |
| Bazpur, ... {       | 1279, ... | 20,061 0 0                     | 16,419 9 1   | 7,583 0 0                          | 2,593 7 8    | 1,883 3 6       | 1,155 12 11 |
|                     | 1280, ... | 20,061 0 0                     | 18,272 2 9   | 1,165 15 7                         | 1,993 15 2   | 1,969 5 0       | 1,119 8 6   |
|                     | 1281, ... | 20,061 0 0                     | 20,679 13 4  | 503 11 6                           | 1,028 15 1   | 1,882 11 2      | 1,382 3 4   |
| Gadarpur, {         | 1279, ... | 5,806 0 0                      | 9,339 9 9    | 2,243 9 3                          | 1,619 13 4   | 683 1 9         | 76 11 6     |
|                     | 1280, ... | 5,806 0 0                      | 12,081 8 6   | ...                                | 1,409 1 0    | 675 1 9         | 81 15 3     |
|                     | 1281, ... | 5,806 0 0                      | 13,500 11 3  | ...                                | 376 5 9      | 593 11 0        | 47 2 0      |
| Rudarpur, {         | 1279, ... | 19,464 0 0                     | 11,769 13 10 | 2,481 15 6                         | 8,069 15 4   | 1,017 15 6      | 171 10 10   |
|                     | 1280, ... | 19,464 0 0                     | 14,263 4 6   | ...                                | 6,475 14 10  | 1,031 3 0       | 198 8 1     |
|                     | 1281, ... | 19,464 0 0                     | 20,173 5 9   | ...                                | 2,034 5 8    | 886 11 0        | 296 6 10    |
| Kilpuri, ... {      | 1279, ... | 4,627 0 0                      | 11,417 10 0  | 1,550 13 3                         | 1,804 11 0   | 881 5 6         | 197 0 0     |
|                     | 1280, ... | 4,627 0 0                      | 9,425 8 0    | 224 7 6                            | 1,150 9 2    | 708 8 6         | 181 0 0     |
|                     | 1281, ... | 4,627 0 0                      | 14,442 0 0   | 85 12 3                            | 766 9 8      | 840 15 0        | 227 9 0     |
| N a n a k - mata. { | 1279, ... | 9,406 0 0                      | 1,727 7 6    | ...                                | 428 2 6      | 560 11 0        | ...         |
|                     | 1280, ... | 9,406 0 0                      | 1,063 0 9    | ...                                | 715 0 3      | 454 10 0        | ...         |
|                     | 1281, ... | 9,406 0 0                      | —337 1 9     | ...                                | 149 2 9      | 361 5 6         | ...         |
| Bilhari, ... {      | 1279, ... | 7,899 0 0                      | 22,328 4 0   | ...                                | 9,828 10 6   | 1,831 13 0      | 324 11 0    |
|                     | 1280, ... | 7,899 0 0                      | 21,436 11 9  | 358 11 6                           | 4,095 8 7    | 1,879 5 0       | 272 0 0     |
|                     | 1281, ... | 7,899 0 0                      | 19,928 8 6   | ...                                | 1,708 7 7    | 1,425 11 6      | 286 0 0     |
| Total, ...          | 1281, ... | 1,81,73 10 3                   | 88,387 5 1   | 589 7 9                            | 7,559 1 0    | 5,941 1 2       | 2,239 5 2   |

| 1.                  | 2.        | 9.                         | 10.                           | 11.                      | 12.        | 13.        | 14.    |
|---------------------|-----------|----------------------------|-------------------------------|--------------------------|------------|------------|--------|
| Pargana.            | Year.     | Takavi advances recovered. | Thatching advances recovered. | Seed advances recovered. | Recredits. | Excise.    | Drugs. |
|                     |           | Rs. a. p.                  | Rs. a. p.                     | Rs. a. p.                | Rs. a. p.  | Rs. a. p.  | Rs.    |
| Kashipur, {         | 1279, ... | ...                        | ...                           | ...                      | ...        | 4,503 0 0  | 1,851  |
|                     | 1280, ... | ...                        | ...                           | ...                      | ...        | 4,355 0 0  | 2,400  |
|                     | 1281, ... | ...                        | ...                           | ...                      | ...        | 4,765 0 0  | 1,900  |
| Bazpur, ... {       | 1279, ... | 18,626 5 1                 | 974 9 7                       | 3,126 14 11              | 771 12 4   | 912 0 0    | 210    |
|                     | 1280, ... | 9,281 2 9                  | 189 3 10                      | 654 1 3                  | 1,373 7 3  | 1,310 0 0  | 425    |
|                     | 1281, ... | 9,831 0 0                  | ...                           | ...                      | 3,840 5 7  | 900 0 0    | 520    |
| Gadarpur, {         | 1279, ... | 5,891 5 0                  | 169 9 6                       | 454 12 9                 | 552 13 4   | 672 0 0    | 105    |
|                     | 1280, ... | 3,125 0 0                  | 18 8 0                        | ...                      | 477 9 8    | 900 0 0    | 110    |
|                     | 1281, ... | 4,254 0 0                  | ...                           | ...                      | 1,065 10 2 | 760 0 0    | 132    |
| Rudarpur, {         | 1279, ... | 16,353 6 5                 | 874 0 6                       | 1,761 13 10              | 603 8 1    | 2,551 0 0  | 120    |
|                     | 1280, ... | 9,704 6 3                  | 242 13 6                      | 872 7 8                  | 605 1 7    | 3,500 0 0  | 200    |
|                     | 1281, ... | 10,283 7 5                 | 18 10 0                       | ...                      | 556 6 5    | 2,739 9 0  | 190    |
| Kilpuri, ... {      | 1279, ... | 6,912 0 0                  | 392 4 5                       | 82 4 9                   | 1,071 11 9 | 2,224 0 0  | 144    |
|                     | 1280, ... | 6,133 8 0                  | 197 11 1                      | 49 2 9                   | 843 1 8    | 1,901 10 8 | 210    |
|                     | 1281, ... | 2,031 0 0                  | 354 4 4                       | ...                      | 608 5 8    | 1,740 15 3 | 135    |
| N a n a k - mata. { | 1279, ... | 26 0 0                     | ...                           | ...                      | 24 8 0     | 1,282 0 0  | 42     |
|                     | 1280, ... | 483 0 0                    | ...                           | ...                      | ...        | 2,500 0 0  | 65     |
|                     | 1281, ... | ...                        | 26 8 0                        | ...                      | ...        | 1,904 13 3 | 65     |
| Bilhari, ... {      | 1279, ... | 940 11 0                   | 176 5 8                       | ...                      | 1,311 4 3  | 1,476 0 0  | 72     |
|                     | 1280, ... | 1,768 9 1                  | 24 3 3                        | ...                      | 313 8 9    | 3,000 0 0  | 160    |
|                     | 1281, ... | 1,131 8 0                  | 79 2 3                        | ...                      | 499 6 9    | 2,900 0 0  | 220    |
| Total, ...          | 1281, ... | 27,530 15 5                | 478 8 7                       | ...                      | 6,570 4 7  | 15,710 5 6 | 3,162  |

| 1.                  | 2.        | 15.         | 16.           | 17.       | 18.            | 19.           |
|---------------------|-----------|-------------|---------------|-----------|----------------|---------------|
| Pargana.            | Year.     | Income-tax. | Registration. | Fines.    | Miscellaneous. | Total.        |
|                     |           | Rs. a. p.   | Rs. a. p.     | Rs. a. p. | Rs. a. p.      | Rs. a. p.     |
| Kashipur, {         | 1279, ... | 3,026 9 8   | 216 8 0       | ...       | 10 0 0         | 1,16,245 0 8  |
|                     | 1280, ... | 65 10 6     | 327 6 0       | 205 0 0   | 30 0 0         | 1,24,059 2 5  |
|                     | 1281, ... | ...         | 314 10 0      | 257 5 6   | 40 0 0         | 1,23,252 12 3 |
| Bazpur, ... {       | 1279, ... | 56 8 2      | ...           | 572 9 9   | 3,481 9 9      | 77,780 12 0   |
|                     | 1280, ... | 26 9 0      | ...           | 252 8 0   | 3,749 12 6     | 61,843 10 7   |
|                     | 1281, ... | ...         | ...           | 508 13 9  | 3,368 8 6      | 64,457 2 3    |
| Gadarpur, {         | 1279, ... | 13 0 4      | ...           | ...       | 8 4 0          | 27,637 10 6   |
|                     | 1280, ... | ...         | ...           | ...       | 6 0 0          | 24,690 13 2   |
|                     | 1281, ... | ...         | ...           | ...       | 10 12 0        | 26,546 4 2    |
| Rudarpur, {         | 1279, ... | 46 14 0     | ...           | 26 0 0    | 13 11 8        | 65,327 13 6   |
|                     | 1280, ... | ...         | ...           | ...       | ...            | 56,557 11 5   |
|                     | 1281, ... | ...         | ...           | ...       | ...            | 56,643 0 1    |
| Kilpuri, ... {      | 1279, ... | 85 15 0     | ...           | 45 0 0    | 166 8 4        | 31,602 4 0    |
|                     | 1280, ... | ...         | ...           | 23 0 0    | 113 11 3       | 25,788 14 7   |
|                     | 1281, ... | ...         | ...           | ...       | 96 3 0         | 25,955 10 2   |
| N a n a k - mata. { | 1279, ... | ...         | ...           | ...       | ...            | 9,614 9 0     |
|                     | 1280, ... | ...         | ...           | ...       | 23 0 0         | 14,709 11 0   |
|                     | 1281, ... | ...         | ...           | ...       | ...            | 11,575 11 9   |
| Bilhari, ... {      | 1279, ... | ...         | ...           | ...       | 438 0 7        | 46,511 12 9   |
|                     | 1280, ... | ...         | ...           | ...       | ...            | 41,007 9 11   |
|                     | 1281, ... | ...         | ...           | ...       | ...            | 36,077 12 7   |
| Total, ...          | 1281, ... | ...         | 314 10 0      | 766 3 3   | 3,515 7 6      | 3,44,508 5 3  |

*Pargana Kashipur.*  
 Area—Square Miles, 187  
 Population, ... 71,527  
 No. of villages, ... 154

7. In this pargana the villages are all settled with thikadars or zemindars, and the figures represented have already been remarked on. The rice crop was a light one; but this was made up for by the spring crop, which was excellent all through the pargana.

Bazpur.

8. The entire pargana of Bazpur, containing an area of 111.26 square miles, and a population of 23,032, is under direct management. The pargana has all been mapped into 111 village sites, of which seventeen on the borders of forest are waste. The population reside in these ninety-four villages, scattered over the pargana; the most northern being inhabited by Boksas, who are succeeded by Banjaras and Lodas; and the southern principally by Muhammadans, intermixed with Hindus. The Muhammadans are mostly Shaikhs, Hindus being Ghosis, Brahmans, Halbas, &c. In these ninety-four villages the rents are collected—in money in 42 villages.

Rents.

|                                           |    |           |
|-------------------------------------------|----|-----------|
| In kankut in ... ..                       | 23 | „         |
| And by a rate on the ploughs in ... ..    | 28 | „         |
| While the rent is taken in kind in ... .. | 1  | village.  |
| Total, ... ..                             | 94 | villages. |

Assessment.

9. The money rates are thus levied:—In December amins are appointed to fixed numbers of villages to prepare the khasra. This is done by taking the khasra of the previous year, and, with the headman of the village, he records without measurement where the holder of the field is the same, also its size. It may be asked, why is not this done by the patwari? The reason is that the patwari could not get through all the villages of his circle and prepare the rent-roll and tahrij in time to enable the tahsildar to commence his collections. As soon as the amin has finished his khasra, he hands it over to the patwari, who proves with the roll. The examination is the more necessary, as in villages where haldi is cultivated the money rates are higher than on what are termed the nijkari crops. Thus the amin's duty is to test owner, size of field, and produce.

Kankut.

10. In kankut an appraiser and a writer are appointed to a certain number of villages, and sanction is asked for by the tahsildar from me. The general rule is, not to appoint the same men to the same villages for two successive crops, but to move them about so as to prevent collusion. They are not to commence work too early in the morning, because then a field, to the eye of an appraiser, presents a very full ear, and misleads. The appraiser generally rides a small pony, and delivers himself of speeches declarative of the great responsibility attached to him. If he fixes his assessment too high, he brings down upon his head the wrath of the owner of the field; if too low, some one bearing the cultivator a grudge brings it to the notice of the headman or the tahsildar, who inspects. I have often gone out with these parties, and the scene is full of interest. If the day is hot the appraiser's head is generally covered with folds of cloth, and he is frequent in his calls for water. Should the villager not bring water properly cooled, the appraiser is accustomed to show the result of such treatment in his assessment. As a rule he is liberally treated, and his assessments are soon tested. Complaints, when made, come up to peshkars and tahsildars, who examine the fields, and when a decision is not arrived at it is reported to me, and I generally order the field to be cut and produce weighed. When my order reaches the cultivator in most cases he refuses, as he knows it will probably end in his having to pay more. The return as prepared by the writer is in a book containing a duplicate. As many as are prepared are duly signed by the writer and appraiser, when he can write, and then are sent each on to the tahsil. Here the peshkar looks at them, signs them, retaining one in his own possession and sending one to me. These again come under my signature, and are kept as a check on the rent-rolls when received.

Procedure in assessment.

Record of assessment.

Harvest prices how determined.

As soon as the assessment is finished, the cotton, sugar, and maize are measured, as these always pay money rents, and the patwaris then commence to abstract the kankut papers, for preparation of rent-rolls.

11. As I pass through each pargana the prices of the harvest are fixed. This is generally done by electing three or more of the leading men of the pargana, and giving them the records of sales which have taken place at the nearest fairs. This being done the patwari gets his rolls ready by calculating the value in money of the amount of grain recorded in his abstract as the "hakksarkar," at the price current fixed.

In comparison with a money rent there is no doubt as to the advantage of the latter over kankut; but the manner of taking rent must differ with the character of the crops, the climate, and the cultivators; and where the latter are poor, the climate bad, and the crop rice, there is great advantage in kankut.

Advantage of kankut.

12. Where rent is taken by a fixed rate on ploughs, the record is very simple. A numbering of ploughs is made once a year, and multiplied by the rate. This is confined to Boksas, on the borders of the forest. They pay Rs. 11 and Rs. 11-8-0 per plough, and no one interferes in their cultivation. It has gone on for some years, and is well enough when the crops are good; but where rice is bad, or cattle die, the fixed rate often lead them into the hands of the money-lender, who charges very high interest. This leads them into Court every now and then for clearance of accounts. I believe that in many of these villages they will gradually change to paying a money rent on each field.

Rate on ploughs.

13. One village is held batai, or where rent is taken in kind. It is useful in providing seed for new comers, which they can purchase at or take away from the grain store at a fair rate, and no exorbitant rate of interest is charged. If possible, I visit the village the day the batai is going on. Each cultivator's heap being separately placed, and the patwari being present, weighing commences, and they are too apt to mix up the produce of the fields so that a correct entry of each becomes difficult. The village servants are careful to be present, as well as those having claims against the cultivators. It would take too long here to describe the threshing-floor of a village on batai days. The weighing often extends over many days, and it is on such occasions that the interior of the village life is seen, and opportunity occurs of becoming acquainted with the character of the cultivator, the amount of his crop, &c., and drawbacks to the advancement of the village become apparent.

Rent in kind.

14. In Bazpur, the increase over last year in rents amounts to nearly Rs. 2,400. This may be generally stated to occur in the twenty-three villages in which kanhut rents prevail. The prices fixed on the crops were as follows:—

*For year of report.—Kharif.*

|                      |     |     |     |                     |
|----------------------|-----|-----|-----|---------------------|
| 1st class rices, ... | ... | ... | ... | 17 seers per rupee. |
| 2nd " " ...          | ... | ... | ... | 21 " "              |
| 3rd " " ...          | ... | ... | ... | 24 " "              |
| Rabi—Wheat,          | ... | ... | ... | 15 " "              |
| Barley,              | ... | ... | ... | 22 " "              |
| Gram,                | ... | ... | ... | 16 " "              |

*For last year.—Kharif.*

|                      |     |     |     |                     |
|----------------------|-----|-----|-----|---------------------|
| 1st class rices, ... | ... | ... | ... | 20 seers per rupee. |
| 2nd " " ...          | ... | ... | ... | 26 " "              |
| 3rd " " ...          | ... | ... | ... | 30 " "              |
| Rabi—Wheat,          | ... | ... | ... | 17 " "              |
| Barley,              | ... | ... | ... | 28 " "              |
| Gram,                | ... | ... | ... | 20 " "              |

15. As regards the other items of income in this pargana, they have been generally explained in the remarks made on other statements. The falling off in forest dues has been explained, as also under excise. The item "miscellaneous" consists of the sums paid in from the Pound Fund.

Other income in Bazpur

16. I should not omit to mention that all villages were visited. In the north of the pargana the spring crop in many of them suffered from hail. In these I made a reduction of rent from Rs. 11 to Rs. 10 and 8 per plough. This was done after an inspection of the damage done by the hailstorm in March. The only villages injured were the halbandi villages.

17. This pargana contains an area of seventy square miles. There is a large area under forest. That not covered with forest is divided into forty-six village sites. Of these forty-one have a population of 15,881. Like Bazpur, the villages bordering on the forest are inhabited by Boksas, and these are succeeded by the Banjaras, then come on the southern and more healthy sites the Muhammadans and Hindus. Of these forty-one villages, three, namely, Kunhatta, Kukhera, and Rajpura, are settled with thikadars or zemindars, and thirty-eight are under direct management. The rents are taken :—

|                               |     |     |              |
|-------------------------------|-----|-----|--------------|
| In cash in                    | ... | ... | 6 villages.  |
| By kankut, in                 | ... | ... | 19 "         |
| and halbandi, or plough-rate, | ... | ... | 13 "         |
|                               |     |     | —            |
|                               |     |     | 38 villages. |

The increase in the rents occurs in those held under kankut and halbandi (plough-rate). It is Rs. 1,400. The rates fixed in kankut as compared with last year, are thus seen—

| <i>Year under report.</i> |    | <i>Kharif.</i>   |     | <i>Last year.</i> |
|---------------------------|----|------------------|-----|-------------------|
| 1st class rices, ...      | 18 | seers per rupee, | ... | 21                |
| 2nd „ „ ...               | 22 | „ „              | ... | 28                |
| 3rd „ „ ...               | 28 | „ „              | ... | 36                |

*Rabi.*

|         |     |    |                  |     |    |
|---------|-----|----|------------------|-----|----|
| Wheat,  | ... | 16 | seers per rupee, | ... | 18 |
| Barley, | ... | 24 | " "              | ... | 28 |
| Gram,   | ... | 19 | " "              | ... | 20 |

The rates in this pargana are, as a rule, cheaper than in Bazpur by about one to two seers. Bazpur commands the Kashipur and Dharyal bazars, and is in closer communication with the hills. Gadarpur is, on the Rampur side, locked up; no roads, and the streams in Rampur in many places having a spongy bottom, the traders are obliged to make considerable detours.

In the villages held by the thikadars or zemindars, rents are taken in kind. The money rates in villages remained the same as last year. The rents have all been collected in this pargana during the year.

18. Amongst the other items of the pargana I see no one which calls for special remark. The receipts from the bazars are small; they will increase this year. The good timber has been removed from the forest, and the income is now little.

19. This pargana contains an area of 152 square miles, a population of 23,912;

| <i>No.</i> | <i>Village.</i> |          | <i>Thikadars.</i> |          |
|------------|-----------------|----------|-------------------|----------|
| 110        | ...             | Ajitpur, | ...               | Thakurs. |
| 111        | ...             | Unjamni  | No. 1 Patti,      | ...      |
| 112        | ...             | "        | " 2 "             | ...      |
| 113        | ...             | "        | " 3 "             | ...      |
| 114        | ...             | Baheri,  | ...               | Thakur.  |
| 115        | ...             | Rampura, | ...               | Maulvi.  |
| 116        | ...             | Bhagu,   | ...               | Brahman. |
| 119        | ...             | Darao,   | ...               | Pathans. |

a very large forest area, and 126 villages. Of these eight are settled with thikadars or zemindars as per margin.

Thirty-three villages are waste, and eighty-five are under direct management, of these last—

|    |                  |
|----|------------------|
| 51 | Pay cash rents.  |
| 28 | „ kanhut.        |
| 4  | „ halbandi, and  |
| 2  | „ rents in kind. |

The rents show an increase of Rs. 5,900. Of this, about Rs. 1,500 is due to a raising of the rents in villages paying cash, and the balance to increased area of cultivation in villages paying money rates, and to increase of prices in kanhut villages. The rise in rents varies from 3 to 6 annas per acre. The prices of produce are thus seen :—

| <i>Last year.</i> |     | <i>Kharif.</i>      |     | <i>Year of report.</i> |
|-------------------|-----|---------------------|-----|------------------------|
| 1st class rices,  | ... | 24 seers per rupee, | ... | 19                     |
| 2nd „             | ... | 32 „ „              | ... | 24                     |
| 3rd „             | ... | 40 „ „              | ... | 30                     |
| <i>Rabi.</i>      |     |                     |     |                        |
| Wheat,            | ... | 18                  | ... | 18                     |
| Barley,           | ... | 30                  | ... | 24                     |
| Gram,             | ... | 20                  | ... | 18                     |

20. Rudarpur prospers most in seasons like the one it has passed through—the rainfall slight and irrigation in plenty. It contains the most unhealthy parts of the Tarai, and the villages lying waste are taken up by Banjaras and others grazing herds of cattle. Traders come also to purchase from the villages, and remain camped for some time. It is over the area of these 33 waste villages, that what are left of tigers, deer, and pigs are found, and, with the exception of the latter, these are gradually creeping away into the forests. I do not anticipate that these waste villages will come under cultivation for many years. The climate is one which can only be endured by a Tharu or a Boksa, and these tribes must increase and multiply largely in order to cultivate them, when they do, the villages doubtless may be cultivated; till then they afford good grazing ground for cattle, and the income from pasturage is sufficiently remunerative for the present.

The climate of Rudarpur.

21. This pargana contains an area of 131 square miles. Of this area it may be said that two-thirds are forest; the other third is divided off into 51 village sites, of which three are waste, and the remaining 48 are under direct management, having a population of 14,874. All these villages, save one, pay money rates, the highest being Rs. 2-4-0 per acre, and the lowest 12 annas. In one village the rents are taken in kind. The increase in rents is Rs. 5,017, of this Rs. 3,000 may be placed as due to the rents being raised, the remainder, to increase of area under cultivation.

Kilpuri.

22. The Bahgul cum Sukhi stream ousted a number of the tenants last year by overlaying their fields. During the year under report there were no floods of this nature, and the tenants kept possession. Colonel Brownlow inspected the stream, and under the orders of Government I accompanied him. His report has been submitted; and he determined to leave the stream alone. I believe many zemindars in the Bareilly District got remissions in consequence of the Sukhi floods. In the Tarai, as reported by me last year, the area submerged was given by me free of rent to the cultivators.

23. In Nanakmata there are 57 villages, scattered over an area of 80 square miles, including forest. Of these, three are under direct management, as marginally noted; twelve are with farmers, principally Kurmis and Pathans; and the others are on a sort of pattidari tenure with the Tharu community. There are four sudder malguzars appointed by the pattidars. They collect the revenue, and after deducting 7½ per cent. pay the balance into the tahsil. The population of Nanakmata numbers 14,256.

Nanakmata.

24. In the three villages under direct management, I take the rent in kind. It be will seen that my collections were less than the revenue demand by Rs. 337-1-9;

Seed advances and repayments in kind.

the reason being that the grain had not been sold from the stores. I advanced the grain to villages in Bilhari requiring assistance, and when the advance is collected, grain will be sold. The tenants prefer paying back in kind, and the agreement is that they carry to store as much as they took away. In the district I have six villages paying rent in kind, and I find them excessively useful in times when seed cannot be procured in consequence of drought or floods destroying crops. By giving out in kind, and taking payment in kind, a great deal of account and confusion is avoided. Thus supposing that by patwari's accounts and tahsildar's reports I have 1,000 maunds in store, I give in seed and food 500, and dispose by sale of 500. The next harvest sees my 500 which was advanced, carted back to the store. Had I after distribution converted my 500 into money at any rate, I should have had an immense account of rupees, annas and pie, whereas the grain is taken in 5 and 10, or in a lump of 40 or 50 maunds, on the security of one well-to-do cultivator. I should state that the balance less than revenue demand in these three villages, was paid from profits in other estates. The Tharus and other farmers paid in their revenue with ease, I noticed amongst the Tharus that at the request of their own zemindars, in this pargana, they consented to pay rents in kind on the kharif. They had always before paid in cash on the kharif. The arrangement considering the crop and light rains suited both parties.

25. Bilhari occupies an area of 189½ square miles, of which upwards of 100

|             |   |         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|---|---------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| * Mahampur. | } | Pathan, | Non-resident. | are forest. The remainder is mapped out into 103 villages. Of these 19 are waste and 84 cultivated. Five* of these are settled with farmers; of these two reside; the others never come near the villages. I invariably send for them when I visit the pargana, and make them, if they cannot come send me an agent to report the state of the villages, one is entirely waste, and this agent appears always much amused at the sameness of his annual story. |
| Bhorria.    |   | Teli,   | Do.           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Kalelsanda. |   | Tharu,  | Resident.     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Partabpur.  |   | Teli,   | Non-resident. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Biria.      |   | Tharu,  | Resident.     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

The other 79 villages are occupied, 70 by Tharus and nine by Kisans and Lodhas. The whole community numbers 22,350.

26. There was a decrease in rents of Rs. 1,500 entirely due to scarcity of rainfall. There is little irrigation, and when rain is scarce, although crops are fair, yet under the peculiarity of the rent-roll, rents fall. I have often explained this roll, and have at times thought to change it, but the people are opposed. Last year I found the advantage of the roll: where crops were scarce, it provided at once for such scarcity, and the fields having a small outturn came under the heading which pays only one-half rent, and those which had no outturn were free from the burden of rent. The rent-roll requires pains and care in working it. If carelessly worked at the time of assessment, there is loss to the receiver of rents; but if looked after, cultivator and rent taker are satisfied. Had there been a fixed rent-roll to collect last year; I mean a fixed money rate, without reference to the produce of fields, numbers of tenants would have gone across the Sardha into Nipal. As it was, in some villages I induced cultivators who had bumper crops to assist their poorer neighbours. They immediately did so, and took their money or grain in the spring crop.

27. The cultivation of the lower villages is principally that of immigrants, and is going on satisfactorily. There has been less sickness than in the west, and crops, although not so heavy, have been good. The rabi was very fair in the new villages, especially gram.

28. The falling off in the forest revenue of Bilheri is remarkable; but I am sure it is the right thing to preserve what remains. Ten or twenty years hence these woods will produce sufficient for the residents of the pargana, who are now obliged to hunt for what they require in other parts.

29. Thus revenue was Rs 1,81,743-10-3, collected from 648 villages; and after payment of the revenue the surplus rents from 424 villages amounted to Rs. 83,387-5-1.

30. The following comparative statement shows the entire expenditure of the district for the past three years, viz:—

*Comparative Statement of Expenditure.*

| No. | Detail.                                                              | 1279 Fasli.   | 1280 Fasli.  | 1281 Fasli.   |
|-----|----------------------------------------------------------------------|---------------|--------------|---------------|
|     |                                                                      | Rs. a. p.     | Rs. a. p.    | Rs. a. p.     |
| 1   | Government land revenue and cesses, ...                              | 1,68,246 3 0  | 1,82,690 2 0 | 1,81,743 10 3 |
| 2   | Excise, ...                                                          | 13,620 0 0    | 17,466 10 8  | 15,710 5 6    |
| 3   | Drugs, ...                                                           | 2,544 0 0     | 3,570 0 0    | 3,157 0 0     |
| 4   | Income Tax, ...                                                      | 3,288 15 2    | 92 3 6       | ...           |
| 5   | Registration, ...                                                    | 216 8 0       | 327 6 0      | 314 10 0      |
| 6   | Fines, ...                                                           | 645 9 9       | 480 8 0      | 771 3 3       |
| 7   | Takavi, ...                                                          | 28,236 0 0    | 31,643 1 3   | 32,856 1 9    |
| 8   | Thatching, ...                                                       | 725 2 3       | 120 6 4      | 118 6 2       |
| 9   | Water-courses, ...                                                   | 20,986 11 5   | 16,435 3 0   | 14,053 11 2   |
| 10  | Huts, ...                                                            | 7,563 11 8    | 3,944 8 0    | 5,822 8 9     |
| 11  | Elephants, ...                                                       | 6,905 4 4     | 4,809 11 6   | 4,485 1 5     |
| 12  | Pay of amins, assessors, and patwaris, and repairs to buildings, ... | 13,498 15 3   | 14,790 4 10  | 10,336 12 6   |
| 13  | Wells, ...                                                           | 894 11 8      | 554 7 4      | 1,137 7 1     |
| 14  | Dues of headmen, ...                                                 | 13,865 7 6    | 8,299 0 6    | 17,711 10 9   |
| 15  | Dues of patwaris, ...                                                | 1,526 15 2    | 1,455 6 1    | 948 11 9      |
| 16  | Miscellaneous refunds, ...                                           | 2,136 11 11   | 3,202 7 4    | 2,225 7 6     |
| 17  | Forest and cattle pasturage establishment, ...                       | 4,317 0 7     | 3,208 4 6    | 3,195 13 4    |
| 18  | Water-rates, ...                                                     | 895 15 5      | 2,934 4 3    | 4,253 10 7    |
| 19  | Pay of medical establishment and cost of medicines, ...              | 4,275 5 4     | 1,470 7 4    | 1,155 6 2     |
| 20  | Pension of native doctor's widow, ...                                | 60 0 0        | 60 0 0       | 50 0 0        |
| 21  | Amount transferred to surplus fund account, ...                      | 80,330 10 0   | 51,103 1 1   | 44,460 11 4   |
|     | Total, ...                                                           | 3,74,714 14 5 | 3,48,657 8 1 | 3,44,508 5 3  |

It may be divided as formerly into three heads:—(a)—Those monies which are paid into the treasury as collected thus—

|                                     | Rs. a. p.     |
|-------------------------------------|---------------|
| Land revenue demand and cesses, ... | 1,81,743 10 3 |
| Excise, ...                         | 15,710 5 6    |
| Drugs, ...                          | 3,157 0 0     |
| Registration, ...                   | 314 10 0      |
| Fines, ...                          | 771 3 3       |
| Total (a), ...                      | 2,01,696 13 0 |

(b)—The expenditure incurred on direct management, viz:—

|                                                         | Rs. a. p.   | Rs. a. p.    |
|---------------------------------------------------------|-------------|--------------|
| Advances or takavi, ...                                 | 32,856 1 9  |              |
| Ditto thatching, ...                                    | 118 6 2     |              |
| Repairs to water-courses, ...                           | 14,053 11 2 |              |
| Huts, ...                                               | 5,822 8 9   |              |
| Feed of elephants, ...                                  | 4,485 1 5   |              |
| Pay of amins, assessors and patwaris, ...               | 10,336 12 6 |              |
| Repair of wells, ...                                    | 1,137 7 1   |              |
| Dues of headmen, ...                                    | 17,711 10 9 |              |
| Dues of patwaris, ...                                   | 948 11 9    |              |
| Miscellaneous refunds, ...                              | 2,225 7 6   |              |
| Forest and pasturage establishment, ...                 | 3,195 13 4  |              |
| Water-rent, ...                                         | 4,253 10 7  |              |
| Pay of medical establishment and cost of medicines, ... | 1,155 6 1   |              |
| Pension of native doctor's widow, ...                   | 50 0 0      |              |
|                                                         |             | 98,350 12 11 |

(c)—Amount credited to the surplus collections fund for improvements, ...

|                  |              |
|------------------|--------------|
|                  | 44,460 11 4  |
| GRAND TOTAL, ... | 3,44,508 5 3 |



The first of these, *viz.*, the money which has been paid into the treasury, has already been remarked on, and I proceed to notice the difference in the sums spent on the direct management.

#### Advances.

31. There is an excess under takavi of nearly Rs. 1,200. This is due to the character of the season, where the rice crop was light, advances were made to secure the spring crop. I have repeatedly explained how such advances are made. They are made on the security of the headmen, at the time which is known as *Beas ka jot*; or in other words, at the ploughing up of the rice land in February. A cultivator who, in February, March, well ploughs up his rice land and prepares it, say, six acres of land, and turns it up for the sun of March, April and May, repeating the ploughing now and then, does not, as a rule, think of moving; and for this ploughing advances are made, having as their object the replacing of cattle that may have died or strayed. The headman brings to the tahsil his cultivators for whom advances are necessary, and after the list has been prepared the tahsildar solicits sanction. On its reaching my office this list is compared with the advance register, and in event of there being no balance against the village, and the sum asked for not being excessive, an order for disbursement is issued. The tahsildar sends for the headman and cultivators, and distributes. Should there be any marriage coming off, payment is, at times delayed, as the cultivator is inclined to spend on this festival what he ought to spend on plough cattle. Some 15 or 20 days after advances are made, the tahsildar or peshkar visits the village lands, and enquires into the state of the *Beas ka jot*, and where any cultivator has not taken the necessary steps to prepare his lands he is called upon to explain how he proposes repayment. When looked after these advances are seldom lost. Security is good, and the cultivators as a rule feel the necessity of repayment. The advances are made in sums varying from Rs. 7 to Rs. 12.

#### Precautions for repayment of advances.

#### Thatching.

32. A small sum appears under "thatching." On a new arrival determining to settle, a hut is built for him, and one for his cattle. He has to thatch these, and sometimes advances are made to enable him to purchase bamboos and grass.

#### Feed of elephants.

33. The expenditure on feed of elephants is lower than last year's charge, the reason being that in December last a male elephant belonging to the management died. The animal was in fine condition when he suddenly fell sick and died after an illness of three days. I reported the circumstance in my No. 8, dated 8th January, 1874, Major Jones purchased the elephant in 1852 for Rs. 600 as a young one, and when with me he was valued at from Rs. 3,000 to Rs. 4,000. His age was about 40. The illness appeared to his keeper to be unknown, or at any rate he was helpless in treating it.

#### Pay of amins and patwaris.

34. Under the head of "pay of amins and patwaris" there is a saving, as compared with last year of Rs. 4,454. I reported last year that the salaries of patwaris paid in that year had included their pay for the previous year, on account of errors in rent-rolls, for which their pay had been stopped. That disbursement did not affect this year's accounts again; last year's account included the compensation ordered to be paid to Fakr-ud-din of Rafiyarpur in Pilibbit. These sums swelled last year's account. The amount disbursed this year included the following: -

|                                      |           |
|--------------------------------------|-----------|
| Pay of patwaris, ... ..              | Rs. 2,798 |
| „ of village tanaits, ... ..         | „ 312     |
| „ of schoolmasters, ... ..           | „ 726     |
| „ of assessors of crops, ... ..      | „ 640     |
| „ of khasra amins, ... ..            | „ 651     |
| Malikana, kala bangar, ... ..        | „ 300     |
| Pay of vaccinators, ... ..           | „ 239     |
| Watchman on threshing-floors, ... .. | „ 103     |
| Writers' pay in head-office, ... ..  | „ 1,768   |

As regards the charges for crop assessors and khasra amins, I have already explained, under the pargana statement, how these men are employed. The vaccinator's pay is the usual charge; we suffered much from small-pox this year, and I had the returns tested; the result was that they were fairly accurate and proved to the people that vaccination is undoubtedly a safeguard against small-pox. The village tanaitis are necessary checks. They are generally appointed where water is required for irrigation, to work the dams and goals.

35. The charges for wells exceeded those of last year by Rs. 638. A larger number were repaired. Wells.

36. Under this head I explained last year that, by a mistake, the 10 per cent. on the rent-roll due for the year 1280 Fasli had not all been paid during the year. This had to be done in the current year, and is the cause of the large increase. The reason for non-payment was asked for by Government, and explained in my No. 160, dated 31st May, 1874. Dues of headmen.

37. The dues of patwaris are those which are, in the first place, collected from the cultivator and then paid over to the patwaris. Dues of patwaris.

38. The next charge which appears to call for notice is that for water-rent. Water was much wanted in July and August, and a large quantity was taken. The rent-roll of the Canal Officer shewed the result of this increase in an increased charge. It was partly having to meet this large bill for water-rent that made me raise my rents in some villages. I should explain that in the villages under direct management, land and water-rents are collected in one sum, and the cultivator has, as a rule, no objection to pay, provided he gets the water. The canals were well supervised by Captain Parsons and his subordinates. I am here referring to part of the Rudarpur and Kilpuri parganas. In the other parganas the water is under my control. The channels are too small, and as a rule lead into the Rampur Jagir, so that by taking over these, it would not pay the Canal Department for supervision. Water-rent.  
Land and water-rent collected as one.

39. I have omitted to notice two large items of expenditure; one, Rs. 14,053 for water-courses, the other, Rs. 5,822 for huts. The former are the charges for silt clearances in Bazpur, Gadarpur, Rudarpur and Kilpuri. The expenditure on these was less than that of last year. This sum also includes the clearing of drainage lines excavated to reclaim lands years ago. The money was spent on estimates submitted by peshkars, and signed by the tahsildar; the rate being one anna and a half per 100 cubic feet for silt clearance. The Canal Officer does not clear the village water-courses; he only keeps his main line in order. The repairs of the village channels are executed under my orders. Each village is responsible for the clearance of the channels within its boundary, and the headman is responsible if the charges made for the work are found excessive. Clearing water-courses.

40. The charge under "huts" is higher than that of last year by nearly Rs. 2,000. A greater number of immigrants came to the district, necessitating this. Every plough requires two huts. These are constructed for Rs. 2-8-0, Rs. 3-8-0, and as high as Rs. 4 each. The rate differs as the distance of water. If water is close the labor is less. In two or three cases I entirely removed villages. The people were suffering from sickness and wished to move; they paying for one hut each, and Government for the other. Improvement in the village sanitation will follow, and the old sites will yield beautiful crops. Huts.

41. No other disbursement calls for special remark. The total expenditure is Rs. 98,350 as compared with Rs. 92,800 in last year, and the extra charge for dues of headmen paid in the year of report but chargeable last year, makes the real difference. It is at times a little difficult to control these charges. I find my native officials sometimes enter into the spirit of improving the villages with great energy, when they are eager to improve drainage, rebuild houses, and clear wells; and they are forgetful at times that there is a limit to expenditure. I have succeeded in drawing up for each pargana a budget of actuals for three years, from their own books; Total charges.

Measures for controlling expenditure by subordinates.

and, having taken an average of the expenditure under each head, I give for each pargana a grant, thus—

*Takavi.*

|           |     |     |     |           |
|-----------|-----|-----|-----|-----------|
| Bazpur,   | ... | ... | ... | Rs. 9,000 |
| Gadarpur, | ... | ... | ... | " 4,000   |
| Rudarpur, | ... | ... | ... | " 9,000   |
| Kilpuri,  | ... | ... | ... | " 4,000   |

*Huts*—in the same way.

The revenue accountant of my office, at the close of the month, reports what has been spent under each grant, and the tahsildar is informed that so much of the grant has been expended. He enters this in a statement which is hung up in his office, and is inspected by me when on tour. The great point is that the tahsildar and muharrirs shall understand exactly how our account system with the treasury works, and they then can look a little further than their own office.

The whole of this expenditure, all of which has been incurred on direct management, is within the powers given to the Superintendent of the Tarai District under notification No. 2664, dated 10th October, 1861.

Financial results, 1181  
Fasli, 1873-74.

42. I have, in the foregoing remarks, explained the facts connected with the revenue and expenditure of the district. It may be summarised thus: The Government land revenue, with the exception of a small balance, the excise, drugs, registration and fines, have been collected and paid into the treasury, amounting to Rs. 2,01,696-13-0. The surplus rents, sayer receipts, together with refunds of loans made, viz., Rs. 1,42,811-8-3, have combined to pay the management charges, Rs. 98,350-12-11, and provide Rs. 44,460-11-4 for works of improvement.

Statements.

43. The statements which accompany this report are as follows:—

- No. 1. Dr. and Cr. account of the district.
- No. 2. Demands collections and balances of revenue and rent for year of report.
- No. 3. Demands collections and balances of rents for previous years.
- No. 4. Demands collections and balances on account of takavi.
- No. 5. Ditto ditto on account of thatching.
- No. 1. has been fully explained in this report.

II.—Revenue and rent.

44. On the rent demand for the year there are balances in pargana Bazpur Rs. 81-5-0, pargana Kilpuri, Rs. 16-8-9. The former has been collected since the close of the year. That it was so late in collection is due to village quarrels. The headman of the village, Jangir Khan, got into quarrels with the tenant's Banjaras, and they would not attend to him. The latter will, I trust, be collected shortly.

The revenue balance in Kashipur, I have already explained. The balance on excise demand, viz., Rs. 295-2-9 has been collected since the close of the year, so that the only real balance in the district is on rent Rs. 16-8-9; and on revenue Rs. 946-7-9.

III.—Rents of previous years

45. The rent balances for previous years were, at the close of the last year, shewn thus:—

|                                   |     | Rs.   | a. | p. |
|-----------------------------------|-----|-------|----|----|
| Rent balances, 1280 Fasli, ...    | ... | 862   | 14 | 0  |
| Land rent for previous years, ... | ... | 172   | 15 | 0  |
| Total, ...                        | ... | 1,035 | 13 | 0  |

Of this Rs. 589-7-9 have been collected.

46. The balances of takavi remaining to be collected were—

IV.—Takavi.

|           |      |        |     |     | Rs.   | a  | p. |
|-----------|------|--------|-----|-----|-------|----|----|
| For       | 1276 | Fasli, | ... | ... | 53    | 0  | 0  |
| "         | 1277 | "      | ... | ... | 91    | 8  | 0  |
| "         | 1278 | "      | ... | ... | 777   | 8  | 0  |
| "         | 1279 | "      | ... | ... | 294   | 0  | 0  |
| "         | 1280 | "      | ... | ... | 6,026 | 12 | 0  |
| Total,... |      |        |     |     | 7,242 | 12 | 0  |

These are higher than last year, and exist in villages where I found it advisable to stay collecting till another rice crop.

47. The balances of advances for thatching are as follows:—

V.—Thatching.

|           |        |     |     |     | Rs. | a | p. |
|-----------|--------|-----|-----|-----|-----|---|----|
| 1278      | Fasli, | ... | ... | ... | 110 | 1 | 0  |
| 1279      | "      | ... | ... | ... | 56  | 0 | 1  |
| 1280      | "      | ... | ... | ... | 3   | 6 | 0  |
| Total,... |        |     |     |     | 169 | 7 | 1  |

These have been largely reduced, and I trust will all come in next rice crop.

48. There thus remain balances of loans—

Total outstandings.

|                                                      |     |     |     |     | Rs.    | a  | p. |
|------------------------------------------------------|-----|-----|-----|-----|--------|----|----|
| Takavi,                                              | ... | ... | ... | ... | 7,242  | 12 | 0  |
| Thatching,                                           | ... | ... | ... | ... | 169    | 7  | 1  |
|                                                      |     |     |     |     | 7,412  | 3  | 1  |
| To this add rent balances,                           | ... | ... | ... | ... | 446    | 5  | 3  |
| Add loans made in year of report, payable next year, | ... | ... | ... | ... | 31,989 | 1  | 9  |
| Total,...                                            |     |     |     |     | 39,847 | 10 | 1  |

Or a total outstanding recoverable of Rs. 40,000 which I consider easy of collection.

49. The year's transactions are thus arranged, in accordance with Government Order No. 480, dated 13th April, 1874:—

#### I.—RENTS AND DUES.

| 1280 Fasli. | Detail.                   | 1281 Fasli.   |
|-------------|---------------------------|---------------|
| Rs.         |                           | Rs. a. p.     |
| 2,59,232    | Land rents and revenue,   | 2,70,130 15 4 |
| 1,749       | Balances of former years, | 589 7 9       |
| 17,089      | Forest dues,              | 7,559 1 0     |
| 6,518       | Pasturage dues,           | 5,941 1 2     |
| 1,853       | Bazar "                   | 2,239 5 2     |
| 3,922       | Miscellaneous,            | 3,515 7 6     |
| 2,90,363    | Total,...                 | 2,89,975 5 11 |

#### II.—COLLECTED ON BEHALF OF GOVERNMENT.

| Rs.    |               | Rs. a. p.  |
|--------|---------------|------------|
| 17,467 | Abkari, ...   | 15,710 5 6 |
| 3,570  | Drugs, ...    | 3,162 0 0  |
| 92     | Income tax,   | .....      |
| 327    | Registration, | 314 10 0   |
| 481    | Fines, ...    | 766 3 3    |
| 21,937 | Total,...     | 19,953 2 9 |

## TARAI DISTRICT.

## III.—FLOATING DEPOSIT ACCOUNT.

| Rs.            |                            |     | Rs.            | a. | p. |
|----------------|----------------------------|-----|----------------|----|----|
| 30,496         | Takavi advances recovered, | ... | 27,530         | 15 | 5  |
| 672            | Ditto thatching,           | ... | 478            | 8  | 7  |
| 3,613          | Recredits,                 | ... | 6,570          | 4  | 7  |
| 1,576          | Seed advances,             | ... | .....          |    |    |
| <hr/> 36,357   | Total,                     | ... | <hr/> 34,579   | 12 | 7  |
| <hr/> 3,48,057 | GRAND TOTAL,               | ... | <hr/> 3,44,508 | 5  | 3  |

## I.—RENTS AND DUES.

| 1280 Fasli.    | Detail.           |     | 1281 Fasli.    |    |    |
|----------------|-------------------|-----|----------------|----|----|
| Rs.            |                   |     | Rs.            | a. | p. |
| 1,82,690       | Land revenue,     | ... | 1,81,743       | 10 | 3  |
| 2,934          | Water-rents,      | ... | 4,253          | 10 | 7  |
| 8,299          | Dues to Padhans,  | ... | 17,711         | 10 | 9  |
| 1,456          | Dues to patwaris, | ... | 948            | 11 | 9  |
| <hr/> 1,95,379 | Total,            | ... | <hr/> 2,04,657 | 11 | 4  |

## II.—PAID TO GOVERNMENT AS COLLECTED.

| Rs.          |               |     | Rs.          | a. | p. |
|--------------|---------------|-----|--------------|----|----|
| 17,467       | Abkari,       | ... | 15,710       | 5  | 6  |
| 3,570        | Drugs,        | ... | 5,157        | 0  | 0  |
| 92           | Income tax,   | ... | .....        |    |    |
| 327          | Registration, | ... | 314          | 10 | 0  |
| 481          | Fines,        | ... | 771          | 3  | 3  |
| <hr/> 21,937 | Total,        | ... | <hr/> 19,953 | 2  | 9  |

## III.—FLOATING DEPOSIT ACCOUNT.

| Rs.            |                                       |     | Rs.            | a. | p. |
|----------------|---------------------------------------|-----|----------------|----|----|
| 31,643         | Takavi advances,                      | ... | 32,856         | 1  | 9  |
| 121            | Ditto thatching,                      | ... | 118            | 6  | 2  |
| 3,203          | Recredits,                            | ... | 2,225          | 7  | 6  |
| <hr/> 34,967   | Total,                                | ... | <hr/> 54,199   | 15 | 5  |
| <hr/> 2,52,283 | GRAND TOTAL,                          |     | <hr/> 2,59,810 | 13 | 6  |
| Rs.            |                                       |     | Rs.            | a. | p. |
| 96,374         | Deducted from gross receipts, leaves, | ... | 35,697         | 7  | 9  |

Against these balances are to be charged the expenses of direct management.  
These are—

| 1280 Fasli.  | Detail.               |     | 1281 Fasli.  |    |    |
|--------------|-----------------------|-----|--------------|----|----|
| Rs.          |                       |     | Rs.          | a. | p. |
| 14,790       | Establishments,       | ... | 10,336       | 12 | 6  |
| 4,810        | Elephants,            | ... | 4,485        | 1  | 5  |
| 3,208        | Forest establishment, | ... | 3,195        | 13 | 4  |
| 1,470        | Dispensaries,         | ... | 1,155        | 6  | 2  |
| <hr/> 24,278 | Total,                | ... | <hr/> 19,173 | 1  | 5  |

## REPAIRS.

| Rs.    |                                         |                  | Rs.    | a. | p. |
|--------|-----------------------------------------|------------------|--------|----|----|
| 16,435 | Water courses,                          | ...              | 14,053 | 11 | 2  |
| 554    | Wells,                                  | ...              | 1,137  | 7  | 1  |
| 3,944  | Hutting,                                | ...              | 5,822  | 8  | 9  |
| ...    | Buildings,                              | ...              | ...    |    |    |
| 20,933 |                                         | Total, ...       | 21,013 | 11 | 0  |
| 60     | Pension to Native Doctor's widow,       |                  | 50     | 0  | 0  |
| 45,273 |                                         | GRAND TOTAL, ... | 40,236 | 12 | 5  |
| Rs.    |                                         |                  | Rs.    | a. | p. |
| 51,101 | Which, deducted from foregoing balance, |                  |        |    |    |
|        | leaves for improvements,                | ...              | 44,460 | 11 | 4  |

50. The year of report was a favorable one for immigration, as the figures of Ploughs. the following statement of ploughs prove:—

| Years.    | Bazpur. | Gadarpur. | Rudarpur. | Kilpuri. | Bilhari. | Total. |
|-----------|---------|-----------|-----------|----------|----------|--------|
|           | Rs.     | Rs.       | Rs.       | Rs.      | Rs.      | Rs.    |
| 1279, ... | 3,408   | 1,932     | 3,215     | 2,452    | 2,778    | 13,775 |
| 1280, ... | 3,461   | 1,899     | 3,421     | 2,387    | 2,780    | 13,952 |
| 1281, ... | 3,539   | 2,144     | 3,798     | 2,493    | 3,031    | 14,996 |

When the ploughs were numbered last year they stood in the district at 13,952. The numbering this year gives 14,996, showing an increase of 1,044. This migration is thus seen. Taking the tract from east to west—

|                        |     |     |                        |
|------------------------|-----|-----|------------------------|
| From Pargana Puranpur, | ... | 2   | came none left for it. |
| „ Ditto Pilibhit,      | ... | 126 | ditto 4 ditto.         |
| „ Ditto Jehanabad,     | ... | 103 | ditto 9 ditto.         |
| „ Ditto Ritcha,        | ... | 28  | ditto 3 ditto.         |
| „ Ditto Chaumehla,     | ... | 93  | ditto 17 ditto.        |
| „ Ditto Nawabganj,     | ... | 4   | ditto 2 ditto.         |
| „ the Rampur Jagir,    | ... | 265 | ditto 74 ditto.        |
| „ Moradabad, ...       | ... | 39  | ditto 8 ditto.         |
| „ Bijnor, ...          | ... | 4   | ditto 2 ditto.         |
| „ Kumaun Bhabar,       | ... | 17  | ditto 8 ditto.         |
| „ Nipal and Doti, ...  | ... | 14  | ditto 11 ditto.        |

In addition there were departures, destination unknown, ... ditto 49.

The above shows the flow from and to the district; the following in the district itself:—

|                  |     |      |      |                |                              |
|------------------|-----|------|------|----------------|------------------------------|
| From Bilhari     | ... | None | ...  | 5              | left from the west to north. |
| „ Nanakmata, ... | 16  | ...  | 29   | ditto          | other parganas.              |
| „ Kilpuri, ...   | 69  | ...  | None | ditto          | ditto.                       |
| „ Rudarpur, ...  | 14  | ...  | 33   | ditto          | ditto.                       |
| „ Gadarpur, ...  | 18  | ...  | 51   | ditto          | ditto.                       |
| „ Bazpur, ...    | 48  | ...  | 7    | ditto          | ditto.                       |
| „ Kashipur, ...  | 19  | ...  | 13   | from the west. |                              |

I have a register of the transfers from the villages of one pargana to the villages in the same pargana which is too long to enter here. The general run is that

cultivators in the lower villages in arrears, moved upwards; and the increase by these transfers is 45 all over the district. A cultivator started with his friend, and on the village to which he went, his friend, who had formerly been a laborer, became a cultivator. The increase in the villages themselves resulted in 1,015 ploughs. In other words, plough that came to a stand still have been again started and people who could afford it started ploughs themselves. The above figures stand thus:—

## Summary—Ploughs.

|                                        |     |       |       |
|----------------------------------------|-----|-------|-------|
| New ploughs from outside the district, | ... | 695   |       |
| Deduct number left,                    | ... | 187   |       |
|                                        |     |       | <hr/> |
| Balance,                               | ... | 508   |       |
| <i>Increase.</i>                       |     |       |       |
| Add increase by inter-transfers,       | ... | 46    |       |
| By movements in parganas,              | ... | 45    |       |
| Do. in villages,                       | ... | 1,015 |       |
|                                        |     |       | <hr/> |
|                                        |     |       | 1,614 |
| <i>Deduct.</i>                         |     |       |       |
| Stopped by death of cattle,            | ... | 399   |       |
| Do. by death of owners,                | ... | 179   |       |
|                                        |     |       | <hr/> |
|                                        |     |       | 570   |
|                                        |     |       | <hr/> |
| Balance, Increase,                     | ... | 1,044 |       |

## What the Plough Statement indicates.

These details may appear confused, but it is a little puzzling to record the migration so that deaths and transfers shall all take their place. The returns record what came under my notice, a movement from some of the unirrigated tracts in Bazpur to lands uncultivated, but for which water was available, in Rudarpur and Gadarpur. The same happened in Kilpuri, where a movement took place on the part of those who had suffered from the Bahgul *cum* Sukhi floods, towards Rudarpur. The time when these movements take place is from March to June. Many of the cultivators of northern Rohilkhand, at this time of year, on the slightest provocation, prepare for a flight. Quarrels regarding their women, old debts, and with Tharus and Boksas on idea that an evil spirit haunts the place, and away they go, and prepare for themselves a new abode. On the north of the pargana encroachments on the part of wild animals, sometimes cause an entire village of these forest cultivators to change their abode. An instance of this came under your own notice last year. In the north of Bilhari, village Deyn was thus affected. A tiger came some three or four nights successively and wandered round the village, removing some of the cattle. He finally took to parading in front of the houses. The villagers summoned their *berara* or wise man, who is supposed to exercise evil spirits, and do other odd jobs for a small remuneration in the shape of presents of rice, &c. The *berara* arrived, and ridiculed the idea of their not being able to drive away the tiger, who had perversely taken up his position in some long grass to the south and east of the village. He finally consented to advance on the tiger, converse with him, and induce him to retire. This he did bearing a drum, beating it as he advanced. Unfortunately for the *berara* the tiger did not understand the situation and it ended in the drum being broken, and the *berara* killed. The villagers were under the impression that the *berara* had been swallowed by the tiger, and that the tiger having swallowed their wise man would so increase his power that no one would be safe; in fact that the *berara* in the shape of a tiger would swallow them all up, and they there and then took all their effects off. Ultimately the tiger was killed, for which a special reward was sanctioned by you.

## Causes of migration.

## Instance.

## Rainfall.

51. The rainfall for the year was 29 in Rudarpur, against 43 in the previous year; 28 in Kilpuri, against 73, and 31 in Kashipur, against 59 of last year. Our mortuary returns show the result in the death rate, which was 32.2 per 1,000 for the year. Could we only keep our rainfall like this, we should have easier times in

the Tarai. It was timely though small, and secured the cotton, sugar-cane and maize, while irrigation helped our rice where water was available. Details are given in the following statement:—

*Rainfall—Tarai—1281 Palsi.*

| Station.  | Year.       | June. | July. | August. | Septem-ber. | Octo-ber. | Novem-ber. | Decem-ber. | Jann-ary. | Febru-ary. | March. | April. | May. | Total. |
|-----------|-------------|-------|-------|---------|-------------|-----------|------------|------------|-----------|------------|--------|--------|------|--------|
| Rudarpur, | 1869-70, .. | 5     | 9.2   | 7.0     | 8.5         | 16.7      | ..         | 1.0        | 0.1       | 1.1        | 1.1    | 0.4    | ...  | 45.6   |
| Ditto,    | 1870-71, .. | 4     | 22.2  | 18.5    | 4.8         | ..        | ..         | 0.2        | 8.1       | 1.6        | ...    | 0.4    | 9.8  | 56.0   |
| Ditto,    | 1871-72, .. | 11.7  | 28.4  | 19.7    | 7.2         | ..        | ..         | 1.1        | 8.0       | 0.6        | 1.8    | 0.3    | 0.7  | 74.5   |
| Ditto,    | 1872-73, .. | 1.8   | 18.5  | 12.1    | 10.6        | ..        | ..         | ...        | 0.2       | ...        | 0.1    | ...    | 0.2  | 45.5   |
| Ditto,    | 1873-74, .. | 0.8   | 11.7  | 7.4     | 7.7         | ..        | ..         | ...        | ...       | 1.1        | 1.4    | ...    | ...  | 29.6   |
| Kilpuri,  | 1869-70, .. | 2.3   | 12.5  | 22.6    | 7.8         | 6.6       | ..         | 0.8        | ...       | 0.8        | 1.3    | 0.2    | ...  | 54.4   |
| Ditto,    | 1870-71, .. | 1.1   | 40.7  | 22.5    | 10.7        | ...       | ..         | ...        | 2.4       | 1.5        | ...    | 0.6    | 4.5  | 84.0   |
| Ditto,    | 1871-72, .. | 9.2   | 34.1  | 19.0    | 4.9         | ..        | ..         | 1.7        | 8.4       | ...        | ...    | 1.1    | 1.8  | 75.2   |
| Ditto,    | 1872-73, .. | 6.0   | 20.0  | 23.7    | 21.2        | ..        | ..         | ...        | 0.2       | 0.7        | 0.5    | ...    | 1.0  | 73.8   |
| Ditto,    | 1873-74, .. | 1.0   | 8.9   | 6.2     | 7.4         | ..        | ..         | ...        | ...       | 2.0        | 1.7    | ...    | ...  | 28.2   |
| Kashipur, | 1870-71, .. | 0.6   | 20.1  | 16.4    | 10.0        | ..        | ..         | ...        | 1.3       | 2.0        | ...    | ...    | 2.7  | 53.1   |
| Ditto,    | 1871-72, .. | 23.2  | 24.6  | 19.1    | 7.2         | ..        | ..         | 0.9        | 4.9       | 0.8        | 0.8    | 1.3    | 0.5  | 83.2   |
| Ditto,    | 1872-73, .. | 8.2   | 18.2  | 18.3    | 14.4        | ..        | ..         | 0.1        | 0.3       | 0.1        | 0.2    | ...    | 4.5  | 59.8   |
| Ditto,    | 1873-74, .. | 1.1   | 10.4  | 9.0     | 7.5         | 0.1       | ..         | 0.1        | 0.3       | 1.0        | 1.5    | ...    | ...  | 31.0   |

52. The following statement gives the cultivated area during the past seven years:—

| Pargana.      | BIGHAS. |         |         |         |         |         |         |
|---------------|---------|---------|---------|---------|---------|---------|---------|
|               | 1275.   | 1276.   | 1277.   | 1278.   | 1279.   | 1280.   | 1281.   |
| Bazpur, ...   | 116,493 | 92,873  | 126,205 | 134,061 | 129,225 | 122,939 | 118,915 |
| Gadarpur, ... | 44,597  | 43,277  | 54,276  | 86,629  | 76,891  | 69,308  | 71,184  |
| Rudarpur, ... | 122,087 | 119,439 | 126,203 | 176,725 | 164,344 | 165,999 | 176,397 |
| Kilpuri, ...  | 94,275  | 90,018  | 94,913  | 96,474  | 95,118  | 91,375  | 91,367  |
| Bilhari, ...  | 131,811 | 127,850 | 134,000 | 146,890 | 150,476 | 151,392 | 162,010 |
| Total, ...    | 509,262 | 573,464 | 534,597 | 640,779 | 616,049 | 601,013 | 619,873 |

The increase of cultivated area amounts to 18,860 bighas. We were prepared to see some increase, and the Government order reviewing my report of last year specially mentions the point. In Bazpur there is a decrease. This is due to three causes. In this pargana the water available for irrigation is not so much as in other parganas, and much of the land prepared for rice was not sown again, a number of ploughs left for Gadarpur (Boksas) and the river Kosi is rapidly turning to the east and displacing some of the villages. It has done a great deal of damage, and I have been obliged to allow the cultivators to move elsewhere. In Gadarpur there is an increase; so also in Rudarpur Kilpuri may be said to be almost stationary as regards cultivated area. A large number of ploughs left for Rudarpur, and the land in the northern villages is all taken up. Again, an increase of ploughs in some cases does not affect the cultivated area as soon as one would think. Cultivators are too apt to take up more land than they require, and on the arrival of new comers it is often necessary to give over some of an older cultivator's land to them. This very often gives rise to quarrels which take some time to dispose of. A close inspection of the land is the only way to meet the case. The tenants accept an order which is given after a visit in person to the village lands; and without this a dozen orders will have but little effect; simply because the people cannot believe in a question being understood which is not seen on the spot. The area in Bilheri is increasing and will still increase. When visiting the Tharu villages last year, I found an inclination existed to allow land to lie out, and I pointed out to the headman that rent could not be lost in this way, and they must either consent to pay rent on it, or crop it. They agreed to hold what they call Kutcherry, and summoned the cultivators to their different chaupals; when each house in the village sends a man to the Court. It is always held at night, and when any one who is summoned refuses to go he is fined. On arrival, dressed in blankets and smoking their hukka, they all sit in a ring, when one more bold than the rest will ask.—“Padhan sahib, Sarkar ka kya hukm”? The headman explains the position and the question is fully discussed, with its *pros* and *cons*. In this case it ended

Decrease in Bazpur explained.

A village kutcherry.



in the village land which had been lying out, being all divided out for ploughing operations.

fluence of the Tharu headmen.

53. The Tharu village headmen have great power in their villages. The "*Beas ka jot*" is not commenced without his order. When the time for harvest comes, until the headman has cut a few sheaves, no one will go. It is under his direction that any expedition for wild game originates; in fact, if anything new is to be started in the village, the plan is to ask the headman to hold his court, and introduce it. Few cases come into my court which have not been well discussed at these meetings, and many of my decisions are there overhauled, and when disagreed with seldom appealed but passed over with the remark. "*Main ap se báhar hun*," a polite way a Tharu has of saying one is wrong.

ayer revenue.

54. The sayer revenue still continues to decrease. It stands this year at Rs. 7,559-1-0, against Rs. 17,089 of last year. I have, practically speaking, closed all the forests, and the items composing the sum this year are :—

|                                        | Rs.   |
|----------------------------------------|-------|
| Firewood, ... ..                       | 1,590 |
| ... ..                                 | 322   |
| Honey, ... ..                          | 51    |
| Thatching grass, ... ..                | 332   |
| Barra, ... ..                          | 106   |
| Tat, ... ..                            | 598   |
| ... ..                                 | 48    |
| Sales of grass outside forests, ... .. | 701   |
| Pipal bark, ... ..                     | 271   |
| Dead wood, ... ..                      | 1,052 |

The forests exhausted.

With the exception of this latter one the others are perhaps slightly higher this year than usual. The dry season always brings people who hope to eke out a livelihood by the export of articles like these. It will be seen from my remarks under each pargana what a large area of the district is under forest. Some of these are useless for the growth of any good timber; notably those in Budarpur and Gadarpur. Others can produce decent timber, but they have been worked out and require rest. As they get cleared of the fallen timber, fire will cause less destruction. It requires some patience to protect timber from Tharus, and the best plan I find is to allot different places each season for them. They consume a great deal of forest produce in their dwellings and farmyards, which requires renewal annually, or every second year.

Grazing.

55. The grazing returns show that 56,578 head of cattle were at the grazing stations scattered over the district, from the Nipal boundary to the Kashipur pargana; mostly cattle from the plains, and a few hill buffaloes. Of these 47,951 paid taxes at the following rates: Buffaloes, 6 annas; bullocks and cows, two annas; and sheep six pie. The sheep numbered 1,950, principally ewes. Most of the owners of the herds line in the Moradabad, Rampur and Bareilly districts, and the herdsmen are paid some small remuneration. The cattle are little cared for, get no salt, and when sickness attacks them, die uncared for.

Disposal of work.

56. Mr. Kilvert was Assistant Superintendent till February, when he proceeded on furlough. He was succeeded by Mr. Quin. The criminal work and Civil Justice of the district was made over to those officers as well as the general charge of the Kashipur pargana, including its town and municipality.

Mr. Quin, who succeeded Mr. Kilvert, although new to the district, disposed of his work with quickness and judgment; and although he necessarily vacates shortly on Mr. Kilvert's return, yet I hope he will soon meet with the promotion he deserves.

Settlement.

57. Captain Barron's survey party commenced the survey of pargana Kashipur. The adjustment of boundaries was, with your sanction, made over to this district by the Settlement Officer, and I entrusted the work to Mr. Quin. The cases disputed, in

as far as they could be disposed of, he settled previous to our leaving the district for Naini Tal.

58. For the convenience of the people I held fortnightly courts at Kaladungi from May to October; Mr. Quin and I taking these as business required it. It saved the witnesses, and in some cases stolen cattle, from coming a tedious climb to our kutcheries at Naini Tal. Court held at Kaladungi.

59. The tahsildar of Rudarpur, and peshkars of Kashipur, Kilpuri, Bazpur and Rudarpur, have carried out their duties well during the year. Tahsil officials.

60. The report on the expenditure of monies from this fund is under preparation, and will be submitted shortly. Surplus fund.

61. These officials were all sent for and their work looked into, more especially those connected with the direct management, and in one case a decently prepared shajra has been filed, and cultivators acquired an interest in having the number of their fields entered therein. Many of the Kashipur patwaris are very deficient, but the climate is against good men, and the arrangements of the settlement officer regarding these men are awaited. Patwaris.

62. I met Mr. Currie who was appointed to enquire into the complaints made against the assessments of the Chaumehla, Ratcha, Jahanebad and Pilibhit parganas, and had several conversations with him on the subject, and gave him the information I could regarding the rents taken by me in the Tarai. His report has been submitted to the Board. The alterations proposed by him will not affect the assessments to any extent. Instances, no doubt, occurred where the holders of villages the areas of which are nearly waste, have a difficulty in meeting the revenue demand; but until they look more closely after their affairs, such difficulty must exist; and I believe they have only to manage their villages directly, spending some little time and money on them, to bring them into cultivation. General remarks.

63. The suit filed by the Hearsays for profits of Bilhari, in the Bareilly Courts, and rejected on the point of jurisdiction, was appealed by Captain Hearsey to the High Court. The appeal was rejected and the case lies now on the regular revenue file on this district. Assessments in bordering parganas.

64. I am aware that this report has exceeded its proper length; but where a number of villages are scattered over an unhealthy tract, and are under a system of direct management where so much power is left in my hands, I am anxious to make its every detail as ample and minute as I can, with the object of shewing you that the expenditure on their management, nearly a lakh of rupees, has been properly supervised. Success in direct management depends on the closest supervision coupled with a knowledge of details, and any success I may have achieved during the year is mainly due to the support I have received from you while superintending the details of such management in all its branches. The Hearsay suit.

I have the honour to be,

SIR.

Your most obedient Servant,

J. C. MACDONALD,

The 24th November, 1874.

Superintendent.

This report, why so long.

Success due to the support of the controlling authorities.

## FORM

Cr.

## Statement of Income and Expenditure of the Tarai District for the

|                     |                                                  |     | Rs. a. p.    | Rs. a. p.     |
|---------------------|--------------------------------------------------|-----|--------------|---------------|
| Tahsil Kashipur,    | By Land Revenue 1281, ...                        | ... | 1,04,441 8 3 |               |
|                     | " Local cesses 10 per cent., ...                 | ... | 10,039 2 0   |               |
|                     | " Abkari, ...                                    | ... | 4,765 0 0    |               |
|                     | " Muskirat, ...                                  | ... | 1,900 0 0    |               |
|                     | " Registration, ...                              | ... | 314 10 0     |               |
|                     | " Fines, ...                                     | ... | 257 5 6      |               |
|                     | " Forest and Pasturage, ...                      | ... | 1,495 2 6    |               |
|                     | " Miscellaneous, ...                             | ... | 40 0 0       |               |
|                     |                                                  |     |              | 1,23,252 12 3 |
| Tahsil Bazpur, ...  | By Land Revenue, balance 1278 Fasli, Rs. 77 12 0 |     |              |               |
|                     | " Ditto, ditto 1279 do., " 60 8 6                |     | 503 11 6     |               |
|                     | " Ditto, ditto 1280 do., " 365 7 0               |     |              |               |
|                     | " Ditto, kharif 1281 do., ...                    | ... | 34,349 7 7   |               |
|                     | " Ditto, rabi 1281 do., ...                      | ... | 6,391 5 9    |               |
|                     | " Advances for 1279, 1280, 1281 Fasli,           | ... | 9,831 0 0    |               |
|                     | " Sayer bazar, ...                               | ... | 1,382 3 4    |               |
|                     | " Abkari, ...                                    | ... | 900 0 0      |               |
|                     | " Drugs, ...                                     | ... | 520 0 0      |               |
|                     | " Fines, ...                                     | ... | 508 13 9     |               |
|                     | " Forest, ...                                    | ... | 1,028 15 1   |               |
|                     | " Pasturage, ...                                 | ... | 1,832 11 2   |               |
|                     | " Refunds, ...                                   | ... | 3,840 5 7    |               |
|                     | " Miscellaneous, ...                             | ... | 3,368 8 6    |               |
|                     |                                                  |     |              | 64,457 2 3    |
| Tahsil Gadarpur,    | By Land Revenue, kharif 1281 Fasli, ...          | ... | 15,779 1 9   |               |
|                     | " Ditto, rabi 1281 do., ...                      | ... | 3,527 9 6    |               |
|                     | " Advances for 1276, 1280, 1281 Fasli,           | ... | 4,254 0 0    |               |
|                     | " Sayer bazar, ...                               | ... | 47 2 0       |               |
|                     | " Abkari, ...                                    | ... | 760 0 0      |               |
|                     | " Drugs, ...                                     | ... | 132 0 0      |               |
|                     | " Forest, ...                                    | ... | 376 5 9      |               |
|                     | " Pasturage dues, ...                            | ... | 593 11 0     |               |
|                     | " Refunds, ...                                   | ... | 1,065 10 2   |               |
|                     | " Miscellaneous, ...                             | ... | 10 12 0      |               |
|                     |                                                  |     |              | 26,546 4 2    |
| Tahsil Budarpur,    | By Land Revenue, kharif 1281 Fasli, ...          | ... | 31,549 7 6   |               |
|                     | " Ditto, rabi 1281 do., ...                      | ... | 8,127 14 3   |               |
|                     | " Advances for 1277, 1278, 1279, 1280, 1281,     | ... | 10,283 7 5   |               |
|                     | " Ditto thatching for 1277, 1280,                | ... | 18 10 0      |               |
|                     | " Sayer bazar, ...                               | ... | 296 6 10     |               |
|                     | " Abkari, ...                                    | ... | 2,739 9 0    |               |
|                     | " Drugs, ...                                     | ... | 190 0 0      |               |
|                     | " Forest, ...                                    | ... | 2,034 5 8    |               |
|                     | " Pasturage dues for 1281 Fasli,                 | ... | 886 11 0     |               |
|                     | " Refunds, ...                                   | ... | 556 8 5      |               |
|                     |                                                  |     |              | 56,643 6 1    |
| Tahsil Kilpuri, ... | By Land Revenue, balances for 1279 and 1280,     | ... | 85 12 3      |               |
|                     | " Ditto, for 1281 kharif, ...                    | ... | 19,006 5 6   |               |
|                     | " Ditto, ditto rabi, ...                         | ... | 62 10 6      |               |
|                     | " Advances for 1277 and 1280 Fasli, ...          | ... | 2,031 0 0    |               |
|                     | " Ditto for thatching for 1278, 1279, 1280,      | ... | 354 4 4      |               |
|                     | " Sayer bazar, ...                               | ... | 227 9 0      |               |
|                     | " Abkari, ...                                    | ... | 1,740 15 3   |               |
|                     | " Drugs, ...                                     | ... | 135 0 0      |               |
|                     | " Forest, ...                                    | ... | 766 9 8      |               |
|                     | " Pasturage dues for 1281 Fasli,                 | ... | 840 15 0     |               |
|                     | " Refunds, ...                                   | ... | 608 5 8      |               |
|                     | " Miscellaneous, ...                             | ... | 96 3 0       |               |
|                     |                                                  |     |              | 25,955 10 2   |
| Tahsil Nanakmata.   | By Land Revenue for 1281 Fasli, ...              | ... | 4,337 11 3   |               |
|                     | " Abkari, ...                                    | ... | 1,404 13 2   |               |
|                     | " Drugs, ...                                     | ... | 65 0 0       |               |
|                     | " Forest, ...                                    | ... | 149 2 9      |               |
|                     | " Pasturage dues for 1281,                       | ... | 260 3 0      |               |
|                     |                                                  |     |              | 6,216 14 3    |
| Tahsil Manajhandi.  | By Land Revenue for 1281 Fasli, ...              | ... | 4,831 3 0    |               |
|                     | " Advances for thatching for 1280 Fasli,         | ... | 26 8 0       |               |
|                     | " Abkari, ...                                    | ... | 500 0 0      |               |
|                     | " Pasturage dues for 1281,                       | ... | 1 2 6        |               |
|                     |                                                  |     |              | 5,358 13 6    |
| Tahsil Bilhari, ... | By Land Revenue for kharif 1281 Fasli, ...       | ... | 23,813 10 3  |               |
|                     | " Ditto for rabi 1281 do., ...                   | ... | 4,013 14 3   |               |
|                     | " Advances for 1278, 1279, 1280, ...             | ... | 1,131 8 0    |               |
|                     | " Ditto for thatching for 1278, 1279,            | ... | 79 2 3       |               |
|                     | " Sayer bazar, ...                               | ... | 286 0 0      |               |
|                     | " Abkari, ...                                    | ... | 2,900 0 0    |               |
|                     | " Drugs, ...                                     | ... | 220 0 0      |               |
|                     | " Forest, ...                                    | ... | 1,708 7 7    |               |
|                     | " Pasturage dues for 1281,                       | ... | 1,425 11 6   |               |
|                     | " Refunds, ...                                   | ... | 499 6 9      |               |
|                     |                                                  |     |              | 36,077 12 7   |
|                     | GRAND TOTAL, ...                                 | ... | ...          | 3,44,508 5 3  |



## FORM No. II.

*Brief Statement of Demand, Collections, and Balances of the Tarai for the year 1281 Faslî.*

| Parganas.                     | Government demand. | Kham tahsil demand. | Collections.  | Balances of kham tahsil demand. | Paid into the treasury before 1st October, 1874. | Balance of Government demand. |
|-------------------------------|--------------------|---------------------|---------------|---------------------------------|--------------------------------------------------|-------------------------------|
|                               | Rs.                | Rs. a. p.           | Rs. a. p.     | Rs. a. p.                       | Rs. a. p.                                        |                               |
| Kashipur, ...                 | 1,05,388           | 1,15,427 2 0        | 1,14,480 10 3 | 946 7 9                         | 1,14,480 10 3                                    | ...                           |
| Baspur, ...                   | 20,061             | 40,822 2 4          | 40,740 13 4   | 81 5 0                          | 20,861 0 0                                       | ...                           |
| Gadarpur, ...                 | 5,806              | 19,306 11 3         | 19,306 11 3   | ...                             | 5,806 0 0                                        | ...                           |
| Rudarpur, ...                 | 12,464             | 39,687 5 0          | 39,687 5 9    | ...                             | 12,464 0 0                                       | ...                           |
| Kilpuri, ...                  | 4,627              | 19,085 8 9          | 19,069 0 0    | 16 8 0                          | 4,627 0 0                                        | ...                           |
| Nanakmata and Manajhandi, ... | 9,406              | 9,068 14 3          | 9,068 14 3    | ...                             | 9,406 0 0                                        | ...                           |
| Bilhari, ...                  | 7,899              | 27,827 8 6          | 27,827 8 6    | ...                             | 7,899 0 0                                        | ...                           |
| Total, ...                    | 1,72,651           | 2,71,175 4 10       | 2,70,130 15 4 | 1,044 5 6                       | 1,61,743 10 3                                    | ...                           |
| Abkari and Muskirat, ...      | ...                | 12,151 9 0          | 18,856 6 3    | 295 2 9                         | ...                                              | ...                           |
| Balance as per last year, ... | ...                | ...                 | 15 15 3       | ...                             | ...                                              | ...                           |
| Total, ...                    | ...                | 12,151 9 0          | 18,872 5 6    | 295 2 9                         | ...                                              | ...                           |
| GRAND TOTAL, ...              | 1,72,651           | 2,90,326 13 10      | 2,89,003 4 10 | 1,339 8 3                       | 1,61,743 10 3                                    | ...                           |

## FORM No. III.

*Statement of Land Revenue Balances for the years 1278, 1279, 1280 Faslî.*

| Balance due at close of 1280 Faslî. |     |            | Collected during 1281. | Balance due. |
|-------------------------------------|-----|------------|------------------------|--------------|
|                                     |     | Rs. a. p.  | Rs. a. p.              | Rs. a. p.    |
| For 1278, ...                       | ... | 77 12 0    | 77 12 0                | ...          |
| " 1279, ...                         | ... | 95 3 0     | 64 0 3                 | 31 2 9       |
| " 1280, ...                         | ... | 862 14 0   | 447 11 6               | 415 2 6      |
| Total, ...                          | ... | 1,035 28 0 | 589 7 9                | 446 5 3      |

## FORM No. IV.

Statement of Demand, Collections, and Balances of the Tarai District on account of Takavi for the year 1281 Fash.

| Pargana.  | 1276.   |       |           | 1277.   |       |           | 1278.   |       |           | 1279.   |       |           | 1280.   |       |           | 1281.   |        |           |
|-----------|---------|-------|-----------|---------|-------|-----------|---------|-------|-----------|---------|-------|-----------|---------|-------|-----------|---------|--------|-----------|
|           | Demand. |       | Balances. | Demand. |       | Balances. | Demand. |       | Balances. | Demand. |       | Balances. | Demand. |       | Balances. | Demand. |        | Balances. |
|           | Rs.     | a. p. |           | Rs.     | a. p. |           | Rs.     | a. p. |           | Rs.     | a. p. |           | Rs.     | a. p. |           | Rs.     | a. p.  |           |
| Bazpur,   | ...     | ...   | Rs.       | ...     | ...   | Rs.       | ...     | ...   | Rs.       | ...     | ...   | Rs.       | ...     | ...   | Rs.       | ...     | ...    | Rs.       |
| Gadarpur, | 101     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | 91      | ...   | ...       | 10,681  | 0 0   | 9,711     | 0 0     | 8,852  | 0 0       |
| Rudarpur, | 53      | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | 3,568   | 0 0   | 3,567     | 0 0     | 4,561  | 0 0       |
| Kilpur,   | ...     | ...   | 53        | 60      | 6 11  | 36        | 6 11    | 24    | 0 0       | ...     | ...   | ...       | 11,143  | 12 6  | 9,836     | 0 6     | 9,347  | 13 0      |
| Bilhari,  | ...     | ...   | ...       | 72      | 8 0   | 5         | 0 0     | 67    | 8 0       | ...     | ...   | ...       | 5,774   | 0 0   | 2,026     | 0 0     | 8,102  | 3 0       |
|           | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | 391     | ...   | ...       | ...     | ...   | ...       | ...     | 1,993  | 1 9       |
| Total,    | 154     | ...   | 53        | 132     | 14 11 | 41        | 6 11    | 91    | 8 0       | 604     | ...   | 294       | 31,166  | 13 6  | 25,140    | 0 6     | 22,856 | 1 9       |
|           |         |       |           |         |       |           |         |       |           | 898     |       |           |         |       |           |         |        | 31,989    |

8

## FORM No. V.

Statement of Demand, Collections, and Balances on account of Thatching for the year 1281 Fash.

| Pargana.  | 1277.   |       |           | 1278.   |       |           | 1279.   |       |           | 1280.   |       |           | 1281.   |       |           |
|-----------|---------|-------|-----------|---------|-------|-----------|---------|-------|-----------|---------|-------|-----------|---------|-------|-----------|
|           | Demand. |       | Balances. | Demand. |       | Balances. | Demand. |       | Balances. | Demand. |       | Balances. | Demand. |       | Balances. |
|           | Rs.     | a. p. |           | Rs.     | a. p. |           | Rs.     | a. p. |           | Rs.     | a. p. |           | Rs.     | a. p. |           |
| Bazpur,   | ...     | ...   | Rs.       | ...     | ...   | Rs.       | ...     | ...   | Rs.       | ...     | ...   | Rs.       | ...     | ...   | Rs.       |
| Gadarpur, | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       |
| Rudarpur, | 13      | 8 0   | ...       | 22      | 0 0   | ...       | ...     | ...   | ...       | 5       | 2 0   | ...       | ...     | ...   | ...       |
| Kilpur,   | ...     | ...   | ...       | 21      | 1 7   | ...       | ...     | ...   | ...       | 96      | 12 11 | ...       | ...     | ...   | ...       |
| Bilhari,  | ...     | ...   | ...       | 158     | 5 7   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       |
|           | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       | ...     | ...   | ...       |
| Total,    | 13      | 8 0   | ...       | 201     | 7 2   | ...       | 275     | 1 6   | ...       | 98      | 8 11  | ...       | 118     | 6 2   | ...       |
|           |         |       |           |         |       |           |         |       |           |         |       |           |         |       |           |

TARAI SUPDT.'S OFFICE:  
The 24th November, 1874.J. C. MACDONALD,  
Superintendent, Tarai District.





# REPORT

ON THE

## SETTLEMENT OF PARGANA JAUNSAAR BAWAR.

No. 1026, dated Camp Sujampur, the 29th December, 1874.

*From*—F. M. LIND, Esq., *Commissioner of the 1st or Meerut Division,*

*To*—E. C. BUCK, Esq., *Offg. Secy., Board of Revenue, N.-W. P.*

SIR,—I have the honour to submit the accompanying letter, No. 478, dated 9th instant, from the Superintendent of the Dun, with its accompaniments, on the subject of the recent settlement of pargana Jaunsar Bawar in that district.

*Vide Secretary's No. 176, dated 11th April, and Commissioner's No. 855, dated 28th October last.*

2. Mr. Ross's report is not so much a final report on the settlement lately brought to a conclusion as an explanation of the manner in which the difficulties which arose in connection with Mr. Cornwall's proceedings were overcome. Mr. Ross commences his report by reference to the various preliminary orders issued; the deputation of Mr. Cornwall to conduct settlement proceedings; the views of that officer on various points; and, finally, the difficulties which arose in consequence of the recusance of the saianas to sign the settlement compact. The report then proceeds to show what these difficulties were, how they arose, and the manner in which they were eventually overcome.

3. Mr. Ross has refrained from entering upon the previous history of the pargana, the system in force prior to British occupation, or the arrangements made in former settlements. He concludes that information on all these points will be found in Mr. Williams' memoir of the Dun recently published, as well as in Mr. Cornwall's report on his own proceedings. The annexures of Mr. Ross's letter contain, however, information on some of these points in tabular form.

4. The main difficulty with the saianas was in connection with their supposed rights in forest lands. They endeavoured to set up a claim which they must have known was untenable; still it was perhaps better that the question was brought forward for final determination. The liberal manner in which the Government disposed of the matter induced the saianas to accept the settlement made by Mr. Cornwall and to sign the final compact. Mr. Ross's report deals for the most part with the duties which devolved upon him in carrying out the orders of Government. A more detailed report of these proceedings has already been submitted to the Board, as noted by Mr. Ross.

5. In the course of his present report, Mr. Ross briefly sketches certain prejudices which prevail among the Jaunsaris; their manners and customs; and their superstitious proclivities. A brief account is also given of the mode of cultivation and the ordinary crops sown. It seems unnecessary to recapitulate these. One point, however, requires a passing remark.

6. The Jaunsaris have the reputation of indulging in polyandry. Possibly the practice may still to some extent be in vogue, but I am inclined to think that it must be dying out. I have no doubt that in former times polyandry was largely practised, but the resort to the custom implies a scarcity of females, and this can hardly be the case now. A reference to the census returns will show that the proportion of females to males is not such as would justify the entertainment of the idea that there is any general necessity for a resort to the practice. The census statement appended to the report no doubt includes minors as well as adults; but this circumstance would make



little difference in general results. The proportion of adult males to adult females would probably be retained ; and if this be so, there would be little reason for continuing polyandry.

7. There is one point in connection with the settlement which requires notice.

8. According to the custom of the pargana, the saianas are the representative men : they practically occupy the position of lumberdars, but their authority and the powers they exercise are far in excess of what is recognized in the status of a lumberdar. The sharers are called zemindars. A reference to Mr. Ross's report and to the translation of the wajib-ul-urz, which was subsequently received, but which is also forwarded, will show that the term 'zemindar' is in all cases used to represent the persons who are really sharers in the khat or mahal. I cannot say whether the use of the term is accidental or whether it has been designedly adopted. The peculiar powers of the saianas may have induced a notion that whilst the use of the term 'zemindar' admitted a proprietary title in the land in favour of the person to whom it was applied, that it restricted this right solely to ownership in the soil, and to nothing else. Be this as it may, the absence of all allusion to the term 'sharers' is striking.

9. To revert, however, to the power of the sudder saianas, it will be seen that they possess the power to make a fresh annual distribution of the sum to be realized from each zemindar, or, as I would call him, sharer in the khat, on account of the Government demand. Mr. Ross admits that this power is sometimes abused, and that the difficulties in the way of rectifying the abuse are so great, that, practically, the right of appeal to the Superintendent is valueless. The question is one which, I think, demands consideration.

I have, &c.,

F. M. LIND,

*Commissioner, Meerut Division.*

No. 478, dated Dehra Dun, the 19th December, 1874.

*From—H. G. Ross, Esq., C. S., Superintendent of Dehra Dun,*

*To—F. M. LIND, Esq., C. S., Commissioner of 1st or Meerut Division.*

SIR,—I beg herewith to forward statements connected with the Jaunsar Bawar settlement.

2. In this office No. 140, dated 29th May, 1868, Government was reminded that the then settlement of Jaunsar Bawar would expire in the end of 1869, and orders were asked for. When His Honor the Lieutenant-Governor, Sir William Muir, came into the district in 1870, a conference was held, at which the Members of the Board, Mr. Court, and Mr. Cornwall were present, and resolutions were come to. Orders were issued in a memo. of Sir William Muir's, sent under Secretary to Government's No. 1558A., dated 19th November, 1870, forwarded to this office under Commissioner's No. 169, dated 6th December, 1870.

In that memo. the Lieutenant-Governor sanctioned a new settlement, to be founded on a field survey similar to that in Kumaun and Garhwal. Mr. Cornwall, who was then employed settling forest boundaries in Jaunsar Bawar, was appointed Settlement Officer, and was directed to go to Kumaun to consult Mr. Beckett.

Mr. Cornwall went to Kumaun, consulted with both Colonel Ramsay and Mr. Beckett, and in his No. 25, dated 26th January, 1871, reported the result. He agreed that the Kumaun plan of field measurement without use of plane-table would answer well for Jaunsar Bawar, but he urged that the khat boundaries should be properly surveyed. He recommended that the settlement should be khatwar (*i. e.*, settlement for the whole khat or taluqa should be made with one headman called a saiana, instead of separately with each zemindar in the khat) and not mauzawar ; that measurement should be in acres and not in bighas ; and he sent in a budget estimate.

The Commissioner forwarded on this letter with a very full report of his own, No. 70, dated 30th January, 1871. The Board forwarded both under their No. 1421, dated 21st February, 1871. The proposals sanctioned in Secretary to Government's No. 270, dated 11th March, were a khatwar settlement; shajras to be made without plane-table; but boundaries of khats to be properly surveyed by some competent persons appointed by Mr. Cornwall. The budget estimate was also sanctioned. Work commenced on 11th April, 1871, and the field measurements were completed in February, 1872. Mr. Cornwall in the meantime occupying himself in settling boundary disputes.

In July, 1872, Mr. Cornwall sent up a brief report of his intended plan of operations, with separate reports on tenures, duration of settlement, and principle of assessment. The Commissioner forwarded on the report on 16th July. The Lieutenant-Governor recorded a memo. calling for further information. Some demi-official correspondence ensued. On 16th September, 1872, Mr. Cornwall prepared a further report in accordance with the Lieutenant-Governor's wishes. In December, 1872, His Honor the Lieutenant-Governor himself came into the district, preceded by Mr. Reid, who went into Jaunsar Bawar with Mr. Cornwall. A conference was held; matters were discussed and formally settled; as reported by Mr. Cornwall in his No. 1, dated 2nd January, 1873, Mr. Cornwall completed the assessment and gave it out, and sent off his final report No. 109, dated 10th March, 1873. The saianas, or headmen of the khats with whom the settlement was made, however had refused to accept the assessment, and before their refusal could be enquired into, Mr. Cornwall was most unfortunately constrained, from ill-health, to leave the country. The apparent real grievance of the saianas was the unsettled state of the forest boundaries. Mr. Bagshawe and myself were deputed to settle these boundaries, which we did in May and June, 1873, as reported in my No. 340, dated 15th September, 1873. It was then too late to prepare the roll of distribution of rent over the khats by the saianas, called phantbandis; and until the saianas had prepared these papers, it was impossible to say whether they really intended to accept or not. Work had therefore to be postponed until March, 1874. I then went to the spot, assembled the saianas, and directed them to prepare the phantbandis; but they one and all refused, on the plea that they had not previously known that the cesses were separate from the land revenue. This was simple nonsense, as I had myself explained matters to them in June, 1873. I therefore took two khats in hand, and commenced to make out the phantbandis myself, explaining to the saianas that I was going to hold kham, and that the saianas' fees would be credited to Government. When I had worked two or three days at the papers, and nearly completed the khats, the saianas gave in. After considerable delay, all the phantbandis were finished. As they were the first after the new settlement, I gave the people more than fifteen days in which to lodge their objections, so that the matter was not finally settled until the end of May. I then commenced preparing the returns: these were not completed until October; hence the delay.

Reason for not giving history of pargana or previous settlement. 3. It is unnecessary for me to give any history of the pargana, of its former rulers, or the manner in which it came into our possession, because this is all clearly stated in Mr. Williams' memoir of the Dun. Neither is it necessary to detail all the arrangements made at previous settlements, and the different systems carried out, because Messrs. Robertson and Cornwall have dwelt at great length on these subjects.

Boundaries and geographical position. 4. The pargana commences at the junction of the Tons and the Jumna: the former is the boundary of the pargana in a north-westerly direction for about 30 miles, separating it from Sirmur; the latter is the boundary in a north-easterly direction for about 40 miles, separating the pargana partly from the Dun and partly from Garhwal. A small stream, called the Kerogard, runs into the Jumna on the edge of the Baunder Khat a little above Lokha Mandal; this forms the boundary between the pargana and Garhwal in a westerly direction; the boundary then runs west until it again hits off the Tons a little above Hanole; the

Tons is then the boundary to the Pahar ; the pargana then crosses the Tons, the boundary running along the ridges of some hills behind Mandhole, separating it from the States of Jabal and Trochi.

It will thus be seen that nearly on every side the pargana is surrounded by foreign territory. The two large States of Sirmur and Garhwal give no trouble. No dispute has ever arisen with them since I have been in charge of the district ; but the two petty little States of Trochi and Jabal, which are under the superintendency of the Deputy Commissioner of Simla, give incessant trouble : they knock down boundary pillars, make raids into Bawar, cut and carry away crops, and in every way give a great deal of annoyance and vexation. The pargana is divided into 39 khats or taluqas ; 34 of these are in Jaunsar and five in Bawar.

**Natural features.**

5. The pargana is composed entirely of a succession of hills. The Jumna at Kalsi divides it from the plains, the hills rising from the very banks of the river ; a large portion of these hills are covered with forest. In the lower khats of Jaunsar there are only oak, a little sisham, and some few sál trees. The oak continues everywhere, but as the land gets higher, chir, spruce and silver pine appear, and, best of all, deodar. Of these different firs, there are some splendid forests, beautiful to the eye and valuable to the Government. It is only within the last ten years that they have been properly preserved, and so it may now be expected that year by year they will increase and improve instead of decreasing as hitherto.

A curious feature that at once strikes the eye in the lower khats is, that the northern slope of the hills is invariably well wooded or cultivated, and the southern face bare and unprofitable. This is not owing to the rays of the sun beating on the southern face, but to the geological formations. The southern faces are comprised of rock and shale ; are generally steep and rugged, with little or no water. The northern slopes, on the contrary, are covered with good soil, are not steep, and are well watered by numerous springs of good water.

6. There are three distinct styles of cultivation. Rice, for instance, is grown in terraced beds made along the edges of all the rivers and streams, but seldom at levels over 3,000 feet, although I have seen some few as high as 4,000 or 4,500 feet ; another style, and the most general, is that of terraces rising one above the other up the hill side. All these terraces have to be supported by stone retaining-walls, varying from a height of 4 to 10 feet. The expense of making these walls is very great. When I say 'expense' I of course allude to time and trouble, because the cultivators make the walls themselves. A landslip or an extra heavy thunder-shower will sometimes wash away a whole hill side of these terraces, thus either ruining the unfortunate cultivator, or involving him in fresh work for years to come. Wherever there is any good land these terraced fields exist.

There are very many little isolated plots where fresh terraces can be made and cultivation increased, but within village bounds there is nowhere a block of good untilled land in one place sufficiently large to form a separate village. Wherever it is possible, water is led on to these terraces from streams and springs : some of these "kuls" or small canals are carried great distances, through most impracticable ground and at great expense.

The third style of cultivation is carried out where the tops of the hills form small table-lands, round and smooth. Khats that have many such hill-tops are considered the most favoured ; the soil is always good, and crops better than in the terraced lands.

7. The chief crops are—rice, mandua, wheat, barley, turmeric, ginger, potatoes, and opium ; a little Indian-corn is grown, also sweet potatoes and some small pulses. The rice is grown entirely in the valleys, some

The different crops grown in the pargana.

high, some low ; requires good land ; and is nearly always watered. A certain amount of dry rice is sown, but the people don't care to run risks with it, and so, as a rule, they keep their dry lands for mandua. Mandua is the chief article of food of the hill-men : the plant is most hardy, and will apparently grow amongst mere stones and shingle. It is a rain crop, but too much rain spoils it. A good year for rice is a bad year for mandua, and *vice versâ*. Wheat and barley are grown a good deal on the high tops. The seed is sown in the end of September, so as to germinate before the frost comes on. These crops depend entirely on snow : if there is a heavy fall of snow, the crops are good ; if not, they are bad. Turmeric and ginger are the most paying crops grown : they are grown on the high hills and table-land already spoken of, and also in the valleys where there is good irrigable land. A few square yards of turmeric or ginger is quite sufficient for a family. The cultivation of potatoes is year by year increasing ; and if the people will only be careful about their seed, it ought to continue a most paying crop. Potatoes are grown either on the high table-lands or on virgin forest soil on the slopes. The cantonment of Chakrata has been a great incentive to the increased cultivation of potatoes. Indian-corn is grown always at the village doors in small garden patches. Red pepper is also grown in considerable quantities all over the pargana ; opium is confined entirely to the high hills. If there are no hail and severe thunder storms, it is a most paying crop ; but it is very risky, and requires a great deal of manure. Apricot and walnut trees abound all over the pargana. The fruit of the former is either exchanged amongst the people themselves or sold in Chakrata ; that of the latter is largely exported. Tobacco is grown in small quantities for home consumption.

8. As the new cantonment of Chakrata is now one of the principal features of the pargana, a short account of it here will perhaps not be out of place. It is situated about the centre of the pargana. At present only one regiment is located there, but it is in contemplation to have another regiment, and move the invalid depôt there from Landour. The station has proved a most healthy one : the difference in the appearance of a regiment when it marches up and marches down is most marked. The station is connected with the Saharanpur railway station by a first-class cart road. The only drawback at present is the want of a bridge over the Jumna : a very fine bridge is in course of construction over the Isan. At present the arrangements for the supply of water at Chakrata are not perfect, as it has to be carried up from different khuds by bullocks, mules, &c. There is a good supply of pure spring water at a very high level close to the cantonment, and when it is brought in, in pipes, it can be led to each separate barrack with the greatest ease. The first outlay will be great, but the subsequent annual saving will, I should think, recoup the expenditure. Wood is expensive, and I fear likely to remain so. The great expenditure of wood takes place from 15th November to 15th March. I see no reason why the troops should not be marched down to Haripur Bias for those months. There is no room at Chakrata to make a parade ground sufficiently large for the purpose of military manœuvres. If the troops were located in tents at Haripur Bias, there would be a saving to Government in fuel and in carriage of commissariat stores, and the troops would have the advantage of extensive parade grounds and a flat country to carry on drill, and also of good cricket grounds for the recreation of the men. Under the impression that this idea might some day be carried out, I have taken up 190 acres of land at Haripur Bias as an encamping ground. Although Chakrata is a wonderfully healthy station, still the men find it very dull. Government should, I think, make a cricket-ground and fives-courts for the men, and a racquet-court for the officers. No outsider has hitherto been allowed to build or possess house property in cantonments. This rule should be most rigidly enforced, otherwise complications are sure to arise, as at Landour and other military stations.

9. With regard to the population of Jaunsar Bawar, I find the upper classes are composed entirely of Rajputs and Brahmans, the former the most numerous. The Brahmans are Bhats and Sar Sut. The Rajputs are chiefly Ramhayets. The lower classes are Dumras, similar to

chamars in the plains; Kulis like Mehtars in the plains; a few blacksmiths and carpenters, and Bajgirs or musicians: these latter are chiefly employed in singing the praise of Mahasu. They all worship Mahasu or Parsaram; and towards the east there are a large number of snake worshippers.

All castes alike work in the fields, and there are no Brahmans or Rajputs who won't put their hands to the plough. In the upper khats the people keep large herds of sheep and goats. There are not many buffaloes kept in the pargana, but a great many cows and bullocks of a very small short-legged breed peculiar to the hills. There is a very prevalent custom of buying bull calves in the plains and keeping them for two years in the hills, and then bringing them back to the plains for sale: the two years' residence in the hills is supposed to strengthen the animals very much, and they fetch a much higher price than similar animals reared in the plains. The people are very superstitious, but are decidedly honest and more truthful than their fellows in the plains. As an instance of their superstition, I may mention the burning of the deodar forest at Chijal. The village was attacked by small-pox, and to appease the wrath of the gods the villagers set fire to the forest and burned down upwards of four thousand magnificent deodar trees. They are very much afraid of incurring the anger of their gods. The custom of deciding cases by oath is very common. The pernicious part of the system is, that if the party who takes the oath, although he is at once put in possession of the disputed property, suffers any loss either amongst his cattle or distant relations, or even if he is attacked by fever or a bad headache months and months after the oath, this is looked upon as a sign of displeasure on the part of the gods, and for fear of further manifestations of their displeasure he at once relinquishes the land or property. The opposite party, however, is equally unable to take possession, and so the land, if that was the subject of the dispute, is left to lie waste. There is a similar superstitious custom by which the wrath of the gods is invoked against an enemy. If a man has a grudge against any one, he takes up some earth out of his enemy's field and lays it at the shrine of one of the gods, with prayers and offerings. If after that any misfortune happens to his enemy, it is looked upon as a sign of displeasure on the part of the god, and the poor man has to relinquish the field and let it go to waste. The Jaunsaris are very particular about their houses: they all have double-storied houses, and in many instances three and four stories.

In the lower khats the wood-work of these houses is deodar, procured from the higher khats, but the covering is slate; in the upper khats the roofing is deodar, split planks being used. The upper khat people say there is no slate in their khats. I have not myself seen any, but I think there must be slate there, just the same as below. It is easier for the people to split deodar than to quarry slate. They have hitherto had as much deodar as they could use, and so there has been no incentive to look for slate.

The people drink a great deal of a kind of beer made in the following manner: In the rains they make thick cakes of the roots of some trees and barley meal; these cakes are stored up, and when they want beer they break up one of these cakes with some cooked cheena and sawak, and soak the mixture in water for eight or nine days; they then strain off the liquor and drink it, and also eat the refuse. In December and January a great deal of drinking goes on, many people being drunk the whole time: all kind of work is stopped, and nothing is thought of but feasting and drinking. They shut up sheep in a room, and feed them upon oak leaves. Each man takes his turn of killing a sheep and feasting his brethren. Owing to the severity of the weather there is little or no work possible at that season except looking after the cattle, and this is left to the women: the Brahmans do not, as a rule, drink.

Polyandryism is general among all castes and classes; a family of brothers having only one wife amongst them. If there is only one son, it is with great difficulty that he can get a wife. Some of the census returns would tend to show that infanticide is practised, but I know that this is not the case: the birth of a girl is hailed with more delight than the birth of a son; and in marriages the family of the bride receives all

the presents and gives none, except a copper cooking pot; on the other hand, the family of the bridegroom has to give the presents. The hill-men make very strong woollen blankets, out of which they make coats and trousers. A suit of well made blanket is supposed to last at least two generations: this is an exaggeration, but it is wonderful stuff to wear.

All the larger zemindars keep ploughmen, called halis, who are serfs or bondsmen of the zemindars; they receive no wages, but are fed and clothed by the zemindars. Sometimes they are given a little land to cultivate for themselves, but they do not acquire any right in this land; the zemindars defray all their marriage expenses. If one of these serfs dies, the zemindar has to look after his widow, should there be no other husband and children. If the widow marries again, she goes to the house of her second husband with her children; but the master of the second husband has to pay to the master of the deceased the amount advanced by him for marriage or maintenance of children. No account is kept of the money spent in food and clothing during the ploughman's lifetime, as he is supposed to work that off; but an account is kept of all monies advanced for marriage or monies spent in the maintenance of young children after the decease of their father. No interest is charged on these accounts. If the ploughman disagrees with his master, he cannot leave him until he pays off the advances against him, or until he finds another master agreeable to pay them for him. The zemindars wanted very much to have a set of rules about these halis entered in the *wajib-ul-arz*; but as the system is opposed to our notions, I have not done so: as long as the people choose to settle these matters amongst themselves, I do not think any interference necessary or advisable. Zemindars have once or twice brought complaints against halis to compel the return of the latter; the cases have, as a matter of course, been thrown out at once, and so the halis must know that if they choose they can leave and go where they like.

10. There is a good deal of iron ore scattered about the pargana, which is worked in a desultory kind of way by the people; but I know of no place where it is as yet found in sufficient abundance to render it worth while working on a large scale. Limestones abound everywhere, and there are very good slate quarries; also a great deal of antimony.

11. In all former settlements lump sums were assessed on the general capabilities of the khat; at last settlement the Settlement Officer took into consideration the area of cultivated land, the adult population, the head of cattle, sheep, and goats, number of fruit trees, &c., &c. The settlement was made with a *saiana* or *saianas* for each khat: the *saiana* was responsible for this amount, and distributed it over the khat himself.

12. The present settlement is based entirely upon the cultivated area as shown by the field measurement.

13. There were no *patwari*'s papers to assist the Settlement Officer in calculating his rent-rate. No rent was paid except in one khat. The soil had never been classed, and the people did not understand any classification. Under these circumstances, it was necessary for the Settlement Officer to devise some new method of arriving at a good average rate.

Mr. Cornwall tried many systems: first of all, the old plan; next, a plan of Mr. Beckett's; and, finally, he worked out the actual produce of each khat and the market value of such produce; he then worked out what kind of lands grew different crops, and eventually fixed on the following assessment rates, which were approved of by Government:—

|                |     |     | Rs. | a. | p. |             |
|----------------|-----|-----|-----|----|----|-------------|
| Irrigated,     | ... | ... | ... | 4  | 0  | 0 per acre. |
| 1st class dry, | ... | ... | ... | 2  | 0  | 0 „         |
| 2nd class dry, | ... | ... | ... | 0  | 13 | 4 „         |

reported by Mr. Cornwall in his No. 1, dated 2nd January, 1873.

Heavier rates were to be charged for turmeric, ginger, and opium lands, and lighter rates for occasional cultivation; at the same time Mr. Cornwall distinctly stated that he would have to vary this rate in different khats. The chief causes that led Mr. Cornwall to depart from his fixed rate were proximity to or distance from markets, number of population, and liability to ravages from wild beasts.

The saiana of each khat is, as before, responsible for the lump sum assessed. He distributes it over the khat. In this distribution he does not confine himself to the value of land actually cultivated; he takes into consideration the general capabilities of the cultivator. The saiana gives in his distribution roll in March of each year, and can alter it each year if he likes. The cultivator is given fifteen days within which to object to the amount of revenue put down against his name by the saiana; the decision of the district officer on this objection is final. The saiana has the entire management of the khat. He must arrange for the payment of revenue on account of any defaulter who may abscond. He can give the deserted land to whom he likes under certain restrictions mentioned in the wajib-ul-urz. He has to carry on all litigation on the part of the khat or any residents in it; it is his business to represent all grievances or hardships; and he is given a certain allowance to cover his travelling and other expenses whilst so engaged.

All that Government has to do is to collect the lump sum from the saiana.

Financial results of the different settlements.

14. The financial results of the different settlements are as follows:—

|               |     |     |     |     | Rs.    | a. | p. |
|---------------|-----|-----|-----|-----|--------|----|----|
| 1815 to 1817, | ... | ... | ... | ... | 16,247 | 8  | 0  |
| 1818 „ 1823,  | ... | ... | ... | ... | 15,703 | 0  | 0  |
| 1824 „ 1829,  | ... | ... | ... | ... | 17,282 | 0  | 0  |
| 1830 „ 1834,  | ... | ... | ... | ... | 15,354 | 0  | 0  |
| 1835 „ 1849,  | ... | ... | ... | ... | 16,280 | 0  | 0  |
| 1850 „ 1859,  | ... | ... | ... | ... | 19,953 | 0  | 0  |
| 1856 „ 1870,  | ... | ... | ... | ... | 19,695 | 0  | 0  |
| 1874 „ 1884,  | ... | ... | ... | ... | 26,181 | 0  | 0  |

This shows the increase by present settlement to be Rs. 6,486; but it must be remembered that at last settlement the only extras collected were the saianas' fees, 5 per cent.; patwaris' fees, 5 per cent. Both these cesses are collected now, and in addition the 10 per cent. cess is collected, and so the real increase is Rs. 9,104. In the former settlements a grant of Rs. 1,000 was given annually out of the land revenue for roads.

15. As I did not assess the pargana, and as I have had considerable means of judging of the correctness of the assessments, it may not be out of place for me to give my opinion about it. I think the assessment very fair on the whole, and I do not think I shall have any difficulty in collecting it except from one or two khats. The difficulty I shall experience in these will arise not so much from the assessment being too heavy, as from the internal quarrels of the inhabitants. Although I think the assessment fair, I am quite positive that Government gets its rights to the uttermost farthing; and unless some most unforeseen changes take place, I do not think any great increase can ever be expected. Although a good deal of the land can be improved, there is very little fresh land that can be advantageously broken up, and from the geographical position of the pargana, I do not see how the markets can be improved, as it would never pay to make roads everywhere. I feel quite sure that at present the assessment presses heavily on the people, and will press heavily for some time to come, but here again this arises, not from the assessment being too heavy, but from other causes. One great cause of the assessment pressing heavily now on the people is the closing of the forests. Although they have been ostensibly closed for many years, yet in reality the people could do very much as they liked. The people have now undoubtedly got their forest rights to the full, but their

boundaries have been clearly defined and marked out, and a proper watch is kept to see that they keep within those boundaries. There is not the slightest doubt that formerly they made a considerable income out of the Government forests unknown to the Government officers; that income is now stopped, and its stoppage coming at the same time as the land revenue is raised, will press hard upon the people.

16. In my No. 340, dated 15th September, 1873, paragraph 46, I expressed an  
 Opinion on the present system. opinion as to the system of assessment, that the actual amount to be paid by each small proprietor should be laid down by the Settlement Officer. From my further experience I see the necessity of this more strongly. The cost of a fresh zemindari settlement would be great; the villages would have to be all demarcated, so would the third-class forests lately made over to the villages; and even when that was done there would still remain the same objections that now exist.

By the present system the khat is assessed in a lump sum, and the saiana is responsible for this amount. He distributes it over the khat each year, giving in a phantbandi or rent-roll; this rent-roll is changed each year. There are two objections to this system:—

*First.*—The small village saianas and mass of the people have not now as much  
 Objections to present system. respect for the sudder saianas as they formerly had: there is no doubt but that the sudder saianas do so favour, assessing their friends and relations lightly, and their enemies heavily. True, objections can be lodged to this assessment, but as the saiana is allowed to take other matters into consideration besides the actual area cultivated by each person, it is very difficult for the district officer to decide upon the fairness or otherwise of the assessment.

*Secondly.*—As this phantbandi can be altered each year, there is no real incentive to thriftiness and exertion in improving the land. For instance, a man commences with a small holding, and he is then assessed lightly. He saves up money, adds to his land, improves it by building up retaining-walls, bringing on water, &c. He is at once pounced down on by the saiana and made to pay heavily. On the other hand, a man who originally had good land, gambles and drinks, neglects his land, and impoverishes the soil, is rewarded for his improvidence by being assessed lightly. This system is radically wrong.

17. What I would propose is that each man's quota should be assessed by the Settlement Officer, and for the term of the settlement he should pay  
 Amendment proposed. no more, but should be allowed to reap the advantage of his own exertion and good management. Let the saianas remain as at present—the middlemen or collectors; let them arrange about land deserted by cultivators and new land to be broken up, &c.; but as regards collections they should be confined strictly to the sum assessed by the Settlement Officer, and not allowed to alter it at all. If land was deserted, the newcomer would have to pay just the same as the deserter paid. I do not think there would be any difficulty in holding the khats kham if Government should decide to do away with the saianas altogether. Land is now of great value in Jaunsar Bawar, and if any cultivator became insolvent and deserted, there would at once be many applicants for the deserted land. Notwithstanding this, I think it would be more profitable for Government and better for the people to keep on the saianas.

18. Intimately connected with the saianachari system is the police system. At  
 Police. present the saianas are responsible for the police arrangements of their khats; they have to provide for watch and ward, and they have to report crime, trace criminals, and bring them up for trial. Crime in the pargana is almost unknown; theft there is little or none; and as the people are not of a jealous disposition as regards their wives, murder and crimes of violence seldom or ever occur. Under these circumstances, I think the less interference on the part of Government the better.



There is one point here worthy of notice,—the khats have to pay the 10 per cent., but, under instructions contained in G. O. No. 417A., dated 19th August, 1872, the saianas have to pay for the chaukidars. I think this hardly fair. I think that Government should either pay the chaukidar or should make a proportionate reduction in the 10 per cent. cess. The latter plan is the one I would recommend; because if the chaukidars are left entirely under the control of the saiana as to pay and everything else, the responsibility of the latter can be more strictly enforced, and there will be less interference on the part of Government officials.

19. There used only to be eight patwaris, and they did nothing; there is no reason why a certain number of the regular papers should not be kept up. I have appointed fourteen patwaris, and proposed that they keep up the following papers :—

I.—A diary in which all monetary transactions about land, and all changes, &c., should be entered.

II.—A kind of terij and jumabandi combined, showing—

| Number. | Name of cultivator. | Number of fields. | Total area. | Names of crops and area under each. | Weight of each. | Market value. | Total receipts. |
|---------|---------------------|-------------------|-------------|-------------------------------------|-----------------|---------------|-----------------|
|         |                     |                   |             |                                     |                 |               |                 |

III.—Milan khasra, showing all increase in cultivation.

IV.—Jummakharch.

V.—Register of proprietary mutations.

The saianas wish the number of the patwaris reduced, and a proportionate amount remitted; but this is out of the question.

20. Up to the present settlement there have been no regularly recognized muafi villages; but in practice certain villages always were left rent-free.

In calculating the lump sum at which the khat was to be assessed, these villages were left out; but they were not recorded as muafi. The field measurement of the present settlement brought the matter prominently forward. After considerable correspondence, Sir William Muir determined to admit the right to hold rent-free, and sanctioned seven muafi villages in G. O. No. 872A., dated 21st March, 1874. The following are the holdings showing cultivated area only :—

|               |     |     |     |     |           |
|---------------|-----|-----|-----|-----|-----------|
| Lakha Mandal, | ... | ... | ... | ... | 36 acres. |
| Nard, ...     | ... | ... | ... | ... | 48 "      |
| Maindrot,     | ... | ... | ... | ... | 45 "      |
| Bartar, ...   | ... | ... | ... | ... | 27 "      |
| Hanol, ...    | ... | ... | ... | ... | 5 "       |
| Phartar,      | ... | ... | ... | ... | 35 "      |
| Chatra, ...   | ... | ... | ... | ... | 22 "      |

These villages represent an annual revenue of Rs. 154.

I think sanads might be given to the muafidars, distinctly laying down the boundaries of the land to be held rent-free, and thus future complications would be avoided.

21. There are no Government canals in the pargana, but the zemindars water freely from the different rivers and streams. I do not think that any water that can be fairly utilized is allowed to run waste. Mr. Cornwall was under the impression that both on the Tons and Jumna there were tracts of

land into which Government might lead water and charge water-rates. I think he was mistaken. I carefully examined the spots and found that in all the cases where the zemindars had not led on water themselves, the expenses of doing so would be too great to warrant the outlay, as the return would never repay it. I spoke to the zemindars about it, and they agreed with me, and they would not even take takavi advances to assist in making any more little canals.

22. Up to the present settlement there have been no regular village forests. The zemindars possessed the cultivated land only. They had not even a right to break up culturable land in their khats without permission of the district authorities. They were allowed to use the forest in a general way, taking as much wood as they wanted for household purposes, but selling none. They were not supposed to cut deodar without permission; they however did very much as they pleased. When the forest rules began to be strictly enforced the people became very much dissatisfied, and thought their rights were being infringed. Sir William Muir accordingly determined to make over certain tracts of forest land to them, and otherwise to define their rights. This work was completed and reported on in my No. 340, dated 15th September, 1873, and sanctioned in G. O. No. 872A., dated 21st March, 1874. The boundaries of the village forests are clearly laid down in English, so there can be no dispute hereafter, and the Forest Department have put up the pillars.

23. In the wajib-ul-urz the rights of the villagers in their own forests and in Government forests is clearly laid down.

In the wajib-ul-urz I entered everything that in any way affects the people. I had each wajib-ul-urz carefully read over to each saiana before he signed, and they, one and all, clearly understood everything entered in them. I mention this because this time the saianas declared that they had never heard the wajib-ul-urz read out at last settlement, and did not know what was in them. This was false, but it was a long time before Mr. Cornwall could lay his hand upon clear documentary evidence proving its falseness.

It may be thought that too many details have been entered into, but it was quite necessary,—the hill-men are so very suspicious.

24. I send up the following returns only:—Village statements II. and III. arranged khatwar. In the miscellaneous remarks I have entered Mr. Cornwall's reasons for fixing his assessment.

General statement in acres of each khat in the pargana.

Annual jumma statement.

Statement showing tenures on which the khats in the pargana are held.

Census return for pargana.

Statement showing expenditure on the settlement.

25. I cannot think of anything further to report on. I must apologize for the meagreness of the report. I know that there must be much wanting. I have never done any settlement work, and do not know on what points information is required. I am well acquainted with the whole pargana, the people in it, and their manners and customs; I also know how the settlement work was carried on, and how it now works, and so should there be any point on which you wish further information, I will at once supply it.

I have, &c.,

H. G. ROSS,

*Superintendent.*

*Statement of Settlement Charges incurred during 1871-72 and 1873-74.*

| Salary of gazetted officers. | Establishment, fixed. | Establishment, variable. | Travelling allowances of officers. | Travelling allowances of establishment. | Contingencies. | Stationery. | Cost of instruments. | Total.     |
|------------------------------|-----------------------|--------------------------|------------------------------------|-----------------------------------------|----------------|-------------|----------------------|------------|
| Rs. a. p.                    | Rs. a. p.             | Rs. a. p.                | Rs. a. p.                          | Rs. a. p.                               | Rs. a. p.      | Rs. a. p.   | Rs. a. p.            | Rs. a. p.  |
| 14,400 0 0                   | 6,613 6 10            | 12,038 8 9               | 1,056 4 2                          | 1,388 4 11                              | 3,014 2 0      | 1,101 5 9   | 16 4 0               | 40,078 4 5 |

H. G. ROSS,  
*Superintendent.*

## Statement showing the Tenures in Pargana Jaunsar Bawar, Zila Dehra Dun.

| 1.             | 2.  | 3.                  | 4.                   | 5.                      | 6.     |
|----------------|-----|---------------------|----------------------|-------------------------|--------|
| Pargana.       | No. | Zemindari Villages. | Villages Patti-dari. | Villages Bhayachari.    | Total. |
| Jaunsar Bawar. | 1   | Haripur Bias.       |                      |                         |        |
|                | 2   |                     | ...                  | Udpalta, ... ..         | 1      |
|                | 3   |                     | ...                  | Uperhathgaon, ... ..    |        |
|                | 4   |                     | ...                  | Athgaon Chandao, ... .. |        |
|                | 5   |                     | ...                  | Bana, ... ..            |        |
|                | 6   |                     | ...                  | Besahil ... ..          |        |
|                | 7   |                     | ...                  | Bangaon, ... ..         |        |
|                | 8   |                     | ...                  | Barasoa, ... ..         |        |
|                | 9   |                     | ...                  | Behlar, ... ..          |        |
|                | 10  |                     | ...                  | Bislar, ... ..          |        |
|                | 11  |                     | ...                  | Bounder, ... ..         |        |
|                | 12  |                     | ...                  | Bamtar, ... ..          |        |
|                | 13  |                     | ...                  | Barmao, ... ..          |        |
|                | 14  |                     | ...                  | Bharm, ... ..           |        |
|                | 15  |                     | ...                  | Bawar, ... ..           |        |
|                | 16  |                     | ...                  | Banadhar, ... ..        |        |
|                | 17  |                     | ...                  | Phuniar, ... ..         |        |
|                | 18  |                     | ...                  | Deoghar, ... ..         |        |
|                | 19  |                     | ...                  | Silgaon, ... ..         |        |
|                | 20  |                     | ...                  | Phartar, ... ..         |        |
|                | 21  |                     | ...                  | Panjgaon, ... ..        |        |
|                | 22  |                     | ...                  | Taplar, ... ..          |        |
|                | 23  |                     | ...                  | Chartar, ... ..         |        |
|                | 24  |                     | ...                  | Dassao, ... ..          |        |
|                | 25  |                     | ...                  | Dhanao, ... ..          |        |
|                | 26  |                     | ...                  | Dowar, ... ..           |        |
|                | 27  |                     | ...                  | Rangaon, ... ..         |        |
|                | 28  |                     | ...                  | Seli, ... ..            |        |
|                | 29  |                     | ...                  | Seli kothan, ... ..     |        |
|                | 30  |                     | ...                  | Samalta, ... ..         |        |
|                | 31  |                     | ...                  | Silgaon, ... ..         |        |
|                | 32  |                     | ...                  | Kooro, ... ..           |        |
|                | 33  |                     | ...                  | Kothi, ... ..           |        |
|                | 34  |                     | ...                  | Kallo, ... ..           |        |
|                | 35  |                     | ...                  | Lakhwar, ... ..         |        |
|                | 36  |                     | ...                  | Lakhao, ... ..          |        |
|                | 37  |                     | ...                  | Mohna, ... ..           |        |
|                | 38  |                     | ...                  | Malehtha, ... ..        |        |
|                | 39  |                     | ...                  | Massao, ... ..          | 38     |

H. G. ROSS,

Superintendent.

*Jumma Statement of Pargana Jaunsar Bawar, Zila Dehra Dun.*

| 1.             | 2.      | 3.                   | 4.                              | 5.       | 6.       | 7.       | 8.       | 9.       | 10.      | 11.      | 12.      | 13.      | 14.      |
|----------------|---------|----------------------|---------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Pargana        | Number. | Name of village.     | Last year of former settlement. | 1873-74. | 1874-75. | 1875-76. | 1876-77. | 1877-78. | 1878-79. | 1879-80. | 1880-81. | 1881-82. | 1882-83. |
| Jaunsar Bawar. | 1       | Udpatha,             | 679                             | 775      | 775      | 775      | 775      | 775      | 775      | 775      | 775      | 775      | 775      |
|                | 2       | Operlathgaon, ...    | 218                             | 309      | 309      | 309      | 309      | 309      | 309      | 309      | 309      | 309      | 309      |
|                | 3       | Athgaon Chaudao, ... | 635                             | 855      | 855      | 855      | 855      | 855      | 855      | 855      | 855      | 855      | 855      |
|                | 4       | Bana,                | 219                             | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      |
|                | 5       | Beasahil,            | 684                             | 1,140    | 1,140    | 1,140    | 1,140    | 1,140    | 1,140    | 1,140    | 1,140    | 1,140    | 1,140    |
|                | 6       | Bangao,              | 490                             | 665      | 665      | 665      | 665      | 665      | 665      | 665      | 665      | 665      | 665      |
|                | 7       | Barasona,            | 21                              | 71       | 71       | 71       | 71       | 71       | 71       | 71       | 71       | 71       | 71       |
|                | 8       | Bishar,              | 773                             | 831      | 831      | 831      | 831      | 831      | 831      | 831      | 831      | 831      | 831      |
|                | 9       | Bislar,              | 313                             | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      | 380      |
|                | 10      | B-ander,             | 570                             | 855      | 855      | 855      | 855      | 855      | 855      | 855      | 855      | 855      | 855      |
|                | 11      | Banitar,             | 1,415                           | 1,971    | 1,971    | 1,971    | 1,971    | 1,971    | 1,971    | 1,971    | 1,971    | 1,971    | 1,971    |
|                | 12      | Borhmaso,            | 518                             | 561      | 561      | 561      | 561      | 561      | 561      | 561      | 561      | 561      | 561      |
|                | 13      | Bhurm,               | 1,089                           | 1,385    | 1,385    | 1,385    | 1,385    | 1,385    | 1,385    | 1,385    | 1,385    | 1,385    | 1,385    |
|                | 14      | Bawar,               | 1,316                           | 625      | 625      | 625      | 625      | 625      | 625      | 625      | 625      | 625      | 625      |
|                | 15      | Banadhar,            | ...                             | 261      | 261      | 261      | 261      | 261      | 261      | 261      | 261      | 261      | 261      |
|                | 16      | Phumiar,             | ...                             | 178      | 178      | 178      | 178      | 178      | 178      | 178      | 178      | 178      | 178      |
|                | 17      | Deoghari,            | ...                             | 702      | 702      | 702      | 702      | 702      | 702      | 702      | 702      | 702      | 702      |
|                | 18      | Silgaon,             | ...                             | 245      | 245      | 245      | 245      | 245      | 245      | 245      | 245      | 245      | 245      |
|                | 19      | Phartar,             | ...                             | 1,166    | 1,166    | 1,166    | 1,166    | 1,166    | 1,166    | 1,166    | 1,166    | 1,166    | 1,166    |
|                | 20      | Panj-aon,            | 675                             | 950      | 950      | 950      | 950      | 950      | 950      | 950      | 950      | 950      | 950      |
|                | 21      | Taplar,              | 494                             | 712      | 712      | 712      | 712      | 712      | 712      | 712      | 712      | 712      | 712      |
|                | 22      | Chirtar,             | 58                              | 95       | 95       | 95       | 95       | 95       | 95       | 95       | 95       | 95       | 95       |
|                | 23      | Dasao,               | 940                             | 1,211    | 1,211    | 1,211    | 1,211    | 1,211    | 1,211    | 1,211    | 1,211    | 1,211    | 1,211    |
|                | 24      | Chanso,              | 611                             | 689      | 689      | 689      | 689      | 689      | 689      | 689      | 689      | 689      | 689      |
|                | 25      | Dowar,               | 356                             | 475      | 475      | 475      | 475      | 475      | 475      | 475      | 475      | 475      | 475      |
|                | 26      | Rangao,              | 53                              | 86       | 86       | 86       | 86       | 86       | 86       | 86       | 86       | 86       | 86       |
|                | 27      | Sali,                | 1,444                           | 2,114    | 2,114    | 2,114    | 2,114    | 2,114    | 2,114    | 2,114    | 2,114    | 2,114    | 2,114    |
|                | 28      | Salkothan,           | 648                             | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      |
|                | 29      | Samalta,             | 522                             | 618      | 618      | 618      | 618      | 618      | 618      | 618      | 618      | 618      | 618      |
|                | 30      | Silgaon,             | 787                             | 1,069    | 1,069    | 1,069    | 1,069    | 1,069    | 1,069    | 1,069    | 1,069    | 1,069    | 1,069    |
|                | 31      | Koru,                | 1,069                           | 1,377    | 1,377    | 1,377    | 1,377    | 1,377    | 1,377    | 1,377    | 1,377    | 1,377    | 1,377    |
|                | 32      | Kothi,               | 39                              | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       | 35       |
|                | 33      | Kalao,               | 214                             | 293      | 293      | 293      | 293      | 293      | 293      | 293      | 293      | 293      | 293      |
|                | 34      | Lakhwar,             | 688                             | 751      | 751      | 751      | 751      | 751      | 751      | 751      | 751      | 751      | 751      |
|                | 35      | Lakhao,              | 125                             | 316      | 316      | 316      | 316      | 316      | 316      | 316      | 316      | 316      | 316      |
|                | 36      | Molna,               | 285                             | 355      | 355      | 355      | 355      | 355      | 355      | 355      | 355      | 355      | 355      |
|                | 37      | Malekha,             | 52                              | 76       | 76       | 76       | 76       | 76       | 76       | 76       | 76       | 76       | 76       |
|                | 38      | Massao,              | 603                             | 784      | 784      | 784      | 784      | 784      | 784      | 784      | 784      | 784      | 784      |
|                | 39      | Haripur Bias,        | 146                             | 310      | 310      | 310      | 310      | 310      | 310      | 310      | 310      | 310      | 310      |
| Total,         |         |                      | 19,730                          | 26,181   | 26,181   | 26,181   | 26,181   | 26,181   | 26,181   | 26,181   | 26,181   | 26,181   | 26,181   |

H. G. ROSS,  
Superintendent.

## Statement of Population of Fargana Jaunsar Bawar according to last Census.

|                         |     |     |     | Male.  | Female. | Total. | Remarks. |
|-------------------------|-----|-----|-----|--------|---------|--------|----------|
| Rajput,                 | ... | ... | ... | 10,734 | 8,251   | 18,985 |          |
| Brahman,                | ... | ... | ... | 2,500  | 1,871   | 4,371  |          |
| Bania,                  | ... | ... | ... | 282    | 73      | 355    |          |
| Bajgi,                  | ... | ... | ... | 1,351  | 1,069   | 2,420  |          |
| Koli,                   | ... | ... | ... | 2,191  | 1,540   | 3,731  |          |
| Dom,                    | ... | ... | ... | 1,749  | 1,455   | 3,204  |          |
| Chanal,                 | ... | ... | ... | 176    | 136     | 312    |          |
| Lohar,                  | ... | ... | ... | 370    | 276     | 646    |          |
| Badhi,                  | ... | ... | ... | 518    | 401     | 919    |          |
| Jogi,                   | ... | ... | ... | 146    | 98      | 244    |          |
| Chamar,                 | ... | ... | ... | 1,537  | 1,329   | 2,866  |          |
| Jolaha,                 | ... | ... | ... | 118    | 98      | 216    |          |
| Sunar,                  | ... | ... | ... | 149    | 105     | 254    |          |
| Hujam,                  | ... | ... | ... | 25     | 10      | 35     |          |
| Gushain,                | ... | ... | ... | 19     | 11      | 30     |          |
| Kahar,                  | ... | ... | ... | 174    | 8       | 182    |          |
| Kumhar,                 | ... | ... | ... | 53     | 9       | 62     |          |
| Fakir,                  | ... | ... | ... | 6      | ...     | 6      |          |
| Gujar,                  | ... | ... | ... | 3      | 3       | 6      |          |
| Ahir,                   | ... | ... | ... | 13     | ...     | 13     |          |
| Taili,                  | ... | ... | ... | 24     | 2       | 26     |          |
| Kurmi,                  | ... | ... | ... | 14     | 1       | 15     |          |
| Bhangi,                 | ... | ... | ... | 103    | 47      | 150    |          |
| Kaith,                  | ... | ... | ... | 12     | 1       | 13     |          |
| Khattri,                | ... | ... | ... | 9      | ...     | 9      |          |
| Kori,                   | ... | ... | ... | 30     | 4       | 34     |          |
| Dhobi,                  | ... | ... | ... | 22     | 6       | 28     |          |
| Gaderia,                | ... | ... | ... | 3      | ...     | 3      |          |
| Jaiswar,                | ... | ... | ... | 10     | 4       | 14     |          |
| Mandraji,               | ... | ... | ... | 1      | ...     | 1      |          |
| Bairagi,                | ... | ... | ... | 5      | ...     | 5      |          |
| Fakir Ughar,            | ... | ... | ... | 2      | ...     | 2      |          |
| Kambou,                 | ... | ... | ... | 4      | ...     | 4      |          |
| Kalal,                  | ... | ... | ... | 10     | ...     | 10     |          |
| Mali,                   | ... | ... | ... | 9      | 3       | 12     |          |
| Bhujwa,                 | ... | ... | ... | 2      | ...     | 2      |          |
| Rajdhema,               | ... | ... | ... | 9      | 1       | 10     |          |
| Gharani,                | ... | ... | ... | 1      | ...     | 1      |          |
| Chhipi,                 | ... | ... | ... | 6      | 4       | 10     |          |
| Khatik,                 | ... | ... | ... | 18     | ...     | 18     |          |
| Malla,                  | ... | ... | ... | 3      | ...     | 3      |          |
| Naigi,                  | ... | ... | ... | 2      | 4       | 6      |          |
| Khasasoker,             | ... | ... | ... | 3      | ...     | 3      |          |
| Tamoli,                 | ... | ... | ... | 3      | ...     | 3      |          |
| Thapa,                  | ... | ... | ... | 1      | ...     | 1      |          |
| Jat,                    | ... | ... | ... | 2      | ...     | 2      |          |
| Kumbi,                  | ... | ... | ... | 10     | 4       | 14     |          |
| Patwa,                  | ... | ... | ... | 1      | ...     | 1      |          |
| Pasi,                   | ... | ... | ... | 4      | ...     | 4      |          |
| Basri,                  | ... | ... | ... | 1      | ...     | 1      |          |
| Benaudhia,              | ... | ... | ... | 2      | ...     | 2      |          |
| Lodha,                  | ... | ... | ... | 9      | 2       | 11     |          |
| Kahari,                 | ... | ... | ... | 2      | 1       | 3      |          |
| Badi,                   | ... | ... | ... | 1      | ...     | 1      |          |
| Kanjer,                 | ... | ... | ... | 2      | ...     | 2      |          |
| Muchi,                  | ... | ... | ... | 21     | 12      | 33     |          |
| Total Hindu,            |     |     |     | 22,475 | 16,828  | 39,313 |          |
| Sheikh,                 | ... | ... | ... | 185    | 55      | 240    |          |
| Syud,                   | ... | ... | ... | 21     | 1       | 22     |          |
| Mogul,                  | ... | ... | ... | 5      | 1       | 6      |          |
| Pathan,                 | ... | ... | ... | 391    | 26      | 417    |          |
| Rajput,                 | ... | ... | ... | 4      | 1       | 5      |          |
| Miscellaneous Musalman, | ... | ... | ... | 57     | 10      | 67     |          |
| Total,                  |     |     |     | 463    | 94      | 757    |          |
| GRAND TOTAL,            |     |     |     | 23,138 | 16,932  | 40,070 |          |
| Zemindar,               | ... | ... | ... | ...    | ...     | 16,812 |          |
| Cultivator,             | ... | ... | ... | ...    | ...     | 12,661 |          |
| Non-cultivator,         | ... | ... | ... | ...    | ...     | 10,597 |          |

H. G. BOSS,

Superintendent.

## GENERAL STATEMENT.

| Pargana. | Number. | Name of Village. | HIGHEST JUMMA OF FORMER SETTLEMENT. |       |       |       |          |       |       | Proposed jumma. | Total area in acres. | MINHAL.   |         | MALOUZARI.        |                              |           |                         | AVERAGE RATE PER ACRE ACCORDING TO THE PROPOSED JUMMA. |           |  |
|----------|---------|------------------|-------------------------------------|-------|-------|-------|----------|-------|-------|-----------------|----------------------|-----------|---------|-------------------|------------------------------|-----------|-------------------------|--------------------------------------------------------|-----------|--|
|          |         |                  | 1st.                                | 2nd.  | 3rd.  | 4th.  | 5th.     | 6th.  | 7th.  |                 |                      | Lakhraja. | Barren. | Culturable waste. | Cultivated including fallow. |           | Per acre of total area. | Per acre of malguzari area.                            | Rs. a. p. |  |
|          |         |                  |                                     |       |       |       |          |       |       |                 |                      |           |         |                   | Rs.                          | Total.    |                         |                                                        |           |  |
|          | 1       | Udipalta,        | 391                                 | 400   | 480   | 410   | 561      | 579   | 679   | 775             | 658                  | Rs.       | Rs.     | Rs.               | Rs.                          | Rs. a. p. | Rs. a. p.               | Rs. a. p.                                              |           |  |
|          | 2       | Operiathgaon,    | 188                                 | 150   | 310   | 240   | 316      | 269   | 218   | 309             | 426                  | ...       | 43      | 455               | 498                          | 1 2 10    | 1 2 10                  | 1 8 10½                                                |           |  |
|          | 3       | Athgaon Chandao, | 565                                 | 525   | 585   | 520   | 622-14   | 601   | 635   | 855             | 790                  | ...       | 12      | 610               | 622                          | 1 1 4     | 1 1 4                   | 1 6 0                                                  |           |  |
|          | 4       | Bana,            | 175                                 | 125   | 140   | 120   | 177-4    | 144   | 219   | 380             | 449                  | ...       | ...     | 379               | 391                          | 0 13 6½   | 0 13 6½                 | 0 15 6½                                                |           |  |
|          | 5       | Besahil          | 461                                 | 430   | 465   | 420   | 507-4    | 509   | 584   | 1,140           | 1,182                | ...       | ...     | 952               | 1,002                        | 0 15 5    | 0 15 5                  | 1 2 2½                                                 |           |  |
|          | 6       | Bangaoon,        | 421                                 | 355   | 420   | 370   | 511-4    | 519   | 490   | 665             | 518                  | ...       | 26      | 354               | 380                          | 1 4 6     | 1 4 6                   | 1 12 0                                                 |           |  |
|          | 7       | Barasua,         | 18                                  | 14    | 14    | 12    | 15-4     | 14    | 21    | 71              | 151                  | ...       | 5       | 100               | 105                          | 0 7 6     | 0 7 6                   | 0 10 9½                                                |           |  |
|          | 8       | Behlar,          | 511                                 | 612   | 500   | 450   | 612-8    | 614   | 773   | 831             | 520                  | ...       | 36      | 385               | 421                          | 1 9 7     | 1 9 7                   | 1 15 7                                                 |           |  |
|          | 9       | Bislar,          | 327                                 | 255   | 355   | 310   | 334      | 283   | 313   | 380             | 454                  | ...       | 24      | 243               | 267                          | 0 13 4½   | 0 13 4½                 | 1 6 9                                                  |           |  |
|          | 10      | Bounder,         | 481                                 | 410   | 500   | 450   | 620-8    | 557   | 570   | 855             | 1,270                | 84        | 110     | 711               | 821                          | 0 10 9½   | 0 11 6½                 | 1 0 8                                                  |           |  |
|          | 11      | Bumtar,          | 1,081                               | 1,000 | 1,131 | 1,010 | 1,316    | 1,380 | 1,415 | 1,971           | 1,272                | ...       | 57      | 938               | 1,040                        | 1 8 9½    | 1 8 9½                  | 1 14 4                                                 |           |  |
|          | 12      | Birhmar,         | 451                                 | 365   | 420   | 370   | 520      | 525   | 611   | 561             | 511                  | ...       | 36      | 369               | 405                          | 1 1 6½    | 1 1 6½                  | 1 6 1½                                                 |           |  |
|          | 13      | Bhurm,           | 885                                 | 858   | 1,000 | 875   | 1,149    | 1,104 | 1,059 | 1,235           | 777                  | ...       | 74      | 566               | 640                          | 1 9 5     | 1 9 5                   | 1 14 10½                                               |           |  |
|          | 14      | Bawar,           | 1,101                               | 1,100 | 1,300 | 1,150 | 1,681    | 1,344 | 1,316 | 625             | 1,266                | 391       | 75      | 438               | 513                          | 0 7 10½   | 0 11 5                  | 1 3 6                                                  |           |  |
|          | 15      | Bahnadhar,       | ...                                 | ...   | ...   | ...   | ...      | ...   | ...   | 261             | 292                  | ...       | 49      | 165               | 214                          | 0 14 3½   | 0 14 3½                 | 1 3 6                                                  |           |  |
|          | 16      | Phuniar,         | ...                                 | ...   | ...   | ...   | ...      | ...   | ...   | 178             | 194                  | ...       | 13      | 123               | 186                          | 0 14 8    | 0 14 8                  | 1 4 11½                                                |           |  |
|          | 17      | Peoghar,         | ...                                 | ...   | ...   | ...   | ...      | ...   | ...   | 702             | 1,492                | 27        | 191     | 597               | 783                          | 0 7 6     | 0 7 6½                  | 0 14 3                                                 |           |  |
|          | 18      | Silgaon,         | ...                                 | ...   | ...   | ...   | ...      | ...   | ...   | 245             | 456                  | ...       | 14      | 268               | 282                          | 0 8 7     | 0 8 7                   | 0 13 10½                                               |           |  |
|          | 19      | Phurtar,         | 766                                 | 737   | 880   | 790   | 1,010    | 1,016 | 1,114 | 1,166           | 723                  | ...       | 44      | 570               | 614                          | 1 9 9½    | 1 9 9½                  | 1 14 4½                                                |           |  |
|          | 20      | Punjaon,         | 506                                 | 516   | 515   | 460   | 632-12   | 650   | 675   | 950             | 883                  | ...       | 35      | 695               | 730                          | 1 1 2½    | 1 1 2½                  | 1 4 10                                                 |           |  |
|          | 21      | Tuplar,          | 461                                 | 385   | 405   | 405   | 506-8    | 520   | 494   | 712             | 726                  | ...       | 42      | 443               | 535                          | 0 15 8½   | 0 15 8½                 | 1 5 3½                                                 |           |  |
|          | 22      | Churtar          | 61                                  | 55    | 51    | 45    | 64-4     | 48    | 56    | 95              | 228                  | ...       | ...     | 131               | 131                          | 0 6 8     | 0 6 8                   | 0 11 7                                                 |           |  |
|          | 23      | Dasao,           | 1,211                               | 1,100 | 975   | 915   | 1,250-8  | 1,132 | 949   | 1,211           | 1,188                | ...       | 16      | 933               | 949                          | 1 0 3½    | 1 0 3½                  | 1 4 5                                                  |           |  |
|          | 24      | Dhimao,          | 871                                 | 750   | 685   | 630   | 820      | 730   | 611   | 6 9             | 547                  | ...       | 40      | 421               | 461                          | 1 4 2     | 1 4 2                   | 1 7 11                                                 |           |  |
|          | 25      | Dwar,            | 286-8                               | 258   | 375   | 310   | 424-4    | 384   | 356   | 475             | 639                  | ...       | 10      | 381               | 391                          | 0 11 10½  | 0 11 10½                | 1 3 5½                                                 |           |  |
|          | 26      | Kungao,          | 65                                  | 65    | 61    | 56    | 57       | 47    | 52    | 86              | 117                  | ...       | 10      | 60                | 70                           | 0 11 9    | 0 11 9                  | 1 3 8                                                  |           |  |
|          | 27      | Sili,            | 666                                 | 1,000 | 1,175 | 1,075 | 1,428    | 1,416 | 1,444 | 1,114           | 1,311                | ...       | 75      | 1,014             | 1,019                        | 1 9 2½    | 1 9 2½                  | 1 14 11½                                               |           |  |
|          | 28      | Salkothan,       | 451                                 | 425   | 490   | 450   | 557      | 557   | 648   | 760             | 655                  | ...       | 5       | 556               | 561                          | 1 2 6½    | 1 2 6½                  | 1 5 8                                                  |           |  |
|          | 29      | Samalta,         | 341                                 | 341   | 380   | 310   | 385      | 427   | 522   | 6 8             | 393                  | ...       | 12      | 335               | 347                          | 1 9 2     | 1 9 2                   | 1 12 5½                                                |           |  |
|          | 30      | Silgaon,         | 595                                 | 545   | 570   | 520   | 690-8    | 691   | 737   | 1,069           | 1,030                | ...       | 14      | 843               | 857                          | 1 0 7½    | 1 0 7½                  | 1 3 11½                                                |           |  |
|          | 31      | Kuro,            | 916                                 | 925   | 951   | 890   | 1,053-8  | 1,046 | 1,069 | 1,377           | 1,011                | ...       | 26      | 832               | 858                          | 1 5 9½    | 1 5 9½                  | 1 9 8                                                  |           |  |
|          | 32      | Kothi            | 16                                  | 30    | 28    | 25    | 34-4     | 25    | 29    | 35              | 46                   | ...       | 1       | 43                | 44                           | 0 12 2    | 0 12 2                  | 0 12 9                                                 |           |  |
|          | 33      | Kalao,           | 266                                 | 255   | 205   | 180   | 223-4    | 226   | 214   | 293             | 375                  | ...       | 54      | 243               | 297                          | 0 13 2½   | 0 13 2½                 | 0 15 9½                                                |           |  |
|          | 34      | Lakhwar,         | 425                                 | 411   | 431   | 385   | 526      | 538   | 638   | 751             | 451                  | ...       | 28      | 385               | 403                          | 1 10 7½   | 1 10 7½                 | 1 13 9½                                                |           |  |
|          | 35      | Lakhas,          | 215                                 | 180   | 235   | 184   | 218      | 134   | 125   | 216             | 443                  | ...       | 74      | 221               | 235                          | 0 7 9½    | 0 7 9½                  | 0 11 8½                                                |           |  |
|          | 36      | Mohna,           | 196                                 | 180   | 320   | 250   | 342-4    | 316   | 285   | 355             | 311                  | ...       | 37      | 179               | 216                          | 1 2 3     | 1 2 3                   | 1 10 3½                                                |           |  |
|          | 37      | Mulethar,        | 61                                  | 45    | 41    | 36    | 50-8     | 35    | 53    | 76              | 137                  | ...       | ...     | 113               | 113                          | 0 8 10½   | 0 8 10½                 | 0 10 9                                                 |           |  |
|          | 38      | Masau,           | 581                                 | 525   | 580   | 535   | 698      | 667   | 603   | 784             | 650                  | ...       | 140     | 409               | 549                          | 1 3 3½    | 1 3 3½                  | 1 6 10                                                 |           |  |
|          | 39      | Haripur Beas,    | 150                                 | 51    | 81    | 65    | 711-4    | 111   | 46    | 310             | 371                  | 93        | 112     | 32                | 184                          | 0 13 4½   | 1 1 10                  | 2 2 5½                                                 |           |  |
|          |         | Total,           | 16198-8                             | 15298 | 16054 | 15534 | 20016-10 | 19085 | 19730 | 26181           | 24933                | 502       | 1,619   | 16,873            | 18,493                       | ...       | ...                     | ...                                                    |           |  |

H. G. ROSS,  
Superintendent.

*List of Patwaris' Halkobandi in Jaunsar Bawar Pargana.*

| No. of Halka. | Name of Halka.      | Names of Villages.  | Amount of land revenue of each vil-<br>lage. | Amount of Patwaris' fees. | REMARKS. |
|---------------|---------------------|---------------------|----------------------------------------------|---------------------------|----------|
|               |                     |                     | Rs. a. p.                                    | Rs. a. p.                 |          |
| 1             | Lackwar, ...        | Lackwar, ...        | 751 0 0                                      | 88 0 0                    |          |
|               | Ditto, ...          | Phartar, ...        | 1,166 0 0                                    | 58 0 0                    |          |
| 2             | Koru, ...           | Koru, ...           | 1,377 0 0                                    | 69 0 0                    |          |
|               | Ditto, ...          | Bilar, ...          | 831 0 0                                      | 42 0 0                    |          |
| 3             | Sali, ...           | Sali, ...           | 2,114 0 0                                    | 106 0 0                   |          |
| 4             | Udpalta, ...        | Udpalta, ...        | 775 0 0                                      | 39 0 0                    |          |
|               | Ditto, ...          | Samalta, ...        | 618 0 0                                      | 31 0 0                    |          |
|               | Ditto, ...          | Birmon, ...         | 561 0 0                                      | 28 0 0                    |          |
| 5             | Kalsi, ...          | Kalsi, ...          | 310 0 0                                      | 16 0 0                    |          |
|               | Ditto, ...          | Pachgaon, ...       | 550 0 0                                      | 48 0 0                    |          |
|               | Ditto, ...          | Sahkothan, ...      | 760 0 0                                      | 38 0 0                    |          |
|               | Ditto, ...          | Bana, ...           | 380 0 0                                      | 19 0 0                    |          |
| 6             | Bislar, ...         | Bislar, ...         | 380 0 0                                      | 19 0 0                    |          |
|               | Ditto, ...          | Bongaon, ...        | 665 0 0                                      | 33 0 0                    |          |
|               | Ditto, ...          | Barasua, ...        | 71 0 0                                       | 4 0 0                     |          |
|               | Ditto, ...          | Aoperhathgaon, ...  | 309 0 0                                      | 16 0 0                    |          |
|               | Ditto, ...          | Rungau, ...         | 86 0 0                                       | 4 0 0                     |          |
| 7             | Dawar, ...          | Dowar, ...          | 475 0 0                                      | 24 0 0                    |          |
|               | Ditto, ...          | Mohna, ...          | 355 0 0                                      | 18 0 0                    |          |
|               | Ditto, ...          | Kalou, ...          | 293 0 0                                      | 15 0 0                    |          |
| 8             | Boweder, ...        | Boundar, ...        | 855 0 0                                      | 42 10 5                   |          |
|               | Ditto, ...          | Chartar, ...        | 95 0 0                                       | 5 0 0                     |          |
|               | Ditto, ...          | Taplar, ...         | 712 0 0                                      | 36 0 0                    |          |
| 9             | Silgaon, ...        | Silgaon, ...        | 245 0 0                                      | 12 0 0                    |          |
|               | Ditto, ...          | Baundhar, ...       | 261 0 0                                      | 13 0 0                    |          |
|               | Ditto, ...          | Phaniar, ...        | 178 0 0                                      | 9 0 0                     |          |
|               | Ditto, ...          | Lakhow, ...         | 216 0 0                                      | 11 0 0                    |          |
| 10            | Bawar, ...          | Bawar, ...          | 715 0 0                                      | 36 0 0                    |          |
|               | Ditto, ...          | Deoghar, ...        | 719 0 0                                      | 38 0 0                    |          |
| 11            | Masau, ...          | Masau, ...          | 784 0 0                                      | 39 0 0                    |          |
|               | Ditto, ...          | Bharm, ...          | 1,235 0 0                                    | 65 0 0                    |          |
| 12            | Disou, ...          | Disou, ...          | 1,211 0 0                                    | 61 0 0                    |          |
|               | Ditto, ...          | Malatha, ...        | 76 0 0                                       | 4 0 0                     |          |
|               | Ditto, ...          | Dhanaw, ...         | 689 0 0                                      | 34 0 0                    |          |
| 13            | Bomtar, ...         | Bomtar, ...         | 1,971 0 0                                    | 99 0 0                    |          |
|               | Ditto, ...          | Koti, ...           | 35 0 0                                       | 2 0 0                     |          |
| 14            | Athgaon Chandu, ... | Athgaon Chandu, ... | 855 0 0                                      | 43 0 0                    |          |
|               | Ditto, ...          | Silgaon, ...        | 1,069 0 0                                    | 54 0 0                    |          |
|               | Ditto, ...          | Bissahal, ...       | 1,140 0 0                                    | 57 0 0                    |          |

H. G. ROSS,  
Superintendent.



## TRANSLATION OF WAJIB-UL-URZ.

I.—The amount of assessment of the last settlement was , and was based on the general capabilities of the whole khat.  
 Class I.—Revenue.

In the present settlement the assessment, based on the cultivated area and sayer calculations, has been raised to , which amount I (or we, as the case may be) agree to pay annually during the period of the present settlement, i. e., from 1st July, 1873, to 30th June, 1883; and for such further term as it may take to complete the next settlement, I hereby bind myself to pay the Government revenue in the Kalsi tahsil, having collected from the several zemindars the sums due from them according to the phantbandi to be annually made, the zemindars to pay in instalments on 15th July, 15th October, 15th January, and 15th April. I also bind myself to be responsible for the payment of all the Government revenue for the whole of his khat.

II.—The zemindars in this khat are the proprietors of all the land cultivated by them; but according to the custom of the country they must pay the Government revenue as fixed by me on their general capabilities, as well as the actual cultivated area. I promise to make this phantbandi fairly and impartially, after careful enquiry into the condition of each zemindar, and to file the phantbandi in the tahsil by the 1st of April of each year, for the confirmation of the Superintendent of the Dun. All increases or decreases of revenue are to be clearly shown. All objections are to be lodged by the zemindars within fifteen days. After the phantbandi has been sanctioned, it will be deemed a sufficient record of the amount of revenue to be paid by each zemindar. In the event of the death or desertion of any revenue-paying zemindar, I bind myself to make arrangements for the payment of the Government revenue, either by having his fields cultivated by some one else, or by distributing the amount over the whole khat.  
 Clause II.—Collections from zemindars.

III.—The custom here as regards tenants-at-will is that they take land from the zemindars, some paying in cash and some in kind, i. e., a fixed portion of the produce of the land. This is termed "kan." But these tenants possess no proprietary right in the lands, nor can they acquire any. The zemindar can at his will oust them at the end of the year, but must have it entered in the patwari's papers. There are no maurusi tenants.  
 Clause III.—Tenants.

IV.—In the event of any balance accruing against any zemindar, I will realize it by filing a suit against the defaulter according to the revenue laws of the pargana. Should any zemindar leave the village, the lands and houses (if not mortgaged) belonging to him will fall into my possession, and I will arrange for the cultivation of the said land, &c. On the return of the zemindar, and his stating his intention to live in the village, I will give him back his property,—the said zemindar to pay the revenue from the date of possession and balance that formerly accrued.  
 Clause IV.—Collection of revenue.

V.—The zemindars possess full proprietary right in their holdings with right of transfer. Land of one village must be transferred to a person holding lands in the same village, or lands of one khat must be transferred to a person holding lands in the same khat as far as possible,—residents of the same village or khat having a right of pre-emption.  
 Clause V.—Transfers.

After the execution of the deed of sale on a proper Government stamp, it must be duly registered. I shall only under these conditions allow the sale, and I shall have this fact entered in the patwari's papers. Should the sale not be effected according to these rules, it will be deemed void.

The fact of the change is to be entered in the khasra. No zemindar or saiana has any power of sale as regards the waste lands or forests situated in the khat, as the said waste lands and forests are either the property of Government or the common property of the whole khat: no one has any exclusive right to them.

VI.—Whereas in this pargana the cases about land and those of monetary transactions, and not criminal cases, are generally settled by panchayat, I bind myself to decide all cases without partiality, and according to the customs of the place. In the case of a dispute being about lands I shall have the quantity of land under dispute, when decided, entered in the patwari's papers. It has been customary here, when a dispute about land or houses arises, the dissatisfied party dedicates some of the earth belonging to the house or field to "the gods," and thus incapacitates the whole country from using the house or field; and thus results the loss of Government revenue. I bind myself to give information of this dedication to the gods to the public authorities, or not to allow the dedication to be made. In the event of my failing to give the said information to the public authorities, I bind myself to be responsible to pay the Government revenue on account of that piece of land.

VII.—I do hereby bind myself not to charge heavy expenses on account of coming and going to Court for miscellaneous purposes, but only take fees at the rate of half an anna per rupee on the Government revenue. I shall also take the saiana perquisites according to the prevailing custom only. I will also charge the amount of talbana which a khat has to pay on account of the default on the part of a zemindar to that zemindar.

VIII.—Whereas Government has fixed the patwari's cess at the rate of Rs. 5 per cent. on the Government demand, I bind myself to pay it with the Government revenue, having collected it annually from the zemindars according to the phantbandis.

IX.—Since the sum of Rs. 5 per cent. has been fixed as saiana's fees, I bind myself to realize the same from the zemindars with the Government revenue according to the phantbandi. The eldest son, according to the custom of this place, succeeds to the saianaship. In case of his incapacity, the younger brother, with the sanction of the authorities, becomes saiana. If a saiana dies without issue, no woman is to be his successor. Government may appoint another man of the same family or any one whom it pleases. Saianas can be removed on account of keeping arrears of revenue, or for any other fault that may be proved before an officer. In the event of the death of a saiana, the new saiana will take care of the wife of the deceased.

X.—With the exception of those lands that are situated within the boundaries of any khat, and those that are entered in the khasra in my name, I bind myself not to take possession of any lands beyond the said boundaries, except by means of purchase or mortgage, or by regular suit. I shall annually inspect the boundary pillars now fixed, and at the time of the payment of the April instalment of Government revenue, I shall inform the tahsildar of Kalsi of the state of the pillars, and shall comply with such orders as the tahsildar may give regarding the pillars.

XI.—I shall be responsible for the police duties. I shall not allow bad characters to enter or stay in my khat. I shall not conceal any criminal, nor stolen property, nor any criminal occurrence. I shall give information of the commission of offences to the Kalsi police, trace out the offenders, and assist the police in prosecuting. I shall decide petty criminal cases which are really of a civil nature according to the customs of the place.

XII.—The zemindars of the khat have power to fish three times a year by poisoning, and throughout the year by rod and line: they can also fish with nets in the large rivers, as the Jumna and Tons, but not in the small streams.

XIII.—In my khat there is first-class Government jungle in \_\_\_\_\_, the bounds of which have been explained to me, and pillars have been put up.  
 Clause XIII.—Forests. In this jungle we zemindars have no right of any kind whatever, and cannot enter to graze, or take leaves, or for any purpose whatever.

There is second-class Government forest in the \_\_\_\_\_, boundaries of which have been read out to, and pillars have been put up. In this we zemindars have the right to graze our cattle, cut grass, and, with the permission of the forest officer, can cut leaves for sheep. We can collect fallen leaves from under the trees for manure. We can take also dried wood for fuel, and stone for building houses. We can cut *ringal* for our own use. We can also cut trees, as *ginghar*, *kaith*, *lod*, *ampar*, *makh*, for hedging purposes, with the permission of the forest officers. If any zemindar of the khat wishes to break up any new land in the said forest, he must before doing so obtain the permission of the forest officers as regards the quantity of land, the position of the field, and the period for which it is to be cultivated; and he shall also pay such revenue as may be fixed by the Superintendent of the Dun. After the expiry of this term, he must get fresh permission; if he does not get it, he must relinquish the field, and under no circumstances can he acquire any right whatever in it. Should the forest officer at any time wish to close any portion of the second-class forest and make it first-class, he must give a month's notice through the Superintendent of the Dun, and leave us such forest as will suffice for our use. Should we not deem the forest so given us sufficient, or find that the forest officer has shut up the forest near the village, and gives us forest which is at a distance, we can apply to the Superintendent, and get just arrangements made for grazing, &c. The piece of forest thus closed we will not enter into till the permission of the Superintendent is given, nor graze our sheep in it. We cannot sell or mortgage anything belonging to second class forest under any pretence whatever. We will not set fire to the forest where our sheep graze, but will preserve the same from being set fire to. Should a fire take place in the forest, we will be liable to a fine, should carelessness be proved against us. We will have the same right over the water which flows through the forest which we have hitherto had, and the right of way to the water will continue. Besides the above forest, all other forests and waste lands which lie in our khat are our property for our use. A zemindar can sell to another of his own village or khat, or to that of another village or khat, the trees which have been planted by himself; but no zemindar can sell any wood or tree of any kind to any person, such as contractor or inhabitant of Chakrata, or to the servants of the Department Public Works, or Commissariat, or any other outsider, by any means whatever. We cannot sell even amongst ourselves the trees which are self-grown, but we can give to the people of another khat for nothing, or in lieu of something received from them. We can sell grass, *ringal* or *bansi* to any person. The zemindars of other khats who used to get dried wood and leaves from our forest will continue to do so without payment of any fees. For sheep which they bring in the morning and take back in the evening we can make no charge. If they make any shed for the sheep, we will have a right to demand grazing dues. If at any time for any reason we wish to close any portion of our jungle, the zemindars of other khats who have a right to graze in our khat must refrain from grazing in the closed jungle. Should the Government discover that any zemindar of our khat has acted contrary to any of the conditions entered into above, it can confiscate the whole forest.

In the case of our requiring any wood which is not to be found in our forest, we must apply to the Superintendent six-monthly, i. e., on the first of March and first of September, stating the quantity of wood required; and after the sanction of Superintendent has been obtained, we shall be entitled to get wood from the Forest Department. If we fail to make the said application on the date fixed, we shall have no right to get wood for six months. After obtaining the sanction of the Superintendent, we must present ourselves to the forest officers between 20th and 30th March, or 20th and 30th September. On our failing to appear on the dates fixed, we shall not be entitled to get wood during the year.

The deodar wood which we get from the Forest Department we will cut by no instrument but by saw. If we cannot procure saws, we will deposit fees in the Forest Department for sawing.

Clause XIV.—Orders. XIV.—We shall obey all orders given us through the tahsildar of Kalsi.

Clause XV.—Lands required by Government. XV.—In future if Government requires any land, cultivated or uncultivated, or trees, it must take up the land under the Act then in force, and pay compensation for it.

Clause XVI.—Coolies. XVI.—In the case of coolies being required for public purposes, or for European travellers, we shall act according to the orders passed on phantbandis of coolies by the Superintendent about the supply of coolies. The Superintendent can from time to time alter the phantbandis.

The saiana is liable to fine for delay in obeying orders. We will make phants of coolies according to number. Should a cooly fail to work on his turn, by absence or refusal, we shall report the same to the authorities, and he shall be liable to fine. Nobody, without the order of the Superintendent or Cantonment Magistrate of Chakrata, can take coolies from us, but we can at our pleasure supply coolies.

H. G. ROSS,  
*Superintendent.*



From Secretary to Government of India, Department of Agriculture, Revenue, and Commerce, to Secretary to Government, North-Western Provinces, (No. 75).—  
Dated Simla, the 17th June, 1872.

SIR,—The great and growing importance of the Indian tea trade renders it desirable that the Government of India should be placed in possession of certain general statistics in regard to the present position of tea culture in all parts of the Empire.

2. I am therefore desired to request that, with the permission of His Honor the Lieutenant-Governor, you will take measures for causing the annexed statement to be carefully filled in, in regard to all tea plantations or gardens now existing in the North-Western Provinces for the present year, and that you will submit the same as soon after the 1st November as may be practicable.

3. His Excellency the Governor-General in Council is deeply interested in this important national enterprise, and he does not doubt that, appreciating the interest he feels in their success, the planters as a body will cheerfully furnish the information required.

4. This statement should be accompanied by a brief history of tea planting, and by a well considered estimate of the present position and apparent prospects of tea culture, in each district.

5. Opportunity should be taken to ascertain what (if any) obstacles exist in each locality to the fullest development of this important branch of production, and what, if any, measures could properly be adopted by Government in view to facilitating this object. The planters themselves should of course be consulted on these points, because, although considerations of general policy may in many cases render it impossible for Government to do all that those pecuniarily interested in the undertaking might desire or suggest, His Excellency is nevertheless anxious to learn what their views upon this branch of the question are, and to ascertain what, if any thing, might, in their opinion, be done by Government towards encouraging the Indian tea trade.

I have, &c.,

A. O. HUME,

Secretary to the Government of India.

Nos. 956-57A. OF 1872.

REVENUE DEPARTMENT.

*Dated Nynee Tal, the 28th June, 1872.*

COPY forwarded to the Commissioners of Meerut and Kumaon for compliance, and for expression of opinion on the general question (to Commissioner of Meerut only), after communication with the Superintendent Botanical Gardens.

By order of the Hon'ble the Lieutenant-Governor, North-Western Provinces.

J. S. MACKINTOSH,

Under-Secy. to Govt., N.-W. P.

From Commissioner of the Kumaon Division, to Secretary to Government, North-Western Provinces (No. 1156).—Dated Camp Ramnuggur, the 9th December, 1872.

SIR,—I have the honor to acknowledge the receipt of your endorsement in the Revenue Department, No. 956A., dated 28th June last, with its enclosures, requiring statistics of tea culture, and a report on its present position and future prospects.

2. Immediately upon the receipt of your reference, I sent to every tea-planter in my Division a copy of the letter from the Secretary to the Government of India, ask-

ing them to favor me by filling in the statement called for, and to offer any suggestions as to improvements that might be introduced, or obstructions removed, in connection with the advancement of this important trade. From the replies received, I now submit a Divisional statement showing the yield of tea in Kumaon for the year 1872 ; and I beg to represent what, in my opinion, is most desired by the majority of planters, and practically attainable.

3. I have purposely not entered into any history of tea culture in Kumaon from its earliest stage, as I am aware that Dr. Jameson, Superintendent of the Government plantations, will furnish a full and correct account of all that has been done in this province; but I may observe that at first most of the largest estates made the mistake of having too extensive plantations, and in my opinion, in some instances, more attention was given to the selection of a site on account of its being a pleasant residence, with lovely scenery, than to the choice of soil, altitude, and other points connected with large tea crops. A good deal of money in some cases was, I think, unnecessarily expended on houses; but experience, dearly though it was bought, has, I trust, altered the tea prospects of this province; and I am convinced, as I always have been, that with proper management, a tea plantation ought to give very satisfactory returns.

4. It strikes me that the tea-planters of Kumaon make a great mistake in not agreeing to send their tea to one house in London, where it could be always procured. Under the existing practice, the tea grown in this province is sent home to different agents, disposed of generally on arrival in large quantities, purchased by those who at once distribute it to smaller dealers, who mix it to flavor in different teas; and thus it disappears unknown. There is no place where any one partial to Kumaon teas can supply himself in England throughout the year, or even can buy sufficient only for a year, and there is nothing in the way of eating or drinking one gets so accustomed to as tea. A person in the habit of drinking Doonagiree tea, for instance, does not at first like Kousanie tea; and in the same way there is a difference in the teas of every plantation in the province. Planters have no safety in sending their teas to Calcutta brokers, and it is most disheartening to have a large quantity of really good tea pronounced worth only ten or twelve annas a pound, when it is known that this so-called indifferent article is used at home to flavor worthless teas, and make them saleable at a price which would have remunerated the planter. A little more unanimity among the planters on this important point would, I think, do much to establish the value of Kumaon teas in the market at home.

5. The accompanying statement shows that the tea crop of the past year amounted to 2,85,700 lbs., and that quantity required about 8,000 porters to carry it down to the foot of the hills, while a large number of men would also be required to carry up the lead to the plantations. Ponies or mules are considered unsafe carriage for tea, and carts or camels have hitherto been unknown at any plantation, therefore porters are the only carriage employed, and this is not only expensive, but it entails the withdrawal of laborers from the plantations, or the employment of extra men at a season when labor is most needed on the plantations. It is almost impossible to procure hired porters at that season, because the people are busy in their fields, and men from the interior have such an objection to going through hot valleys to the foot of the hills in June and July, that porters for this work could only be hired at enhanced rates, which add considerably to the expense.

6. To remedy this great drawback, it is the universal wish of the planters that cart-roads may be made in the province, and two lines would be sufficient to meet the wants of most of them, in so far that they would reach points to which tea could be sent without the objections noticed in the preceding paragraph. One line would be an extension of the Ramnuggur and Almorah cart-road from Hawalbagh up the Kosee valley, as far as the base of the hill to a place called Tota Siling. The other would be

a branch from the Raneekhet road from Ramnuggur up the Ramgunga valley, as far as Gunnye. The length of the former new line would be about 20 miles, and of the latter about 40 miles. There are no difficulties on either of these lines. The Ramgunga valley especially is very open, and these cart-roads would bring most of the plantations into easy connection with the railway terminus at Ramnuggur.

7. Another request urged by many of the planters is that Government will authorize the contracts for the supply of tea to the troops in Oudh and the North-Western Provinces being given in smaller quantities, in order that they may compete. At present they are debarred from doing so in consequence of the present contracts being on so enormous a scale as to be entirely beyond the capabilities of any single plantation. If this could be allowed, it would give a healthy impulse to the tea interests of this province, and might give the advantage to planters of being able to dispose of their produce near home.

8. A third very important request of the planters is that they may be assisted by tuccavee advances, and thus be relieved of the ruinous rates of interest charged by agents or bankers, which tend more than anything else to make tea cultivation unprofitable. I think this assistance might be given with great advantage to this important trade, and without any risk to Government. The immense advantages to this province from the prosperity of tea plantations are, apart from the fairness of assisting those who have contributed so much to the wealth of the people from which Government derive profit, a sufficient reason, in my opinion, for rendering all possible assistance in not only maintaining the existing plantations in a way which will remunerate the present proprietors, but in some measure enhance the value of those plantations on which it is estimated upwards of sixteen lakhs (16,00,000) of rupees have already been spent. Many of the planters commenced work in the province 15 years ago, and I regret to say, speaking generally, that their efforts have not been crowned with success pecuniarily during this long period. A variety of circumstances have prevented the fulfilment of their hopes, but they have struggled manfully against the many difficulties incident to all new enterprises. Experience has brought about many improvements in the management of tea plantations, and a happier state of affairs seems now in prospect, which I should be glad to see aided by any reasonable assistance that Government could grant. I think that tuccavee advances at 5 per cent. interest, to the extent of half value of the crop, might be made without any risk to the Government, on the understanding that the account was cleared every year, and I have no doubt such advances would very materially help the tea interests. The granting of such advances might be left to the discretion of the local authorities (subject to the sanction of the Board of Revenue) who would be well acquainted with the circumstances of individual applicants.

9. Some other suggestions of a minor and local nature have been made which I have not thought necessary to bring before the Government of India. Cart-roads, contracts, and tuccavee advances are the only points on which the favourable consideration of Government is required. These questions will, I trust, be favorably received. A great deal depends on the success of existing plantations. Should they prove successful, there are thousands of acres of waste land which could be brought under tea cultivation. It is superfluous to enlarge on the vast benefits already conferred on this province by the introduction of capital expended on tea culture, or to anticipate the results that would follow could it be practically established that tea cultivation was a certain source of honorable profit.

I have, &c.,

H. RAMSAY,  
Commissioner.



# KUMAON DIVISION.

Statement illustrative of the state of Tea culture in 1872.

| District. | Name of Plantation. | Approximate average elevation. | AREA IN ACRES. |                  |                                             |              | APPROXIMATE YIELD IN 1872 IN LBS. ABOVE DUPOIS. |        |           |                 |                       |        |        |             |        |  | Average yield in lbs. per acre of mature plants. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|           |                     |                                | Mature plants. | Immature plants. | Taken up for planting, but not yet planted. | Damag. area. | Total.                                          | BLACK. |           |                 |                       | GREEN. |        |             |        |  |                                                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|           |                     |                                |                |                  |                                             |              |                                                 | Dohra. | Souchong. | Pekoe Souchong. | Pekoe & Orange Pekoe. | Total. | Hyson. | Hyson Skin. | Total. |  |                                                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|           |                     |                                |                |                  |                                             |              |                                                 |        |           |                 |                       |        |        |             |        |  |                                                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

KUMAON DISTRICT.

|          |                          |     |                |           |     |     |        |       |        |        |        |        |        |         |         |       |        |         |         |        |                                 |
|----------|--------------------------|-----|----------------|-----------|-----|-----|--------|-------|--------|--------|--------|--------|--------|---------|---------|-------|--------|---------|---------|--------|---------------------------------|
| KUMAON.  | Soonsodhar, ...          | ... | 5,000          | 60        | ... | 35  | ...    | 3,196 | 6,529  | 11,456 | 5,640  | 7,150  | ...    | ...     | ...     | 1,000 | ...    | ...     | 2,800   | 4,000  | 66 lbs.                         |
|          | Jaitola, ...             | ... | 6,500          | ...       | 3   | ... | 8      | ...   | ...    | 35     | 125    | 500    | ...    | ...     | ...     | ...   | ...    | ...     | 2,075   | 2,700  | 77 lbs.                         |
|          | Jeenabad, ...            | ... | ...            | 20        | ... | ... | 40     | ...   | ...    | 11     | ...    | ...    | ...    | ...     | ...     | ...   | ...    | ...     | ...     | 100    | 33 lbs.                         |
|          | Boonga, ...              | ... | ...            | ...       | ... | ... | ...    | ...   | ...    | 60     | ...    | ...    | ...    | ...     | ...     | ...   | ...    | ...     | ...     | 300    | 15 lbs.                         |
|          | Total Kumaon,            | ... | ...            | 1,233     | 498 | ... | ...    | 3,196 | 6,529  | 11,456 | 5,640  | 7,150  | 46,270 | 22,265  | 162,825 | 6,600 | 1,900  | 56,375  | 219,200 |        |                                 |
| GARHWAL. | Gudoollee or Paoree, ... | ... | 5,000          | 215       | ... | ... | ...    | ...   | ...    | 215    | ...    | 1,400  | ...    | 2,000   | 3,400   | ...   | ...    | ...     | ...     | 3,400  | 15½ lbs. !                      |
|          | Moosetee, ...            | ... | 6,000          | 2         | 11  | ... | ...    | ...   | ...    | 13     | ...    | 300    | ...    | 2,300   | 2,600   | ...   | ...    | ...     | ...     | 2,600  | 200 lbs. on total planted area. |
|          | Gwaldom, ...             | {   | 4,500 to 6,000 | 120       | ... | ... | ...    | ...   | 1,680  | 1,800  | 400    | 1,000  | ...    | 10,000  | 11,400  | ...   | ...    | ...     | 4,100   | 15,500 | 130 lbs.                        |
|          | Telwaree, ...            | ... | not given      | not given | ... | ... | ...    | ...   | ...    | 120    | 700    | 600    | ...    | 1,200   | 2,500   | ...   | ...    | ...     | ...     | 2,500  | 20 and five-sixths lbs.         |
|          | Silkot, ...              | ... | 5,500          | 300       | ... | ... | ...    | ...   | ...    | 300    | ...    | 10,000 | ...    | 30,000  | 40,000  | ...   | ...    | ...     | ...     | 40,000 | 133 lbs.                        |
|          | Willow Bank, ...         | ... | 6,500          | 16½       | ... | ... | 30½    | ...   | ...    | 47     | ...    | ...    | ...    | ...     | 2,500   | ...   | ...    | ...     | ...     | 2,500  | 180 lbs.                        |
|          | Total Garhwal,           | ... | ...            | 653½      | 11  | ... | 30½    | ...   | 1,680  | 2,495  | 1,100  | 13,300 | ...    | 45,500  | 62,400  | ...   | ...    | ...     | 4,100   | 66,500 |                                 |
|          | Grand Total,             | ... | ...            | 1,886½    | 509 | ... | 3,226½ | 8,209 | 13,951 | 6,740  | 20,450 | 46,270 | 67,765 | 225,225 | 6,600   | 1,900 | 60,475 | 285,700 |         |        |                                 |

KUMAON COMMISSIONER'S OFFICE: }  
The 9th December, 1872.

H. RAMSAY,  
Commissioner, Kumaon Division.

From Commissioner, of the Meerut Division, to Secretary to Government, North-Western Provinces (No. 11).—Dated Meerut, the 14th February, 1873.

SIR,—I have the honor to acknowledge the receipt of your office endorsement No. 956A., dated 28th June last, enclosing a letter No. 75, dated 17th idem, from the Secretary to the Government of India (Department of Agriculture and Commerce), requiring a report on the present position and future prospects of tea plantations, with certain statistical information. I observe that I am required to give an expression of my opinion on the subject of tea culture generally, after communicating with the Superintendent of the Botanical Gardens at Saharunpore. I regret that I have been unable up to the present time to obtain from Dr. Jameson any detailed reply to my call. The accompanying dockets from that gentleman, Nos. 118 and 306, dated 17th July and 23rd November last, will explain the reasons which have hitherto prevented Dr. Jameson from replying to my letter; and as I have received several reminders from your office, I do not wish to delay any further the submission of such information as has been collected.

2. The accompanying letter No. 437, dated 16th December last, from the Superintendent of the Doon, contains an interesting history of the rise and progress of tea-farming in the Doon, and of the difficulties which have had to be encountered. It was perhaps inevitable that the pioneers of tea-farming should be the victims of losses. It is true that tea cultivation in India was nothing new at the time the experiment was tried in the Doon; the plantations in Assam and Cachar had prospered, and some of the leading farms were realizing large profits, but even these had experienced their period of trial, but I think sufficient attention was not at first paid to natural and climatic difficulties. It was probably urged that what had succeeded in Assam must succeed in the Doon, and that all that tea required was a hill climate. I am unable to explain what the peculiar difference in climate may be between Assam and the Doon, but I believe it will be admitted that tea grows more luxuriantly in the former than in the latter district. But climate alone was not the sole cause of failure. Mr. Ross has detailed the blind infatuation which seized the first speculators in tea-farming in the Doon, and the natural result of the ignorance and carelessness shown were failure and loss. The original promoters had to give way to others, and for a time it seemed as if tea speculation in the Doon would never rise to be an accomplished fact. I am happy, however, to say that prudence and capital have at last overcome most of the difficulties, and that in the present day tea-farming is likely to prove a paying speculation.

3. Mr. Ross has obtained from most of the more important planters an expression of their views on the subject. It will be seen how varying the opinions of these gentlemen are. For instance, Colonel Thelwall complains of a scarcity of labor, whereas Mr. Watson, the Manager of the Annfield concern, thinks there can be no difficulty on this point. I believe that both gentlemen may be partly right and partly wrong. There can be no doubt that some parts of the Doon are more thickly populated than others, and each may have written according to his own experience.

4. The chief points urged by the planters from whom Mr. Ross has received replies are—*1st*, the propriety of permitting planters to purchase their estates in fee simple; *2ndly*, the necessity of arranging for a proper supply of fuel; *3rdly*, opening up grazing lands, or rather permitting cattle to graze in Government forests; and *4thly*, maintaining lines of communication in serviceable and passable condition. I do not here include the item of canal-water, as I believe the question of the charge to be made for water has been definitively settled.

5. With respect to the first point, I would urge for favorable consideration the request to be allowed to purchase tea estates in fee simple. There can be no doubt that nothing will give such an impetus to tea-farming as this concession. But I would restrict the indulgence in the first instance to *bonâ fide* tea farms held by persons of capital and character, so that there might be reasonable assurance that the concession would not be abused.

6. The second and third points are rather more difficult to deal with. Manure and firewood are two chief articles required in the proper cultivation and preparation of tea. The former may possibly be provided by the planters if sufficient grazing lands are made available for their cattle. But the supply of fire-wood will really, I think, be a difficulty in years to come, as land is opened up and brought under the plough, the sources of supply are curtailed. There are, as it would seem, two conflicting elements at work. The land-owner will of course do what he can to improve his own estates by the extension of cultivation, whilst the tea-planter would desire a certain amount of jungle to be kept up to supply him with fire-wood. Government can however assist by supplying wood from their forests.

7. The question of maintaining roads in a proper condition is one which will receive due attention at the hands of the local authorities. Hitherto want of funds has prevented more being done than has been done, and this was necessarily so as long as the former system of local funds management continued; but under the present system grants of money are made irrespective of the contribution of the district itself to provincial funds, so that the question now hinges on the actual requirements of a district, and not on what funds may be available for expenditure from its own road cess.

8. I would note a remark in Mr. Watson's letter (the Manager of the Annfield concern) relative to the Punjab octroi dues having a depressing tendency on the importation of tea into that province. Mr. Watson refers very briefly to the matter, still it might be well to make further inquiry.

9. Speaking generally, I am of opinion that tea-farming under proper management ought to pay. I believe that the former notions of realizing fabulous interest on capital laid out on tea-farming are exploded, and that people now look to and are content with the prospect of a fair return for their money. There is no reason why this expectation should not be realized. The Central Asian market alone will buy up almost any quantity of tea, provided it be of good quality, and there is a daily increasing disposition on the part of the natives of this country to use tea. I do not think there is any fear of a market failing. But planters should be careful to keep down their working expenses as much as possible, so as to supply tea at the cheapest possible price.

I have, &c.,

F. M. LIND,

Commissioner.

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From Superintendent of Dehra Doon, to Commissioner of the Meerut Division (No. 437).

—Dated the 16th December, 1872.

SIR,—In reply to your No. 117, dated 8th July, and enclosure, I beg herewith to forward returns filled in for most of the tea estates in the Doon. I have been

|                                  |                                                                                                                               |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 1. Malookawala of Mr. Dick.      | waiting for replies from the others, but do not like to make any further delay. The returns of only a few unimportant estates |
| 2. Meorkham of Colonel Thelwall. | as per margin are wanting.                                                                                                    |

2. Tea was commenced in the Doon before 1840, but by Government only. An experimental garden was formed at Kowlagir. In 1847 there were about eight acres of bearing plants, and three hundred acres planted out. One or two European landholders, who had bought land or received grants, commenced planting in a small way ; but it was not until 1853-54 that any great advance was made ; in [that year, owing to the efforts of the District Officers, four or five native landholders and three or four Europeans took the matter up, and made gardens of different sizes. They one and all failed ; the Europeans who had invested all their means in their gardens were of course ruined. The natives being Zemindars, simply let the tea lie untouched, and looked upon it as so much land wasted.

3. For years plantations were worked at a dead loss. In many companies shares originally costing Rs. 100, could not find purchasers at Rs. 5. In other instances the parties who broke up the land and commenced the plantations were ruined and sold up. The parties who bought were also ruined, and the second purchasers, who bought at very low rates, only just managed to pay actual working expenses.

4. I am thankful to say a great change has now come over the scene. All the plantations that have any pretensions to being properly worked are now paying, and will, I have no doubt, year by year extend their cultivated area.

5. The failure above alluded to must, I think, be attributed entirely to ignorance on part of first planters.

(a.) They were ignorant of the time it took the tea plants to grow up to tea-producing shrubs. Hence they commenced work with too little capital : they expected immediate returns, not getting such returns they could not go on with their work, and were ruined.

(b.) They were ignorant of the style of cultivation, and thought they had nothing to do but to put the plants in, water them now and then, and then reap a harvest. Hence instead of properly cultivating small gardens within their means, they planted out large areas, which from want of attention yielded nothing.

(c.) They thought any body could manage a tea plantation, and appointed as managers persons utterly ignorant not only of tea, but of cultivation of any sort. As tea requires very high cultivation and a peculiar treatment, the result of bad management was that the plants never thrived, and instead of improving year by year deteriorated.

(d.) It was supposed that plants should be five feet apart, hence only 1,740 bushes could be planted in an acre. In Cachar it is found best to plant  $3 \times 1\frac{1}{2}$ , thus giving 9,000 bushes to the acre. If originally bushes had been planted close, they would perhaps have killed the grass. They would have been close together, and only a small area would have had to have been cultivated.

Finally no regard was had to the nature of soil. No attempt was made to manure, leaves were plucked from bushes a year old. Year after year leaves, such as they were, were plucked. No attempt was made to prune. Many of the managers added dishonesty to their ignorance : under these circumstances it cannot be wondered that tea failed. Apart from this, some natives seeing the mania there was for tea, planted a few bushes in land that was utterly useless to them and unfit for any crops. European speculators, quite ignorant of what they were doing, bought their lands at

ruinous prices. In 1850-53 tea was fetching high prices ; there was a very small quantity produced, and it fetched over three rupees a pound ; planters rushed to the conclusion they could always secure this price, but the price rapidly went down to ten and twelve annas a pound. This of course put people out in their calculation.

6. A very different state of affairs exists now. In all the large plantations there are highly paid managers, gentlemen who thoroughly understand the science of farming and gardening generally, and tea in particular. Manure is now harboured and collected most carefully, and large herds of cattle are kept simply and solely for manure. Bushes are carefully pruned and trimmed, the ground is properly cultivated, and a system of order and precision prevails. In plantations that of themselves are unable to afford such managers, the proprietors have taken advantage of the example set, and have not been slow to follow it. In justice to the above-mentioned managers, I must say that they seem always ready and willing to give any information and assistance in their power to their poorer and less well-informed neighbours.

7. There is now a ready sale for green tea. Cabul and Central Asian merchants come and buy on the spot, and give up to a rupee a pound for the first four sorts without packing, they themselves taking away the tea in their own bags. Even very average tea is now easily sold at thirteen annas a pound on the spot.

8. There are only two real difficulties that threaten the tea-planters :—

I.—Want of manure.

II.—Want of fire-wood.

The planters have now awakened to the fact that without manure they can reap nothing, and so they collect as much manure as they can from villages, keep as many cattle as they can, &c., &c., but still they run short. Many of the plantations have little or no grazing ground attached to them, and so they are nearly helpless. Fire-wood is another necessary, without it tea cannot be made ; as cultivation extends, the supply of fire-wood decreases, has to be brought from longer distances, and is more expensive, and day by day is becoming scarcer and scarcer.

9. In both these matters Government can render material assistance. As regards manure, they can throw open their forests for grazing, and so induce cattle to enter the Doon.

As regards fire-wood they can allow tea-planters to purchase fire-wood at reasonable rates from Government forests, and can reserve certain jungles near the tea-growing tracts for the purpose of supplying fire-wood.

10. Some tea-planters have urged the necessity for better roads, the roads are certainly not regular raised roads, but still they are quite passable, and I do not think are any hindrance to the advancement of tea cultivation. I do not think better roads would in any way improve the prospects of tea-planters.

11. Some tea-planters complain of the want of a criminal law of contract, and state they are entirely at the mercy of the workmen. They are obliged to give advances, and the men often run away just at the most critical time. All they can do is to sue the men in Civil Court : if they obtain a decree, they cannot realise the amount, and so it is merely throwing good money after bad. This no doubt is often a great hardship, but I do not think any thing can be done, as I believe it has been finally decided by all political economists that a criminal law of contract interferes with trade, and in the end does more harm than good.

12. Some planters pray that they may be allowed to purchase their estates in fee simple according to the old rules. This would of course be a great favour, but is one on which I refrain from expressing any opinion, as it has been so often before Government in other cases.

13. Some planters wish Government to guarantee that tea lands shall never be assessed higher than wheat lands, and that water for tea will never be charged for at higher rates than water supplied for wheat : this I certainly recommend.

14. I think it would be a great mistake of the planters to trust too entirely to the Central Asian trade. They should certainly keep up a home connection. Dehra Doon green tea has a high name in the London market, and a certain quantity should be sent home yearly, so that in event of any interruption to Central Asian trade, sales could be carried on in the home markets.

15. I enclose copies of letters received from Colonel Thelwall, Mr. Watson, Mrs. Vansittart, and Mr. Mooney, to enable you to judge of the feelings of the planters themselves.

16. I regret the delay that has occurred in answering the letter, but it was unavoidable, owing to non-receipt of returns, &c., from the planters.

I have, &c.,

H. G. ROSS,

Superintendent.

Statement illustrative of the state of Tea culture in India in 1872,

| Province.                | District.   | Name of Plantation.                                       | Approximate average elevation. | Area in acres. |                  |                                             |        | Approximate yield in 1872 in lbs. <i>Annoindupois</i> . |         |            |        |  | Average yield in lbs. per acre of mature plants. |              |                            |                |
|--------------------------|-------------|-----------------------------------------------------------|--------------------------------|----------------|------------------|---------------------------------------------|--------|---------------------------------------------------------|---------|------------|--------|--|--------------------------------------------------|--------------|----------------------------|----------------|
|                          |             |                                                           |                                | Mature plants. | Immature plants. | Taken up for planting, but not yet planted. | Total. | BLACK.                                                  |         |            | GREEN. |  |                                                  | Grand Total. |                            |                |
|                          |             |                                                           |                                |                |                  |                                             |        | Congou.                                                 | Pekoe.  | Flannings. | Total. |  |                                                  |              | Total.                     |                |
|                          |             |                                                           |                                |                |                  |                                             |        |                                                         |         |            |        |  |                                                  |              |                            |                |
| North-Western Provinces. | Dehra Doon. | Dehra Doon Tea Company Limited, Arcadia, and Hurbunswala. | Feet.                          | 500            | 50               | 1,000                                       | 1,550  | EUROPEAN.                                               |         |            |        |  | 200,000                                          | 201,500      | Approximate yield 400 lbs. |                |
|                          |             | Kaonlagir, ...                                            | 2,000                          | 250            | ...              | ...                                         | 250    |                                                         | 6,000   |            |        |  |                                                  | 54,000       | 60,000                     | 240 lbs.       |
|                          |             | Anfield, ...                                              | 2,500                          | 300            | ...              | 256                                         | 556    |                                                         | 2,000   |            |        |  |                                                  | 78,000       | 80,000                     | About 250 lbs. |
|                          |             | Ambaree, ...                                              | 2,000                          | ...            | 170              | 100                                         | 270    | 3,000                                                   |         |            |        |  | 30,000                                           | 33,000       | 400 lbs.                   |                |
|                          |             | Nirunjunpore, ...                                         | ...                            | 75             | 25               | ...                                         | 100    | ...                                                     |         |            |        |  | 12,000                                           | 12,000       | About 120 lbs.             |                |
|                          |             | Dyrham Town, ...                                          | 1,500                          | ...            | ...              | ...                                         | 19     | 659                                                     |         |            |        |  | 343                                              | 1,002        | 52 lbs.                    |                |
|                          |             | Goodrich, ...                                             | ...                            | 20             | ...              | 50                                          | 70     | 990                                                     |         |            |        |  | 7,100                                            | 8,090        | 80 lbs.                    |                |
|                          |             | West Hope Town, ...                                       | ...                            | 80             | ...              | 12                                          | 92     | 300                                                     |         |            |        |  | 15,500                                           | 15,800       | About 180 lbs.             |                |
|                          |             | Nuthunpore, ...                                           | ...                            | 20             | ...              | ...                                         | 20     | ...                                                     | NATIVE. |            |        |  |                                                  | 462          | 462                        | 23 lbs.        |
|                          |             | Hurbhujwala and Gurhee, ...                               | ...                            | { 120 }<br>30  | ...              | ...                                         | 150    | ...                                                     |         |            |        |  |                                                  | 13,200       | 13,200                     | 88 lbs.        |
|                          |             | Gurhee Daen Hatee Burkulla, ...                           | ...                            | 45             | ...              | 26                                          | 71     | 800                                                     |         |            |        |  |                                                  | 3,700        | 4,500                      | 100 lbs.       |
|                          |             | Nirunjunpore, ...                                         | ...                            | 100            | ...              | ...                                         | 100    | 160                                                     |         |            |        |  | 800                                              | 960          | 50 lbs.                    |                |
|                          |             | Dhuratwala, ...                                           | ...                            | 16             | ...              | ...                                         | 16     | ...                                                     |         |            |        |  | 1,920                                            | 1,920        | 120 lbs.                   |                |

H. G. ROSS,  
Superintendent.



From MRS. MARY AMELIA VANSITTART, to Superintendent of Dehra Doon.—Dated the 20th July, 1872.

SIR,—In answer to your letter forwarding the questions asked by Government concerning tea, I beg to state that I consider that tea *may* pay a capitalist who can afford to wait seven (7) years for a return on his capital. We ourselves worked at a loss for ten (10) years, partly from inexperience, from neglect of pruning, and partly from want of labour, which we now have attracted to our estate by our money, so that we can at times command the labour of 400 women and children to pick the flush.

I *do* however consider that it will pay commercially to add to the area of existing plantations whoever after the past crisis may now be the holders, *how* many of us *have* been ruined who shall say. We have not extended of late years, because the Hon'ble Mr. Drummond raised on us the rates of water taken from the canal. We took this as a hostile measure towards us, who were in difficulties, entertaining, as we then did, the erroneous impression that artificial irrigation was essentially necessary for profitable cultivation, whereas we have now found that plots of tea unirrigated for seven years are the hardiest and most productive in our estate. Plants regularly irrigated are, we think, exotic; unirrigated bushes acclimatizing themselves.

Now that Sir William Muir has reduced the charge on canal-water, confidence in the intentions of Government has revived, and we have both plucked our own seed, which for some years was allowed to rot; and have bought other seed from Assam and Cachar, and we now have lacs of seedlings ready for immediate and after extension.

Government can, I think, best assist all planters, Native and European, by publishing the letter in the *Gazette* of His Honor the Lieutenant-Governor, which was proclaimed in the Doon by its then Superintendent, Mr. M. Thornhill.

This letter, we believe, conveys some security of title against Government itself in the Revenue Department, and perhaps as against enhancement of the water-rate. Government might also permit us to buy the fuel falling in its forests adjacent to our plantations.

We do not think Government can otherwise assist us, and indeed we now do not ask for extraneous aid. The fact that Government has been good enough to honor us with this letter is of itself a guarantee of a revival of that interest by which the barren and unhealthy Doon may some day be made a charming garden.

The greatest guarantee of assistance however that Government can give to the Indian tea-planters is to allow them to commute the land-tax on the ground set apart by them for planting out tea, and to hold such lands in fee simple. This would encourage them to lay out capital on the thorough cultivation and improvement of that soil as their own property.

The accompanying copies of letter and receipt from the late Mr. Manderson will

Copy No. 1.

Received from Mrs. Vansittart the hoondee payable on 1st April, 1862, for Rs. 2,000 (two thousand), which amount, when realized, will be placed to her credit in purchasing the fee simple of the estate of West Hope Town.

CAMP DEHRA DOON : }  
The 4th March, 1862. }

R. MANDERSON,  
Superintendent.

however show, that as regards the oldest grantees in the Doon, the local authori-

Copy No. 2.

MY DEAR MRS. VANSITTART,

I have to-day received your letter of 1st instant, enclosing an order payable on 1st April. for Rs. 2,000, which, to use mercantile phraseology, when realized, shall be placed to your account in purchasing the fee simple of West Hope To wn.

On receipt of the order from Government, for which I applied more than a month ago, you shall have *every facility possible* shown you, &c., &c.

Yours very sincerely,

R. MANDERSON.

CAMP UMBARRY : }  
The 4th March, 1862. }

ties, having placed to current revenue our deposit for payment of fee simple during our absence in England, did not afford us the promised

facility for the purchase of the said fee simple.

We submit therefore that Government might now in equity permit us to commute the land-tax on 1,000 (one thousand) acres, which are situated in one block in a ring-fence, and on which our three existing tea plantations now are.

I have, &c.,

MARY AMELIA VANSITTART.

From J. B. THELWALL, ESQUIRE, to Superintendent of Dehra Doon.—Dated the 20th July, 1872.

SIR,—In reply to your memo. No. 555 of 15th July, 1872, I beg to state—

1. That tea cultivation in the Doon is extending slowly.
2. That tea is beginning to pay as a commercial speculation.
3. The obstacles which have hitherto prevented the successful and remunerative cultivation in the Doon are numerous : some have been overcome, many remain.
4. The introduction by the D. D. T. Co. on their plantations of the Hybrid Assam plant, of which they now have many acres, will tend much to improve the yield and quality of the teas. Many of the varieties now cultivated in the Doon are comparatively worthless.
5. The cultivation, pruning, and manufacture of tea in the Doon is now being conducted on sound principles, but still very much remains to be done before it can be said that tea is properly cultivated in the Doon, or elsewhere ; whilst the manufacture of tea, until the use of good, efficient and cheap machinery becomes universal, must always be open to great risk, and mainly depend for its excellency upon the energy and efficiency of the European in charge of the factory.
6. The want of a ready and local market is much felt, the North-West traders are now coming forward, hitherto the planters have been at the mercy of the brokers, &c., in Calcutta, who combine to keep down the price of tea.
7. The prohibitory inland freight charged by Railway Companies on tea, tea-lead, &c., &c., would only admit of the very finest teas being exported at a profit. A local market obviates this great drawback to success.
8. The want of a simple and just contract law between master and servant is much required. At present the master is completely at the mercy and caprice of his native establishment, who often, after receiving advances, run away whenever any heavy and critical work is coming on, entailing heavy loss on tea-planters, for whom there is no redress. This reason alone deters hundreds from embarking capital in a country where the settler and cultivator is left entirely at the mercy of his labourers. Labour in India is becoming scarcer and dearer every year : the labouring classes appear to be rapidly diminishing in numbers all over the country. Whether this is caused by

disease, many of them becoming small cultivators on their own account, or whether they are absorbed into the crowds of faqueers and beggars who infest the country, it is hard to say, but as to the diminution in the number of this class there can be no doubt.

9. Government might remove some of the obstacles by enabling the planters to buy good and efficient tea-rolling and tea-hoeing machinery to be driven by mules at a cheap rate. The prices charged at the foundries in India are capriciously exorbitant, and unless the order was given a year or two before the machinery was required, the planter would be unlikely to get any, and probably when sent, the machinery would not act from carelessness in fitting, &c., &c., so constantly experienced in this country.

10. Government might also maintain the roads in good order in the Doon. I believe the main roads running east to Hurdwar and west to the Jumna are impassable during some portion of the rains. A comparatively small sum would keep these in good repair. Material for their repair of the best kind could be had in any quantity merely by paying for its cartage from a short distance. The whole line to Hurdwar might be kept in as good or better order than the Grand Trunk Road at a mere trifling expense, provided the work was properly looked after.

I have, &c.,

J. B. THELWALL.

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From Manager Annfield Grant, to Superintendent of Dehra Doon.—Dated the 27th July, 1872.

SIR,—I have the honor to return the form sent me duly filled in to the best of my knowledge.

Tea is paying now fairly as a commercial speculation, but only after long years of losses.

It does not pay any better in my opinion than any other good ordinary mercantile enterprise. In Assam, I believe, the present area under cultivation is being greatly extended, and I suppose extension will be made in this district too; but in Assam extension is easy, and owing to the early period at which the rains commence, and to there being no hot weather really, the results are pretty certain to be good, but here the making of a garden is a very laborious and risky business, and this may retard extension till the present area is at its best, then if tea stands as it does now, that area will assuredly be increased.

I do not know why tea should have failed hitherto in the Doon, but I suspect that the real reasons were the distrust of it, and inattention to it, by proprietors and the ignorance of managers.

There may have been *land* difficulty, but I am rather ignorant of the land tenures of the Doon.

There could have been no labour difficulties. I fancy as the Doon has all Upper India to draw on, labour here is cheap and plentiful. *Labour* difficulties have had *much* to do with failure in Assam and Cachar; and I consider that Government has scope there for the carrying out of its good wishes, but what it could do here to help us I really do not know, unless it remitted the octroi taxes imposed on tea in some of the Punjab stations, and to which the bulk of our tea finds its way. But candidly the chief reason of non-success has been the great ignorance of us planters ourselves.

If I may offer a suggestion, it is that fire-wood reserves might be made in the Doon, or that plantations of suitable fire-wood and box-wood timber might be made at central stations in the Doon. Government conserves its forests rigorously, and it is yearly becoming more difficult to get fire-wood, which to us is a vital commodity. The cost of making fire-wood plantations by the Forest Department would rapidly be very profitably repaid, and I believe that the assurance of being always able to get fire-wood would greatly stimulate the extension of tea cultivation, as gardens could be formed in many spots that are now from this sole reason unsuitable.

I look upon a deficiency of fire-wood as one chief difficulty in the future.

We necessarily consume much of it in the manufacture of green tea, the only kind of tea which the Doon can produce of really good quality.

I have, &c.,

J. T. WATSON,

Manager Annfield Grant.

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From Manager Kowlaghur Tea Plantation, to Superintendent of Dehra Doon (No. 254).

—Dated the 12th September, 1872.

SIR,—Referring to your No. 555 of the 15th July, 1872, I now beg to enclose the statement called for.

It would be a matter of doubt for me to say at present how much of the different classes of tea I will have of black and green, and have consequently given you my probable outturn for the year. The average of first class tea may be taken at from 60 to 65 lbs per cent.

There is always a greater demand for green tea in the Doon than for black, hence the small quantity manufactured, which I have made only to meet local demands. This description of tea has always sold well, but the demand is small. The green until lately has on the contrary sold at prices very unremunerative; and after paying for packing in lead-lined boxes for transit to Calcutta, the immense commission and other charges of the Calcutta brokers, the balance in favor of the planter per lb is very insignificant and very discouraging, but I am happy to add that for the last two seasons the price of tea is looking up, so much so that it has instilled courage in one or two private parties to commence planting.

The causes of failure are various, and in a great measure this is attributable to Government itself, in the first instance in so much as they caused estimates, &c. &c., to be published, which were based on probabilities and not on facts; and parties with a small capital embarked in a speculation of which they were utterly ignorant, and depending on these estimates, they looked for a return before it was actually due, and consequently ruined themselves. Of this I speak from experience, having been in the tea line since 1855, and eleven years of which I spent as Assistant in the Government Plantations in Kumaon.

I have not the slightest doubt that if tea is looked after as it should, it would pay as well, if not better than, any other commercial speculation in India; and I may add that if Government patronized the Indian teas more than they do at present, it would induce planters to bring a better description of tea into the market. More than two-thirds of the tea now supplied to the Indian Army is imported from China, and as a natural consequence, tea is exported from India, and is at the mercy of brokers and others.

Another greater disadvantage under which the planters labor is the bad state of the roads in the district : it is almost dangerous to ride or drive after dark on any of the roads, unless a person is acquainted with them ; among these I may mention the road leading to Hurdwar, and the one leading *viâ* Sainspore to the Jumna. If once put into thorough repair, a trifle would keep them so.

I may add that the Doon is yearly rising in commercial value, and if Government take the matter into consideration, I have no doubt that in a few years it will be one of the important districts of this province.

I have, &c.,

T. MOONEY,

Manager Kowlaghur Tea Plantation.

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From Superintendent Botanical Gardens, North-Western Provinces, to Commissioner of the Meerut Division (No. 450).—Dated Camp Roorah, Etawah Division, Ganges Canal, the 26th February, 1873.

SIR,—With reference to your docket No. 339, dated 8th July, 1872, with enclosures, I beg to submit two Tabular Statements\* showing the outturn of tea during the last season, 1872, in the Dehra Doon and in the Districts of Kumaon and Gurhwal. In doing so I beg to make a few observations on the introduction of the tea plants into the Kohistan of the North-West Provinces and Punjab.

Small tea plantations were first established in the Kohistan of the North-West Provinces in 1836, *viz.*, at Bhurtpoor in the Bhim Tal Pergunnah, and at Lutmaissur and Kupeena in the neighbourhood of Almorah in Kumaon : about the same time several small plantations were formed in Western Gurhwal, *viz.*, at Koth and Rama Serai. In all these localities the tea plant succeeded tolerably well. In 1842-43 plantations were formed in an extensive scale at Hawul Baugh in Kumaon, Gadowli in East Gurhwal, and at Kowlaghir in the Dehra Doon.

In 1842 eight Chinese tea makers were imported from Assam, and by them a small quantity of tea was manufactured. This was the first attempt made at preparing tea in the North-West Provinces. A sample of this tea was forwarded to Dr. Forbes Royle at the India Office, and by him it was submitted to Messrs. Thompson of Mincing Lane, for examination, and by them it was pronounced to be "of the Oulong Souchong kind, fine flavored and strong, and equal to the superior Black Tea generally sent as presents, and better for the most part than China teas imported for mercantile purposes." From this report dates the gradual rise of tea cultivation throughout the Kohistan and Doons of the North-West Provinces and Punjab.

Orders were received in 1844-45 to extend the plantations in Kumaon, Gurhwal and the Dehra Doon, and to erect at Hawul Baugh and Russiah in Kumaon, Paoree in East Gurhwal, and Kowlaghir in the Dehra Doon tea factories.

On the annexation of the Jullundhur and Kangra Districts, the Kohistan of the Punjab was traversed in 1847, and the Kangra Valley having been found well adapted to tea cultivation, two plantations were formed—one at Nagrota, and the other at Bawarnah in the Pahlum Valley. These plantations were inspected by His Excellency the Governor-General, the late Marquis of Dalhousie, in 1851 ; and so gratified was His Lordship at the luxuriant manner in which the tea-plant was growing, that he issued orders for a plantation to be formed in an extensive scale. For the purpose the undulating waste plain of Holta was taken up, and a plantation of about six hundred acres formed with factory and offices complete.

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\* The second of these is a copy of the table for the Kumaon Division, which follows Colonel Ramsay's letter above. The first is printed after Dr. Jameson's letter No. 530, dated 11th April 1873.

To work the factories in Kumaon, Gurhwal, Dehra Doon, and the Punjab, two parties of tea manufacturers were imported in 1851 and 1855 from some of the best tea districts in China (the first tea makers received from Assam being indifferent tea manipulators), with large supplies of tea-plants, seeds, and several complete sets of implements. The importance of the cultivation attracted particularly the attention of their Excellencies the Governor-Generals Lords Hardinge and Dalhousie, and by them much was done to place it on a proper footing.

To inspect the progress of the plantations in the Kohistan of the Punjab, the late Viceroys the Earl Canning and the Earl of Elgin made long journies over a difficult mountainous country. To the Dehra Doon the Marquis of Dalhousie and Lord Lawrence journeyed to inspect the work there going on.

By every Lieutenant-Governor, from the establishment of the plantations in 1842, viz., by the Hon'bles Sir G. Clerk, J. Thomason, J. Colvin, Sir G. Edmondstone, E. Drummond, and Sir W. Muir, inspections were periodically made. With such countenance and support it is not therefore to be wondered at that the undertaking progressed, and has taken firm hold of the country.

In 1865-66 Government declared that the objects for which the experiments had been conducted had been attained, viz., the manufacture of tea fitted for the market, and that too at a rate that would yield a good interest for money embarked in the speculation. The plantations and factories were therefore sold, and the field left open to private enterprise. The results, as shown in the tabular statements, prove how far the cultivation has now progressed in the Kohistan and Doons of the North-Western Provinces. But these are not the only results, as great fields of tea cultivation in other parts of India owe their rise chiefly to the support in the form of seeds, plants, and skilled labour received from the Government plantations of Upper India.

But I regret much to state that both tabular statements are very incomplete, so far as the filling up of the blank form received from your office is concerned. Thus the classes into which the teas are divided cannot be accurately shewn, as many of the planters and tea manufacturers do not separate the different kinds of tea from each other, but sell them in an unsifted state, and in the lump. This particularly applies to green teas, nor is it much to be wondered at that many planters have declined to give detailed returns, as by so doing they might lay themselves open to strictures by the public at large.

But though the tabular statements are incomplete, still they contain much valuable information, I therefore forward them with the following brief analysis.

*Number of plantations in the Dehra Doon.*—The number of plantations in the Dehra Doon, now under cultivation with tea, is 17, belonging partly to Europeans and partly to natives. In addition there are some plantations also cultivated by natives, but which are too small to be worthy of notice. The general altitude of the plantations is from 2,000 to 2,200 feet above sea-level. Their gross outturn is lbs. 411,548. By the returns given by several managers it will be perceived that the outturn varies from 8 lbs. to 312 lbs. per acre, and that too obtained from land the annual rental of which does not exceed twelve annas or one rupee per acre.

Of the kinds of teas manufactured during the season 3,692 lbs. were black, and 407,856 lbs. green teas. The green teas were manufactured entirely for the Central Asia trade, the whole stock having been purchased by Amritsur and Cabul merchants for transmission to Peshawur and Cabul.

Owing to the want of details, barring those kindly submitted by the Manager of the Dehra Doon Tea Company, it is impossible to show the proportion of fine to coarse teas prepared in factories. But this will always vary, as such results depend entirely on the manner in which green or raw leaves are gathered. In a well conducted factory the following is the percentage presented by the different kinds of green teas :—

|                                  |     |                 |
|----------------------------------|-----|-----------------|
| 1. Hyson, 1st and 2nd Class, ... | ... | 9 per cent.     |
| 2. Young Hyson, ditto ...        | ... | 31½ ditto.      |
| 3. Gunpowder, ditto ...          | ... | 1½ ditto.       |
| 4. Imperial Gunpowder, ditto ... | ... | 3 ditto.        |
| 5. Hyson Skin, or Twankay, ...   | ... | 55 ditto.       |
|                                  |     | <hr/> 100 <hr/> |

Of black tea, if the green leaves be carefully gathered and prepared, there ought not to be more than five (5) per cent. of coarse to 959 fine teas.

*Number of plantations in Kumaon.*—In the Kumaon and Gurhwal statement, for which I am indebted to Colonel Ramsay, C. B., Commissioner of the Province, there are some interesting details which are well worthy of notice. The number of plantations under cultivation with tea is 19, varying in altitude from 3,000 to 6,500 feet. The number of acres covered with plants in full bearing is 1,233, and in addition there are 498 acres planted with young plants, making a grand total of 1,731 acres : to extend the cultivation 9,725 acres have been taken up,—thus making the grand total of tea land in Kumaon equal at present to 11,456 acres.

On coming to details we find that the gross quantity of tea manufactured was in 1872-73, 219,200 lbs., of which 162,825 lbs. were black, and 56,375 lbs. green teas. This quantity has been obtained from an acreage of 1,731, which is thus equal to upwards of 126 lbs. per acre, and which will be considerably increased as soon as the land lately planted comes into full bearing. It too will be perceived that some of the plantations yielded from 300 lbs. to 350 lbs. per acre—a larger outturn than that obtained from the best plantations in the Dehra Doon. These excellent results have been entirely brought about by heavily manuring and high cultivation, and that too from land paying only from twelve annas to one rupee per acre. Proprietors, therefore, with such results, can well afford to manure heavily and cultivate highly. The returns too show the high percentage that may be obtained for capital well laid out.

*Number of plantations in Gurhwal.*—In Gurhwal there are six (6) plantations, with altitudes ranging from 4,500 to 6,500 feet, and with an acreage under cultivation with tea of 2,395½ ; to extend the cultivation 11,435½ have been taken up,—making a grand total of 11,951 acres.

By the 2,395½ acres of land under cultivation, 66,500 lbs. have been yielded, or at the rate of about 23½ lbs. per acre. When we come to details we find that the yield in the different plantations varies from 15½ lbs. to 200 lbs. per acre. Of the whole quantity manufactured 62,400 lbs. were black teas, and 4,100 lbs. green teas.

In Gurhwal tea cultivation in many of the plantations is at a very low ebb when compared to that in Kumaon or the Dehra Doon. But if two plantations in Gurhwal show an average yield of from 180 lbs. to 200 lbs. per acre, it proves how greatly the produce of other plantations may be improved by good manuring and cultivation.

In the Dehra Doon statement there is but little to show the quantity of land under cultivation, and the quantity available and capable of being cultivated with tea. It however is very large. In Kumaon and Gurhwal the quantity of land is also extensive and in the Kangra Valley and the Kohistan of the Punjab generally there are large tracts filled for the purpose. In the Kohistan and Doons of the North-West Province<sup>s</sup> and Punjab the cultivation of tea has for some years (*viz.*, from 1866, as already stated) passed from experiment to fact, all the plantations of Government having passed into the hands of private individuals, barring one which has been reserved for other purposes. The teas prepared have been declared by competent authorities equal to the best China teas, and the fact that they have entirely superseded the China teas in the markets of the North-Western Provinces and Punjab, fully bear out the opinions of the brokers. A brisk trade is now springing up with Central Asia, large quantities, particularly of green teas, having been sold to Punjab and Cabul merchants to supply that market. Nor is the supply nearly equal to the demand. When it is considered, therefore, that the first factory for the manufacture of tea in the Kohistan of the North-West Provinces was only erected in 1844-45, and in the Punjab in 1853, that the cultivation and manufacture in Assam for a time had ended in ruinous failure from causes which are well known, that the exportation of Indian teas has now risen to 18½ millions of pounds, and in addition a considerable local trade for exportation to Central Asia and consumption in the country,—when all these things are considered, tea cultivation in India may, in my humble opinion, be considered to be in a highly satisfactory state, and its future foretold to be a bright one. The day too is not far distant when the export of Indian teas to European markets will rival China itself. Such views we enunciated a quarter of a century ago, but which were generally considered visionary. But we have maintained them through good and bad report.

True it is that the plantations in the Kohistan and Doons of the North-West Provinces and Punjab are still on a small scale when compared with those now met with in other parts of India. But it is not the less a fact that the work carried on in this part of India has been the means of re-assuring the public of the value and importance of the cultivation when it had broken down and become a ruinous failure, owing to mismanagement, in other parts of India. The cultivation has now taken a firm hold of the country, and all well managed and prudently conducted concerns are paying dividends. The cultivation is rapidly extending, and the limit to which it may be carried on is boundless, if carefully fostered by Government.

In the Kohistan and Doons of the North-West Provinces and Punjab all that is required is the opening up the hilly country by the formation of good roads to enable planters to send their teas to good markets. To planters with good paying concerns in the interior of the mountains, who from this cause find it impossible to forward their produce to markets until the cessation of the rains, small advances on the crop might with much advantage be given, and a moderate rate of interest, 6 or 7 per cent., charged. This would be considered a great boon, and give a great impetus to the cultivation.

To open up the hill country of Kumaon, a magnificent cart-road is being constructed from Ramnuggur in the plains, and leading to the capital of the Province *viâ* Raneekhet, and thence north to the Kosanee Range. The Dehra Doon has been opened up by great roads, leading through the Mohun and Timli Passes. In the Kohistan of the Punjab, the Kangra Valley has been opened up by two great roads,—one leading from Bijnath in the east of the valley to Nurpoor on the west, and thence to the plains, and the other from Dhurmsalla to the plains *viâ* Dehra and Hoshiarpoor. Both these fine roads are well fitted for carts. But before these roads are complete, they must be connected by branch lines with the great Railway centre lines leading



to the sea-board. When this is accomplished, tea will no longer require the fostering care of Government.

To the teas of Upper India a check has, it is said, been given by the advance of the Russians in Central Asia, and by them a heavy duty imposed. But when it is considered that two-thirds of the raw produce of Russia's greatest staples, viz., hemp, flax, and tallow, find markets in Britain, it surely will not be a very difficult matter of diplomacy to obtain a reciprocity for a staple, which tea must now be styled, the produce of a part of the British Empire. Early attention to the subject is well worthy of the serious and earnest attention of Government.

I have, &c.,

W. JAMESON, SURGEON-MAJOR,  
Superintendent Botanical Gardens, N.-W. P.

From Under-Secretary to Government, North-Western Provinces, to  
Superintendent Botanical Gardens, (No. 705A.)—Dated the 31st  
March, 1873.

SIR,—With reference to your report on the cultivation of tea in  
the North-Western Provinces, No. 450, dated the  
\* No. 437, dated 16th Decem- 26th February, 1873, I am directed to forward  
ber, 1872. for your information a letter,\* in original, from  
the Superintendent of the Doon, and its enclosures (to be returned), on  
the subject. I am to point out that neither the quantities of tea pro-  
duced, nor even the names of the plantations in the Doon given in Mr.  
Ross's statement, agree with those contained in the statement appended to  
your report, and I am to request that you will be good enough to endea-  
vour to reconcile these differences. An early answer is requested, as the  
Government of India have issued several reminders on the subject.

I have, &c.,

C. J. LYALL,  
Under-Secy. to Govt., N.-W. P.

From Superintendent Botanical Gardens, to Secretary to Government, North-Western  
Provinces (No. 530).—Dated Botanical Gardens, Saharunpore, the 11th April,  
1873.

SIR,—I have the honor to acknowledge the receipt of your letter No. 705A., dated  
31st ultimo, with enclosures, and in reply beg to state that I at once placed myself  
in communication with the principal tea-planters in the Dehra Doon, in order to get  
the tabular statement of the yield of tea in the Dehra Doon rectified, as far as it was  
possible to do so. I proceeded to Dehra, and communicated with Mr. W. Bell, Ma-  
naging Director Dehra Doon Tea Company, Mr. Mooney, Manager Kowlaghir Tea  
Plantation, Colonel McPherson, shareholder in several Tea Companies, Lalla Ram Nath,  
&c., from all of whom I received ready answers to all my questions. I also saw the  
Superintendent of the Doon, and by him was informed that his figures were only  
approximations.

In the tabular statement now furnished by me, I have taken advantage of the  
tabular statement forwarded by the Superintendent Dehra Doon, to enter the land so  
far as it is given now under cultivation with tea in the Dehra Doon, as in the copy  
first received from him this item was altogether omitted. In my report to your  
address No. 450, dated 26th February last, I have stated that the plantations in the

Dehra Doon under cultivation with tea are 10 in number, belonging partly to Europeans and partly to Natives. I have in the tabular statement now submitted increased the number to 17, viz., 11 cultivated by Europeans and 6 by Natives, and have brought up the whole outturn to lbs. 411,548, a difference of 20,200 lbs., with the outturn given by the Superintendent. The yield too of plantation varies from 8 lbs. to 333 lbs. per acre. But the outturn now given by me shows an increase of 25,374 lbs. over the first statement, caused by a large increase in the Dehra Doon Tea Company's outturn on finishing off their annual crop. Still between my statement and that furnished by the Superintendent Dehra Doon, there are considerable discrepancies. Thus he gives as the yield of the Dehra Doon Tea Company 201,500 lbs., my tabular statement shows only 166,592 lbs., or 34,918 lbs. less. Annfield is given at 80,000 lbs., I, on the best authority, have given it at 67,000 lbs., or 13,000 lbs. less. Brinjarawallah, the property of Colonel Barlow and others, is not mentioned in the Superintendent's statement, and I find that the yield was 8,000 lbs. Charlivilla too is omitted, with an outturn of 7,000 lbs., and Horowallah with 2,000 lbs. To reconcile my statement with that furnished by the Superintendent of the Dehra Doon is impossible, as his statement was compiled from approximations. I, on the other hand, received correct data from the proprietors six weeks later: when the Superintendent of the Dehra Doon applied to the tea-planters, their crops had not all been gathered. I too informed the Commissioner that if Government wished to receive correct information, they must give the planters time to finish the preparation of their crops. Owing to this cause, therefore, the statement furnished by the Superintendent of the Dehra Doon does not correspond with the one I furnished with my report dated 26th February last, and with the one I now submit, which is as correct as can be obtained.

Regarding Mr. Ross' review of the progress of tea cultivation in the Dehra Doon, it does not become me to criticise it, as it is a tissue of mistakes, and to no one is the subject better known than to His Honor the Lieutenant-Governor. In my report I have briefly given the progress of the experiment in the North-Western Provinces and Punjab. It would have been more becoming had the Superintendent of the Dehra Doon omitted to mention the share that the Civil authorities of the Doon had taken to encourage the cultivation, as when Mr. Fortune sent in his first report on the cultivation of the tea-plant in the Dehra Doon, the Superintendent advised the Native cultivators to plough up all their tea-plants. Fortunately for the experiment, His Excellency the Governor-General the Marquis of Dalhousie inspected the Government plantation at Kowlaghir six months after Mr. Fortune's report had been received by Government, and was so gratified with the luxuriant manner in which the tea-plant was growing, His Lordship after learning the cause of Mr. Fortune's injurious report remarked, "consider Mr. Fortune's report as waste paper. I shall take care that nothing results from it." He then ordered the cultivation to be carried on with the greatest vigour, and another party to be deputed to China for implements, &c. By His Honor the Lieutenant-Governor the late Honorable J. Thomason, the subject was also taken up most warmly, and in the space of a season the damaging results of Mr. Fortune's report and the action of the local Civil authorities were counteracted.

I regret exceedingly that there has been so much delay in forwarding the statement called for. But correct data were not forthcoming at an earlier date: approximations could have been obtained. But unless calculated with the greatest nicety, they are very liable to mislead. For the results of the tabular statement now given I am chiefly indebted to Mr. W. Bell, Managing Director Dehra Doon Tea Company, Mr. Mooney, Manager Kowlaghir Plantation, Colonel McPherson, Lalla Ramnath, &c.

As requested I return the enclosures received, and respectfully solicit that the enclosed tabular statement may be substituted for the one forwarded with my report submitted on the 26th February last.

I have, &c.,

W. JAMESON, SURG. MAJOR,  
Superintendent Botanical Gardens, N.-W. P.

Statement illustrative of the state of Tea culture in India in 1872.

| Province.             | District.   | Name of Plantation.                                     | Approximate average elevation. | Area in acres. |                  |                                            |        | Approximate yield in 1872 in lbs Ancoirapois. |        |          |                          |          | Average yield in lbs. per acre of mature plants. |
|-----------------------|-------------|---------------------------------------------------------|--------------------------------|----------------|------------------|--------------------------------------------|--------|-----------------------------------------------|--------|----------|--------------------------|----------|--------------------------------------------------|
|                       |             |                                                         |                                | Mature plants. | Immature Plants. | Taken up for planting but not yet planted. | Total. | BLACK.                                        |        |          | Grand Total.             |          |                                                  |
|                       |             |                                                         |                                |                |                  |                                            |        | Congou.                                       | Pekoe. | Ranning. |                          | Total.   |                                                  |
| North-West Provinces. | Dehra Doon. | 1. Dehra Doon Tea Company or Hurbans-walla and Arcadia. | Feet. } 2,000                  | *              | 50               | 4                                          | 524    | ...                                           | ...    | ...      | { 91,742 }<br>{ 74,860 } | 1,66,592 | 333                                              |
|                       |             | 2. Anfield,...                                          | 2,000                          | 300            | 256              | 556                                        | ...    | ...                                           | ...    | ...      | ...                      | 67,000   | 223                                              |
|                       |             | 3. Ambaree, ...                                         | 2,000                          | ...            | 170              | 100                                        | 270    | ...                                           | ...    | ...      | ...                      | 28,500   | 167                                              |
|                       |             | 4. Nirunjanpoor, ...                                    | ...                            | 75             | 25               | ...                                        | 100    | ...                                           | ...    | 500      | 11,000                   | 11,500   | 153                                              |
|                       |             | 5. Dythan Town or Luckhunwalla,                         | 1,500                          | ...            | ...              | ...                                        | 19     | ...                                           | ...    | ...      | ...                      | 1,092    | 52                                               |
|                       |             | 6. Gooderich, ...                                       | ...                            | 20             | ...              | 50                                         | 70     | ...                                           | ...    | ...      | ...                      | 12,000   | 171                                              |
|                       |             | 7. West hope Town,...                                   | ...                            | 80             | ...              | 12                                         | 92     | ...                                           | ...    | ...      | ...                      | 21,600   | 270                                              |
|                       |             | 8. Kowlaghr, ...                                        | 2,500                          | 250            | ...              | ...                                        | 250    | ...                                           | ...    | 3,192    | 62,282                   | 65,474   | 261                                              |
|                       |             | 9. Nuthunpoor, ...                                      | ...                            | 20             | ...              | ...                                        | 20     | ...                                           | ...    | ...      | ...                      | 1,500    | 75                                               |
|                       |             | 10. Hurbhajwalla and Garhee, ...                        | ...                            | 150            | ...              | ...                                        | 150    | ...                                           | ...    | ...      | ...                      | 13,200   | 88                                               |
|                       |             | 11. Garhee Daen and Hatee Burkulla,                     | ...                            | 45             | ...              | 26                                         | 71     | ...                                           | ...    | ...      | ...                      | 3,300    | 73                                               |
|                       |             | 12. Nirunjanpoor, ...                                   | ...                            | 100            | ...              | ...                                        | 100    | ...                                           | ...    | ...      | ...                      | 960      | 8                                                |
|                       |             | 13. Dhurtawalla, ...                                    | ...                            | 16             | ...              | ...                                        | 16     | ...                                           | ...    | ...      | ...                      | 1,920    | 120                                              |
|                       |             | 14. Brinjarawalla, ...                                  | ...                            | Not given.     | ...              | ...                                        | ...    | ...                                           | ...    | ...      | ...                      | 8,000    | ...                                              |
|                       |             | 15. Charlie Villa, ...                                  | ...                            | "              | ...              | ...                                        | ...    | ...                                           | ...    | ...      | ...                      | 7,000    | ...                                              |
|                       |             | 16. Horowalla, ...                                      | ...                            | "              | ...              | ...                                        | ...    | ...                                           | ...    | ...      | ...                      | 2,000    | ...                                              |
|                       |             | Total,                                                  | ...                            | ...            | ...              | ...                                        | ...    | ...                                           | ...    | 3,692    | ...                      | 4,11,548 | ...                                              |

\* As the quantity of Tea yielded by mature and immature plants has not been shewn separately, it is difficult to state what is the actual out-turn per acre, the figures given must therefore be considered as mere approximations.

W. JAMESON, SURGEON MAJOR,  
Supt. Botanical Gardens, North-Western Provinces.

From Officiating Secretary to Government, North Western Provinces, to Secretary to Government of India, Department of Agriculture, Revenue, and Commerce (No. 1130A.).—Dated Nynce Tal, the 2nd June, 1873.

SIR,—I am directed to acknowledge the receipt of your letter No. 75, dated 27th June, 1872, requesting to be furnished with statistics of the outturn, area, elevation, &c., of tea plantations in the North-Western Provinces, together with a history of the progress of tea cultivation in each district, and recommendations as to the measures to be adopted with the view of facilitating its fuller development.

2. In reply I am to forward, for the information of His Excellency the Governor-General in Council, copies of the reports marginally noted, which furnish a complete view of the past history and the present state of tea culture in the three districts of Kumaon, Gurhwal, and Dehra, to which, in these Provinces, its growth is confined.

From the Commissioner of Kumaon, No. 1156, dated the 9th of December, 1872, and enclosure.

From the Commissioner of Meerut, No. 11, dated the 14th of February, 1873, and enclosure.

From the Superintendent, Botanical Gardens of the North-Western Provinces, No. 450, dated the 26th of February, 1873.

From the Superintendent, Botanical Gardens of the North-Western Provinces, No. 530, dated the 11th of April, 1873, and enclosure.

Gurhwal, and Dehra, to which, in these Provinces, its growth is confined.

3. A full account of the rise and progress of tea cultivation will be found in Dr. Jameson's report of the 26th of February, 1873. Small plantations were first established in Kumaon in the year 1836. They steadily increased in number and extended in area until 1844-45, when orders were issued by Government for the extension of the plantations in Kumaon, Gurhwal, and Dehra Doon. In 1865-66 Government withdrew from the management of tea plantations, after having successfully attained the object for which they had been undertaken, namely, the introduction of tea fitted for the market at a rate sufficiently high to yield a good interest for money embarked in the speculation. The field was left open to private enterprise, the plantations and factories were sold, and the results, shown in the reports herewith submitted, bear undoubted testimony to the success of the experiment.

4. The following figures show at a glance the area and outturn in these Provinces during the year 1872 :—

| District.       | No. of plantations. | Elevation above the level of the sea. |          | Area in Acres. |                   |                                             |        | Total yield in 1872 in lbs. Avoirdupois. | Average yield in lbs. per acre of mature plants. | Average yield in lbs. per cultivated acre. |
|-----------------|---------------------|---------------------------------------|----------|----------------|-------------------|---------------------------------------------|--------|------------------------------------------|--------------------------------------------------|--------------------------------------------|
|                 |                     | Maximum.                              | Minimum. | Mature plants. | Unmatured plants. | Taken up for planting, but not yet planted. | Total. |                                          |                                                  |                                            |
|                 |                     | ft.                                   | ft.      |                |                   |                                             |        |                                          |                                                  |                                            |
| Kumaon, ...     | 19                  | 6,500                                 | 3,000    | 1,233          | 498               | 9,725                                       | 11,456 | 219,200                                  | 177.7                                            | 128.6                                      |
| Gurhwal, ...    | 6                   | 6,500                                 | 4,500    | 653½           | 11                | 1,710½                                      | 2,495  | 66,500                                   | 101.8                                            | 100.1                                      |
| Dehra Doon, ... | 17                  | 2,500                                 | 1,500    | 1,556          | 245               | 1,458                                       | 3,264  | 411,548                                  | 264.4                                            | 228.5                                      |

The figures for Dehra Doon, as given by Dr. Jameson, the Superintendent of the Botanical Gardens, differ from those furnished by the Superin-

tendent of the Doon. While satisfied of the accuracy of the outturn given by him, Dr. Jameson has not found it possible to satisfy himself as to the statistics of the areas under cultivation. In the above statements the figures showing area are those reported by the Superintendent of the Doon, while the total yield is that given by Dr. Jameson: the former appear to have been approximations made at a time when the season was not over, while the latter are founded on later and more minute inquiries; and so far as the total yield is concerned, Dr. Jameson's figures may be accepted. The figures showing the area for the Doon and the average yield per acre must therefore be regarded as only approximately correct.

5. The total yield of tea during 1872 in the North-Western Pro-

| District.       | Black Tea. | Green Tea. | Total.  |
|-----------------|------------|------------|---------|
|                 | lbs.       | lbs.       | lbs.    |
| Kumaon, ...     | 162,825    | 56,375     | 219,200 |
| Gurhwal, ...    | 62,400     | 4,100      | 66,500  |
| Dehra Doon, ... | 3,692      | 407,856    | 411,548 |
| Total, ...      | 228,917    | 468,331    | 697,248 |

vinces will be seen, with the above reservation, to have been 697,248 lbs. in 1872, according to the figures marginally noted.

6. The area under tea cultivation in Kumaon is re-

turned at 1,731 acres, and in Gurhwal at 664½ acres: of which 1,233 acres in Kumaon and 653½ acres in Gurhwal are covered with mature, and the remainder with immature plants. In addition to this area there are in Kumaon 3,196 acres and in Gurhwal 30¾ acres, which have been taken up for tea-planting, but not yet planted: while 6,529 acres in Kumaon and 1,680 in Gurhwal, included in the area of the tea estates, remain uncultivated. These two last entries appear generally to refer to the same thing, since there is only one plantation in the Kumaon Division (Rykot) which gives both. The total area of tea grants is 11,456 acres in Kumaon and 2,495 in Gurhwal: grand total, 13,951 acres.

7. The area under tea cultivation thus bears a proportion to the total grant area of 15·1 per cent. in Kumaon and 26·6 in Gurhwal, and in the whole Division of 17·16 per cent.

8. The elevation of almost all the tea estates in the Kumaon Division is considerable. The highest are "Willow Bank," "Juttola," and "Chowkooree," 6,500 feet above the sea: the lowest, Peepulta, 3,000 feet. The following figures shew the plantations are those which make the most tea, with their several elevations:—

| Order in productive-ness. | Estate.                   | Order in elevation. | Tea produced | Cultivated area. | Average lbs. per acre. | Height. |
|---------------------------|---------------------------|---------------------|--------------|------------------|------------------------|---------|
|                           |                           |                     | lbs.         | acres.           |                        | feet.   |
| 7                         | Kousanee,...              | 3                   | 50,000       | 400              | 125                    | 5,600   |
| 7                         | Kumaon and Kutyooree, ... | 8                   | 50,000       | 400              | 125                    | 4,500   |
| 4                         | Silkot, ...               | 5                   | 40,000       | 300              | 133                    | 5,500   |
| 3                         | Doomagiri, ...            | 1                   | 23,000       | 150              | 153                    | 6,300   |
| 2                         | Dumloote, ...             | 5                   | 20,000       | 100              | 200                    | 5,500   |
| 6                         | Gwaldom, ...              | 7                   | 15,500       | 120              | 129                    | 5,250   |
| 1                         | Benee Nag, ...            | 2                   | 13,500       | 60               | 225                    | 6,200   |
| 5                         | Julna, ...                | 3                   | 13,000       | 100              | 130                    | 5,600   |
| 9                         | Bheem Tal, ...            | 9                   | 12,000       | 120              | 100                    | 4,300   |

This table would seem to show no general connection between richness and height. The richest of all is the highest but one (Bennee Nag): the lowest, Bheemtal, is the poorest. But the intermediate estates do not in any way vary in richness with their elevation.

9. Of the total production of the Division, *viz.*, lbs. 285,700, lbs. 225,225, or 78·8 per cent., was black tea, and the rest green. Some of the largest growers do not give details of their different kinds of tea. But of black tea we have details of 141,225 lbs., or about two-thirds of the whole. The proportions stand thus :—

|                 |     |     |     | lbs.    | Per cent. |
|-----------------|-----|-----|-----|---------|-----------|
| Bohea,          | ... | ... | ... | 6,740   | 4·77      |
| Souchong,       | ... | ... | ... | 20,450  | 14·48     |
| Pekoe Souchong, | ... | ... | ... | 46,270  | 32·76     |
| Pekoe or Pek,   | ... | ... | ... | 67,765  | 47·99     |
| Total,          |     |     |     | 141,225 | 100·00    |

Thus of the black tea manufactured no less than 80·75 per cent. is of the higher qualities, and a very small proportion of the common or Bohea sort. This argues a demand chiefly among European and foreign consumers. The best sorts, it is believed, never sell for less than one rupee a pound, and probably the whole annual market value of the outturn cannot be much under three lakhs of rupees.

10. With regard to the measures which could properly be adopted by Government, with the view of facilitating the future development of tea cultivation, the Kumaon planters strongly urge the necessity for the provision of improved facilities of carriage by the introduction of cart roads. The absence of such roads adds considerably to the cost of carriage, and renders the tea-producing tracts in Kumaon unable to compete in the market with tracts which, though less favored in point of capability for tea cultivation, have the advantage of more ready means of communication. His Honor, however, observes that great attention has of late years been paid to the roads in Kumaon. A cart-road has been made from the plains to Raneekhet, and is now being carried onwards to Almorah. Two lines of road suggested by the Commissioner of Kumaon will be recommended for the consideration of this Government in the Public Works Department. The prolongation of the Oudh and Rohilkhand Railway from Moradabad to Ramnugger will also be a great boon to the planters in the locality.

11. The second request relates to the contracts for the supply of tea to the Commissariat. These contracts are now given in amounts so large as practically to prevent any competition on the part of tea plantations in these Provinces. The planters desire that if possible the con-

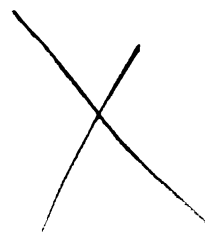
tracts should be given in smaller quantities, to allow of their entering the local market, instead of being obliged to undergo the loss and delays of a sale in Calcutta and a transit to Europe. The same request is made by the planters of Dehra Doon. The request His Honor regards to be reasonable, and recommends it for the consideration of His Excellency in Council.

12. His Honor is however unable to support the request made by the planters of Kumaon that pecuniary Taccavee advances should be allowed under certain conditions. The practical object of such advances would, in the case of tea cultivation, be merely to afford planters additional facilities for carrying on trade, and the necessity for such advances for an object of this nature cannot be allowed.

13. The Commissioner of Kumaon also advocates greater unanimity amongst the planters, and points out the benefits which would result from the establishment of a common Agency in London for the sale of the teas of Upper India. His Honor considers this latter suggestion a very important one. Home consumers, who have been accustomed to, and have a preference for, the tea of Upper India, are unable, in the absence of such an Agency, to procure it. Were such an Agency in existence in London, the difficulty of supply would cease to exist.

14. The figures of the Doon, as has been stated, are less reliable than those for Kumaon: and it is unnecessary to comment in detail on them. But the chief points urged by the Doon planters are the propriety of permitting planters to purchase their estates in fee simple, the necessity for arranging for a fresh supply of fuel, the maintenance of lines of communication in serviceable condition, and the opening of Government forests for grazing purposes, in order that the large herds of cattle which they keep chiefly for the purpose of supplying manure may have sufficient grass; and that with the extension of the area available for grazing purposes, they may be enabled to increase the number of head of cattle, and consequently to increase the supply of manure.

15. The alleged want of fuel and opening of Government forests for grazing purposes, His Honor will consider in the Public Works Department. Fuel is at present available on a moderate payment, and the conditions as to grazing have been lately relaxed. The request urged by the planters, that they may be allowed to purchase their estates in fee simple, appears to His Honor to be sufficiently met by existing rules, inasmuch as plantations fall within the exceptions mentioned in the despatch of 1861, and redemption can therefore be allowed under the rules at present in force. In respect of roads, I am to add that the Lieutenant-Governor has repeatedly traversed the Doon, and is satisfied that no reasonable complaint can be made in respect of the defective nature of existing means of communication.





16. In conclusion, I am to state that the submission of these reports has been necessarily delayed by the difficulty which has been found in procuring the needful statistics, and the necessity for waiting until the operations of the season of 1872 were brought to a close.

I have, &c.,  
A. COLVIN,  
Offg. Secy. to Govt., N.-W. P.

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No. 1131A.

EXTRACT paras. 1, 10, and 15 of this letter, with para. 5 of Colonel Ramsay's letter, and paras. 8 and 9 of Mr. Ross' report, forwarded to the Secretary to this Government, in the Public Works Department, for consideration.

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No. 1132A.

Copy forwarded to the Commissioner of Kumaon, for information, with reference to his letter No. 1156, dated the 9th of December, 1872.

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No. 1133A.

Copy also forwarded to the Commissioner of Meerut for information, with reference to his letter No. 11, dated the 14th of February, 1873.

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No. 1134A.

Copy also forwarded to the Superintendent, Botanical Gardens of the North-Western Provinces, for information, with reference to his No. 530, dated the 11th of April, 1873.

*c. 1134A. Pr*

INDEX  
No.REVENUE DEPARTMENT.  
NORTH-WESTERN PROVINCES, JULY, 1873.PROGS.  
No. AND  
DATE.

No. 8.

( COPY . )

JULY 12,  
1873.  
No. 3.

No. 201.

## GOVERNMENT OF INDIA.

DEPARTMENT OF AGRICULTURE, REVENUE, AND COMMERCE.

[Agriculture and Horticulture.]

*Dated Simla, the 17th June, 1873.*

## RESOLUTION.

READ :—

A letter from the Government of the North-Western Provinces, No. 1130A., (Revenue Department), dated the 2nd instant, reporting on the past history and present state of tea culture in the Districts of Kumaon, Gurhwal, and Dehra Doon, in the North-Western Provinces.

THE Governor-General in Council desires to express his thanks to the numerous planters of Kumaon, Gurhwal, and Dehra Doon, who have responded to His Excellency's call for information as to the exact position of tea culture in those districts, and his satisfaction at learning that, after a long period of depression, this enterprise now seems to promise reasonable returns for the labour and capital expended on it.

His Excellency in Council is glad to learn that, besides the Raneekhet and Almorah cart-road, two other important roads, calculated to open up the whole of the tea-producing tracts in Kumaon, are receiving His Honor the Lieutenant-Governor's consideration ; while in the Doon, the supply of fuel and the relaxation of the rules in regard to grazing within the forests, so far as this may be consistent with the conservation of the forests themselves, have not been overlooked.

In regard to the contracts for the supply of tea to the Commissariat a further communication will be made.

A. O. HUME,

Secretary to the Government of India.

ORDER.—Ordered, that a copy of the above Resolution be sent to the Government of the North-Western Provinces, for information and for communication to the tea-planters referred to.

No. 193.

REVENUE DEPARTMENT.

*Dated Allahabad, the 12th July, 1873.*

COPY forwarded to Commissioner of Kumaon for information, in continuation of G. O., No. 1132A., dated 2nd June, and communication to the planters of Kumaon and Gurhwal.

INDEX  
No.REVENUE DEPARTMENT.  
NORTH-WESTERN PROVINCES, JULY, 1873.PROGS.  
No. AND  
DATE.

No. 8.

No. 194.

JULY 12,  
1873.  
—  
No. 3.

COPY forwarded to Commissioner of Meerut for information, in continuation of G. O., No. 1133A., dated 2nd June, and communication to the Superintendent of the Doon and the Doon planters.

—  
No. 195.

COPY forwarded to Superintendent, Botanical Gardens, North-Western Provinces, for information, in continuation of G. O., No. 1134A., dated 2nd June.

J. S. MACKINTOSH,

Offg. Under-Secy. to Govt., N.-W. P.

## CONTENTS.

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|         |                                          |     | <i>Page.</i> |
|---------|------------------------------------------|-----|--------------|
| CHAPTER | I.—Gurhwal Forests Description           | ... | 1            |
| „       | II.—Kumaon Forests Ditto                 | ... | 5            |
| „       | III.—Timber and Revenue Statements       | ... | 8            |
| „       | IV.—Present Condition of the Forests     | ... | 10           |
| „       | V.—Future Yield of the Forests in Timber | ... | 11           |
| „       | VI.—Future Managements                   | ... | 13           |



GOVT., N.-W. PROVINCES,  
**Public Works Department.**  
**FORESTS.**

ALLAHABAD, THE 17<sup>TH</sup> MARCH, 1869.

To

THE CONSERVATOR OF FORESTS,  
*North-Western Provinces.*

**REPORT ON THE SUB-HIMALAYAN FORESTS OF KUMAON  
AND GURHWAL.**

*Conservator's No. 102A., dated 31st January, 1869.*

CONVEYS the best thanks of His Honor the Lieutenant-Governor for the clear and comprehensive report now submitted on the forests in the outskirts of the Himalayas in the Kumaon Division, and observes that the views of the Conservator as to their general conditions and the vast treasury of valuable timber, existing and prospective, contained in them, are considered highly gratifying.

2. The proposals submitted by the Conservator, in respect of the future management of these forests, have the concurrence of the Lieutenant-Governor in every respect. The objects to be kept in view are the closing absolutely of all forests which from previous treatment need time to recover themselves; the division of the virgin or other forests that can be worked, into blocks which may successively be taken up as sources of current supply; and the thinning out of all the overstocked forests.

3. For the second and third objects, and, indeed, for effective administrative control, it is absolutely necessary that the construction of pathways and roads be diligently prosecuted; and if there is any point which may not have been sufficiently dwelt upon by Major Pearson, it is perhaps this. His Honor the Lieutenant-Governor would be glad to have a scheme as to the best means of carrying this out, and the Government of India will be requested to consider the desirability of devoting the current forest income to carrying out these essential works and providing sufficient establishment for this purpose.

4. The Lieutenant-Governor notices with regret that portions of the forest have been so cleared of timber, and so overgrown with grass and scrub as to prevent the rise of forest trees; and His Honor will be glad to find that the plan of keeping the grass from fires in the expectation that it will die out, may prove successful. There is, however, some ground for

apprehending that these tracts will continue in their present state ; and if so, it might be worth considering whether they should not be cleared for cultivation ; but this should not be done so long as there is any prospect of their becoming again productive as forests.

5. Major Pearson's expression of his appreciation of the labors of the Commissioner, his predecessor in the charge of these Forests, is noticed with much satisfaction by His Honor the Lieutenant-Governor. It is in every way pleasing to find so high a testimony borne to the forest administration of Colonel Ramsay, and its excellent results. His testimony to the services of Colonel Ramsay's staff, especially Colonel Baugh, and Mr. R. Thompson, has also been noted.

6. In conclusion, states that His Honor the Lieutenant-Governor is much pleased at the energy and intelligence with which Major Pearson has opened his administration of the forests in these Provinces.

By order, &c.,

C. J. HODGSON, COLL., R.E.,

*Secy. to Govt., N. W. P., P. W. D.*

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No. 80F.

ORDERED that a copy of Major Pearson's Report, with a copy of the foregoing, be forwarded to the Secretary to Government of India, Public Works Department, for information.

# Pines of

## Himal.

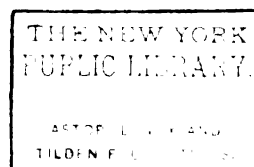
ing the approximate range of elevation at which the Pines grow, and the supposed height and girth they attain under ordinary circumstances.

Mad den, in the Journal of the Agri-Horticultural Society of India IV. p. 269 has given the exceptional trees.

|    | Locality                                  | Average girth.  |
|----|-------------------------------------------|-----------------|
| ma | Annandale } Similar {<br>South water-fall | 10 feet<br>11 " |
| ma | Hill States                               | 16 "            |
|    | Ditto -                                   | 14 1/2 "        |

Maiana No. 81, had partly fallen to pines before it was sketched.





No. 102A. OF 1869.

FROM

G. F. PEARSON, MAJOR,  
*Conservator of Forests,  
North-Western Provinces, Allahabad,*

TO

COLONEL C. J. HODGSON,  
*Secretary to Government, North-Western Provinces,  
Public Works Department.*

*Dated Camp, Kumaon Forests, the 31st January, 1869.*

SIR,

THESE forests extend from the Ganges on the west to the Sarda, on the east, covering the lower spurs and ridges of the Himalayas. They are bounded on the south by an excellent cart-road which has been constructed from the Ganges as far as Karnsote in Kumaon. From thence the Pheeka river marks the boundary for about three miles, and from that point an irregular line marked by roads and pillars carries it on as far as the Sarda. The Ramgunga, and its tributary the Bursotee, are the boundary between the two grand Divisions of Kumaon and Gurhwal, while the Himalaya mountains in the rear of both shut them in like a wall towards the north. Except the Kumaon Iron Company's grant, which is clearly marked off by pillars, and a very few villages which do not affect the actual forests in any way, and for the removal of which it has not been thought worth while in consequence to make arrangements, the whole tract forms a Great State Forest, in one compact block, perfectly defied by natural and easily-recognized boundaries. Within these limits no private rights exist which can prove injurious in any way to the forests, and cattle-grazing is entirely prohibited, except in a few places, where the cattle can do no harm whatever. The taking up of fresh land for cultivation has been entirely stopped above the main road, and I believe I may say that there is no State Forest in India to be compared to this one for extent, compactness, and perfect control.

2. The principal timber tree is saul, which grows with vigor everywhere, and covers by far the greater portions of the forests. Toon and shisum are also plentiful in certain localities, especially along the low flats and moist valleys, and they grow exceedingly well, and attain a large size; while other jungle trees, especially the pentaperras, conocarpus, and the naucleas (sein, bakla, and huldoo or kyem) are found mixed with the saul everywhere, even where the latter predominates.

## CHAPTER I.

### THE GURHWAL FORESTS.

3. The Gurhwal forests resolve themselves into four main divisions commencing from the westward:—

- I.—The forests of Chandee.
- II.—The forests of Odeypore.
- III.—The forests of the Kotree Doon.
- IV.—The forests of the Patlee Doon.

#### I.—THE CHANDEE FORESTS.

4. The Chandee forests extend over an area of from 120 to 130 square miles, stretching from the Ganges to the Rewassum river—a distance in a direct line of about 12 miles. The geological structure here is mainly sandstone and drift boulders.

5. These forests may be said to have been completely worked out, as their proximity to the Ganges has rendered them easily accessible to the contractors and agents of the Roorkee Workshops and Public Works Department. But saul saplings and unsound trees are found scattered over a large portion of the tract, and in some places the former show considerable promise, though at present the young saul has not generally made as much head as could be wished with other trees, which occupy a large portion of the ground ; and it is a matter of consideration whether hereafter the growth of the saul may not be favored by the removal from the more promising portions of the forest of other descriptions of timber. This it is hoped may be effected through the demands of the Railway for fuel, which could conveniently be floated down the Ganges to the line. Only a few mature saul trees now remain, and these are confined to the higher and more inaccessible ridges on the north and east sides of the division.

6. At present dry wood for fuel and bamboos, which are floated down the Ganges, are the principal articles of export from these forests.

## II.—THE FORESTS OF ODEYPORE.

7. This division extends from the Rewassum on the west to the Koh river on the east—a distance of about 16 miles. The soil is a dry sandy loam with outcrops of gravel and blue clayey state in the hills.

8. This division contains evidences of having formerly been highly populated and well cultivated, but there is a great want of water through all the lower portion of the forests. Only three tracts of saul are found here. The first extends along the Rewassum containing some mature trees, but was considerably worked by Captain Read, and now but little valuable timber remains in it. The second, along the Chowkeeghatta stream, contains also some mature trees as well as toon in the low moist valleys : and the third is a young saul forest in the south-east corner of the division, and is about three square miles in extent. For the rest, bamboos grow extensively all over this division, and form a main article of export. The terminalias pentapperas and nauclea (bahera, sein, and huldoe) are also found on the lower plains along the southern boundary.

## III.—FORESTS OF THE KOTREE DOON.

9. The Kotree Doon is in fact the valley of the Sunnyee river and its affluents. The Koh river forms its western boundary, and the ridges of the Patlee Doon its eastern one. The formation of the soil is sandstone and drift.

10. The whole of the Kotree Doon may be called a nearly pure saul forest, differing in value in different places, according to the character and quality of the soil and other natural circumstances.

11. In area the Kotree Doon is about 200 square miles ; within its limits there are few forests which have never been worked ; and where this has been the case, it will not be possible to remove any more trees until time has been given for the second class trees to come to maturity ; but there are still some forests (as those of Soowursote and Gireel Panee, Gangun, Kumayree, Loharkotee, and Silanee, which from being more inaccessible have escaped felling operations, and these still contain a considerable amount of fine timber. On the whole, the soil is perhaps not very favorable to the growth of really fine timber, and this fact, coupled with the effects of the frost, and forest fires, has rendered the young trees less clean in their bark, and more knotty and inferior in their heads to those in more favored localities. However, the second and third class trees are by no means of indifferent character, and the saplings show much promise. Since these forests have been rigidly protected, they have evidently made much progress, and the keeping out of fires and cattle will in a few years do much more for them.

12. There is a large trade in timber and minor forest produce from the Kotree Doon to Najeebabad, from which the Meerut and Bijnour Districts are supplied with these products. The former is furnished partly from the old logs lying in the forests which the traders are allowed to cut up and carry away on paying a Royalty, and partly by regular felling operations—the timber being collected to Depôt at Sunnyee and disposed of there.

#### IV.—THE PATLEE DOON FORESTS.

13. The Patlee Doon comprises the valley of the Ramgunga and of its affluents, and the ridges which run between their water-sheds. In area it is about 280 square miles, of which 200 are nearly pure saul forests. Its geological formation is composed of alluvial deposits and drift in the valleys and plateaus, and massive grey sandstone interspersed with blue shale on the ridges. The whole Doon has been a noble forest of saul, the lower and more accessible portions of which have been worked out; but in which enormous tracts of virgin forest still remain, from which under judicious treatment inexhaustible stores of timber may be drawn, as by degrees forest roads are completed through the valleys. Already excellent roads have been completed up through most of the principal valleys for the export of the forest produce, and indeed nothing has been left undone which good judgment and a thorough knowledge of the requirements of forest conservancy could suggest for the renovation of the forests.

14. The forests of the Patlee Doon may conveniently be considered in the following division:—

I.—The forests of the Timooria and its affluents.

II.—The forests of the Mondhal.

III.—The forests of the Ramgunga Valley, South Patlee Doon, and Sonah.

#### I.—THE FOREST OF THE TIMOORIA AND ITS AFFLUENTS.

15. This river, which has its source on the reverse side of the high ridges at the head of the Kotree Doon, and runs down with a south-eastern course of about 25 miles into the Ramgunga near Buxar, through its upper portion, bear the name of the Palein. It has for its affluents on the right bank the Khamsore and Monaltee, and on the left bank the Hulgudda and the Beetlead and Bahlead (inner and outer) nullahs. The whole bason comprised within this water-shed contains a noble saul forest.

16. The lower portions of this forest, especially along the right bank of the main stream, and along the plateaus and ravines near the exit of its various affluents, have been very considerably worked about ten years ago by the agents of the Gun Carriage Department, and by Captain Read and Mr. Finn. But I have no hesitation in saying that the effect produced has been to their great advantage, as too much timber was not taken from them. Since the forest has been rigidly shut up, the immense improvement of the second class trees will be at once apparent to the most casual observer, as compared with the condition of the same class of trees in those portions of the forest which have never been worked. As the trees in the upper portion of the ravines are far too thickly placed together, and evidently fail to increase in size in consequence, opportunities should be taken of any demand for moderate-sized timber to open the forests out more to the sun and light than they are at present. It is easy to observe how in such places the heads of the trees are bent out from the side of the ravines as if seeking for more light.

17. Lower down the valley towards the ramgunga River, all over the plateaus opposite the mouth of the Manaltee stream at Chawulchura, and along the ravines to the mouth of the Bahlead nullah, the forests have been far too heavily worked previous to Mr. Finn's time. There are here, however, many fine old trees, which though unsound have continued to shed their seed, and a large crop of all seedlings and young

trees is now springing up on all sides, some of which are already assuming noble proportions, and show the highest promise. On some of the plateaus, especially those which were formerly occupied by the old cattle stations, either on account of the nature of the soil, or injury done to the trees by the cattle owners before their removal from the forests, the show of young trees is not so good, but on the whole nothing can be more satisfactory than the present state of the young timber.

18. It is also most satisfactory to observe how, since these forests have been rigidly shut up, the whole surface of the ground is becoming thickly clothed everywhere with bamboos, by which the moisture is retained in the soil, the increase of other grasses prevented, the risk of fires materially diminished, and the young forests generally protected from harm, and their growth encouraged.

## II.—THE FORESTS OF THE MONDHAL.

19. The Mondhal river takes its rise in the lower spurs of the Himalayas near the head of the Kotree Doon, and runs with an almost east course for about 30 miles into the Ramgunga above Surrup Doolee. It is divided from the Timooria and Ramgunga valleys by a high range of hills, over which there is a fair foot-road out of the valley of the Ramgunga.

20. The valley of the Mondhal itself is well cultivated, and possesses several decent villages, but the range of hills above alluded to is covered with fine saul forests on the sides which slope down to the river facing the north. These forests from their remote position have never been worked, and though in a few places they bear the trace of having been cleared for cultivation, yet since the felling of saul has been prohibited, they are even in such places fast recovering themselves; and as the villagers possess no cattle, no harm beyond the removal of the timber seems to have been done. There are here in consequence to be found an immense store of noble first-class saul, as well as an abundance of trees of every age and size. The good forests may be said to extend over about 15 miles in length, through all the lower portion of the valley below Janett on the slopes and plateaus facing the north, and on the opposite bank of the river over the last 5 miles. On the plateaus immediately above the river the trees have attained a very large size, but generally speaking they stand somewhat too thickly together, and would much improve if some of them were removed. But in order to effect this, and with a view to the sale of the wood, it will be necessary first to open a cart-road up the lower portion of the Mondhal valley into the valley of the Ramgunga, and this will be a work of considerable expense, as the gorges become very narrow and precipitous on both sides near the mouth of the river. The work will therefore in all probability have to be done by a little at a time as money can be spared for it; as the details of the working plan, which it is my intention to propose, will not necessitate the carrying on of operations for the removal of the large timber in this valley for a number of years to come. In this valley, however, I propose at once to go on with the regular survey, as it will be most important to have an accurate estimate of its contents, in order that we may know what reserve stock of timber we have in hand for future years, and may husband our resources accordingly. It should be mentioned that there is a large amount of fine toon in the valley which seems particularly well adapted to its growth.

## III.—THE FORESTS IN THE VALLEY OF RAMGUNGA, THE SOUTH PATLEE DOON, AND SONAH.

21. All these forests, which are situated on the hills and plateaus sloping down into the Ramgunga, and its affluents the Sonah and Gouzhera nullah on the right bank, and the Myra Sote, Putter Panee, and Dharao stream on the left bank, being generally in the same condition, may be conveniently considered together. In one word, they may all be said to have been *felled in even to desolation* by Captain Read, as well as by Mr. Finn, and the native contractors who went before him. From this felling it is satisfactory to state that in most places they are now recovering themselves,

owing to the fact that the hollow\* and the unsound trees were spared when these operations took place. These trees have continued to shed seed, and over most of the ground (thanks to the vigor with which saul reproduces itself whenever even moderate protection is afforded to it) young timber of every size is to be seen rapidly coming on, from the saplings of one year old to noble straight-grown trees of 2 or 3 feet in girth, and 60 or 80 feet in height. An exception to the above satisfactory state of things is seen, where in the lower valley near the river the felling of almost every tree has denuded the ground of all covering, so that the huge grass has been enabled to get a strong head, and has, by choking the surface of the soil, prevented the seed from germinating. That it is ready to do so is easily seen by the fact that wherever from any cause the growth of the grass has been hindered, a fine crop of young saul seedlings will be found coming up. I am not without hopes that if we are successful in keeping jungle fires out of the valley, the grass will in time wither, and the reproduction of these forests be yet effected. What they must have been in past ages is easily seen from the size and symmetry of the gigantic old trunks which have been left standing. At present the long grass gives cover to a number of wild elephants, but it is doubtful if the difficult nature of the ground would admit of their capture; and, as they seem to confine themselves to regular tracks, it is not apparent that they do any great damage to the young saul. The exclusion of cattle for the last 5 or 6 years has worked wonders, and it is to this point, and to the prevention of fire, that attention should principally be directed.

22. It has been said above that these forests have been worked to desolation, but perhaps even this does not give an adequate idea of the waste that has occurred, and the mischief that has been committed. Thousands of trees were felled which were never removed, nor was their removal possible; and a large revenue has been realized during the last few years by allowing passes to the people of the lower country, to cut up and to remove the dead timber on the payment of a Royalty. There is also a very large export of bamboos from hence to the plains below. It may be added that in several places along the Ramgunga valley there are fine patches of toon.

23. The Patlee Doon has lately been made accessible to carts by a good road constructed by the Forest Department through the lower range of hills near Kalagurh and leading into the Bijour District. For facilitating the removal of the dead timber and minor forest produce this road will be of the greatest use, and will add considerably to the revenue of the valley.

24. Having now completed the Patlee Doon we pass on to

## CHAPTER II.

### THE KUMAON FORESTS.

The Kumaon forests may be conveniently divided as follows:—

- I.—The forests of the Kosillah river.
- II.—The Kumaon Iron Company's Grant (not Government).
- III.—The forests of the Nindhore and Serrara Garinner Ranges.
- IV.—The forests of the outer ranges and in the Bhabur.
- V.—The forests on the Sardah (Kuldoonga).

#### I.—THE FORESTS OF THE KOSILLAH RIVER.

25. In this section I have included all the tract of saul forest in Kumaon on both sides of the Kosillah north of Ramnuggur, between the Ramgunga on the west and the boundary of the Kumaon Iron Company's grant close the Dubka river on

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\* I measured one perfectly symmetrical though hollow tree on the banks of the Ramgunga 21 feet 9 inches in girth.

the east, including the hills which have their water-shed towards those rivers as well as into the Kosillah. In area it is about 400 square miles. Deposits of both lime and iron occur in this section, which otherwise in geological formation does not seem to differ from the rest of the Sub-Himalayan plateaus. A large portion of the above tract has been excessively worked by native contractors in former years, and felling operations have also been carried on in the forests by the Forest Department during the past three years, but nevertheless it still contains a fair proportion of unworked forests. These are situated on both sides of the Kosillah, the principal tract being the forests of Doorgadeb, Timleepanee, Koolbangadhera and Daudree, which are situated on the plateau between the Kosillah and Ramgunga, immediately below the main range of the Himalayas, and on the hills sloping down to the latter river Doorgadeb is the best of these, and is a noble forest, all the trees being straight and well grown and of noble appearance, with clean barks and round well-formed stems, and free from under-growth. A proportion of the trees however here, as elsewhere, are unsound. From 8,000 to 10,000 mature sound trees may no doubt be taken from these forests, without any injury to them. On the left bank of the Kosillah the forest of Koorya Khurruk contains about 1,000 mature trees fit for felling, and below it in the Kotah Bhabur, a considerable number of mature trees will also be found, though in somewhat inaccessible places. On the higher ridges of the southernmost forests on the right bank of the Kosillah also a few hundred mature trees are to be still found.

26. On the left bank of the Kosillah, east of Koorya Kurruk, are the forests of Bhoojakhet and Seroulee. About 9,000 first class trees have been taken from these by the Forest Department during the past three years, and they are now entirely closed. I am of opinion that perfect discretion has been shown in the selection and felling of the trees here. In no case has the ground been too much denuded; there is an admirable show of thriving second class trees throughout; and it cannot be doubted that in every way the general condition of the forests has been bettered by the removal of the timber which has gone out of them. There need be no hesitation in asserting when the time shall arrive to work these forests again, as many more first class trees will be found ready for the axe.

27. In addition to the above, it is satisfactory to see some exceedingly fine and regular young forests springing up in this section. Among these, those of Amtoonolah and Chukur Nagul, east and west of the Doorgadeb plateau, are conspicuous; they are almost as regular in appearance as plantations, and contain trees up to 3 feet in girth and 50 to 60 feet in height. It is remarkable that the whole of the plateau on which these forests stand bears the mark of ancient cultivation, the trees springing up on the edge of the old fields. This is said to date from the time of the Chund Dynasty, above a century ago, and one mature forest of trees has already been removed to make way for the forests which are now growing up. The young forests of Deolee Chour above Mohan are also in the best possible condition.

28. The lower forests nearer the plains are not in such good order. On the plateaus and chours above the Sajgurree and Sungurree Sotes, on the right bank of the Kosillah, unsound trees of noble size show what the forests must have been, and a fair show of young trees growing up gives promise that there will be again good timber in those localities. Further south the Burra and Chota Panode and Chandnee Chour plateaus have been so extensively cleared in former years, that a mixed forest of conocarpus and other jungle trees has made head, and to a large extent supplanted the saul, though in some places the latter is making a good show and coming on well. The best hope for the renewal of these forests must be in the practicability of totally excluding fire from them during the next few years; for it is wonderful to observe the immense number of young saul seedlings which are now coming up on all sides, no doubt owing to the fact that the forest was not burned last year.

29. Immediately above the cultivated lands of the Bhabur, west of Ramnuggur, the forests may be said to have been worked out, and as they are required as grazing grounds for the cattle of the Bhabur villages, nothing more can be done except to protect the saul as a reserved tree from felling. There is a block of mixed jungle about 8 or 9 square miles in extent in the plains beyond Dhelah, seven miles west of Ramnuggur, in parts of which some fair young saul trees may be seen; but as a whole I have not much expectations from it in point of quality, though from its accessible position it is by no means without value.

30. East of the Kosillah, and stretching up to the Himalayas, is the Kotah Bhabur, a sort of elevated plateau like the Doon, but more broken. The scenery is exceedingly beautiful in parts of it, and it contains some excellent saul forests, which have been enough worked to require rest, but not too much to prevent a very fine store of timber being obtained from them when it comes to their turn to be worked. It would be well to leave them for 15 or 20 years; but I believe there will be no occasion to work them before that time. The second class and third class trees are very fine throughout this tract. In this tract there are several villages with cultivation near the hills, but their limits have been strictly defined, and they are not allowed to keep any buffaloes.

#### II.—THE FORESTS IN THE KUMAON IRON COMPANY'S GRANT.

31. This grant extends from the Munáar Gudderah, about one mile west of the Dubka, as far as the Bukra river, about half way between Kaladoongee and Huldwanee. The grant is bounded on the north by the Himalayas, and on the south (towards the Bhabur) by a line of pillars. In area it is about 400 square miles. As the forests in this grant have been given away, I did not examine them minutely. But from having enjoyed perfect rest and protection the young saul seemed to be springing up vigorously in all parts, while good second and third class trees, and in some places mature timber, is abundantly to be met with. The whole certainly forms a very valuable property.

#### III.—THE FORESTS OF THE NINDHORE AND SERRARAGAR.

32. These two rivers have their source in the lower ridges of the Himalayas, between Huldwanee and the Sardah, close to each other, but run out of the hills in opposite directions, the course of the Nindhore being nearly west for 17 or 18 miles, and that of the Serraragar south-east for about 12 miles till they reach the Bhabur, from which they are separated by high ranges of broken hills.

33. Both these rivers—not only as regard their main valley, and also the numerous ravines and sotes that appertain to them—are filled with a dense forest of nearly pure saul, slightly intermixed with cheer in the upper portion, and in some places with trees of the lower jungles. But the forests generally resemble so entirely those of the Palein and Mondhal that any particular description of them seems superfluous. Except in some of the lower portions, and on the side of the hills towards the Bhabur, they have never been touched by the hand of man. The trees generally are far too much crowded, and in consequence I think are not generally of very large size, though no doubt noble trees exist in many places over so large an area of forest. But it is absolutely necessary that a series of foot paths, which hereafter may be developed into forest roads, should be constructed through these valleys before even a proper or accurate examination of them can be made. At present they are simply an impenetrable thicket. I am quite sure that an enormous amount of timber might at any time be brought out of these forests to their extreme benefit, if only other considerations admitted of this being done. These conditions will be alluded to hereafter. There cannot be less than 40 square miles of virgin saul forest contained in the area of these valleys. The geological formation is massive sandstone, with drift boulders and gravel.



#### VI.—FORESTS OF THE OUTER RANGE AND IN THE BHABUR.

34. In this are included all the belts of saul which cover the plateaus and slopes of the hills, and which extend in many places far out into the Bhabur from Huldwanee in the west to the Sarda on the east. From their exposed position, as may be expected, every thing worth taking away from these forests has long ago been cut down, and except in the upper portions of the gorges or ravines, and high up on the ridges of the hills, mature trees do not exist anywhere: young forests however are springing up on all sides, which differ materially in quality in different localities. In some places where the soil is suitable, and other circumstances have favored the growth of the young trees, they are exceedingly fine, and show straight stems, clean barks, and fine heads. In other places where the soil is poor, but more especially where the numerous cattle stations formerly existed, and where in consequence the young trees suffered continually from being lopped, barked, and otherwise injured, and where they were more exposed to repeated fires, the trees are knotted, crooked, and with poor heads. The best forests are perhaps those west and north of Chorgalia (where the old unsound trees which still remain are exceedingly fine in size and appearance), and those situated on the flats and plateaus above the Jugboora and Colonia streams. Toon as well as sissoo and khair is also coming on well in many places.

The main export, however, for some years will consist of minor forest produce and bamboos, of which a large quantity is carried away to the plains from these forests.

#### V.—SARDAR FORESTS.

35. About 8 miles above Baramdio around Kuldoonga, near where the Ludya empties itself into the Sardar, there is a fine block of virgin saul forest. North of the Poornagiree precipice the hills recede somewhat from the river, and from a series of plateaus and flats terminating in ravines, which run up into the higher ranges of hills, all of which (both along the Ludya and the Sardar, for a distance of 6 or 7 miles) are covered with saul; and from the favorable nature of the situation the trees have developed themselves here in a very remarkable degree. Taking it all in all, this is one of the finest forests in Kumaon, and it now may be said to be at its prime. There appear to be very few old or unsound trees in the forest—most of the full-grown ones being from 6 to 8 feet in girth, and 60 to 80 feet high, with younger ones of every age in abundance. It would seem advisable after the clearing out of the Doorgadeb block of forest to proceed next to work this one, so as to get the sound timber out before the trees begin to decay.

There is a precipice below Poornagiree which has hitherto prevented the export of timber along the river bank, and this no doubt has saved the forest from being worked; but the rocks here can easily be removed by blasting, as the difficulty extends for a short distance only. In the centre of the forest is the village of Kuldoonga, which has a large amount of cultivation round it. The presence of this village is no doubt objectionable, but its removal impossible. Its boundaries have been accurately defined by the Settlement Officer.

### CHAPTER III.

#### TIMBER AND REVENUE STATEMENTS.

36. From the following tables the annual income and expenditure of these forests will be seen at a glance since they were made over to Colonel Ramsay, the principal sources of revenue being shown separately in the tables:—

*Statement of the Yield of Timber and Revenue in the Forests of Garhwal and Kumaon.*

| Forests. | Year.    | A I.<br>PROCEEDS OF TIMBER SALE. |                |            | A II.<br>SALE OF DRY WOOD REMOVED<br>BY PURCHASERS. |             | REVENUE FROM SALE OF BAMBOOS. |             | Grazing dues. | Revenue from other<br>sources. | Total Receipts. | Total Expenditure. |
|----------|----------|----------------------------------|----------------|------------|-----------------------------------------------------|-------------|-------------------------------|-------------|---------------|--------------------------------|-----------------|--------------------|
|          |          | Cubic feet.                      | Revenue.       | Rs. As. P. | Cubic feet.                                         | Amount.     | No.                           | Amount.     |               |                                |                 |                    |
|          |          |                                  |                |            |                                                     |             |                               |             |               |                                |                 |                    |
| 1.       | 2.       | 3.                               | 4.             | 5.         | 6.                                                  | 7.          | 8.                            | 9.          | 10.           | 11.                            | 12.             |                    |
| GARHWAL. | 1859-60, | 11,98,000                        | 2,50,939 13 8  | ...        | ...                                                 | ...         | ...                           | ...         | Rs. As. P.    | Rs. As. P.                     | Rs. As. P.      | Rs. As. P.         |
|          | 1860-61, | 28,425                           | 43,905 12 7    | ...        | ...                                                 | ...         | ...                           | ...         | 58,881 1 2    | 3,04,820 14 10                 | 2,56,809 2 6    | 94,540 10 10       |
|          | 1861-62, | 70,000                           | 1,88,382 12 8  | ...        | ...                                                 | ...         | ...                           | ...         | 74,527 1 3    | 1,18,432 13 10                 | 80,133 0 0      | 91,766 14 3        |
|          | 1862-63, | 2,80,518                         | 2,42,194 9 10  | ...        | ...                                                 | ...         | ...                           | ...         | 19,208 3 3    | 2,61,402 13 1                  | 32,663 10 5     | 87,586 10 1        |
|          | 1863-64, | 801                              | 17,355 14 5    | ...        | ...                                                 | ...         | ...                           | ...         | 15,307 12 0   | 2,17,742 0 8                   | 1,09,104 4 6    | 81,717 0 5         |
|          | 1864-65, | 3,89,219                         | 2,06,373 12 9  | 1,000      | 260 0 0                                             | 6,48,000    | 5,400 0 0                     | 504 4 1     | 5,213 15 10   | 2,47,075 5 7                   | 55,919 4 3      | 52,488 0 0         |
|          | 1865-66, | 2,756                            | 1,85,149 8 2   | 50,631     | 12,657 14 0                                         | 13,93,090   | 45,453 5 7                    | 144 9 10    | 3,670 0 0     | 1,76,795 0 1                   | 9,10,064 14 10  | 1,46,556 10 6      |
|          | 1866-67, | 96,814                           | 1,11,181 10 2  | 1,77,368   | 44,342 2 3                                          | 2,26,71,734 | 56,245 10 11                  | 60 0 0      | 16,121 0 0    | 2,27,950 7 4                   | 86,024 0 4      | 1,09,680 0 0       |
| 1867-68, | 63,333   | 75,138 0 0                       | 1,12,865       | 28,216 5 8 | 2,28,69,641                                         | 56,810 10 5 | ...                           | 16,630 0 0  | 1,76,795 0 1  | 8,35,477 2 11                  | 17,43,542 1 9   |                    |
| ...      | ...      | 21,29,866                        | 13,20,621 14 3 | 3,41,864   | 85,466 5 11                                         | 4,81,02,465 | 1,63,909 10 11                | 708 13 11   | 2,18,661 13 7 | 17,89,368 10 7                 | 9,10,064 14 10  |                    |
| KUMAON.  | 1859-60, | 6,05,349                         | 2,30,388 9 9   | ...        | ...                                                 | ...         | ...                           | ...         | 26,012 11 2   | 2,56,401 4 11                  | 1,46,556 10 6   | 98,163 12 5        |
|          | 1860-61, | 3,73,523                         | 18,131 3 0     | ...        | ...                                                 | ...         | ...                           | ...         | 51,313 10 9   | 69,444 13 9                    | 95,319 5 9      | 68,337 0 1         |
|          | 1861-62, | 19,26,111                        | 67,621 1 11    | ...        | ...                                                 | ...         | ...                           | ...         | 23,727 14 5   | 1,35,417 1 0                   | 1,00,929 12 1   | 63,354 4 1         |
|          | 1862-63, | 2,85,081                         | 1,11,689 2 7   | ...        | ...                                                 | ...         | ...                           | ...         | 16,603 5 8    | 68,881 6 8                     | 2,84,793 4 4    | 1,03,630 13 6      |
|          | 1863-64, | 1,67,304                         | 52,278 1 0     | ...        | ...                                                 | ...         | ...                           | ...         | 39,904 4 9    | 2,59,543 12 11                 | 61,800 13 11    | 86,024 0 4         |
|          | 1864-65, | 2,11,435                         | 2,44,888 15 7  | ...        | ...                                                 | ...         | ...                           | ...         | 10,155 5 6    | 1,47,558 12 2                  | 1,09,680 0 0    | 8,35,477 2 11      |
|          | 1865-66, | 37,160                           | 2,31,104 11 5  | 23,792     | 5,947 15 9                                          | 17,63,396   | 4,473 1 9                     | 7,862 10 6  | 52,291 3 10   | 1,73,730 9 7                   | 17,43,542 1 9   | 32,90,459 1 8      |
|          | 1866-67, | 82,945                           | 57,060 15 0    | 1,20,555   | 30,138 8 3                                          | 30,22,376   | 8,258 4 11                    | 9,809 12 2  | 10,425 13 8   | 15,01,090 7 1                  | 8,35,477 2 11   | 17,43,542 1 9      |
| 1867-68, | 1,28,315 | 1,15,796 0 0                     | 1,05,029       | 26,257 3 7 | 25,68,739                                           | 10,374 6 0  | 10,977 2 4                    | 10,425 13 8 | 15,01,090 7 1 | 8,35,477 2 11                  | 17,43,542 1 9   |                    |
| ...      | ...      | 20,74,723                        | 11,28,968 13 3 | 2,49,376   | 62,343 11 7                                         | 73,54,511   | 23,005 12 8                   | 28,649 9 0  | 2,58,132 9 7  | 15,01,090 7 1                  | 8,35,477 2 11   | 17,43,542 1 9      |
| ...      | ...      | 42,04,589                        | 24,49,580 10 5 | 5,91,240   | 1,47,810 1 6                                        | 5,54,56,976 | 1,86,915 7 7                  | 29,358 6 11 | 4,76,794 7 2  | 32,90,459 1 8                  | 17,43,542 1 9   | 32,90,459 1 8      |

A.—Includes a balance of Ra. 4,52,380 cubic feet from previous year.

B.—Includes revenue from Captain Reid and Mr. Johnson's timber.

Balance in favor of the Forests in nine years,  
Ra. 16,46,916-16-11.

37. Having expressed myself strongly on another occasion against the collection in the Doon by kham tehseel of the revenue on minor forest produce, I feel bound to state that as far as I have been able to judge the same system has worked in Gurhwal and Kumaon in a perfectly satisfactory manner. The large revenue realized from this source, and the small charge on its collection (about 6 per cent.), sufficiently attests the truth of this statement. But the natural condition of the two divisions are very different. In Kumaon and Gurhwal almost every portion of the forests is readily accessible by excellent roads, so that it is more profitable to exporters to carry their bamboos and timber out of the forests along such tracts past the forest chowkees, and to pay a small duty on their export, than to smuggle them out over difficult and precipitous mountain-paths. But across the Ganges, although there is a fair road along the south side of the Sewalicks in the Doon forests generally, the system of roads (projected by the Commissioner of Meerut) has yet to be carried out. Moreover, in the Doon the forest boundaries are enormously multiplied by the intermixture of private grants, which add very greatly to the facilities of smuggling and to the difficulties of watching the forest. It would not, however, be fair to attribute the whole of this satisfactory result in Kumaon and Gurhwal to such causes as these, and no doubt much also is due to the praiseworthy vigilance and thorough knowledge of the country and people, which the Messrs. Thompson have brought to bear on this part of their duty. Nor would I omit the name of Moteeram Sah, the Banker of Nynce Tal, who has been of great service to the department in many ways, and to whom the whole of the responsibility connected with receiving the collections and remitting them to the Treasury has been entrusted for a small commission; and who, through his own good character, has no doubt greatly influenced the native subordinates of the Kham Tehseel Establishment for their good.

## CHAPTER IV.

### PRESENT CONDITION OF THE FORESTS.

38. The management of the Gurhwal and Kumaon forests was first taken in hand by Colonel Ramsay after the Mutiny. Previous to that period it is to be feared that but little consideration either for economy of the timber or the future welfare of the forests was shown by those to whom the responsibility of working them was entrusted. Felling of trees without permission was then first prohibited by Colonel Ramsay when he took charge, and Forest Officers were appointed. From that time conservancy has progressed with vigor. In 1861-62 the cultivation in the Patlee Doon was put a stop to by assigning land to the people below the hills in the Bhabur; next the cattle stations were broken up, and all herds of buffaloes removed from the forests. This operation occupied three years from 1862 to 1865, the cattle stations being removed from all the Gurhwal forests, and in Kumaon from all the forests above the main line of road. In meanwhile excellent roads were opened out, and the forests, especially those of Gurhwal, were made accessible from all sides: at the same time a regular system was instituted of working only certain forests, the remaining ones being kept rigidly shut up, and the selection and marking of all trees previous to felling being insisted on. The clearance also of the forests from old timber, which, after the operations of Captain Reid and the contractors who preceded him, lay scattered over all of the forests, was commenced, the wood being removed by native merchants on payment of a small Royalty which has brought in a handsome revenue now for several years, and has not yet entirely ceased. In 1867-68 forest fires were successfully excluded from all Gurhwal and from most of the Kumaon forests.

39. As regards their present condition, it will be seen from the preceding description that though in the years prior to the introduction of the present conservancy arrangements the more accessible forests have been heavily worked (in some places even to utter desolation, so that their reproduction can hardly be looked for), yet that many portions of them still exist where timber has never been felled at all: while in the

others, though felling may have been carried on, a considerable amount of trees can still be taken away without injury. In other places the trees are growing so closely together that they cannot develop themselves to their full size, and the removal of a portion of them is desirable for the benefit of the rest; while in almost every forest a large number of partially unsound trees is found, many of which will bear removal, and will yield a large amount of good wood.

40. Generally the second and third class trees are in most flourishing condition, and the entire rest which the forests have enjoyed since they were shut up has borne marked fruit in their improvement. This result is best seen in those forests which were partially but not too heavily worked in past years.

41. The growth of the young trees and saplings in almost every case is most satisfactory, and is a standing proof of the immense benefit that has been effected by the removal of the cattle and the exclusion of fires when one looks at thriving young trees of every size, from the smallest seedlings to the young giants of 50 or 60 feet in height, and two feet in girth, growing up with fine clean barks and straight stems, and all full of the highest promise, the mind is filled with good hope that future ages will see these valleys and plateaus covered with forests far greater in value to those that went before them, inasmuch as they will benefit by regular protection and conservancy, which their predecessors did not enjoy. Indeed, the virgin forests which actually exist, are by no means the best ones we have.

42. The only portion of the forests which can be looked on as forming an exception to the above are those in which, from being overworked, the grass has got to such a head that it chokes the ground entirely, and renders it impossible for the seed to germinate. It is very difficult to know how to act here, as in order to do any good the huge grass must be got rid of. It is to be hoped that if fires can be effectually excluded for a number of years it will wither and die, as there are in most cases still quite sufficient old trees on the ground to furnish seed, if only the grass could be removed and the ground cleared.

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## CHAPTER V.

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### FUTURE YIELD OF THE FORESTS IN TIMBER.

43. I think this should be divided into two parts, viz. :—

1st,—The yield from the regular annual fellings.

2nd,—The yield from conservancy operations.

44. The former must be carried out agreeably to a regular working plan drawn up with a view to the removal of a certain proportion of the mature sound timber every year, the latter will be the result of such operations as from time to time may be executed for opening out and improving the forests. I have now been in the habit of watching saul forests for about ten years, and the inspection of these Doons very much confirms the opinion to which my mind has for some years been tending—viz., that both for the free germination of the seed, and the effectual reproduction of the forest, as well as for the welfare of the trees, and their progress afterwards, *saul requires a considerable amount of sun and light*; and that a saul forest will bear, and indeed repay (if it does not absolutely require), much more liberal felling than almost any other description of forest in India. Yet this felling must be carefully limited in such a degree that the grass and the scrub jungle should not get head instead of the young saul; for if it does, the latter will infallibly be choked and perish. It is impossible however to see any forest, even where heavy felling has been carried on, provided sufficient cover has been left to prevent the coarser descriptions of grass getting hold of the ground, where the growing trees of all classes do not show a marked improvement in their appearance over those in forests which have

never been touched. Moreover, for the actual free germination of the seed of the saul tree, it is absolutely necessary to open the ground to the light and sun—a fact which the most cursory examination of a saul forest will at once show.

45. In regard to the amount of felling which a saul forest will bear with safety, I believe that in almost every case every sound first class tree may be removed : for where the second and third class trees are abundant they protect each other ; and where this is not the case, we may be sure that the forests are old, and that from 20 to 50 per cent. of the trees are more or less unsound. The unsound trees are quite as good both for seed shedding and protective purposes as any others, and the proportion of them to be removed must depend on the ratio they bear in the forest to the sound ones. But every forest must be treated on its own merits ; and, indeed, there are hardly any two portions of the same forest which will bear exactly the same amount of working.

46. For the above reasons, as well as on account of the immense benefit which accrues to young saul from perfect rest, I am led to advocate a plan of working these : and, indeed, all saul forests, the basis of which should be the division of the forest into blocks, each of which should be worked in succession to the *full extent* it will bear with safety, after which it should be shut up for a full period so as to allow the second class trees to become first class. As from seven to ten rings may be generally counted in one inch of the radius of a well-grown saul tree, I am induced to think that this period may be estimated at from 30 to 40 years.

47. With a view to obtaining data to frame a working plan based on the above principles, I have directed an enumeration to be made by the Rangers and Patrols of all first class trees in the forests which have not yet been worked—the sound and unsound trees being counted separately. But the system of linear surveys, which is said to be well adapted to some forests, would not answer here, inasmuch as the unsoundness of the trees, which exists in a very different ratio over the forests, contributes so large a disturbing element to all calculations of the value of the timber, that the truth of any estimate based on them, would be considerably invalidated.

48. From the data thus obtained, a tentative working plan will be drawn up and submitted for the sanction of Government, and by it the annual yield of the forest in sound timber will be carefully ascertained and defined : but after the inspection I have made I believe I may safely commit myself to say that Colonel Ramsay's estimate of one lakh cubic feet per annum from the forests of both divisions may confidently be reckoned on, besides whatever is obtained by the removal of partially unsound trees and from thinnings. The regular survey of the forests will follow, and by it the estimate now obtained will be checked, and the working plan corrected accordingly.

49. With regard to the second head—*viz.*, the thinning of forests which are too closely packed,—this must be looked on rather as a conservancy operation than as a source of revenue. It must be borne in mind that the best trees will in almost every case be left standing, and that the sale of a large quantity of more or less indifferent wood in distant localities will not in all probability yield much profit. Moreover, it must be carried out absolutely under the personal inspection of the Forest Officer himself—every tree being selected entirely with a view to the effect which its removal will have on those which are left standing, and not on its value as a timber tree. It must be remembered, too, that the forests where these operations are mainly required, are those which from their inaccessibility have hitherto escaped the axe, and the making of roads must in every case precede the act of thinning out the trees. But I feel no hesitation in saying that if half the trees were cut down in the untouched portion of the Paloin forests, as well as in the Mondhal and Nindhore valleys, the remainder would benefit beyond all calculations by the operation.

## CHAPTER VI.

## FUTURE MANAGEMENT.

50. Under this head but little can be done except to mature and consolidate the sound system of conservancy which Colonel Ramsay has commenced, and with this view, in addition to the exclusion of fires and cattle which of course must be steadily persevered with, the following points would seem now to demand special attention.

1st,—The completion of a good and correct set of forest maps for the whole tract on a large scale.

2nd,—The framing of a regular working plan of the forest.

3rd,—The opening out and thinning of the virgin forests.

4th,—The gradual extension of the system of forest roads especially in Kumaon.

5th,—The compilation of a proper record of the State rights in the forests or "Register of the Forests."

51. Arrangements have been already made for taking in hand the first two of these works, and both will be materially facilitated when the maps, which are now in the course of preparation by the Topographical Survey Department, are completed. The third and fourth points must necessarily be a work of time, as both of them will demand not only money, but also the personal supervision of well-trained officers, which cannot always be afforded, and both as stated above will probably depend in some degree in the possibility of finding a sale for a large amount of second-class timber.

52. In regard to the last point, it would seem most necessary that the compilation of a proper record of the rights of the State, as well as of the rights of the people, in reference to these valuable forests, should be no longer delayed. Rights so important, and property so valuable, must not be left to be dealt with by individual knowledge or caprice, and, moreover, it is highly desirable that they should be placed on a legally-defined footing. To this end then it is proposed to issue instructions for the preparation of a descriptive Register of the forests, showing all their boundaries, and noting such rights as it may be necessary to concede in regard to them. When this is completed and revised by myself it will be submitted to the Commissioner, in order that all points involving the rights and interests of the population of the Hills and Bhabur may be fully considered. When all these have been determined, the record shall be submitted to Government for sanction, with a view to the forests being declared State Forests under the Forest Act.

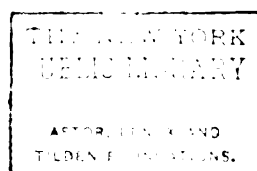
53. In conclusion, although anything in the shape of commendation in a public report would, as a rule, almost seem to savor of presumption when expressed in reference to an officer who is so much my senior, and who bears so high a character as Colonel Ramsay does, yet I trust that it may not be considered that I am trespassing beyond the proper bounds of duty, if, after a most minute and instructive examination of every part of these forests, which has occupied me for the whole of two months, I desire to place on record how strongly I have been impressed with the very perfect system of management that officer has instituted and carried out in them. It would be difficult to over-estimate the value of Colonel Ramsay's services to Government in these respects; indeed, it is I believe not too much to say that no officer who did not possess the local knowledge and influence, which Colonel Ramsay brought to bear on the work, could have effected so much in the same time. And after having been in the Forest Department myself for nearly nine years, and after having seen something of the system followed—not only by myself in the Central Provinces, also in the Madras Forests, in Bombay, and in the Punjab—I would desire to testify that perhaps in no forests in India has so much sound progress in forest conservancy been accomplished on so large a scale as has been effectually carried out in the saul forests of Gurhwal and

Kumaon. To Colonel Baugh—who has had charge of the conservancy arrangements, and to whom the delicate task was intrusted of dealing with the cattle owners who have been excluded from the forest, and who, in connection with the Settlement Officer, Mr. Beckett, completed the arrangements for suppressing unauthorized cultivation within the forest limits—every possible commendation is due for the tact and success, as well as for the thorough manner in which this has been carried out. The same is due to the Messrs. Thompson, but especially to Mr. R. Thompson, who has been in the forests since Colonel Ramsay took charge of them, and who possesses great local knowledge, as well as some scientific attainments, and a thorough experience in forest work in all its branches. Both of these officers have had charge of the timber arrangements, road works, and kham tehseel management, and both of them, but more especially Mr. R. Thompson, have done these works right well. I was glad also to observe that they were both well and kindly spoken of by the native population in the forests.

I have the honor to be,  
 SIR,  
 Your most obedient Servant,  
 G. PEARSON, MAJOR,  
*Conservator of Forests, N. W. P.*

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**Narrative of Events**  
ATTENDING THE OUTBREAK OF DISTURBANCES  
AND THE  
**RESTORATION OF AUTHORITY IN THE DISTRICT**  
OF  
**KUMAON,**

IN 1857-58.

---

No. 258.

FROM

MAJOR H. RAMSAY,

*Commissioner of Kumaon,*

TO

WILLIAM MUIR, Esq.,

*Secretary to Government,*

*North Western Provinces.*

DATED NYNEE TAL, THE 22<sup>ND</sup> JULY 1858.

SIR,

I HAVE now the honor to submit the report required by your Circular No. 212, dated 30th April.

Mr. Colvin's letter is enclosed.

2. The news of the Meerut mutiny reached me, then in the Snowy Ranges of Gurhwal, on 22nd May. I hastened back to Almorah, made what arrangements appeared advisable with Colonel McCausland, and then proceeded to Nynee Tal to do what was possible for the preservation of order at the foot of the Hills, to get funds and procure supplies.

3. My applications to Bareilly and Moradabad for money were too late, the sepoys having determined upon protecting the Treasuries for themselves, and no larger sums could be taken out of them. The Buheree Tehseel officers had helped themselves, and I got no money;—the Bunjarahs, collected in large numbers, had closed the roads in Rooderpore, and all trade was at a stand-still. I secured as much grain as I could in the Bhabur, and awaited the course of events.

4. On the 1st June the Bareilly refugees reached Huldwanee, and those of Moradabad who came to Nynee Tal, arrived at Kala Doongee on the 4th June. All who started, except Sergeant Staples from Bareilly, reached the Hills in safety, and from the 6th June we were, for nearly a month, cut off from all communication with the plains. Early in July a dâk line was established across the Hills through Mussooree.

5. Soon after the 10th June, the most complete disorder prevailed in the plains, and large hordes of dacoits from Rampore and the Moradabad district filled the Bhabur villages of lower Kota; they stole the cattle, removed thousands of maunds of grain, and did as much damage as possible. Our strength at that time was not sufficient to protect the whole of the Bhabur; I therefore confined my efforts to the Chukhata district in the vicinity of Huldwanee. The Hill cultivators of the Bhabur returned to the Hills after a few attempts at resistance, in which about 20 rebels were killed. I could not offer any efficient resistance, and the rebels having in a few days plundered the villages, the country was left a desert.

6. On 27th June, the rebels again collected below upper Kota. I sent a party under Dhun Sing to defend the place, but Mustoo Khan of the Rampore Territory came with an overwhelming force of horse and foot. Dhun Sing and some others were killed, the Tehseel was plundered of the few rupees (about 400) in deposit, and the rebels at once retired without destroying the villages.

7. About the middle of June the evil-disposed of the Hill people, especially on the borders of the plains, began to show that they were sensible of our weakness, and as I had no district Police, I felt the necessity of resorting to extreme measures to preserve order; for I foresaw that if any part of the Province became disorganized, our position at Nynee Tal would be most critical, and if one Pergunnah got into disorder, the probability was others would soon have followed the example.

8. As soon as I saw the danger alluded to above, I proclaimed Martial Law in Kumaon. In the first few cases of dacoity, I sentenced to long terms of imprisonment: this was not sufficient, and I gave longer sentences, but without success, and at last I sentenced some dacoits to capital punishment. This was made known throughout the Province; the bad characters were frightened, the good men felt safe, and the country remained as peaceable as in former years.

9. It soon became evident after the arrival of the Rohilcund refugees, that there was no prospect of immediate relief. Our funds were alarmingly small, and we had then no prospect of assistance. Mr. Colvin and I drew up a scale of allowances, by which we paid every European monthly. Advances were made on receipts, and nearly all have been adjusted.

10. The Rampore Nawab did all in his power to preserve order in his own Territories, and assist us; but from the information we received, it appeared quite possible, and even probable, that at the "Bukr Eed," in the end of July, a disturbance might take place at Rampore, and if the Nawab had been killed the victorious party would at once have attacked us. The presence of many ladies and children would have hampered us a good deal in the event of being attacked, and though that was only a chance, contingent on other events, I preferred a timely, though it might be an unnecessary, retreat to the chance of a discreditable flight. I accordingly sent over the ladies and children, about 200, to Almorah, and when the Eed festival passed over they all returned to Nynee Tal: this was the only occasion on which any body had to leave Nynee Tal from first to last.

11. The Police Sowars and Burkundazes (belonging to the Plains), ran away on 9th September, and only Hill Burkundazes remained, but the Police stations at and near Huldwanee were maintained till 17th September, when a party of rebels, mustering about 1,000 horse and foot, took possession of the place. On the 18th, Captain Maxwell with a party of Goorkhas, and about 40 Cavalry, composed of Officers, and 8 Irregulars, defeated the rebels, killing about 150 of them. Up to the beginning of September the 66th Goorkhas and 8th Irregular Cavalry had protected Huldwanee; but the climate became so dangerous after the rains ceased, I thought it imprudent to risk the lives of such valuable men, and recalled them.

12. The Police after this retired to the entrance to the Hills, and kept parties moving about the lower part of the Huldwanee district. On the 6th October the rebels, in number about 5,000, again took possession of the place; it was not deemed advisable to attack them, and an attempt was made to entrap the Cavalry portion of the force. Although we failed in securing the Cavalry, we created such an alarm that the rebels fearing an attack, were seized with a panic during the night, cut their heel-ropes, and went off helter-skelter, leaving their grain and some other property behind them. One Sowar was caught next morning and hanged.

13. The unhealthy season had passed away, and as we expected to hear of a force entering Rohilcund, I urged on Colonel McCausland the necessity of taking up a position at Huldwanee, to protect that part of the district, and be ready to assist in the destruction of the rebels, or at any rate to create a diversion. The arrival of the Nepal Contingent, and advanced state of the Kumaon Levies, enabled us to occupy Huldwanee, and leave at Nynsee Tal a party strong enough to protect the passes on the Rampore side; while Lieutenant McIntyre's young Regiment was available to take some of the Almorah duties, and, if necessary, guard the Eastern passes.

14. On the 1st January the rebels hearing of a supply of grain coming for our Camp, made a night march from Roodehpore and appeared before Huldwanee about 9 A. M. The force under Captain Baugh defeated them, killing about 50.

15. The impossibility of procuring more supplies of grain, and my store having become exhausted, most of Captain Crossman's Cavalry had been ordered to Kasheepore. In the end of January they returned, and Colonel McCausland came down with the Head Quarters of the 66th Goorkhas, and on 1st February we had about 1,000 Infantry, 250 Cavalry, two 6-pounders, and two mountain train guns.

16. Fuzl Huq's Army of 4,500 with four guns moved up from the East, Kala Khan with 4,000 men and four guns advanced from Buheree. Fuzl Huq's Army encamped at Sunda, 13 miles East, and Kala Khan's took up a position 16 miles South of Huldwanee. They first intended attacking us in front and flank, and the ground was so much in our favor we remained quiet. They then determined upon uniting forces and attacking us in front; this was not desirable, and on 10th February, Colonel McCausland attacked Kala Khan's force at Churpoora. The result has been noticed at length in Colonel McCausland's despatch. After the Churpoora fight the rebels lost heart, and never again settled down in the Terrai Pergunnahs.

17. A party once came to collect Revenue in Kilpooree, and put up at the Setargunge Tehseel. Captain Baugh was sent immediately out with 250 Infantry and Cavalry. Mr. Carmichael, who had formerly charge of these Pergunnahs, accompanied the detachment as Civil Officer, and by judicious management the rebels were surrounded and destroyed.

18. In January, it became known that a few of the Kali Kumaon people had joined the Rebel camp, and I deputed Mr. Colvin to that part of the district. Mr. Colvin prevented the contagion spreading—if it had any tendency to become more general, and kept the passes so well guarded that the rebels never attempted to approach the hills in the direction of Burmdeo.

19. When the Artillery Company at Almorah showed symptoms of disaffection in June, so many of them were sent to jail that there was no room. At the same time there was such a panic among the Natives at Nynsee Tal, that coolies were very scarce. I took 40 hill prisoners from the jail, knocked off their irons and used them as coolies, without guards, on the promise that if they behaved well they should be released at the end of the year. They worked on the roads; carried loads; on one occasion attacked

a body of dacoits near Kala Doongee, killing several of them, and throughout behaved admirably. I therefore released them at the end of the year. I considered it desirable that Mr. Colvin should be present at Almorah, and sent him there in June; his presence maintained confidence among the people of the town, and he was ready to proceed in any direction where an Officer's presence might be required.

20. Mr. Beckett kept the passes into the Hills from Bijnore well guarded, and at once proceeded in any direction where attack was threatened. In consequence of some evil-disposed plain's men attempting to create a disturbance at Sreenuggur, a company of Goorkhas was sent over for a short time from Almorah, but with the exception of some dacoitees in the early part of the mutiny, Mr. Beckett's district,\* like Kumaon, remained perfectly well-conducted and loyal. In fact,

\* Gurhwal.

with the few individual exceptions, the people of Kumaon and Gurhwal have behaved very well. They supplied coolies, grain and men, to protect the bye-passes; and the best evidence I can offer of their loyalty and honesty is the fact of Remittances of 10 to 50,000 Rs. having passed through the Hills from Mussooree to Almorah in charge of a few Chuprassees.

21. Mr. Batten was detained by me at Nynee Tal, as it was uncertain where I might go to, and the presence of one Civil Officer at the Station was absolutely necessary to keep order, and carefully dispose of the numerous applications from all sides without delay.

22. Mr. Alexander by applying to the Nawab of Rampore received 64,000 Rs. in Gold Mohurs; he also received about a Lac of Rs. in the payment of Revenue, and by granting Bills on Moradabad. The Rajah of Gurhwal lent a Lac of Rupees, and we managed to pay our way on a limited scale, until better times admitted of treasure being sent us through Deyra.

23. I consider it proper to mention that I felt it incumbent on me to cancel an order given by the late Lieutenant Governor, requiring all villagers to keep cattle out of their houses. This created great disgust, and was so offensive to the Hill people that I took upon myself to cancel it. I wrote to the late Mr. Colvin explaining the circumstances, and he approved of my proceeding. I got no official approval, but it was conveyed (by Kossid) in a small note from Mr. Thornhill, then Secretary to Government, and I think subsequently in a letter written in Mr. Muir's hand-writing, signed by the late Mr. Colvin. I have noticed this matter in order that I may not appear to have acted disrespectfully in having interfered with the late Lieutenant Governor's orders.

24. In conclusion I would observe, that the facts specified for report in the Circular under acknowledgment had no place in this Province, which happily has no history to record; but I have in the absence of such facts given a brief account of what has occurred from the sad tidings of the mutiny first reaching Kumaon, to the defeat of the rebels by the Huldwanee force at Churpoora, from which date we were never molested by any one.

I have the honor to be,

Sir,

Your most obedient servant,

H. RAMSAY,

*Commissioner.*

KUMAON COMMISSIONER'S OFFICE, }

NYNEE TAL :

*The 22nd July 1858.*

GOVERNMENT OF INDIA.

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REPORT

UPON THE

DEODAR FORESTS OF BUSSAHIR.

TO WHICH ARE APPENDED

REGISTERS OF VALUATION FOREST SURVEYS IN BUSSAHIR AND THE DISTRICT  
OF JAONSAR BAWUR, WITH OTHER STATEMENTS RELATING TO  
THE GROWTH OF THE DEODAR TREE IN THE  
WESTERN HIMALAYA.

BEING THE RESULT OF A JOINT EXAMINATION OF THE BUSSAHIR FOREST  
BY

D. BRANDIS, PH. D.

INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

J. L. STEWART, M. D.

OFFICIATING CONSERVATOR, PUNJAB,

AND

CAPT. E. WOOD,

OFFICIATING CONSERVATOR, OUDH.

WITH A MAP, ILLUSTRATING THE SITUATION OF THE FORESTS.

---

Calcutta:  
PUBLIC WORKS DEPARTMENT PRESS.  
1865.





## CONTENTS.

### REPORT ON THE DEODAR FORESTS OF BUSSAHIR.

1. Introduction.
2. General Classification of the Forests.
3. General review of the distribution of the Deodar Forests.
4. General description of the Deodar Forests.
5. Aspect.
6. Rock and Soil.
7. Gradient of the slope.
8. Deodar Forests on deserted cultivation terraces.
9. Largest trees measured in Kunawur.
10. Average size and cubical contents of first class trees.
11. Stature of the trees in the different Forest districts.
12. Gnarled and stunted trees in Upper Kunawur.
13. Practice of mutilating the trees.
14. Cutting and burning the Forest for cultivation.
15. Rate of growth.
16. Rate of growth generally slow.
17. Rate of growth at different ages of the tree.
18. Rate of growth in different Forest Districts.
19. Slow growth on steep slopes.
20. Average rate of growth of first and second class trees.
21. Average rate of timber production per acre.
22. Difference between measured and calculated girth.
23. Thickness of Sapwood.
24. Character of the vegetation in the Deodar Forests.
25. *Pinus longifolia* and *Gerardiana*.
26. *Pinus excelsa*.
27. *Abies Smithiana*.
28. *Picea Webbia*.
29. The different species of Pines retain their leaves for different periods.
30. *Taxus*, *Cupressus*, *Juniperus*.
31. Oaks, *Quercus* species.
32. *Fraxinus*, *Olea*, *Buxus*.
33. Trees found in moist places near Deodar Forests.
34. *Betula Bhojputra*.
35. Low scrub springing up in Forest clearings, injurious to the reproduction of the Forest.
36. Forest valuation Surveys, their method.
37. Totals of trees counted in the Valuation Forest Surveys.
38. Maps.
39. Working Divisions.
40. Previous working of the Forests.
41. Forest tracts completely destroyed.
42. Trees felled but not removed.
43. Logs left behind in the Forests and along the rivers.
44. Logs injured and destroyed in their passage to the river.
45. Reforms needed in the mode of working.
46. The duration of the lease may affect the working plan.

REPORT—*continued*.

47. Working Divisions, First Division.
  48. Two methods of arranging felling operations.
  49. Necessity for clearing the Forest of timber, tops and branches.
  50. Other Forests of the first Division.
  51. Second Division.
  52. Third and Fourth Divisions.
  53. Fifth Division.
  54. Sixth Division.
  55. Seventh Division.
  56. Eighth Division.
  57. Provision made for sixteen years.
  58. Necessary modifications of the plan proposed.
  59. Review of the resources available after sixteen years.
  60. Resources of the Forests not at present available.
  61. Protection of the Forests against injury.
  62. Injury done to the Forests by villagers.
  63. Demarcation of the Forests of superior value.
  64. The right of collecting waifs and strays exercised by Native Chiefs.
  65. Rules for the management of waif timber in British Territory.
  66. Further sources of Deodar to supplement the Forests of Bussahir.
  67. Deodar localities between Bussahir and the plains.
- 

## APPENDICES.

- I. Register of Forest Valuation Surveys, Bussahir.
  - II. Abstract of Forest Valuation Surveys, Bussahir.
  - III. Statement of Deodar trees, examined to determine rate of growth.
  - IV. List of Deodar trees, measured at different heights along the stem.
  - V. Statement of the Geographical limits of the principal trees of Kunawur.
  - VI. Memo. of heights in Kunawur.
  - VII. Register of Forest Valuation Surveys, Jaonsar Bawur.
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## REPORT ON THE DEODAR FORESTS IN BUSSAHIR.

*Introduction.*—Having been directed to make, in company with Dr. Stewart, Officiating Conservator of Forests in the Punjab, a preliminary survey of the Deodar Forests, lately leased from the Rajah of Bussahir, with a view to sketch out the preliminary working plan to be adopted, I left Simla on the 8th September, and joined Dr. Stewart at Poinda on the 12th. Captain E. Wood, Officiating Conservator of the Oudh Forests, who had been associated with us in this work by the kind permission of the Chief Commissioner of Oudh, accompanied me. We found that Dr. Stewart had, previous to our arrival, made a tour along the right bank of the river from the 22nd August to the 11th September, and examined the Forests on that side as far as Lipi, which may be considered the limit of workable Deodar, though scattered trees of stunted growth are found as far as the Hangarang ridge. The results of his observations are incorporated in this Report, and in the papers attached. We left Poinda on the 13th September, and keeping the left or south side of the river, examined the Forests between Poinda and Sapni, which may be called the Lower Sutlej Forests on the left bank. On the 22nd September, we left Sapni, and proceeded to examine the Forests on both sides of the Buspa River. We followed the course of this tributary as far up as the village of Rakcham, above the limit of Deodar, and rejoined the Sutlej at Mebar village, where, on the 28th September, we commenced the examination of the upper Forests on the left bank of the Sutlej. On this side the last Forests are on the Teedong stream, a feeder, which joins the Sutlej from the east above the village of Rispa. On the 4th October we completed our work on the left side, and crossed the river about midway between Rispa and Riba, opposite the village of Akhpa, whence we followed the right bank, and after again crossing at Wangtu, reached Rampoor on the 13th October. From this place Dr. Stewart proceeded to Kullu, and I returned to Simla on the 18th October, examining on my way the Chaog Forest south of Fagu. Captain Wood preceded me a few days, as his presence was required at Lucknow. After a short stay at Simla, I proceeded to the depôt of Ropur on the Sutlej to see the timber collected there, and the mode of transport down the river; the result of my enquiries at this place is given in No. 80 of Appendix I.

2. *General Classification. Non available and available Forests.*—Before reviewing the results of our joint labours, I may explain that, as regards the prospective timber yield from these Forests, it is convenient to divide them into two classes, *viz.*, “available” and “not available.”

The only method hitherto employed to transport timber from the Forests into the river, has been by rolling and sliding the logs down a dry ravine or a steep slope of the hill. The tracks thus smoothed by the passage of the logs are called slides. In a few instances these tracks have been improved by clearing away stones, brushwood, and other impediments.

Those Forests which are so situated, that logs cannot be transported to the Sutlej or its tributaries on slides similar to those hitherto used, or improved by blasting rocks or otherwise, must be regarded as not available at present for the supply of timber.

After a systematic working of the Forests has been established for a series of years, and the price of timber in the plains has risen, so as to justify a larger outlay on the transport, then the resources of the Forests, not now available, will come into play, either by converting the timber on the spot into scantling, which can be carried to the river, or by forming artificial slides and improving the tributaries so as to render them fit for floating timber.

These Forests are very extensive, and having only been worked to meet local requirements, they are rich in valuable timber. But as they will not be available for a series of years, it was not thought necessary to examine any except the Forests of the Kashong valley.

The second class would be composed of the Forests, from which, under the present system of working, the timber can be made available. The distinction is not absolute, as in many of the Forests called available, slides for the removal of timber must be opened out by blasting, but it is sufficiently definite for our present purpose.

3. *General review of the distribution of the Deodar Forests.*—The principal Deodar localities in Bussahir are near the Sutlej and its tributaries. A limited quantity is also found on the head waters of the Pabur stream, and its feeders, above Ruru village. Dr. Cleghorn mentions three tracts producing Deodar (Punjab Forest Report, page 5), 1st between Ruru and Chergaon behind the ruined fort of Batowli; 2nd on the Pej Stream; 3rd above Chergaon towards the Borenda Pass. There is also some Deodar on the tributaries which join the Pabur from the north. But according to the description of the river and the localities, given by Dr. Cleghorn, none of these Forests are immediately available for the export of timber.

On the Sutlej side of the water shed, the most important Forests are situated on the left bank of the main river and on the Buspa, commencing at Soongree near Poinda, and extending to the Teedong River. Below Soongree, there are a considerable number of isolated Deodar localities between the river and the line of watershed, but excepting near Taranda village, all are remote from the river, and the timber could only be made available by conversion into portable scantling. Thus there are Deodar Forests on the Choundeh Khad south-west of Taranda, on the south side of the Nogri stream, and on the head waters of the Bera River above Kotgurh. The last is called the Nagadar Forest, and judging from a number of logs and planks brought from this Forest for the construction of bridges near Nagkanda, the rate of growth appears to be remarkably rapid in this locality (See Appendix III, No. 1).

On the right side of the Sutlej, the highest Deodar Forests are on the south bank of the river Teti, opposite the village of Lipe. From this point, scattered Forests, generally poor, and often remote from the main river, extend down as far as the Rupigad, which joins the Sutlej from the north below Taranda.

We have thus five main geographical groups of the Deodar producing tracts in Bussahir. These must not be confused with the working divisions to be explained hereafter.

| NAMES.                                                                         | NUMBER OF FIRST CLASS<br>TREES SUPPOSED TO BE<br>AVAILABLE. |
|--------------------------------------------------------------------------------|-------------------------------------------------------------|
| I.—The Pabur Forests ... ..                                                    | None.                                                       |
| II.—The Lower Sutlej (below the mouth of the Buspa) on<br>the left side ... .. | 30,000                                                      |
| III.—The Buspa Forests ... ..                                                  | 6,000                                                       |
| IV.—The Upper Sutlej Forests on the left side... ..                            | 18,000                                                      |
| V.—The Sutlej Forests on the right side ... ..                                 | 4,000                                                       |
| Total ... ..                                                                   | 58,000                                                      |

4. *General description of the Deodar Forests. Elevation.*—The bed of the Sutlej, four miles below the Wangtu bridge, where the more important Deodar Forests commence, is about 5,000 feet above the Sea, 33 miles higher up at the mouth of the Teti River near the upper limit of the Forests, its elevation is 7,600 feet. Near Nachar and Soongree, the lower limit of Deodar Forests commences at about 2,000 feet above the bed of the river; near Riba and Rispa only a few hundred feet intervene between the river and the first Cedars, and in the Buspa valley Deodar Forests fringe the banks of the river above the village of Shoang, and the last Deodar trees are found between the granite boulders of an old glacier Moraine below Rakcham village through which the river has forced its way.

Deodar Forests fit to be worked with advantage, rarely attain an elevation of 10,000 feet in Kunawur. Some of the most elevated Forests visited by us were the Phinla Forest, between Punung and Kilba, the Upper Buspa Forests, the Forests above Poari and the Simoling Forest between Purbani and Riba. The upper limit of these Forests was estimated by comparison with known heights at 10,000 feet. Dr. Thomson notes the highest Deodar in descending the Werang Pass on the east side at 11,000 feet, and scattered trees may, perhaps, be found at that elevation in other parts of Kunawur, but the more important Forests are confined to elevations between 7,000 feet and 10,000 feet.

5. *Aspect.*—It has been stated by several authors, that Deodar is found in greatest abundance on the northern slopes of the hills. This is, upon the whole, correct, and is remarkably exemplified in the hills of Kunawur. With rare exceptions, the slopes on which Deodar grows, are exposed to the north, east or west, a northerly and north-westerly aspect being most common. This is the reason why the hill slopes on the left bank of the Sutlej, Buspa and Teedong valleys, and on the right side of the Teti which face the north, north-west, and north-east are covered with the best Deodar Forests, the Forests being poor and scattered on the opposite sides.

6. *Rock and Soil.*—There is no great variety of rock in that part of the Sutlej valley to which this Report mainly refers. Granite, Gneiss and quartzose Schist are the principal rocks, and fine Deodar Forests with well shaped trees of large dimensions, are found on soils overlying each of these three formations. Limestone is not found to any great extent in this part of the valley, but we know from the examination of the Forests in the British district of Jaonsar Bawur, between the rivers Tonse and Jumna, and also in the valley of the Upper Chenab, by Cleghorn, that Deodar thrives well on limestone. In several Forests near Kilba village, the rock is a poor dry quartzose Schist. Here on steep slopes the trees are stunted, and there are other localities, where the influence of a poor soil on the growth of the tree is apparent.

7. *Gradient of the slope.*—A more or less steep gradient of the slope has a marked influence on the rate of growth and stature of the trees. We found small tracts covered with Deodar on rocky and almost precipitous slopes; in the majority of Forests the gradient is between 25° and 45°, and the prevalence of these steep slopes is a great draw-back to the Forests of Kunawur.

8. *Deodar Forests on deserted cultivation terraces.*—The most valuable Deodar localities are on the terraces of fields deserted centuries ago. These Forests sprang up after cultivation was abandoned, and the trees found ample nourishment in the comparatively level soil of these terraces, the ruined walls of which are still seen between the trees.

The Nachar Forest is the most remarkable instance of this kind. The circumstance was first observed by Dr. Aitchison, late Deputy Conservator of the Sutlej Forests. The largest trees here have attained a height of 250 feet and a girth of 20 feet. The largest trees are more than 550 years old, but the majority appear to be between 150 and 350 years. Possibly, the oldest trees may have existed before the fields were abandoned, which probably took place about 350 years ago. The Soongree Forest also stands on old cultivation terraces of about the same date as those of Nachar. The best part of the Janee, Phinla and Kiuden Forests is likewise on ground terraced by the hand of man. The same is the case in the Mebar Forests where however the majority of trees are smaller in size, and judging by the number of annual rings counted on the stumps of the larger trees, the Forest probably sprang up about 150 or 200 years ago. Some of the Purbani Forests also, and several other of the best Deodar localities in Kunawur, are found in similar places.

It is only in a few localities in the upper part of the Buspa valley above Sangla, in the Forests of Purbani, above Jangi, and in one or two other places, that Deodar is found on ground naturally level or with a gentle gradient, and these tracts are small.

9. *Largest trees measured in Kunawur.*—Round an old temple near the village of Kunai, between Kilba and Sapni, stand five splendid Deodars on a small plot of level ground, four of which have a girth of 25 feet 4 inches, 24 feet

9 inches, 23 feet 2 inches, and 17 feet 4 inches, and on one of the terraces above the village of Purbani an old tree was measured 34 feet 4 inches in girth and probably about 900 years old. A very large tree stands near Punang village ; it was not measured.

The largest girths of Deodar in Kunawur on record are :—

36½ feet Taranda. (Madden).

36 feet Chasoo. (Madden).

35½ feet Soongree (Thomson, Hoffmeister and Cleghorn.)

10. *Average size and cubical contents of first class trees.*—The average size of first class trees is considerably smaller in the upper than in the lower portion of the Forests. This is particularly striking as regards the length of stems. The average height of first class trees below the mouth of the Buspa River may be said to vary from 100 to 150 feet ; further up they rarely exceed 100 feet and are generally only 70 feet or 80 feet. In the Nachar Forest the average yield of the trees felled this season has been 6 logs of from 12 to 14 feet in length and measuring about 35 cubic feet each. In the upper Buspa Forest, the trees have only yielded from two to three logs on an average, and the same is the case in the Forests near Rispa and Lipi. In the Nachar Forest on 2·30 acres, 100 standing trees and 44 stumps of felled trees were measured, the result being an average contents of 218 cubic feet for first class, and 66 cubic feet for second class trees. Here, on an average, a length of 80 feet was available for timber.

In a portion of the Kiuden Forest, the average contents of 19 first and 11 second class trees was determined at 142 cubic feet for the first and 21 for the second class trees, a length of 60 feet being taken as available for timber. In the Nachar and Kiuden Forests, a number of felled trees was measured at different heights from the ground, the result is that the mean girth for logs, 80 and 60 feet long respectively, is about 8-10th of the butt girth. The details of these measurements, and of similar measurements taken in other Forest districts, are given in Appendix IV.

In most of the upper Suttlej Forests, a length of from 30 to 40 feet only would be available ; at the same time the girth decreases more rapidly towards the top of the tree, and the girth at the base is not generally so large. The average butt girth in the upper Forests might be 8 feet, with a mean girth of 4 feet and a cubic contents of 40 feet. Upon the whole, we cannot expect that the average timber yield per tree throughout the Kunawur Forests will exceed 75 cubic feet.

11. *Stature of the trees in the different Forest districts.*—The stature of the trees is generally good, and the stems are straight. In Forests like Nachar, where the trees have grown up close together, the stems are clear of branches to a great height, and carry their girth well up. In Forests of an ordinary character, clear branchless stems with little decrease in girth are more common in the lower part of the valley.

In the Buspa Forests and along the Suttlej above the mouth of this tributary, a great change is perceptible, the trees even in Forests where they stand close together being covered with side branches to within a short distance from the ground, and the stems showing a considerable decrease in girth towards the top. This renders the process of lopping and the preparation of the logs more difficult and expensive.

12. *Gnarled and stunted trees in upper Kunawur.*—Another feature in the growth of the trees in upper Kunawur is note-worthy. Many trees in the vicinity of villages and in other localities easy of access, are gnarled and stunted. The stems, instead of being straight, divide into numerous branches, each forming a separate leader. This division sometimes takes place near the ground, sometimes at a height of from 10 to 20 feet. These leaders again form tall and well-shaped tops, so that at a distance the forest frequently has a deceptive appearance. The trees appear to be tall and well formed, whereas on approach they are found to be worthless for timber, being only the branches of a short stem. Occasionally well grown trees of good size are found in this mass of useless and gnarled Deodar jungle. This circumstance, and the tendency

of the branches to form well-shaped tops, prove that the cause of this irregular growth cannot be ascribed to the soil or climatic causes, but must be sought in some extraneous injury. In one instance, on the right side of the Kashang Valley, it was evident that avalanches of snow had done the mischief by crushing the main stem of the trees, whereupon some of the lower side branches had taken the lead and attempted to form fresh stems. In a few cases wind and snow-fall may break the top. Such injury, however, commonly produces what are called tabulated or flat-topped trees, such as are frequently seen near Simla, and in Kunawur above Pangee, on the right side of the river.

13. *Practice of mutilating the trees.*—The peculiarity here noted must, in most instances, be ascribed to the hand of man. The tops of the trees are lopped off to furnish posts, beams, and shingles for house building; poles and branches for fences, and litter for cattle. Here, as in other parts of India, the people find it more convenient to cut the upper part only instead of the entire tree, which requires more labour in felling and dressing the timber. If a Deodar is felled close to the ground, no side shoots are formed, but if any branches are left on the stumps, some of them take the lead and throw out straight ascending shoots. In many instances, the cut is still visible, in others it is concealed by the bark of the side shoot having grown over the cut and joined itself with the bark of the stem below the cut. Specimens of such stunted and gnarled trees are found throughout Kunawur, but in the upper part of the valley they form large tracts, especially near Purbani, in the vicinity of Riba and Rispa, and on the right bank of the river above Rogi. These indications of former cuttings are most frequent near the borders of the treeless region, and in the more populous parts of the valley where the demand for timber and branches is greatest. There are other sources of injury which have impaired the value of the Forests in some localities, and have entirely destroyed it in others. One practice, *viz.*, the lopping of side branches to serve as litter for cattle, is common all over the hills between the Jumna and Sutlej Rivers, and reduces the trees to a bare pole with a small tuft of branches at the top.

14. *Cutting and burning the Forest for cultivation.*—Another general custom is that of cutting, charring, or burning parts of the Forest for cultivation. The trees are either felled and burnt, as far as they will burn, or ringed and lopped, the branches being heaped round the stem and fired, or they are merely charred without ringing them. Substantially, this destructive practice is the same as what is called *Toungya* cultivation in Burmah, *Dhya* in Central India, and *Koomree* in Madras. One or two crops are taken off the ground, which is then allowed to lie waste.

15. *Rate of Growth.*—Having thus noted the distribution, the dimensions, and the appearance of the Deodar, and the principal injuries to which the tree is exposed, I proceed to discuss the rate of growth, that is, the time required by the tree to attain a sufficient size for the yield of timber. It has been agreed, for the sake of convenience, in several provinces of India, to adopt an uniform classification of trees. In the present state of Forest Conservancy, these classes are useful; hereafter, when the work is placed on a more rational basis, they will no longer be required. They are as follows:—

1st Class.—Six feet in girth and upwards.

2nd Class.—From 4 feet 6 inches to 6 feet in girth.

3rd Class.—From 1 foot 6 inches to 4 feet 6 inches in girth.

4th Class.—Below 1 foot 6 inches in girth.

All trees are measured at 6 feet from the ground.

The rate of growth of the Deodar in the different parts of the Kunawur Forests was one of the special points of enquiry. Including those examined in neighbouring Forests, upwards of 380 trees and logs were examined and the rings counted. A page of the register kept is given to illustrate the method followed in making these observations and recording them.



*Register of Trees examined in a part of the Buspa Forests.*

| FOREST.                                                                                   |            | LIMSAN-TANG FOREST. | SERINCHE FOREST. |      |      |      |       |       |        |       |       |     |        |       |      |       |       |      |
|-------------------------------------------------------------------------------------------|------------|---------------------|------------------|------|------|------|-------|-------|--------|-------|-------|-----|--------|-------|------|-------|-------|------|
| No. of Survey.                                                                            |            | 36.                 | 37 to 39         |      |      |      |       |       |        |       |       |     |        |       |      |       |       |      |
| No. of Trees.                                                                             |            | 1.                  | 1.               | 2.   | 3.   | 4.   | 5.    | 6     | 7.     | 8.    | 9     | 10. | 11.    | 12.   | 13.  | 14.   |       |      |
| Rings counted on successive portions of the radius between centre and circumference.      | 0" to 2"   | 15                  | 10               | ...  | ...  | ...  | 11    | 8     | 17     | 7     | ...   | 13  | 35     | 13    | ...  | 12    | ...   |      |
|                                                                                           | 2" to 4"   | 12                  | 10               | ...  | ...  | ...  | 9     | 21    | 13     | 7     | ...   | 18  | 25     | 16    | ...  | 16    | ...   |      |
|                                                                                           | 4" to 6"   | 13                  | 9                | ...  | ...  | ...  | 7     | 16    | 10     | 9     | ...   | 16  | 27     | 15    | ...  | 13    | ...   |      |
|                                                                                           | 6" to 8"   | 17                  | 11               | ...  | ...  | ...  | 10    | 10    | 13     | 5     | ...   | 13  | 55     | 24    | ...  | 13    | ...   |      |
|                                                                                           | 8" to 10"  | 19                  | 10               | ...  | ...  | ...  | 12    | 21    | 11     | 6     | ...   | 18  | 24     | 28    | ...  | 20    | ...   |      |
|                                                                                           | 10" to 12" | 10                  | 18               | ...  | ...  | ...  | 17    | 17    | 16     | 8     | ...   | 19  | 34     | 26    | ...  | 13    | ...   |      |
|                                                                                           | 12" to 14" | ...                 | ...              | ...  | ...  | ...  | ...   | ...   | 20     | 23    | ...   | 18  | ...    | 22    | ...  | 10    | ...   |      |
|                                                                                           | 14" to 16" | ...                 | ...              | ...  | ...  | ...  | ...   | ...   | 26     | 14    | ...   | 32  | ...    | ...   | ...  | ...   | ...   |      |
|                                                                                           | 16" to 18" | ...                 | ...              | ...  | ...  | ...  | ...   | ...   | 16     | 10    | ...   | ... | ...    | ...   | ...  | ...   | ...   |      |
|                                                                                           | 18" to 20" | ...                 | ...              | ...  | ...  | ...  | ...   | ...   | ...    | ...   | ...   | ... | ...    | ...   | ...  | ...   | ...   |      |
| Note. Nos. 10, 11, 13, 14 had grown on a steep slope facing the south at an angle of 30°. |            |                     |                  |      |      |      |       |       |        |       |       |     |        |       |      |       |       |      |
| Total rings                                                                               |            | 86                  | 68               | 65   | 65   | 67   | 66    | 93    | 142    | 100   | 89    | 47  | 147    | 200   | 144  | 97    | 217   | 89   |
| Radius                                                                                    |            | 11"                 | 12"              | ...  | ...  | ...  | 12"   | 12"   | 21"    | 8"    | 17"   | ..  | 16"    | 12"   | 13"  | 13½"  | 24"   | 6½"  |
| "                                                                                         |            | 12"                 | 15"              | ...  | ..   | ...  | 13"   | 14"   | 17"    | 9"    | 17"   | ... | 25"    | 14"   | 10"  | 12"   | 19"   | 8"   |
| "                                                                                         |            | 11"                 | ...              | ...  | ...  | ...  | ...   | ...   | 23"    | ...   | 19    | ... | 19"    | 15"   | 16"  | 7"    | ...   | 9"   |
| "                                                                                         |            | ...                 | ...              | ...  | ...  | ...  | ...   | ...   | 18"    | ...   | ...   | ... | 25"    | ...   | ...  | ...   | ...   | ..   |
| Mean radius                                                                               |            | 11'3"               | 13'5"            | ...  | ..   | ...  | 12'5" | 13"   | 19'75" | 8'5"  | 17'6" | 5"  | 21'25" | 13'6" | 13"  | 10'8" | 21'5" | 7'8" |
| Measd. Girth                                                                              |            | 6'2"                | 7'7"             | 7'9" | 6'5" | 7'6" | 6'10" | 6'10" | 11'9"  | 5'    | 10'6" | 3'  | 12'4"  | 7'5"  | ...  | 5'9"  | 8'8"  | 5'3" |
| Calcd. Girth                                                                              |            | 6'4"                | 7'6"             | ...  | ...  | ...  | 7'    | 7'2"  | 10'9"  | 1'10" | 9'7"  | 3'  | 11'6"  | 7'6"  | 7'2" | 6'1"  | 11'8" | 4'6" |
| Length of stem                                                                            |            | 73'9"               | ...              | ...  | ...  | ...  | ...   | ...   | ...    | ...   | ...   | ... | ...    | ...   | ...  | ...   | ...   | ...  |
| Age.                                                                                      |            |                     |                  |      |      |      |       |       |        |       |       |     |        |       |      |       |       |      |
| 1st Class                                                                                 |            | 82                  | 53               | 50   | 60   | 54   | 53    | 82    | 67     | ...   | 36    | ... | 83     | 173   | 104  | 80    | 150   | 102  |
| 2nd Class.                                                                                |            | 55                  | 39               | 38   | 45   | 41   | 36    | 54    | 51     | ...   | 27    | ... | 59     | 137   | 65   | 52    | 113   | 76   |

Aver. on level ground. 1st Cl. 62.

(1 to 9, and 12). 2nd Cl. 44.

Aver. on the steep slope } 1st Cl. 132.

(10, 11, 13, 14) } 2nd Cl. 98.

An abstract of the trees examined giving results only, is entered in Appendix III with a summary Appendix IV, exhibiting the Forests arranged according to the more or less rapid rate of growth of the Deodar trees.

16. *Rate of growth generally slow.*—The general result of our investigation indicates an exceedingly slow rate of growth in most Forest Districts of the Sutlej valley. This must be attributed, partly to the very steep slopes on which the trees are growing, partly to climatic and other influences not yet sufficiently understood. For the sake of comparison, a number of measurements made in the Deodar Forests of Jaonsar Bawur, and in several Forest tracts near Simla have been added, and also some measurements of Ravee, Chenab, Jhelum, Cabul, and Swat River timber. The trees measured were generally selected as average specimens, after a previous observation of the width of the annual rings, as noted on logs, stumps, and pieces of wood lying on the ground. To obtain average results, it is important to exclude all cases of extremely slow or rapid growth, as the variations of size in trees of the same age and standing on the same plot are very great. Another plan would be to take trees at random, to measure them by thousands instead of by hundreds, and to rely on averages. Where time is limited, this would be impracticable and the results would rarely repay the time and labour expended.

17. *Rate of growth at different ages of the tree.*—In most cases, the annual rings are wider near the centre of the stem than near the circumference. Most trees, while young, grow more rapidly than afterwards. This is a general law, but the difference in the rate of growth of a tree in the earlier and later stages of its life, is less marked in Deodar than in many other

kinds. Teak, for instance, which in Burmah is supposed to attain in from 60 to 70 years a girth of 6 feet or a radius of 12 inches under favourable circumstances, attains not rarely a girth of 2 feet, or a radius of 4 inches in ten years, and afterwards decreases in its rate of growth.

The following tabular statement shows the number of years required to attain a radius of 4 inches by 122 trees examined in the different Forest Districts, and the number of years which elapsed between the formation of the sixth and tenth inch of radius. On an average, the former was accomplished in the trees measured in 40, and the latter in 50 years, and against 94 trees where the rate of growth decreased at a more advanced age, we have 28 trees with a less rapid growth while quite young. In some instances, where this anomaly was observed, the soil of the Forest was exceedingly poor, and possibly the trees of the Forest that sprung up first had to struggle against this disadvantage, but as the Forest grew older, the soil would gradually improve by the accumulation and decay of trees and other debris.

*Statement of the number of Rings counted on 4 inches of Radius near the centre, and on 4 inches between the sixth and tenth inch.*

|    | NAME OF FOREST.                | No. OF TREES. | No. OF RINGS BETWEEN CENTRE AND 4TH INCH. | No. OF RINGS BETWEEN 6TH AND 10TH INCH. | REMARKS.                                                                                                                                                             |
|----|--------------------------------|---------------|-------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Nagadar ... ..                 | 8             | 16                                        | 22                                      | Note.—The trees where the outer wood shows a more rapid rate of growth than the wood near the centre are marked.*                                                    |
| 2  | Nachar ... ..                  | 1             | 35                                        | 73                                      |                                                                                                                                                                      |
| 3  | Janee... ..                    | 1             | 24                                        | 48                                      |                                                                                                                                                                      |
| 4  | Phinla ... ..                  | 1             | 25½                                       | 38                                      |                                                                                                                                                                      |
|    |                                | 1             | 34                                        | 76                                      |                                                                                                                                                                      |
| 4  | Phinla ... ..                  | 1             | 42                                        | 48                                      |                                                                                                                                                                      |
|    |                                | 1             | 84                                        | 58*                                     |                                                                                                                                                                      |
| 5  | Wasankan ... ..                | 1             | 37                                        | 78                                      |                                                                                                                                                                      |
| 6  | Kilba... ..                    | 2             | 43                                        | 56½                                     |                                                                                                                                                                      |
| 7  | Skoang ... ..                  | 3             | 22                                        | 34                                      |                                                                                                                                                                      |
| 8  | Chasoo ... ..                  | 1             | 32                                        | 19*                                     |                                                                                                                                                                      |
|    |                                | 1             | 32                                        | 33                                      |                                                                                                                                                                      |
| 9  | Chidu ... ..                   | 1             | 19                                        | 23                                      |                                                                                                                                                                      |
|    |                                | 1             | 23                                        | 12*                                     |                                                                                                                                                                      |
| 10 | Limsantang ... ..              | 1             | 27                                        | 36                                      |                                                                                                                                                                      |
| 11 | Serince ... ..                 | 7             | 31                                        | 38                                      |                                                                                                                                                                      |
|    |                                | 2             | 22                                        | 17½*                                    |                                                                                                                                                                      |
| 12 | Rakcham ... ..                 | 2             | 28½                                       | 56                                      |                                                                                                                                                                      |
|    |                                | 2             | 24                                        | 36                                      |                                                                                                                                                                      |
| 13 | Mebar ... ..                   | 1             | 61                                        | 36*                                     | Taking the 4 rings from the 8th to the 12th inch, the average of the 4 trees in the Chaog Forest is :<br>Rings from Centre to 4th inch, 40.<br>8th to 12th inch, 21. |
| 14 | Barunalang and Simoling ... .. | 3             | 42                                        | 58                                      |                                                                                                                                                                      |
| 15 | Tinala ... ..                  | 4             | 33                                        | 54                                      |                                                                                                                                                                      |
|    |                                | 1             | 58                                        | 46*                                     |                                                                                                                                                                      |
|    |                                | 1             | 46                                        | 35*                                     |                                                                                                                                                                      |
| 16 | Kashang ... ..                 | 1             | 36                                        | 40                                      |                                                                                                                                                                      |
| 17 | Kadelli ... ..                 | 1             | 37                                        | 32*                                     |                                                                                                                                                                      |
| 18 | Chaog ... ..                   | 2             | 32                                        | 36                                      |                                                                                                                                                                      |
|    |                                | 2             | 48                                        | 23*                                     |                                                                                                                                                                      |
|    |                                | 2             | 24                                        | 31½                                     |                                                                                                                                                                      |
| 19 | Ropur Dépôt... ..              | 1             | 36                                        | 27*                                     |                                                                                                                                                                      |
|    |                                | 6             | 20                                        | 27                                      |                                                                                                                                                                      |
| 20 | Jaonsar Bawur ... ..           | 4             | 32                                        | 22*                                     |                                                                                                                                                                      |
| 21 | Bhagaruttee ... ..             | 1             | 82                                        | 104                                     |                                                                                                                                                                      |
|    |                                | 6             | 31                                        | 50                                      |                                                                                                                                                                      |
| 22 | Ravee ... ..                   | 2             | 76                                        | 58*                                     |                                                                                                                                                                      |
|    |                                | 27            | 39½                                       | 54                                      |                                                                                                                                                                      |
| 23 | Chenab ... ..                  | 8             | 47                                        | 41*                                     |                                                                                                                                                                      |
|    |                                | 2             | 25½                                       | 31½                                     |                                                                                                                                                                      |
| 24 | Jhelum ... ..                  | 1             | 42                                        | 29*                                     |                                                                                                                                                                      |
|    |                                | 7             | 47                                        | 66                                      |                                                                                                                                                                      |
| 25 | Swat River ... ..              | 1             | 55                                        | 54*                                     |                                                                                                                                                                      |
|    | TOTAL ... ..                   | 122           | .                                         |                                         |                                                                                                                                                                      |

122 trees examined, viz., 28 with an increasing, and 94 with a decreasing rate of growth.

18. *Rate of growth in different Forest Districts.*—The figures of this statement also exemplify the great discrepancy in the rate of growth in the different Forest Districts. These data are, however, given in a more complete manner in the following statement illustrating the rate of growth in each Forest District. The age of a first class tree with a girth of 6 feet, and that of a second class tree with a girth of 4 feet 6 inches, with the number of years which the tree requires to increase from the smaller to the larger size is here shown, and forest tracts are arranged according to the more or less rapid growth of the Deodar. Where the annual rings were counted in detail on the successive portions of a radius, the results were calculated from these data, but where the total number of rings only was counted, the age at 6 feet and 4 feet 6 inches was calculated by simple proportion. In a few instances, trees were examined exhibiting extremes in the rate of growth, but these are omitted. It is not supposed that the data exhibited in this statement correctly represent the average rate of growth of the trees in the different Forest Districts; they only do so to a certain degree, the results here exhibited must be regarded as merely preliminary, and as subject to correction, when a larger number of observations becomes available. As the results stand at present, three groups of Forests may be distinguished, according as the trees have a slow, a rapid, or a moderate rate of growth; a moderate rate of growth being that when a tree attains a girth of 6 feet in from 110 to 160, and a girth of 4 feet 6 inches in from 80 to 100 years. As far as the Sutlej Forests are concerned, the following may be regarded as the principal results of these enquiries:—

1st.—The majority of slow growing Forests were found above the junction of the Buspa with the Sutlej River.

2nd.—The majority of Forests, with a growth more rapid than the assumed average, are found in the Buspa valley and below it.

Reviewing the results in a general way, it is apparent that, in the Forests situated on the outer ranges of the Himalaya, Deodar grows more rapidly than in those which are at a greater distance from the plains. It will also be observed, that the Forests further to the north-west show a slower rate of growth than those further to the south-east. Thus there are among the Forests with slow growing trees, the Bhagaruttee Forest below Gungootree, nearly all the upper Sutlej Forests above Chini, and the Forests on the Swat and Cabul Rivers; if we may judge by the Bhagaruttee timber examined in 1863 by myself and in 1865 by Mr. A. D. Campbell, and by the Cabul and Swat river timber, examined by me near Peshawur in November 1864. Among the Forests with rapid growth we find those in Jaonsar Bawur, all the Forests between Simla and Nagkanda (Simla, Chaog, Kadelli, Nagadār) and most of the lower Sutlej Forests. This is exactly what might be expected. In the moist climate of the outer ranges of the Himalaya the trees grow more luxuriantly, and form wood more rapidly than in the dry hills of the inner ranges, and of the extreme north-west beyond Peshawur. There are, however, notable exceptions to this general rule, which show, that although the rate of growth to a great extent depends on climate and geographical position, these are not the only determining agents in this matter.

The exceptions are as follows:—Some trees in the Phinla and Kiuden Forests, in the lower part of the Sutlej valley, were found to have a remarkably slow rate of growth, the average being 154 years for a girth of 6 feet. In the Nachar Forest, lower down the river, the average of 31 trees gave 149 years. In all these Forests the trees had grown up close together, and thus impeded each other's growth. Among the Forests with a rapid rate of growth, the Jhelum is recorded with only 97 years as the age of a tree 6 feet in girth. This is the result of the examination of four logs only, but it was confirmed by a careful inspection of a large quantity of timber collected at the depôt near Jhelum. The greater part of this timber had come from the Nainsookh River in Kaghan. Larger quantities of timber from this and the other tributary streams of the Jhelum River should be examined. The geographical position of these Forests would lead us to expect a slow rate of growth.

The other exceptional instance of a quick rate of growth is that of some trees measured in the lower part of the Yoling Forest above Poari on the left side of the river. It is supposed that these trees had grown more rapidly because they stood on level ground.

*Statement showing the average age of 1st and 2nd Class Deodars examined in the different Forests of Kunawur, and some of the adjoining Forests.*

| FOREST.                                                                                  | NO OF<br>TREES EX-<br>AMINED. | AGE OF<br>I CLASS<br>TREES. | AGE OF<br>II CLASS<br>TREES. | DIFF. | REMARKS.                                                                                                                                                        |
|------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Bhaga-<br>ruttee { Exd. by Dr.<br>{ Brandis ...<br>{ Exd. by Mr.<br>{ A. D. Campbell* | 4                             | 229                         | 143                          | 86    | Forests with a<br>slow rate of growth.<br>Age of 1st Class trees<br>above 140 years.<br>Age of 2nd Class<br>tree above 100 years.                               |
| 2. Cabul River ...                                                                       | 13                            | 214                         | 158                          | 56    |                                                                                                                                                                 |
| 3. Skyamdangdang, Sutlej ...                                                             | 3                             | 189                         | 142                          | 47    |                                                                                                                                                                 |
| 4. Yoling (upper part of For-<br>est) S. ...                                             | 2                             | 177                         | 133                          | 44    |                                                                                                                                                                 |
| 5. Barunalang S. ...                                                                     | 7                             | 160                         | 119                          | 41    |                                                                                                                                                                 |
| 6. Swat River ...                                                                        | 10                            | 156                         | 112                          | 44    |                                                                                                                                                                 |
| 7. Phinla, Kiuden S. ...                                                                 | 7                             | 154                         | 110                          | 44    |                                                                                                                                                                 |
| 8. Manda (Jangi) S. ...                                                                  | 2                             | 153                         | 115                          | 38    |                                                                                                                                                                 |
| 9. Chini S. ...                                                                          | 6                             | 152                         | 91                           | 61    |                                                                                                                                                                 |
| 10. Nachar S. ...                                                                        | 30                            | 149                         | 112                          | 37    |                                                                                                                                                                 |
| 11. Poari, Purbani, Akpa, mea-<br>sured at Ropur S. ...                                  | 9                             | 145                         | 106                          | 39    | Forests with an<br>average rate of growth.<br>Age of 1st Class<br>trees between 110 and<br>140 years.<br>Age of 2nd Class<br>trees between 80 and<br>100 years. |
| 12. Kilba S. ...                                                                         | 5                             | 138                         | 100                          | 38    |                                                                                                                                                                 |
| 13. Sleepers from Chenab at<br>Lahore Railway Station...                                 | 50                            | 134                         | 97                           | 37    |                                                                                                                                                                 |
| 14. Ravee timber, slow growth.                                                           | 4                             | 134                         | 93                           | 41    |                                                                                                                                                                 |
| 15. Serinche, (steep slope) S. ...                                                       | 4                             | 132                         | 98                           | 34    |                                                                                                                                                                 |
| 16. Drift timber, examined at<br>Ropur S. ...                                            | 4                             | 130                         | 96                           | 34    |                                                                                                                                                                 |
| 17. Tinala (Teedong) S. ...                                                              | 7                             | 130                         | 91                           | 39    |                                                                                                                                                                 |
| 18. Rakcham S. ...                                                                       | 3                             | 125                         | 80                           | 45    |                                                                                                                                                                 |
| 19. Chenab, measured at Wu-<br>zeerabad... ..                                            | 39                            | 124                         | 88                           | 36    |                                                                                                                                                                 |
| 20. Rogi S. ...                                                                          | 15                            | 119                         | 86                           | 33    |                                                                                                                                                                 |
| 21. Dippi S. ...                                                                         | 2                             | 117                         | 88                           | 29    | Forests with a rapid<br>rate of growth.<br>Age of 1st Class<br>trees below 110 years.<br>Age of 2nd Class<br>trees below 80 years.                              |
| 22. Yak Bursari S. ...                                                                   | 3                             | 116                         | 87                           | 29    |                                                                                                                                                                 |
| 23. Topan and Kashang S. ...                                                             | 5                             | 113                         | 85                           | 28    |                                                                                                                                                                 |
| 24. Mebar S. ...                                                                         | 7                             | 113                         | 83                           | 30    |                                                                                                                                                                 |
| 25. Chaog ...                                                                            | 5                             | 110                         | 87                           | 23    |                                                                                                                                                                 |
| 26. Simla (north side young<br>trees) ...                                                | 23                            | 99                          | 73                           | 26    |                                                                                                                                                                 |
| 27. Jhelum ...                                                                           | 4                             | 97                          | 71                           | 26    |                                                                                                                                                                 |
| 28. Kadelli (between Muttianah<br>and Nagkanda) ...                                      | 1                             | 94                          | 85                           | 9     |                                                                                                                                                                 |
| 29. Simla, (south side) ...                                                              | 9                             | 91                          | 67                           | 24    |                                                                                                                                                                 |
| 30. Kumkumee, Shoang S. ...                                                              | 10                            | 91                          | 66                           | 25    |                                                                                                                                                                 |
| 31. Ravee timber, good growth                                                            | 4                             | 91                          | 62                           | 29    | Forests with a rapid<br>rate of growth.<br>Age of 1st Class<br>trees below 110 years.<br>Age of 2nd Class<br>trees below 80 years.                              |
| 32. Kilba, Dippi, Kusthal (Ro-<br>pur) S. ...                                            | 8                             | 90                          | 66                           | 24    |                                                                                                                                                                 |
| 33. Janee S. ...                                                                         | 3                             | 80                          | 56                           | 24    |                                                                                                                                                                 |
| 34. Yoling (lower part of For-<br>est) S. ...                                            | 2                             | 76                          | 57                           | 19    |                                                                                                                                                                 |
| 35. Jaonsar Bawur ...                                                                    | 17                            | 71                          | 53                           | 18    |                                                                                                                                                                 |
| 36. Simla, (north side, large<br>trees) ...                                              | 7                             | 71                          | 52                           | 19    |                                                                                                                                                                 |
| 37. Taranda ...                                                                          | 4                             | 67                          | 49                           | 18    |                                                                                                                                                                 |
| 38. Chasoo Limsantang S. ...                                                             | 6                             | 65                          | 47                           | 18    |                                                                                                                                                                 |
| 39. Serinche, (level ground) S.                                                          | 10                            | 62                          | 44                           | 18    |                                                                                                                                                                 |
| 40. Nagadar ...                                                                          | 8                             | 50                          | 34                           | 16    |                                                                                                                                                                 |
| Total ...                                                                                | 380                           |                             |                              |       |                                                                                                                                                                 |

NOTE.—The Sptlej Forests are marked S.

\* Received while this Report was printing.

19. *Slow growth on steep slopes.*—The more or less steep gradient of the slope on which the trees are growing, seems to have a great influence on the rate of growth. In several instances we observed that on steep slopes the average growth was much slower than on level or gently sloping ground.

This was exemplified in a remarkable manner in the survey of the Serinche Forests, in the Buspa valley above Sangla. Part of the Forest is on steep slopes, but the greater portion covers undulating land along the river bank, the average age of the trees measured in these localities was:—

|                                      | Age of 1st Class. | Age of 2nd Class. |
|--------------------------------------|-------------------|-------------------|
| On level ground 10 trees, average    | 62 years          | 44 years.         |
| On steep slopes 4,       ,,       ,, | 132       ,,      | 98       ,,       |

The measurements made in the Rakcham Forest, a small tract near the upper limit of the Cedar in the Buspa valley, where the trees grow on a sandy flat near the river, seem to contradict the above, the age of a first class tree being 122, and that of a second class tree 79 years. But here the soil is poor and water-logged. No data were obtained to show the influence of absolute elevation on the rate of growth, but it is known that, as a rule, the annual rings are more narrow at elevations near the upper limit of the tree.

The time required for a tree to increase from the second to the first class corresponds to the general rate of growth. In the quick growing Forests, this time varies from 16 to 29, and in those with slow growth from 37 to 86 years. In framing the plan for working the Forests, 35 years will be assumed as the average.

20. *Average rate of growth of first and second class trees.*—The practical result of these enquiries concerning the rate of growth of the Deodar in different Forest Districts, and under different circumstances, is that in the majority of the Forest Districts in Bussahir, the age of a first class Deodar 6 feet in girth is between 110 and 140, and that of a second class tree 4 feet 6 inches in girth between 80 and 100 years. To frame the preliminary working plan, it is necessary to adopt certain figures indicating the average rate of growth; for this purpose 90 years will be assumed as the age of a second, and 125 years as that of a first class tree. From the preceding remarks it is apparent that, comparing equal areas in different parts of the Forests stocked with the same number of trees producing timber of the same quality, and offering the same facilities for export that tract will be more valuable where the rate of growth is more rapid.

21. *Average rate of timber production per acre.*—In the following statement the average annual timber production per acre in several Forest tracts or Bussahir and Jaonsar Bawur is shown. In the Nachar and part of the Kiuden Forest, for instance, the average annual produce of marketable timber amounts to 50 cubic feet per acre. The same rate was found in Jaonsar Bawur, though the rate of growth was much more rapid, but the places examined are not well stocked with timber.

| Forest.                                 | Area surveyed in acres. | No. of trees counted. |            | Length of stem available for Timber. |            | Coefficient by which butt girth was multiplied to find mean girth. |            | Average content per tree. |            | Total cubic content I. and II. Class. | Cubic content per acre. | Age of Forest. | Average annual production per acre. |
|-----------------------------------------|-------------------------|-----------------------|------------|--------------------------------------|------------|--------------------------------------------------------------------|------------|---------------------------|------------|---------------------------------------|-------------------------|----------------|-------------------------------------|
|                                         |                         | I. Class.             | II. Class. | I. Class.                            | II. Class. | I. Class.                                                          | II. Class. | I. Class.                 | II. Class. |                                       |                         |                |                                     |
| No. 7. Mayshak Forest, Jaonsar Bawur .. | 0.69                    | 10                    | 27         | 60                                   | 30         | ..                                                                 | ..         | 100                       | 25         | 1,700                                 | 2,464                   | 70             | 35.20                               |
| .. 10. Above Khatowa Village, ditto ..  | 0.46                    | 20                    | 12         | 50                                   | 25         | 0.70                                                               | 0.70       | 72                        | 18         | 1,658                                 | 3,604.35                | 84             | 42.90                               |
| .. 19. Chilara Jungle, ditto .. ..      | 0.34                    | 11                    | 13         | 60                                   | 30         | 0.80                                                               | 0.80       | 103                       | 26         | 1,470                                 | 4,323.53                | 83             | 52.09                               |
| .. 8. Nachar Forest, Kunawur .. ..      | 2.30                    | 82                    | 18         | 80                                   | 80         | 0.80                                                               | 0.80       | 218                       | 66         | 28,605                                | 12,436.96               | 250            | 49.75                               |
| .. 23. Kiuden Forest, ditto .. ..       | 0.327                   | 19                    | 11         | 60                                   | 30         | 0.80                                                               | 0.80       | 142                       | 23         | 2,934                                 | 8,972.48                | 180            | 49.85                               |
| .. 24. Ditto ditto .. ..                | 1.80                    | 57                    | 33         | 60                                   | 30         | 0.80                                                               | 0.80       | 142                       | 22         | 8,820                                 | 5,512.50                | 180            | 30.62                               |

22. *Difference between measured and calculated girth.*—In the statement given in Appendix III of the trees examined to determine rate of growth, two columns will be found marked “measured” and “calculated girth.” The figures in the latter column are calculated from the measured average radius of the wood without the bark. In thus calculating the girth, an allowance must be made for the bark, and this allowance has been fixed at five inches. The average thickness of the bark in Deodar trees of the first and second class is about half an inch, but the irregular portions round which the measuring tape must pass, are frequently more than one inch thick.

An uniform thickness of half an inch would require an addition of 3·14 inches, if it measured 2 inches, 6·28 inches would have to be added.

In the following statement, average values of measured and calculated girth of trees examined in different Forest Districts are placed side by side, and it will be seen, that, upon the whole, they agree very well.

This statement is not at present of any practical importance, but will be so hereafter when the best mode of measuring Deodar trees, by the girth or by the diameter, comes to be determined.

*Statement showing the difference between the measured girth of Deodar trees and the girth calculated from the radius.*

| FOREST.                       | NO. OF TREES. | MEASURED GIRTH. |         | CALCULATED GIRTH. |         |
|-------------------------------|---------------|-----------------|---------|-------------------|---------|
|                               |               | Feet            | Inches. | Feet              | Inches. |
| Nachar                        | 31            | 6               | 4       | 6                 | 3       |
| Dippi                         | 2             | 6               | 9       | 7                 | 2       |
| Janee                         | 3             | 10              | 2       | 8                 | 11      |
| Phinla, Wasankan, Kiuden      | 4             | 7               | 2       | 6                 | 6       |
| Kilba                         | 1             | 10              | 4       | 8                 | 3       |
| Kumkumee Sapni, Būrū          | 3             | 7               | 1       | 6                 | 11      |
| Rāpur, Jungari, Shoang        |               | 6               | 9       | 9                 | 7       |
| Chasoo, Chidū, Limsantang     | 7             | 7               | 9       | 7                 | 6       |
| Serinche (on level ground)    | 3             | 7               | 1       | 7                 | 11      |
| Serinche (on the steep slope) | 3             | 7               | 11      | 7                 | 8       |
| Rakcham                       | 1             | 4               | 2       | 4                 | 3       |
| Yak Bursari                   | 6             | 7               | 6       | 7                 | 2       |
| Mebar                         | 2             | 8               | 11      | 9                 | 3       |
| Yolinge near top of Forest    | 2             | 6               | 6       | 6                 | 10      |
| Barūnalang, Simoling, Peadun  | 5             | 7               | 10      | 7                 | 6       |
| Tināla Teedong valley         | 7             | 8               | 3       | 7                 | 11      |
| Manda Forest of Jangi         | 3             | 8               | 9       | 9                 | 7       |
| Skyamdangdang                 | 3             | 7               | 3       | 7                 | 3       |
| Topan, Kashang                | 4             | 5               | 2       | 5                 | 7       |
| Forest above Chini            | 5             | 5               | 3       | 5                 | 5       |
| Rogi                          | 24            | 4               | 8       | 4                 | 8       |
| Chaog                         | 2             | 8               | 5       | 8                 | 9       |
| Jaonsar Bawur                 | 16            | 6               | 10      | 6                 | 9       |
| Bhagaruttee                   | 1             | 5               | 9       | 5                 | 7       |
| Total                         | 144           | 175             | 5       | 173               | 2       |

The measured girth is larger in 12 cases, being the average of 87 trees, it is equal to the calculated girth in three cases, being the average of 33 trees, and it is smaller in nine cases, being the average of 24 trees.

23. *Thickness of Sapwood.*—The Sapwood of Deodar is distinctly marked, and is much less durable than the Heartwood. Its thickness varies from  $1\frac{1}{2}$  to 3 inches. In logs left lying in the Forests, the Sapwood commences to decay after the exposure of a few years, but nowhere did we observe a decay of the Heartwood. The thick layer of Sapwood acts as a protection to the timber when passing down rocky slides, and while rubbing and bumping

against the rocks in the river. When this protecting coat of Sapwood has been destroyed, logs are much more liable to injury during their transit to the river, and down river to the depôts in the plains.

24. *Character of the vegetation in the Deodar Forests.*—The character of the vegetation generally in that part of Kunawur, where the more important Deodar Forests are found, has been described by Dr. Cleghorn in his Report on the Sutlej valley, I need, therefore, only mention the principal trees associated with Deodar, or found in the vicinity of the Deodar localities.

Appendix No. VII, contains a list of the principal trees and plants found near the Kunawur Deodar Forests, with their upper and lower limits as far as they could be ascertained. This list was prepared by Dr. Stewart partly from his own observations, and partly from statements of the inhabitants of the valley. The native names are those used in Kunawur between Nachar and Lipi. A few of the systematic names entered in the list may require correction hereafter.

25. *Pinus longifolia and Gerardiana.*—Of the Pines, *P. longifolia* skirts in light Forests, the trees standing far apart, the lower slopes of the hills on both sides of the Sutlej river as far as the Wangtu bridge, where this tree reaches its upper limit in the valley. A few miles higher up, below Chergaon on the right, and below Janee on the left side, *Pinus Gerardiana* commences. This tree, like *P. longifolia*, requires a large amount of light, and does not form dense Forests like the other Pines of these hills. It occupies the lower slopes of the mountain sides near the river, and is sometimes found intermixed with Deodar. We found this tree in greatest abundance between the junction with the Sutlej of the Buspa and the Teedong, covering the lower slopes of the hills on both sides of the river. The largest specimen which we observed had a girth of 9 feet; the stems are generally short, and divide early into branches. Its upper limits are said to be the Hangarang ridge on the right, and the village of Dabling on the left side of the river.

26. *Pinus excelsa.*—Of the other pines, *P. excelsa* (Lim) is probably the most common. It is frequently found mixed with Deodar and in many localities forms Forest tracts of considerable extent, both below and above the Deodar belt. In the Buspa valley Deodar ceases at an elevation of about 9,500, but Forests of Lim grow considerably higher up, both at the bottom of the valley and on its sides. In the Forests on the left side of the Sutlej above the mouth of the Buspa, *Pinus excelsa* commonly forms the main portion of the Forest between the Deodar and the Alpine Birch, *P. excelsa* does not, however, extend as high as Deodar, it ceases on the right bank at Soognum, and on the left at Namgia. Thomson mentions a stunted tree on the north-east side of the Runang pass at an elevation of 12,500 feet.

27. *Abies Smithiana.*—*Abies Smithiana* (Ryung) has its upper limit in the Sutlej valley near Pangi on the left and near Rispa on the right side. In the lower portion of the Forests it is frequently found associated with Deodar. This tree forms a large proportion of the Forest in the Dippi, Janee, Punang and Sapni Forests, also in some of the Forests of the Buspa valley, and in the Barung Forests above the mouth of the Buspa. Above this *Pinus Gerardiana* takes its place in the Deodar Forests.

28. *Picea Webbiana.*—*Picea Webbiana* (Span, Pan, Krok) is said to have its upper limits at Lipi on the right, and Dabling on the left side of the valley; below and frequently mixed with the Alpine Birch, this tree forms a part of the Forests near the upper limit of arborescent vegetation. The variety with short leaves, more uniformly arranged round the branch, is found in the more elevated situations. The other form with longer leaves and a more distichous arrangement is commonly met with lower down.

29. *The different species of Pines retain their leaves for different periods.*—*P. Webbiana* and *A. Smithiana* are the two pines which in these hills retain their leaves longest. The shoots of successive years can easily be distinguished on a vigorous branch. On the north-west side of the Harang pass on the road from Sangla to Mebar, near the limit of arborescent vegetation, a Forest of tall Piceas grows below the Birch. Here we found parts of branches 13 years old covered with leaves still green, and occasionally scattered leaves on branches 14 and

15 years old. Lower down the hill the limit is from 8 to 10 years; this we found in Kunawur to be the usual age at which the leaves of *Picea* and *Abies* are shed. *P. Gerardiana* and *longifolia* retain their leaves from 2 to 3 years. *P. excelsa* appears to retain them somewhat longer, and the Deodar clears its branchlets at the age of about 5 years. This peculiar feature is within certain limits well marked in the coniferous trees of Europe and North America; it gives a peculiar character to the foliage and indicates the requirements of the different species regarding light and shade. *Picea* and *Abies* with their dense foliage thrive in more close and dark Forests than *P. longifolia* and *Gerardiana*, and their seedlings spring up, other circumstances being favourable, with a small allowance of light. These facts are noted to direct the attention of Forest Officers to a curious feature in the life of Coniferous trees not entirely without practical bearings.

30. *Taxus, Cupressus, Juniperus*.—The Yew, *Taxus baccata* (Yamdal) is met with here and there at elevations exceeding 9,000 feet.

The *Cypress* (*Cupressus torulosa*) is not found in Kunawur; there is a small Forest of this tree on the Shali mountain near the Sutlej River. The arborescent Juniper (*Juniperus excelsa*) commences a little below the upper limit of the Deodar Forests. It is found on the north side of the Teedong stream opposite Rispa, and on the south-west side of the Werang pass, in both cases at an elevation of about 10,000 feet.

31. *Oaks, Quercus Species*.—Of Oaks, *Quercus Ilex* (Brē) is one of the characteristic trees of Kunawur. It begins below Chergaon on the right, and Panwi on the left side of the valley, and clothes the lower slopes of the hills, commonly in company with *P. Gerardiana*, as far as Purbani, where it has its upper limit. It is always a small rigid tree. The largest specimen we measured, was in the Kilba Forests (No. 26 of Appendix I.) which was 6 feet 10 inches in girth and had a clear stem 20 feet high.

*Quercus semicarpifolia*—is not met with on the Sutlej above Kunai. On the Buspa we found a Forest of it between Sangla and Rakcham on the right side of the valley.

Of *Q. dilatata* (Marghang) a few cultivated trees only were found near Janee.

*Q. incana* (Bān) has its upper limit opposite Chergaon.

32. *Fraxinus, Olea, Buxus*.—A characteristic tree of the lower slopes between the river and the Deodar Forests is the small leaved Ash, *Fraxinus Xanthoxyloides* (Thūm), it is of small size, frequently only a shrub, and grows as far as Spui and Namgia, considerably higher than Deodar. *Olea ferruginea* Wili is also found on the lower slopes near the river. It is said to ascend as far as Rarang and Riba, but we did not observe it above the mouth of the Buspa River.

*Boxwood*.—*Buxus sempervirens* (pāprang) seems to be scarce in Kunawur; we only found it in one place on a flat near the river and on its left bank below the village of Punang. The trees were too small to be of value.

33. *Trees found in moist places near Deodar Forests*.—The following trees are found in moist places near the Deodar producing tracts, mostly in the lower division of the Forests. *Populus ciliata* (Krammal) a tree 3 feet 2 inches in girth at the butt examined in the Buspa Valley above Sangla was found by the annual rings to be 53 years old. The upper limit of this tree is said to be Rarang. Several species of *Acer* and *Rhus*. *Alnus Nepalensis* (Nyū) upper limit near Spui and Namgia. *Cedrela Toona* (serrata) not found above the Dippi Forests. *Prunus Padus* as far as Sangla on the Buspa river. *Arundinaria utilis* (Spyūg) the hill bamboo grows on the road to the Shatool Pass above the village of Panwi.

34. *Betula Bhojputra*.—The Alpine Birch, (Shāk, Shag) occupies the upper limit of arborescent vegetation throughout Kunawur where the soil is not too arid.



35. *Low scrub springing up in Forest clearings, injurious to the reproduction of the Forest.*—The low scrub, springing up on the ground from which Forest has been removed differs remarkably in the lower and upper portions of the valley.

In the Nachar, Dippi, and Kusthal Forests, and higher up as far as the Buspa River, a dense scrub of *Abelia*, *Berberis*, *Lonicera*, &c., follows the axe of the wood-cutter wherever the whole mountain side has been cleared at once. In this scrub young *Deodar* rarely springs up, and a visit to these bare slopes where the natural reproduction of the Forest is now hopeless, and planting is prohibited by expense, would be instructive to those who maintain, that enough is done to satisfy the requirements of conservancy, if a Forest is allowed to enjoy rest, after all the large trees have been felled.

To ensure in these latitudes the reproduction of a Forest by natural means, it is necessary to give light gradually, leaving a large proportion of the trees standing, to furnish seed, and to shelter the seedlings that may spring up, and at the same time to prevent the luxuriant growth of the low scrub.

In the Upper Forest, the danger of wholesale clearing is less. Owing probably to the smaller fall of rain and less moisture in the atmosphere, very little scrub springs up. The ground in the Upper Forests is sparingly covered with scattered bushes of *Lonicera*, and tufts of *Artemisia*, *Caragana* or *Astragalus*. Seedlings spring up readily and are not liable to be choked by any dense undergrowth.

On the other hand jungle-fires appear to be more frequent in the upper portion of the Forests and the young self-grown plantations will have to be guarded with greater care against danger from this source. But upon the whole it appears, that if we succeed in clearing the Forests of the timber, tops and branches, during the same season in which the trees are felled, then, as far as reproduction is concerned, the working of the upper forests will be less difficult than the working of the lower portion.

36. *Forest valuation Surveys, their method.*—I now proceed to discuss the resources of the forests in detail, and to propose the plan of management. A description of the Forest tracts examined by us with valuation surveys will be found in Appendix No. I. These surveys give the number of trees of different classes counted on certain areas in the different forests. A few areas were actually measured; in most cases, the length of the track only was measured, on both sides of which the trees were counted, the width being estimated. These are usually called linear surveys, in hilly and broken ground they are generally more useful than the former, as the contents of a much larger area of the Forest can thus be obtained at the same expenditure of time. The survey of measured squares is expeditious in the plains on level ground, but requires more time in the hills, than could be spared in the present case. Actually measured areas were counted in two forests only, Nachar and Kiuden.

I may here mention, that the counting of individual trees, as is done in these valuation Forest Surveys is a *primitive and incomplete method for arriving at the valuation of any Forest*. *When the methods of forest management are further advanced in India, it will be abandoned*, and the valuation of a forest will then not be expressed by stating the number of trees, but the cubical contents of timber per acre, and the quantity which is annually produced on this area. But under present circumstances, the method here described must still be used.

37. *Totals of trees counted in the Valuation Forest Surveys.*—Appendix No. II. gives an abstract of these surveys, with the estimated area and number of first class trees of each Forest District, and the proposed working divisions.

It will be observed, that in the aggregate 652 acres have been surveyed, and that 3,743 first, 4,099 second class trees, and 2,281 stumps have been counted on this area.

Excepting the Kashang Forests (Nos. 72 to 76) the tracts included in this preliminary survey are so situated, that with some improvement of the slides

their timber can be made available by rolling and throwing it into the river. Whenever the examination of a Forest District was completed, an estimate of the area covered by Deodar, and the number of first class trees standing on this area was made.

In Appendix VIII and IX. are given the results of an examination of the Jaonsar. Bawur Forests in the North Western Provinces made by me in June 1863. These papers are added, because it is desirable to unite in one volume all the available data bearing on the management of Deodar Forests in the Himalaya.

38. *Maps.*—The route pursued and the boundaries of the different forests were entered on the spot on a map, prepared on an enlarged scale from the degree sheets of the Great Trigonometrical Survey.

We had frequent opportunities of correcting the entries on the map and the estimate alluded to, by the excellent views of the sides of the Sutlej Valley which are obtained from elevated points and especially in returning on the north side of the valley. Nevertheless the map and estimates are only a rough approximation. They are given, because, without them, no working plan of the Forests could be framed and the plan here proposed could not be correctly understood.

39. *Working Divisions.*—The result of our enquiries is, that we assume the present stock of growing timber in the Forests immediately available to amount to about 58,000 first class, and an equal number of second class trees. These Forests we propose to divide into eight divisions, assumed to contain about equal quantities of timber.

40. *Previous working of the Forests.*—Before stating what yield of timber is expected from these eight divisions, it is necessary to inquire into the amount hitherto yielded by them. The first person who worked the Deodar Forests in Kunawur was Soda Sing. This was about 1850. But no extensive fellings appear to have been conducted until 1859, when Mr. Arratoon and several others embarked largely in timber operations in this valley. We have obtained a list of the trees reported to have been felled in the different Forest Districts between 1859 and 1863. From this list are taken the details given in the Forest Surveys. The total number of trees stated to have been felled is 19,606. But in the Sapni Forest, where 447 trees are stated to have been felled, I counted, on the 22nd September, in a small portion of the Forest, 410 stumps, and in other instances also the large number of stumps counted indicates a larger number of trees felled than that reported. Altogether 2,281 stumps were counted in the Forests, and it should be noted, that, in selecting the tracts for examination, care was taken to examine those tracts which had not been extensively worked. On the whole, it may be assumed, that the number of trees felled is not less than 30,000. These trees have invariably been taken from the Forests easiest of access, and a large proportion of the Forests on the lower slopes of the hills have been entirely cleared out.

41. *Forest tracts completely destroyed.*—The following Forest tracts seen by us have been completely destroyed, so as to make reproduction impossible without expensive planting operations:—

1st.—Kusthal and Dippi, the lower part (Nos. 9-11, Appendix I).

2nd.—Punang, the western portion (Nos. 15-16.)

3rd.—Kilba, the lower portion (No. 26.)

4th.—Kumkumi. and Sapni (No. 27), here the lower half of the Forest has been destroyed by fire. A few years ago the greater part of the large sized trees was felled but not removed. Fire entered in the dry season, and what was formerly a rich Forest with 33 first class trees on the acre, is now a barren slope covered with charred stumps and trees killed by the fire.

5th.—The lower part of the Shoang Forest, (No. 35).

6th.—A considerable portion of the Serinche and Yak Bursari Forest, (Nos. 37-39.)

7th.—The lower portion of the Tanglin Forest, (No. 49.)

8th.—The Kastiarang and Eastern Runang Forest, (Nos. 80-81).

Unfortunately a small portion only of the trees felled in these and other Forests has been made available for the market.

42. *Trees felled but not removed.*—In many Forests we found numerous trees felled but not removed. Thus in the Kilba Forest 115 stumps were counted, near 32 of them the trees were still lying as they had been felled several years ago. In the Serinche Forest, 20 out of 114 had been left lying on the ground. In the Simoling Forest, out of 49 trees felled, 10 only had been cut up and removed, the remainder were still lying on the ground. In the Kastiarang Forests 72 trees had been felled, but 92 logs, the produce probably of from 20 to 30 trees had been left on the ground.

43. *Logs left behind in the Forests and along the rivers.*—In the Nachar Forest upwards of 300 logs were found at the head of Mr. Arratoon's Slide, these had been cut in 1861, and the sapwood on most of them had decayed.

All along the Buspa River a large number of logs were found lying on the sands, which, with a small expenditure of labour might have been sent down. Large numbers were also seen stranded on rocks and sands in the bed of the Sutlej. If protected from fire, these trees and logs can be sent down and made available for the market.

44. *Logs injured and destroyed in their passage to the river.*—A large proportion, in many forests the larger half, and in some nearly the whole, of the timber is lost by being shattered to pieces, before it reaches the river.

Some of the timber slides examined by us were strewn with fragments of logs shattered on their passage downwards. Frequently large logs of two feet in diameter and upwards split from end to end, two half cylinders being the result. At the foot of a slide from the Ramni Forest, upwards of 1,000 logs and splintered pieces of logs were counted. A still larger quantity of timber was seen at the foot of the Dippi Forest Slide.

In visiting the Punang Forests we ascended the timber slide, and counted along the upper part of it 256 pieces and damaged logs. A larger number was scattered over the lower part of this slide.

Many similar instances of destruction of timber were observed, and upon the whole it appeared to us that of the timber felled in the forests, not more than half had reached the river.

45. *Reforms needed in the mode of working.*—The foregoing remarks on the present state of the forests, and the method hitherto observed in working them point to two matters, calling for reform in the plan of working:—

1st.—In selecting trees to be felled, and in felling and removing them, more regard should be had to the reproduction of the forest.

2nd.—The trees when felled should be lopped, logged, and launched, if possible, during the season in which they are felled, and the land transport should be arranged with more care to guard against the damage and destruction of timber.

The propriety of the second proposal will not be doubted; the first may possibly be objected to. It may be urged that the Deodar Forests are practically inexhaustible, that if those nearest the river are for the time being cleared out, the remoter forests will yield a sufficient supply of timber to last until the others shall have reproduced their former stock.

We must be prepared to meet objections of this kind at every step towards progress in Forest conservancy in this country. In the plains of the Punjab, the Rukhs, which yield the fuel for Railways, are considered by some inexhaustible, and the adoption of a methodical management unnecessary, because some localities are well stocked with trees and brushwood. Similar views are generally entertained regarding other Forests in India. In the Deodar Forests of Bussahir, however, the expediency of conservancy is palpable. Since 1859 upwards of 30,000 trees have been felled, and a

large proportion of the more accessible forests have been ruined beyond the hope of restoration. This has been accomplished in five years, and if the felling is continued at the same rate, ten years more will suffice to clear out and to ruin the whole of the forests available under the present system of working. We should then, in 1874, be reduced to those forests which require the sawing up of timber, artificial slides and roads for the land transport. Under a similar system these may last ten years more, but after 1884 the resources of the forests would be completely exhausted. The tracts where young Deodar is springing up form a very small proportion of the original forests. Moreover these young trees in most forest districts will require upwards of 125 years to attain a girth of 6 feet.

46. *The duration of the lease may affect the working plan.*—The lease of the forests is for 50 years only. It may not be considered expedient to manage the forests leased under strict conservancy, and after the expiration of the term of lease to restore them to the Rajah in an improved condition at a considerable sacrifice of revenue. If, however, a prudent consideration of the future requirements of the country, is allowed its due weight, and it is decided to adopt a systematic management of these Forests, and thus to secure a steady and permanent timber supply, then I would propose the following plan of operations.

47. *Working Divisions, First Division, Nachar Forest.*—In Appendix No. II, the Forests now available are arranged in eight divisions; from each of these about 3,000 trees may be taken at the first felling without endangering the reproduction of the Forests, provided suitable arrangements are made. The First Division comprises all the lower Forests as far as the Melgad. This might be worked in 1865. In the Nachar Forest, which is the best in this Division, working commenced in 1864, and 300 trees were felled. It is supposed that in 1865 upwards of 1,800 trees more may be taken without injury to the Forest. When arranging the details of the working plan in this and other Deodar tracts, it should be borne in mind, that injury by fire and wind must be guarded against as much as possible. In the Nachar Forest, the trees have grown up exceedingly close, and if left isolated they are liable to be blown down by high winds. A belt of healthy trees should therefore be left standing on the outside of the Forest wherever practicable to afford some protection to the parts thinned out. On the lower edge of the Forest, openings would be made in this belt for the passage of the logs.

48. *Two methods of arranging felling operations.*—Within the belt, two methods of arranging felling operations might be adopted. The aim should be to afford sufficient light to enable seedlings to spring up, and to leave a sufficient number of trees standing for seed and shelter. Narrow descending strips, the width to be regulated by the character of the locality from one hundred to several hundred feet, might be cleared through the entire breadth of the Forest, alternate strips of twice the width being left intact. One-half of these alternate strips of forest would then be removed at a later period, when the young Deodar in the lines first cleared had attained a sufficient size to grow without shelter. The last portion of the old forest would be cleared when the trees grown on the part first cleared commenced to produce seed in sufficient quantity, unless it be found expedient to re-stock the Forest by planting. Further experience of Deodar Forests must guide Forest Officers as to the detail of this operation; it may be advisable at first, as a tentative measure, to leave a small number of trees standing in each strip cleared.

This plan can only be carried out in compact Deodar Forests where there has been little previous felling. As the operations of this season in Nachar were not conducted according to this system, it may be preferable to adopt another plan, and to select single trees, always taking the precaution to leave a certain number per acre, to be removed at some later period, either in one or in two instalments.

The first plan has this advantage that the timber can be moved out of the Forest, without disturbing the young trees, the whole or nearly the whole

of the timber on the ground being removed at once. It will also in many instances be found the more convenient plan for transporting the logs to the river.

49. *Necessity for clearing the Forest of timber, tops and branches.*—After the trees have been felled and trimmed, every exertion should be used to clear the Forest of the timber, tops and branches. If the latter cannot be utilized, they must be collected in heaps and burnt. If allowed to remain in the Forest, they serve to feed the jungle-fires. Unless care is taken, great loss may occur in the Nachar Forest owing to the large quantity of felled timber. If it be impossible to remove all the logs and branches during the season in which the trees are felled, then a path to keep out fires must be cleared round the whole Forest, and carefully kept free of combustible matter during the dry months.

Our aim should be to allow the Forest tract, (where felling operations have been conducted,) complete rest until it has re-stocked itself with young trees. Where natural reproduction does not effect this in a satisfactory manner, assistance must be given, by clearing away the brushwood, loosening the soil, sowing seed, or by regular planting operations.

The number of first class trees standing in the Nachar Forests is estimated at 4,000. About one-half of these will be left after the first instalment has been felled. A careful observation year by year of the state of the Forest will show, after what interval the second and third instalments should be felled.

50. *Other Forests of the first Division.*—The Soongree Forest also belonging to this Division, may be treated in a similar manner, and it is supposed that about 200 trees may be felled. The eastern part of the Division is composed of the Panwi, Dippi, Kusthal and Ramni Forests. The lower part of these having been cleared, only eight hundred trees are estimated as the yield of the first cutting which must be conducted with the greatest care, and only in the more remote tracts, where owing to local obstruction, timber has not been felled. These tracts are on precipitous mountain sides difficult of access, and water is scarce. Roads will have to be made, and rocks blasted, to form timber slides. From the preceding remarks it is apparent, that the working of the first division will require the undivided attention for one season of the Officer in charge of the Sutlej Forests.

51. *Second Division.*—The second division comprises the Janee, Punang, and Phinla Forests. Its boundaries are the Melgad to the west, and the Sdeeling-gad to the east. The Phinla and Janee Forests are almost untouched, and after slides have been prepared, felling operations might be conducted in descending lines as above indicated. The inferior Pines found in these and other Forests should not be allowed to stand in the strips cleared of Deodar, and if they cannot be utilized, they should be burnt with the tops and branches of Deodar. The terms of the lease fix a rate of Rs. 2 for every tree of other kinds felled, this refers only to timber which can be utilized, otherwise the loss would be considerable. If the other Pines are allowed to remain standing on the ground from which the Deodar has been removed, the Forest will speedily deteriorate. It is supposed that the second division will yield about 3,000 trees as the first instalment of felling operations.

52. *Third and Fourth Divisions.*—The third and fourth divisions contain the remaining Forests of the lower section in which there is a large extent of almost virgin Forest, viz., the Jumpan, Wasankan, and Kiuden Forest, believed to be some of the richest of the available tracts in the valley, and hitherto protected by their situation with regard to the river and the intervening cultivation.

The obstacles are probably not insurmountable, but to ensure success the undivided attention of the Officer in charge of the Sutlej Forests should be devoted to this division for several reasons. It is believed, that the plan of clearing in lines, following the slope of the hill, may be adopted with advantage. According to the plan here sketched out, these divisions would be worked in 1867 and 1868, and as a first instalment 6000 trees might be felled.

53. *Fifth Division.*—The Buspa Forests form the Fifth Division ; most of these have been extensively worked ; the outturn of the first cutting may possibly not amount to 3000 trees, which must be selected with great care.

54. *Sixth Division.*—The sixth division comprises the Forests on the left side of the Sutlej between the Buspa River and the Shaengarang stream near Barang. A large portion of these (the Mebar and Barang Forests) have hitherto been considered unavailable, on account of the high precipice between the Forests and the river. The construction of slides here will be difficult, and will involve considerable outlay. If the obstacles can be overcome, it is hoped that upwards of 3,000 trees may be removed as a first instalment.

55. *Seventh Division.*—The Forests between the Shaengarang and Purbani are the property of Surjeet Sing, Wazir of Poari, whose father received them as a jaghir from the father of the present Rajah. On the supposition that a lease may be obtained of these Forests also, they are included, forming the Seventh division. One of these, the Stalimpi Forest, is exceedingly valuable. Being protected by distance from the river, and rocky boulders near its lower edge, it has never been worked.

56. *Eighth Division.*—In the last or eighth division are included a few good Forests near Purbani and the Dogri (Chalêt) of Simoling, the Forest near Riba and Rispa, the Teedong Forest and the whole of the available Forests on the right bank. If the present plan is carried out, these Forests would yield 3,000 trees in 1871.

57. *Provision made for 16 years.*—Thus an annual supply of 3,000 trees has been provided for eight years, that is until 1871, or for seven years, in case the Poari Forests cannot be leased. It must, however, be remembered that though the estimates on which the arrangement is based, are only rough approximations, in many instances depending on the possibility of opening out timber-slides from the different Forests, so much is certain, that 3,000 trees per annum is the maximum average which can be expected during this period. It has been stated that the whole number of first class trees in available localities probably does not exceed 58,000. Of these 24,000 will be removed during the first period, and it may be possible to fell a second instalment of the same number during the second period of eight years.

58. *Necessary modifications of the plan proposed.*—There will be unavoidable exceptions in carrying out the series of operations here sketched. Where felling is not conducted in regular lines, but where the trees are selected over the whole extent of the Forest, the second instalment may have to be felled before the expiry of eight years. Again, an unusual demand for timber may be expected occasionally to arise rendering it expedient to conduct operations in two divisions simultaneously, and thus to anticipate a crop properly appertaining to a later period. But an exceptional increase of the fellings should be equalized by a corresponding decrease in subsequent seasons, so as to keep within the average annual yield, as here proposed, or as may be ascertained by future experience. The systematic arrangements of felling by divisions may be objected to on the ground that it will delay the renewal of some of the more valuable forests, such as Nachar, Soongree, Janee, Phinla, Kiuden, and others which, in their present state, do not increase in any sensible degree. It might be thought preferable to conduct felling operations in all the divisions simultaneously, to give more room for the natural growth of young trees. This, however, would distribute the work of the season over a wide area of forests instead of concentrating it in one tract. The delay of a few years in commencing the work in the different compact Deodar Forests of Kunawur appears necessary in order to ensure careful and methodical management.

It may also be objected that planting operations on a large scale have not been included as part of the general working plan. Whenever nature fails to produce a young forest in a satisfactory manner, planting must be resorted to, unless the expense should be prohibitory, and it may be expedient to raise new Deodar Forests by sowing in localities, where, owing to the level ground and other circumstances, a rapid growth of the trees may be expected. This

may be considered hereafter when the revenue to be derived from the Sutelj Forests has been ascertained by actual experience.

59. *Review of the resources available after sixteen years.*—Assuming that the arrangement here proposed is carried out, only a small number of the trees now belonging to the first class will be left at the end of sixteen years, probably those trees only which, owing to unsoundness, or other circumstances, are not worth removing; but meanwhile a proportion of the second class trees will attain first class size.

It will be remembered that of the trees actually counted in the Kunawur Forests, 3,743 belonged to the first and 4,179 to the second class. We have also seen that taking the average rate of growth of the trees in these forests, 35 years are required for a tree 4' 6" in girth to attain 6' in girth, and as the trees of the 2nd class are not fewer than those of the first class, we may expect, that, in 35 years, the second class trees will replace those of the first class. This, however, is only partially correct, for many of the second class trees, on which the above assumption is based, were counted in compact forests, where their growth was retarded by the larger trees. In one instance (Kilba Forests, No. 26) a number of second class trees were observed on a sterile ledge of quartz rock where they evidently had attained their maximum size. In other localities, a considerable proportion of smaller trees were counted in less compact forests, where they were likely to grow into first class trees. At all events it is evident that, in arranging the working plan, we must provide for a regular supply of timber for at least the next 35 years.

60. *Resources of the Forests not at present available.*—Sixteen years have been provided for, and to meet the wants of the remaining 19 years we must look to the Forests not available under the present system of timber transport. No estimate can at present be framed of their contents, but it is supposed that they do not contain fewer first class trees than the forests immediately available. As none of these have been examined, except the Kashang Forests above Pangli, no classification can be made, but the following enumeration may suffice:—

- 1.—The Deodar Forests on the Pabur and its tributaries.
- 2.—The forests on the Nogri, Choundeh and other streams below Taranda.
- 3.—The forests on the Rupli, Shorang, Kandari, and other streams on the right side of the river below Wangtu.
- 4.—The Wangar Forests.
- 5.—The Melgad Forests. These are said to be extensive and rich in fine trees.
- 6.—The Punang Forests.
- 7.—The Barang Forests on the feeders of the Shaengarang.
- 8.—The Forests on the Tanglingad.
- 9.—The Upper Teedong Forests.
- 10.—The Kashang Forests.
- 11.—The Malgun Forests below Pangli.

The first step to make the timber of these Forests available, will be the introduction of sawyers, and the conversion of the timber into Railway sleepers to be carried to the river. In these hills one man frequently carries planks and other scantling measuring more than 3 cubic feet, and weighing about 120 lbs. Railway sleepers should be cut a few inches longer and one inch deeper and wider than the specified measurements. Pieces  $10\frac{1}{2}$  feet long and 6" x 11" would require two men, but could always be carried even over difficult ground. In the side valleys, it may hereafter be expedient to collect the timber at localities suitable for the establishment of water saw-mills, and from these points to make roads or artificial slides to the river. All these matters should be kept in view, and a number of sawyers should be employed from the first, partly for cross cutting the logs, which has hitherto been done by the axe, involving great waste of material, partly for sawing timber in localities whence otherwise no timber can be removed. This will afford an opportunity for testing the practicability of floating sawn timber down the Sutelj river without serious injury and for ascertaining the best season for doing this.



It will be apparent from the preceding, that unless great caution is used, the present resources of the Forests may be exhausted before the young trees (which, under good management, will spring up where the existing Forest has been cut down,) have attained maturity.

61. *Protection of the Forests against injury.*—Two subjects remain to be discussed ; *first*, how the Forests are to be protected from injury ; *second*, what arrangements are to be made to protect the timber floated down the river from depredation. Fires in Forests from which the timber had not been removed have hitherto been the greatest source of injury, and it is a matter for serious consideration what is to become of the Forests where large numbers of trees, tops and branches have been left on the ground. The risk is great, and it may be necessary to give notice that, if not removed by a certain date, the Forests will be cleared of old timber by the Forest Department at the risk and expense of the owners.

62. *Injury done to the Forests by villagers.*—These Forests suffer from other sources of injury, *viz.*, the practice the villagers have of cutting, charring or burning the trees for cultivation, and of mutilating them to obtain planks, poles and branches for fencing and litter for cattle. On these matters the lease contains the following provisions:—"The Zemindars shall be permitted to cut timber for fuel, charcoal, house building, and vine frames. They are not to be prohibited from cutting down the inferior Forests for purposes of cultivation."

63. *Demarcation of the Forests of superior value.*—It will be necessary to demarcate the Forests of superior value, to prevent their being cut down for cultivation. This may be done year by year in those Divisions where felling operations are being conducted. At the same time it may be expedient to place Rangers in charge of the different Forest Divisions who should be natives of the district. They should reside in or near the Forests under their charge, and it would be their duty to examine the boundary marks at stated times, to report, and, if possible, to prevent any encroachment on the boundaries ; they would prevent such damage or depredations as are prohibited in the lease, and would report any occurrence of note in the Forests.

Hereafter it may be possible to induce the villagers to fell such trees only in the demarcated or reserved tracts, as are pointed out to them by the Forest Rangers, who would be instructed by the Forest Officer as to the trees to be felled. Ultimately, when after 50 years the lease is renewed, a stipulation might be inserted, that the demarcated localities should be at the absolute disposal of the British Government, while the remainder of the Forests should be available for the free use of villagers.

64. *The right of collecting waifs and strays exercised by Native Chiefs.*—Under existing circumstances, the different Native Chiefs, whose territories adjoin the Sutlej river, exercise the right of collecting waif timber on the river. Logs or pieces which bear a distinctive mark are regarded as private property, but logs which bear no such mark, are regarded as the property of the Chief in whose part of the river they are caught. This right of collecting waif is leased out by the different Chiefs, and the aggregate payments at present are said to amount to Rs. 7,050 annually ; the detail is given in Appendix I, No. 85. The value of this right depends on the extent of river frontage, and the number of quiet reaches and other places in the river where timber either strands or can be brought on shore by men on inflated skins. Parties engaged in the timber trade on the Sutlej river complain that under cover of these leases, marks are effaced and others substituted on logs floating down the river, that timber is thus stolen from the rightful owner, and that this practice of piracy is the main cause of the insecurity attending the working of the Forests. It cannot be expected that, under these circumstances, persons with capital will embark in the trade as permit-holders, although, hereafter, when greater security is afforded to the timber on the river, and when the prospect of profitable working becomes more certain, it may be very desirable to leave to private enterprise the work of felling, cutting, and floating the timber from the Forests.



If the Sutlej timber be brought down by the Forest Department, the greatest care should be used to prevent the launching of any log or piece which has not been properly marked. If this is done, the value of the drift timber leases will probably fall, and the different Chiefs may then be induced to grant these leases to the British Government.

65. *Rules for the management of waif timber in British Territory.*—Rules for the management of waif timber on the Punjab rivers within British Territory have been promulgated. These rules might be amplified by prohibiting the seizing, cutting, and marking of timber on the river, or any interference with it by others than the owners, or their Agents, or persons specially authorized by the Deputy Commissioner of the District, or the Conservator of Forests. The Native Chiefs might be induced to promulgate these rules as law in their own territories, and thus to transfer the entire control of the waif timber in their jurisdiction to the British Government, in consideration of the annual payment to be made to them for the waif timber leases. If this can be arranged, guards might be stationed at those parts of the river where timber is easily caught, or washed on shore, to prevent transgression of these rules.

66. *Necessity of further sources of Deodar to supplement the Forests of Bussahir.*—The results of this enquiry show, that 3,000 trees annually is the maximum yield which can be expected for the next 16 years, and that it is doubtful whether, after this time, the yield can be maintained at the same figure. The average contents of these trees cannot be estimated at more than 75 cubic feet, or one ton and a half, so that 4,500 tons, or 225,000 cubic feet annually will be the outside that can be expected. It is hoped that, under careful management, a net revenue of Rs. 8 per ton or Rs. 12 per tree will be realized. The limit of the annual net revenue would thus, at present timber prices, be Rs. 36,000.

With the prospect of these small results, it seems desirable to review the Deodar localities between Bussahir and the plains. If anywhere nearer the plains, a sufficient extent of compact Deodar Forests could be found to warrant the construction of roads so as to render transport on carts possible, it might be expedient to rely on them for future supply, and meanwhile to work the Bussahir Forests with due care and economy of material, but without reference to their maintenance and reproduction. Forests in the outer hills have the great advantage of a more rapid rate of growth which would considerably enhance their value.

67. *Deodar localities between Bussahir and the plains.*—The Jaonsar Bawur Forests, between the Rivers Tonse and Jumna in the North Western Provinces, and the Forests on the head waters of these rivers in Native Gurhwal, will serve to supply the country on both sides the Jumna River; for the plains further west the Deodar Forests on the Choor Mountain Range between the Giri and Tonse Rivers might possibly be made available, and an early opportunity might be taken to examine their resources.

The Deodar localities on both sides of the line of watershed between Simla and Nagkanda are numerous, but not sufficiently extensive to warrant the expectation that they will ever prove a source of great importance. From two or three of these tracts, particularly from those north-west of the Shali Mountain, and near Komharsen, timber was brought to the Sutlej, before the working of the Kunawur Forests commenced.

In No. 83 of the Valuation Forest Surveys some of these tracts are enumerated, and in No. 84 a description is given of the Chaog Forest, a fine, but not extensive Deodar Forest, south-east of Fagu.

The Officer in charge of the Sutlej Forests must make the journey between Simla and the Forests twice a year, before the commencement and after the close of the working season; he might be instructed to examine in succession the principal Forest tracts in that line of country, including the valley of the Pabur, from which the Borenda Pass would take him into the heart of the Buspa Forests. This, and the survey of the Deodar localities on the Choor Mountain, would complete our knowledge of the Deodar resources in this portion of the Himalaya.

## APPENDIX I.

*Forest Valuation Surveys—Bussahir, 1864.*

| No. | Date.    | Name of Officer conducting the Survey. | Locality.                                                 | DEODAR.                 |                              |                             |                      |         | AREA SURVEYED. |              |                | TREES PER ACRE. |               | REMARKS.   |
|-----|----------|----------------------------------------|-----------------------------------------------------------|-------------------------|------------------------------|-----------------------------|----------------------|---------|----------------|--------------|----------------|-----------------|---------------|------------|
|     |          |                                        |                                                           | First class above 6 ft. | Second class, 4½ ft to 6 ft. | Third class, 1½ ft to 6 ft. | Fourth class, small. | Stumps. | Length in ft.  | Width in ft. | Area in acres. | First class.    | Second class. |            |
| 1   | ...      | —                                      | Forests on the left bank of Sutlej below Soongree..       | ...                     | ...                          | ...                         | ...                  | ...     | ...            | ...          | ...            | ...             | ...           | No surveys |
| 2   | Aug. 22  | Dr. Stewart ..                         | Soongree .. ..                                            | 53                      | 1                            | 8                           | ..                   | ..      | 625            | 200          | 2'87           | 18'47           |               |            |
| 3   | "        | " " "                                  | " " " "                                                   | 121                     | 8                            | 4                           | 42                   | ..      | 1052           | 200          | 4'83           | 25'05           |               |            |
| 4   | "        | " " "                                  | East Nachar up the hill .. ..                             | 341                     | 402                          | 324                         | ..                   | ..      | 1428           | 200          | 6'56           | 51'08           | 61'28         | Dead, 15   |
| 5   | "        | " " "                                  | East Nachar across the slope at right angles .. ..        | 43                      | 54                           | 3                           | 8                    | ..      | 408            | 200          | 1'87           | 23'00           | 28'58         | Dead, 15   |
| 6   | Sept. 11 | " " "                                  | West Nachar up the hill .. ..                             | 91                      | 111                          | 87                          | Few                  | 6       | 700            | 200          | 3'21           | 28'35           | 34'58         |            |
| 7   | "        | " " "                                  | West Nachar across the slope at right angles to No. 6 ... | 114                     | 85                           | 64                          | Few                  | .       | 800            | 200          | 3'67           | 31'06           | 23'16         |            |
| 8   | Oct. 10  | Dr. Brandis and Capt. E. Wood ...      | East Nachar ..                                            | 82                      | 18                           | ..                          | ..                   | 44      | 500            | 200          | 2'30           | 35'05           | 7'83          |            |

## FORESTS ON THE LEFT BANK OF THE SUTLEJ RIVER BELOW SOONGREE.

No. 1. On the flanks of the spur on which Taranda is situated, is a certain quantity of Deodar. Some has been felled for bridges. The stumps which were seen near the road showed a remarkably rapid growth. The age of a first class tree in this Forest, according to these observations, would be as follows:—64, 76, 84, 43—average 67 years. Some Deodar is also high up on the Choundehgad above the point where the road crosses this stream.

There is a large extent of Deodar Forest on the south side of the Nogri Valley, and a Forest, called Nagadār, is on the head-waters of the Beragad, north of the new road, and not far from the Kotguruh territory. In this Forest a large number of trees were lately cut by the road Engineers for the repairs of bridges near Nagkanda. The examination of the beams collected on the road, gave the following result—age of first class trees; 61, 64, 54:—average 59 years. There are many other Deodar localities on the Sutlej side of the mountain range, which forms the line of water-shed between the Pabur and Sutlej from Nagkanda to Serahn, but upon the whole this tree seems to be less frequent here than along the Deoban range, which divides the drainage of the Tons and Jumna Rivers in Jaonsar Bhawur. This range, however, is 40 miles further south, and its highest point rises only to 9,500 feet, whereas the peaks at the head of the Nogri valley attain an elevation of 17,000 feet.

Nos. 2, 3. *Locality.*—The Soongree, also called the Thāno Forest, is the first compact mass of *Deodar* of any size met with in ascending the Sutlej from Rampoor by the main road. It is a small forest of a somewhat oval shape situated close to the village of Soongree, about 2 miles north-east from Poinda, at an elevation of 7,000 feet above the sea, and at the foot of a steep rocky ridge, running down to the river from the higher hills above.

Both surveys were made across the slope of the hill on the longer diameter of the forest, and probably indicate nearly the average character of it.

The Deodar are almost unmixed with other trees. Small patches or single Deodar trees are scattered over the slopes and ridges between Soongree and Nachār, and it seems probable that a considerable part of this tract was at one time covered with Deodar, which has now, in a great measure, been cleared for cultivation.

*Soil, &c.*—The aspect of the hollow in which the Forest lies is N. N. E.; the slope is for the most part gentle (about 15° to 20°), and the soil is deep, over granitic rock. The whole ground retains marks of old cultivation terraces, and the village fields extend between the Forest and the river which is about ½ths of a mile below.

*Growth, &c.*—Here stand, or have recently stood, some of the largest Deodars in Kunāwur, and the general size and shape of the trees are very good, being similar to those of the Nachār Forest. Those of the first class would yield, on an average, about six logs and are mostly straight and symmetrical, the branches commencing high on the trunk; some of the largest stems, however, are gnarled and branched. A considerable proportion of the first class trees are above 12 feet in girth.

This Forest is near a temple, to which it is said to belong, and has escaped the axe of the timber traders, but a few trees have been cut by Zemindars. Some arrangement may be needed to obtain permission to fell in it, and compensation will have to be given for the passage of a slide through the fields below. The physical difficulties in constructing a slide to the river will not be great, as the slope is fair and few rocks intervene. The Forest is of limited extent (say 20 acres) and probably contains under 600 first class trees. The proportion of young trees is small, this is probably the result of the closeness and height of the older trees, and the former will increase as soon as felling commences.

#### NACHAR FORESTS.

Nos. 4—8. *Locality.*—Nachār is the collective name of a number of villages situated on the north and north-east slope of the hills facing the Sutlej River, opposite the mouth of the Kandari stream. The Deodar localities are on the slope above these villages, and extend over a length of about two miles to near the Wangtu bridge. The average elevation of the Forest may be estimated at 7,500 feet. The trees in the eastern portion are scattered over precipitous rocky ground; above the village there are two compact masses of Forest separated by waste and cultivation. The western portion may be designated as West Nachar. It is situated on a steep slope; the eastern portion is on terraced ground below, and on a steep rocky slope above.

*Soil.*—In the compact Forest the rock is granite. There seems to be a deep layer of soil enriched by the accumulation, undisturbed for centuries, of pine leaves, roots, and branches. It is apparent from the terrace walls still standing, that the lower part of the Eastern Nachar Forest was cultivated before the greater part of the Cedars had sprung up. Some trees are of much larger size than others, and may have existed before these fields were abandoned. They have grown very close together on good soil, and under very favourable circumstances, the stems have thus been drawn up to an unusual length, while they are not deficient in girth and rate of growth.

The size of the trees in the compact portion of the Eastern Nachar Forest is gigantic. The largest standing trees measured had the following dimensions :—

| Girth. | Height of entire tree. |
|--------|------------------------|
| 19' 6" | 250'                   |
| 22' 6" | 204'                   |
| 21' 6" | 178'                   |
| 13' 6" | 213'                   |
| 13' 6" | 205'                   |

In the East Nachar Forest felling operations were commenced by the Forest Department during the present season, 300 trees were felled and 1,800 logs from 10 to 14 feet were obtained. Several trees gave 10 logs each. A larger proportion of logs would have been obtained if the loss from breakages in falling had not been so heavy. Upon the whole, it seems that a length of 80 feet may be calculated as available for timber. From a series of measurements made (Appendix V) it appears that if the girth or diameter is 100 inches near the butt, it is 80 inches at 40', and 60 inches at 80'.

In determining approximately the cubic contents of the trees standing on a given area, the length available for marketable timber has been assumed at 80', and the girth at  $\frac{3}{5}$ ths of the butt girth. In Survey 8 all trees standing and stumps of fallen trees were measured on an area 500' x 200', or 2.30 acres and the result was as follows :—

|                              |              |           |
|------------------------------|--------------|-----------|
| First class trees standing,  | 82 or 35.65  | per acre. |
| Second „                     | 18 or 7.83   | „         |
| Stumps of first class trees, | 44 or 19.13  | „         |
| Total                        | 144 or 62.61 | per acre. |

Thus there stood on one acre of this portion of the Nachar Forest, before felling was commenced, 54 first and 9 second class trees. The aggregate content of these 144 trees was ascertained to have been 28,605 cubic feet, or 12,437 cubic feet per acre. This, as explained above, excludes that part of the tree which is beyond a length of 80 feet as well as all

branches. Under existing circumstances, the top and branches cannot be turned to account, but, on the contrary, are an encumbrance. The average content of 126 first class trees standing and felled was 218 cubic feet, the largest being a felled tree with a diameter of 4'8" and a content of 684 cubic feet. The average content of the 18 second class trees was 66 cubic feet.

The rate of growth of the trees in this Forest is very slow. The oldest tree, whose age was determined by counting the annual rings on the section of the stem near the ground, was 466 years old and measured 18' 10" in girth. Six trees between 9' and 16' 3" girth were examined and gave the following figures:—

| Girth.  | Rings. |
|---------|--------|
| 10' 6"  | 227    |
| 10' 6"  | 223    |
| 9' 3"   | 327    |
| 13' 4"  | 347    |
| 12' 11" | 210    |
| 16' 0"  | 307    |

---

Total .. 72' 6" 1,641

Average .. 12' 1" 273 ; this gives an increase in girth of 0"53 per annum.

Four trees between 6 and 9 feet in girth were examined, and gave the following figures:—

| Girth. | Rings. |
|--------|--------|
| 8' 0"  | 191    |
| 7' 0"  | 220    |
| 7' 8"  | 150    |
| 8' 3"  | 227    |

---

Total .. 30' 11" 788

Average .. 7' 9" 197 ; this gives an increase in girth of 0"47 per annum

The majority of the large trees in this part of the Forest appears to be between 150 and 350 years of age. Assuming 250 years as the average, we obtain nearly 50 cubic feet per annum an acre as the average annual increase of timber up to date in this part of the Nachar Forest.

The time which the trees now standing on the ground required to attain a girth of 4' 6" and 6' would appear to have been 112 and 149 years respectively, if the average is taken of the figures yielded by all the 31 trees measured, but it is probable, that the average rate of growth in this Forest has been more rapid than this. Taking the results of the trees measured on the 10th October, viz., from No. 24 to No. 30, the age of a 6' tree is 118, and of a 4' 6" tree 88 years. These trees were selected as instances of average growth, whereas among the smaller trees measured on the 22nd August, there appears to have been an undue proportion of extremely slow growth, as they had grown up overshadowed by the larger trees. Such instances are—

| Girth. | Age. |
|--------|------|
| 7' 0"  | 220  |
| 2' 4"  | 67   |
| 5' 0"  | 151  |
| 5' 4"  | 160  |
| 5' 3"  | 194  |
| 1' 5½" | 61   |
| 4' 6½" | 101  |
| 3' 5"  | 113  |
| 1' 4"  | 43   |

---

Total ... 35' 8" +1,110

Average girth 3' 11" with an age of 123 years or an annual increase in girth of 0"38.

This exceedingly slow growth does not agree with the results obtained by measuring the larger sized trees, as shown above, nor does it agree with the results obtained on the 10th October.

*General Remarks.*—The area of the Nachar Forests was estimated at 200 acres, and the contents at 4,000 first class trees, before the felling operations of 1864 commenced. Out of these, 300 trees have been felled. The logs should be moved outside of the Forest as speedily as possible, and the tops and branches, if they cannot be utilized, should be collected and burnt. If this precaution is not taken, it may be difficult to protect the Forest against destruction by fire. With proper management, another instalment of from 1,500 to 2,000 trees may be felled in 1865, without serious injury to the Forest. Regarding the selection, the following remarks may be useful. It should be borne in mind that trees which have grown close together, are liable to be blown down by storms, and a belt of healthy trees should therefore be left standing for the present on all sides wherever practicable. Within this belt it will be sufficient to leave about 10 trees to the acre to shed seed, and to afford shelter to seedlings springing up. We observed that a considerable space within the eastern Nachar Forest had been completely cleared of trees, and that no seedlings had sprung up.

As the first season's fellings were carried on at random over a large portion of the Forest, it will not be practicable to arrange for lines to be cleared following the slope of the hill with belts of Forest left untouched between, which will generally be found an expedient plan of working the more compact Deodar Forests in Kunawur.

Ultimately, the trees left for shelter round and in the Forest must be felled and removed to give space to the young Forest. Experience and careful observation of the young trees must show when this can be done with the least injury. While young it is hoped that the seedlings will be sufficiently pliable, not to suffer materially by the felling of the trees and the rolling of the timber. It may be useful to fell the third and last instalment of the trees now standing on the ground, while the snow is lying and affords some protection to the young trees, provided the cold is not too severe.

It is supposed that the trees to be felled next season may be between 1,500 and 2,000, which, if all logs reach the Dépôt in the plains, would give an out-turn of these two seasons of about 300,000 cubic feet or 6,000 tons of timber. It is not, however, believed that, under existing circumstances, more than one-half of the timber actually launched will reach the Dépôt in the plains. To ensure the arrangements here proposed being carried out in an intelligent and efficient manner, it appears absolutely necessary that no tree should be felled in this Forest which has not been marked by the Forest officers in charge, and arrangements should be made to cut up the trees into logs, to move them outside the Forest, and to utilize or destroy by fire all tops and branches during the same season in which the trees were felled.

*Former working of the Forest.*—It is stated that 1,188 trees were felled in this Forest between 1859 and 1863 by Mr. Aratoon, Soda Singh, Wazir Goshain, and Surda. A large quantity of timber, besides that felled by the Forest Department, is lying in the Forest, belonging, it is said, to Mr. Aratoon and Surda. The last party has been working this year, and the greater part of his timber has been removed, but several hundred logs of Mr. Aratoon were lying at the top of his slide. They had been felled in 1861, and in most of them, the sapwood was completely decayed. The logs have been rolled down to the river by three tracks or slides. Two of these have been used by Mr. Aratoon, and one by Surda. These are mere tracks smoothed to a certain extent by the passage of timber. No outlay appears to have been incurred in permanently improving them. Though the ground is favourable, a proportion of the logs have been injured or destroyed before reaching the rivers.

A new slide was last season made by Government. The outlay consisted in—

- 1st.—Compensation to villagers as the slide passes through cultivation.
- 2nd.—Clearing brushwood.
- 3rd.—Smoothing the ground and removing stones.

*Protection of the Forest against injury by cultivation.*—In several places round the Forest, Deodar has been cut and burnt by the villagers for cultivation. By the terms of the lease this practice is restricted to inferior Forests. It appears to be essential that the compact portion of the Nachar and other superior forests, should, as soon as possible, be demarcated by boundary marks.

The terms of the lease do not prohibit the felling of trees for agricultural and domestic purposes by the inhabitants of the country; but as the forests are placed under the control of the British Government, it seems not unreasonable to suppose that, within the demarcated portion of the Nachar Forest, the cultivators will abstain from felling any trees which have not been pointed out to them by the Forest Officers.

| No. | Date.    | Name of Officers conducting the Survey.      | Locality.                                    | DEODAR.                 |                            |                           |                     |         | AREA SURVEYED. |              |                | TREES PER ACRE. |               | REMARKS.                                                               |
|-----|----------|----------------------------------------------|----------------------------------------------|-------------------------|----------------------------|---------------------------|---------------------|---------|----------------|--------------|----------------|-----------------|---------------|------------------------------------------------------------------------|
|     |          |                                              |                                              | First class above 6 ft. | Second class 4 ft to 6 ft. | Third class 1 ft to 4 ft. | Fourth class small. | Stumps. | Length in ft.  | Width in ft. | Area in acres. | First class.    | Second class. |                                                                        |
| 9   | Sept. 17 | { Dr. Brandis<br>Dr. Stewart<br>Capt. Wood } | Dippi .. ..                                  | 4                       | 4                          | 24                        | ..                  | 16      | 300            | 250          | 1.72           | 2.33            | 2.33          |                                                                        |
| 10  | "        | " ..                                         | " .. ..                                      | 18                      | 48                         | 89                        | scarce              | 34      | 1500           | 250          | 6.89           | 2.61            | 6.97          |                                                                        |
| 11  | "        | " ..                                         | " .. ..                                      | 19                      | 43                         | 116                       | mid-<br>dling.      | 151     | 1500           | 250          | 8.61           | 2.21            | 4.99          |                                                                        |
| 12  | Sept. 19 | " ..                                         | Janee Forest ..                              | 65                      | 47                         | 65                        | 830                 | 5       | 3200           | 300          | 22.04          | 2.95            | 2.13          | P. excelsa, 55<br>A. Smithiana, 46                                     |
| 13  | "        | " ..                                         | " .. ..                                      | 38                      | 21                         | 65                        | 140                 | 3       | 1300           | 300          | 8.95           | 4.25            | 2.35          | P. excelsa, 5<br>A. Smithiana, 6                                       |
| 14  | "        | " ..                                         | " .. ..                                      | 107                     | 93                         | 85                        | 500                 | 7       | 2800           | 220          | 14.14          | 7.56            | 6.57          | P. excelsa, 6<br>A. Smithiana, 7                                       |
| 15  | Sept. 20 | " ..                                         | Punang Forest at the head of the slide .. .. | 10                      | 23                         | 38                        | 120                 | 125     | 1900           | 300          | 13.09          | 0.76            | 1.76          | P. Excelsa, 9<br>A. Smithiana, 6<br>Deodar dead, 32<br>A. Smithiana, 7 |
| 16  | "        | " ..                                         | Punang Forest above the slide...             | 6                       | 17                         | 19                        | 90                  | 63      | 1000           | 300          | 6.89           | 0.87            | 2.47          | P. Excelsa, 7<br>A. Smithiana, 5                                       |
| 17  | "        | " ..                                         | Phinla Forest ..                             | 37                      | 34                         | 37                        | 110                 | 45      | 1100           | 300          | 7.57           | 4.89            | 4.40          | Deodar dead, 8<br>P. Excelsa, 2<br>A. Smithiana, 5                     |
| 18  | "        | " ..                                         | " .. ..                                      | 95                      | 69                         | 82                        | 150                 | ..      | 1000           | 250          | 5.74           | 16.55           | 12.02         |                                                                        |
| 19  | "        | " ..                                         | Phinla Forest upper portion ..               | 12                      | 6                          | ..                        | 100                 | ..      | 2200           | 200          | 10.10          | 1.19            | 0.59          |                                                                        |

#### FORESTS BETWEEN THE WANGTU BRIDGE AND THE MELGAD.

Nos. 9—11. *Locality.*—Near the Wangtu Bridge two streams join the Sutlej from the south, the Lower and Upper Panwigad. About two and a half miles above the bridge is a third stream, the Melgad. On both sides of the lower Panwigad near the Sutlej there is a certain quantity of Deodar, and some has been cut on the east side for the Wangtu Bridge. On the west side of the Upper Panwigad, above the village of Panwi, is a group of good sized Deodars, and above this group are a considerable number of scattered trees. The road to the Shatool Pass runs along on this side. Above the village the road passes through cultivated land, and then enters a forest composed of *P. excelsa* and *A. Smithiana*, with a very few Deodars on the out-skirts. Higher up, no Deodar is said to be found on this side. The space between the Upper Panwigad and Melgad is occupied by the end of a high ridge. The western flank of this ridge is exceedingly steep and rocky, the northern face slopes towards the Sutlej at an average angle of 40°, and presents frequent rocky precipices. Its foot along the Sutlej is a continuous mural precipice, for upwards of a mile and a half, in some places several hundred feet high. The eastern flank towards the Melgad has, upon the whole, a gentler slope. Deodar is scattered in considerable quantities over the western flank, but the trees cannot be brought to the river in the shape of logs. On the north face, the forests must, six years' ago, have been very extensive, and rich in large trees; at present the lower parts contain nothing but stumps, and a few trees of the smaller classes. Some valuable forest is said to remain over a range of cliffs at an elevation of more than 2,000 feet above the river. On the east side also from which logs can be slid to the Sutlej, a good forest remains above a precipice of rocks. This is called the Ramni Forest. Further inland, above the Melgad, some apparently good forest tracts exist, but under the present system of working they are not available. The eastern part of these is called Kusthal, the western is known by the name of Dippi. Surveys 9, 10, and 11 were made in the Dippi Forest immediately below the range of cliffs mentioned before.

*Soil.*—The rock is granite with a scanty covering of soil on the parts examined by us.

*Other trees.*—*Q. incana* and *Cedrela serrata* below the Deodar Forest. The trees principally mixed with Deodar were *P. excelsa* and *A. Smithiana*, with Elm and Maple in moist localities.

*Size of trees and rate of growth.*—Above the village of Panwi a Deodar was measured 22 ft. in girth and 148 ft. high. In that part of the Dippi and Kusthal Forest examined by us, the average size of the trees was not very large. The rate of growth was 1st class 117, 2nd class 88 years. It must, however, be mentioned, that when examining the Ropur Dépôt in November, I found that the logs said to have come from the Dippi, Kusthal, and neighbouring Forests, showed a much better rate of growth. The average results of 8 logs of average quality, of which I counted the rings at the butt end were:—

Age of 1st class trees ... 90 years.

Age of 2nd class trees ... 66 "

*General Remarks.*—*Area.* It is impossible, with the data before us, to venture upon an estimate of the area and contents of the Dippi and Kusthal Forest. Surveys 9 to 11 indicate a poor forest, and we did not visit the richer portion. The stumps were at the rate of 11 on the acre, so that before felling commenced, these low parts of the forest must have averaged upwards of 13 first class trees on one acre.

*Reproduction.*—In some parts of the Kusthal Forest, we observed a large proportion of seedlings, but wherever the whole of the large trees had been cut down, the ground was covered with dense low brushwood of *Abelia*, *Berberis*, *Rubus*, and other shrubs, between which no young trees could spring up.

*Working.*—We ascended a slide made by Mr. Aratoon. It had the appearance of having been smoothed by the passage of a large amount of timber, but was full of rocks and pieces of shattered logs. Near the river it passes over a perpendicular precipice 100 feet high, and to prevent destruction of the logs, they are only slid down when the river is in full flood. Another slide by Prem Sing was similar to the above, but its passage into the river more favourable, being through an opening in the rocks over sloping ground. At the foot of this slide several thousand logs and pieces of logs were counted from the road on the opposite bank of the Sutlej. There is one main slide for the timber from the Kusthal Forest, and there are two from the eastern portion called the Ramni Forest. At the Ramni slide about 1,000 logs, and splintered fragments were counted. We learned, that nearly 5,000 trees had been felled in these forests between 1859 and 1863, viz :—

|         |     |     |     |       |       |
|---------|-----|-----|-----|-------|-------|
| Panwi   | ... | ... | ... | 250   | Trees |
| Dippi   | ... | ... | ... | 1,231 | „     |
| Kusthal | ... | ... | ... | 1,036 | „     |
| Ramni   | ... | ..  | ... | 2,400 | „     |
| Karang  | ... | ... | ... | 31    | „     |
| Total   |     |     |     | 4,948 | „     |

It appears desirable that the Dippi and Kusthal Forests should have complete rest for some time, excepting the portions not yet worked. Where the forest has been worked, it is full of the tops and branches of felled trees, and many entire trees are lying on the ground. It does not appear that the Forest is regularly visited by jungle fires. No demarcation of reserved tracts is called for at present.

#### FORESTS BETWEEN THE MELGAD AND PUNANG-GAD.

Nos. 12—14. *Locality.*—The face of the ridge between the Melgad and Punang-gad rises abruptly from the river in a precipice between 100 and 300 feet high. At an elevation of about 1,000 feet, the slope is easier. Here is the village of Janee and above it a belt of Deodar Forest, nearly a mile long, and about a fourth of a mile broad, known as the Janee Forest. The slope is steeper in the Forest than below, near the village. On the west flank of the ridge towards the Melgad, above Melang village, a large extent of apparently good Deodar Forest was seen. This on account of its distance from the Sutlej is not available at present. On the east flank facing the Pununggad, there is also a considerable tract of Deodar.

*Soil.*—Granite rock is seen protruding in the Janee Forest. Between the rocks the soil is apparently rich and deep.

*Other trees.*—Below the Janee Forest the hill side is covered with *Quercus Ilex*. The associates of Deodar are *P. excelsa* and *A. Smithiana*. The latter is seen abundant near the top of the hill.

*Rate of growth and size of trees.*—The following trees were measured :—

- (1) Height 115', girth 9'5", spread of branches 45', both in the direction of the slope and across it.
- (2) „ 47', „ 22', top broken. To the south-west of this tree is a large piece of ground covered with young trees.
- (3) „ 130', „ 11'6", spread of branches 63' across the slope, and 75' with the slope.

The rings counted on other trees, as detailed in the Register, indicate a better rate of growth than in the Nachar Forest; the age of a first class tree being only 74, and that of a second class tree 56 years.

*General Remarks.*—Regarding the area and contents of the Deodar localities in the side valleys of the Melgad and Punanggad, no estimate can be formed. The Janee may be estimated to cover 160 acres; the surveys give only a rate of five first class trees per acre, or a total of 800 trees. It is supposed that this estimate is considerably below the mark. The natural reproduction of the Forest appears to be good. Numerous seedlings of this year's growth were observed in places with much shade, but it is doubtful whether these will ever grow to any size. The proportion of seedlings, was generally good. In one part of the Forest almost every stem was scorched at the base. In the western part of this Forest about 350 trees are stated to have been cut by Mr. Arratoon, and the logs slid down. The upper part of the slide is well chosen, with a slope of 38°. Near the river it passes over a perpendicular precipice about 200 feet high; and the destruction of timber must have been very great. No rocks have been blasted, but only brushwood cut. The remainder has never been touched on account of the slight slope above, the rocks below, and the cultivation intervening. These obstacles might be overcome. It is desirable to demarcate the Janee Forest on account of its vicinity to the village. The eastern part has evidently sprung up on deserted fields of which the terrace walls remain. Survey No. 13 was made in this portion.

## FORESTS BETWEEN THE PUNANG AND SDEELING STREAMS.

Nos. 15—19. *Locality*.—It appears expedient first to indicate the general position of all Forests, the survey of which is described in Nos. 15 to 25. From the road on the right bank of the Sutlej between Urni and Chergaon, a prominent object is the Badiarang Peak which rises midway between Punang and Kilba villages, at a distance of about 5 miles in a direct line from the river. From this Peak two principal spurs run to the river. The most eastern spur, which reaches the Sutlej opposite the Runang-gad is marked by a high precipice forming its north-west flank over a distance of more than three miles. The other spur is less marked, it reaches the Sutlej near the mouth of the Runang-gad, and the village and cultivation of Punang is situated on its north slope. The space between these two spurs is sub-divided by a number of minor spurs on the face and flanks of which the Deodar localities are situated as follows :—

- (1). The Kulunga Forest facing the Punang-gad.—Not visited. Timber could be made available at present from this Forest only by converting it into portable scantling.
- (2). The Punang Forest above the village of Punang—(Not visited).
- (3). The Wachamchi and Phinla Forest on both flanks of a spur which meets the Sutlej at the mouth of the Sdeeling stream. On the west side this Forest has been much worked, but on the east flank, high up, some of the finest Deodar localities in Kunawur still remain, known as the Phinla or Sdeeling Forest.
- (4). The Jumpan Forest below the Dogri of Kilba, on a spur which separates the Sdeeling and Halabgar streams.
- (5). The Wasankan Forest on both sides of the Halabgar stream.—In these two Forests, 4 and 5, the size of the trees is said to approach nearer to that in the Nachar Forest than anywhere near the Sutlej.
- (6). The Chokro and Jumki Forests.—The Jumki Forest occupies the face, and the Chokro the west side of the spur which divides the Kilba Valley from the Halabgar stream.
- (7). The Kiuden Forest.—This joins the Chokro Forest on the spur just mentioned, and extends to the east, nearly over the entire width of the Kilba Valley, of which it occupies the upper portion. This is an extensive and very rich Forest, entirely unworked.
- (8). The Kilba Forest, between the eastern main spur mentioned before, and the first secondary spur from it to the west.

The Punang and the western portion of the Phinla Forest have been worked, and are at the head of a large timber slide, which we ascended from our camp on the Sutlej River. The slide is more than a mile long, and rises at an angle of about 35°. In this part of the Forest, surveys 15 and 16 were taken. Further east the jungle has the name of Phinla Forest (surveys 17, 18 and 19). It extends to the limit of Deodars at an elevation of probably 10,000 feet. No. 18 is a rich forest, which has sprung up on old fields. These, to judge by the size of the trees, must have been deserted about 200 years ago. Higher up (survey 19) the forest is a mixture of *P. Webbiana*, Birch, and a little Deodar.

*Aspect, Slope, and Soil*.—The rock is granite with a good covering of soil. The aspect of these Forests is north and north-east, and the slope is from 30° to 35°. In the upper portion of the Phinla Forest the slope is broken by the old terraces made for cultivation.

*Other trees*.—Besides *P. excelsa* and *A. Smithiana* there are in moist localities *Rhus*, *Alnus*, Poplar and Maple, below, and *P. Webbiana* with Birch, in the higher parts of the Forest.

*Rate of growth and size of trees*.—The following trees were measured :—

- (1). Girth 14'6" height 117'
- (2). „ 8' „ 116'

The largest trees are found on the deserted fields in the upper part of the Phinla Forest. The trees stand very close, and the stems are clear of branches to a considerable height.

*General Remarks*.—No estimate of the area and contents of the Punang and Wachamche Forests can be attempted. The Phinla Forests may cover upwards of 300 acres, which, at the rate of 10 first class trees per acre, would give a total of 3,000 first class trees. Our guide stated that logs could be rolled from the Punang Forest into the main river. The growth of young trees throughout these Forests is good; large numbers exist wherever trees have been removed, and a judicious arrangement of felling operations would ensure a satisfactory reproduction of the Forest. At the head of the slide in survey No. 15, 32 trees killed by fire were counted. Some of these had been burnt intentionally in forming clearings for cultivation, but the greater portion had apparently been killed by jungle-fires.

*Slide from the Punang Forest*.—Little has been done to improve this slide beyond rolling logs down it to the river. Several huge rocks and a large mass of smaller boulders are in the line which the logs have taken, and consequently a considerable number have been broken into two, or entirely smashed. We counted 256 half logs and pieces along the upper portion of the slide. A large quantity of shattered fragments was also lying at the foot of the slide near the river. In many instances the logs had split length-ways into two halves. A moderate expenditure in blasting rocks would have made this an excellent road for timber, and probably have saved a large proportion of the timber felled in this Forest; unfortunately it is too late now, as the greater part of the Deodar at the head of the slide has been cut down. In the Punang Forest 888 trees are said to have been felled from 1859 to 1863. To judge by the number of stumps, this part of the forest contained before working commenced 10 trees per acre.



| No | Date    | Name of Officers conducting the Survey    | Locality                            | DEODAR                  |                             |                             |                     |         | AREA SURVEYED |              |                | TREES PER ACRE |               | REMARKS                                                                 |
|----|---------|-------------------------------------------|-------------------------------------|-------------------------|-----------------------------|-----------------------------|---------------------|---------|---------------|--------------|----------------|----------------|---------------|-------------------------------------------------------------------------|
|    |         |                                           |                                     | First class above 6 ft. | Second class 4½ ft to 6 ft. | Third class 1½ ft to 4½ ft. | Fourth class small. | Stumps. | Length in ft. | Width in ft. | Area in acres. | First class.   | Second class. |                                                                         |
| 20 | Sept 20 | { Dr Brandis<br>Dr Stewart<br>Capt E Wood | Wasankan Forest                     | 40                      | 26                          | 25                          | 150                 | 1       | 500           | 250          | 2 27           | 13'04          | 9'26          | P excelsa, 5<br>A Smithiana, 3                                          |
| 21 | "       |                                           | Chokro Forest ..                    | 23                      | 17                          | 43                          | 80                  | 3'5     | 3600          | 250          | 20'66          | 1'11           | 0'82          | A Smithiana, 3                                                          |
| 22 | Sept 21 |                                           | Kiuden Forest ...                   | 83                      | 75                          | 18                          | 150                 | 9       | 1100          | 200          | 5'05           | 16'4           | 14'8          | Deodar dead, 3<br>P excelsa 4                                           |
| 23 | "       |                                           | " ...                               | 19                      | 11                          | ...                         | ...                 | ..      | ...           | ..           | 0'33           | 58'0           | 33'3          |                                                                         |
| 24 | "       | "                                         | " ...                               | 57                      | 33                          | 21                          | 120                 | 7       | 350           | 200          | 1'6            | 35'6           | 20'6          | Dead 36<br>Fallen 4<br>P excelsa 1st class, 2<br>" 2nd " 7<br>" 3rd " 3 |
| 25 | "       | "                                         | " ...                               | 35                      | 57                          | 8                           | 170                 | ...     | 1000          | 250          | 5'74           | 6'10           | 10'00         | P excelsa, 8.<br>A Smithiana, 7                                         |
| 26 | Sept 21 | "                                         | Kilba Forest ...                    | 22                      | 71                          | 193                         | ...                 | 115     | 2600          | 300          | 17'92          | 1'23           | 3'96          | P excelsa<br>A Smithiana, 3<br>Logs not removed                         |
| 27 | Sept 22 | Dr. Brandis ...                           | Kunai Forest ...<br>Kumkumee Forest | No regular survey.      |                             |                             |                     |         |               |              |                |                |               |                                                                         |
|    |         |                                           | Burnt                               |                         |                             |                             |                     |         |               |              |                |                |               |                                                                         |
|    |         |                                           | Rapung Forest ...                   | 71                      | ...                         | ...                         | ...                 | 410     | 1600          | 400          | 14'69          | 32'74          |               |                                                                         |

#### FORESTS ON BOTH SIDES OF THE HALABGAR STREAM.

Nos. 20 and 21. *Locality*.—The road from the pastures at the head of the Sdeeling River to Kilba village, first crosses several of the feeders of this stream near the limits of arborescent vegetation. It then descends on a gentle slope over fields and open pastures, belonging to the Dogri of Kilba, towards the Halabgar stream. On the spur between this stream and the Sdeeling is the Jumpan Forest. It commences immediately below the fields, and extends to within a short distance of the Sutlej. This is one of the richest forests remaining on the Sutlej, stated to have been protected by the rocky state of the ground, rendering the removal of timber difficult. We visited only the upper end of the forest, and found the size and growth of the trees magnificent. The forest east of the Halabgar stream is broken up into a number of distinct forest tracts, situated between the Halabgar stream and a sharp ridge of quartz rock, which divides the stream from the amphitheatre, in which the Forests and fields of Kilba are situated. Along the west flank of this ridge the lower portion is known as the Chokro Forest. The upper portion near the stream is more compact, and in this survey No. 20 was taken. It is called Wasankan Forest. Below the Chokro Forest on the triangular head of the spur is a small tract called Jumki. From this locality Mr. Aratoon is said to have removed 15 trees.

*Soil, &c.*—Granite rock with good soil in the Wasankan, with a slope of 30°, and a north north-west aspect, and poor quartz rock in the Chokro Forest.

*Rate of growth, size of trees, and reproduction.*—According to the data collected, the rate of growth in the Wasankan Forest is slow, the age of a first class tree 6 feet in girth, varying from 152 to 181 years. The first class trees seen in the Wasankan Forest were mostly of good size; one was measured 9 feet 4 inches in girth, and 135 feet high the proportion of young trees was satisfactory, wherever there was sufficient light to enable them to spring up.

*General Remarks.*—The lower part of the Chokro Forest has been much worked lately; it should now be left alone. The trees which remain are too much scattered to admit of further felling without destroying the forest; but the Jumpan and Wasankan Forest might be worked at once; some expense would be necessary for making timber slides to the river. The slides by which the timber has been removed from the Chokro Forest are apparently nothing but the slope of the hill, somewhat smoothed by the gliding down of the logs. Two hundred trees are said to have been cut in this part by Mr. Aratoon, and 200 logs sent down. The slides, where we saw them were the bare rock, a little smoothed by the passage of the logs, and without trace of any labour bestowed upon them. To judge from general appearances, the contents of the forests on both banks of the Halabgar stream, *viz.*, Jumpan, Wasankan, and Chokro, may be assumed to be about equal to those of the Phinla Forests.

#### KIUDEN FOREST.

Nos. 22—25. *Locality*.—The Kiuden Forest is situated above the village of Kilba on a large extent of deserted fields, of which the terrace walls are still standing. It joins the eastern portion of the Chokro Forest, and its area may be estimated at 300 acres; it is one of the best and most compact forests that we have examined, and second only to Nachar.

*Soil, slope, aspect, &c.*—The rock is quartzose, but the soil is rich from being terraced, and from having been enriched by the accumulation of vegetable matter for centuries. The slope has a northern aspect, and is from 23° to 35° where there are no terraces.

*Other trees.*—*Quercus Ilex*, and *Pinus Gerardiana* are common between the village and the forest.

*Rate of growth, size, and reproduction.*—The trees in this forest are of large size, the stems are clear of branches, and do not lose in girth much. The following trees were measured :—

|     |       |       |        |          |
|-----|-------|-------|--------|----------|
| (1) | Girth | 3'3"  | age    | 84 years |
| (2) | "     | 5'4"  | "      | 149 "    |
| (3) | "     | 13'0" | height | 145 feet |

These, trees, however, were not fair specimens of the rate of growth. The first was measured on poor rocky soil below the forest; the second was the stump of a tree that had grown oppressed by the other trees, 60 feet of the stem of first class trees may, in this Forest, be considered available for timber, and the mean girth for this length is about  $\frac{1}{10}$  of the butt girth.

The quantity of timber standing on an acre is large; on one-third of an acre along one of the old terraces 19 trees of the first class, and 11 of the second were measured with an aggregate cubic contents of 2,933 feet, which gives 8,971 cubic feet per acre. The average contents of a first class tree was 142, and of a second and third class tree 22 cubic feet. In another locality the trees of different classes were counted on an area of 350' × 200', with the following result :—

|                   |     |                |                   |
|-------------------|-----|----------------|-------------------|
| First class trees | 57, | cubic content, | 8,094 cubic feet. |
| Second "          | 33, | "              | 726 "             |

|           |       |                        |
|-----------|-------|------------------------|
| Total ... | 8,820 | on 1.60 acre, or 5,512 |
|-----------|-------|------------------------|

cubic feet per acre.

The average age of the first class trees from 6 to 10 feet in girth may be assumed at about 180 years. This would give an average annual timber production per acre up to date, of 50 cubic feet in the first, and 31 in the second locality, not taking into account tops and branches, and the trees which have died as the forest grew up.

Assuming the average number of first class trees per acre to be 20, this would give for the Kiuden Forest about 6,000 first class trees. This is, we believe, a moderate estimate. The growth of young trees is good; wherever light was given by the death or fall of large trees, seedlings had sprung up in abundance. There was in the Forest a clearance of about 150 feet broad, and several hundred feet long, down the slope. This was covered with young trees. The attempt might here be made with success to clear alternate strips, from 100 to 200 feet wide, of all first class trees that will yield marketable timber, leaving the forest on both sides intact, and likewise a belt of forest above, at the top.

*General Remarks.*—The forest has been protected by the fields of Kilba intervening between it and the river, the owners of which would have to be compensated in case slides were made. There seems to be no physical obstacle against the removal of the timber.

#### KILBA FOREST.

No. 26. *Locality.*—A high and precipitous wall of quartzose rock bounds the valley, in which the fields and village of Kilba are situated, to the east. After ascending this ridge we found that towards the east side it slopes more gradually, the strata of the rock having a northerly strike and a dip to the east. The valley between this ridge and the main spur mentioned above, is drained by a small stream which joins the Sutlej below the mouth of the Runang-gad. Before working commenced, a good Deodar Forest appears to have covered the slopes of this valley. But now, excepting the upper part, it may almost be called a Forest of stumps. We proceeded downwards along the crest of the ridge, and then descended to the bed of the little stream mentioned above, which is used as a slide with several branch slides.

*Soil, slope, and aspect.*—In the upper part of the Forest there is little soil on the quartz rock, and the growth of the trees is poor; the greater portion of the third class trees counted, were stunted trees, found along the crest of the ridge. Lower down the soil appears to be favourable. The slope is about 35°, and the aspect of the portion surveyed is N. N. E.

*Other trees.*—Above *A Smithiana* is almost the only tree mixed with Deodar; lower down *Quercus Ilex* is abundant. One tree measured 6'10" in girth, with a clear stem 20' long.

*Rate of growth, size, and reproduction.*—The following trees were measured.—

The detail of the trees examined is given in Appendix III, No. 9, the result is 138 years for the age of a tree 6' in girth, and 100 for a tree in girth 4 feet 6 inches. This is slow growth. The young trees of the fourth class were not counted, but their number was very large.

*General Remarks.*—1,202 trees are stated to have been felled in this forest in 1859 and 1863. That portion which was surveyed, has principally been worked by Mr. Aratoon. The work has not apparently been conducted in a careful manner. In the upper part of the Forest large numbers of trees were felled, but hardly any removed. Out of 115 trees felled, of which the stumps were counted, 32 had been left lying on the ground untouched. These had been

lying on the ground for several years; some had been injured by fires, and all are likely to suffer from decay of the sapwood before they are removed. If it is at all intended to husband the timber resources of these Forests, some steps will have to be taken to compel the owners of timber remaining within them, to remove it without further delay.

*Slides.*—We crossed several slides, and examined particularly that slide which follows the bed of the torrent above described. As the water of this stream is required by the inhabitants of Kilba for the irrigation of their fields, a channel across the slide had been made, and bridged over with rough stones, so as to enable the logs to pass over it without injury to irrigation. The bed of the torrent was full of large boulders of rock and debris of logs, showing that a proportion of the timber had been injured or destroyed in their passage downwards. It was stated by our guides that 1,000 trees had been felled in this forest. To judge by the number of stumps counted, the portion surveyed must have contained upwards of seven first class trees per acre. Now it only contains one per acre on an average; and should the mass of dry trees and branches with which the ground is now covered catch fire, trees still standing would be entirely destroyed, the ground would be covered with shrubs, and the reproduction of the Forest would seriously be endangered. If practicable, a short time should be fixed for the removal of the timber from this Forest, and if this is not done by the date fixed, it would have to be removed by the Forest Department. The tops and branches of the trees which cannot be utilized, should then be collected in heaps and destroyed by fire, so as to give the young trees a fair chance to spring up. Otherwise the forest should be left alone, and its contents cannot be reckoned as part of the resources immediately available.

#### KUNAI AND SAPNI FORESTS.

No. 27. *Locality.*—Between the spur, which, as described before, bounds the Kilba Forest to the east, and another spur which runs from it to the junction of the Buspa and Sutlej Rivers, the village and Forest of Kunai is situated. The most compact portion of this Forest is on the east slope of the ridge above the road from Kilba to Kunai. The portion below the road has been extensively worked by Mr. Aratoon. On the west side of the spur which runs towards the junction of the Buspa and Sutlej, and divides Kunai from Sapni, is the Kumkumee, and on the east is the Sapni or Rapung Forest. At the top, near the upper road from Sapni to Kunai, these two Forest tracts join. There is a lower road through these Forests.

*Lower part of the Forest destroyed.*—A part of Kumkumee Forest and the entire Sapni Forest below this road have been destroyed by fire. It was stated by my guides, and confirmed by Mr. Aratoon's Agent, that a few years ago, after the trees in these Forests had been felled, a portion only was removed, and the greater part of the trees was left lying on the ground. In two successive seasons fire entered the Forest, destroyed all timber felled, and killed the standing trees. In the Sapni Forest, I counted on a length of 1,600 feet along the lower road, 410 stumps of large trees, all charred or half-burnt, and 71 first class trees standing but killed, besides the remains of a large number of trees of the smaller class all killed by the fire. No young trees had sprung up; the ground was naked and barren, and will probably remain so or produce low scrub only. Calculating the number of stumps and killed first class trees per acre, we obtain 32.74 first class trees per acre on the ground surveyed before the Forest was destroyed. This lower part of the Sapni Forest must have been one of the finest Forests on the Sutlej before it was burnt. The area of the forest thus destroyed measured probably more than 100 acres. It is reported that 250 trees were felled in the Kunai, and 447 trees in the Sapni Forest between 1859 and 1863. The latter statement regarding the Sapni Forest must be considerably below the number actually felled, as the stumps counted on a small portion alone amounted to 410.

*Forests still remaining.*—The compact portion of the Kunai Forest, and what remains of the two others, may be estimated to cover about 200 acres. In the Kumkumee Forest along the upper road, I estimated the first class Deodar trees at 10 per acre with about two additional of *A. Smithiana*, and a few *P. excelsa*. The Sapni Forests are much richer; there appeared to be upwards of 15 first class trees on the acre. The soil in these two forests is very rich, the rock being a gneissoid granite. Assuming 10 trees per acre, the number of first class trees remaining in these three Forests may be estimated at 2,000.

*Size of trees and rate of growth.*—The following trees were measured:—

|                 |     |             |       |        |              |
|-----------------|-----|-------------|-------|--------|--------------|
| Kumkumee Forest | (1) | tree, girth | 10'0" | height | 150'         |
| "               | (2) | " "         | 18'0" | "      | 150'         |
| "               | (3) | stump "     | 9'9"  | "      | —, rings 170 |
| Sapni Forest    | (4) | " "         | 24'0" | "      | —, " 176     |
| "               | (5) | " "         | 12'0" | "      | —, " 120     |
| "               | (6) | " "         | 7'6"  | "      | —, " 120     |

These indicate an age of 90 years for 6' and 65 years for 4' 6" in girth.

Near the Kunai Forest, round a temple, six gigantic trees stand on an area of 100' by 100' or about one-fourth of an acre. Four of these were measured, and had the following girths at 6' from the ground:—

25'4", 24'9", 23'2", 17'4".

The age of the largest of these trees cannot be less than 600 years.

*Future management.*—It appears desirable to demarcate the remaining portions of the three Forests here described, and thus to secure their effectual preservation.

| No. | Date.   | Name of Officers conducting the Survey.            | Locality.                                           | DEODAR.                 |                             |                             |                     |         | AREA SURVEYED. |              |                | TREES PER ACRE. |               | REMARKS.                           |
|-----|---------|----------------------------------------------------|-----------------------------------------------------|-------------------------|-----------------------------|-----------------------------|---------------------|---------|----------------|--------------|----------------|-----------------|---------------|------------------------------------|
|     |         |                                                    |                                                     | First class above 6 ft. | Second class 4½ ft to 6 ft. | Third class 1½ ft to 4½ ft. | Fourth class small. | Stumps. | Length in ft.  | Width in ft. | Area in acres. | First class     | Second class. |                                    |
| 28  | Sep 22  | Dr Stewart ...<br>Capt Wood ...                    | Churi Forest ...                                    | 19                      | 14                          | 12                          | 47                  | ...     | 1000           | 200          | 4'50           | 4'14            | 3'05          | P. excelsa, 18<br>A, Smithiana, 61 |
| 29  | "       | "                                                  | "                                                   | 12                      | 13                          | 20                          | 31                  | ...     | 350            | 200          | 1'60           | 7'50            | 8'12          |                                    |
| 30  | "       | "                                                  | Buru Forest ...                                     | 42                      | 38                          | 28                          | 16                  | ...     | 1200           | 250          | 6'89           | 6'00            | 5'52          | P. excelsa, 5<br>A, Smithiana, 170 |
| 31  | "       | "                                                  | "                                                   | 75                      | 102                         | 120                         | 123                 | ...     | 2300           | 250          | 13'20          | 5'68            | 7'73          | P. excelsa, 5<br>A, Smithiana, 22  |
| 32  | "       | Dr Brandis ...<br>Dr Stewart ...<br>Capt. Wood ... | Rapur Forest ...                                    | 29                      | 23                          | 49                          | 36                  | 21      | 1100           | 200          | 5'05           | 5'74            | 4'55          | P. excelsa, 3<br>A, Smithiana, 1   |
| 33  | "       | "                                                  | Jungari Forest ...                                  | 10                      | 17                          | 87                          | 32                  | 47      | 700            | 200          | 3'21           | 3'12            | 5'30          | A, Smithiana, 1                    |
| 34  | "       | "                                                  | "                                                   | 42                      | 63                          | 130                         | 83                  | ...     | 1000           | 200          | 4'59           | 9'15            | 14'31         |                                    |
| 35  | "       | "                                                  | Shoang Forest ...                                   | 40                      | 50                          | 91                          | 192                 | 41      | 1700           | 200          | 7'80           | 5'13            | 6'41          | P. excelsa, 5<br>A, Smithiana, 3   |
| 36  | Sept 23 | "                                                  | Chasoo Forest...<br>Chidu " ...<br>Limsantang " ... | No regular surveys.     |                             |                             |                     |         |                |              |                |                 |               |                                    |
| 37  | Sept 26 | "                                                  | Serinche Forest<br>of Sangla ...                    | 7                       | 22                          | 21                          | 8                   | 27      | 1100           | 300          | 7'57           | 0'92            | 2'91          |                                    |
| 38  | "       | "                                                  | Do. do. ...                                         | 7                       | 23                          | 100                         | 142                 | 76      | 2000           | 200          | 9'18           | 0'76            | 2'50          |                                    |
| 39  | "       | "                                                  | Do. do. ...                                         | 1                       | 4                           | 22                          | 4                   | 11      | 700            | 200          | 3'21           | 0'31            | 1'24          |                                    |
| 40  | "       | "                                                  | Rakcham Forests                                     | 22                      | 17                          | 37                          | 86                  | 16      | 300            | 200          | 1'38           | 15'94           | 12'32         |                                    |
| 41  | "       | "                                                  | Yak Bursari ...                                     | 30                      | 58                          | 133                         | many                | 44      | 3000           | 300          | 20'06          | 1'45            | 2'80          |                                    |

#### FORESTS BETWEEN THE SAPNI AND BURU STREAM.

Nos. 28—31. *Locality.*—Between Sapni and Buru garang, up which leads the road to the Buru or Borenda Pass, are two streams, the Rapang-gad and another stream which passes the village of Batoring on its way to the Buspa. The Churi Forest is on the spur which divides these two streams, above the road from Sapni to Shoang; the Buru Forest is on both sides of the Batoring stream, but principally on the side towards Buru, the lower portion on the right bank of the stream is called Batoring Forest. Besides these, some patches of Deodar producing forest were observed south-west of the village of Buru, which were not visited.

*Soil, Slope, and Aspect.*—In the Churi Forest the aspect is north, the slope 35° and the soil fair. In a portion of the Buru Forest (No. 30), the Deodar grows on deserted fields, and here the forest is best, the slope is 35° and the aspect north and north-east.

*Rate of growth, size of trees, and reproduction.*—In the Batoring Forest near the road, the average size of the first class trees is girth 10' to 12', height 150'. In the Buru Forest one tree was measured, girth 6' 4", rings 104. The other trees of the first class averaged about the same size. It is supposed that the trees in the Churi Forest would yield, on the average, 3 logs of 12 feet each, and that the trees in the Buru Forest will, if any thing, yield a greater length of marketable log. Assuming the area to be 120 acres, containing 5 first class trees on an acre, these two forests contain 600 first class trees. 485 trees are reported to have been felled in the Buru Forests between 1860 and 1862. The only person who has felled timber in the Buspa valley above the village of Buru, is Mr. Aratoon.

#### FORESTS BETWEEN THE BURU STREAM AND SHOANG.

Nos. 32—35. *Locality.*—Between the Buru garang and Shoang village is a broad rocky shoulder, about 1½ mile wide. The road from Buru to Shoang village leads along the hill-side, which has a north-east aspect and a slope of 35°. In many places there is but little soil on the rock, which is distinctly stratified; and parts of the hill are perfectly bare of trees. These barren slopes separate the four belts of forest in which the survey was made. The line was taken along the road.

*Rate of growth, &c.*—The following trees were measured. From the trees examined in this forest and entered in No. 13 of the Register in Appendix III, it would appear that the average age of first and second class trees in this forest tract is about 91 years for a girth of 6', and 66 years for a girth of 4' 6".

These forests have been worked extensively by Mr. Aratoon. 1,021 trees are reported to have been felled between 1859 and 1863. Five slides were observed, viz, tracks where a suitably situated slope of the hill had been smoothed by sending timber down to the river. The total number of first class trees counted on 20.65 acres in these forests was 121, the total number of stumps 109, this gives an average of 11 first class trees per acre before the working was commenced, of which about one-half have been removed. The total area may be about 300 acres, still containing upwards of 1,500 first class trees.

*Future management.*—These forests should have rest; for some time no trees should be felled. Demarcation does not seem to be called for, as there appears to be no ground to apprehend injury from cultivation at present.

## FORESTS BETWEEN SHOANG AND SANGLA.

No. 36. *Locality*.—Between Shoang village and Sangla on the left side of the Buspa, Deodar is scattered on the lower slopes of the hills. According to Gerard, the elevation of Sangla is 8,568 feet. The tree hardly exceeds an elevation of 9,500 feet in the Buspa valley. Chasoo is 9,174 feet, and a few hundred feet above the village Deodar ceases, and *Pinus excelsa*, Birch, and *Picea Webbiana* take its place, and carry arborescent vegetation about 2,000 feet higher up. Four distinct Deodar tracts may be considered :—

- (1).—A considerable number of Deodar trees is on the west slope of a rocky precipice which skirts the Sapoots Garang, the stream between Shoang and Chasoo. This precipice has a broad step about 300 yards wide, drained by a small ravine which joins the Buspa River below a Dogri of Chasoo village. This ravine has been used as a slide by Mr. Aratoon. It has a gentle slope, and is altogether a favourable locality; but the slide has not been improved by blasting or otherwise. Some Deodar is also on a ledge of the rock which projects to the north.
- (2).—The left bank of the Buspa River is high and steep, from the mouth of the Sapoots Garang to the gorge where the river leaves the flat of Sangla; between these two points the river runs over a succession of falls and rapids. This high and steep bank is covered with Deodar and a few trees of *A Smithiana*; and a number of trees have been felled here by Mr. Aratoon.
- (3).—On the left bank of the Buspa river, above the gorge described. Here the hills approach the river, and were formerly covered with a fair Deodar Forest; a small number of trees only is left at present, the greater portion of the larger trees having been cut down. This forest is called the Chidu Forest.
- (4).—Opposite Sangla is a small Forest of Deodar, on the north face of a hill. This is called the Limsantang Forest, and has not been worked. It is said that the villagers would not allow trees to be felled.

*Rate of growth and size of trees*.—The figures given in Nos. 14, 15, 16 of the separate Register in Appendix III give an average age of 72 years at 6' girth, and of 53 years at 4' 6" girth. One tree growing between the precipice and the Sapoots Garang measured girth: 16' 6" height 145'.

*Future management*.—The only forest of the four here described, that appears to call for demarcation, is that opposite Sangla. It is considered sacred, and the trees are cut only for temples and other sacred buildings. The question may, therefore, be raised whether this forest can, with propriety, be demarcated. No survey was made of these different Forest tracts; but the aggregate area does not probably exceed 200 acres, and the Forests are not likely to contain at present more than 1,000 first class trees. It is reported that 551 trees were felled by Mr. Aratoon between 1859 and 1862, in the Chasoo Forest.

## SERINCHE FORESTS.

Nos. 37—39. *Locality*.—The highest forests of importance on the right side of the Buspa River are opposite the village of Bursari, and below the Dogri of Serinche, between the river and the steep cliffs, which bound the valley on this side. The width of the Forest nowhere exceeds half a mile, and is commonly much less.

*Soil, Slope, and Aspect*.—The ground along the river is covered with blocks of granite, and there is apparently little soil between them. The slope is steep near the river and gentle higher up.

*Rate of growth and size*.—The following trees were measured :—

|         |       |     |     |       |     |         |       |     |    |       |     |
|---------|-------|-----|-----|-------|-----|---------|-------|-----|----|-------|-----|
| No. (1) | girth | 7'  | 7"  | rings | 68  | No. (8) | girth | 10' | 6" | rings | 89  |
| " (2)   | "     | 7'  | 9"  | "     | 65  | " (9)   | "     | 12' | 4" | "     | 147 |
| " (3)   | "     | 6'  | 5"  | "     | 65  | " (10)  | "     | 7'  | 5" | "     | 200 |
| " (4)   | "     | 7'  | 6"  | "     | 67  | " (11)  | "     | 7'  | 2" | "     | 144 |
| " (5)   | "     | 6'  | 10" | "     | 66  | " (12)  | "     | 5'  | 9" | "     | 97  |
| " (6)   | "     | 6'  | 10" | "     | 93  | " (13)  | "     | 8'  | 8" | "     | 217 |
| " (7)   | "     | 11' | 9"  | "     | 142 | " (14)  | "     | 5'  | 3" | "     | 89  |

The trees numbered 1 to 9 and 12, had grown on a gentle slope of about 10°. Nos. 10 to 14 stood on a steep slope of 30° with a south aspect. The rock in all instances was granite. These figures confirm the result of observations in other parts of Kunawur, tending to show that, on a gentle slope, the rate of growth is commonly better than on a slope of a steep gradient. These figures indicate for the trees on an easy slope an average age of 44 years

for 4' 6" girth, and of 62 for 6' 0" girth. For the other trees the corresponding ages are 98 and 132. The rate at which the stem diminishes in girth towards the top appears from the following figures :—

|          |     |       |       |     |
|----------|-----|-------|-------|-----|
| Girth at | 2'  | 11'9" | Rings | 142 |
| " at     | 52' | 5'0"  | "     | 100 |
| " at     | 3'  | 10'6" | "     | 89  |
| " at     | 53' | 4'2"  | "     | —   |
| " at     | 64' | 3'0"  | "     | 47  |

The trees in this Forest are not generally very large. The first class trees left standing are mostly under 10' in girth and under 80' in height, the largest tree measured had a girth of 17' 10", and was 105' high. The size of the stumps shows that formerly the Forest produced larger timbers. It is stated that the greater number of trees only produced 2 logs each.

*General Remarks.*—The number of young trees in suitable localities is favourable. 347 trees are reported to have been felled in this Forest. 114 stumps were counted, and of these 20 trees had not been removed. Not more than a few hundred first class trees are left standing on the ground.

#### RAKCHAM FOREST.

No. 40. *Locality.*—This Forest is on the right bank of the Buspa, on an island formed by this river and the Runalgad, a considerable torrent which is fed by one of the glaciers of the Raldang Range. This stream, before its junction with the Buspa, divides into a number of branches, the principal one of which runs for about a mile parallel to the Buspa River through a flat above the village of Bursari. The Forest consists of two patches; the survey was taken in the upper one.

*Soil, &c.*—The ground is covered with granite boulders. The soil is very sandy.

*Rate of growth and size.*—The following trees were measured :—

|      |       |      |        |      |
|------|-------|------|--------|------|
| (1.) | Girth | 9'0" | Height | 100' |
| (2.) | "     | 8'5" | rings  | 130  |
| (3.) | "     | 7'7" | "      | 136  |
| (4.) | "     | 7'8" | "      | 196  |

The trees are of good height and well proportioned. The two patches mentioned may contain upwards of 100 first class trees. The rate of growth is slow, though the ground is level. It is believed, that the soil is poor and water-logged.

*Observations on the limit of Deodars in the Buspa valley.*—Between the flat above Sangla and the village of Rakcham, there are two distinct steps in the valley; in each the ascent is over a mass of granite boulders. These granite boulders fill up the valley from one side to the other, and may possibly be the remains of large terminal moraines of a glacier, which at some remote period filled the upper part of the Buspa valley. Scattered Deodar trees are found at the foot of the first or upper old Moraine on the right or north bank of the river. According to Gerard, the elevation of Sangla is 8,568', and of Rakcham 10,456'. Hence the upper limit of Deodar in this part of the Buspa valley, may be assumed to be about 10,000'.

#### YAK BURSARI FORESTS.

No. 41. *Locality.*—On the left bank of the Buspa River, between the Rupti-gad opposite Sangla and the first step or old Moraine above the village of Bursari, the lower slopes of the hills and the steep banks of the river are more or less covered with Deodar. The tract between the Rupti and Hurba-gad is known under the name of Hurba Forest; the remainder is called below Ek-Bursari Forest, and above Burra Bursari. The survey was conducted from the bridge below Bursari village downwards, on flat terraces above the river.

*Soil, &c.*—The Forest is on tolerably flat terraces along the margin of the river, becoming steep and rocky some hundred yards off. The soil of the lower part is fair. The rock observed was granite; the slope varies.

*Rate of growth, size, &c.*—The following trees were measured :—

|     |             |          |       |      |
|-----|-------------|----------|-------|------|
| (1) | Stump girth | 7' 2,"   | rings | 115. |
| (2) | "           | " 5' 2," | "     | 91.  |
| (3) | "           | " 4' 2," | "     | 101. |

The trees were well grown and of good height.

*General Remarks.*—These Forests were worked by Mr. Arratoon about 4 years ago. In accessible portions, a considerable proportion of the large sized trees has been cut down. Opposite the bridge were found 38 logs cut by Mr. Arratoon 4 years ago, and which had been left lying. Some of these logs were partially decayed. A considerable tract of the Forest had been completely destroyed by an avalanche. The trees had been thrown down and are lying on the ground. No young trees had sprung up in the tract thus destroyed. Mr. Arratoon is stated to have felled 456 trees in the Bursari Forest; but of this, and of the timber cut by him in other parts of the valley above the gorge near Chasoo, a considerable proportion is still lying in various places along the Buspa River, having been deposited there by high floods. On the sands above the gorge we counted above 100 logs lying within a small space, which, with very small outlay, might be rolled into the river. The Forests on the left side of the Buspa River above Sangla, still contain a considerable quantity of Deodar, covering probably several hundred acres.

| No. | Date.               | Names of Officers conducting the Survey.    | Locality.                    | DEODAR.                 |                              |                              |                      |         |       | AREA SURVEYED. |              |                | TREES PER ACRE. |               | REMARKS.                               |
|-----|---------------------|---------------------------------------------|------------------------------|-------------------------|------------------------------|------------------------------|----------------------|---------|-------|----------------|--------------|----------------|-----------------|---------------|----------------------------------------|
|     |                     |                                             |                              | First class above 6 ft. | Second class 4½ ft. to 6 ft. | Third class 1½ ft. to 4½ ft. | Fourth class, small. | Stumps. |       | Length in ft.  | Width in ft. | Area in acres. | First class.    | Second class. |                                        |
| 42  | Oct. 7 and Sept. 22 | Dr. Brandis and Dr. Stewart (Capt. E. Wood) | Ralli and Karcham Forest ... | No regular survey       |                              |                              |                      |         |       |                |              |                |                 |               |                                        |
| 43  | Sept. 28            | "                                           | Mebar Forest ...             | 19                      | 36                           | 120                          | 82                   | 8       | 800   | 200            | 3.67         | 5.78           | 98.1            |               |                                        |
| 44  | "                   | "                                           | "                            | 28                      | 26                           | 110                          | 30                   | ..      | 900   | 200            | 4.13         | 6.78           | 6.29            |               | Dead, 37                               |
| 45  | "                   | "                                           | "                            | 60                      | 90                           | 90                           | 68                   | 3       | 1,200 | 300            | 8.26         | 7.26           | 10.90           |               | Dead, 33                               |
| 46  | "                   | "                                           | "                            | 48                      | 11                           | 32                           | 25                   | 7       | 800   | 300            | 5.51         | 8.71           | 2.00            |               | A Smithiana, 1 Dead, 11                |
| 47  | "                   | "                                           | "                            | 30                      | 33                           | 73                           | 36                   | 48      | 1,900 | 200            | 8.72         | 3.44           | 3.78            |               | A Smithiana, 2 Dead, 6                 |
| 48  | "                   | "                                           | Barung Forest ...            | 136                     | 136                          | 97                           | 46                   | 12      | 2,700 | 360            | 18.59        | 7.31           | 7.31            |               | A Smithiana, 21 P. Excelsa, 6 Dead, 19 |
| 49  | "                   | "                                           | Tanglin Forest ...           | No survey               |                              |                              |                      |         |       |                |              |                |                 |               |                                        |
| 50  | "                   | Dr. Stewart and Dr. Brandis                 | Stalimpi ...                 | 77                      | 26                           | 70                           | 300                  | 6       | 1,800 | 300            | 12.40        | 6.21           | 2.10            |               | P Gerardiana (first Class), 25         |

#### RALLI AND KARCHAM FORESTS.

No. 42. *Remarks.*—These Forests face the Sutelj and Buspa Rivers immediately above their junction. They were not surveyed, but as the roads from Rogi to the Runang, and from Sapni to Buru lead on the opposite sides of the Buspa and Sutelj valleys, and within an average distance, as the crow flies, of not more than 2 miles from these Forests, we had a good opportunity of forming a general idea of the extent of these Deodar localities.

*Locality.*—The spur which runs down from the mountain, the shoulder of which is crossed by the Harang Pass, to the junction of the Buspa and Sutelj Rivers, is well clothed with Forest on the side towards the Sutelj. These Forests, as far as Mebar village, are called the Ralli Forests from a village on the banks of the river. The slope is apparently steep. The aspect is northerly, Deodar covers a considerable area in the middle of the slope, interrupted only by a few ravines, precipices of rock and narrow barren belts. Above it is Birch, *P. Webbiana* and *P. excelsa*, and below a Forest of *P. Gerardiana* and *Quercus Ilex*. There are two slides from these Forests to the Sutelj, but a portion of the Forest is stated never to have been worked, because protected by precipices below.

On the side towards the Buspa there is an open grassy slope below, above which there are several extensive tracts which at one time were covered with Deodar. These are called the Karcham Forests. They may be said to extend to nearly opposite Būrū village. Above this as far as Sangla, there are but scattered trees on this side of the Buspa River. Three slides lead from these Forests to the Buspa River. The Forests have been worked, and 179 trees are reported to have been felled in 1859 and 1863. In the Ralli Forests 306 trees are reported to have been felled during the same period.

#### MEBAR FORESTS.

Nos. 43—47. *Locality.*—From the village of Mebar to Barung, the left bank of the Sutelj is lined by a range of precipitous and high cliffs. Above these cliffs is a series of good Deodar localities, which have been worked in one place only, and have otherwise been protected by these rocks. The western part of this Forest is called Mebar, the eastern Barung. In the Mebar Forest the survey went first through the Forest below the village into a small ravine to the east (43); thence across the ravine to the edge of the precipice (44); and at last upwards to the road from Mebar to Barung and along this road (45, 46, 47).

*Soil, Aspect, Slope, &c.*—The rock is a grey schist, sometimes more like clay-slate, sometimes more quartzose. The strike of the strata is from north to south, and the dip eastward. Nos. 43 and 44, aspect north, slope 35°, soil good, and some old cultivation terraces—in part. The stumps are from Zemindars felling. Nos. 45 and 46, nearly as before, slope 38°, rock schistose, with fair amount of soil, and old cultivation on lower part. No. 47, very rocky, and with but little soil, slope 38°.

*Rate of growth, size, &c.*—The trees are well shaped, but not very tall. The first class trees are about 80' high. The largest tree measured was below Mebar village; girth 18' 4", height 135', two others measured girth 9' 4", height 80', girth 10', height 85', most large trees are



branched to near the ground. The rate of growth is fair. The following trees were measured :—

|       |       |       |     |
|-------|-------|-------|-----|
| Girth | 8' 4" | rings | 129 |
| "     | 8' 0" | "     | 183 |
| "     | 6' 7" | "     | 152 |
| "     | 6' 4" | "     | 165 |
| "     | 7' 0" | "     | 172 |
| "     | 9' 0" | "     | 130 |
| "     | 7' 8" | "     | 155 |

These figures give 113 years for a girth of 6', and 83 years for a girth of 4' 6", 181 trees are reported to have been felled by Soda Sing in the Mebar Forests at the locality indicated above.

#### BARUNG FOREST.

No. 48. *Locality*.—The Forest tract of which the survey is given, is a continuation of the Mebar Forest; there appears to be no sharp geographical division between them. The survey followed the road from Mebar to Barung. The high precipice along the river continues to the village of Barung. Above this village the Shaen-garang joins the Sutlej. On the left side of this stream there are several Deodar localities which were not surveyed. From these the timber cannot be rolled into the main river. They would however be available in case arrangements could be made to bring down sawn timber.

*Soil, slope, and aspect*.—The rock is a hard quartzose schist with a considerable quantity of Mica. The slope is gentle, about 20°. Where the trees are growing, the aspect is north-east.

*Rate of growth, size, &c.*—The trees are branched to the ground, but well shaped and of fair size. One tree 18'-6" in girth was 90' high. The area of the Mebar and Barung Forests covers upwards of 350 acres, and may be estimated to contain about 2,500 first class trees. A small quantity of timber only is said to have been felled in the Barung Forests.

#### TANGLIN FOREST.

No. 49. *Locality, &c.*—Between the Shaen-gad and the Tanglin-gad, a steep face of hill, about one mile broad, slopes like a large triangle from the top of one of the spurs of the Raldang mountains. A large portion of this slope, the area of which may be estimated at about two-thirds of a square mile, was formerly covered with good Deodar Forest, and in localities not easily worked, a large number of good trees are said still to remain standing. We were prevented by want of time from surveying this Forest; but to judge of what can be seen at a distance, we believe that a considerable quantity of timber remains available. This Forest is stated to have been extensively worked by Mr. Arratoon before 1862, and by Kan Sing and others after that time. This Forest together with the neighbouring Forests was given as a Jagheer by the late Rajah to the father of Surjeet, Wazir of Poari. The boundaries are the Shaen-garang below, and Kibar Dogri near Purbani above. It is stated that in the whole extent of these Forests, 3,052 trees were felled between 1861 and 1864.

#### STALIMPI FOREST.

No. 50. *Locality*.—Between the Tanglin-gad and the village of Poari, one of the spurs of the Jastangrang peak rises into a cone shaped hill. The lower part of this hill towards the river and the Dogris of Tanglin and Skangrang is composed of detritus of granite, intermixed with granite boulders. The back of the hill and the neck which join it to the main range is composed of a stratified quartzose rock. The lower part of the hill is covered with *P. Gerardiana*, but on the back and on the upper part of the slope from the neck towards Poari village, there is a fine Deodar Forest, called the Stalimpi Forest. Higher up the trees stand on a gentle grassy slope with a north-west aspect. Lower down the ground is covered with large granite boulders; here *P. Gerardiana* commences; and further down towards the river no Deodar is to be seen. We ascended the back of the hill from Skangrang Dogri, and the trees were counted in descending over the neck described towards the village of Poari. A considerable quantity of Deodar was also observed on a separate spur to the south-east, separated from the hill just described by a small stream, which waters the gardens and fields of Skangrang. This part of the Forest could only be worked if the timber were sawn up into scantling and carried over land to the river. It was not visited.

*Rate of growth, size, &c.*—The size of the trees in the Stalimpi Forest is very good; one tree was measured with a girth of 18'-9". The Stalimpi Forest may be assumed to cover 150 acres with upwards of 1,000 first class trees. It seems to have been protected by the boulders in its lower part, and its distance from the river; but there is no apparent reason why a timber-slide might not be made; some outlay would have to be incurred. This Forest like the next is said to belong to Wazir Surjeet Sing of Poari.



| No. | Date.    | Names of Officers conducting the survey. | Locality.                        | DEODAR.                 |                             |                             |                     |         | AREA SURVEYED. |              |                | TREES PER ACRE. |               | REMARKS.                          |
|-----|----------|------------------------------------------|----------------------------------|-------------------------|-----------------------------|-----------------------------|---------------------|---------|----------------|--------------|----------------|-----------------|---------------|-----------------------------------|
|     |          |                                          |                                  | First class above 6 ft. | Second class 4½ ft to 6 ft. | Third class 1½ ft to 4½ ft. | Fourth class, small | Stumps. | Length in ft.  | Width in ft. | Area in acres. | First class.    | Second class. |                                   |
| 51  | Sept. 30 | Dr. Stewart...<br>Capt. Wood ...         | Shunalang of Poari               | 20                      | 39                          | 56                          | 25                  | 81      | 850            | 300          | 5'85           | 3'42            | 6'67          | Dead, 6<br>P Gerardiana, 8        |
| 52  | "        | "                                        | Shunalang and on to Kanun ki ... | 9                       | 50                          | 56                          | 21                  | 5       | 1300           | 300          | 8'95           | 1'00            | 5'59          | Dead 9<br>P Gerardiana, 5         |
| 53  | "        | "                                        | Kanun ki to east                 | 11                      | 33                          | 16                          | 16                  | 22      | 1600           | 250          | 9'18           | 1'19            | 3'59          | Dead 12<br>P Gerardiana, 16       |
| 54  | "        | "                                        | Shangrang or Shanang ...         | 36                      | 57                          | 60                          | 48                  | ..      | 800            | 250          | 4'59           | 7'84            | 12'42         | P Gerardiana, 7<br>P. Excelsa, 10 |

#### FORESTS BETWEEN POARI AND PURBANI.

No. 51.—Stumps almost all of this year, Slope 38°; aspect, north western; soil good on schistose rock with mica. Average of 1st class trees yield 3 logs at most.

No. 52.—One small patch of young trees burned up, otherwise as No. 51.

No. 53.—Very steep, 45°, and rocky. Soil poor. Trees not likely to yield more than 1½ to 2 logs; otherwise as before.

No. 54.—Slope 40°. Fair soil on rock, the same as that of Barung Forests. First class trees average nearly 4 logs.

*Locality, &c.*—These forests, which range from 8,000 feet to nearly 10,000 feet above the sea, are situated partly on the steep slope above the mountain bay, in which the village of Poari lies, and partly on the precipitous rocky face to the north. The former have been largely worked, but owing to the difficulties of the ground, &c., the latter are still intact. The lower part of the slopes is clothed with *Pinus Gerardiana*, above which the *Deodar* extends nearly to the precipitous cliffs which here crest the mountain. Surveys 51-53 were made across, and near the two chief timber slides (Shunālang and Kanunki), and indicate the present character of the forest where felling has been largely carried on. Survey 54 was made across that part where there has not been systematic felling, and which, indeed, is by no means so rich in trees as the former has been.

*Aspect, &c.*—The aspect of these forests varies from north-west to west. The slope from 38° to 45°. The soil is good and in fair quantity towards the south and north, but poor and scanty in the central steeper part, where the rock, a hard grey schist with mica, crops out abundantly. There are no traces of old cultivation terraces in any part.

*Character of the Forest.*—The trees are mostly *Deodar*, with a small proportion of *P. Gerardiana* intermixed, and a few *P. excelsa* towards the north where the track of the survey reached a greater elevation. The *Deodar* trees are of symmetrical shape, but of no great size; those of the first class towards the south and north yielding only 3 logs and occasionally 4, while the first class trees remaining in the central steeper and barer portion (near Kanunki) do not average more than 1½ to 2 logs. The proportion of dead trees is not large, but there are occasional traces of fire, and in one place near the Shunālang-slide, a considerable patch of young trees had been destroyed by burning.

*General Remarks.*—Surveys 48-50, show that the timber contractors have already felled as many trees as it is advisable at present to remove from the southern part of this forest, but if a tolerable slide can be arranged for the northern part, a good many trees could be got, as it is of considerable extent and untouched. We may assume an area of 200 acres and about 1,500 first class trees. These forest tracts belong to the Wazir of Poari.

| No. | Date.   | Names of Officers conducting the Survey. | Locality.                                           | DEODAR                  |                             |                             |                      |         | AREA SURVEYED. |              |                | TREES PER ACRE. |               | REMARKS.                                                     |
|-----|---------|------------------------------------------|-----------------------------------------------------|-------------------------|-----------------------------|-----------------------------|----------------------|---------|----------------|--------------|----------------|-----------------|---------------|--------------------------------------------------------------|
|     |         |                                          |                                                     | First class above 6 ft. | Second class 4½ ft to 6 ft. | Third class 1½ ft to 4½ ft. | Fourth class, small. | Stumps. | Length in ft.  | Width in ft. | Area in acres. | First class.    | Second class. |                                                              |
| 55  | Sept 30 | Dr. Stewart... Capt Wood ...             | Shangrang Forest to Kibar Dogri...                  | 102                     | 187                         | 103                         | 241                  | ...     | 3100           | 300          | 21.35          | 4.78            | 7.82          | P Excelsa, 18                                                |
| 56  | "       | Dr Brandis ... Dr Stewart ...            | Yolinge Forest ...                                  | 50                      | 38                          | 36                          | 60                   | 7       | 1300           | 300          | 8.96           | 5.58            | 4.25          | P Excelsa, 14                                                |
| 57  | Oct. 1  | "                                        | Purbani, Rauli Phuitang...                          | 52                      | 82                          | 67                          | 110                  | 5       | 1600           | 240          | 8.81           | 5.90            | 9.30          | P Excelsa, 50 Dead 23                                        |
| 58  | "       | "                                        | "                                                   | 24                      | 16                          | 20                          | 66                   | 4       | 900            | 240          | 4.96           | 4.84            | 3.23          | P Gerardiana, 9 Dead, 20                                     |
| 59  | "       | "                                        | Barunalang Forest                                   | 53                      | 109                         | 194                         | 110                  | 78      | 2800           | 300          | 19.28          | 2.75            | 5.65          | P Gerardiana, 16 Deodar dead, 40 Felled trees not removed, 5 |
| 60  | "       | "                                        | Simoling Forest ...                                 | 31                      | 110                         | 90                          | 180                  | 49      | 1000           | 300          | 6.89           | 4.49            | 15.97         | P Excelsa, 25 Deodar dead, 25 Felled trees not removed, 39   |
| 61  | "       | "                                        | "                                                   | 38                      | 78                          | 21                          | 89                   | 12      | 2500           | 300          | 17.22          | 2.21            | 4.53          | P Excelsa, 30 A Smithina, 4 Deodar dead, 16                  |
| 62  | "       | "                                        | Ralda Forest of Skiba ...                           | 41                      | 120                         | 240                         | 302                  | 8       | 3000           | 250          | 17.22          | 2.38            | 6.96          | P Excelsa, 6 P Gerardiana, 3 Deodar dead, 70                 |
| 63  | "       | "                                        | "                                                   | 22                      | 38                          | 200                         | 50                   | 1       | 700            | 250          | 4.02           | 5.47            | 9.45          | P Gerardiana, 18 Deodar dead, 16                             |
| 64  | Oct 3   | "                                        | Tinala Forest of Elspa, left bank of Teedong stream | 35                      | 95                          | 180                         | 72                   | 69      | 1900           | 250          | 10.90          | 3.21            | 8.71          | P Gerardiana, 31 Deodar dead, 25                             |

## PURBANI FORESTS.

Nos. 55—58. *Locality.*—The village of Purbani or Punung is situated on a terrace bounded by a steep slope towards the river. This terrace, which slopes gently upwards, is covered with fields and fruit trees. A second step leads to a higher terrace, on which the Dogri of Yolinge is situated; and on a third terrace above these are the fields of Kibar Dogri. The whole forms a kind of amphitheatre bounded on both sides by precipitous cliffs of rock. Deodar is found on the steeper slopes which separate the second and third terraces, and on the broken ground on either side at the foot of the rocks and partly on them. One tract only, called the Korang Forest, has been worked. This is situated on the head waters of the Korang-garang, a short stream which joins the river about a mile below Purbani. Here are two slides, and along this stream a number of trees were cut, near and above the road leading from Poari to Purbani. This forest was not surveyed. Survey No. 55 was taken along the top of a ridge running west north-west; slope of top 20°. Soil, fair, but full of boulders and destitute of grass. Trees stunted and branching, and first class trees do not average 3 logs. Survey No. 56 went down a slope of 30° below last. Soil fair, and boulders fewer, trees good; first class averaging over 5 logs. In the part below this, just over Yolinge (not surveyed) the trees were again as in No. 55. These surveys were taken on the 30th September. On the following morning, the eastern portion of this forest was examined. The road led from the camp near Purbani through the fields on the first terrace up into broken ground. The Forest tracts marked Nos. 57 and 58 may be considered as a continuation of No. 56. The rock is gneiss and granite; the slope 30°; aspect west north-west; old cultivation terraces in parts. Young trees springing up freely wherever there is space. Trees taper quickly and branch much. First class average about 100 feet or 4 logs. Little scrub, and many marks of fire.

In these tracts the following trees were measured :—

- |      |                                                    |                                              |
|------|----------------------------------------------------|----------------------------------------------|
| (1.) | Stump at 3' 6" from ground, girth 11' 9" rings 383 | } near the top of the Forest No. 56.         |
| (2.) | " " 2' 6" " " " 6' 1" " 160                        |                                              |
| (3.) | " " 4' " " " 7' 4" " 90                            | } at foot of Forest No. 56 near cultivation. |
| (4.) | " " 3' " " " 5' 8" " 73                            |                                              |

The two first trees are instances of a very slow, the two last of moderately rapid growth, probably, because grown on a more gentle slope.

Near the Yolinge Dogri a large tree was measured 34' 4" in girth, several of its branches broken, and the tree fast declining. The age cannot be estimated at less than 900 years, near it stand the shattered remains of two other giants, now dead. A large portion of the belt of Forest which covers the first slope above Purbani consists of gnarled and stunted trees, the stems instead of being straight from the root, divide into numerous limbs at different heights above the ground; many have a straight top often of considerable size. Higher up, the trees are of the usual shape, and in some localities attain large dimensions, but they bear branches down to the ground.

*General Remarks.*—The greater part of these Forests has not been worked for export, as the slope is not sufficient to form regular slides to the river, and cultivation intervenes, but these obstacles are not insuperable, though the cost of the timber will be somewhat enhanced. If these Forests are to be preserved, demarcation is necessary to prevent the trees being mutilated. In the upper parts of Kunawur near the treeless region, Forests are more exposed to injury by the wasteful cutting of shingles, planks and poles for sale, while the branches of Deodar are lopped to a great extent to serve as litter for cattle. It is difficult to estimate the area of the Deodar localities in this part, still left intact, and available for export; about 200 acres with five first class trees on an average may be taken as an approximation. In the Purbani Forest 552 trees are reported to have been felled in 1859 and 1863.

#### FORESTS BETWEEN PURBANI AND RIBA.

No. 59—61. *Locality.*—A steep rocky precipice forms the face of the hill between the terraces, on which the fields of Purbani and Riba are situated. The rock is entirely granite. There are two roads joining these two villages. The lower road leads along the bank of the river to a point opposite the village of Rarang, where a rope-bridge is thrown across during winter. It then gradually ascends the precipice, until it reaches the village of Riba. The upper road goes along the face of the rocks, gradually rising, until it reaches its highest point near the Dogri of Simoling. One road is used in the winter, the other in summer. Deodar is scattered over the whole of these rocks; the best Forests are on the two flanks. Survey 59 was taken on the west side towards Purbani, along a path used by sheep and goats; leading from the Purbani Forest over a steep ridge and again down to the upper road, and along this until the ground becomes too uneven, and the trees too scattered, to admit of useful results being obtained. Survey 60 and 61 were taken from the point where the highest ridge of the rock is rounded, to the fields of the Simoling Dogri. A part of these Forests has been worked.

*Soil, Slope, Aspect.*—The elevation of the upper part of the Barunalang Forest is nearly 10,000' and that of the Simoling Forest is not much less. The rock is granite throughout. The slope in both Forests is steep, between 30° and 40° and the aspect is north or N. N. West.

*Rate of Growth and Size.*—The trees are of fair size both in the Barunalang and Simoling Forests. A tree in the last named Forest tract had a girth of 17' and a height of 120'. The rate of growth is slow upon the whole, the probable cause being the steep slope of the Forest. The following stumps were measured:—

|      |               |           |                      |
|------|---------------|-----------|----------------------|
| (1.) | Girth 5' 10½" | rings 255 | } Barunalang Forest. |
| (2.) | " 7' 0"       | " 219     |                      |
| (3.) | " 8' 5"       | " 196     |                      |
| (4.) | " 8' 6"       | " 248     |                      |
| (5.) | " 9' 7"       | " 166     | Simoling Forest.     |

The growth is slow, a first class tree 6' in girth being 156, and a second class tree 116 years old.

There is a great deal of Deodar between Simoling and Riba, and below the fields of Chuen and Batto Dogri, which like Simoling, occupy the top of a terrace. But from what we saw, and from information obtained on the spot, the whole or the greater part of this Deodar appears to be gnarled and stunted, similar to the belt of Forest described above Purbani. Higher up, and in localities more difficult of access, the trees are well grown.

*General Remarks.*—The good Forests still remaining in the localities here described, may be estimated to cover about 200 acres, which, at 5 first class trees per acre, would give 1,000 first class trees. This estimate is probably not too high, if all localities are taken into account. Timber has been removed by two slides from the Barunalang Forest. In the Simoling Forest a large number of trees has been felled, but only a small proportion removed. The only practicable slide is down the bed of a nullah of which the road crosses the head. Those logs which could not be rolled down this slide, have been left lying. The trees were felled a few years ago, and hitherto the large quantity of outlying timber has been preserved from fire; but should a fire enter the Forest, it is to be feared that the standing trees, as well as those felled, will be destroyed. The felled timber should be cleared away as soon as possible.

#### FORESTS BETWEEN RIBA AND RISPA.

No. 62—63. *Locality.*—The Forests between Riba and Rispa are very extensive, but, with few exceptions, of little value. The Cherang Garang divides them into two unequal parts. To the east of this stream Deodar is found only on the slope of the hill below the granite cliffs which rise above. This locality is called the Solling Forest. To the west the precipice approaches the river, and Deodar is found on a sloping terrace above this first step, and also further west, where the lower precipice ceases at the foot of the main line of rocks. These Forests are called the Ralda Forests. On the lower part of the slope, along the river, *Pinus Gerardiana* is the principal tree.

*Soil, slope, aspect.*—Grey schist appears only close to the river, higher up the rock is granite. Some of the best trees found in Survey 62, were between huge granite boulders. Survey 63 was on the first terrace above the cliffs, opposite the village of Akpa. Here are traces of old cultivation, but the terraces are almost obliterated.

*Size of trees.*—The first class trees in No. 62 average 80' in height; one was measured 11' in girth and 110' in length. In No. 63 the size is smaller, between 60' and 80'. All trees are branched nearly to the ground, but straight trees are found high up in localities somewhat difficult of access; near the river all Deodar trees are gnarled and have divided stems, as described before. On the 4th October we visited the Solling Forest, east of the Cherang Garang. At a distance, the trees looked well, because those branches which had taken the lead, were straight and had well formed pyramidal heads. But on examination we found in the whole Forest only three regularly shaped trees. Most trees divide into a number of limbs at different heights, in a few instances as high up as 15 feet. The causes of this are several. In some instances, snow or ice may break off the tops; in others, the top may wither from natural causes, but by far the most frequent cause of this irregular growth is the lopping off branches or the tops of the tree. Deodar has the peculiarity of throwing outside shoots after the main stem has been felled within a certain distance from the ground, and thus the old stump of a tree is often surrounded by a complete circle of large side branches.

These forests can hardly be reckoned as at present available, the stock of timber may be 1,000 first class trees at the outside.

#### TEEDONG FORESTS.

No. 64. *Locality.*—The Teedong stream joins the Sutlej from the South East. A portion of the lower slope of the hills on its left bank is covered with Deodar for the first three or four miles. We examined the Forest as far as the Doba Garang. Near the river the hills are covered with *Pinus Gerardiana*, but between this and a precipice of rock above, a considerable quantity of Deodar is found. The tree also grows along this stream and on the hill side beyond opposite the village of Tangi, and a small quantity grows in ravines on the right bank of the Teedong Stream. The two sides of the ridge facing the Doba Garang offer a remarkable instance of the influence of the aspect on the vegetation. The North West side is covered with Deodar, the South East side is perfectly barren.

*Soil, slope, aspect.*—The slope of the forest surveyed varied from 35° to 40° with a northerly aspect. The rock was a hard dark grey quartzose schist. In a few places cultivation terraces, almost obliterated, were observed. The precipice above being granite, a few boulders of that rock are found below.

*Rate of growth, size of trees.*—The trees in the Forest surveyed were well shaped but covered with side branches to the ground, and the stems tapering quickly. The average height of 1st class trees was 50' to 70'. The largest tree measured had a girth of 11' and a height of 80'. A felled tree was 75' long and measured 9' at the butt end.

The average of seven trees, the rings of which were counted, gave 130 years as the age of a tree 6' in girth, and 91 years as the age of a tree 4' 6" in girth.

Near the village of Rispa and in the neighbourhood of the Teedong stream, the Deodars were gnarled and had crooked and divided stems, apparently caused by lopping the top and branches for litter, poles, shingles, planks and other purposes. In the tract surveyed the large proportion of dead trees was remarkable. In other parts of the Forest, a still larger number was observed, yet the Forest was not overcrowded. This fact seems to indicate peculiarities either of soil or climate, unfavourable to a healthy development of the trees.

*General Remarks.*—It is reported, that the Deodar localities above the Doba Garang are at present unworkable, on account of a steep precipice between them and the river. Between this stream and the mouth of the Teedong, three slides were examined. They are all in favourable localities, and it is stated, that the timber is sent down without much breakage. It is reported that, altogether, 272 trees have been felled in these Forests. Some timber has been felled for sale in the district. We saw a granary constructed of Deodar, 10' x 6' made of timber lately cut in the Forest, and were told, that it would sell for about Rs. 15 at Morung, the first large village in the treeless country beyond the Teedong river. These granaries are put together in the Forest, and taken to pieces for removal. The value of these Teedong Forests for export is not great. The localities producing good trees above and below the Doba Garang may be estimated at not more than 200 acres, which, at three first class trees to the acre, would only give 600 trees above 6' in girth.

| No. | Date.  | Name of Officers conducting the Survey.         | Locality.                                             | DEODAR                 |                                        |                                                    |                     |        | AREA SURVEYED. |             |               | TREES PER ACRE |              | REMARKS.                                           |
|-----|--------|-------------------------------------------------|-------------------------------------------------------|------------------------|----------------------------------------|----------------------------------------------------|---------------------|--------|----------------|-------------|---------------|----------------|--------------|----------------------------------------------------|
|     |        |                                                 |                                                       | First class above 6 ft | Second class $4\frac{1}{2}$ ft to 6 ft | Third class $1\frac{1}{2}$ ft to $4\frac{1}{2}$ ft | Fourth class, small | Stumps | Length in ft.  | Width in ft | Area in acres | First class    | Second class |                                                    |
| 65  | Sept 7 | Dr J L Stewart                                  | Lipi Forest ...                                       | 39                     | 34                                     | 6                                                  | ...                 | 12     | 702            | 200         | 3'22          | 12'11          | 10'56        |                                                    |
| 66  | "      | "                                               | Jangi Forest ...                                      | 10                     | 11                                     | very                                               | few                 | 27     | 546            | 200         | 2'50          | 4'00           | 4'40         |                                                    |
| 67  | "      | "                                               | Manda Forest ...                                      | 20                     | 19                                     | "                                                  | "                   | 29     | 546            | 200         | 2'50          | 8'00           | 7'00         |                                                    |
| 68  | "      | "                                               | Bangrang Forest...                                    | 6                      | 7                                      | ...                                                | ...                 | 10     | 390            | 100         | 0'89          | 6'74           | 7'87         |                                                    |
| 69  | "      | "                                               | " " ...                                               | 9                      | 12                                     | 9                                                  | ...                 | 18     | 663            | 200         | 3'04          | 2'96           | 3'25         |                                                    |
| 70  | Sept 8 | Dr Stewart ...                                  | Skyamdangdang Forest above Akpa                       | 14                     | 8                                      | 10                                                 | very few            | 20     | 950            | 100         | 2'18          | 6'42           | 3'67         |                                                    |
| 71  | "      | "                                               | "                                                     | 16                     | 11                                     | 12                                                 | "                   | 19     | 640            | 100         | 1'47          | 10'88          | 7'48         |                                                    |
| 72  | Oct 5  | Dr Brandis ...<br>Dr Stewart ...<br>Capt E Wood | Kashang Forest left bank of stream..                  | 143                    | 116                                    | 110                                                | 141                 | ...    | 2500           | 200         | 11'48         | 12'46          | 10'10        |                                                    |
| 73  | "      | "                                               | Kashang Forest right bank of stream ...               | 40                     | 46                                     | 51                                                 | 16                  | 14     | 800            | 250         | 4'59          | 8'71           | 10'02        | P Excelsa, 6<br>P Gerardiana, 5<br>Deodar dead, 23 |
| 74  | "      | "                                               | "                                                     | 115                    | 231                                    | 46                                                 | 105                 | 80     | 3300           | 250         | 18'94         | 6'07           | 12'20        | P Excelsa, 3<br>Deodar dead, 6                     |
| 75  | "      | "                                               | "                                                     | 59                     | 52                                     | 12                                                 | 39                  | 40     | 800            | 250         | 4'59          | 12'85          | 11'33        | P Excelsa, 2<br>Deodar dead, 26                    |
| 76  | Sept 8 | Dr Stewart ...                                  | At the head of the slide west of the Kashang river .. | 16                     | ...                                    | ...                                                | ...                 | 6      | 290            | 100         | 6'66          | 24'24          | ...          | P Excelsa, 1<br>Deodar dead, 8                     |

#### LIPI AND JANGI FORESTS.

Nos. 65—69. *Locality, &c.*—The highest available Deodars on the Sutlej are those stretching along the right bank of the Teti or Pijur, one of its affluents, from opposite the town of Lipi to its junction with the Sutlej 5 miles below. The forests here consist chiefly of more or less compact strips and patches on the steep sides of the range which skirts the Teti on the south-west. They are of similar character throughout, and are known by the names—passing downwards—of Lipi, Changrang, Bangrang and Manda; one small patch of forest, called Skirang, lies on a tolerably level spot close to the Teti, under the Bangrang Forest and Zuzhang, a dogri of Jangi, but with this exception, none of the Deodar is on level ground.

Surveys 65—69 were made across the slope of the hill in various parts of these forests, from the lowest, which is just above the junction of the Teti with the Sutlej, to nearly opposite Lipi.

*Aspect, &c.*—The aspect of all of these forests is nearly north-north-east, and the slope varies from  $35^{\circ}$ — $40^{\circ}$ . The rock is a grey schist, and the soil generally very scanty. The surface is arid and sparsely covered with trees, and almost destitute of shrubby and herbaceous vegetation. The ravines are occasionally rather rocky, but on the whole not unfavourable for the formation of slides. No traces of forsaken cultivation were observed.

*Character of trees, &c.*—*Pinus Gerardiana* exists in considerable proportion all over, and is almost the only tree here associated with Deodar. The latter are fairly symmetrical. Their size, however, is small, and they generally branch low on the trunk. One tree with a girth of 19' 6" was measured, the average of first class trees being 2—3 logs each, rarely more. The proportion of dead trees is moderate, and there are occasional traces of jungle-fires, although the Zemindars declare that there has been no setting fire to the grass since the issue of a prohibitory order three years ago.

*General Remarks.*—Within the last two or three years, since the pressure for timber became great, there has been a good deal of felling in all the better parts of these forests, at least eight regular slides being in existence; and most of the parts where felling has been carried on, have had as many good trees taken as can be spared. In the Lipi Forests 180, and in the Tangi Forests 215 trees are reported to have been felled in 1863; no definite estimate can be formed of the resources remaining.

Below the junction of the Teti with the Sutlej lies the exceedingly sparse forest of Pela, in which there is almost no Deodar, and downwards to Jangi and for some distance below, there are only a few scattered Deodars; about  $1\frac{1}{2}$  mile from Jangi occurs the Tikri Forest which is of small extent, and in which the first class trees are rarely over 2—2½ logs each. Mr. Arratoon has felled a few trees in it. Still further down lies the Kurti Forest in a bay between two spurs separating it from Tikri above and Skyamdangdang below. This is of considerable extent, from 400 to 500 acres, but the Deodars are for the most part thinly scattered (mixed with *Pinus Gerardiana*) and as the slope is low, the ground rocky, and the best trees a good way from the Sutlej, no systematic felling has been carried on.

#### SKYAMDANGDANG FOREST, ABOVE AKPA.

Nos. 70—71. *Locality*.—The right or north side of the Sutlej valley between the bend of the river above Rispa and the Kashang valley is more barren than the opposite side; on the lower slopes are scattered a good deal of *Pinus Gerardiana* and Deodar trees with divided and gnarled stems, and higher up small tracts covered with well-grown Deodar are found, but no continuous forest. The surveys 70 and 71 were made near the road leading from Akpa to Jangi, high up on some ravines, which come down from the west side of the spur that runs towards the bed of the river. The slope here was  $30^\circ$ , the aspect south-east, and the rock schist with fair soil. Another good Deodar locality was examined on our way from Rarang village to join the road over the Werang pass, where it descends into the Kashang valley. We left the road from Rarang to Pangli at the Topan-garang, and after passing some gnarled and mutilated trees, came upon a considerable number of well-grown Deodars scattered on a steep slope of the hill, on grey quartzose schist. A large tree had been felled with a diameter of 5' 1", with the following number of rings on two inches—19 near the centre, 47 half way between centre and circumference, 46 near circumference. This would give an average of 18 rings per inch, or for a radius of  $30\frac{1}{2}$  inches a probable age of 549 years. This would correspond to 107 years for a girth of 6' and 74 years for a girth of 4' 6". This tree had grown on a slope inclined about  $30^\circ$  with an eastern aspect.

A remarkable fact deserves notice. A large proportion of the Deodar trees observed between Rarang and the Kashang valley have flat tops. This is caused by the terminal shoot withering, and no side branch taking its place. Tabulated Deodars are frequent near Simla and in other localities, but they are upon the whole scarce in Kunawur. Winds, snow or the nature of the soil may be the cause of this peculiarity in the growth of the trees. In the Akpa Forests 115 trees are stated to have been felled in 1863.

#### KASHANG FORESTS.

Nos. 72—76. *Locality*.—The Kashang river joins the Sutlej between the villages of Rarang and Pangli. Deodar localities are found on the slopes on both sides of this river, commencing about half a mile above its junction with the Sutlej and extending upwards of two miles. The larger quantity of Deodar is on the west bank. The surveys were made along the road leading from the Werang Pass to Pangli. The trees in No. 72 were counted on the descent to the river from the Werang Pass, Nos. 73, 74, 75 were taken on the opposite side in ascending towards Pangli after crossing the stream, and No. 76 was surveyed along the road from Rarang to Pangli.

*Soil, slope, aspect*.—The slope of the tracts surveyed varies from  $25^\circ$  to  $40^\circ$ , the aspect from south-west to north-east. But as the valley is narrow, the influence of the aspect is of little moment. The rock on the left side is a hard grey schist, on the opposite side the schist is much concealed under granite boulders, and higher up the rock is entirely granitic.

*Rate of growth, size, &c.*—The shape and size of the trees is upon the whole very good. They are tall and moderately branched. Two large trees, both on the right side of the valley, were measured, the top of one was withered and broken off, this was 126' high, with a girth of 19' 6", the other was 135' high, with a girth of 17'; on the left side the first class trees average 10' in girth, and 120' in height. On the right side (No. 70) the survey passed three places cleared by avalanches from the top of the hill to the bed of the stream. Here the trees were gnarled, without any top, but with wide-spreading branches along the slope of the hill. In the Forest adjoining these avalanche paths, the stems of a number of trees were irregular near the ground, but had formed straight and well-shaped tops. There was no sign of cutting or lopping, so that possibly at some former period, avalanches passed over these trees and crushed them, but they recovered, when, owing to some unknown reason, the masses of snow took another path downwards.

*General Remarks*.—Some timber has been cut in this Forest by the Road Engineers and by villagers, hence the stumps counted along the line of survey. At present the timber of this Forest is not available for export, unless it is converted into portable scantling, or an artificial slide be made along the Kashang, which seems difficult. There is also a slide to the Sutlej at the opening of the valley on the west side, down which some timber has been thrown from the Deodar localities higher up. The trees registered in No. 76 were counted at the head of this slide, and the number of trees felled in this locality is reported at 93. The area of the Kashang Forest may be estimated at 500 acres, which, with an average stock of eight first class trees per acre, would give 4,000 trees.

| No. | Date.   | Name of Officers conducting the Survey. | Locality.                                           | DEODAR.              |                         |                         |                      |         | AREA SURVEYED.  |                | Area in acres. | TREES PER ACRE. |               | REMARKS.              |
|-----|---------|-----------------------------------------|-----------------------------------------------------|----------------------|-------------------------|-------------------------|----------------------|---------|-----------------|----------------|----------------|-----------------|---------------|-----------------------|
|     |         |                                         |                                                     | First class above 6' | Second class, 4½' to 6' | Third class, 1½' to 4½' | Fourth class, small. | Stumps. | Length in feet. | Width in feet. |                | First class.    | Second class. |                       |
| 77  | Oct. 7  | Dr. Braudis ...<br>Dr. Stewart ...      | Forest between Kashang and Chini. (No survey)       |                      |                         |                         |                      |         |                 |                |                |                 |               |                       |
| 78  | "       | "                                       | Rogi Forest near Rogi Village upwards on north side | 140                  | 90                      | 175                     | 215                  | 80      | 1800            | 200            | 8.26           | 16.95           | 10.86         | P Excelsa, 8 Dead, 17 |
| 79  | "       | "                                       | The same downwards on south side                    | 109                  | 125                     | 139                     | 112                  | 70      | 1400            | 200            | 6.43           | 16.97           | 19.44         | P Excelsa, 4 Dead, 13 |
| 80  | "       | "                                       | Kastiarang ...                                      | 170                  | ...                     | ...                     | ...                  | 72      | ...             | ...            | about 81       | 2.12            | —             | Logs unremoved, 94    |
| 81  | Sept. 2 | Dr. Stewart ...                         | Runang Forest ...                                   | 45                   | 26                      | 177                     | ...                  | 6       | 1300            | 100            | 2.98           | 15.10           | 8.72          | Dead, 36              |

#### DEODAR LOCALITIES BETWEEN THE KASHANG VALLEY AND CHINI.

No. 77. No Survey. On turning round the cliffs which bound the Kashang Valley to the west, Deodar ceases almost entirely, and *Pinus Gerardiana* takes its place, scattered over a wide extent of barren slopes, with here and there some gnarled and mutilated Deodar trees. There is a large quantity of fine timber of good size and shape in the Malgun Valley above Pangli, above the junction of the two branches of the Malgun River, especially on the south branch. From this Forest the timber can only be made available by conversion on the spot. Between the Malgun River and Chini, there are no compact Deodar Forests, nor has any cutting by contractors been carried on, except in the neighbourhood of Teling, where 333 trees are reported to have been felled, and at Chini, where 74 are reported. The Deodar, however, is common all along (mixed largely with *P. Gerardiana*), but the trees, even where of large girth, are mostly short, gnarled and branching, the distance from the river is generally considerable, and the slopes not favourable. There are also several villages in this tract, and the timber is open to supply the necessities of the inhabitants for house building, &c. The trees entered in Appendix III under this number were measured by Dr. Stewart along the road between the Malgun River and Chini.

#### FORESTS BETWEEN CHINI AND MIRU.

Nos. 78—81. *Locality.*—Between Chini and Urni, Deodar is found scattered at a certain elevation on the cliffs of Gneiss, and the steep slopes, which in this part form the north side of the Sutlej Valley. Along the road from Chini to Rogi, and near the last named village, the trees are mostly gnarled and have divided trunks. In the large majority of cases this must be ascribed to the habit of the villagers cutting the tops and branches for agricultural and domestic purposes. Some trees also were observed with flat tops, this may be caused by the snow or wind. The only remaining Forests of any value are, one near the village of Rogi, on the west side of the small stream, between the old and new roads, and another called the Runang Forest on both sides of the new road, east of the Runang-garang. South-east of the Runang Forest, there were at one time several valuable tracts covered with Deodar, on the steep slope opposite the junction of the Buspa and Sutlej Rivers. But these Forests which may have covered an area of about 3 or 4 acres, have, as far as the present stock and the future reproduction of Deodar is concerned, been almost annihilated. These localities have been worked by Soda Singh, and we saw two of the slides used by him, one above the mouth of the Buspa, from the Kastiarang Forest, the other below, from the tract east of the Runang Forest. In a portion of the Kastiarang Forest, on both sides of the new road, 72 stumps and 94 logs and trees not removed, were counted—a portion of these had been destroyed by fire, which had also injured many standing trees. In the eastern part of the Runang Forest, very few trees remain; the stumps are numerous, indicating a Forest of about five first class trees per acre. No seedlings or small trees were observed. The ground has been cleared at once, and apparently all possibility of a renewal of the Forest has been cut off.

That part of the Runang Forest, which remains intact, is on the slope looking towards the Runang stream, with a south-west aspect, and a slope of about 30°. The soil is plentiful, and not arid. A few moist places are occupied by *Ulmus*, *Acer*, and *Corylus*, otherwise the Forest is composed entirely of Deodars, with a few *Abies Smithiana* and *Pinus excelsa*. The trees are of very good size, with tall stems, which may give more than four logs on an average. Its area may be estimated at about 50 acres, which, at the rate of 15 first class trees, gives upwards of 750 trees available. As far as we could see, the difficulties of rolling the logs into the main river, which have hitherto protected this Forest, might be overcome. This tract should certainly be demarcated, and if a portion of the ground on both sides and above could be included and kept clear of cattle for a few years, the Deodar would probably spread, and the area of the Forest be gradually increased. This might be effected by planting a narrow belt of Deodar round the boundary line, between which and the Forest the ground would probably, after a number of years, be covered with seedlings. The locality seems well suited for the growth of fine Deodar. Survey No. 81 was made through this Forest along the new road.



In the *Rogi Forest* near the village, the trees were counted along two lines, both between the new and old roads, one upwards and one downwards. This forest is on old cultivation terraces. To judge by the probable age of the trees, the fields were abandoned about 250 years ago. The rock is a quartzose schist with mica. The general slope is about 30° and the aspect easterly. The size of trees is fair, but less than in the Runang Forest; average girth 8' height 80'. The side branches are less numerous and smaller than in the forests in the upper part of Kunawur; young deodar is abundant. One tree 9' in girth was 80' high, another measured 12' 1" and 98'; there has been some cutting in this Forest by the inhabitants of the neighbouring villages, and by the Road Department, especially in the lower part. The cliffs below the new road make it impossible to roll logs down to the river unless a passage for the timber is blasted. The rate of growth in this Forest is moderate. From the figures given in the Register of trees measured, it appears that the age of a first class tree in girth 6' may be assumed at 119, and that of a second class tree 4' 6" in girth at 87 years. The area of the forest may be estimated at 50 acres, which at 15 trees per acre would give 750 first class trees in this forest; 249 were actually counted in the portion surveyed.

This forest should be demarcated and carefully preserved.

#### MIRU, CHERGAON, LASTAH, KANDARI, AND OTHER FORESTS ON THE RIGHT BANK OF THE RIVER.

No. 82. No survey. On the right bank of the river below the Runang-gad there are several forests of straggling Deodar, of which some of the more important may be enumerated. None of these were visited.

- (1).—On the east side of the Tsoiling gad, which runs between Urni and Miru, a forest high up the slope; near Miru 91 trees were felled in 1860 and 1862.
- (2).—Above the village of Chergaon.
- (3).—The Lachmi Forest below the Rushnang Station. A slide has been formed by rolling logs down from this forest; it falls into the Sutlej opposite the mouth of the Melgad. 236 trees are reported to have been felled in 1859-60-62.
- (4).—The forests on the Wangar River. In one locality, called the Babee Forest, on the left side of the stream, several hundred trees were felled some years ago; they were rolled and thrown to the bottom of the valley. Though the Wangar River rises considerably in the rains, the bed was found to be too rocky to admit of timber being floated.
- (5).—The Lastah Forest, opposite Nachar. Here 361 trees are reported to have been felled from 1860 to 1862. A quantity of timber was thrown down a steep bed of a torrent, but most of the logs were shattered to pieces.
- (6).—The Kandari Forest on the right side of the valley is supposed to contain a considerable quantity of timber, which, however, could only be removed if cut up on the spot.
- (7).—There is Deodar on the Kach gad, which joins the Sutlej opposite Soongree; above the village of Chikaba opposite Taranda; on the Shorang gad and Rupi gad, which join the main river, the Shorang opposite the Choundeh gad, and the Rupi below. The last is the lowest side valley with Deodar Forests of which we could hear, on the right side of the river in Bussahir.

#### DEODAR LOCALITIES ON BOTH SIDES OF THE ROAD BETWEEN FAGU AND NAGKANDA.

No. 83. No survey. These are as follows arranged according to the territories in which they are situated:—

- (1).—Komharsen. Above the village of Komharsen.
- (2).—Komharsen. The Kadelli Forest on the new road from Nagkanda to Muttianah; on a slope to the north. Annual rings were counted on one tree, the girth was 5' 9" and the number of rings, 93. The size of the trees is good.
- (3).—Komharsen. The Imbri Forest north of the Giri river.
- (4).—Kuental. The Kokrani Forest south of Muttianah, near the old road from Theog to Muttianah.
- (5).—Kuental. The Tikor Forest west of the road from Theog to Muttianah.
- (6).—Theog. The Kaleri Forest on the east side of the road.
- (7).—Theog. Kunli Forest on the west side of the road.
- (8).—Bajee and Madhan. The forests north and north-east of the Shali Peak.
- (9).—Gund. A Forest east of Gund village.

#### CHAOG FOREST.

No. 84, Chaog Forest, 17th October. *Locality*.—This forest occupies the north and north-west slopes, and the sides of a spur thrown out from the Mahassu ridge at Fagu to the south-south-east. The forest commences about 1½ or 1¾ mile below Fagu. The road descends rapidly from the bungalow about 1,200 feet, to a depression or Col in the ridge, where two Buniahs' shops are built. This place called Chaog, gives the name to the forest. The elevation of the bungalow is 8,200'; the houses of Chaog are at about 7,000'. From here the



ridge rises again a few hundred feet. The south-west side is stated to be bare, but the north-west slope is covered almost exclusively with Deodar. The area of Deodar-producing forest may be estimated at between 600 and 800 acres. Proceeding from Chaög along the main road, which traverses the entire length of the forest, a tract is first met, where all trees have been converted into broomsticks by the lopping of side branches for litter. The Rajah of Kuental, in whose territory the forest is situated, allows the Zemindars to cut the branches for this purpose. The trees have, however, been thus mutilated on the outskirts only. Further to the south, is the finest part of the forest. This is reserved for the temple which is in the forest on a small elevation a few hundred yards south of Chaög. The Temple Forest has several years ago been demarcated by pillars of rough stone, which seem to answer well. No one is allowed to cut trees within this boundary line, a few trees only have been felled for repairing the temple. Here the trees are magnificent. On an area of about 10 acres, I counted 400 first class trees, or 40 first class trees per acre. One tree was measured 10'6" in girth and 155' in height, another had a girth 18'3" and was 80' high. A large proportion of the first class trees in this part has a girth of from 8 to 10 feet. These trees do not diminish in girth till high up the stem. One tree, which had been felled, had a butt girth of 8'4" and a girth at 40' of 7'2". Outside the Temple Forest and along the road, which skirts the north-east slope of the hill, a large proportion of the first class trees have been felled. Young trees are springing up in large numbers. Lower down, the slope of the hill is covered with a large extent of rich forest almost untouched, containing trees of good size. At a small temple called the Kalör Deota, the spur divides. Deodar is found in the hollow between the two branches, and on the north side of the northern branch; lower down the hills, the upper part of the slope and the south-east face of the spur are quite barren.

In its present state the Chaög Forest may be estimated to contain upwards of 3,000 first class trees. The rate of growth is not very favourable. The soil is apparently poor, the rock is clay slate, but where forest has been growing for some time, and vegetable mould formed, the soil has apparently improved. I observed in the sections of the larger stumps that the rings near the centre, which were formed while the tree was young, were frequently smaller than those on the outside, which is the reverse of what is usually the case. The stumps on which the rings were counted, were selected as average specimens of good and slow growth in the different parts of the forests visited by me, and yield the following results:—

Total rings of the innermost 4 inches, 35, 67 28, 29; average 40 rings.

Total rings on four inches from the 8th to the 12th inch,—22, 26, 18, 19; average 21 rings.

Age of I class trees 105, 114, 58, 79, 194 years,—average 110 years.

„ II „ 85, 99, 44, 61, 146 „ „ 87 „

The Bunias have the forest at present in their hands. They pay the official who has been placed in charge by the Kuental Rajah, a certain rate according to the girth of each tree felled, and hire sawyers and coolies to carry away the timber. The greater part of the tops and branches are on the spot converted into charcoal, and it is gratifying to find this forest well cleared of inflammable matter. Nearly the whole of the timber now cut, and the charcoal prepared in this forest, is carried to Simla. One man carries as much as 3 cubic feet of timber, weighing upwards of 120 lbs. This forest was for some time leased by Lord William Hay, late Superintendent of Hill States, on account of Government. If its extent were larger, it might be worth while to make a cart road from it to Simla, but its present resources would not justify such an outlay.

#### ROPUR TIMBER DEPOT.

No. 85.—*Ropur Timber Depot*.—(November 5.) This dépôt is at present used only by the Native timber dealers, who collect and raft their timber at Neila, about 30 koss above Ropur, at the great bend of the Sutlej River. This place is situated in the State of Belaspoor, and the Rajah levies one anna on every log of timber rafted. The rate is the same for large and small logs of Deodar and other kinds of timber. To avoid payment of this duty, Mr. Arratoon collects and rafts his timber at Phalan, 5 koss above Anandpoor and 10 koss below Neila. This is in British Territory, in the Hooshiarpoor district, and no duty whatever is levied on the timber collected there. The Native dealers, however, find Neila more advantageous, as rope and bamboos are cheaper there.

The rafts are small. If the logs are large, they contain only from 20 to 40, if small, upwards of 50. Four men go with each raft, each provided with a mussuk or inflated skin. The men engaged in rafting are from different places along the river between Belaspoor and Ropur. They are engaged by contract at from 6 annas to one Rupee per log, according to their size, the owner providing ropes and bamboos which are tied across the logs. The rope is made of *Munj* (*Saccharum* sp.). The passage down from Neila to Ropur, occupies about one month during this time of the year; every night the rafts are moored. During the height of the rains, no floating is possible.

At Neila the timber is captured and collected by mussuk men, who are engaged on monthly pay.

*Drift and Lawaris timber*.—All timber which is found in the river without the mark of a forester, is considered as Lawaris, and as such is the property of the Government of the

territory where it is found. The different Native Chiefs, through whose territories the Sutlej River passes, annually let out the right of collecting this drift timber. In Bussahir the lease is for 5 years and it has been given to Mr. Arratoon for Rs. 700 per annum. The same person has also leased the right of collecting the drift timber in the British Territory under the Deputy Commissioner of Hooshiarpoor for Rs. 700 annually.

Below Bussahir is the British Territory of Kepu (Kotgurh.) Here Surdah has the lease for Rs. 60.

The following are the leases in the territories along the river below Kotgurh :—

|                              | Rs.   |
|------------------------------|-------|
| Komharsen, left bank ... ..  | 270   |
| Shangri, left bank ... ..    | 150   |
| Baji, left bank ... ..       | 350   |
| Mangai, left bank ... ..     | 120   |
| Sukhēt, right bank ... ..    | 1,500 |
| Belaspoor, both banks ... .. | 3,200 |

The aggregate of the amounts paid for these drift timber leases, thus amounts to Rs. 7,050 per annum.

The lessees for Belaspoor have three chowkees with four mussuk men at each chowky, whose pay is about Rs. 6 per mensem, and whose duty it is to examine all logs that pass, and to seize all those which have no mark.

The amounts which are paid for these drift timber leases, show that the outturn of Lawaris timber must be good. The foresters whom I met at Ropur complained that people were in the habit of cutting out marks and putting on theirs, and afterwards claiming the timber. The temptation to dishonest practices on the part of the drift timber lessees is doubtless great. As there will be a considerable quantity of old private timber in the river for the next 3 or 4 years, in addition to the Government timber, some arrangements should be made to place this matter on a satisfactory footing. It may be expedient under the Government Forest Act to frame and pass forest rules for the Punjab, by which the marking of timber and the use of implements for marking timber is prohibited for the Sutlej, and such other rivers in British Territory as may be found necessary, and the management of waif timber generally is put on a regular footing. The assent of the different Chiefs of Native Territories along these rivers to such rules should then, if possible, be obtained, and authority granted by them to the Forest Officer to regulate all drift timber matters and to punish offenders. It will then have to be considered, whether it may not be necessary to lease the right of collecting drift timber in the different Native States. The main objection is the expense, Rs. 7,050 is more than is likely to be covered by the sale of the *bonâ fide* unclaimed timber.

Should the lease be decided upon, then all unmarked timber would be collected at a depôt, say at Neila or Ropur, and monthly notices would be published inviting claimants to prove their claims and to redeem the timber by payment of a share of the outlay incurred. Timber remaining unclaimed would be sold on account of the Forest Department.

*Sale of timber at Ropur.*—Very few logs above 12 feet in length were at the depôt at the time of my visit; the majority did not exceed 10 feet, eight annas per cubic foot is stated to be the usual price for good logs of this length. I was surprised to see a large proportion of small timber, logs split half through, and short pieces shattered on the slides before reaching the river. All these, if Deodar, are said to be saleable, though they may only fetch a few annas, each. From enquiries made and from examining the timber at Ropur, it would seem that the timbers receive the principal injury in the forests and comparatively little on the river. The largest log at the depôt was 20 feet long and had a diameter of 44 inches. It was from the Dippi Forest and the tree was 190 years old. Other logs had a diameter of 4 feet, but were shorter. The logs are hauled up out of the river on a slide formed by two lines of logs about 6' apart. The work is done by hand labour, Rs. 11 being paid for 100 logs, large or small; if very large a few Rupees are added as a present.

Some timber is cut up into sleepers here, these are sent down by water to Philour; a large proportion of the round timber is carted to Umballa, 4 or 5 annas per cubic foot being the usual rate paid. The distance is 35 koss; one cart carries 25 cubic feet, the average size of a large log. Some kail, *P. excelsa* and cheer, *P. longifolia*, is brought down to this place from the Belaspoor Territory; kail sells for 3 annas per cubic foot, as an inferior wood for building and other purposes; cheer is mostly used for the building of large flat-bottomed boats. It stands many years under water and is much stronger than Deodar. I saw two large planks of this timber 30 feet long and 24 inches wide. The bottom of these boats is bent by wetting the timber.

*Former working of the Sutlej Forests.*—From the localities in the Komharsen and Baji Territories, timber was sent down to the Sutlej about 15 years ago. About 1850, Soda Singh commenced to cut timber in Kunawur, at that time he paid two annas a tree to the Rajah. Soda Singh had formerly been employed in cutting timber in the Mahassu Forest. Mr. Arratoon commenced several years afterwards, and has since then been the principal trader on the Sutlej River.

## APPENDIX II.

*Abstract Statement of the Forest Valuation Surveys of Bussahir, showing the trees estimated to be available in the different Divisions and Districts*

| No. of Forest Survey. | FOREST.                                                      | OBSERVED.    |               |         |                | ESTIMATED.     |                           | WORKING DIVISION.                                                                          |  |
|-----------------------|--------------------------------------------------------------|--------------|---------------|---------|----------------|----------------|---------------------------|--------------------------------------------------------------------------------------------|--|
|                       |                                                              | First Class. | Second Class. | Stumps. | Area in Acres. | Area in Acres. | No. of First Class trees. |                                                                                            |  |
|                       | A. Lower Sutlej Forests, left side.                          |              |               |         |                |                |                           |                                                                                            |  |
| 1                     | Forests below                                                |              |               |         |                |                |                           | I Division, Nachar and Dippi Forests. 3,000 trees may be felled in 1865.                   |  |
|                       | Soongree ...                                                 | ...          | ...           | ...     | ...            | Not estimated  |                           |                                                                                            |  |
| 2                     | Soongree ...                                                 | 53           | 18            | ...     | 2.87           | 20             | 600                       |                                                                                            |  |
| 3                     | " ...                                                        | 121          | 84            | ...     | 4.83           |                |                           |                                                                                            |  |
| 4                     | East Nachar ...                                              | 341          | 102           | ...     | 6.56           | 200            | 4,000                     |                                                                                            |  |
| 5                     | " ...                                                        | 43           | 54            | ...     | 1.87           |                |                           |                                                                                            |  |
| 6                     | West Nachar ...                                              | 91           | 111           | 6       | 3.21           |                |                           |                                                                                            |  |
| 7                     | " ...                                                        | 114          | 85            | ...     | 3.67           |                |                           |                                                                                            |  |
| 8                     | East Nachar ...                                              | 82           | 18            | 44      | 2.30           | Not estimated. |                           |                                                                                            |  |
| 9                     | Dippi ...                                                    | 4            | 4             | 10      | 1.72           |                |                           |                                                                                            |  |
| 10                    | " ...                                                        | 18           | 48            | 34      | 6.89           |                |                           |                                                                                            |  |
| 11                    | " ...                                                        | 19           | 43            | 151     | 8.61           | 160            | 1,600                     | II Division, Punung and Phinla Forests. 3,000 trees may be felled in 1866.                 |  |
| —                     | Kusthaland Ramni                                             | ...          | ...           | ...     | ...            |                |                           |                                                                                            |  |
| 12                    | Janee ...                                                    | 65           | 47            | 5       | 22.04          | 300            | 3,000                     |                                                                                            |  |
| 13                    | " ...                                                        | 38           | 21            | 3       | 8.95           |                |                           |                                                                                            |  |
| 14                    | " ...                                                        | 107          | 93            | 7       | 14.14          | Not estimated  |                           |                                                                                            |  |
| 15                    | Punung ...                                                   | 10           | 23            | 125     | 18.09          |                |                           |                                                                                            |  |
| 16                    | " ...                                                        | 6            | 17            | 63      | 6.89           | 300            | 3,000                     |                                                                                            |  |
| 17                    | Phinla ...                                                   | 37           | 34            | 45      | 7.57           |                |                           |                                                                                            |  |
| 18                    | " ...                                                        | 95           | 69            | ...     | 5.74           | Not estimated  |                           |                                                                                            |  |
| 19                    | " ...                                                        | 12           | 6             | ...     | 10.10          |                |                           |                                                                                            |  |
| —                     | Jumpan ...                                                   | ...          | ...           | ...     | ...            | 300            | 3,000                     | III and IV Divisions, Kilba and Kunai Forests. 6,000 trees may be felled in 1867 and 1868. |  |
| 20                    | Wasankan ...                                                 | 40           | 26            | 1       | 2.87           |                |                           |                                                                                            |  |
| 21                    | Chokro ...                                                   | 23           | 17            | 35      | 20.66          | 300            | 6,000                     |                                                                                            |  |
| 22                    | Kiuden ..                                                    | 83           | 75            | 9       | 5.05           |                |                           |                                                                                            |  |
| 23                    | " ..                                                         | 19           | 11            | ...     | 0.33           | 300            |                           |                                                                                            |  |
| 24                    | " ...                                                        | 57           | 33            | 7       | 1.60           |                |                           |                                                                                            |  |
| 25                    | " ...                                                        | 35           | 57            | ...     | 5.74           | Not estimated  |                           |                                                                                            |  |
| 26                    | Kilba ...                                                    | 22           | 71            | 115     | 17.90          | Not estimated  |                           |                                                                                            |  |
| 27                    | Kunai ...                                                    | ...          | ...           | ...     | ...            | ...            | ...                       |                                                                                            |  |
| 27                    | Kumkumi ...                                                  | ...          | ...           | ...     | ...            | ...            | ...                       |                                                                                            |  |
| 27                    | Rapung or Sapni                                              | ...          | ...           | 410     | 14.68          | 200            | 2,000                     |                                                                                            |  |
|                       | Total                                                        | 1,535        | 1,467         | 1,070   | 199.88         | 1,480          | 20,200                    |                                                                                            |  |
|                       | Add Forests not estimated and scattered Deodar, say ...      | ...          | ...           | ...     | ...            | ...            | 9,800                     |                                                                                            |  |
|                       | Total trees available in Lower Sutlej Forests, left side ... | ...          | ...           | ...     | ...            | ...            | 30,000                    |                                                                                            |  |
|                       | B. Buspa River Forests.                                      |              |               |         |                |                |                           |                                                                                            |  |
| 28                    | Churi ...                                                    | 18           | 19            | ...     | 4.59           | 120            | 600                       | V Division, Buspa Forests. 3,000 trees may be felled in 1869.                              |  |
| 29                    | " ...                                                        | 12           | 13            | ...     | 1.60           |                |                           |                                                                                            |  |
| 30                    | Buru ...                                                     | 42           | 38            | ...     | 6.89           | 300            | 1,500                     |                                                                                            |  |
| 31                    | " ...                                                        | 75           | 102           | ...     | 13.20          |                |                           |                                                                                            |  |
| 32                    | Rapur ...                                                    | 29           | 23            | 21      | 5.05           |                |                           |                                                                                            |  |
| 33                    | Jungari...                                                   | 10           | 17            | 47      | 3.21           |                |                           |                                                                                            |  |
| 34                    | " ...                                                        | 42           | 68            | ...     | 4.59           | Not estimated  |                           |                                                                                            |  |
| 35                    | Shoang ...                                                   | 40           | 50            | 41      | 7.80           |                |                           |                                                                                            |  |
|                       | Carried over ...                                             | 268          | 330           | 109     | 46.93          | 420            | 2,100                     |                                                                                            |  |

## Abstract Statement of Forest Valuation Surveys,—continued.

| No. of Forest Survey. | FOREST.                                                | OBSERVED.    |               |         |                | ESTIMATED.                      |                           | WORKING DIVISION.                                                                                                 |
|-----------------------|--------------------------------------------------------|--------------|---------------|---------|----------------|---------------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------|
|                       |                                                        | First Class. | Second Class. | Stumps. | Area in Acres. | Area in Acres.                  | No. of First Class trees. |                                                                                                                   |
|                       | Brought forward...                                     | 268          | 330           | 109     | 46.93          | 420                             | 2,100                     | V Division, Buspa Forests. 3,000 trees may be felled in 1869.                                                     |
| 36                    | Chasoo ..                                              | }            | ...           | ...     | ...            | 200                             | 1,000                     |                                                                                                                   |
| "                     | Chidu ..                                               |              |               |         |                |                                 |                           |                                                                                                                   |
| "                     | Limsantang ..                                          |              |               |         |                |                                 |                           |                                                                                                                   |
| 37                    | Serinché ..                                            | 7            | 22            | 27      | 7.57           | A few hundred first class trees |                           |                                                                                                                   |
| 38                    | " ..                                                   | 7            | 23            | 76      | 9.18           |                                 |                           |                                                                                                                   |
| 39                    | " ..                                                   | 1            | 4             | 11      | 3.21           |                                 |                           |                                                                                                                   |
| 40                    | Rakcham ..                                             | 22           | 17            | 16      | 1.38           | Not estimated                   |                           |                                                                                                                   |
| 41                    | Yak Bursari ..                                         | 30           | 58            | 44      | 20.66          |                                 |                           |                                                                                                                   |
|                       | Barra Bursari ..                                       | ...          | ...           | ...     | ...            |                                 |                           |                                                                                                                   |
|                       | Total of Buspa Forests ..                              | 335          | 454           | 283     | 88.93          | 620                             | 3,100                     |                                                                                                                   |
|                       | Add Forests not estimated and scattered Deodar, say .. | ...          | ...           | ...     | ...            | ...                             | 2,900                     |                                                                                                                   |
|                       | Total of Buspa Forests ..                              | ...          | ...           | ...     | ...            | ...                             | 6,000                     |                                                                                                                   |
|                       | C. Upper Sutlej Forests, left side                     |              |               |         |                |                                 |                           |                                                                                                                   |
| 42                    | Ralli and Rakcham ..                                   | ...          | ...           | ...     | ...            | Not estimated                   |                           | VI Division, Ralli, Mebar and Barung Forests. 3,000 trees may be felled in 1870.                                  |
| 43                    | Mebar ..                                               | 19           | 36            | 8       | 3.67           | 350                             | 2,500                     |                                                                                                                   |
| 44                    | " ..                                                   | 28           | 26            | ...     | 4.13           |                                 |                           |                                                                                                                   |
| 45                    | " ..                                                   | 60           | 90            | 3       | 8.26           |                                 |                           |                                                                                                                   |
| 46                    | " ..                                                   | 48           | 11            | 7       | 5.51           |                                 |                           |                                                                                                                   |
| 47                    | " ..                                                   | 30           | 33            | 48      | 8.72           | 150                             | 1,000                     | VII Division, Poari Forests belong to a Wazir Surjeet Sing, (if leased, 3,000 trees may be felled in 1871).       |
| 48                    | Barung ..                                              | 136          | 136           | 12      | 18.59          |                                 |                           |                                                                                                                   |
| 49                    | Stalimpi ..                                            | 77           | 26            | 6       | 12.40          | Not estimated                   |                           |                                                                                                                   |
| 50                    | Tanglin ..                                             | ...          | ...           | ...     | ...            | 200                             | 1,500                     |                                                                                                                   |
| 51                    | Shunalang ..                                           | 20           | 39            | 81      | 5.86           |                                 |                           |                                                                                                                   |
| 52                    | " ..                                                   | 9            | 50            | 5       | 8.95           |                                 |                           |                                                                                                                   |
| 53                    | Kanunki ..                                             | 11           | 33            | 22      | 9.18           | 200                             | 1,000                     | VIII Division, Purbani, Riba and Rispa Forests, and Forests on the right bank, 3,000 trees may be felled in 1872. |
| 54                    | Shangrang ..                                           | 36           | 57            | ...     | 4.59           |                                 |                           |                                                                                                                   |
| 55                    | Shangrang Kanarang ..                                  | 102          | 167           | ...     | 21.35          |                                 |                           |                                                                                                                   |
| 56                    | Yolinge ..                                             | 50           | 38            | 7       | 8.95           | 200                             | 1,000                     |                                                                                                                   |
| 57                    | Rauli Phutang ..                                       | 52           | 82            | 5       | 8.81           |                                 |                           |                                                                                                                   |
| 58                    | " ..                                                   | 24           | 16            | 4       | 4.96           | 200                             | 1,000                     |                                                                                                                   |
| 59                    | Baru nalang ..                                         | 53           | 109           | 78      | 19.28          |                                 |                           |                                                                                                                   |
| 60                    | Simoling ..                                            | 31           | 110           | 49      | 6.89           | ...                             | 1,000                     |                                                                                                                   |
| 61                    | " ..                                                   | 38           | 78            | 12      | 17.21          |                                 |                           |                                                                                                                   |
| 62                    | Ralda ..                                               | 41           | 120           | 8       | 17.22          | 200                             | 600                       |                                                                                                                   |
| 63                    | " ..                                                   | 22           | 38            | 1       | 4.02           |                                 |                           |                                                                                                                   |
| 64                    | Tinala ..                                              | 35           | 95            | 69      | 10.91          |                                 |                           |                                                                                                                   |
|                       | Total                                                  | 922          | 1,390         | 425     | 209.46         | 1,300                           | 8,600                     |                                                                                                                   |
|                       | Total Upper Sutlej Forests, left side                  | ...          | ...           | ...     | ...            | ...                             | 8,600                     |                                                                                                                   |
|                       | Add Tanglin Forests and scattered Deodar (say) ..      | ...          | ...           | ...     | ...            | ...                             | 9,400                     |                                                                                                                   |
|                       | Total                                                  | ...          | ...           | ...     | ...            | ...                             | 18,000                    |                                                                                                                   |

## Abstract Statement of Forest Valuation Surveys,—continued.

| No. OF FOREST SURVEY. | FOREST.                                       | OBSERVED.    |               |         |                | ESTIMATED.               |                           | WORKING DIVISION.                                 |
|-----------------------|-----------------------------------------------|--------------|---------------|---------|----------------|--------------------------|---------------------------|---------------------------------------------------|
|                       |                                               | First Class. | Second Class. | Stumps. | Area in Acres. | Area in Acres.           | No. OF FIRST Class trees. |                                                   |
|                       | D. Suttlej Forests, right side.               |              |               |         |                |                          |                           |                                                   |
| 65                    | Lipi ... ..                                   | 39           | 34            | 12      | 3.23           | Not estimated            |                           | VIII Division, 3,000 trees may be felled in 1872. |
| 66                    | Jangi ... ..                                  | 10           | 11            | 27      | 2.51           |                          |                           |                                                   |
| 67                    | Manda ... ..                                  | 20           | 19            | 29      | 2.51           |                          |                           |                                                   |
| 68                    | Bangrang ...                                  | 6            | 7             | 10      | 0.89           |                          |                           |                                                   |
| 69                    | " ... ..                                      | 9            | 12            | 18      | 3.06           |                          |                           |                                                   |
| 70                    | Akpa ... ..                                   | 14           | 8             | 20      | 2.18           | Not available at present |                           |                                                   |
| 71                    | " ... ..                                      | 16           | 11            | 19      | 1.47           |                          |                           |                                                   |
| 72                    | Kashang, left side                            | 143          | 116           | ...     | 11.48          |                          |                           |                                                   |
| 73                    | Kashang, right side                           | 40           | 46            | 14      | 4.59           |                          |                           |                                                   |
| 74                    | " ... ..                                      | 115          | 231           | 80      | 18.93          |                          |                           |                                                   |
| 75                    | " ... ..                                      | 59           | 52            | 40      | 4.59           |                          |                           |                                                   |
| 76                    | " ... ..                                      | 16           | ...           | 6       | 0.66           |                          |                           |                                                   |
| 77                    | Kashang to Chini                              | ...          | ...           | ...     | ...            | Not estimated            |                           |                                                   |
| 78                    | Rogi ... ..                                   | 140          | 90            | 80      | 8.27           | 50                       | 750                       |                                                   |
| 79                    | " ... ..                                      | 109          | 125           | 70      | 6.43           |                          |                           |                                                   |
| 80                    | Kastiarang ...                                | 170          | ...           | 72      | 80.00          | Not estimated            |                           |                                                   |
| 81                    | Runang ... ..                                 | 45           | 26            | 6       | 2.98           | 50                       | 750                       |                                                   |
| 82                    | Miru to Kandari..                             | ...          | ...           | ...     | ...            | Not estimated            |                           |                                                   |
|                       | Total                                         | 951          | 788           | 503     | 153.78         | 100                      | 1,500                     |                                                   |
|                       | Add scattered trees and forests not estimated | ...          | ...           | ...     | ...            | ...                      | 2,500                     |                                                   |
|                       | TOTAL                                         | ...          | ..            | ...     | ...            | ...                      | 4,000                     |                                                   |

## SUMMARY.

| MAIN DIVISIONS.                 | WORKING DIVISIONS. | OBSERVED.    |               |         |                | ESTIMATED No. OF FIRST CLASS TREES. | TREES REPORTED TO HAVE BEEN FELLED. |  |
|---------------------------------|--------------------|--------------|---------------|---------|----------------|-------------------------------------|-------------------------------------|--|
|                                 |                    | First Class. | Second Class. | Stumps. | Area in Acres. |                                     |                                     |  |
| Lower Forests, left side ...    | I, II, III and IV  | 1,533        | 1,467         | 1,070   | 199.88         | 30,000                              | 9,268                               |  |
| Buspa Forests ...               | V                  | 335          | 454           | 283     | 88.93          | 6,000                               | 3,039                               |  |
| Upper Forests, left side ...    | VI, VII, and VIII  | 922          | 1,390         | 425     | 209.46         | 18,000                              | 4,378                               |  |
| Suttlej Forests, right side ... | VIII               | 951          | 788           | 503     | 153.78         | 4,000                               | 2,921                               |  |
|                                 | Total              | 3,743        | 4,099         | 2,281   | 652.05         | 58,000                              | 19,606                              |  |

NOTE.—The true number of trees felled is believed to be about 30,000.

## APPENDIX III.

*Abstract Statement of Deodar trees examined to determine rate of growth.*

| Number. | Forest and number of Survey. | Number of tree.                 |     | Mean radius measured. | Measured girth. | Calculated girth. | Calculated age of 1st class trees. | Calculated age of 2nd class trees. | Details of rings counted, and Remarks. |     |     |     |     |    |    |     |    |  |  |  |
|---------|------------------------------|---------------------------------|-----|-----------------------|-----------------|-------------------|------------------------------------|------------------------------------|----------------------------------------|-----|-----|-----|-----|----|----|-----|----|--|--|--|
|         |                              | Age, (number of rings counted). |     |                       |                 |                   |                                    |                                    |                                        |     |     |     |     |    |    |     |    |  |  |  |
| 1       | Nagadār<br>1                 | 1                               | 46  | 9                     | ...             | 5 2               | 48                                 | 37                                 | Inches.                                | 1   | 2   | 3   | 4   | 5  | 6  | 7   | 8  |  |  |  |
|         |                              | 2                               | 45  | 9                     | ...             | 5 2               | 47                                 | 36                                 | 0 to 2                                 | 7   | 10  | 7   | 8   | 7  | 10 | 9   | 7  |  |  |  |
|         |                              | 3                               | 31  | 9                     | ...             | 5 2               | 33                                 | 22                                 | 2 to 4                                 | 9   | 9   | 6   | 7   | 7  | 9  | 9   | 6  |  |  |  |
|         |                              | 4                               | 38  | 9                     | ...             | 5 2               | 40                                 | 29                                 | 4 to 6                                 | 11  | 7   | 5   | 7   | 9  | 11 | 8   | 8  |  |  |  |
|         |                              | 5                               | 74  | 12                    | ...             | 6 8               | 61                                 | 36                                 | 6 to 8                                 | 11  | 11  | 5   | 8   | 15 | 13 | 10  | 12 |  |  |  |
|         |                              | 6                               | 68  | 11                    | ...             | 6 2               | 64                                 | 42                                 | 8 to 10                                | 8   | 8   | 8   | 8   | 18 | 16 | 12  | 16 |  |  |  |
|         |                              | 7                               | 48  | 10                    | ...             | 5 8               | 52                                 | 35                                 | 10 to 12                               | ... | ... | ... | ... | 18 | 9  | ... | 18 |  |  |  |
|         |                              | 8                               | 67  | 12                    | ...             | 6 8               | 54                                 | 32                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         | Average                      | ...                             | ... | ...                   | ...             | ...               | 50                                 | 34                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
| 2       | Taranda<br>1                 | 1                               | 81  | 13.5                  | ...             | 7 6               | 64                                 | 47                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 2                               | 108 | 15                    | ...             | 8 3               | 76                                 | 56                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 3                               | 80  | 10                    | ...             | 5 8               | 84                                 | 62                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 4                               | 55  | 13.5                  | ...             | 7 6               | 43                                 | 32                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         | Average                      | ...                             | ... | ...                   | ...             | ...               | 67                                 | 49                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
| 3       | Nachar<br>4—8                | 1                               | 227 | 17.75                 | 10 6            | 9 9               | 130                                | 97                                 | Inches.                                | 24  | 25  |     |     |    |    |     |    |  |  |  |
|         |                              | 2                               | 223 | 16                    | 10 6            | 8 10              | 127                                | 96                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 3                               | 466 | 29.25                 | 18 10           | 15 9              | 148                                | 111                                | 0 to 2                                 | 13  | 14  |     |     |    |    |     |    |  |  |  |
|         |                              | 4                               | 191 | 13                    | 8 0             | 7 2               | 143                                | 107                                | 2 to 4                                 | 22  | 10  |     |     |    |    |     |    |  |  |  |
|         |                              | 5                               | 220 | 14                    | 7 0             | 7 9               | 188                                | 141                                | 4 to 6                                 | 43  | 12  |     |     |    |    |     |    |  |  |  |
|         |                              | 6                               | 50  | 3.38                  | 1 10            | 2 2               | 164                                | 123                                | 6 to 8                                 | 47  | 29  |     |     |    |    |     |    |  |  |  |
|         |                              | 7                               | 67  | 4.5                   | 2 4             | 2 9               | 172                                | 129                                | 8 to 10                                | 26  | 19  |     |     |    |    |     |    |  |  |  |
|         |                              | 8                               | 49  | 4.25                  | 2 7½            | 2 8               | 112                                | 84                                 | 10 to 12                               | 45  | 19  |     |     |    |    |     |    |  |  |  |
|         |                              | 9                               | 53  | 5.9                   | 3 0             | 3 6               | 106                                | 80                                 | 12 to 14                               | 30  | 21  |     |     |    |    |     |    |  |  |  |
|         |                              | 10                              | 62  | 4.75                  | 3 2             | 2 11              | 117                                | 88                                 | 14 to 16                               | 45  | 49  |     |     |    |    |     |    |  |  |  |
|         |                              | 11                              | 151 | 8.25                  | 5 0             | 4 9               | 181                                | 136                                | 16 to 18                               | 56  | 27  |     |     |    |    |     |    |  |  |  |
|         |                              | 12                              | 82  | 7.75                  | 4 1             | 4 6               | 120                                | 90                                 | 18 to 20                               | ... | 35  |     |     |    |    |     |    |  |  |  |
|         |                              | 13                              | 160 | 10                    | 5 4             | 5 8               | 180                                | 135                                | 20 to 22                               | ... | 42  |     |     |    |    |     |    |  |  |  |
|         |                              | 14                              | 117 | 8.5                   | 4 6             | 4 10              | 156                                | 117                                | 22 to 24                               | ... | 36  |     |     |    |    |     |    |  |  |  |
|         |                              | 15                              | 194 | 11.6                  | 5 3             | 6 5               | 222                                | 166                                | 24 to 26                               | ... | 34  |     |     |    |    |     |    |  |  |  |
|         |                              | 16                              | 87  | 6                     | 3 5             | 3 7               | 152                                | 114                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 17                              | 61  | 4.5                   | 1 5½            | 2 9               | 251                                | 188                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 18                              | 101 | 8.25                  | 4 6½            | 4 9               | 133                                | 100                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 19                              | 62  | 4.25                  | 2 5             | 2 8               | 154                                | 115                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 20                              | 113 | 5.62                  | 3 5             | 3 4               | 198                                | 149                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 21                              | 43  | 2.62                  | 1 4             | 1 9               | 193                                | 145                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 22                              | 58  | 6.25                  | 3 8             | 3 8               | 95                                 | 71                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 23                              | 81  | 5                     | 2 9             | 3 0               | 176                                | 132                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 24                              | 327 | 16.3                  | 9 3             | 8 11              | 159                                | 120                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 25                              | 347 | 24.3                  | 13 4            | 13 2              | 90                                 | 62                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 26                              | 150 | 13.85                 | 7 8             | 7 8               | 117                                | 88                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 27                              | 66  | 7.73                  | 4 0½            | 4 5½              | 98                                 | 73                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 28                              | 210 | 22                    | 12 11           | 11 11             | 98                                 | 73                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 29                              | 227 | 15                    | 8 3             | 8 3               | 165                                | 124                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | 30                              | 307 | 28                    | 16 0            | 15 1              | 115                                | 86                                 |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         |                              | „                               | 287 | 16                    | 9 5             | 8 9               | 183                                | 137                                |                                        |     |     |     |     |    |    |     |    |  |  |  |
|         | Average                      | ...                             | ... | ...                   | 6 4             | 6 8               | 149                                | 112                                |                                        |     |     |     |     |    |    |     |    |  |  |  |

At butt end.

At 103 feet from ground.

## Abstract Statement of Deodar Trees, &amp;c.,—continued.

| Number. | Forest and number of Survey.      | Number of tree. | Age, (number of rings counted). | Mean radius measured. | Measured girth. | Calculated girth. | Calculated age of 1st class trees. | Calculated age of 2nd class trees. | Details of rings counted, and Remarks. |     |     |          |     |     |
|---------|-----------------------------------|-----------------|---------------------------------|-----------------------|-----------------|-------------------|------------------------------------|------------------------------------|----------------------------------------|-----|-----|----------|-----|-----|
| 4       | Dippi<br>9—11                     | 1               | 122                             | 12                    | 6 7             | 6 8               | 111                                | 83                                 |                                        |     |     |          |     |     |
|         |                                   | 2               | 145                             | 14                    | 7 0             | 7 9               | 124                                | 93                                 |                                        |     |     |          |     |     |
|         | Average                           | ...             | ...                             | ...                   | 6 9             | 7 2               | 117                                | 88                                 |                                        |     |     |          |     |     |
| 5       | Janee<br>12—14                    | 1               | 140                             | 14                    | 8 6             | 7 9               | 81                                 | 50                                 |                                        |     |     |          |     |     |
|         |                                   | 2               | 258                             | 29                    | 18 6            | 15 7              | 84                                 | 63                                 |                                        |     |     |          |     |     |
|         |                                   | 3               | 43                              | 5.75                  | 3 5             | 3 5               | 76                                 | 57                                 |                                        |     |     |          |     |     |
|         | Average                           | ...             | ...                             | ...                   | 10 2            | 8 11              | 80                                 | 56                                 |                                        |     |     |          |     |     |
| 6       | Phinla<br>17—19                   | 1               | 194                             | 12.6                  | 9 2             | 7 0               | 157                                | 102                                | Inches.                                | 1   | 2   | Inches.  | 1   | 2   |
|         |                                   | 2               | 103                             | 10.5                  | 6 0             | 5 11              | 110                                | 77                                 | 0 to 2                                 | 15  | 23  | 6 to 8   | 37  | 25  |
|         |                                   |                 |                                 |                       |                 |                   |                                    |                                    | 2 to 4                                 | 19  | 19  | 8 to 10  | 39  | 23  |
| 7       | Wasankan<br>20                    | 1               | 180                             | ...                   | 6 1             | ...               | ...                                | ...                                | 4 to 6                                 | 35  | 13  | 10 to 12 | 49  | ... |
|         |                                   | 2               | 189                             | ...                   | 7 5             | ...               | 152                                | 114                                |                                        |     |     |          | 194 | 103 |
|         |                                   | 3               | 172                             | 9.5                   | 6 0             | 5 5               | 181                                | 138                                |                                        |     |     |          |     |     |
| 8       | Kiuden<br>22—25                   | 1               | 84                              | ...                   | 3 3             | ...               | ...                                | 116                                |                                        |     |     |          |     |     |
|         |                                   | 2               | 149                             | ...                   | 5 4             | ...               | 168                                | 126                                |                                        |     |     |          |     |     |
|         | Average of 6, 7, and 8            | ...             | ...                             | ...                   | 7 2             | 6 6               | 154                                | 110                                |                                        |     |     |          |     |     |
| 9       | Kilba<br>26                       | 1               | 184                             | ...                   | 6 2             | ...               | 179                                | 134                                | Inches.                                | 4   | 5   | Inches.  | 4   | 5   |
|         |                                   | 2               | 174                             | ...                   | 8 0             | ...               | 131                                | 98                                 | 0 to 2                                 | 29  | 16  | 8 to 10  | 27  | 30  |
|         |                                   | 3               | 235                             | ...                   | 10 10           | ...               | 130                                | 98                                 | 2 to 4                                 | 17  | 24  | 10 to 12 | 12  | 25  |
| 10      | Kumkumi<br>27                     | 1               | 170                             | ...                   | 9 9             | ...               | 104                                | 78                                 | 4 to 6                                 | 12  | 24  | 12 to 14 | ... | 30  |
|         |                                   | 2               | 120                             | ...                   | 7 6             | ...               | 96                                 | 72                                 | 6 to 8                                 | 29  | 27  | 14 to 16 | ... | 19  |
|         | Average                           | ...             | ...                             | ...                   | 8 1             | 7 1               | 138                                | 100                                |                                        |     |     |          | 126 | 196 |
| 11      | Sapni<br>27                       | 1               | 176                             | ...                   | 12 0            | ...               | 88                                 | 66                                 |                                        |     |     |          |     |     |
| 12      | Būrū<br>30—31                     | 1               | 104                             | 11.8                  | 6 4             | 6 7               | 96                                 | 72                                 |                                        |     |     |          |     |     |
| 13      | Rapur, Jungari<br>Shoang<br>32—35 | 1               | 120                             | ...                   | 7 6             | ...               | 96                                 | 72                                 | Inches.                                | 2   | 5   | 6        |     |     |
|         |                                   | 2               | 115                             | 14.5                  | 8 2             | 8 0               | 54                                 | 37                                 | 0 to 2                                 | 11  | 12  | 11       |     |     |
|         |                                   | 3               | 94                              | ...                   | 5 7             | ...               | 101                                | 76                                 | 2 to 4                                 | 7   | 13  | 11       |     |     |
| 14      | Average of 10, 11, 12, 13         | 4               | 156                             | ...                   | 8 2             | ...               | 115                                | 86                                 | 4 to 6                                 | 7   | 15  | 11       |     |     |
|         |                                   | 5               | 120                             | 12.25                 | 7 4             | 6 10              | 97                                 | 55                                 | 6 to 8                                 | 14  | 17  | 12       |     |     |
|         |                                   | 6               | 85                              | 10.5                  | 5 9             | 5 11              | 66                                 | 43                                 | 8 to 10                                | 11  | 31  | 16       |     |     |
| 15      | Average of 10, 11, 12, 13         | ...             | ...                             | ...                   | 6 11            | 6 10              | 91                                 | 66                                 | 10 to 12                               | 13  | 20  | 15       |     |     |
|         |                                   | ...             | ...                             | ...                   | ...             | ...               | ...                                | ...                                | 12 to 14                               | 13  | 12  | 9        |     |     |
|         |                                   | ...             | ...                             | ...                   | ...             | ...               | ...                                | ...                                | 14 to 16                               | 24  |     |          |     |     |
| 16      | Average of 10, 11, 12, 13         | ...             | ...                             | ...                   | ...             | ...               | ...                                | ...                                | 16 to 18                               | 15  |     |          |     |     |
|         |                                   | ...             | ...                             | ...                   | ...             | ...               | ...                                | ...                                | ...                                    | ... | ... | ...      |     |     |
|         |                                   | ...             | ...                             | ...                   | ...             | ...               | ...                                | ...                                | ...                                    | ... | ... | ...      |     |     |

*Abstract Statement of Deodar trees, &c.,—continued.*

| Number.                                      | Forest.                                   | Number of tree.                                                         |                                                                                             | Age, (number of rings counted.)                                                                                    | Mean radius measured.                                                                                            | Measured girth.                                                                                                  | Calculated girth.                                                                                  | Calculated age of 1st class trees.                                                               | Calculated age of 2nd class trees. | Details of rings counted, and Remarks. |     |          |          |    |    |     |     |     |     |
|----------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------|-----|----------|----------|----|----|-----|-----|-----|-----|
| 14                                           | Chasoo ...<br>36                          | 1<br>2<br>3                                                             | 127<br>74<br>261                                                                            | 25<br>11.6<br>25.5                                                                                                 | in.<br>13 1<br>6 7<br>13 10                                                                                      | ft. in.<br>...<br>...<br>13 9                                                                                    | 58<br>65<br>83                                                                                     | 44<br>54<br>60                                                                                   | Measured without the bark.         |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | " " "                              |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | Inches.                            |                                        | 2   | 3        | Inches.  |    | 3  |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 0 to 2                             | 2                                      | 14  | 15       | 12 to 14 | 17 |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 2 to 4                             | 4                                      | 18  | 17       | 14 to 16 | 25 |    |     |     |     |     |
| 15                                           | Chidu ...<br>36                           | 1<br>2                                                                  | 107<br>123                                                                                  | 16.3<br>16.1                                                                                                       | 8 10 1/2<br>9 3                                                                                                  | 8 11<br>8 5                                                                                                      | 54<br>49                                                                                           | 33<br>39                                                                                         | Inches. 1 2 Inches. 1 2            |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 0 to 2                             | 2                                      | 10  | 10       | 10 to 12 | 11 | 12 |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 2 to 4                             | 4                                      | 9   | 13       | 12 to 14 | 12 | 16 |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 4 to 6                             | 6                                      | 8   | 12       | 14 to 16 | 9  | 13 |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 6 to 8                             | 8                                      | 9   | 5        | 16 to 18 | 9  | 15 |     |     |     |     |
| 16                                           | Limsantang<br>36<br>Average of 14.15 & 16 | 1                                                                       | 86                                                                                          | 11.3                                                                                                               | 6 2<br>9 6                                                                                                       | 6 4<br>9 4                                                                                                       | 82<br>65                                                                                           | 55<br>47                                                                                         | Inches. 1 inches. 1                |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 0 to 2                             | 2                                      | 15  | 6 to 8   | 17       |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 2 to 4                             | 4                                      | 12  | 8 to 10  | 19       |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 4 to 6                             | 6                                      | 13  | 10 to 12 | 10       |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 86                                 |                                        |     |          |          |    |    |     |     |     |     |
| 17                                           | Serinche ...<br>37-39                     | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14 | 68<br>65<br>65<br>67<br>66<br>93<br>142<br>100<br>89<br>47<br>147<br>200<br>144<br>97<br>89 | 13.5<br>...<br>...<br>...<br>12.5<br>13<br>19.75<br>8.5<br>17.6<br>5<br>21.25<br>13.6<br>13<br>10.8<br>21.5<br>7.8 | 7 7<br>7 9<br>6 5<br>7 6<br>6 10<br>6 10<br>11 9<br>5 0<br>10 6<br>3 0<br>12 4<br>7 5<br>..<br>5 9<br>8 8<br>5 3 | 7 6<br>...<br>...<br>...<br>7 0<br>...<br>10 9<br>4 10<br>9 7<br>3 0<br>11 6<br>7 6<br>7 2<br>6 1<br>11 8<br>4 6 | 53<br>50<br>60<br>54<br>53<br>82<br>67<br>...<br>36<br>...<br>83<br>173<br>104<br>80<br>150<br>102 | 39<br>38<br>45<br>41<br>36<br>54<br>51<br>...<br>27<br>...<br>59<br>137<br>65<br>52<br>113<br>76 | Inches. 1 5 6 7 8 9 10 11 12       |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 0 to 2                             | 2                                      | 10  | 11       | 8        | 17 | 7  | 13  | 35  | 13  | 12  |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 2 to 4                             | 4                                      | 10  | 9        | 21       | 13 | 7  | 18  | 25  | 16  | 16  |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 4 to 6                             | 6                                      | 9   | 7        | 16       | 10 | 9  | 16  | 27  | 15  | 13  |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 6 to 8                             | 8                                      | 11  | 10       | 10       | 13 | 5  | 13  | 55  | 24  | 13  |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 8 to 10                            | 10                                     | 10  | 12       | 21       | 11 | 6  | 18  | 24  | 28  | 20  |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 10 to 12                           | 12                                     | 18  | 17       | 17       | 16 | 8  | 19  | 34  | 26  | 13  |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 12 to 14                           | 14                                     | ... | ...      | ...      | 20 | 23 | 18  | ... | 22  | 10  |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 14 to 16                           | 16                                     | ... | ...      | ...      | 26 | 14 | 32  | ... | ... | ... |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 16 to 18                           | 18                                     | ... | ...      | ...      | 16 | 10 | ... | ... | ... | ... |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 68 66 93 142 89 147 200 144 97     |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | Measured without bark.             |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | " at the butt end.                 |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | " " 52 feet from ground.           |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | " " the butt end.                  |                                        |     |          |          |    |    |     |     |     |     |
| " " 64 feet from ground.                     |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  |                                    |                                        |     |          |          |    |    |     |     |     |     |
| On level ground.                             |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  |                                    |                                        |     |          |          |    |    |     |     |     |     |
| On steep slope facing S. at an angle of 30°. |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  |                                    |                                        |     |          |          |    |    |     |     |     |     |
| " " "                                        |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  |                                    |                                        |     |          |          |    |    |     |     |     |     |
| On level ground.                             |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  |                                    |                                        |     |          |          |    |    |     |     |     |     |
| On steep slope facing S. at an angle of 30°  |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  |                                    |                                        |     |          |          |    |    |     |     |     |     |
| " " "                                        |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  |                                    |                                        |     |          |          |    |    |     |     |     |     |
| 18                                           | Rakcham ...<br>40                         | 1<br>2<br>3                                                             | 130<br>136<br>196                                                                           | 15.<br>12.5<br>14.1                                                                                                | 8 5<br>7 7<br>7 8                                                                                                | 8 3<br>7<br>7 9                                                                                                  | 93<br>130<br>153                                                                                   | 61<br>65<br>114                                                                                  | Inches. 1 2 Inches. 1 2            |                                        |     |          |          |    |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 0 to 2                             | 2                                      | 17  | 15       | 8 to 10  | 24 | 48 |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 2 to 4                             | 4                                      | 12  | 13       | 10 to 12 | 28 | 20 |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 4 to 6                             | 6                                      | 19  | 14       | 12 to 14 | 16 |    |     |     |     |     |
|                                              |                                           |                                                                         |                                                                                             |                                                                                                                    |                                                                                                                  |                                                                                                                  |                                                                                                    |                                                                                                  | 6 to 8                             | 8                                      | 14  | 26       |          |    |    |     |     |     |     |
| Average                                      | ...                                       |                                                                         |                                                                                             |                                                                                                                    | 7 11                                                                                                             | 7 8                                                                                                              | 125                                                                                                | 80                                                                                               | 130 136                            |                                        |     |          |          |    |    |     |     |     |     |



*Abstract Statement of Deodar trees, &c.,—continued.*

| Number. | Forest.                             | Number of tree. | Age, (number of rings counted). | Mean radius measured. | Measured girth. | Calculated girth. | Calculated age of 1st class trees. | Calculated age of 2nd class trees. | Details of rings counted, and Remarks. |     |          |     |
|---------|-------------------------------------|-----------------|---------------------------------|-----------------------|-----------------|-------------------|------------------------------------|------------------------------------|----------------------------------------|-----|----------|-----|
|         |                                     |                 |                                 | in.                   | ft. in.         | ft. in.           |                                    |                                    |                                        |     |          |     |
| 19      | Yak Bursari<br>41                   | 1               | 115                             | ...                   | 7 2             | ...               | 96                                 | 72                                 |                                        |     |          |     |
|         |                                     | 2               | 91                              | ...                   | 5 2             | ...               | 106                                | 80                                 |                                        |     |          |     |
|         |                                     | 3               | 101                             | 7.3                   | 4 2             | 4 3               | 145                                | 109                                |                                        |     |          |     |
|         | Average ...                         |                 |                                 |                       | 4 2             | 4 3               | 116                                | 87                                 |                                        |     |          |     |
| 20      | Mebar ...<br>43-47                  | 1               | 129                             | 13.3                  | 8 4             | 7 5               | 96                                 | 65                                 | Inches.                                | 1   | 2        | 3   |
|         |                                     | 2               | 183                             | 14.5                  | ...             | 8                 | 59                                 | 38                                 | 0 to 2                                 | 14  | 12       | 26  |
|         |                                     | 3               | 152                             | 12.                   | 7 6             | 6 8               | 127                                | 99                                 | 2 to 4                                 | 14  | 7        | 35  |
|         |                                     | 4               | 165                             | 10.83                 | 6 4             | 6 1               | 156                                | 117                                | 4 to 6                                 | 17  | 8        | 24  |
|         |                                     | 5               | 172                             | 13.83                 | 7               | 7 7               | 147                                | 110                                | 6 to 8                                 | 22  | 12       | 16  |
|         |                                     | 6               | 130                             | 14.75                 | 9               | 8 1               | 87                                 | 65                                 | 8 to 10                                | 22  | 15       | 20  |
|         |                                     | 7               | 155                             | 12.87                 | 7 8             | 7 2               | 121                                | 90                                 | 10 to 12                               | 20  | 23       | 22  |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 12 to 14                               | 20  | 34       | 9   |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 14 to 16                               | ... | 42       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 16 to 18                               | ... | 30       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    |                                        | 129 | 183      | 152 |
|         | Average ...                         |                 |                                 |                       | 7 6             | 7 2               | 113                                | 83                                 |                                        |     |          |     |
| 21      | Yolinge ...<br>56                   | 1               | 383                             | 22                    | 11 9            | 11 11             | 196                                | 147                                | Near top of Forest.                    |     |          |     |
|         |                                     | 2               | 160                             | 12                    | 6 1             | 6 8               | 158                                | 119                                | " "                                    |     |          |     |
|         |                                     | 3               | 90                              | 14                    | 7 4             | 7 9               | 74                                 | 56                                 | At foot of Forest near cultivation.    |     |          |     |
|         |                                     | 4               | 73                              | 10.5                  | 5 8             | 5 11              | 77                                 | 58                                 | " " "                                  |     |          |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    |                                        |     |          |     |
|         | Average near top ...<br>Do. at foot |                 |                                 |                       | 8 11<br>6 6     | 9 3<br>6 10       | 177<br>76                          | 133<br>57                          |                                        |     |          |     |
| 22      | Barunalang<br>59                    | 1               | 255                             | 10.3                  | 5 10½           | 5 10              | 260                                | 195                                | Inches.                                | 3   | 4        |     |
|         |                                     | 2               | 219                             | 13                    | 7               | 7 2               | 188                                | 141                                | ...                                    |     |          |     |
|         |                                     | 3               | 196                             | 13.6                  | 8 5             | 7 7               | 149                                | 114                                | 0 to 2                                 | 15  | 25       |     |
|         |                                     | 4               | 248                             | 15                    | 8 6             | 8 3               | 160                                | 110                                | 2 to 4                                 | 33  | 22       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 4 to 6                                 | 33  | 35       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 6 to 8                                 | 30  | 31       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 8 to 10                                | 29  | 36       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 10 to 12                               | 30  | 31       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 12 to 14                               | 26  | 38       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 14 to 16                               | ... | 30       |     |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    |                                        | 196 | 248      |     |
| 23      | Simoling ...<br>60-61               | 1               | 166                             | 15.6                  | 9 7             | 8 7               | 113                                | 85                                 | Inches.                                | 1   | Inches.  | 1   |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 0 to 2                                 | 11  | 8 to 10  | 19  |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 2 to 4                                 | 21  | 10 to 12 | 20  |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 4 to 6                                 | 27  | 12 to 14 | 19  |
|         |                                     |                 |                                 |                       |                 |                   |                                    |                                    | 6 to 8                                 | 29  | 14 to 16 | 20  |
|         | Average of 22, 23, 24               |                 |                                 |                       | 7 10            | 7 6               | 160                                | 119                                |                                        |     |          | 166 |
| 24      | Peadun ...                          | 1               | 226                             | ...                   | 9 8             | ...               | 140                                | 105                                |                                        |     |          |     |
|         |                                     | 2               | 208                             | ...                   | 11 8            | ...               | 107                                | 80                                 |                                        |     |          |     |
|         | Average of 22, 23, 24               |                 |                                 |                       | 7 10            | 7 6               | 160                                | 119                                |                                        |     |          |     |

## Abstract Statement of Deodar trees, &amp;c.,—continued.

| Number. | Forest and number of Survey.                  | Number of trees. | Age, (number of rings counted.) | Mean radius measured. | Measured girth. | Calculated girth. | Calculated age of 1st class trees. | Calculated age of 2nd class trees. | Details of rings counted, and Remarks. |     |     |     |     |     |
|---------|-----------------------------------------------|------------------|---------------------------------|-----------------------|-----------------|-------------------|------------------------------------|------------------------------------|----------------------------------------|-----|-----|-----|-----|-----|
|         |                                               |                  |                                 | in.                   | ft. in.         | ft. in.           |                                    |                                    | Inches.                                | 1   | 2   | 3   | 4   | 5   |
| 25      | Tinala Teed-<br>ong valley                    | 1                | 173                             | 15                    | 8 9             | 8 3               | 124                                | 91                                 | 0 to 2                                 | 12  | 23  | 16  | 26  | 12  |
|         |                                               | 2                | 183                             | 11.3                  | 6 4             | 6 4               | 140                                | 104                                | 2 to 4                                 | 18  | 35  | 17  | 21  | 9   |
|         | 64 ...                                        | 3                | 276                             | 17                    | 10 5            | 9 4               | 138                                | 90                                 | 4 to 6                                 | 39  | 28  | 25  | 13  | 14  |
|         |                                               | 4                | 173                             | 14.3                  | 8 8             | 7 11              | 128                                | 80                                 | 6 to 8                                 | 24  | 20  | 36  | 22  | 16  |
|         |                                               | 5                | 108                             | 11                    | 6 2             | 6 2               | 86                                 | 49                                 | 8 to 10                                | 24  | 26  | 34  | 35  | 27  |
|         |                                               | 6                | 299                             | 17                    | 9 6             | 9 4               | 188                                | 141                                | 10 to 12                               | 28  | 38  | 37  | 39  | 30  |
|         |                                               | 7                | 145                             | 14.5                  | 8 2             | 8                 | 107                                | 80                                 | 12 to 14                               | 28  | 13  | 34  | 17  | ... |
|         |                                               |                  |                                 |                       |                 |                   |                                    |                                    | 14 to 16                               | ... | ... | 37  | ... | ... |
|         |                                               |                  |                                 |                       |                 |                   |                                    |                                    | 16 to 18                               | ... | ... | 40  | ... | ... |
|         | Average ...                                   | ...              | ...                             | ...                   | 8 3             | 7 11              | 130                                | 91                                 |                                        | 173 | 183 | 276 | 173 | 108 |
| 26      | Manda ...<br>Forest of<br>Jangi ...<br>67 ... | 1                | 240                             | 19.5                  | 10              | 10 7              | 144                                | 108                                |                                        |     |     |     |     |     |
|         |                                               | 2                | 377                             | 28.5                  | 14              | 15 4              | 162                                | 122                                |                                        |     |     |     |     |     |
|         |                                               | 3                | 63                              | 4.5                   | 2 4             | 2 9               |                                    |                                    |                                        |     |     |     |     |     |
|         | Average ...                                   |                  |                                 |                       | 8 9             | 9 7               | 153                                | 115                                |                                        |     |     |     |     |     |
| 27      | Skyamdang-<br>dang ...<br>70-71 ...           | 1                | 290                             | 17.2                  | 8 4             | 9 5               | 208                                | 156                                |                                        |     |     |     |     |     |
|         |                                               | 2                | 166                             | 11.2                  | 7 6             | 6 3               | 132                                | 99                                 |                                        |     |     |     |     |     |
|         |                                               | 3                | 229                             | 11                    | 6               | 6 2               | 229                                | 172                                |                                        |     |     |     |     |     |
|         | Average ...                                   |                  |                                 |                       | 7 3             | 7 3               | 189                                | 142                                |                                        |     |     |     |     |     |
| 28      | Topan ...                                     | 1                | 571                             | 30.5                  | ...             | 16 4              | 101                                | 76                                 | Inches.                                | 1   |     |     |     |     |
|         |                                               |                  |                                 |                       |                 |                   |                                    |                                    | 0 to 10                                | 95  |     |     |     |     |
|         |                                               |                  |                                 |                       |                 |                   |                                    |                                    | 10 to 20                               | 235 |     |     |     |     |
|         |                                               |                  |                                 |                       |                 |                   |                                    |                                    | 20 to 30½                              | 241 |     |     |     |     |
| 29      | Kashang ...<br>72-76 ...                      | 1                | 100                             | 10                    | 5 8             | 5 8               | 104                                | 84                                 | Inches.                                | 1   | 2   |     |     |     |
|         |                                               | 2                | 111                             | 9.3                   | 5 1             | 5 3               | 100                                | 69                                 | 0 to 2                                 | 23  | 15  |     |     |     |
|         |                                               | 3                | 103                             | 10.5                  | 4 10            | 5 11              | 128                                | 96                                 | 2 to 4                                 | 23  | 21  |     |     |     |
|         |                                               | 4                | 111                             | 9.5                   | 5 0             | 5 5               | 133                                | 100                                | 4 to 6                                 | 19  | 17  |     |     |     |
|         |                                               |                  |                                 |                       |                 |                   |                                    |                                    | 6 to 8                                 | 21  | 18  |     |     |     |
|         |                                               |                  |                                 |                       |                 |                   |                                    |                                    | 8 to 10                                | 14  | 22  |     |     |     |
|         |                                               |                  |                                 |                       |                 |                   |                                    |                                    | 10 to 12                               | ... | 18  |     |     |     |
|         | Average of<br>28-29 ...                       |                  |                                 |                       | 5 2             | 5 7               | 113                                | 85                                 |                                        | 100 | 111 |     |     |     |
| 30      | Forest above<br>Chini ...<br>77 ...           | 1                | 174                             | 14                    | 7 8             | 7 9               | 136                                | 102                                |                                        |     |     |     |     |     |
|         |                                               | 2                | 172                             | ...                   | 4 5             | ...               | 234                                | 175                                |                                        |     |     |     |     |     |
|         |                                               | 3                | 130                             | 17.5                  | 9 2             | 9 7               | 85                                 | 64                                 |                                        |     |     |     |     |     |
|         |                                               | 4                | 74                              | 5.2                   | 3 0             | 3 2               | ...                                | 105                                |                                        |     |     |     |     |     |
|         |                                               | 5                | 30                              | 1.5                   | 0 9½            | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 6                | 57                              | 3.5                   | 1 7             | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 7                | 20                              | 2.5                   | 1 4             | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 8                | 43                              | 3                     | 1 6             | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 9                | 30                              | 2.2                   | 1 4             | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 10               | 19                              | 2.2                   | 1 2             | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 11               | 16                              | ...                   | 0 5½            | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 12               | 12                              | 1.5                   | 0 9½            | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 13               | 21                              | 1.2                   | 0 7½            | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 14               | 28                              | 3.2                   | 1 10            | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 15               | 98                              | 4                     | 2 10            | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 16               | 41                              | 5.6                   | 3 6             | 3 4               | ...                                | 55                                 |                                        |     |     |     |     |     |
|         |                                               | 17               | 29                              | 4.3                   | 2 7             | ...               | ...                                | ...                                |                                        |     |     |     |     |     |
|         |                                               | 18               | 35                              | 5.5                   | 3 1½            | 3 3               | ...                                | 48                                 |                                        |     |     |     |     |     |
|         | Average ...                                   |                  |                                 |                       | 5 3             | 5 5               | 152                                | 91                                 |                                        |     |     |     |     |     |

*Abstract Statement of Deodar trees, &c.,—continued.*

| Number.     | Forest and number of Survey. | Number of trees.<br>Age, (number of rings counted.) |     | Mean radius measured. | Measured girth. | Calculated girth. | Calculated age of 1st class trees. | Calculated age of 2nd class trees. | Details of rings counted, and Remarks. |        |        |        |        |          |
|-------------|------------------------------|-----------------------------------------------------|-----|-----------------------|-----------------|-------------------|------------------------------------|------------------------------------|----------------------------------------|--------|--------|--------|--------|----------|
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    | Inches.                                | 1      | 2      |        |        |          |
| 31          | Rogi ...<br>78-79            | 1                                                   | 215 | 16.8                  | 9 9½            | 9 2               | 126                                | 85                                 | 0 to 7.8                               | 85     | 61     |        |        |          |
|             |                              | 2                                                   | 137 | 13                    | 7 8             | 7 2               | 107                                | 61                                 | 0 to 10.6                              | 126    | 107    |        |        |          |
|             |                              | 3                                                   | 28  | 4.8                   | 2 4½            | 2 11              | ...                                | ...                                | 0 to 16.8                              | 215    | ...    |        |        |          |
|             |                              | 4                                                   | 33  | 3                     | 1 7½            | 1 11              | ...                                | ...                                | 0 to 13                                | ...    | 137    |        |        |          |
|             |                              | 5                                                   | 54  | 3.6                   | 1 11            | 2 4               | ...                                | ...                                |                                        |        |        |        |        |          |
|             |                              | 6                                                   | 62  | 4.6                   | 2 6½            | 2 10              | ...                                | ...                                |                                        |        |        |        |        |          |
|             |                              | 7                                                   | 46  | 5                     | 3 0             | 3 0               | ...                                | ...                                |                                        |        |        |        |        |          |
|             |                              | 8                                                   | 57  | 6.2                   | 3 8             | 3 8               | ...                                | 70                                 |                                        |        |        |        |        |          |
|             |                              | 9                                                   | 61  | 4.3                   | 2 8             | 2 8               | ...                                | ...                                |                                        |        |        |        |        |          |
|             |                              | 10                                                  | 66  | 6.5                   | 4 2             | 3 10              | 95                                 | 71                                 |                                        |        |        |        |        |          |
|             |                              | 11                                                  | 57  | 7                     | 4 4             | 4 1               | 79                                 | 59                                 |                                        |        |        |        |        |          |
|             |                              | 12                                                  | 60  | 8.7                   | 5 0             | 5 0               | 72                                 | 54                                 |                                        |        |        |        |        |          |
|             |                              | 13                                                  | 29  | 3.5                   | 1 10            | 2 3               | ...                                | ...                                |                                        |        |        |        |        |          |
|             |                              | 14                                                  | 36  | 3.3                   | 1 10            | 2 2               | ...                                | ...                                |                                        |        |        |        |        |          |
|             |                              | 15                                                  | 37  | 4                     | 2 6             | 2 6               | ..                                 | ...                                |                                        |        |        |        |        |          |
|             |                              | 16                                                  | 160 | 11.5                  | 6 2             | 6 5               | 156                                | 117                                |                                        |        |        |        |        |          |
|             |                              | 17                                                  | 70  | 8.2                   | 4 5             | 4 8               | 95                                 | 71                                 |                                        |        |        |        |        |          |
|             |                              | 18                                                  | 131 | 8.5                   | 4 11            | 4 10              | 160                                | 120                                |                                        |        |        |        |        |          |
|             |                              | 19                                                  | 157 | 15.2                  | 8 4             | 8 4               | 113                                | 85                                 |                                        |        |        |        |        |          |
|             |                              | 20                                                  | 121 | 10.2                  | 5 6             | 5 9               | 132                                | 99                                 |                                        |        |        |        |        |          |
|             |                              | 21                                                  | 148 | 11                    | 6 5             | 6 2               | 138                                | 104                                |                                        |        |        |        |        |          |
|             |                              | 22                                                  | 165 | 11                    | 5 10            | 6 2               | 168                                | 126                                |                                        |        |        |        |        |          |
|             |                              | 23                                                  | 138 | 13.7                  | 7 7             | 7 7               | 109                                | 82                                 |                                        |        |        |        |        |          |
|             |                              | 24                                                  | 147 | 12.7                  | 7 10½           | 7 1               | 112                                | 84                                 |                                        |        |        |        |        |          |
|             |                              | Average ...                                         |     |                       |                 |                   | 4 8                                | 4 8                                | 119                                    | 86     |        |        |        |          |
| 32          | Kadelli ...                  | 1                                                   | 93  | ...                   | 5 9             | ...               | 94                                 | 85                                 | Inches.                                | 0 to 2 | 2 to 4 | 4 to 6 | 6 to 8 | 8 to 10  |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    | Rings                                  | 18     | 19     | 24     | 27     | 5        |
| 33          | Chaog ...<br>84 ...          | 1                                                   | 130 | 14                    | 8 6             | 7 9               | 105                                | 85                                 | Inches.                                | 1      | 2      | 3      | 4      |          |
|             |                              | 2                                                   | 161 | 15.3                  | ...             | 8 5               | 114                                | 99                                 | 0 to 2                                 | 19     | 32     | 18     | 12     | 10 to 12 |
|             |                              | 3                                                   | 91  | 17                    | ...             | 9 4               | 58                                 | 44                                 | 2 to 4                                 | 16     | 35     | 10     | 17     | 12 to 14 |
|             |                              | 4                                                   | 120 | 15                    | 8 4             | 8 3               | 79                                 | 61                                 | 4 to 6                                 | 24     | 19     | 7      | 16     | 14 to 16 |
|             |                              | 5                                                   | 270 | 18                    | 8 4             | 9 10              | 194                                | 146                                | 6 to 8                                 | 29     | 15     | 10     | 18     | 16 to 19 |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    | 8 to 10                                | 13     | 10     | 10     | 12     | ...      |
| Average ... |                              |                                                     |     |                       | 8 5             | 8 9               | 110                                | 87                                 |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |
|             |                              |                                                     |     |                       |                 |                   |                                    |                                    |                                        |        |        |        |        |          |

## Abstract Statement of Deodar trees, &amp;c.,—continued.

| Number. | Forest.                            | Number of tree. | Age, (number of rings counted) | Mean radius measured. | REMARKS.                                                 | Number. | Forest.                  | Number of tree. | Age, (number of rings counted.) | Mean radius measured. | REMARKS.          |
|---------|------------------------------------|-----------------|--------------------------------|-----------------------|----------------------------------------------------------|---------|--------------------------|-----------------|---------------------------------|-----------------------|-------------------|
|         |                                    |                 |                                | in.                   |                                                          |         |                          |                 |                                 | in.                   |                   |
| 34      | Simla, north side, small trees ... | 1               | 50                             | 4.25                  |                                                          |         | Simla, south side ...    | 1               | 54                              | 6                     |                   |
|         |                                    | 2               | 35                             | 4                     |                                                          |         |                          | 2               | 94                              | 9.5                   |                   |
|         |                                    | 3               | 24                             | 4                     |                                                          |         |                          | 3               | 42                              | 6.5                   |                   |
|         |                                    | 4               | 42                             | 4                     |                                                          |         |                          | 4               | 43                              | 5                     |                   |
|         |                                    | 5               | 30                             | 4                     |                                                          |         |                          | 5               | 100                             | 12                    |                   |
|         |                                    | 6               | 30                             | 4                     |                                                          |         |                          | 6               | 43                              | 4.5                   |                   |
|         |                                    | 7               | 40                             | 5                     |                                                          |         |                          | 7               | 31                              | 3                     |                   |
|         |                                    | 8               | 47                             | 5.5                   |                                                          |         |                          | 8               | 70                              | 6                     |                   |
|         |                                    | 9               | 44                             | 5                     |                                                          |         |                          | 9               | 40                              | 4.5                   | Age of I cl. = 91 |
|         |                                    | 10              | 45                             | 4.5                   |                                                          |         | Average...               | 57              | 6.6                             |                       | „ II cl. = 67     |
|         |                                    | 11              | 40                             | 4.5                   |                                                          |         |                          |                 |                                 |                       |                   |
|         |                                    | 12              | 70                             | 5                     |                                                          | 35      | Ropur timber Dépôt ...   | 1               | 210                             | 12                    |                   |
|         |                                    | 13              | 45                             | 4.5                   |                                                          |         | Purbani ...              | 2               | 180                             | 12                    |                   |
|         |                                    | 14              | 44                             | 4.5                   |                                                          |         | Poari ...                | 3               | 98                              | 7                     |                   |
|         |                                    | 15              | 33                             | 4.5                   |                                                          |         | Ditto ...                | 4               | 100                             | 10                    |                   |
|         |                                    | 16              | 39                             | 4                     |                                                          |         | Ditto ...                | 5               | 110                             | 9                     |                   |
|         |                                    | 17              | 47                             | 5.5                   |                                                          |         | Ditto ...                | 6               | 110                             | 11                    |                   |
|         |                                    | 18              | 50                             | 6.5                   |                                                          |         | Akpa ...                 | 7               | 202                             | 13.5                  |                   |
|         |                                    | 19              | 68                             | 5                     |                                                          |         | Ditto ...                | 8               | 187                             | 12                    |                   |
|         |                                    | 20              | 57                             | 5.5                   |                                                          |         | Ditto ...                | 9               | 225                             | 18                    |                   |
|         |                                    | 21              | 47                             | 4.5                   |                                                          |         |                          |                 |                                 |                       |                   |
|         |                                    | 22              | 30                             | 4                     |                                                          |         | Average...               | 158             | 11.6                            |                       | Age of I cl. 145  |
|         |                                    | 23              | 91                             | 5                     | [An exceptionally slow grown tree on a dry slope of 40°] |         |                          |                 |                                 |                       | „ II cl. 106      |
|         | Average...                         |                 | 43                             | 4.6                   | Age of I cl. = 99                                        |         | Kusthal ...              | 10              | 124                             | 15                    |                   |
|         | North side, large trees            | 1               | 88                             | 16                    | „ II cl. = 73                                            |         | Ditto ...                | 11              | 107                             | 14                    |                   |
|         |                                    | 2               | 66                             | 15                    |                                                          |         | Ditto ...                | 12              | 150                             | 18                    |                   |
|         |                                    | 3               | 72                             | 12                    |                                                          |         | Kilba ...                | 13              | 109                             | 15                    |                   |
|         |                                    | 4               | 72                             | 12                    |                                                          |         | Dippi ...                | 14              | 80                              | 12                    |                   |
|         |                                    | 5               | 153                            | 18                    |                                                          |         | Ditto ...                | 15              | 165                             | 15                    |                   |
|         |                                    | 6               | 138                            | 12                    |                                                          |         | Ditto ...                | 16              | 190                             | 22                    |                   |
|         |                                    | 7               | 102                            | 18                    |                                                          |         | Punang ...               | 17              | 170                             | 17.5                  | Age of I cl. 90   |
|         | Average...                         |                 | 99                             | 14.7                  | Age of I cl. = 71                                        |         | Average...               | 137             | 16                              |                       | „ II cl. 66       |
|         |                                    |                 |                                |                       | „ II cl. = 52                                            |         | Lawaris, or drift timber | 18              | 96                              | 12                    |                   |
|         |                                    |                 |                                |                       |                                                          |         |                          | 19              | 297                             | 18                    |                   |
|         |                                    |                 |                                |                       |                                                          |         |                          | 20              | 125                             | 15                    |                   |
|         |                                    |                 |                                |                       |                                                          |         |                          | 21              | 270                             | 20                    |                   |
|         |                                    |                 |                                |                       |                                                          |         | Average...               | 197             | 16                              |                       | Age of I cl. 131  |
|         |                                    |                 |                                |                       |                                                          |         |                          |                 |                                 |                       | „ II cl. 96       |

## Abstract Statement of Deodar Trees, &amp;c.—continued.

| Number.                              | Forest.                                    | Number of tree. |      | Age (number of rings counted). | Mean radius measured. | Measured girth. | Calculated girth. | Calculated age of 1st class trees. | Calculated age of 2nd class trees.                                           | Details of rings counted, and Remarks. |    |   |    |   |   |   |
|--------------------------------------|--------------------------------------------|-----------------|------|--------------------------------|-----------------------|-----------------|-------------------|------------------------------------|------------------------------------------------------------------------------|----------------------------------------|----|---|----|---|---|---|
| 36                                   | Bodeher, Jaonsar Bawur<br>2-3              | 1               | 71   | 11-6                           | 6 7                   | 6 6             | 69                | 53                                 | Measured at 3 ft.<br>ditto ditto 28 "<br>ditto ditto 3 "<br>ditto ditto 48 " | Inches.                                |    | 1 | 2  | 3 |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 0 to 1                                 | 5  | 6 | 7  |   |   |   |
|                                      |                                            | 2               | 58   | 6-5                            | 4 2                   | 3 10            | ...               | 63                                 |                                                                              | 1 to 2                                 | 7  | 8 | 9  |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 2 to 3                                 | 8  | 9 | 10 |   |   |   |
|                                      |                                            | 3               | 41   | 5                              | 3 2½                  | 3 0             | ...               | 38                                 |                                                                              | 3 to 4                                 | 7  | 8 | 9  |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 4 to 5                                 | 6  | 7 | 8  |   |   |   |
|                                      |                                            | 4               | 42   | 8                              | 4 5                   | 4 7             | ...               | ...                                |                                                                              | 5 to 6                                 | 8  | 9 | 10 |   |   |   |
| 6 to 7                               | 9                                          |                 |      |                                |                       |                 |                   |                                    | 10                                                                           | 11                                     |    |   |    |   |   |   |
| 5                                    | 70                                         | 12              | 6 10 | 6 8                            | 67                    | 41              | 7 to 8            | 9                                  | 10                                                                           | 11                                     |    |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 | 8 to 9            | 10                                 | 11                                                                           | 12                                     |    |   |    |   |   |   |
| 37                                   | Mashak, Jaonsar Bawur<br>5-8               | 1               | 98   | 8                              | 4 2                   | 4 7             | ...               | 78                                 | Pinus excelsa ..                                                             | Inches.                                |    | 1 | 2  | 3 | 4 | 5 |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 0 to 1                                 | 14 | 8 | 5  | 6 | 7 |   |
|                                      |                                            | 2               | 64   | 8                              | 4 4                   | 4 7             | ...               | 62                                 |                                                                              | 1 to 2                                 | 12 | 7 | 6  | 5 | 4 |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 2 to 3                                 | 4  | 6 | 5  | 4 | 3 |   |
|                                      |                                            | 3               | 143  | 29-3                           | 17 0                  | 15 8            | 50                | 38                                 |                                                                              | 3 to 4                                 | 8  | 8 | 4  | 5 | 6 |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 4 to 5                                 | 8  | 8 | 4  | 5 | 6 |   |
|                                      |                                            | 4               | 47   | 10                             | 6 2                   | 5 8             | 46                | 33                                 |                                                                              | 5 to 6                                 | 9  | 8 | 4  | 5 | 6 |   |
| 6 to 7                               | 9                                          |                 |      |                                |                       |                 |                   |                                    | 8                                                                            | 4                                      | 5  | 6 |    |   |   |   |
| 5                                    | 83                                         | 12              | 7 0  | 6 8                            | 79                    | 52              | 7 to 8            | 13                                 | 10                                                                           | 3                                      | 10 | 9 |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 | 8 to 9            | 16                                 | ...                                                                          | 4                                      | 9  | 8 |    |   |   |   |
| 38                                   | From ridge to Khattowa Jaonsar Bawur<br>11 | 1               | 66   | 9-3                            | 5 6                   | 5 4             | 64                | 50                                 | Inches. 2                                                                    | Inches.                                |    | 2 |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 0 to 1                                 | 9  |   |    |   |   |   |
|                                      |                                            | 2               | 50   | 6-75                           | ...                   | 3 11            | ...               | 50                                 |                                                                              | 1 to 2                                 | 7  |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 2 to 3                                 | 6  |   |    |   |   |   |
|                                      |                                            | 3               | 143  | 29-3                           | 17 0                  | 15 8            | 50                | 38                                 |                                                                              | 3 to 4                                 | 7  |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 4 to 5                                 | 4  |   |    |   |   |   |
|                                      |                                            | 4               | 47   | 10                             | 6 2                   | 5 8             | 46                | 33                                 |                                                                              | 5 to 6                                 | 5  |   |    |   |   |   |
| 6 to 7                               | 9                                          |                 |      |                                |                       |                 |                   |                                    |                                                                              |                                        |    |   |    |   |   |   |
| 39                                   | Tutwa, Jaonsar Bawur<br>16                 | 1               | 152  | 24                             | 12 0                  | 13 0            | 76                | 57                                 | Inches. 2                                                                    | Inches.                                |    | 2 |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 0 to 1                                 | 21 |   |    |   |   |   |
|                                      |                                            | 2               | 178  | 18-2                           | ...                   | 9 11            | 98                | 76                                 |                                                                              | 1 to 2                                 | 11 |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 2 to 3                                 | 9  |   |    |   |   |   |
|                                      |                                            | 3               | 162  | 18                             | 10 7                  | 9 10            | 92                | 69                                 |                                                                              | 3 to 4                                 | 9  |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 4 to 5                                 | 6  |   |    |   |   |   |
|                                      |                                            | 4               | 47   | 10                             | 6 2                   | 5 8             | 46                | 33                                 |                                                                              | 5 to 6                                 | 5  |   |    |   |   |   |
| 6 to 7                               | 9                                          |                 |      |                                |                       |                 |                   |                                    |                                                                              |                                        |    |   |    |   |   |   |
| 40                                   | Chilu, Jaonsar Bawur<br>17                 | 1               | 95   | 10-6                           | 6 0                   | 6 0             | 91                | 65                                 | A small oppressed tree                                                       | Inches.                                |    | 1 |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 0 to 1                                 | 8  |   |    |   |   |   |
|                                      |                                            | 2               | 44   | 2                              | ...                   | ...             | ...               | ...                                |                                                                              | 1 to 2                                 | 9  |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 2 to 3                                 | 7  |   |    |   |   |   |
|                                      |                                            | 3               | 162  | 18                             | 10 7                  | 9 10            | 92                | 69                                 |                                                                              | 3 to 4                                 | 7  |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 4 to 5                                 | 6  |   |    |   |   |   |
|                                      |                                            | 4               | 47   | 10                             | 6 2                   | 5 8             | 46                | 33                                 |                                                                              | 5 to 6                                 | 7  |   |    |   |   |   |
| 6 to 7                               | 9                                          |                 |      |                                |                       |                 |                   |                                    |                                                                              |                                        |    |   |    |   |   |   |
| 41                                   | Chilara, Jaonsar Bawur<br>18               | 1               | 98   | 19-25                          | 11 7                  | 10 6            | 51                | 33                                 | Inches. 1                                                                    | Inches.                                |    | 1 |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 0 to 1                                 | 3  |   |    |   |   |   |
|                                      |                                            | 2               | 178  | 18-2                           | ...                   | 9 11            | 98                | 76                                 |                                                                              | 1 to 2                                 | 11 |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 2 to 3                                 | 9  |   |    |   |   |   |
|                                      |                                            | 3               | 162  | 18                             | 10 7                  | 9 10            | 92                | 69                                 |                                                                              | 3 to 4                                 | 7  |   |    |   |   |   |
|                                      |                                            |                 |      |                                |                       |                 |                   |                                    |                                                                              | 4 to 5                                 | 6  |   |    |   |   |   |
|                                      |                                            | 4               | 47   | 10                             | 6 2                   | 5 8             | 46                | 33                                 |                                                                              | 5 to 6                                 | 7  |   |    |   |   |   |
| 6 to 7                               | 9                                          |                 |      |                                |                       |                 |                   |                                    |                                                                              |                                        |    |   |    |   |   |   |
| Average of 36, 37, 38, 39, 40, & 41. |                                            |                 |      |                                | 6 10                  | 6 9             | 71                | 53                                 |                                                                              |                                        |    |   |    |   |   |   |

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## Abstract Statement of Deodar trees, &amp;c.—continued.

| Number. | Forest.                                 | Number of tree. | Age (No. of rings counted.) | Mean radius measured. | Measured girth. | Calculated girth. | Calculated age of 1st class trees. | Calculated age of 2nd class trees. | Details of rings counted, and Remarks. |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|---------|-----------------------------------------|-----------------|-----------------------------|-----------------------|-----------------|-------------------|------------------------------------|------------------------------------|----------------------------------------|--------|-----|-----|-----|---------|----------|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|
|         |                                         |                 |                             |                       |                 |                   |                                    |                                    | Inches.                                |        | 1   | 3   | 4   | 5       | 6        | 7   | 8   | 9   | 10  | 11  | 12  | 13  |     |  |  |  |  |  |
| 45      | Chenab, (depôt near Wuzerabad). ...     | 1               | 132                         | 8                     | ...             | 4 7               | ...                                | 128                                | 0 to 2                                 |        | 24  | 9   | 24  | 26      | 13       | 13  | 20  | 16  | 20  | 21  | 15  | 33  |     |  |  |  |  |  |
|         |                                         | 2               | 166                         | 17                    | ...             | 9 4               | ...                                | 38                                 | 2 to 4                                 |        | 36  | 9   | 22  | 39      | 11       | 10  | 16  | 12  | 14  | 23  | 13  | 59  |     |  |  |  |  |  |
|         |                                         | 3               | 192                         | 12                    | ...             | 6 8               | ...                                | 164                                | 4 to 6                                 |        | 36  | 11  | 30  | 31      | 12       | 14  | 15  | 20  | 15  | 20  | 18  | 46  |     |  |  |  |  |  |
|         |                                         | 4               | 241                         | 13                    | ...             | 7 3               | ...                                | 193                                | 6 to 8                                 |        | 36  | 10  | 36  | 45      | 14       | 16  | 15  | 19  | 16  | 27  | 21  | 55  |     |  |  |  |  |  |
|         |                                         | 5               | 122                         | 13-5                  | ...             | 7 6               | ...                                | 77                                 | 8 to 10                                |        | ... | 15  | 40  | 40      | 21       | 21  | 19  | 15  | 17  | 41  | 28  | 44  |     |  |  |  |  |  |
|         |                                         | 6               | 118                         | 13-75                 | ...             | 7 7               | ...                                | 80                                 | 10 to 12                               |        | ... | 16  | 40  | 30      | 37       | 31  | 13  | 12  | 15  | 37  | 37  |     |     |  |  |  |  |  |
|         |                                         | 7               | 171                         | 18                    | ...             | 9 10              | ...                                | 91                                 | 12 to 14                               |        | ... | 15  | ... | ...     | 14       | 13  | 21  | 16  | 21  | 24  | 42  | 31  |     |  |  |  |  |  |
|         |                                         | 8               | 145                         | 18                    | ...             | 9 10              | ...                                | 87                                 | 14 to 16                               |        | ... | 15  | ... | ...     | ...      | ... | 18  | 14  | 12  | 40  |     |     |     |  |  |  |  |  |
|         |                                         | 9               | 154                         | 18                    | ...             | 9 10              | ...                                | 87                                 | 16 to 18                               |        | ... | 15  | ... | ...     | ...      | ... | ... | ... | ... | ... | ... |     |     |  |  |  |  |  |
|         |                                         | 10              | 294                         | 13-25                 | ...             | 7 4               | ...                                | 144                                | 18 to 20                               |        | ... | 15  | ... | ...     | ...      | ... | ... | ... | ... | ... | ... |     |     |  |  |  |  |  |
|         |                                         | 11              | 200                         | 12-5                  | ...             | 7                 | ...                                | 103                                | 20 to 22                               |        | ... | 21  | ... | ...     | ...      | ... | ... | ... | ... | ... | ... |     |     |  |  |  |  |  |
|         |                                         | 12              | 234                         | 9                     | ...             | 5 2               | ...                                | 247                                | 22 to 24                               |        | ... | 20  | ... | ...     | ...      | ... | ... | ... | ... | ... | ... |     |     |  |  |  |  |  |
|         |                                         | 13              | 101                         | 10-25                 | ...             | 5 9               | ...                                | 105                                | 85                                     |        |     | 132 | 166 | 192     | 241      | 122 | 118 | 171 | 145 | 154 | 294 | 200 | 234 |  |  |  |  |  |
|         |                                         | 14              | 289                         | 13-6                  | ...             | 7 6               | ...                                | 223                                | 170                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 15              | 158                         | 14-2                  | ...             | 7 9               | ...                                | 113                                | 78                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 16              | 153                         | 12                    | ...             | 6 8               | ...                                | 164                                | 112                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 17              | 104                         | 9-3                   | ...             | 5 3               | ...                                | 109                                | 84                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 18              | 94                          | 8-6                   | ...             | 4 10              | ...                                | 76                                 | 76                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 19              | 221                         | 11-5                  | ...             | 6 5               | ...                                | 143                                | 88                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 20              | 76                          | 13-6                  | ...             | 7 6               | ...                                | 54                                 | 33                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 21              | 97                          | 10-6                  | ...             | 5 11              | ...                                | 104                                | 77                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 22              | 111                         | 10-6                  | ...             | 5 11              | ...                                | 103                                | 75                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 23              | 70                          | 5-6                   | ...             | 3 4               | ...                                | ...                                | 101                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 24              | 193                         | 12                    | ...             | 6 8               | ...                                | 142                                | 113                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 25              | 142                         | 8-9                   | ...             | 5 1               | ...                                | 149                                | 114                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 26              | 103                         | 11                    | ...             | 6 2               | ...                                | 70                                 | 48                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 27              | 162                         | 13-5                  | ...             | 7 5               | ...                                | 117                                | 70                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 28              | 181                         | 9-1                   | ...             | 5 2               | ...                                | 191                                | 144                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 29              | 143                         | 12-8                  | ...             | 7 1               | ...                                | 119                                | 82                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 30              | 150                         | 11-3                  | ...             | 6 4               | ...                                | 125                                | 79                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 31              | 172                         | 12-75                 | ...             | 7 1               | ...                                | 141                                | 108                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 32              | 176                         | 12-3                  | ...             | 6 10              | ...                                | 126                                | 89                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 33              | 166                         | 13                    | ...             | 7 2               | ...                                | 143                                | 99                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 34              | 87                          | 13-3                  | ...             | 7 4               | ...                                | 58                                 | 41                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 35              | 81                          | 8-1                   | ...             | 4 7               | ...                                | ...                                | 79                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 36              | 92                          | 9-3                   | ...             | 5 3               | ...                                | 98                                 | 91                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 37              | 99                          | 8-6                   | ...             | 4 11              | ...                                | ...                                | 76                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 38              | 160                         | 10-6                  | ...             | 5 11              | ...                                | 172                                | 116                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 39              | 163                         | 8-3                   | ...             | 4 9               | ...                                | ...                                | 112                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | Average         |                             | ...                   | ...             | ...               | ...                                | ...                                | 124                                    | 88     |     |     | 143 | 150     | 172      | 176 | 166 | 87  | 81  | 92  | 99  | 160 | 163 |  |  |  |  |  |
| 46      | Jhelum (Depot near Jhelum)              | 1               | 233                         | 21                    | ...             | 11 5              | 77                                 | 55                                 | Inches.                                |        | 1   | 2   | 3   | Inches, |          | 1   | 2   | 3   |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 2               | 219                         | ...                   | ...             | ...               | ...                                | 91                                 | 70                                     | 0 to 2 |     | 10  | 30  | 12      | 14 to 16 |     | 23  | 15  | 24  |     |     |     |     |  |  |  |  |  |
|         |                                         | 3               | 137                         | ...                   | ...             | ...               | ...                                | 78                                 | 56                                     | 2 to 4 |     | 15  | 12  | 14      | 16 to 18 |     | 24  | 22  |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 4               | ...                         | ...                   | ...             | ...               | ...                                | 143                                | 105                                    | 4 to 6 |     | 15  | 15  | 16      | 18 to 20 |     | 24  | 30  |     |     |     |     |     |  |  |  |  |  |
|         |                                         | Average         | ...                         | ...                   | ...             | ...               | ...                                | 97                                 | 71                                     | 6 to 8 |     | 17  | 14  | 16      | 20 to 22 |     | 24  | 20  |     |     |     |     |     |  |  |  |  |  |
| 47      | Swat River (Depot near Nowshera)        | 1               | 144                         | 8                     | ...             | 4 10              | ...                                | 141                                | Inches.                                |        | 1   | 2   | 3   | 4       | 5        | 26  | 7   | 8   | 9   | 10  |     |     |     |  |  |  |  |  |
|         |                                         | 2               | 156                         | 9                     | ...             | 5 2               | ...                                | 166                                | 0 to 2                                 |        | 26  | 26  | 24  | 20      | 17       | 20  | 14  | 20  | 24  | 18  |     |     |     |  |  |  |  |  |
|         |                                         | 3               | 100                         | 8                     | ...             | 4 7               | ...                                | 121                                | 2 to 4                                 |        | 52  | 36  | 26  | 18      | 33       | 34  | 20  | 29  | 31  | 24  |     |     |     |  |  |  |  |  |
|         |                                         | 4               | 99                          | 9                     | ...             | 5 2               | ...                                | 104                                | 4 to 6                                 |        | 36  | 30  | 26  | 21      | 30       | 36  | 23  | 24  | 70  | 30  |     |     |     |  |  |  |  |  |
|         |                                         | 5               | 168                         | 9-5                   | ...             | 5 5               | ...                                | 181                                | 6 to 8                                 |        | 30  | 32  | 24  | 22      | 44       | 28  | 28  | 30  | 24  | 40  |     |     |     |  |  |  |  |  |
|         |                                         | 6               | 148                         | 10                    | ...             | 5 8               | ...                                | 157                                | 8 to 10                                |        | ... | 32  | ... | 18      | 44       | 30  | 30  | 36  | 30  | 50  |     |     |     |  |  |  |  |  |
|         |                                         | 7               | 120                         | 9                     | ...             | 5 2               | ...                                | 129                                | 10 to 12                               |        | ... | ... | ... | ...     | ...      | ... | 40  | 34  |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 8               | 179                         | 12                    | ...             | 6 8               | ...                                | 150                                |                                        |        | 144 | 156 | 100 | 99      | 168      | 148 | 120 | 179 | 213 | 162 |     |     |     |  |  |  |  |  |
|         |                                         | 9               | 213                         | 12                    | ...             | 6 8               | ...                                | 188                                |                                        |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 10              | 162                         | 13                    | ...             | 7 3               | ...                                | 177                                |                                        |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
| Average |                                         | ...             | ...                         | ...                   | ...             | ...               | 156                                | 112                                |                                        |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
| 48      | Cabul River timber (examined at Attock) | 1               | ...                         | ...                   | ...             | ...               | 191                                | 140                                |                                        |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 2               | ...                         | ...                   | ...             | ...               | ...                                | 170                                | 125                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 3               | ...                         | ...                   | ...             | ...               | ...                                | 223                                | 164                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 4               | ...                         | ...                   | ...             | ...               | ...                                | 313                                | 234                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 5               | ...                         | ...                   | ...             | ...               | ...                                | 148                                | 109                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 6               | ...                         | ...                   | ...             | ...               | ...                                | 339                                | 250                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 7               | ...                         | ...                   | ...             | ...               | ...                                | 201                                | 148                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 8               | ...                         | ...                   | ...             | ...               | ...                                | 265                                | 195                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 9               | ...                         | ...                   | ...             | ...               | ...                                | 191                                | 140                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 10              | ...                         | ...                   | ...             | ...               | ...                                | 148                                | 109                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 11              | ...                         | ...                   | ...             | ...               | ...                                | 201                                | 148                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 12              | ...                         | ...                   | ...             | ...               | ...                                | 127                                | 94                                     |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
|         |                                         | 13              | ...                         | ...                   | ...             | ...               | ...                                | 265                                | 195                                    |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |
| Average |                                         | ...             | ...                         | ...                   | ...             | ...               | 214                                | 158                                |                                        |        |     |     |     |         |          |     |     |     |     |     |     |     |     |  |  |  |  |  |

## APPENDIX IV.

*Measurements of Deodar trees at different heights of the Stem.*

| NAME OF TREE<br>AND<br>LOCALITY. | NO. OF TREE. | HEIGHT. | DIAMETER. | GIRTH.  | PROPORTION OF<br>LOWER AND UPPER<br>GIRTH. | NAME OF TREE<br>AND<br>LOCALITY. | NO. OF TREE. | HEIGHT. | DIAMETER. | GIRTH.  | PROPORTION OF<br>LOWER AND UPPER<br>GIRTH. |
|----------------------------------|--------------|---------|-----------|---------|--------------------------------------------|----------------------------------|--------------|---------|-----------|---------|--------------------------------------------|
|                                  |              | Ft.     | Ft. In.   | Ft. In. |                                            |                                  |              | Ft. In. | Ft. In.   | Ft. In. |                                            |
| <i>Pinus longifolia</i> .—       | 1            | Stump.  | ...       | 5 3     | 100                                        | Nachar S. ...                    | 4            | 3 0     | 4 11      | 15 10   | 100                                        |
| Between Kanda and                |              | 10      | ...       | 4 10    | 92                                         |                                  |              | 20 0    | 3 5       | 11 2    | 70                                         |
| Bandrouli, Jaonsar               |              | 20      | ...       | 4 8     | 89                                         |                                  |              | 36 0    | 3 5       | 11 2    | 70                                         |
| Bawur ...                        |              | 30      | ...       | 4 1     | 78                                         |                                  |              | 52 0    | 3 4       | 10 11   | 69                                         |
|                                  |              | 40      | ...       | 3 9     | 71                                         |                                  |              | 69 0    | 3 3       | 10 8    | 67                                         |
|                                  |              | 50      | ...       | 2 1     | 39                                         |                                  |              | 86 0    | 3 0       | 9 10    | 62                                         |
| Ditto ...                        | 2            | 10      | ...       | 5 2     | 100                                        |                                  |              | 103 0   | 2 9       | 9 1     | 57                                         |
| Bodeher Forest Jaon-             |              | 50      | ...       | 3 10½   | 75                                         |                                  |              | 122 0   | 2 7       | 8 6     | 53                                         |
| sar Bawur ...                    | 3            | 3       | ...       | 4 5     | 100                                        | Ditto ...                        | 5            | Stump   | 4 6       | 14 7    | 100                                        |
|                                  |              | 28      | ...       | 3 1     | 70                                         |                                  |              | 18 6    | 4 3       | 13 9    | 94                                         |
|                                  |              | 38      | ...       | 2 9     | 62                                         |                                  |              | 33 0    | 3 11      | 12 9    | 87                                         |
|                                  |              | 48      | ...       | 2 3     | 51                                         |                                  |              | 47 6    | 3 9½      | 12 4    | 84                                         |
|                                  |              | 58      | ...       | 1 9     | 39                                         |                                  |              | 62 0    | 3 7½      | 11 10   | 81                                         |
| Ditto ...                        | 4            | 3       | ...       | 6 10    | 100                                        |                                  |              | 76 6    | 3 5       | 11 2    | 76                                         |
|                                  |              | 48      | ...       | 4 0½    | 59                                         |                                  |              | 91 0    | 3 2½      | 10 6    | 72                                         |
| Ditto ...                        | 5            | 3       | ...       | 6 10    | 100                                        |                                  |              | 105 6   | 2 10      | 9 4     | 64                                         |
|                                  |              | 43      | ...       | 4 6     | 65                                         |                                  |              | 120 0   | 2 10      | 9 4     | 64                                         |
|                                  |              | 58      | ...       | 3 9     | 54                                         |                                  |              | 134 6   | 2 6       | 8 3     | 56                                         |
| Above Khattowa village           |              | 68      | ...       | 3 1     | 45                                         |                                  |              | 150 0   | 2 1½      | 7 1     | 48                                         |
| Jaonsar Bawur ...                | 6            | 3       | ...       | 5 6     | 100                                        | Ditto ...                        | 6            | Stump.  | ...       | 10 6    | 100                                        |
|                                  |              | 21      | ...       | 3 11    | 71                                         |                                  |              | 84 0    | ...       | 4 0     | 38                                         |
| Tutwa Forest Jaonsar             |              |         |           |         |                                            | Ditto ...                        | 7            | Stump.  | ...       | 10 6    | 100                                        |
| Bawur ...                        | 7            | 3       | ...       | 12 0    | 100                                        |                                  |              | 96 0    | ...       | 5 0     | 47                                         |
|                                  |              | 48      | ...       | 8 3     | 69                                         | Ditto ...                        | 8            | Stump.  | ...       | 18 10   | 100                                        |
|                                  |              | 2       | 3 0       | 9 10    | 100                                        |                                  |              | 84 0    | ...       | 10 0    | 53                                         |
| Nachar S. ...                    | 1            | 27      | 2 4       | 7 9     | 78                                         | Kiuden                           | 1            | 6 0     | ...       | 5 4     | 100                                        |
|                                  |              | 41      | 2 3       | 7 6     | 76                                         |                                  |              | 18 0    | ...       | 5 2     | 97                                         |
|                                  |              | 55      | 2 2½      | 7 4     | 74                                         |                                  |              | 26 0    | ...       | 4 9     | 89                                         |
|                                  |              | 94      | 1 9       | 5 11    | 60                                         |                                  |              | 34 0    | ...       | 4 6     | 84                                         |
| Ditto ...                        | 2            | 4       | 2 11      | 9 7     | 100                                        |                                  |              | 44 0    | ...       | 4 0     | 75                                         |
|                                  |              | 18      | 2 10½     | 9 5     | 98                                         |                                  |              | 54 0    | ...       | 3 7     | 67                                         |
|                                  |              | 32      | 2 8       | 8 9     | 91                                         | Buru                             | 1            | Butt.   | ...       | 5 8     | 100                                        |
|                                  |              | 45      | 2 3       | 7 6     | 78                                         |                                  |              | 49 0    | ...       | 3 10    | 67                                         |
|                                  |              | 59      | 2 2       | 7 3     | 75                                         | Sangla                           | 1            | Butt.   | ...       | 6 2     | 100                                        |
|                                  |              | 73      | 1 7       | 5 5     | 52                                         |                                  |              | 19 0    | ...       | 5 1     | 82                                         |
| Ditto ...                        | 3            | 2½      | 3 3½      | 10 9    | 100                                        |                                  |              | 34 0    | ...       | 4 3     | 69                                         |
|                                  |              | 18½     | 2 11      | 9 7     | 88                                         |                                  |              | 49 0    | ...       | 3 6     | 56                                         |
|                                  |              | 31      | 2 8       | 8 9     | 81                                         | Serinche                         | 1            | 2 0     | ...       | 11 9    | 100                                        |
|                                  |              | 44      | 2 7       | 8 6     | 79                                         |                                  |              | 52 0    | ...       | 5 0     | 42                                         |
|                                  |              | 70      | 2 4       | 7 9     | 72                                         | Ditto ...                        | 2            | 3 0     | ...       | 10 6    | 100                                        |
|                                  |              |         |           |         |                                            |                                  |              | 53 0    | ...       | 4 2     | 39                                         |
|                                  |              |         |           |         |                                            |                                  |              | 64 0    | ...       | 3 0     | 28                                         |
|                                  |              |         |           |         |                                            | Chaog                            | 1            | Butt.   | ...       | 8 4     | 100                                        |
|                                  |              |         |           |         |                                            |                                  |              | 40 0    | ...       | 7 2     | 86                                         |
|                                  |              |         |           |         |                                            | Tinala Forest                    | 1            | Butt.   | ...       | 9 0     | 100                                        |
|                                  |              |         |           |         |                                            |                                  |              | 50 0    | ...       | 5 8     | 64                                         |

Measured without the bark.

Note.—The trees were Deodar, unless otherwise stated.



## APPENDIX V.

*Statement of the Geographical limits of some of the trees, shrubs, and useful plants in Kunawur,*  
by J. L. STEWART, M. D.

U. Upper limit.      U. R. Upper right bank limit.      U. L. Upper left bank limit.  
L. Lower      „      L. R. Lower      „      „      L. L. Lower      „      „  
C. Cultivated or planted.

| BOTANICAL NAME.                       | KUNAWURAI NAME.                 | LIMITS.                                                                                                                               |
|---------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <i>Abies Smithiana</i> ...            | <i>Ryung</i> ...                | U. R. Pangī. U. L. Rispa.                                                                                                             |
| <i>Acacia Julibrissin</i> ...         | <i>Shirin</i> ...               | U. Above Wangtū                                                                                                                       |
| <i>Acer cultratum</i> ...             | <i>Tān</i> ...                  |                                                                                                                                       |
| <i>A. sterculiaceum</i> ...           | <i>Lāūr</i> ...                 |                                                                                                                                       |
| <i>Alnus Nipalensis</i> ...           | <i>Nyū</i> ...                  | U. R. Spūi. U. L. Namgia.                                                                                                             |
| <i>Ampelopsis Himalayana</i> ...      |                                 | U. R. Urnī.                                                                                                                           |
| <i>Amygdalus Persica</i> ...          | <i>Rek</i> ...                  | U. R. Sungnam. U. L. Morung.<br>Cult.                                                                                                 |
| <i>Arum</i> Sp. ...                   |                                 | U. R. Pangī. U. L. Rakcham on the<br>Buspa.                                                                                           |
| <i>Arundinaria utilis</i> ...         | <i>Spyūg</i> ...                | Above Panwi on the road to Shatūl<br>Pass.                                                                                            |
| <i>Betula Bhojputra</i> ...           | <i>Shāk, shāg</i> ...           | Generally above 10,000 except where<br>very arid.                                                                                     |
| <i>Buxus sempervirens</i> ...         | <i>Pāprang</i> ...              | Opposite Chergāon on the left bank of<br>the Sutlej.                                                                                  |
| <i>Capparis spinosa</i> ...           | <i>Bussar</i> ...               | Wangtū to Urnī, along the Sutlej.                                                                                                     |
| <i>Cedrela toona (serrata)</i> ...    | <i>Khishing, Khanam</i> ...     | U. L. Opposite Chergāon.                                                                                                              |
| <i>Cedrus Deodara</i> ...             | <i>Kelmung, Kewate Gyam</i> ... | U. R. Hangarang Pass. U. L. Dab-<br>ling and on Buspa below Rakcham                                                                   |
| <i>Celtis Caucasica</i> ...           | <i>Kur</i> ...                  | U. R. Jangī. U. L. Morung. C.                                                                                                         |
| <i>Cornus macrophylla</i> ...         | <i>Shitā, Shkā</i> ...          | U. R. Urnī. U. L. Jānī.                                                                                                               |
| <i>Corylus lacera</i> ...             | <i>Geh</i> ...                  | U. R. Pangī. U. L. Poārī. C. & wild.                                                                                                  |
| <i>Daphne oleoides</i> ...            | <i>Zhikuk</i> ...               | L. Wangtū. U. Pangī.                                                                                                                  |
| <i>Desmodium (argenteum)</i> ...      | <i>Mūs</i> ...                  | U. R. Sungnam. U. L. Morung.<br>Observed at Rārang.                                                                                   |
| <i>Dioscorea deltoidea</i> ...        | <i>Kāns, Gungru</i> ...         | Rakcham.                                                                                                                              |
| <i>Elæagnus conferta</i> ...          | <i>Rinsot, rül</i> ...          | To Tibet. Cult.                                                                                                                       |
| <i>Ephedra</i> sp. ...                | <i>Khanna, Khanda</i> ...       | L. Urnī, occasional to Tibet.                                                                                                         |
| <i>Eriophorum comosum</i> ...         | <i>mūjī, ūchī</i> ...           | U. Chergāon.                                                                                                                          |
| <i>Ficus caricoides</i> ...           | <i>kak, Kok</i> ...             | U. L. Urnī.                                                                                                                           |
| <i>Fraxinus Xanthoxyloides</i> ...    | <i>thūm</i> ...                 | U. R. Spūi. U. L. Namgia.                                                                                                             |
| <i>Hippophaë salicifolia</i> ...      | <i>sūts</i> ...                 | One or two below Wangtū. Urnī to<br>Tibet. Cult.                                                                                      |
| <i>Indigofera arborea</i> ...         | <i>kāstin</i> ...               | U. R. Sungnam. U. L. Morung.                                                                                                          |
| <i>Juglans regia</i> ...              | <i>kā</i> ...                   | U. R. Spūi. U. L. Namgia. Cult.                                                                                                       |
| <i>Juniperus communis</i> ...         | <i>lang shūr</i> ...            | Purbnī.                                                                                                                               |
| <i>J. excelsa</i> ...                 | <i>shūr, Shurghu</i> ...        | 9,500' Werang Pass 10,000', and hill<br>opposite Rispa on the right bank of<br>the Teedong stream probably at a<br>similar elevation. |
| <i>J. squamosa</i> ...                | <i>theli</i> ...                | Hārang Pass 10,000 feet.                                                                                                              |
| <i>Morus serrata</i> ...              | <i>an soā</i> ...               | U. R. Jangī. U. L. Opposite Cher-<br>gāon. Cult.                                                                                      |
| <i>Myricaria</i> sp. ...              | <i>hombu</i> ...                | L. Above Sangla, Rispa.                                                                                                               |
| <i>Olea (ferruginea) European</i> ... | <i>wili</i> ...                 | U. (Rarang, Riba.) Chergāon.                                                                                                          |

## Statement of the Geographical limits of some of the trees, &amp;c.,—continued.

| BOTANICAL NAME.                      | KUNAWURI NAME.                | LIMITS.                                                      |
|--------------------------------------|-------------------------------|--------------------------------------------------------------|
| <i>Paliurus aculeata</i> ...         | <i>thūm</i> ...               | U. L. Jāni.                                                  |
| <i>Parrotia Jacquemontiana</i> ...   | <i>shā</i> ...                | Near Shoang only, 9,000 feet.                                |
| <i>Pavia Indica</i> ...              | <i>pū</i> ...                 | U. R. Jangi. U. L. Purbani. Cult.                            |
| <i>Phytolacca decandra</i> ...       | <i>matazor</i> ...            | U. L. Opposite Chergāon.                                     |
| <i>Picea Webbiana</i> ...            | <i>spun, pun, Krok</i> ...    | U. R. Lipi. U. L. Dabbling.                                  |
| <i>Pinus excelsa</i> ...             | <i>līm</i> ...                | U. R. Sūngnam. U. L. Namgia.                                 |
| <i>P. Gerardiana</i> ...             | <i>rī</i> ...                 | L. R. Chergāon. L. L. Jāni. U. R. Hangarang. U. L. Dabbling. |
| <i>P longifolia</i> ...              | <i>chūl</i> ...               | U. Above Wangtū.                                             |
| <i>Pistacia integerrima</i> ...      | <i>Kakkrangche</i> ...        | U. R. Urnī. U. L. Kilba.                                     |
| <i>Populus alba</i> ...              | <i>māl</i> ...                | L. R. Mirū. L. L. Poāri to Tibet. Cult.                      |
| <i>P. ciliata</i> ...                | <i>krammal</i> ...            | U. Rarang.                                                   |
| <i>P. fastigiata</i> ...             | <i>do.</i> ...                | U. R. Spūi. U. L. Dabbling.                                  |
| <i>Prinsepia utilis</i> ...          | <i>bekling</i> ...            | U. Urnī.                                                     |
| <i>Prunus armeniaca</i> ...          | <i>chūl, burzha</i> ...       | To Tibet.                                                    |
| <i>P. Padus</i> ...                  | <i>krūn</i> ...               | U. On Buspa, above Sangha.                                   |
| <i>Pyrus variolosa</i> ...           | <i>kent, shegul</i> ...       | To Urnī                                                      |
| <i>Quercus dilatata</i> ...          | <i>marghang</i> ...           | U. Jāni. C.                                                  |
| <i>Q. Ilex</i> ...                   | <i>bre</i> ...                | L. Chergāon, Panwī. U. Teling, Purbnī.                       |
| <i>Q. incana</i> ...                 | <i>bān</i> ...                | U. L. Opposite Chergaon.                                     |
| <i>Q. semicarpifolia</i> ...         | <i>khursūi</i> ...            | On Buspa above Sangla, not above Wangtū on Sutlej.           |
| <i>Rheum Moorcroftianum</i> ...      | <i>arts</i> ...               | Above 10,000 feet. All over.                                 |
| <i>Rhododendron campanulatum</i> ... | <i>sīmrung</i> ...            | Hārang Pass.                                                 |
| <i>Rhus Cotinus</i> ...              | <i>tung</i> ...               | U. Above Wangtū.                                             |
| <i>R. semialata</i> ...              | <i>hulāshing, kashin</i> ...  | U. Urnī.                                                     |
| <i>R. acuminata</i> ...              | <i>hūrku</i> ...              | U. Wangtū.                                                   |
| <i>Rhus sp.</i> ...                  | <i>hulashing</i> ...          | U. Sapnī.                                                    |
| <i>Rosa Webbiana</i> ...             | <i>ring yāl</i> ...           | L. R. Pangī.                                                 |
| <i>Rubia cordifolia</i> ...          | <i>runaug</i> ...             |                                                              |
| <i>Rubia tinctorum</i> ...           | <i>bacho</i> ...              | Cultivated at Rispa.                                         |
| <i>Salix alba</i> ...                | <i>mudanū, shun</i> ...       | L. Pangī.                                                    |
| <i>Salix sp.</i> ...                 | <i>shun</i> ...               |                                                              |
| <i>Staphylea Emodi</i> ...           | <i>kāghaniya</i> ...          | U. Chergaon.                                                 |
| <i>Syringa Emodi</i> ...             | <i>shāfar, rangchūl</i> ...   | Rogī Raksham 10,000 feet.                                    |
| <i>Taxus baccata</i> ...             | <i>yamdal</i> ...             | Above 9,000 feet.                                            |
| <i>Ulmus erosa</i> ...               | <i>shko</i> ...               | L. Urnī. U. Rārang and Riba.                                 |
| <i>U. virgata</i> ...                | <i>maldūng</i> ...            | U. R. Tangi. U. L. Riba.                                     |
| <i>Vitis vinifera</i> ...            | <i>lanang fruit dakhang</i> { | L. Urnī. Jani<br>U. Spūi. Namgia                             |
| <i>Xanthoxylon hostile</i> ...       | <i>timrū</i> ...              | U. Wangtū.                                                   |

## APPENDIX VI.

*Memo. of Heights from observations of boiling point by COL. R. MACLAGAN, 1847, Heights calculated by Prinsep's Tables.*

|                                                                |     |     |     |     |     | Feet above Sea. |
|----------------------------------------------------------------|-----|-----|-----|-----|-----|-----------------|
| Sutlej at confluence of the Machâr between Kotgurh and Rampoor |     |     |     |     |     | 2,796           |
| Rampoor (town)                                                 | ... | ... | ... | ... | ... | 3,013           |
| Wangtu (village)                                               | ... | ... | ... | ... | ... | 5,133           |
| Buspa, at the Sanga near confluence with the Sutlej            | ... |     |     |     | ... | 6,049           |
| Poori (village)                                                | ... | ... | ... | ... | ... | 6,472           |
| Riba (village)                                                 | ... | ... | ... | ... | ... | 8,449           |
| Sutlej at confluence of Teedong                                | ... | ..  |     | ... | ... | 7,583           |
| Dabling village                                                | ... | ... | ... | ... | ... | 9,276           |
| Namja „                                                        | ... | ... | ... | ... | ... | 9,305           |
| Shipkee „                                                      | ... | ... | ... | ... | ... | 9,672           |
| Lupcha Sanga on the Sutlej above Shipkee                       | ... |     |     | ... | ... | 8,384           |
| Sanga on the Spiti at Shalkur                                  | ... | ... |     | ... | ... | 9,845           |
| Jhula on the Spiti at Mane                                     | ... | ... |     | ... | ... | 10,929          |

## APPENDIX No. VII.

*Forest valuation Surveys, Jaonsar Bawur 1863.*

| No. | Date.   | Name of Officers conducting the Survey.    | Locality.                                    | DEODAR.                 |                             |                              |                    |        | AREA SURVEYED. |              |                | TREES PER ACRES. |               | REMARKS.                                    |
|-----|---------|--------------------------------------------|----------------------------------------------|-------------------------|-----------------------------|------------------------------|--------------------|--------|----------------|--------------|----------------|------------------|---------------|---------------------------------------------|
|     |         |                                            |                                              | First class above 6 ft. | Second class 4 ft. to 6 ft. | Third class 1½ ft. to 4½ ft. | Fourth class small | Stumps | Length in ft.  | Width in ft. | Area in acres. | First class.     | Second class. |                                             |
| 1   | June 9  | Mr. Williams<br>Mr. Melvill<br>Dr. Brandis | South slope of Lokandi hill (Dunau District) | 31                      | 46                          | 18                           | 123                | 22     | 5000           | 300          | 34'43          | 0'90             | 1'34          | Abies Smithiana 24 of the two first classes |
| 2   | "       | "                                          | Bodeher F Upper part (Dunau District)        | 31                      | 42                          | 376                          | 621                | 91     | 2200           | 150          | 7'58           | 4'09             | 5'07          | A Smithiana 48 of the two first classes     |
| 3   | "       | "                                          | Bodeher F Lower part (Dunau District)        | 6                       | 20                          | 64                           | 165                | 58     | 600            | 150          | 2'06           | 2'91             | 9'70          |                                             |
| 4   | "       | Dr. Brandis                                | Molla hill N E side (Mashak District)        | 20                      | 40                          | 48                           | 88                 | 15     | 2200           | 200          | 10'10          | 1'98             | 3'96          |                                             |
| 5   | June 10 | Mr Melvill<br>Dr Brandis                   | Mashak Forest                                | 106                     | 242                         | 262                          | 259                | 75     | 6600           | 200          | 30'30          | 3'50             | 7'99          | P excelsa 94<br>A Smithiana 56              |
| 6   | "       | "                                          | "                                            | 53                      | 80                          | 35                           | 15                 | 76     | 2000           | 200          | 9'18           | 5'77             | 8'71          | A Smithiana 1 9                             |
| 7   | "       | "                                          | "                                            | 10                      | 27                          | 53                           | 22                 | 14     | 200            | 150          | 0'69           | 14'50            | 39'13         | P excelsa 23<br>A Smithiana 106             |
| 8   | "       | "                                          | "                                            | 17                      | 28                          | 40                           | 84                 | 27     | 2700           | 150          | 9'30           | 1'83             | 3'01          | Picea Webbiana 9                            |

## FOREST ON THE LOKANDI SPUR.

Nos. 1—8. On the 8th June 1863, we determined to start upon a tour through the Deodar Forests on the Lokandi Spur, a westerly branch of the main range of water-shed on which Deoban is situated. The party consisted of Mr. Fleetwood Williams, Commissioner of the Meerut Division, Mr. Melville, Superintendent of Dehra Doon, and myself.

The road leads along a secondary ridge, which leaves the main range of water-shed between the Jumna and Tonse rivers north of Deoban, and takes first a westerly, and then a north-westerly direction. About 500 feet below the Deoban bungalow, and at an elevation of about 8,700 feet, we came to a field of barley not yet ripe. The fields of barley and wheat in the higher parts of these hills are still green, but the people do not apprehend any failure of the crop on account of the approaching rains, as there is generally sufficient sunshine during June and July to ripen the crop. Our path led us through a Forest of Rai, with little Morunda (*Abies Smithiana* and *Picea Webbiana*) a great deal of Kurzoo (*Quercus semicarpifolia*) with fine tall stems. The rock is limestone, the strike of the strata almost due east and west, and the dip to the south. In the valley to the south we saw the villages of Jaddi and Mangul; near the latter, iron is smelted from good ore, and there is an abundance of wood for charcoal.

One Rai tree measured 8 feet 6 inches in girth and 95 feet in height to the point where the girth of the trunk is less than 3 feet. Another had been struck by lightning; the outer layers of the wood had separated from the inner. There was hardly any trace of fire, some of the branch stumps in the outer layers of the wood, were blackened as if burnt. Further on, the south side of the ridge was almost bare, whereas the north side was densely wooded. But stumps and stunted trees on the south side indicated that Forest had existed at some previous period. The villages, however, are numerous on this side, and this may possibly have led to the destruction of the forest. We found fields covered with young Bhatwa (*Chenopodium*) which is sown in March, and ripens in October.

We pitched our tents above the village of Raju, below the Lokandi Pagoda. Near our camp lay a large number of Deodar planks, brought from the Forest on the north side of the ridge. Most of these were 7 to 10 feet long, 1 to 2 inches thick, and of various breadth. They had been cut by the villagers, who sell at the rate of 19 feet or 10 cubits in width, or about 150 square feet for one rupee. The purchasers come from the southern part of the district and from the villages near the Amlawah, Tonse and Jumna Rivers, where no Deodar grows. In the afternoon, I ascended the limestone peak on which stands the Lokandi Pagoda, a square wooden temple, surrounded by a low stone wall. Near it are terraces where the villagers assemble on their annual feast days. On the limestone rocks there is much fine *Leauri* (*Cupressus torulosa*) and to the west and north much Deodar. The view from this point, the highest on the spur, is beautifully varied with dense forests in many places. To the north-west the spur terminates in the Moila Hill with picturesque limestone rocks and gently sloping meadows. On my return to camp I measured three Deodar trees with stems fit for timber 60 feet long and girths of 7 feet 8 inches, 8 feet and 13 feet 6 inches. One tree, with a girth of 6 feet 10 inches, and a stem fit for timber of 55 feet, had been felled. The stump showed 78 rings on a radius of  $12\frac{1}{2}$  inches, of which 3 inches were sapwood; the largest cypress was 7 feet 6 inches in girth and 80 feet high.

9th June.—Started to go round the Lokandi and Moila Hill, from south to north. Upon the south slope, there is a quantity of Deodar scattered between the fields; here the trees noted in Valuation Survey No. 1, were counted. Many of the Deodars had their side branches lopped off, nearly the entire length of the stem, probably to be used as litter for cattle. Crossing a side spur running in a south-west direction, we entered a splendid Forest named Bodehâr, consisting mainly of Deodar, which here attains a large size upon a clay slate soil. We measured a tree which had been felled; the stump 6 feet 7 inches in girth; the entire length of the stem up to an end girth of 3 feet being 82 feet. The age of this tree was 71 years. The following trees were also measured:—

|          |        |      |                        |
|----------|--------|------|------------------------|
| Girth 7' | length | 75'  | to an end girth of 3'. |
| " 6' 9"  | "      | 85'  | " "                    |
| " 7' 2"  | "      | 115' | " "                    |

The rate of growth appears from the data entered in No. 36 of Appendix III. Deodar in this Forest forms one inch of wood (radius) in from 5 to 9 years. The stem of these trees does not taper much as will appear from the following statement:—

| TREE, | GIRTH AT BUTT. | UPPER GIRTH.                     | IF GIRTH AT BUTT 100" PROPORTIONATE UPPER GIRTH. |
|-------|----------------|----------------------------------|--------------------------------------------------|
| 1     | 4' 5"          | 1' 9" measured at 58'            | 39"                                              |
| 2     | 6' 10"         | 4' 0 $\frac{1}{2}$ " ditto „ 48' | 59"                                              |
| 3     | 6' 10"         | 3' 1" ditto „ 68'                | 45"                                              |

The surveys of this Forest are entered under Nos. 2. and 3. The figures there entered, 4.09 and 2.91 first class trees per acre, do not convey a sufficiently favourable idea of the contents of the forest. In some parts the trees stood much closer. The area of the forest probably extends over several hundred acres.

The proximity to the Tonse renders this Forest peculiarly valuable. In a straight line the distance is only  $4\frac{1}{2}$  miles, and by the road, which was said to follow the course of a valley, it cannot be more than 10. A large quantity of timber is being cut, and the people say that it is all consumed for house-building in the neighbouring hill districts. The usual scantlings cut are from 20 to 30 feet long and 5 inches by 6 inches or less, and planks for walls and roofs from 4 feet to 7 feet long and 1 inch to  $1\frac{1}{2}$  inches thick. At the lower end of the Forest we saw a stack containing upwards of 660 planks, 10 feet to 12 feet long, 12 inches to 14 inches wide, and 3 inches to 4 inches thick. These had been cut on account of Government for a bridge over the Tonse, and had been lying there for several years, but had not apparently suffered by exposure.

Near these planks we were surprised to find five stumps of trees recently felled, 7 feet in girth. A few planks had been taken off, but the greater part of the trunks had been burnt apparently a short time ago. The people asserted that the trees had been destroyed by jungle fires, but as there was no sign of recent fire round about, this cannot have been the case. The wood must either have been used for the manufacture of charcoal, or the place was cleared for temporary cultivation, and the timber burnt. We observed in the course of the day many similar instances of destruction. In some cases, it appeared that the standing trees had been ignited, and we found the burnt remains of large branches which had evidently been heaped up round the trunk. Trees are commonly thus burnt in the hills, to get rid of them for the purpose of cultivation, but these trees were often in the midst of the forest where no cultivation was likely to be attempted; possibly they are burnt to obtain charcoal with little trouble.

From the Bodeh̄r Forest we turned our steps to the Moila Hill which is a north-west prolongation of the Lokandi Spur. We had a good view of the Tonse in several places, as it flows round the base. The Moila Hill sends out three spurs; one runs to the west towards Aswi. On the south side of this spur, and all along the flank of the hill, there is a great deal of Deodar, not forming continuous tracts like Bodeh̄r, but in patches intermixed with Rai. The path leads through this tract, but as we were obliged to proceed rapidly, no survey was taken. Between the west and north-west spurs towards the villages of Kunwa and Pingwa, there is little Deodar. The slope is in many parts precipitous, being formed of almost perpendicular limestone rocks. Where there is room, *Leauri* (*Cupressus torulosa*) and Rai (*A. Smithiana*) are abundant. I walked nearly round the Moila Hill, and a considerable distance down the north-west spur, but found only a few scattered Deodar trees. In the angle between this and the third spur, tending towards north, north-east, is the village of Rahan, below a limestone precipice which here borders the Moila Hill. Far down in the valley there is a little Deodar, but near the top all is *Abies* and *Cupressus*. The third great Deodar locality occurs in the bend between this northern spur and a large spur running from the Lokandi Pagoda to the north-east, towards the junction of the Benargad and Chiligar. In this valley the village of Mashak is situated. The main portion of the Moila Hill is limestone. The strike of the strata is from north-west to south-east, and the dip towards the south-west. In accordance with this formation of the strata, the south-west slope is gradual as on the Lokandi Hill, and the other sides are precipitous. It has already been mentioned that clay-slate is found in the Bodeh̄r Forest. It also occurs near the village of Mashak.

Wherever Deodar was found on the Moila Hill, there were the marks of cutting, and a plank 25½ feet long 10 inches by 1½ inches was seen near the top. On my way down to Mashak village, survey No. 4 was taken. Deodar is here scattered over the steep and often precipitous slope of the hill; the result was two and four trees per acre of the 1st and 2nd classes. The growth of the trees, however, is good. One tree, which had been struck by lightning, was 11 feet 9 inches in girth and 70 feet long up to 3 feet end girth.

We found our tents pitched on a terraced field near the village of Mashak, surrounded by Apricot and Peach trees. The village bears every mark of being in the midst of Deodar Forest, the houses are built with magnificent pieces of this wood. We measured several planks 37 inches wide, 4 inches thick, and 8 feet long. The aggregate width of three planks, which served as the flooring of a terrace in front of a house, was 15 feet 4 inches which gives an average width of 5 feet 1 inch. The length of these was 16 feet 6 inches. The enclosure round the open square paved with large flags of slate, where the elders of the village assemble, was formed by Deodar beams 28 feet long 12 inches thick and 15 inches wide. The houses in Mashak are neat, the lower part is of stone, with beams between to strengthen the walls. These beams are painted with ochre which contrasts well with the white plaster of the walls, and the light brown color of the wooden superstructure. The lower portion just described serves as a store-house for grain, and is closed by massive Deodar doors with large well carved door frames. The upper story stretches out on all sides 3 or 4 feet beyond the understructure, and is supported by trusses and pillars neatly carved. It is entirely built of wide Deodar planks, some sawn, others split, and all from 2 to 4 inches thick. The roof is a simple gable, projecting beyond the upper story, covered with thick split Deodar planks or shingles.

10th June.—We took a path which led round the semi-circular valley enclosed by the Moila and Lokandi Hills, and a spur running northward from the latter hill, then crossed this spur and following the head waters of a tributary of the Benargad, which falls into that stream above its junction with the Chiligar, gained the main ridge above Jaddi village and returned to Deoban by the road of the 8th.

After leaving the clay-slate and quartzose rocks near Mashak, the route lay entirely over limestone. Deodar was plentiful on the first portion of the march, but disappeared when we began to ascend the main ridge. There is Deodar on the north face of this ridge but lower down, between the spur mentioned above and that by which the Simla road ascends to Deoban. This forest is called Kandari, and furnished the timber used in the construction of the Deoban Bungalow. In survey No. 7, the trees counted on a small space

200 feet  $\times$  150 feet accurately measured, are noted. Ten trees of the first, and 27 of the second class were counted. Some of these were not Deodar, but the object was merely to ascertain the amount of timber standing on that area. The first class trees measured 100, the second class 25 cubic feet of marketable timber. This gives per acre 2,460 cubic feet. The average age of the first class trees was 70 years, so that the annual production of marketable timber has only been 35 cubic feet. The longitudinal surveys (5, 6, 8,) give a less favourable result as they include blank spaces, and localities producing other trees than Deodar. Besides *Picea Webbiana* and *Abies Smithiana*, there was a large quantity of Cheel (*Pinus excelsa*), Rai and Morunda have a dark, Cheel and Deodar a light green foliage, but the general appearance of the Pine at a distance is different, the branches not spreading horizontally as those of the Cedar do. Of other trees there were three kinds of Oak, Ban (*Quercus incana*) and Moru (*Quercus dilatata*) below, and Kurzoo (*Quercus Semicarpifolia*) above, and associated with the grey Oak, large numbers of Andromeda, forming trees of 4 feet in girth.

*Rate of growth.*—Great extremes were observed. One tree (no 3 in Register) was found on a limestone slope with south-east aspect, which had been felled many years ago. The measurements of this tree were as follows:—

|                |     |     |     |           |
|----------------|-----|-----|-----|-----------|
| Girth          | ... | ... | ... | 17'       |
| Length of stem | ... | ... | ... | 170'      |
| Age            | ... | ... | ... | 143 years |

The average time required to form an inch of wood (radius) 4.8 years.

This remarkable growth surpasses all the trees yet measured. As some of the rings were indistinct upon the charred surface of the stump, the rings were counted on three distinct radii, to guard against any mistake; the results were—

|      |     |     |     |           |
|------|-----|-----|-----|-----------|
| r'   | ... | ... | ... | 140 rings |
| r''  | ... | ... | ... | 159 "     |
| r''' | ... | ... | ... | 130 "     |

This tree attained a girth of 4 feet 6 inches with 38, and a girth of 6 feet with 50 years

Two trees on a slope exposed to the west, and also on limestone (Nos. 1 and 2) were 4 feet 2 inches and 4 feet 4 inches in girth, and had required 98 and 64 years to attain these dimensions. Another Deodar (No. 4) was measured which had grown to a girth of 6 feet 2 inches in 47 years, another instance of rapid growth. In this case the aspect was northerly. A Cheel stump (No. 5) 7 feet in girth shewed 83 rings.

Near the large tree described (No. 3), four fine trees were seen on a small space 45 feet  $\times$  35 feet = 1,575 square feet. This was the space covered by their branches. One of them divides above the ground into two large boles. The measurements of these five stems are as follows:—girth 6 feet 10 inches, 6 feet 8 inches, 6 feet, 5 feet 11 inches, 5 feet 10 inches. The height is 105 feet to the top of the 6 feet 8 inches tree, and 90 feet for the others. If calculated on the acre, this would give 140 first and second class trees per acre. It may therefore not be impossible to produce with good management in similar localities 100 first and second class Deodars per acre, giving upwards of 7,000 cubic feet of marketable Deodar timber, and an annual average yield per acre of 400 cubic feet.

Close to these fine specimens of well grown trees, there were the traces of reckless waste of valuable timber to obtain a trifling return. On a space of about half an acre, prepared for a species of *Chenopodium*, sown at the commencement of the rains and reaped about October there were eighteen first and second class Deodar trees standing, but killed by fire, and twenty-six stumps of trees felled to make room for this temporary cultivation. The trees, if not felled, are destroyed by lopping the whole of the branches, heaping them round the foot of the tree and setting fire to them. This kind of cultivation, which is similar to Toungya in Burmah, Dhya in Central India, and Coomree in Madras, is called Khil in these hills. The land is, deserted after one crop is taken. On the slope of the hill, where the village of Mashak is situated, we counted on an area 1,000 yards long and 500 broad, ninety Deodar trees destroyed in this manner.

A little further on, we measured a remarkable tree overhanging a precipice, and divided a few feet above the ground into fire boles, each 5 feet in girth, the joint girth of the whole group being 24 feet. One of these had been felled, the height of the main stem of this compound tree was 121 feet. The timber yield of these forests, to judge from the large number of stumps counted, has been very considerable. I observed several sawpits and a large number of scantling recently cut, placed near the roadside ready for removal. The following timbers were noted near the road:—Twelve round pieces prepared from young trees, from 25 feet to 32 feet long, girth 1 foot 10 inches to 2 feet. Forty-four rafters 20 feet long and 6 inches  $\times$  6 inches. Fifty planks 8 feet long from 12 inches to 30 inches wide and 1½ inches to 3 inches thick. Sixty planks 5 feet long and 1½ inches thick. It was stated that all this timber had been cut by people from Naraya in the Amlawa valley, who come up every year to fetch wood for their houses, and that they paid to the head man at Mashak village a duty of from 4 to 5 annas per tree. All this timber is carried away on men's shoulders.

| No | Date    | Name of Officers conducting the Survey. | Locality                                                  | DEODAR                 |                         |                         |                    |        | AREA SURVEYED. |             |               | TREES PER ACRE. |              | REMARKS        |
|----|---------|-----------------------------------------|-----------------------------------------------------------|------------------------|-------------------------|-------------------------|--------------------|--------|----------------|-------------|---------------|-----------------|--------------|----------------|
|    |         |                                         |                                                           | First class above 6 ft | Second class 4½ to 6 ft | Third class 1½ to 4½ ft | Fourth class small | Stumps | Length in ft   | Width in ft | Area in acres | First class     | Second class |                |
| 9  | June 11 | Dr Brandis                              | Along the main range N of Deoban (Deor Monar and Bislar)  | 14                     | 47                      | 14                      | 35                 | 15     | 18500          | 300         | 127.41        | 0.11            | 0.37         |                |
| 10 | "       | "                                       | Above Khattowa village (sacred grove, planted) (Bislar)   | 20                     | 12                      | 25                      | 22                 | ...    | 200            | 100         | 0.46          | 43.48           | 26.09        | Slope 32       |
| 11 | "       | "                                       | From the main range to Khattowa village (Bislar)          | 10                     | 36                      | 23                      | 14                 | 5      | 11700          | 300         | 80.57         | 0.12            | 0.45         |                |
| 12 | June 12 | "                                       | From Khattowa village to main range (Bislar)              | 48                     | 178                     | 21                      | 55                 | 23     | 4800           | 300         | 33.05         | 1.45            | 5.38         |                |
| 13 | "       | "                                       | Along the main range to Mondchoo (Killoo and Bislar)      | 148                    | 63                      | 80                      | 898                | 34     | 5200           | 150         | 17.01         | 8.26            | 3.52         |                |
| 14 | "       | "                                       | Mondchoo to Foot of Karama or Daghur Peak (Bondar Lokhar) | 66                     | 81                      | 38                      | 610                | 21     | 5000           | 200         | 22.95         | 2.87            | 3.52         | Deodars dry. 2 |

#### FORESTS ALONG THE MAIN RANGE FROM DEOBAN TO THE KARAMA PEAK.

Nos. 9 to 14. On the 11th June I started in the afternoon to explore the forests along the main range between the rivers Tonse and Jumna. After leaving Deoban, the range takes an east, north-east direction, and the road leads chiefly along the south-east flank, keeping near the line of water-shed. About a mile north of Deoban, Deodar commences, it is, however, scattered; on a distance of  $3\frac{1}{2}$  miles only 14 trees of the first and 47 trees of the second class were noted, (Survey No. 9). To the right are the head-water of the Kutno stream, and to the left those of the Benargad. As the weather was threatening, we turned off to the right to a tributary of the Kutno river, encamping at a village called Khattowa. On the road to the village, Survey No. 11 was taken. Above the village is a temple forest containing a large quantity of Deodar on a slope of  $32^\circ$ . On an area 200 feet  $\times$  100 feet or 0.46 of an acre, 20 first, and 12 second class trees were found (Survey No. 10). The average cubic contents of a first class tree, taking 50 feet as the length of the stem available for timber was found to be 72 cubic feet, that of a second class tree 18, and the average annual increase per acre would be 42.9 cubic feet.

On the 12th June, we again ascended the main range, the road leads first through a moist ravine with deciduous trees, which opens out higher up where there is a good forest of Deodar on limestone rock, the strike running north-west, and the dip being towards the north-east. (Here survey No. 12 was taken). On both sides of the main range very fine forest was found, extending to the foot of the Karāma or Daghur Peak. On the left we looked down on the forests near the source of the Benargad and the Chiligar, and to the right on those near the Riknargad. On a length of about two miles along the main range, we counted 214 first class trees. (The detail is given in surveys 13 and 14). *Picea Webbiana*, *Quercus semicarpifolia* and *Quercus dilatata* were the principal trees associated with Deodar. Rai, *A. Smithiana* was scarce.



| No | Date    | Name of Officer conducting the Survey | Locality                                             | DEODAR                 |                         |                         |                     |        | AREA SURVEYED. |              |                | TREES PER ACRE. |              | REMARKS       |
|----|---------|---------------------------------------|------------------------------------------------------|------------------------|-------------------------|-------------------------|---------------------|--------|----------------|--------------|----------------|-----------------|--------------|---------------|
|    |         |                                       |                                                      | First class above 6 ft | Second class 4½ to 6 ft | Third class 1½ to 4½ ft | Fourth class, small | Stumps | Length in ft.  | Width in ft. | Area in acres. | First class     | Second class |               |
| 15 | June 12 | Dr Brandis                            | Foot of Karama Peak to range above the Tutwa Forests | ...                    | ...                     | ...                     | 100                 | 7      | 8500           | 200          | 39.07          | ...             | ...          | Deodar dry 1  |
| 16 | "       | "                                     | Tutwa Forest (Bawur)                                 | 261                    | 185                     | 297                     | 270                 | 75     | 7000           | 150          | 24.10          | 1.088           | 7.67         | Deodar dry 16 |

#### FORESTS NORTH OF THE KARAMA PEAK.

Nos. 15 and 16. From the top of the Karāma Peak we had a fine view of the Deodar localities in this part of Jaonsar Bawur. There are extensive forests at the foot of the peak to the north and north-east, on both sides of the spur which forms the water-shed between the Chiligar and Dharagad, and on the west flank of the main range.

After descending from this peak, little Deodar was seen, for about a mile and half, until we reached the Tutwa Forest (Survey No. 15.) The ridge above the Deodar producing localities is covered with beautiful grassy glades in which stand some splendid specimens of the undermentioned forest trees, attaining the dimensions noted :—

|                        |     |     | Girth. | Height. |
|------------------------|-----|-----|--------|---------|
| Abies Smithiana        | ... | ..  | 15'    | 150'    |
| Picea Webbiana         | ... | ... | 15'    | 130'    |
| Acer                   | ... | ..  | 13'    | ...     |
| Quercus semecarpifolia | ..  | ..  | 13'    | ...     |
| " dilatata             | ..  | ... | 12'    | 150'    |
| Prunus Padus           | ... | ... | 6'     | ...     |
| Juglans regia          | ..  | ..  | 17'    | 100'    |

A few hundred yards below, the Deodar Forest begins. Here the trees are of splendid size, of two trees here measured, both 11 feet in girth, one was 115 feet, the other 135 feet high to the top. The rock appears to be limestone with a deep layer of vegetable mould on it. The rate of growth was good, though the slope was steep. The details are shown in No. 39 of Appendix III. The average age of trees 6 feet in girth was found to vary from 76 to 98 years. The particulars of the survey made through the Tutwa Forest, are entered in No. 16. With Deodar were associated immense Rai trees; one measured 18 feet 5 inches in girth, Birch up to 6 feet in girth. Lower down near the foot of the hill was a dense forest of *Alnus*, *Rhododendron*, *Quercus incana*, *Populus ciliata*, and a variety of other trees. In this forest were old stumps of Deodar and half-decayed logs lying on the ground. Apparently the Deodar formerly extended further down, and other trees have subsequently occupied the ground.

Along the road from Deoban we had met many men carrying planks and other scantling from the Tutwa Forest which is resorted to for timber to a great extent by the inhabitants of the lower and treeless parts of the district. In the forest we found 75 stumps of trees recently cut and many felled trees, utilized only to a small extent. The timber is here split, not sawn, and the waste is great.

Twenty-four acres of the Tutwa Forest were surveyed, and the result was an average of 11 first class trees per acre. From the data furnished by my guide, the area of the Tutwa Deodar Forest may be estimated at three square miles. It occupies a considerable portion of the hills, south of the head waters of the Dharagad.

After crossing a small stream, the southernmost feeder of the Dharagad, we came upon a dry open slope with scattered trees of *Pinus longifolia*, here called Surul, of very large size; the soil was a micaceous schist. After a march of several hours, during which we crossed successively several feeders of the Dharagad, we reached the village of Chejal long after dark, where we encamped.

On the 13th we went from Chejal along the north side of the spur, running from the main range in a north-westerly direction towards the junction of the Pabur and Tonse rivers.

| No | Date    | Name of Officer conducting the Survey | Locality               | DEODAR                 |                                |                                   |                     |        |               | AREA SURVEYED |                |             | TREES PER ACRE |                    | REMARKS |
|----|---------|---------------------------------------|------------------------|------------------------|--------------------------------|-----------------------------------|---------------------|--------|---------------|---------------|----------------|-------------|----------------|--------------------|---------|
|    |         |                                       |                        | First class above 6 ft | Second class, 4 1/2 ft to 6 ft | Third class, 1 1/2 ft to 4 1/2 ft | Fourth class, small | Stumps | Length in ft. | Width in ft.  | Area in acres. | First class | Second class.  |                    |         |
| 17 | June 13 | Dr. Brandis                           | Chilu Jungle (Bawur)   | 185                    | 360                            | 468                               | 421                 | 1040   | 5100          | 180           | 21.07          | 8.78        | 17.08          | Deodar killed 1898 |         |
| 18 | "       | Dr. Brandis...                        | Chilara Jungle (Bawur) | 15                     | 38                             | 48                                | 56                  | 11     | 1400          | 180           | 5.78           | 2.60        | 6.57           |                    |         |
| 19 | "       | " ...                                 | "                      | 11                     | 18                             | 37                                | 7                   | 23     | 100           | 150           | 0.34           | 32.35       | 38.24          | Deodar dead,       |         |
| 20 | "       | " ...                                 | "                      | 143                    | 123                            | 166                               | 1,313               | 123    | 2200          | 180           | 9.29           | 1.513       | 13.53          |                    |         |

#### FORESTS ON THE NORTH FLANK OF THE CHEJAL SPUR.

Nos. 17 to 20.—Chejal village stands high on a south projection of this spur, and has a splendid view of the vast mountain bay drained by the Dharagad in which some of the finest Deodar Forests of Jaonsar Bawur are situated. The road from Chejal to Bastil village on the Tonse led for about one mile through what must formerly have been an excellent Deodar Forest. A large portion has been destroyed for temporary (khil) cultivation. No less than 1,040 stumps and 1,898 standing trees killed by fire, were counted. Notwithstanding this destruction, the forest still contained, when examined, upwards of nine first class trees per acre on an average, with an abundance of saplings. The trees associated with Deodar were Rai, Ban, and Moru.

After leaving the forest, we passed through a jungle of Andromeda and Rhododendron. Further west the spur divides into several branches. On the northern branch, near the junction of the Pabur and Tonse, the village of Koti is situated. Not far from this is a Deodar Forest said to cover about 15 acres in which 100 trees have been cut for the bridge over the Tonse river, and 50 for a temple in the vicinity. The forest of Koti and Bastil are alluded to in Dr. Cleghorn's Punjab Forest Report, 1864, page 5. This forest near Koti, I only saw at a distance as my road led down another spur to the village of Bastil. On the northern slope of this spur is the Chilara Forest, where an area of 150 feet by 100 feet was measured, and 11 first class and 13 second class trees were found, which gives the average number per acre of the trees of these two classes as follows :—

1st Class trees 32  
2nd " " 38

The trees in this small forest are of good size and satisfactory growth. A tree with a girth of 11 feet 7 inches showed only 98 rings. *Pinus excelsa* is the only tree here mingled with Deodar. Near Bastil is a large quantity of *Olea ferruginea* (Kau) and lower down near the Tonse, Sandun (*Oojeinia dalbergioides*) Semul (*Bombax Malabaricum*) and *Acacia Julibrissin* were found.

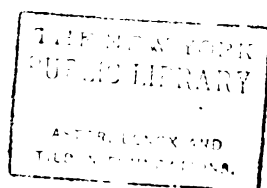
A considerable number of planks and other scantling of Deodar were met in transit on the road. Since we left Deoban on the 11th, we have seen altogether 203 planks and small beams (kurries). This evening we encamped at Kando, and on the 14th we returned to Deoban by the Simla and Mussoorie road. As far as Bandrouli much *Pinus longifolia* is scattered on the slopes of the hills. A considerable quantity was cut a few years ago by Messrs. Scott and Wilson of Mussoorie, for Railway sleepers.

#### GENERAL REMARKS ON THE TAONSAR BAWUR FORESTS.

The data collected are not sufficient to justify any but an uncertain estimate of the Deodar resources of these hills. Altogether 485 acres were surveyed, and on this area 1,195 first, and 1,662 second class trees were noted. If the statements of the natives of the district regarding the extent of the Deodar localities are correct, the forests would contain not less, than 40,000 Deodar trees.

The average age of a first class tree 6 feet in girth in these forests may, on the ground of the data available, be assumed at 71 years, and that of a second class tree 4 feet 6 inches in girth, at 55 years. If these data are correct, 16 years will suffice for second class trees to attain first class size. The number of second class trees is about equal to that of the first class. If we, therefore, clear away all first class trees in the space of 20 years, or at the rate of 2,000 trees per annum, this quantity will, if the above data are correct, be within the amount annually produced in the Deodar Forests of Jaonsar Bawur. Great care should, however, be taken, first to ascertain by a series of detailed valuation surveys, the capabilities of the different divisions of the forests, and on the ground of these valuation surveys, a regular plan for working the forests should be prepared and strictly followed. The transport of the timber to a place of sale without undue expense is the great difficulty, as all the more valuable forests are situated at a considerable distance from the river. If this difficulty can be overcome, and if the unrestricted and wasteful cutting of Deodar by the inhabitants and by parties from the lower parts of the district can be prevented, these forests will prove of great importance on account of the good size and the rapid growth of the timber produced in them.

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The following synonyms of the Himalayan pines given in the posthumous papers of Griffith may be noted:-

*Pinus*, = *Pinus pendula*

*Abies Smithiana*, = *Abies densa*

*Picea Webbiana*, = — *spinulosa*

The following names occur in the catalogue of Jacquemont's plants (Voyage al' Inde par Victor Jacquemont, 1828 to 1832,) published by the French Government:-

1. *Cedrus deodara*, = *Larix deodara*

2. *Pinus excelsa*, = *Pinus attenuata*

3. — *longifolia*, = — *longifolia*

4. — *Gerardiana*, = — *Gerardiana*

5. *Abies Smithiana*, = *Abies circularis*

6. *Picea Webbiana*, = — *complanata*

7. *Cupressus torulosa*, = (not observed)

8. *Taxus baccata*, = *Taxus Nipalensis*

9. *Juniperus excelsa* = *Juniperus arboresc.*

The Synonyms of the oaks and chestnut mentioned by Jacquemont appear to be:-

1. *Quercus incana*, = *Quercus castanoides*

2. — *dilatata*, = — *protra.*

3. — *semicarpifolia*, = — *diversifolia*

*Pavia Indica*, = *Asclepius hippocastanum*

Notes:- In Dr. Brandis' report upon the Deodar Forests of Bussahir, page 12, - some interesting facts are given relating to the periods which the different species of Pines retain their leaves.

|                               |                     |
|-------------------------------|---------------------|
| <i>Picea Webbiana</i> , - - - | } years<br>8 to 10  |
| <i>Abies Smithiana</i> , ———  |                     |
| <i>Cedrus Deodara</i> , ———   | } 6<br>4<br>2 to 3. |
| <i>Pinus excelsa</i> ———      |                     |
| <i>Pinus longifolia</i> ———   |                     |
| — <i>Gerardiana</i> ———       |                     |



No. 248A. of 1869.

FROM

MAJOR G. F. PEARSON,

*Conservator of Forests, N.-W. Provinces, Allahabad,*

TO

COL. C. J. HODGSON, R.E.,

*Secretary to Government, N.-W. P., P. W. D.*

DATED CAMP, THE 5TH DECEMBER, 1869.

SIR,—I have now the honour to lay before you, for the information of His Honor the Lieutenant-Governor, some account of the deodar localities, not previously described, which lie about the head of the Jumna and Tonse rivers. A rough sketch-map is appended, and by a comparison of it with the atlas-sheet their position will at once be seen.

2. It will be seen that three main ridges spring out of the block of snowy mountains of which Bunderponch is the main feature. The first of these separates the Ganges from the Jumna, of which the last distinctive feature is Nagtiba, opposite Mussoorie; the second range separates the Jumna from the Tonse, and may be said to extend as far as Deobund; and the third separates the Tonse from the Pabur, and, indeed, is a branch of the main range which divides the Sutlej from the group of rivers south of it. All these ranges are well covered with fine forests of firs and oak; but the Ganges and Jumna range is only deodar-bearing in a few special localities; the Jumna and Tonse range only becomes so about its lower extremity near Deobund, where it contains our Jounsar Bawur Forests (already described); but the last or Tonse and Pabur range seems to have deodar as its characteristic tree from the point where vegetation commences below the snow-line. I shall now proceed to describe the deodar localities on these ridges in detail.

3. Commencing from the Ganges, there has been a considerable forest (No. 1) above Barahat, near Sulda, but it was well worked by Mr. Wilson in former years, and latterly about 1,000 trees it is said, were cut down shortly before I took charge of the Department. It is now cleared out entirely, except a few young trees which are coming up in places. Near Lisnore (Upreekot), there are two small forests (No. 2), but these are probably too remote from the river to be of any use except for the villagers. About 400 trees were felled three years ago in the lower forest near Kowna, but they are five koss from the Ganges, and it would be impossible to remove the sleepers without doing something to improve the road down to the river. It is doubtful, as there is so little timber available, if sleepers sawed up here would bear this charge in addition to the cost of carrying them to the river; but the subject shall receive my attention and if possible this timber shall not be wasted.

4. The range above Upreekot contains one of the finest oak (*moroo*) forests which I have seen in the hills. Descending into the valley of the Jumna, there is a small deodar forest above Shalna. It covers about 250 or 300 acres, and being on a moderately-sloping hill-side with a southern aspect, the growth of the trees is exceedingly favourable, and the young trees numerous. Portions of the forest have been much injured by fire in former years, and the greater portion of the mature timber has been felled by the people of the country for house-building; perhaps 1,000 trees may remain fit for timber at the present time. The growth of timber here is fully equal to the best specimens in Jounsar. The care of the forest is entrusted to the *Pudan* of the village, who says he every year takes some precautions against fire. It would be better to make him some small allowance, and hold him practically responsible.

5. South of this there are some small patches of deodar, about the Bonk Peak and Nagtiba Hills, but they are either too far away and too small to be of any practical importance, or else they had better be reserved for the special wants of Mussoorie.



Mr. Scott, of Mussoorie, removed a good quantity of deodar from this part of the range in past years.

6. As regards the capabilities of the Jumna as a floating river, from all that I can learn it is quite free from impediments except for about two miles near Singone, about 20 miles due east of Chukrata, where some not very heavy rocks are found in its bed. The river, however, shall be specially examined and surveyed (if possible) during the present cold season.

7. Crossing the Jumna on to the Kedarkanta ridge, which separates that river from the Tonse, there is (or rather has been) a very fine deodar forest in the Bunnal, a tributary of the Jumna, which joins it just above *Burkot*. This forest (No. 4) extends along the left bank of the Bunnal for about two miles, and may on an average be half a mile in depth. This forest has contained much fine timber in former years, and many very fine trees still remain in it. The growth is quite remarkable, and I have never seen it equalled elsewhere; one stump of nearly eight feet girth showing only a growth of fifty-six years, the rings being perfectly even. But, being situated in the middle of a thickly-populated country where there is but little deodar, it has been terribly cut up by the people for house-building purposes, and there are not, perhaps, more than 2,500 or 3,000 available timber-trees at present in the forest. In some places the trees have been cut down as clean as if they had been mowed; but the growth of young deodar since the very moderate protection that the forest now receives is quite remarkable.

8. There are some small patches (No. 5) of young deodar in the Ramaserai valley, a tributary of the Kamalada, which runs into the Jumna below the Bunnal; but they are of no practical importance, and contain no large trees. I did not visit them, as it would have involved a long trip from the ridge, from which I contented myself with looking at them with a glass. The whole of this valley is richly cultivated, and bears two crops a year throughout; indeed, it may be called the granary of this part of the hills.

9. The great difficulty with regard to any effective conservation of these Jumna deodar forests will be in respect to the grazing. The immense sums exacted by the Rajah for grazing from the villages near the forests quite precludes the possibility of thinking of compensation, for the forests would not be worth it. The next favourable point is that, where fire has been kept out, the forest is so strong that it keeps down the grass, and the young trees seem very often to spring up readily in the face of all difficulties from grazing; and I believe we must confine our efforts to keeping down the fire, which may reasonably be insisted on.

10. It will be seen that the Jumna contains but little deodar of any sort, but it would be difficult adequately to describe the enormous seas of cheer (*longifolia*) forest which line its bank. In these the trees must be numbered not by thousands but by hundreds of thousands, and many of them are of huge size. Government has with a wise liberality offered a munificent reward for the invention of machinery for the preparation of the rhoea fibre; and it might, in its own interest, be well worth while, considering the large number of miles of railway—all the property of the State—that before many years will be at work in Upper India, to double or even treble this reward for the invention of a thoroughly-satisfactory process for impregnating, and so preserving from decay, sleepers made of cheer timber; for it is quite certain that the deodar forests will never bear all the strain that will be put on them, besides which they are generally much more remote from the main rivers and much higher up the hill-side than the cheer forests.

11. Like the hills of the left bank of the Jumna, those on the left bank of the Tonse are also covered with almost interminable forests of cheer. Higher up the river near Datmeer, cheel (*excelsa*) takes the place of cheer, but the latter may be considered the predominating tree. The Goroogad, running down to the Tonse from the west of the Kedarnath Peak, is full of an enormous cheer forest.

12. Passing, then, across the Tonse to the range which separates it from the Pabur, we come again into a tract of which the deodar forests are the distinctive feature. The deodar commences north of the Tonse near Gungar, and is scattered all over the range which separates the Tonse from its other main head-stream (the Punch Gunga) which joins it opposite Shankree. The hills here are rocky and precipitous, and the trees are chiefly confined to the small ravines and streams which run down from them to the river. The main blocks of forest extend from just below Gungar to about two miles below (opposite to) Datmeer (No. 6), and on the further side of the range above Leor and opposite Kahsole and Ruksha (No. 7). All this timber would readily come down into the river. I do not think there can be less than 10,000 or 12,000 available trees on this range.

13. As regards the floating capabilities of the Tonse above its junction with the Rupin at Naintwaree, there is certainly very little water in it at the present season, nor in the Punch Gunga, which joins it opposite Shankree; but there is a fall in the river of near 2,500 feet from Datmeer to Naintwaree, or above 100 feet per mile, and the people say that in June or July an enormous torrent comes down both these rivers, and that the logs which Mr. Wilson cut near Datmeer easily came down. The river-bed is remarkably free from rocks, and there is no impediment as far as I could see except for a short distance above Shankree.

14. Proceeding downwards, there is a considerable amount of deodar on the spur which comes down to the river above the village of Koarbo (No. 8), also in the stream next to it, west of Koarbo (No. 9), all of which would readily work down into the river. These may be estimated at least at 3,000 trees.

15. We now come to the Rupin and its forests. This river joins the Tonse at Naintwaree. On its left bank, just above the junction, there is a block of deodar forest above the village of Bitree, while the whole of the north bank of the Kharoor (a tributary of the Rupin) appeared to me to be lined with deodar forests (No. 12), and I was told by the people that the forest was all deodar. There must be at least 6,000 trees in these three blocks.

16. Passing to the right bank of the Rupin, there is considerable scattered forest of deodar on the slopes of the Kandighat Hill down to the Tonse (No. 14), and there is a large mixed forest, the lower portion being mainly deodar, while the upper consists of cheel (*exceles*) and silver-fir, on the heights surrounding and above the village of Narayingaon (No. 13); these blocks may certainly be estimated at 4,000 available trees. It may be mentioned that Mr. Wilson has worked out timber much higher up the Rupin than any of these forests—from those belonging to Bussahir.

17. Passing out of the Rupin round the spur of the Taroo (marked in the map Charoo) Peak, we come to a large basin formed by the streams which run down from that peak and the ridge which joins it to the Lambatach Peak. These are called successively the Salda stream, the Motwargad, the Koneegad, the Chilleegad and the Matakanalla. There is a little deodar under the spurs at the head of the Salda stream (not available). The Motwargad and Koneegad both contain fine deodar forests of considerable extent (No. 15); the trees are very large, but they seem to me rather too remote to be worked with profit. But the people of the villages declared they would easily bring the logs down to the Tonse, and I had not time to examine the ground between, and certainly the hill-side is sufficiently precipitous, and the work all down hill. The Chilleegad (the largest of all these gads) contains a considerable mixture of trees—silver-fir, spruce, oak, and deodar; the deodar being fewest, but very fine trees what there are of them. The Matakanalla has a fine forest of pure deodar (No. 16), probably workable to the Tonse. These blocks certainly contain 10,000 deodar trees, but probably not above one-third of them could be ever got to the Tonse.

18. It is necessary from this point, on account of the scarps, to ascend to the top of the ridge through a forest, mainly of oaks and silver-fir, when you look down into

the Pabur on the other side. Proceeding along the ridge, the point where the road crosses from the Tonse to the Pabur (from Seras to Gokul) is reached. Here commences a noble deodar forest (Nos. 17 and 18) on both sides of the ridge, equal perhaps to the best of our Jounsar Forests. Neither of these forests are entirely pure, but the deodar is mixed chiefly with raiee and silver-fir, and cheel. The forest to the east of the ridge is the finest and purest. Here I measured six trees, quite close together, of the following girths respectively:—

|        |     |     | Ft. | in. |                              |
|--------|-----|-----|-----|-----|------------------------------|
| No. 1, | ... | ... | 15  | 3   |                              |
| No. 2, | ... | ... | 16  | 10  | A noble tree; quite perfect. |
| No. 3, | ... | ... | 11  | 8   |                              |
| No. 4, | ... | ... | 13  | 9   |                              |
| No. 5, | ... | ... | 12  | 3   |                              |
| No. 6, | ... | ... | 17  | 4   | Slightly injured below.      |

All these trees were much over 100 feet high, and there are many trees like them all over the forest.

19. On the opposite (west) side of the Lambatach Peak are two forests (Nos. 20 and 21), which I saw last year from the opposite side of the Pabur, and appeared to be considerable forests. Proceeding around the Lambatach, there is a considerable amount of deodar (No. 19), mixed with cheel, above the village of Bamsoo in Surass; below this down to the Tonse is cheer (*longifolia*) forest, as, indeed, is the case all along.

20. On the south side of the Lumbatach Hill is Forest No. 22—a forest about three miles long by half a mile deep, full of noble deodar trees, right over the Tonse. This will be a most valuable addition to our stock of timber.

21. Besides the above, there is the Mundhole Forest (No. 23), west of the Tonse, which has not yet been included in any calculations. This forest is perhaps too high up to work at present, and as the lower part of the valley is full of rice-fields, it will perhaps be as well to reserve it for the present.

22. The forests between the Rupin and the Pabur (Nos. 15 and 22) cannot contain less than 25,000 trees; I am sure of these. One-third, or say 8,000, will certainly be at once available; and, adding all the above blocks together, the Upper Tonse certainly contains not less than 50,000 trees, of which one-third at least, or say 15,000, may be worked out cheaply and easily, as the forests are not too far from the river and overhang it immediately, while the best of the Jounsar Forests are fully from four to twelve miles distant from the river.

23. I feel very glad that I have been enabled to thoroughly examine all this block of forest before I made out the working-plan of the sleeper-work for the Tonse, as it will enable us to remove the sleeper-work for the present out of the immediate neighbourhood of Jounsar, and obviate the inconvenience of the sleeper-work competing for labour so directly with the Chukrata works, which is a most important point.

24. I propose, then, at once to direct Captain Murray to fell 5,000 trees in Blocks Nos. 6, 8, 9, 10, and 22, and perhaps in Nos. 17, 18, and 23 after more examination of the ground. Mr. Bagshawe may look after this work at once.

25. Captain Murray will also be directed to saw up at once about 2,000 sleepers, to be ready to put into the river in April, when it first rises, when 300 or 400 logs will be also put into the river; and, after an actual experiment, a decision will be finally come to whether the logs should be sawn up into sleepers in the valley or below in the Doon. Experiments will also be made in bringing down both timber and sleepers from different parts of the forests, as to cost and practicability; also in sawing up, both on the hills and in the river.

26. The above arrangement will enable Captain Murray by degrees to open out the mule-tracks in the Jounsar Forests, and to make slides and otherwise prepare these forests for working hereafter. It is hoped; therefore, that it may meet approval.

27. I believe from enquiries that, if 15,000 or 20,000 logs can be got down into the river, there would be no difficulty at all in sawing up *a lakh of sleepers per annum* in these forests. I would, therefore, not be in too much of a hurry to commence sawing up too many sleepers before they are wanted, as they are sure to split and deteriorate more or less in a couple of years.

28. Something will have to be done to make the road practicable up the Tonse as a *footpath*; and one or two wire-rope bridges must be put up in places to render the forests more accessible, as the only way at present of crossing the river between Mundhole and Naintwaree is by being slung in a noose under a rope, and being dragged across.

29. As the whole of the forests of deodar north of the Tonse are in the Teeree Rajah's country, Government may be congratulated in having got a much better bargain out of the lease of his forests than has been heretofore supposed.

I have the honour to be,

SIR,

Your most obedient Servant,

G. F. PEARSON, MAJOR,

*Conservator of Forests, N.-W. P.*



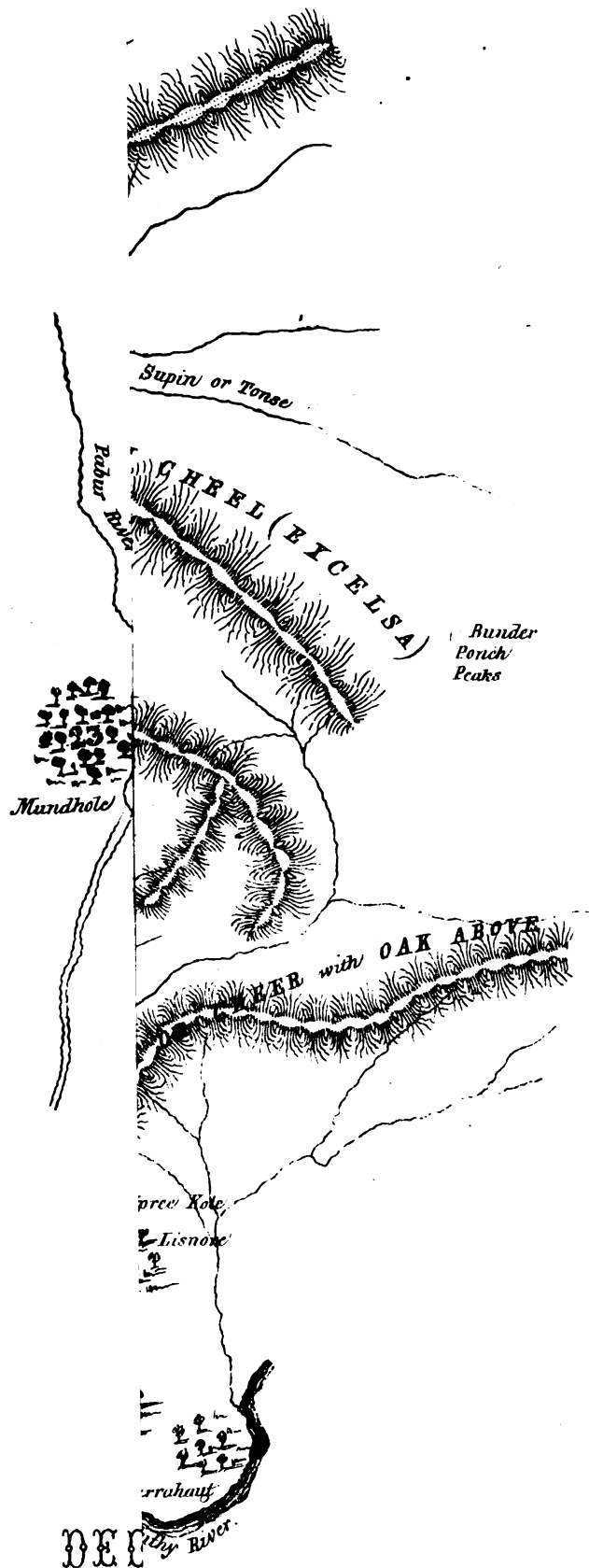
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## CONTENTS.

---

|                                                                                           | <i>Page.</i> |
|-------------------------------------------------------------------------------------------|--------------|
| Introduction ... ..                                                                       | 1            |
| List of Principal Forests of Deodar in Jounsar Bawur ... ..                               | <i>ib.</i>   |
| Chapter I.—Description of the Forests.                                                    |              |
| Forests of the Deobund Hill ... ..                                                        | 2            |
| „    Lokundee Spur— ... ..                                                                | } <i>ib.</i> |
| I.—The Bodya Forest ... ..                                                                | 3            |
| II.—The Mushuk „ ... ..                                                                   | <i>ib.</i>   |
| III.—The Kotee „ ... ..                                                                   | 4            |
| IV.—The Kyoloe „ ... ..                                                                   | <i>ib.</i>   |
| V and VI.—The Lokwa and Totwa „ ... ..                                                    | 5            |
| VII.—The Jako „ ... ..                                                                    | <i>ib.</i>   |
| VIII.—The Chejal „ ... ..                                                                 | 6            |
| Estimate of the Contents of the Jounsar Bawur ... ..                                      | 7            |
| Chapter II.—Proposed future arrangements for the management of the Jounsar Forests ... .. |              |
| 1st.—As regards marking off the Reserved Forests ... ..                                   | <i>ib.</i>   |
| 2nd.—As regards making the Forests accessible ... ..                                      | 9            |
| 3rd.—As to a working plan for the Forests ... ..                                          | <i>ib.</i>   |
| 4th.—As regards special arrangements for Chukrata ... ..                                  | 10           |
| 5th.—Arrangements for providing for the wants of the people for wood ... ..               | <i>ib.</i>   |





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No. 198F.

GOVT., N.-W. PROVINCES.  
**Public Works Department.**  
**FORESTS.**

DATED NYNEE TAL, THE 29TH JUNE, 1869.

To

THE CONSERVATOR OF FORESTS,  
*North-Western Provinces.*

**REPORT ON THE DEODAR FORESTS OF JOUNSAR BAWUR.**

*Conservator's No. 211A., dated the 12th May, 1869.*

ACKNOWLEDGES the above, and states that the report contains a full, clear, and highly interesting account of the forests in question. It shows that these forests are especially valuable, owing to the rapid growth of the deodar in them.

2. The wants of Chukrata may apparently be supplied in great part from the Bodaya forests, before all the 1st class trees, which may be cut without injury to future production, are exhausted, and the remainder from the Mushuk forest. In the Kotee and other forests, it is no doubt necessary for their preservation to exclude cultivation, and the question of doing so should be carefully considered. The destruction of the beautiful silver fir forest above Kotee should be avoided, if possible; and it may be hoped that it will be rendered unnecessary by securing the complete reserve of the existing deodar forests. The forests about the Dharagad will afford ample stores of timber for the present, and admit of the market being well supplied for the next ten or twelve years.

3. The trans-Tonse tracts are shown to be highly valuable to the British Government for their forest reserves; and this fact will be communicated to the General Department of this Government, in order that it may have its due weight in the determination of the question now pending as to the proposal to relinquish the British territory on the right bank of the Tonse.

4. As to the measures to be taken for forest conservancy, His Honor the Lieutenant-Governor observes, that, in Jounsar Bawar, the occupied portions of the soil are settled in full proprietary right with the village

communities. In the remainder, the village communities have only a modified right ; the waste and forest lands within their respective boundaries they hold as against all strangers, but not as against Government ; the understanding being that Government can appropriate any portion of the same at its discretion ; but on condition that a sufficiency of waste land is allowed for grazing purposes to the village community, who have also a prescriptive right to the use of such wood as is required for domestic purposes. The Conservator has, His Honor believes, correctly stated that the people do not possess the right of disposing of timber to strangers.

5. The classification of forests should be, then—

I.—Government forests, (a.) closed.

„ „ (b.) open ;

II.—Village forests.

I.—In order to the formation of a closed forest, it is necessary that the sole right be vested in Government; and that if there be any other prescriptive rights, they be extinguished by compensation or otherwise. This, under ordinary circumstances, can be done by the assignment of an area of village or open forest to the several villages, sufficient to provide for their grazing, fuel, or timber requirements; when the remainder may be declared closed and inviolable. The closed portion will then be marked off by permanent landmarks, and notification made that all encroachments on the same will be resisted and punished.

6. Something further is, however, wanted by Major Pearson in respect of the Bodaya, Kotee, and Kyoloe Forests. These valuable tracts of timber are interspersed with old established villages, which render forest conservancy, in its complete and only effective form, impossible. The Conservator rightly says that such prescriptive settlements can only be removed by compensation; and, under the circumstances, His Honor thinks that this must be done by voluntary bargain and negotiation, which should be conducted through a civil officer of the district. There is no detail as to the number or area of these occupied tracts, nor any estimate of the expenditure that would be required to eliminate the intruders. Until some estimate on these heads be given, it cannot be judged whether the inconvenience and hardship by eviction would be justified, and the cost of compensation repaid, by the public advantage anticipated from closing the forests. The subject will be referred for consideration to the General Department of this Government. If an officer of the Settlement Staff could be spared, it would, in His Honor's opinion, be desirable to depute him to determine these points, in communication with an officer of the Forest Department. Mr. Cornwall is said to be eminently qualified for the duty; but before any determination is come to on this point, further report will be awaited in the Revenue Department. Meanwhile, it is admitted, with the Conservator, that it is extremely desirable to have these valuable forests in distinct and self-contained blocks, each thoroughly cleared of private rights of every kind.

7. II.—The open Government forests would be all other forests which it may not be expedient or possible at present to close. These will be open to grazing and fuel demands as heretofore; but the cutting of timber must be prohibited, except under sanction of the Forest Department, which might take a general form, by declaring certain classes of wood as free to be cut, no other trees being touched but by express permission. There is no occasion to require an annual application for the privilege of grazing; the rights of Government are well understood. These forests should also be distinctly marked off.

8. III.—The remaining forests would be at the disposal of the villagers; with this condition, that they are free to cut what is required for domestic uses, but not to sell nor dispose of any timber to strangers.

9. His Honor is of opinion that the above plan, by which the forest tracts defined as Nos. I. and II. will alone be marked off, is preferable to marking off the entire village forests. It would still be in the power of Government to add to the areas of Nos. I. and II, for good reasons, on condition that satisfactory provision was made for village requirements.

10. The rules proposed by the Conservator at the close of this report are just, and conformable to the rights and customs of the people; but His Honor considers that Major Pearson is mistaken in expecting that there will be little pressure for cultivating holdings in consequence of the Chukrata cantonment; on the contrary, His Honor anticipates a large increase, and desires that the Forest Department should make its arrangements in expectation of such pressure.

11. It is noted with satisfaction that the temporary cultivation (*kheel*) on the Kyoloe hill has been put a stop to for some years. It should continue to be carefully suppressed.

12. The necessity for the construction of roads, slides, &c., for facilitating transport of the produce from the forests cannot be doubted. It will be the business of the forest officers to carry out these works. Already a small grant has been made for constructing mule tracks during the present year from the Deobun forests, and it will be the duty of the Conservator year by year to bring forward a scheme of operations with this end; and to propose the requisite budget provision. An estimate should be framed as soon as practicable for forming the road described as passing by the Karama peak to the Yako forest.

13. The proposed order in which the forests are to be worked, seems to be that required by their present state; and the special arrangements for supply of wood to Chukrata are approved. On receipt of the estimate for the completion of the Simla road as far as the Tonse, which the Conservator has promised to furnish, it will be considered whether the Government of India should be asked to make a grant from the general funds of the State for the benefit of the residents of the

cantonment in facilitating supply of fuel, &c. ; or whether the cost should be borne by the Forest Department, and eventually recovered in the price of fuel.

By order, &c.,

C. J. HODGSON, Col., R.E.,

*Secy. to Govt., N. W. P., P. W. D.*

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No. 199F.

ORDERED, that a copy of Major Pearson's report, with a copy of the foregoing, be forwarded to the Secretary to the Government of India, Public Works Department, for information.

FROM

MAJOR G. F. PEARSON,  
*Conservator of Forests,*  
*North-Western Provinces,*

TO

COLONEL C. J. HODGSON, R.E.,  
*Secretary to Govt., N.-W. Provinces,*  
*Public Works Department, Allahabad.*  
*Dated Camp, Jounsar, the 12th May, 1869.*

## REPORT ON THE DEODAR FORESTS OF JOUNSAW BAWUR.

1. The two British pergunnahs of Jounsar Bawur are situated between the Native States under the Simla Agency and the Rajah of Gurhwal's country, along the lower spurs of the great range which separates the Jumna from the Tonse, and culminates in the peaks above Jumnotree. There is also a small tract west of the Tonse, between the Chachpore ridge and that river, containing some valuable forests, which belong in part to the British Government, and in part to the petty Chief of Taroche. The main features of the country are—1st, the principal backbone or ridge which runs up from the junction of the two rivers in a N.-N.-E. direction to Deobund, and thence on to the Jako Pass; after which, following the course of the Tonse, it bends more to the eastward, and is lost in the high peaks of Bunderpouch; and 2nd, the spurs which run down on either side of it to the two rivers. The western spurs, which run down to the Tonse from the ridge as far as the Jako Pass, mainly contain the forests which it is now proposed to describe. A sketch map is appended, for the better understanding of the report. Dr. Brandis himself made an inspection of some of these forests in 1863, and I am indebted to his report for much useful information regarding them.

2. The principal deodar forests in Jounsar Bawur are as follows :—

|                                                              |    |                                 |
|--------------------------------------------------------------|----|---------------------------------|
| <i>On the Lokundee spur</i> ... ..                           | {  | I. The Bodya Forest.            |
|                                                              |    | II. „ Mushuk „                  |
|                                                              |    | III. „ Kotee „                  |
| <i>On the spur between the Bennargad and Chiligad</i> ... .. | {  | IV. „ Kyoloe „                  |
|                                                              |    | V. „ Totwa „                    |
| <i>Round the head of the Dharagad</i> ... ..                 | {  | VI. „ Lokwa „                   |
|                                                              |    | VII. „ Jako „                   |
|                                                              |    | VIII. „ Chejal „                |
| <i>On the Chejal spur</i> ... ..                             | {  | IX. „ Kotee and Basteel Forest. |
| <i>West of the Tonse</i> ... ..                              | X. | „ Mundhole „                    |

Besides which, large forests of oak, firs, and scattered patches of deodar, fringe all the ridges and clothe the sides both of the main range and of the lateral spurs, which will be described in due order.

NOTE.—In this report the oaks and firs will be called by their common English or Native names, as being more generally understood; the botanical names of the principal trees being as follow :—

|            |                         |                  |                        |
|------------|-------------------------|------------------|------------------------|
| Oak        | <i>Banj</i>             | <i>Quercus</i>   | <i>incana.</i>         |
| „          | <i>Moroo</i>            | „                | <i>dilatata.</i>       |
| „          | <i>Kurzoo</i>           | „                | <i>semicarpifolia.</i> |
| „          | <i>Tilouge or Banea</i> | „                | <i>annulata.</i>       |
| Silver Fir | <i>Morinda</i>          | <i>Picea</i>     | <i>Webbiana.</i>       |
| Spruce „   | <i>Rall</i>             | <i>Abies</i>     | <i>Smitheana.</i>      |
| Cheel      |                         | <i>Pinus</i>     | <i>excelsa.</i>        |
| Cheer      |                         | „                | <i>longifolia.</i>     |
| Cyprus     |                         | <i>Cypressus</i> | <i>torolosa.</i>       |
| Deodar     |                         | <i>Cedrus</i>    | <i>deodar.</i>         |
| Maple      |                         | <i>Acer.</i>     |                        |



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## CONTENTS.

---

|                                                                                           | <i>Page.</i> |
|-------------------------------------------------------------------------------------------|--------------|
| Introduction ... ..                                                                       | 1            |
| List of Principal Forests of Deodar in Jounsar Bawur ... ..                               | <i>ib.</i>   |
| Chapter I.—Description of the Forests.                                                    |              |
| Forests of the Deobund Hill ... ..                                                        | 2            |
| „    Lokundee Spur— ... ..                                                                | } <i>ib.</i> |
| I.—The Bodya Forest ... ..                                                                | 3            |
| II.—The Mushuk „ ... ..                                                                   | <i>ib.</i>   |
| III.—The Kotee „ ... ..                                                                   | 4            |
| IV.—The Kyoloe „ ... ..                                                                   | <i>ib.</i>   |
| V and VI.—The Lokwa and Totwa „ ... ..                                                    | 5            |
| VII.—The Jako „ ... ..                                                                    | <i>ib.</i>   |
| VIII.—The Chejal „ ... ..                                                                 | 6            |
| Estimate of the Contents of the Jounsar Bawur ... ..                                      | 7            |
| Chapter II.—Proposed future arrangements for the management of the Jounsar Forests ... .. |              |
| 1st.—As regards marking off the Reserved Forests ... ..                                   | <i>ib.</i>   |
| 2nd.—As regards making the Forests accessible ... ..                                      | 9            |
| 3rd.—As to a working plan for the Forests ... ..                                          | <i>ib.</i>   |
| 4th.—As regards special arrangements for Chukrata ... ..                                  | 10           |
| 5th.—Arrangements for providing for the wants of the people for wood ... ..               | <i>ib.</i>   |

## CHAPTER I.—DESCRIPTION OF THE FORESTS.

## FORESTS OF THE DEOBUND HILL.

3. The Deobund hill is a prominent feature of the main range. The forests are important, as being situated close to the new cantonment of Chukrata, and from them the main supply of fuel and common building timber must be drawn. Only a few patches of deodar are found on the hill itself, chiefly scattered on the north-west side; but the south and east faces are well clothed with oak—chiefly *bánj* with *moroo*—which will need careful protection; and on the top of the hill there is a magnificent forests of *kurzoo* oaks. Below this, but near the summit, on the spurs which run down from the north-west and west flank, the spruce fir is found in great abundance, mixed with silver fir, which both show fair development. These forests, with proper care, should go far to supply the ordinary wants of the new cantonments; and the arrangements which have been made for this end will be detailed in the proper place in this report.

## FORESTS ON THE LOKUNDEE SPUR.

## I.—THE BODYA FORESTS.

4. This is a beautiful forest of nearly pure deodar, close by Lokundee ghât, about 8 miles nearly due west from Deobund, and only about 4 miles directly above the Tonse. It is situated in a compact bason or valley, like a horse-shoe, on the south-west end of the main spur. The northern semicircle is, properly speaking, known as Kananee, but with a view to simplicity of nomenclature, I propose to call it all Bodya.

5. The bason or valley in horizontal area may perhaps be about two miles in width by one in depth, but the numerous ravines and spurs which run down from the main ridge must give a much larger superficial area of forest. The rocks are limestone, and very precipitous, and the ravines are full of a rich deposit of decayed vegetable matter, in which the deodar seems to spring up with great vigor wherever it has a chance, and thousands upon thousands of young seedlings may be seen coming up, literally as thick as corn in a field. But, except in a few places where chance favors them, the seedlings are never permitted to come to maturity, as many hundreds of sheep from the neighboring villages come to graze here, and, by nibbling off the heads of the young shoots, have reduced them to the condition of furze bushes. But the natural growth of the deodar in this well protected bason is wonderful, and Doctor Brandis, who made several surveys here, gives about 70 years as the average age of a first-class tree, which is certainly not too little, as I have counted myself many stumps, two feet in diameter, which show an age of only from 50 to 60 years.

6. From this forest all the trees for the Chukrata barracks have been taken. Up to the present time about 1,400 trees above 6 feet in girth have been felled; and about 400 more, which have been withered but not killed by girdling, which was altogether a mistake, remain to come down. With due regard to selection, this number would not have been too great for the forest to spare; and though it is not possible to see the present condition of the forest without regret, yet, where harm has been done, it is chiefly from taking trees from such places as had evidently been pretty well worked previous to the forest coming into Government charge. I have no reason, however, to think that when the forest can be finally closed, after the present operations are completed, it will not thoroughly recover itself. As long as the work is going on, and some hundred sawyers and coolies are encamped in and about the forest, it is impossible to do anything in the way of clearing it up and putting things to rights, and I must confess that at present its appearance is extremely pitious.

7. There are a great number of regularly terraced fields belonging to the village of Loharee, scattered in the ravines of this forest. I shall make a vigorous effort to obtain possession of these by compensation or purchase, as, if the forest were once in

sole possession of the department, I am sure, with a little aid in the way of sowing seed, the whole bason might be filled with such a forest of deodars as perhaps the whole of the Himalayas could not show.

## II.—THE MUSHUK FOREST.

8. Mushuk is situated on the north or opposite side of the main Lokundee spur to Bodya. The ridge itself on that side is tolerably covered with scattered patches of deodar, intermingled with cypress on the higher ridges, and firs (chiefly spruce, mixed with some silver firs and *cheel*) lower down. There are also oaks and rhododendrons. Around the village of Mushuk itself there has no doubt been formerly a considerable deodar forest; but its contents have been largely cut down in past years, and sold for a trifling sum to the villagers, who come up for the wood from below. In no place can there be said to be a regular forest like Bodya. Eastward, towards Deobund, the forests get thicker, and numerous patches of deodar are found among the firs and oaks. All along, however, the spruce fir predominates, and forms the staple portion of the forest. I purpose, after the Bodya timber is worked up, that the supplementary requirements of the Chukrata barracks be met from here. The trees will be carefully selected wherever they are available, a sufficient number being left in each patch or block for the purposes of seed. Were it possible, with regard to the wants of the numerous villages below in the valley, the whole of the north face of the spur above Mushuk should be made a close reserved forest, but I fear the necessities of providing some grazing ground for their sheep will prevent this being done. As the scarps in many places are exceedingly precipitous, the working of the forest, except along certain lines, would be difficult and expensive, so perhaps this is less to be regretted.

## III.—THE KOTEE FOREST.

9. On the northern side of the main Lokundee spur there is a most lovely little forest, the nucleus of which is round a temple in a beautiful glen, about half-way between Lokundee ghât and Deobund, overlooking one of the feeders of the Bennargad. The growth of deodar is here perfectly extraordinary, and in two of the old stumps, which were of huge size, through imperfect, the rings showed that the trees in the 21 years of their life had attained a diameter of timber of 12 and 13 inches respectively. In one case, five regularly formed consecutive rings measured each two-fifths of an inch in depth, five rings giving a radius of two inches. The whole of the little valley and hill above it must have been formerly an exquisite forest of pure deodar, but now fields have been cut in the forest in every direction, and the trees stand in bands or patches amongst the fields, stretching somewhat more compactly above them for a considerable distance. There are still probably a couple of thousand well-grown trees scattered about; and, as the growth of the younger trees is remarkably prolific, and the beautifully straight development of their stems even in Jounsar is remarkable, efforts must be made to obtain possession of at least some compact blocks of the forest, for I am sure that if the terraces were only ploughed up and strewn with deodar seed, the whole hill-side would in a few years be covered with a mass of magnificent young forest.

10. Immediately above the deodars at Kotee, there is one of the finest and most noble forests of silver fir and spruce that I have seen anywhere. The side of the limestone hill, covered with a rich vegetable deposit, is somewhat steep, and the trees are all giants; and the forest underneath them being perfectly clear and free from undergrowth, presents a very noble appearance. I noticed, in a few places some young deodars (of which a very few old trees are mixed with the firs) springing up under the shade of the silver firs, to the supersession apparently of the proper offspring of the latter. This led me to think whether it might be possible, with regard to the singularly favorable conditions of this locality for the growth of timber trees, to supplant the fir forest by a more valuable one of deodar, killing the former by gird-

ling them *by degrees* (for it would never pay to remove them as timber), so as to make room for the latter. It would be a sin to spoil so noble a forest, were it not that I do not well see how to get possession of very much of the cultivated portion of the forest below them.

#### IV.—THE KYOLOE FOREST.

11. / Returning to Deobund, and following the main ridge northwards to the Karama peak, deodar is found scattered here and there, sometimes in considerable quantities, especially on the west side of the range, and in the *khuds*, which are very precipitous, running down into the head streams of the Bennargad. After running for about six miles along the east side of the ridge, a steep path leads down through a forest of oaks and maple, with some firs, to a spur of the Karama peak, running down between the affluents of the Bennargad and Chiligad. On this spur is situated the village of Kanein, and around and above it is the fine deodar forest known as Kyoloe.

12. / Along the main range leading down to this spur, and on the grassy slopes which run up to the Karama peak from its base, some exceedingly noble deodar trees are to be seen,—trees measuring 15, 16, and even 17 feet in girth, and of proportionate height, being continually met with. These stand in clumps of five or six (more or less) in number, for the most part on little spurs or other places where a deeper deposit of earth remains than the steep slope of the hill-side usually admits of. Indeed, for the whole distance down to the village of Kanein, little else but deodar is to be seen, mixed with some *cheel*. / But here, as at Kotee, the village is almost in the midst of the deodar forest, and, except in a few favored places, cultivation and grazing have so usurped the place of the forest, that no young trees are to be seen coming up anywhere. Indeed, every inch of ground that is spared from the plough is burned for the sake of the sheep grazing. The forest covers the summit as well as both sides of the spur, the main portion of it, however, being on the northern slope; the whole of which, as well as a portion of the summit, I trust it may be possible, without interfering with village rights, to obtain possession of as a close reserve.

13. / Estimated that above and around Kanein, including the slopes up to the Karama peak, there were altogether between 3,000 and 4,000 first class deodar trees, with about a like number of second class trees; but anything like a proper proportion of younger trees was altogether wanting. / I should mention that terrible destruction has been committed here for temporary cultivation (called here *kheel*), similar to the Dhyas and Bendries of Central India,—and several hundred dead deodar trunks (like dockyards) now disfigure the Kyoloe Hill. This wanton destruction has been entirely stopped during the last three or four years.

#### V. AND VI.—TOTWA AND LOKWA FORESTS.

14. / Crossing the Chiligad stream, and ascending by a very steep path the next main spur, which separates the Dharagad valley from that of the Chiligad, and the pergunnah of Jounsar from Bawur, the forests at the head of the Dharagad, known by the names of Totwa and Lokwa, are entered. These are by far the finest, most extensive, and most perfect of all the deodar forests in this District. / I should estimate the distance from the village of Lokwa, which is situated low down on the northern face of this spur, nearly opposite Chejal, round through the Totwa forest, and over the village of Lokhar to the Jako pass, as not less than eight miles, taking the ridge. But as in this distance there are eight main *khuds* or ravines, some of which have a depth of at least two miles, I cannot estimate the superficial area of forest contained in this space at less than 16 miles in length by 1 in depth. Taking the rates given in Dr. Brandis' survey (No. 15 of 12th June), viz., 1,083 for first class and 767 for second class trees, per acre, this would give about 10,000 first class deodars and 7,000 second class trees for these forests, but as his calculations were made on the Totwa forest, which has been very heavily worked, whereas Lokwa,

which covers full two-thirds of the area, has hardly been touched at all, I myself think that for the whole forest the number of first class trees might be doubled, and the second class raised by trebling them, making the numbers 20,000 and 21,000 respectively. But, except an accurate survey of the ground be obtainable, it is impossible to do more than make a guess, as even when the average number of trees per acre is known with tolerable correctness, it is very difficult to apply the figures to the total area so as to get satisfactory results. In one *khud* alone, in Lokan, I counted all together in one spot, in about four acres, between 200 and 250 (it is most difficult to count with exactness in such a place), all first class trees of 6 feet in girth or thereabouts, and upwards, and none of them under 100 feet in height, while many must have approached 200 feet. On the trees there was not a single branch for fifty feet from the ground; all by growing close together had cleared each other, and showed perfectly straight bales and clean timber. The rocks here are still limestone, covered with a rich vegetable deposit, and the sides of the *khuds* are very steep, and very hard work it is walking over them. The whole of this forest should be secured as a first class reserved forest. Some of the *khuds* are pure deodar; in others deodar is mixed with silver fir in large proportion, with some spruce; while in others again hardly any deodar is found: but nevertheless deodar is the main standard tree of the forest.

15. The upper portion of the Totwa forest extends well down into the *khuds* and ravines on the east side of the main range, and down the head of the stream known as the Riknalgad. Passing along the upper ridge, the trees are magnificent in appearance and size, and many of them are very old, with pleasant grassy slopes below them. These trees naturally attracted Dr. Brandis' attention, and he measured two of 11 feet in girth, and 115 and 135 feet in height respectively. There are many nearly as fine, but I am not sure that the average rate of growth in these forests is so rapid as in the forests of Bodya or Kyoloe, though some stumps show fair results. The trees that I counted averaged about 8 rings to one inch of radius, which agrees closely with Dr. Brandis' higher figure of 98 years for a first class tree. In the Bodya forest, as shown before, average of 5 rings to every inch of radius is by no means uncommon. There is a great absence of young trees all along the ridge, and on the grassy slopes below them, as they have no chance with the fires and sheep. In portions of the Lokwa Forest, however, the growth of young trees and saplings is magnificent.

#### VII.—THE JAKO FOREST.

16. West of the Jako pass there is a high mountain in the deep bay, on which there is a pure deodar forest of considerable extent. From the steepness of the sides of the hill, the trees are not as large as others, but it seemed to me that the timber was exceedingly firm and well-grown, and if it could be got down would be valuable. There is a magnificent view down the Ram Serai valley to the Junina, and across the high ridges to Bunderpouch, from the summit of this mountain. There is also an excellent view of the Forests, of Lokwa and Totwa, on the opposite side of the valley.

#### VIII.—THE CHEJAL FOREST.

17. Descending this ridge, we come upon the Chejal spur, which after dividing into two minor spurs, runs down into the Tonse, near its junction with the Pabur. Above Chejal there has been a fine deodar forest, but it has been horribly mutilated for *kheel* cultivation, and there are about 2,000 dead trees killed by fire now standing on the hill-side. Still there is a very considerable amount of good forest left, and much of the space that was cleared is again clothing itself with young deodars; a little care would enable it to do so entirely; and this I propose to have taken, as well as to make some endeavor to utilize the timber of the dead trees, which is still sound, by converting them into planks, and floating them down the Tonse. This work

must, however, perhaps stand over for the present. I should calculate that there are at least 3,000 first class trees (living) left in the Chejal forest.

18. Proceeding down the ridge towards the Tonse, we find that it separates itself into two minor spurs, on one of which is situated the village of Kotee, and on the other that of Busteel. The latter is the residence of the Wuzer of Bawur, and hereditary high priest of the Onale temple, on the Tonse. These spurs possess two small but perfect forests of deodar, mixed in the upper portion with a good deal of exceedingly fine *cheel* (*excelsa*). These are numbered IX. in the list. The growth of timber in the Busteel forest is said by Dr. Brandis to be very satisfactory. I did not myself note it, but in that of Kotee, where we get on to a shaly soil—though the forest, from being a temple one, is excellently preserved—the growth is very slow indeed, and few of the trees are above 5 feet in girth. This is no doubt owing to the fact that the trees stand too close together, and have hindered each other in their growth, as well as to the greater poverty of the soil. Still nearly all of them are now useful timber trees, and I do not think they will grow much bigger, as they are all evidently considerably more than 100 years old. The forest is about 150 acres in extent, and may contain about 2,500 or 3,000 trees, all much of the same size. On the Busteel side there may be perhaps 2,000 available trees, but I had not time to examine the forest critically.

19. To recapitulate them, after deducting Bodya, which may be considered as worked out, I should estimate the contents of the Jounsar Bawar forests nearly as follows:—

|                       |     |     | 1st Class. | 2nd Class. |
|-----------------------|-----|-----|------------|------------|
| I.—Bodya              | ... | ... | ...        | ...        |
| II.—Mushuk            | ... | ... | 1,500      | 1,000      |
| III.—Kotee            | ... | ... | 1,500      | 1,000      |
| IV.—Kyoloe            | ... | ... | 3,000      | 3,500      |
| V.—Lokwa              | ... | ..  | 20,000     | 21,000     |
| VI.—Totwa             | ... | ... |            |            |
| VII.—Jako             | ... | ... | 2,500      | 3,000      |
| VIII.—Chejal          | ... | ... | 2,500      | 2,500      |
| IX.—Kotee and Busteel | ... | ... | 3,000      | 5,000      |
| Total                 |     |     | 34,000     | 37,000     |

This may, I think, be taken as a moderate estimate, as Dr. Brandis estimated 40,000 first class trees, but he had not the same opportunity for a critical examination as I had, and in the absence of any certain statistics, I would prefer to be rather under than over the mark. There is no doubt that the whole country is most prolific of deodar, and if it were possible to carry out conservation thoroughly everywhere, it might be converted into one vast deodar forest.

20. Crossing the Tonse by the Jooler, on the Simla road below Kootee, and ascending to Mundhole, in the larger ravine above the bungalow, stretching up to the Byrach peak, there is a magnificent deodar forest, nearly pure, but mixed partly with silver fir. It contains many noble trees, some of them measuring from 15 to 16 feet in girth, and covers an area of full two miles in the *khud* and on the mountain side. It is also, as regards the natural reproduction of young deodar, one of the very first in value of all the Tonse forests. In addition to this, the lower portion of the same *khud* (the Chandneegad) is lined with a noble *cheer* forest, which extends in profusion up the Pabur as far as Sunsog—a distance of some 20 miles. It is altogether one of the finest *cheer* forests I have seen in the Himalayas, though some portions of it have been sadly mutilated by the operations of Soda Singh, a railway sleeper contractor, who seems to have made no attempt to remove his timber, but has left it to rot, partly in the river, and partly where it was cut. He probably failed in his attempts to float out the logs, as much from ill-devised and ill-timed operations, as from any inherent hindrance to floating in the river itself, which at full floods must certainly contain water enough

to carry down sleeper logs, if aided by gangs of men to push them off when struck on the rocks. Probably, however, for economy in saving labor of this sort, it would be preferable to cut sleepers up in the forest, if the Pabur *cheer* ever be used for that purpose. The question as to whether these forests are to be retained or given up to Taroche is now before Government. It will be a very great loss of most valuable property if they are allowed to pass from us.

21. I have not this year had time to explore the Deodar forests up the Pabur and to the head of the Tonse, or those in the Jumna valley, and in the valleys which drain into it. From Sunsog, however, I could see two fine deodar forests south of the Reigengurh, on the east side of the Pabur, with a temple near them, in one of which there were some stupendous trees. About thirty or forty miles up the Tonse, near Datmeer, there is, I believe, a considerable amount of deodar, quite workable. Again, near Shalna, on the Jumna, and Bunnal on the same river, and in the Ram Serai valley, on the east side of the Jako Pass, deodar is certainly to be found in workable places, but I have not yet had time to examine them.

## CHAPTER II.—PROPOSED FUTURE ARRANGEMENTS FOR THE MANAGEMENT OF THE JOUNSAR FORESTS.

22. These may be divided into the following :—

1st,—Arrangements for getting possession of and marking off the best forests as reserves, and for their conservancy.

2nd,—Arrangements for making them accessible and getting the timber to market.

3rd,—Arrangements for a working plan for the forests.

4th,—Special arrangements for the conservancy of the Deobund hill and supply of timber to Chukrata.

5th,—Arrangements for providing for the wants of the people in wood.

1st. *As regards marking off the Reserved Forests.*—It is quite true that the State rights in the forests of Jounsar Bawur have been, with certain exceptions, reserved to Government in the “record of rights” of the settlement, but as this record contains a proviso “that wood is to be allowed to the people, and grazing for their sheep and cattle,” the difficulty is not entirely got over; because as long as the people can take wood or graze their cattle where they please, there can be no forest conservancy, and matters will practically remain as they are. Moreover, even if no proviso existed in the settlement paper, it would be necessary to provide for them, as being general requirements of the community.

23. It may be admitted that the right to grazing and wood does not concede that this right can be exercised *wherever the people please*, though heretofore such has been practically the case. There will be no difficulty regarding the wood; but as sheep exist in large numbers throughout both pergunnahs, and as in their grazing their natural habit leads them to wander over large tracts of country, while it is no easy task to exclude them from any place where they wish or have been accustomed to go, I am afraid we shall not have such an easy task with them. Any one who knows the difficulties that we have experienced from sheep breaking loose on the Welsh and Scotch mountains will appreciate this; keeping, then, in view these difficulties, I propose to meet the requirements of the forests, and at the same time of the people, by much the same plan as was pursued in the Central Provinces, viz., by forming three descriptions of forests.

I.—The reserved or State forests.

II.—The village forests.

III.—Open forests belonging to the State.

The first class should be absolutely close forests, in which the right of felling all trees will rest absolutely with the Forest Department, and in which all grazing must be absolutely prohibited, and the firing of the grass prevented. Only the best deodar forests should be included in this class.

24. In the second class, every village should have a tract of waste and jungle set apart for its own use in proportion to its wants, in which the people should do exactly as they like, except that they should not be allowed to cut deodar or other reserved trees without permission (though the trees included in it would belong to themselves), and from which they should not be allowed to sell any wood at all. This last provision is necessary to prevent their turning their wood into money and then coming to us for more.

25. All the rest of the forest and waste should be included in the third class. In these third class forests the Government rights *should be reserved, but not enforced*, except where it might for special reasons be considered necessary to do so. In these forests the sheep must find grazing, and in my opinion no payment could be taken under the settlement rights for it from the people; but I think permission should be asked by them yearly for the privilege to graze, in order to show that the Government retains the right to withdraw or withhold it. This might be advisable in case it were necessary to take up land from these for first class forest reserves hereafter. In addition to this, it would be in the power of the Forest Department to allow certain trees of inferior value to be cut without permission in these forests.

26. But it will be seen from the preceding chapter that in several of the best deodar forests (especially in Bodya, Kotee, and Kyoloe) a large amount of regular cultivation exists in the forests. This cannot in any way be compared to the temporary clearances known as *kheel*; nor does the case here in any way resemble that of little villages which have been allowed to remain unreserved in certain parts of the Kumaon forests and in some of the Central Province forests, with manifest advantage; for in Jounsar large sums of money as well as much labor must have been expended on the terraces, which are regularly cultivated every year, and it was clearly the right of the people under the settlement to make those fields, whereas the people themselves live outside what it is proposed to make the forest limits, in their own villages; and yet (especially in Bodya) it would be most desirable to get these terraces into our possession, as the holding of fields in the centre of forests by the villagers is open to every possible objection, and in fact would render proper conservancy impossible. The only plan that I see for getting rid of them is by a money compensation. It has been proposed to make fields for the people elsewhere; but, no doubt, in making them in the forest the people have made the fields in the best place they could find. But as Chukrata becomes a large station, the people round the Deobund hill will cultivate less land, and do much more by earning money in other ways, and purchasing their food. As some of the most favorable deodar localities are cut up in this way, and it is most advisable to get entire possession of them, I recommend this as the only feasible plan.

27. But the whole of the above arrangements must be carried out in connection with the civil officers, and cannot be arranged by the forest officers alone. This is necessary, in order that the people should feel that full justice is done them; and that they have in fact some one to speak on their side. Moreover, it will require much discrimination and care to carry out the arrangements fairly; inasmuch as in forming the State forests of the first class some villages will practically suffer very much, while others will not be affected at all, especially in the matter of grazing, and great care must be taken that this is made up to them elsewhere. When the boundaries of the State and village forests are decided, they should be marked off by permanent pillars at once, and the observance of the boundaries duly enforced. Of course, whatever did not belong to one or the other class would be an "open State forest" of the third class.



28. *2nd. As regards making the Forests accessible.*—Dr. Brandis, at the end of his report, remarks :—“ The transport of timber.—The transport of the timber to a place of sale without undue expense is the great difficulty, as all the more valuable forests are situated at a considerable distance from the river. If this difficulty can be overcome, and if the unrestricted and wasteful cutting of deodar by the inhabitants and by parties from the lower parts of the district can be prevented, these forests will prove of great importance, on account of the good size and the rapid growth of the timber produced in them.”

29. In these words the real question as to the management of the Jounsar Bawur forests lies ; for at present not only the forests, but the country itself, is totally inaccessible ; for except along the old Simla road a pony cannot travel anywhere, and a great deal of unnecessary time and labor is unavoidably expended in getting from place to place. There can be no doubt as to the extreme value of the forests if the timber can be got to market for a reasonable cost. In the Bhagarutty forests it takes 86 years for a 2nd class tree to become 1st class, according to Dr. Brandis, while in Jounsar it takes from 16 to 19 years ; and my own observations entirely coincide with this.

30. I should recommend, then, that a system of roads be commenced in Jounsar, to be at first merely mule or pony tracks, which might be widened and improved as it became necessary to work certain forests. This will cost a considerable sum of money, and cannot be the work of one or two years, but must extend over several ; but when it is seen how much has been done in this way in the Kumaon and Gurhwal forests to make them accessible, there is no fear that the same cannot with proper management be accomplished here. These tracks should be made with a view eventually of being turned into graded roads, along which timber trucks could travel, but first regular grades must not be thought of. One track along the ridge, from Deobund by the Karama peak to the Jako Pass, with branches down the Lokundee spur, the Kanein spur, and the Dharagad to the Tonse, must be the main lines, and be first commenced on. These are absolutely required to enable the forest officer to get about the country, as at present so much valuable time is lost in crossing these trackless *khuds* and spurs. As the forests are worked, branch lines and slides down the hill-sides must be constructed to meet them, for it must be made a cardinal principle that the timber be moved *down to the river, and not upwards across the hill*, with the sole exception of the wood required for the Chukrata, which will be provided for separately. The next thing will be to get a boom across the Tonse, or probably across the Jumna, below its junction with that river ; but for this we must wait till we gain experience from our Ganges boom. It may be added, that when the country is opened up by roads, the condition of the people will greatly improve in all respects, and it is to be hoped the District Inspector of Schools will make an inroad into the country, for the villages are full of children, but not one in the whole pergunnah can read or write a word, for there is not a single school in the hills beyond Deobund ; and yet as a rule the children are exceedingly sharp and intelligent, and ready to converse, and are not at all *gauché* or shy. Next year I purpose, with the approval of Government, to enter a considerable sum in the Forest budget for roads in Jounsar.

31. *3rd. As to a working plan for the Forests.*—It will be seen that Bodya has been worked out to the greatest possible extent for Chukrata, and that still timber is required for the barracks. This I purpose taking from the scattered deodar patches in the Mushuk forest, on the north side of the Lokundee spur, as being the nearest to Chukrata, and therefore the least expensive to convey there. As all the wood has to be carried up hill on men's backs to Chukrata, this is a point of serious consideration. The Kyoloe and Kotee forests I should be inclined for the most part to leave alone, if we get possession of them, and *not to fell any tree until it is seen that the bare places begin to be well covered with young saplings*. It is in the forests at the head of the Dharagad that work must commence, and I think that here (if Dr. Brandis and my

own calculations be correct, and a road for timber be made down the Dharagad to the Tonse) that about 2,000 trees per annum might be safely felled for the next 10 or 12 years. By that time the first-named forests, as well as Bodya, would be recovering, and 4 or 5 years' felling might be found in them; by which time the Dharagad forests would be ready with a second crop. In all cases, however, the noble trees which stand along the ridges must be carefully spared.

32. *4th. As regards special arrangements for Chukrata.*—The Deobund forests are chiefly valuable from their proximity to the new cantonment. It is believed, that with proper arrangements, the supply of fuel and ordinary building-wood may suffice for the wants of the new cantonment; but no care must be spared to economize the available resources of the forests, and, by opening out roads and mule tracks, to bring into use the wood on the more distant ridges, while that in the immediate neighborhood of the cantonment is protected. To this end, the Simla road, which runs along the south side of the Deobund hill, should be completed as soon as possible, as far as the Lokundee ghât, or even to the Tonse, when mule tracks can be opened by the Forest Department from the various ridges to join it. Tracks must also be cut round the north side of the same hill by Kotee, and so along the ridge to Chukrata, so as to open all the forests on the other side of it.

The line works of the Public Works Department have been removed further off cantonments than they were at first, that the ravines nearest to the station may be made available under proper restrictions for residents to obtain their fuel from. As far as possible, every endeavor has been made to provide for the convenience of the cantonment and its residents, while the natural beauty of the hills and ravines will not be destroyed by the removal of all the trees on them. I believe that the requirements of the new station will necessitate that the Deobund hill be made a 3rd class forest, in which grazing will be permitted, but where wood cannot be cut except under proper restrictions.

33. *5th. Arrangements for providing for the wants of the people for wood.*—Until the last few years, the people both of the hills and the neighboring country below have been in the habit of cutting and carrying away deodar and whatever wood they pleased to a very large extent, and some of the forests—like Totwa and Mushuk—have been very heavily worked for this purpose, to the great profit of the neighboring zemindars. Those who came from below, however, had to pay something (though it was a trifle) to the head-man of the village, and on whose lands they cut the wood. By the terms of the settlement, the people of Jounsar Bawur are *clearly entitled to wood according to their wants*, but nothing is said about it being *deodar*. They will declare that they cannot use any other, but the same was said of teak in the Central Provinces; and the people have managed very well there without teak, since they have not been able to get it. I propose then—

1st,—That all people who have deodar in their village forests should of course get it, and that it should be given gratis also *for their own wants* to those who formerly had it in their forests, but from whom the forests have been taken away to form State reserves.

2nd,—That those who neither have deodar in their forests, nor ever had any, must use other wood, such as fir or oak, which they may have gratis; but if they require deodar, they must pay for it at the rate of one-fourth the average selling price of deodar in the Division. This was the rule in the Central Provinces with regard to teak, and worked well, as it checked its being used except when absolutely required.

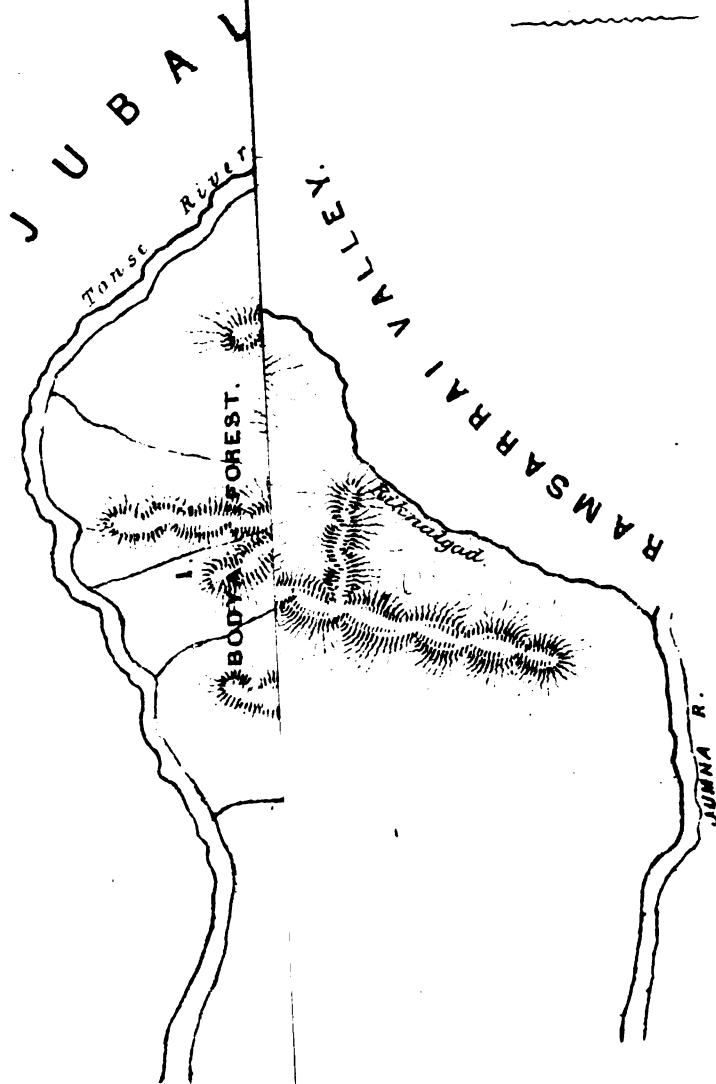
3rd,—Artisans and timber-dealers of all sorts must pay the full price for deodar.

4th,—But no villager in Jounsar must sell wood of any sort without distinct permission from the forest officer, even though it be from his own village forest.

G. F. PEARSON, MAJOR,  
Conservator of Forests,  
North-Western Provinces.

Sketch Map  
OF THE  
DEODAR FORESTS  
OF  
JOUNSAR BAWUR.

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