

REPORT

ON THE

SURVEY OPERATIONS

OF THE

LOWER PROVINCES,

FOR SEASON 1863-64.

FROM

1ST OCTOBER 1863 TO 30TH SEPTEMBER 1864.

Calcutta:

PRINTED AT THE BENGAL CENTRAL PRESS.

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FROM

THE JUNIOR SECY. TO THE BOARD OF REVENUE, L. P.,

To

THE SECRETARY TO THE GOVERNMENT OF BENGAL,

FORT WILLIAM.

LAND REVENUE,
2ND SECTION, SURVEY.*Present:*A. GROVE, }
AND } ESQRS.
E. T. TREVOR, }*Dated the 24th March, 1865.*

SIR,

I AM directed by the Board of Revenue to submit the Statements and

Statement No. I.—Work performed by Survey Superintendents.
 Statement No. II.—Condition of Demarcation Operations, including Khusroli.
 Statement No. III.—Condition of Survey Registers.
 Statement No. IV.—Expenses incurred in the non-professional Branch.
 Letter from Surveyor-General, to Secretary to Government of Bengal, dated 18th
 January, No. 14, with annexures.
 Letter from Deputy Collector, in charge First Division, dated 25th October, No. 62.
 Letter from Superintendent, Second Division, dated 22nd December, No. 200.
 Letter from Officiating Superintendent, Third Division, dated 3rd December, No. 42.
 Letter from Superintendent, Fourth Division, dated 2nd November, No. 187.
 Letter from Commissioner of Patna, dated 17th December, No. 34Ct.
 Letter from Commissioner of Chota Nagpore, dated 16th November, No. 1994, with
 enclosures.
 Letter from Deputy Collector of Kamroop, to Deputy Commissioner, dated 9th October.

Reports noted on the
 margin, describing the
 Survey operations in
 the Lower Provinces
 during the year end-
 ing the 30th Septem-
 ber last.

2. The 1st Division professional party, under Mr. R. B. Smart, continued
 its operations in the southern portion of Tipperah,
 and the western portion of Bulloah, including the
 great rivers which intersect that part of the country.
 The party took the field early in December, and returned to its head quarters
 at Dacca in June. During this period an area of 1,383 square miles comprised in
 1,877 villages, including 234 square miles of river area, was effected at a cost of
 Rs. 45,547-10-3, averaging Rs. 32-15-0 per square mile. This is a low rate, and
 the work in this Division may be pronounced very satisfactory both in quantity
 and quality.

3. During the present season this party will probably complete the Bulloah
 District, together with the large islands at the confluence of the three great
 rivers, and will then be available for the survey of Assam.

4. The non-professional party has long since been broken up, the Office Establishment, with a few Ameens, having alone been retained for the purpose of compiling the Registers, replacing damaged field books, and classifying the records before their transfer to the Collectors of the several Districts. The compilation of the vernacular Registers in all the Districts which fell to this party is complete, and only 13 Registers remained at the close of the year for translation into English. On this work, 5 Clerks are employed, under the direction of the Covenanted Deputy Collector of Dinagapore, who is in charge of the Survey branch. The Registers actually finished during the year are 90 in the vernacular, with 32,969 entries, and 101 in English, with 23,109 entries. Three vernacular Registers only remained in hand at the end of December. The Uncovenanted Deputy Collector, Baboo Tarucknauth Ghose, has been transferred to Jessore to take up the registry work of that District left unfinished by Baboo Doorgapersad Ghose, who, on account of ill-health, was transferred to Dacca.

5. The expenditure in this branch amounted to Rs. 17,363-5-9.

6. The 2nd Division professional party resumed operations in Maunbhoom under Captain Macdonald, who took charge on the departure, early in the season, of Major J. L. Sherwill on sick leave. The field work occupied the period from November to the close of April; the area surveyed being 992 square miles, comprised in 1,499 villages. Of this area 74 square miles were topographically surveyed. The expenditure aggregated Rs. 52,284-12-9, producing an average rate of Rs. 52-11-3 per square mile. This is Rs. 21-8-3 above that of the previous season, and nearly equal to the high rate (Rs. 54-10) of 1861-62, which was due to special causes. Of the expenditure, Rs. 1,573-8-0 is properly debitable to the previous year; but this will diminish the average very slightly, and the result is not satisfactory.

7. Complaint is made in para. 40 of the Surveyor-General's Report, of the "most unsatisfactory" character of the demarcation maps.* It is to be regretted that this was not represented to the Board earlier, so that proper steps might have been taken by them; but they have now asked for a copy of the Surveyor's remarks,

* The Board have since received the Commissioner's explanation, the purport of which is as follows:—The Surveyor admits that the thicks in cultivated ground were good and the Maps fair. His complaint seems to refer chiefly to Pergunnah boundaries for the delineation of which the chain and compass were not made use of. In this, the Deputy Collector followed the practice of his predecessor, Major Thompson. Disputed boundaries, however, were laid down with chain and compass, and where no dispute occurred, accurate delineation in the map of Pergunnah boundaries in a wild country was not considered of much importance, so long as the marks on the ground were properly set up. Whether these marks were properly set up or not, is not clear; but Captain Macdonald admits that he found no difficulty in having the boundaries pointed out on the spot. Captain Macdonald also objected to the materials used for the construction of *chabotras* at the tri-junctions, but it is to be observed that in the Regulation districts these marks are equally liable to erasure (see Survey Rule 17). There is no doubt, however, that the erection of stable landmarks is very desirable, if the zemindars in the wild country of Maunbhoom can be induced to recognize their importance by erecting such landmarks in their estates. The Revenue Authorities cannot insist on their erection, as may be done in the North-West Provinces, under Act I. of 1847.

and have also called for explanation from the Commissioner of Chota Nagpore, under whose orders the demarcation work is here conducted, and who was apparently unaware that the Surveyor had any cause for complaint.

8. In addition to the field work, it is stated in para. 44 of the Report that Captain Macdonald re-surveyed the Military Cantonments of Ballygunge and Allipore.

9. The work remaining to complete the Maunbhoom District consists of 2,200 square miles, of which from 1,000 to 1,100 square miles at least is expected to be accomplished in the course of the current season. About one-half of the area will probably be mouzahwar, but if the topographical survey should preponderate, a larger out-turn may be expected, and in that case the survey will probably be completed by the middle of the season 1865-66.

10. The non-professional party acts in concert with the professional first Division party, the operations of which have been described above, (paras. 2 and 3). One thousand four hundred and fifty-two villages were demarcated chiefly in Bullooh, the estimated area being 1,385 square miles. Boundary disputes were not numerous, and the large number of cases of excess and missing lands were well worked off, there being only 115 on hand at the close of the year out of 3,437. One hundred and twenty-nine out of 1,205 miscellaneous cases remained for disposal, and 26 appeals out of 112. In 532 villages internally plotted, 9,690 *chucks* occurred; no khusreh measurement was required. The Towjih nikás, or rent roll comparison of 32 Bullooh Pergunnahs, was also completed.

11. The Registers of Tipperah were taken in hand during the year. Eighty English and vernacular Registers were completed, leaving two in hand, which have also been since completed. The registry work of Bullooh is also stated to be much advanced; the rough village Registers of 964 Estates out of 1,764 having been filed by Mr. Deputy Collector Davey. The Superintendent, Mr. Browne, to whose method and system these results are mainly due, writes:—"Under such circumstances, I may venture to observe that the registry work of this Division has been carried on with a rapidity unparalleled in the annals of the Bengal Surveys—a result mainly due to the more methodical arrangement of Mehals and greater simplicity in the registry of survey details, which I have succeeded in introducing into this Division."

12. The expense amounted to Rs. 66,837-12-5, which is at the rate of Rs. 48-4-1 per square mile on the demarcated area.

13. Mr. Assistant King, being no longer required in this Division, has been transferred to Seebsaugor in Assam, to head the demarcation party which is

to be organized there. Mr. Deputy Collector Davey has been transferred to the general line. The registry work of Bulloah is assigned to Baboo Brijsoonder Mitter, who will also, during this season, complete the demarcation work connected with the search for missing villages.

14. The 3rd Division professional party, under the direction of Mr. N. T. Davey, continued the survey of Sylhet south of the previous season's work, up to the frontier of Hill Tipperah. The area completed during the field season of 5 months was 979 square miles, of which 641 square miles, containing 777 villages, were mouzahwar. The remaining 337 square miles were surveyed in connection with the special duty of identifying Captain Fisher's boundary between Hill Tipperah and the British Territory.

15. The difficult nature of the country, and the reduction of the agency during the season, prevented a more favorable result. The cost of the work Rs. amounted to Rs. 42,722-10-7, yielding an average rate per square mile of 43-10-2, which is much the same as that of the previous year under nearly similar circumstances. The erection of pillars on the frontier boundary was referred to in paras. 49 and 50 of the Board's last report, and their letter No 40 of 31st December last, and the sanction of Government is now again solicited to the execution of this work by the Department of Public Works. I am also directed to repeat the suggestion that a special report on the entire external boundaries of the British Territories should be called for from the Surveyor-General.

16. The difficulties encountered in the work of identifying Captain Fisher's boundary are clearly described in the extract following the Surveyor-General's 59th para. The report of the Survey Superintendent was submitted with the Board's letter No. 7, dated 7th instant, which contains their opinion on the manner in which the proceedings of the Arbitrators on the part of Government and of the Rajah of Tipperah were conducted. Besides the work done in Sylhet, one of the Assistants, as stated in para. 60, prepared a plan of the land required for the Stations of Shillong and Yeodo in the Cossyah Hills.

17. About 900 square miles of Sylhet remain for survey, of which 400 square miles will be dealt with mouzahwar. This area, with the Cachar Tea tracts, will occupy the party during the current season. It is proposed in para. 63 to extend the survey as far as may be practicable into the Eastern Frontier, as yet so little known.

18. The operations of the demarcating party were carried on chiefly in Cachar. Nothing was done in Sylhet beyond the measurement of the eleven Estates referred to in para. 19 of the Board's last report, the renewal of field marks in the tract coming under professional survey, and enquiries into missing villages.

Non-professional.

The efforts of the party under the three Assistants, Messrs. Geddes, Kineally, and Kelly, embraced 77 waste land grants in Cachar, which had undergone preliminary measurement and mapping by the District Ameen. These were speedily disposed of, and no more work of the same kind being ready, it was arranged to make over the original applications to be disposed of by the Superintendent's party, thereby dispensing with the Ameen's preliminary survey. Some delay, however, occurred in carrying out this arrangement, owing to a discussion between the Deputy Commissioner and the Survey Officers, and a reference to the Board was thought necessary; otherwise the out-turn of work would have been greater; but the rains setting in early, as is usual in Cachar, the field party was driven under shelter. The tract demarcated was thus only 585 square miles, in addition to which 100 linear miles of the frontier boundary of Tipperah were demarcated. The miscellaneous work calls for no remark, only 17 boundary disputes having occurred.

19. The registry work of Dacca has not progressed so favorably as was anticipated, when the work was transferred from the Superintendent to the Collector. The arrangement appeared suitable at the time, for the Collector, Mr. Reynolds, having just vacated the superintendentship, was intimately acquainted with survey details; but he was compelled to quit his post on sick leave. His successor had not the same experience, and the work was much delayed. It has now again been made over to the Superintendent, and is in charge of Baboo Doorgapersad Ghose, a Deputy Collector of great experience acquired in other Divisions. Only 8 vernacular and 8 English Registers of this District were completed during the year. The work of the same description in Sylhet, which was carried on partly by the Superintendent and partly by Baboo Satkowri Roy, has progressed more satisfactorily, 35 registers having been prepared in English, and 17 in Bengali. The expenditure of the year was Rs. 70,040-13-10.

20. During the current season, the Cachar waste land grants and allotments will be taken up by Mr. Geddes, the only Assistant now attached to the Division, with a field party of 6 Peshkars and 60 Ameen; but the boundaries of the grants lie through dense jungle, and rapid progress cannot be looked for. The Deputy Collectors, Baboo Doorgapersad Ghose and Baboo Satkowri Roy, will remain at head quarters to superintend the compilation of the Dacca and Sylhet registers. The Superintendent himself expects to be fully engaged in completing the definition of the frontier boundary, between the British Territories and Hill Tipperah, as well as in laying down 11 miles of boundary between Sylhet and the Cossyah Hill States, the completion of which was interrupted by the disturbances of 1861-62. The remaining field establishment of 4 Peshkars' parties will be employed in renewing the field marks in Sylhet. The Assistants, Messrs. Kineally and Kelly, and Deputy Collector Mahomed Saduk, have been transferred to the general line.

21. The 4th Division professional party under Lieutenant Stewart, being left free after the completion of the Backergunge District, took the field at Buxar, in the District of Shahabad, in the middle of November, with the object of re-surveying the banks of the Ganges and its main affluents, under Act IX of 1847. The Surveyor's operations comprised the borders of Shahabad and Sarun, and of Ghazee-pore and Azimghur in the N. W. Provinces. The average breadth of the tract coming under survey was 4 miles on each bank, and the surveyed area embraced 837 square miles, with 1,185 villages and *dearas*. Unavoidable delays occurred in arranging matters for survey, owing to which, as described in para. 68 of the Surveyor-General's Report, the out-turn was very small. The absence of Lieutenant Stewart for 6 weeks, as mentioned in para. 84, for the purpose of explaining his Backergunge work of the previous season, must also have caused delay. The cost aggregated Rs. 51,969-9, giving an average of Rs. 58-9-5 per square mile.

22. The Board must here notice the remarks in paras. 72 to 83 of Colonel Thuillier's Report. Two questions were referred by this Officer in September last. One was whether, in regard to villages situated beyond the action of the river, the boundaries shewn in the maps of the former survey should be relaid, or those now surveyed be taken as the correct boundaries. The Surveyor-General expressed an opinion in favor of the former course, especially as the survey had been notified in the *Gazette* as approved, except where the boundaries had been altered by the orders of a competent authority. On this question the Board held that where no change of possession had taken place, any discrepancies in boundaries must be referred to erroneous demarcation at the time of the first survey, and that present possession should determine the question. The Government notification of the old survey held good, in their opinion, only till the new survey should be ready for notification under Act IX of 1847, and the demarcating Officers should now, as before, be guided by possession, leaving points of law which might arise from their proceedings to be disposed of by the Civil Courts.

23. The second question was in reference to villages liable to fluvial action, in which great changes had taken place, and how conflicting claims should be decided, whether based on the ground of accretion, or of re-formation, or any other such grounds. On this point, too, Colonel Thuillier advocated the re-laying of the old boundaries, but the Board were of opinion that the survey would lose its value if the Demarcating Officers followed this course where the old boundaries had ceased to be the true boundaries. The Revenue Authorities require actualities to be mapped now more than they did in the former survey; for, if the object of Act IX of 1847 is to be attained, they will have to adjust the sudder jummas of

the border zemindars (between Shahabad and Ghazee-pore) on the results of the new survey. Possession is the principle on which all demarcations have hitherto been made, questions of title being left for adjustment by the constituted tribunals, whose decisions alone can modify the boundary laid down according to possession.

24. The question of jurisdiction where boundary disputes occur between two Districts, one of which belongs to the Bengal Government, and the other to the North-Western Provinces Government, was submitted in the Board's letter No. 7, dated 9th February 1864, and disposed of by Government orders dated 1st December last, by which the deep stream of the Ganges is taken to be the permanent boundary between the two Governments. The Board consider that this is the only rule by which disputes as to jurisdiction can be avoided, and under which disputes as to property and occupation can be decided by tribunals having full and undoubted jurisdiction.

25. With reference to the Surveyor-General's 83rd paragraph, the Board desire me to detail the steps which have been taken for the construction of masonry pillars at the tri-junctions of villages. The purport of the orders of May and October 1863 is given in paragraph 51 of the last annual report. In November, the Commissioner estimated that 2,000 pillars would be required at a cost of Rupees 20,000, but the Board pointed out that if the pillars were confined, as they should be, to tri-boundaries, so many would not be required. The Commissioner was further told that such pillars should be constructed on the base line, and not on the banks, which were liable to the action of the river. Early in February, at the instance of the Surveyor-General, the importance of avoiding delay was again urged on the Commissioner. The Commissioner replied in the same month that the number estimated for Shahabad was 188, which would cost Rs. 1,880, and he expressed his inability to furnish an estimate for the other Districts till demarcation should have taken place. He pointed out also that Collectors could not well undertake the responsibility of so large an outlay without sanction. The Board had already requested the sanction of Government on the 29th January, to an expenditure of Rs. 6,000 for these pillars, and, in forwarding to the Commissioner a copy of the instructions of the North-Western Board to its Officers, directing the construction of *chabostras*, 3 feet square for tri-junctions, and smaller pukka pillars for sinuosities in the line, they directed the Commissioner to proceed on the same plan within the above limit of expense. In April, the Commissioner called attention to his letter of February, which had already been replied to; and on further reference he was told that he might incur the outlay in anticipation of the orders of Government, which arrived at the end of the same month. Meanwhile the survey was proceeding in Shahabad, and it became necessary to abandon, for the present, the erection of pillars in the tract of which the survey was completed, leaving this to be done in the following season, when the professional parties would point out the tri-junction points. The settlement of these preliminaries took up so much time that the

erection of the pillars during the season was impracticable. Both parties commenced work almost simultaneously on the subsidence of the annual flood, and there was not the usual interval between demarcation and survey. The remarks made by Colonel Thuillier regarding the "promptness" with which pillars are put up in the North-Western Provinces, were evidently penned in forgetfulness of the fact that in those Provinces the Zemindars are bound by law, (Act I of 1847), to erect boundary marks, while in Lower Bengal, the Revenue Authorities have no power whatever to cause the erection of any pillars, save at Government expense.

26. The Board regret that both in this part of his report and in para. 16 the Surveyor-General should have so entirely omitted to refer to the discussions which have so often taken place on the question of erecting boundary pillars. As above shewn, the whole cost of such works must fall in the Lower Provinces on Government, without any assistance from Zemindars; and as long as a large expenditure on this account cannot be sanctioned, the boundary marks, considered by Colonel Thuillier so essential to his operations, cannot be erected.

27. During the present season the survey of the River Gunduck to its junction with the Ganges will be carried on, and the Board desire me to quote here the orders passed by them for the careful erection of boundary pillars throughout those lands under survey. To the Commissioner of Patna, they wrote under date the 19th December last:—"With regard to the Gunduck dearas, and those portions of the Patna dearas, which have not yet been surveyed, you are now requested to issue instructions for the immediate erection of these pillars. Captain Stewart is now, as the Board are informed, commencing the survey of the Gunduck dearas, and no time should be lost in marking the tri-junction points along the banks of that river. It appears from the 6th para. of your letter under reply, that 367 pillars will be required in Tirhoot, 847 in Sarun and Chumparun, and 314 in Patna. Those required for Shahabad need not now be erected. Out of the above number of 1,528, more than 1,200 will very probably not be required for the lands which now remain unsurveyed in Patna, and those on the banks of the Gunduck, and the Tirhoot bank of the Ganges. The Board have consulted Colonel Gastrell, who is of opinion that pillars of the dimensions originally proposed by the Board are not required, and that the following dimensions will be sufficient."

"3 feet \times 3 \times 3, out of which 2 feet 6 inches in hard ground, and 2 feet " in soft ground, should be underneath the surface."

"The cost of such a pillar is estimated at the present D. P. W. District rates, at Rupees 5-6-4 at the very outside; the sum estimated by your Deputy Collector being very excessive. At this rate the cost of 1,200 pillars will be Rupees 6,475, and this amount you are authorized to disburse during the present year." Again on the 10th January, they wrote to the Commissioners of Patna

and Bhaugulpore as follows:—"The Zemindars cannot be compelled to erect these pillars, but you can, of course, ask their assistance, and, if necessary, advance half the estimated cost to them. No time should, however, be lost in this important matter, and the Deputy Collector should commence the erection of the pillars, unless the Zemindars undertake to do so. The cost of Rupees 5-6-4 for each pillar should not, if possible, be exceeded. It is considered necessary that one foot of each pillar should be above ground where it is soft, in order to allow for its settling down, or for any deposit being made round the pillar during inundation. In hard ground, six inches only need be above ground." The Board consider the Surveyor-General's proposition for constructing masonry pillars at every tri-junction point of village boundaries impracticable, except at an enormous cost. The lowest estimate for masonry platforms of 3 feet cubical measurement, made by the Deputy Collector, is from 8 to 10 Rupees each. If every village in Bengal is to be demarcated, the expense must amount to many lakhs. They admit the necessity in special cases, such as frontier boundaries and village boundaries liable to change like those on the Ganges, of pukka pillars, and they have always advocated the construction of such pillars. They may here remark that the definition by masonry pillars of the Tipperah frontier boundary laid down by Mr. Leycester in 1854, though sanctioned by Government in 1858, does not yet appear to have been carried out. This subject was referred to para. 49 of the Board's last report. With their letter No. 7, dated 7th instant, a recommendation has been submitted for the construction of a line of pillars to indicate the boundary between Sylhet and Hill Tipperah. The boundary line between Sylhet and the Cossyah Hill States should also be similarly defined on the completion of the survey in that quarter.

Non-professional.

28. The following is a Statement of the registry work effected by the Superintendent of Survey.

DISTRICTS.	ESTATE REGISTERS.		VILLAGE REGISTERS.	
	English.	Vernacular.	English.	Vernacular.
Jessore	12	1	12	2
Furriedpore	12	10	9	12
Backergunge	5	6	5	7
Pubna	1	0	1	0
Total	30	17	27	21

29. The protracted absence of the Deputy Collector, Baboo Doorgapersad Ghose, on sick leave, accounts for the comparatively small progress in the registry work of Jessore; the number of entries being 6,629 against 9,771 of the previous year. About two-thirds of the work in this District is completed, the remaining third represents 19,821 entries. Baboo Tarucknath Ghose, from the 1st Division,

has taken up this work, and Baboo Doorgapersad Ghose has been transferred to Dacca for similar work in that District.

30. The Furreedpore Registers were prepared by Baboo Mohindernath Bose ; the number of entries made was 5,893, leaving 3,037 entries to complete the District. The Backergunge Registers are now fairly in hand ; the number of entries made is 3,082, and 7,052 villages remain to be entered. The Pubua Registers were compiled in the 1st Division, with the exception of a few pergunnahs which overlapped those of Jessore. These were taken up in this Division, and the last of them is now completed. The expenditure amounted to Rs. 35,421-0-9.

31. The demarcation of the Ganges and other Rivers for the 4th Division professional party was entrusted to a special establishment, and placed under the superintendence of *Demarcation of Ganges Dearas.* Moulvee Ahsan Ahmed, an experienced Deputy Collector from Maunbhoom. He joined on the 14th October, and was assisted by two Deputy Collectors, Moulvee Fida Ally and Baboo Hursahoy Sing, who joined in the following month. The field establishment, consisting of 6 Peshkars and 60 Amceens, took the field in November, their progress extending along the borders of Shahabad, Sarun, Patna, and Tirhoot ; one of the Deputy Collectors, Fida Ally, was withdrawn in January. The number of villages demarcated was 2,320, estimated to contain 2,547 square miles. One thousand nine hundred and six thâkbusts were made over to the Surveyor, 129 boundary disputes were settled out of 196, and 343 miscellaneous cases disposed of. The demarcation, so far as respects the Districts of the Patna Division, is completed, and 162 masonry pillars have been erected at the tri-junctions of villages.

32. The expenditure amounted to Rs. 21,451-12-8, or Rs. 8-6-9 per square mile, a rate by no means excessive. This sum does not include the cost of erecting masonry pillars. These pillars will be erected in the current season, the expenditure of which will be proportionately enhanced.

33. During the present season, Moulvee Ahsan Ahmed is to carry on the demarcations along the Districts of the Bhaugulpore Division on the south bank of the Ganges, and Baboo Hursahoy Sing on the north bank.

34. The 5th Division party, under Mr. O'Donel, was occupied in surveying the unexplored tract of hills between Chittagong and Sylhet. The area effected topographically was 3,505 square miles in the Tipperah Hills, over which, excepting 480 square miles of uninhabited country, a net work of triangles was thrown. The field season extended from December to March, some of the party

FIFTH DIVISION, TOPOGRAPHICAL
SURVEY.

remaining out as late as July. A preliminary survey of the Goomtee River was made in November, as it was necessary to ascertain the course of that river with a view to perfecting the arrangements for the season. The expenditure amounted to Rs. 53,618-10-5, on which the mileage average comes to Rs. 15-4-9. The contingent expenses were particularly heavy in this Division, to provide for carrying provisions and cutting lines by coolies, who could only be engaged at a high rate of wages.

35. On account of the impracticable nature of the country, the further prosecution of the survey towards the East and North-east has, the Board learn from para. 95, been abandoned with the sanction of Government.

36. This year, one of the Assistants is engaged in measuring an elevated tract within the District of Chittagong, adapted for the cultivation of tea, and in surveying the grants already made in this tract. The estimated area is from 300 to 400 square miles. The main body under Mr. O'Donel, is stated, in paras. 98 and 99, to have proceeded to the Bhootan Dooars, to co-operate with Captain Austen in the survey of the frontier in that direction.

37. Major Thompson, who is at the head of the 6th professional division, continued his survey of Pergunnah Palamow with Pergunnah Torree. The area surveyed is 1,743 square miles, of which 1,079 square miles were mouzahwar. This was accomplished at a cost of Rs. 59,069-15-0, giving a general average of Rs. 33-14-3 per square mile. This is nearly double the rate of the previous year ; but it is to be borne in mind that in that year the work was chiefly topographical. Colonel Thuillier pronounces the out-turn to be good, and the rate moderate.

38. During the current season the survey of Palamow is to be continued, but the work, which is stated to be difficult, will probably not be completed before the close of 1865-66. The pergunnah contains upwards of 4,000 square mile, an area large enough, Colonel Thuillier remarks, to constitute it a District by itself. It is stated in para. 112, that in consequence of revisions which have become necessary in the survey of the Kurhurbalee coal field, the tract to the north of it, as far as the boundary of Monghyr, must also be re-surveyed during the season.

39. The demarcation of Pergunnah Palamow was completed in 1861-62, but the professional survey did not follow immediately ; and so long an interval having elapsed, the professional party has to be attended by a Peshkar and 3 Ameens, to renew the village boundary marks. It has also been found convenient, as it does not interfere with Major Thompson's professional work, to let that officer make a khusreh survey of Government villages for settlement purposes. The small separate

Establishment employed on this work is not charged to the Survey Branch. The Khusreh survey of 20 confiscated villages in the Estates of Seeree and Odoypore has thus been effected. The boundaries of 587 villages were defined in the manner above stated. One hundred and thirty-six thâkbust maps were made, 1 boundary disputes decided, and 30 miscellaneous cases disposed of.

40. Mouzahwar Registers have been prepared for 9 estates professionally surveyed, and partially for two others. Statistical Statements, in a form devised by Major Thompson and approved by the Board, have been prepared for 51 Palamow Government villages. The expense incurred was Rs. 3,420-5-6.

41. In Maunbhoom, the demarcating party under Baboo Rakhal Das Holdar, who succeeded Moulvee Ahsan Ahmed at the commencement of the season, demarcated an area estimated to contain 2,500 square miles. Of 16 pergunnahs demarcated, 7 being in the open plain, were done mouzahwar, and they contained 1,818 villages. The remaining 9 pergunnahs in the hill and jungle tracts were only demarcated exteriorly. In the course of the demarcations of the jungle, 153 Ghatwalee villages were laid down, and litigation will probably thereby be avoided, and encroachments prevented. The number of *chucks* met with was 2,336; 150 boundary disputes were decided, and 138 miscellaneous cases disposed of. The statistics of 3,828 villages have been collected, and 1,971 village maps prepared. The statistical tables of 6 estates have been nearly completed on Major Thompson's plan. The expense amounted to Rs. 8,154-0-7.

42. The Deputy Collector reports the demand for copies of thâkbust maps on the part of the Zemindars to be increasing; 164 such maps have been applied for, and the cost of preparing them paid. The Board regret to find that great mortality prevailed on this establishment, the number of deaths from diseases induced by the climate being no less than 14.

43. The Darjeeling Waste Land party, under Mr. Johnson, began work in November, and surveyed 127 square miles in the hills, and 197 square miles in the Terai. The hill survey is described as being minute, except in 20 square miles of unallotted and uncleared land. The Cinchona plantations were carefully delineated. Of the Terai survey, which was conducted by Mr. Johnson's Assistant, 104 square miles were completely surveyed, and 90 square miles in boundary only. The unhealthy climate compelled the Assistant to withdraw early from the field. The total surveyed area of 321 square miles contained 778 separately demarcated blocks, including 659 jotes, and cost Rs. 22,431-0-6, giving an average rate per square mile of Rupees 69-14-0. An additional sum of Rupees 3,511-8-0 was expended by the Deputy Commissioner in jungle clearances, which raises the general average to about Rupees 80 per square mile.

44. In his 125th and 126th paras., Colonel Thuillier records his disapproval of posts or mounds to mark the boundaries of holdings in the Morung, and expresses his dissatisfaction that the Deputy Commissioner of Darjeeling should not have recognized the necessity of constructing masonry pillars. The character of the Morung, and of the *pal* Pottahs in use there, forms the subject of the Board's letters dated 1st May 1863, No. 123, and 7th January last, No. 3. It appears to the Board to be utterly useless to incur a heavy outlay on masonry pillars to mark the boundaries of ryots' jotes not exceeding 200 beegahs in size. The discussion between the Superintendent and Surveyor has now, for the first time, been reported to the Board; but had the question been referred to them before, they would certainly have expressed their concurrence in the Deputy Commissioner's refusal to entertain the Surveyor's proposal. The statement of the Superintendent, quoted in the Surveyor General's 126th para., is not in accordance with the rules prescribed regarding waste lands, para. 14 of which clearly gives full authority to the Revenue Officer to cause the grantee to erect pillars, or, in default, to have them erected by Government at his expense.

45. In the current season it is proposed to continue the survey in the Hills and the Terai. It appears from para. 129 that Mr. Johnson is also required to co-operate with Captain Austen in the Topographical Survey of the recently acquired Dooars. The Board have no objection to the proposition contained in this para. for making over the establishment employed in the Morung Pergunnahs for the survey of the Hills in the Dooars adjoining Darjeeling, when their task in the Morung is completed.

46. The 2nd Waste Land party, under Mr. A. D. Smart, surveyed 100 square miles of grants and allotments in Sebsaugor, at the cost of Rupees 14,549-4-0, being at the rate of Rupees 145-8-0 per square mile. A fair start was not made till January, in consequence of delay on the part of the grantees in clearing their boundaries. When this was done, the boundaries were laid down by the Survey Establishment, with the aid of descriptive lists taken from the pottahs.

47. Complaint is made in para. 138 of the Surveyor-General's report, and paras. 22 to 24 of the extract from Mr. Smart's letter, given at page 51 of the appendix, of the want of co-operation on the part of the Revenue Authorities, especially in regard to securing the attendance of the Mouzahdar. It is stated also that the Surveyor was required to make a special application whenever a Mouzahdar's presence was required. The Board have called for explanations from the Commissioner on these points, which have now, for the first time, been brought to their notice.

48. The presence of the Mouzahdar is obviously essential to due progress in Upper Assam. There the mouzah is very different from the mouzah or village of Bengal, corresponding very nearly to the pergunnah sub-division of the latter province. It is represented to be, as stated in the letter from the member on deputation at Darjeeling to Government, dated 16th September last, a tract "containing grants, villages or *gaons*, and often waste lands available for grants. A village has no fixed boundaries. It consists of the village site, and the cultivation round it; these villages are scattered over the mouzah, as ryots settle with waste lands round them. A mouzah is supposed to have proper defined boundaries." Where the Assam village has no fixed boundaries, but contains a certain area of ryotee cultivation and grants or allotments, plus an indefinite portion of ungranted forest, the duty of a demarcating party becomes a very different one from what it is in the Regulation Districts. Such a party must be of comparatively little use, and the Surveyor might be left to assign to the village whatever portion of the ungranted waste land may seem to him most convenient for forming definite boundaries. Where the ryotee cultivation of one village abuts on the cultivation of another, or on a grant clearance, previous demarcation will of course facilitate the Surveyor's progress; but such contiguity of cultivation is probably not the rule in Seesaugor, or in other Upper Assam Districts.

49. By Government Orders No. 3886T, dated 4th October last, it has been decided that the partial and desultory waste lands surveys in Assam shall be converted into a continuous survey, to be conducted as a Revenue Survey in the settled mouzahs, and as a topographical survey in unoccupied, or partially occupied, tracts. Mr. Assistant King has accordingly proceeded from the 2nd non-professional division to Seesaugor, with the view of organizing an establishment for demarcating a field for the Surveyor. The principles on which the Assam Survey is henceforward to be conducted, are definitively laid down in the Government Order No. 3567, dated 24th October. The Board regret to notice that Mr. Smart has resigned his post at the head of the professional party; Mr. Assistant Brownfield has been deputed to take his place till the completion of Bullooah shall admit of the entire strength of the 1st Division party being concentrated in Assam. The Surveyor General will now be requested to drop the distinctive designation of "Waste Land Survey" parties. "Mixed Topographical Surveys" is perhaps that which will best represent the character of these Assam parties.

50. In his 134th para., Colonel Thuillier again lays stress on the construction of masonry pillars at the tri-junctions of villages in advance of survey. In Bengal, mounds of earth have been found to answer the purpose, masonry pillars, on account of the great expense attending the construction of them, being reserved for boundaries of a more important description. In such a country as Assam, the facilities for erecting such pillars must be still less, and if village boundaries are to be so marked, the cost will be something enormous.

51. The 3rd or Lower Assam party was organized under Mr. Nicolson for the survey of waste lands in Kamroop. That Officer could not, however, break ground before the middle of April, when the season was drawing to its close. Only 4 grants with an area of 2,498 acres, or not quite 4 square miles, were surveyed at a cost of Rs. 16,080-12-0, producing the enormous average of Rs. 4,123-4-0 per square mile. Four grants comprising 4,686 acres are not included in the out-turn, as the survey was not complete in all respects. Here, too, complaint is made of the late period at which the list of grants was furnished by the Deputy Commissioner, and explanations have been called for from that Officer.

52. The non-professional work was under the superintendence of Baboo Bhugwanchunder Sen, who was appointed a Deputy Collector in January 1864. He joined in March when the season was far advanced, and could therefore be of little assistance to Mr. Nicolson. An establishment costing Rs. 1,025 per mensem was sanctioned by G. O., 17th February, No. 654, but this party could only be gradually engaged, and at the close of the year a number of Ameens discharged from the 4th Division were directed to proceed to Kamroop to form the nucleus of the demarcating party. The field was not taken till October, and the results will therefore appear in the next Report. Till he was able to take the field, the Deputy Collector was employed on revenue business in the Deputy Commissioner's office. Both this Deputy Collector and Mr. King are placed under the Commissioner for employment under the Deputy Commissioner. It is not possible, if it were necessary, to treat the operations in this distant province as those of the parties in the Regulation Districts, which look direct to the Board. The Commissioner of Assam has been given to understand that the responsibility of carrying out efficiently the new system of survey, and of economising as much as possible the costly time of the establishment at his disposal, must rest with him.

53. The following is a synopsis of the out-turn and cost in each branch.

PROFESSIONAL.					NON-PROFESSIONAL.				
DIVISIONS.	Years.	Area in square miles.	Cost.	Rate per square mile.	DIVISIONS.	Years.	Area in square miles.	Cost.	Rate per square mile.
			Rupees.	Rs. As. P.				Rupees.	Rs. As. P.
1st Division ...	{ 1862-63	1130	37,939	33 9 2	1st Division ...	{ 1862-63	...	15,026	...
	{ 1863-64	1383	45,548	32 15 0		{ 1863-64	...	17,363	...
	Difference	+253	+7,609	-0 10 2		Difference	...	+2,337	...
2nd Division ...	{ 1862-63	1427	44,495	31 3 0	2nd Division...	{ 1862-63	1183	59,760	50 8 3
	{ 1863-64	992	52,285	52 11 3		{ 1863-64	1385	66,838	48 4 1
	Difference	-435	+7,790	+21 8 3		Difference	+202	+7,078	- 2 4 2
3rd Division ...	{ 1862-63	986	41,612	42 3 2	Maunbhoom...	{ 1862-63	2300	8,555	4 9 5
	{ 1863-64	979	42,723	43 10 2		{ 1863-64	2500	8,154	3 4 2
	Difference	- 7	+1,111	+ 1 7 0		Difference	+200	+401	- 1 5 0
4th Division ...	{ 1862-63	980	35,271	35 15 9	3rd Division...	{ 1862-63	1213	60,081	49 8 6
	{ 1863-64	637	51,970	58 9 5		{ 1863-64	585	70,041	119 11 7
	Difference	-143	+16,699	+22 9 8		Difference	-628	+9,960	+70 3 1
5th Division ...	{ 1862-63	3113	44,509	14 4 9	4th Division ...	{ 1862-63	...	40,604	.....
	{ 1863-64	3505	53,619	15 4 9		{ 1863-64	...	35,421	.....
	Difference	+392	+9,110	+ 1 0 0		Difference	...	-5,183	.....
6th Division ...	{ 1862-63	1923	34,996	18 3 2	Ganges River...	{ 1862-63	...	21,452	8 6 9
	{ 1863-64	1743	59,070	33 14 3		{ 1863-64	2547	21,452	8 6 9
	Difference	-180	+24,074	+15 11 1		Difference	+2547	+21,452	+8 6 9
1st Division, Waste Lands	{ 1862-63	105	14,192	135 2 6	6th Division ...	{ 1862-62	...	3,553	.....
	{ 1863-64	321	25,943	80 13 1		{ 1863-64	...	3,420	.....
	Difference	+216	+11,751	-54 5 7		Difference	...	-139	.....
2nd Division, Waste Lands	{ 1862-63	64	11,107	173 8 7	Kamroop ...	{ 1862-63	...	.....	.....
	{ 1863-64	100	14,549	145 8 0		{ 1864-64	...	2745	.....
	Difference	+36	+3,442	-28 0 7		Difference	...	+2,745	.....
3rd Division, Waste Lands	{ 1862-63	0	0	0 0 0	Total ...	{ 1862-60	4696	1,87,579	39 15 1
	{ 1863-64	4	16,081	4123 4 0		{ 1863-64	7017	2,25,434	32 1 0
	Difference	+4	+16,081	+4123 4 0		Difference	+2,311	+37,855	-7 14 1
Total ...	{ 1862-63	9728	2,64,121	27 2 5					
	{ 1863-64	9864	3,61,785	36 10 1 0					
	Difference	+136	+97,667	+ 9 8 6					

54. In the non-professional branch the rates are generally less than before, except in the 3rd Division, where the demarcation of the Tipperah frontier is not taken into account, though it served to swell the expense. In the 2nd and 4th Divisions the cost in the professional branch is very much greater in the year under report than in the previous year. No sufficient explanation is given of the cause of increase in the 2nd Division; the cause of increase in the 4th Division is adverted to above (para. 26). The increase in the 6th Division is also explained in para. 43. In regard to the high rates prevailing in the Waste Lands parties, the difficulty experienced in obtaining cleared boundaries, combined with the delay in setting on foot operations in a new locality, must, for the present, be accepted as a sufficient explanation. Much time was lost in deciding to what extent the obligations of the grantees should be insisted on. In December 1863, the Board suggested, as a means of obviating interruption to the survey parties, that contiguous grants should be surveyed in one block where the boundaries were still uncleared, leaving the detailed survey to follow when convenient. The orders of Government directed that grantees should, if possible, be persuaded to point out their boundaries, and to clear the jungle sufficiently to enable the surveyor to work; but that if they refused to do so, the Board's proposal should be adopted. These orders were communicated to the Commissioner on the 14th January 1864, but had not apparently been acted on up to the date of the Board's report of 10th May, 1864, No. 14. It was also discovered that the local authorities in Assam had neglected to enforce that provision of the rules which requires a deposit to be made to meet the expense of clearance. In Sebsaugor, Mr. Smart prevailed on some of the grantees to supply coolies for the purpose, but this was done only when the survey party was already in the field, by which the progress of the survey was necessarily retarded. In regard to *old* grants, no stipulation was made originally with the grantees for clearing boundaries. They are bound only by the ordinary obligation of landholders to point out their boundaries.

55. The professional officers are all mentioned in terms of commendation by Colonel Thuillier. The Board continue to entertain a high opinion of Colonel Thuillier's management of the important duties over which he so efficiently presides. His labors and responsibilities have, doubtless, been considerably increased by the multiplication of surveys. The Board earnestly call the attention of Government to the suggestion in para. 156, for appointing a separate Professional Superintendent of Revenue Surveys in the Lower Provinces. Some such arrangement seems to them urgently called for, and has, they understand, been specially pressed on the Government of India by Colonel Dickens.

56. The Assistants and Deputy Collector in the non-professional branch are well spoken of. The Board are satisfied with the manner in which the Superintendents of Survey have discharged their duties.

57. Before concluding, the Board deem it necessary to notice the Surveyor-Generals proposals in paras. 11 to 15 of his report, regarding the re-survey of Hooghly by the party now engaged in Maunbhoom. The Board are unprepared to give their support to this proposal, which has indeed already been disposed of by Government Orders, No. 461T, dated 3rd October 1862, which direct that the several professional parties, as they become available for new duty, shall concentrate their strength in Assam. The completion of the Estate Registers of Hooghly is of secondary importance to that of obtaining accurate maps of Assam. The 1st Division party will be free to enter this Province next season, and the 3rd Division will soon follow; the 2nd Division, and possibly the 4th Division, will also be free in 1866-67. The 5th Division will hardly have completed the survey of the Bhootan Dooars (4,000 square miles in extent) before that time, as such a work in such a country will probably require two full seasons. It may safely, the Board think, be left till next year to make the necessary arrangements for the re-survey work.

58. In conclusion, the Board desire to draw His Honor's attention to the last para. of their Report for the past year, proposing that Dinagepore, Backergunge, and Hazareebaugh be notified in the *Gazette*, under Sections 3 and 4, Act IX of 1847. The Tipperah District is now to be added to the list.

I have the honor to be,

SIR,

Your most obedient Servant,

T. B. LANE,

Junior Secretary.

No. I.

Work performed by the Survey Superintendents from 1st October 1863 to 30th September 1864.

1	2	3	4	5	6		7		8		9		10			
					On the file during the year.	Disposed of.	On the file during the year.	Disposed of.	On the file during the year.	Disposed of.	On the file during the year.	Disposed of.	On the file during the year.	Disposed of.	On the file during the year.	Disposed of.
FIRST DIVISION	Rajshahi, Bograh, Rangore and Dinapore	Mr. J. E. Worzans, Covenanted Deputy Collector in charge Baboo Harachand Ghose, Deputy Collector.	...	...	...	...	...	...	...	...	...	...	...	...
				
			
SECOND DIVISION	Tippurah and Eulooah	Mr. J. E. Worzans, Superintendent Mr. I. B. Brown, Deputy Collector Mr. W. Davey, Deputy Collector Baboo Ferozunder Mitter, Deputy Collector	...	...	...	...	...	...	...	...	...	...	...	...
				
			
THIRD DIVISION	Sylhet, Dacca and Cooch	Mr. F. Jones, Officiating Superintendent Mr. J. C. Geddes, Assistant Superintendent Mr. J. O'Kneely, Assistant, from 16th Nov. 1863 Mr. C. A. Kelly, Assistant, from 1st January to 30th May 1864 Baboo Satowary Roy, Deputy Collector Mouvee Mahomed Saduck, Deputy Collector Baboo Doorgayernad Ghose, Deputy Collector, from 6th to 30th September, 1864 Collector of Dacca	...	...	...	...	...	...	...	...	...	...	...	...
			
			
FOURTH DIVISION	Jessore, Farasbore and Backergunge	Mr. F. H. Fellow, Superintendent Baboo Doorgayernad Ghose, Deputy Collector Baboo Mohinderath Bose, Deputy Collector	...	...	...	...	...	...	...	...	...	...	...	...
				
				
SIXTH DIVISION	Champarni, Patna, Surin, Bhulabad and Tirhut	Mouvee Ahsan Ahmed, Deputy Collector, from 11th October, 1863 Baboo Ferozunder Mitter, Deputy Collector, from 30th November, 1863 Mouvee Fida Ali, Deputy Collector, from 7th November, 1863	...	...	...	...	...	...	...	...	...	...	...	...
				
				
TOTAL			2,452	1,978	461	481	3,167	3,322	115	1,532	1,532	1,078	120	112	86	20

No. II.

CONDITION of the Demarcation operations including Khusrreh from 1st October 1863 to 30th September 1864.

1 Divisions.	2 Incomplete Villages remain- ing from last season.	3 Villages taken up this year.	4 Total in hand during the year.	5 Completed externally and internally during the year.			6 Remaining in hand, to be completed next year.	7 REMARKS.
				By Khusrreh.	By Internal plotting.	By External demarca- tion			Total
First Division	Number of Chucks found in Villages internally plotted, 9,690.
Second Division.	...	1,452	1,452	...	532	920	1,452	
Third Division.	...	233	233	...	...	233	...
Fourth Division.	...	21	21	7	14	...	21	
Ganges Dearah party	...	2,320	2,320	...	...	2,320	2,320

Condition of the Survey Register from 1st October 1863 to 30th September 1864.

115(C)

1	2	3	REGISTERS OF ESTATES.													REGISTERS OF VILLAGES.										28								
			ENGLISH.						BENGAL.							ENGLISH.					BENGAL.													
			4	5	6	7	8		9	10	11	12	13	14		15		16	17	18	19	20		21			22	23	24	25	26		27	
							Half finished.	Less than half finished.						Half finished.	Less than half finished.	Half finished.	Less than half finished.					Half finished.	Less than half finished.	Half finished.	Less than half finished.						Half finished.	Less than half finished.		
Registers completed and forwarded to the Collector.		Registers completed, but not yet forwarded.		Total completed.	Number of entries of Villages made and to be made in Registers of the preceding column.		Registers completed and forwarded to the Collector.		Registers completed, but not yet forwarded.		Total completed.	Number of entries of Villages in Registers of the preceding column.		Remaining incomplete.		Number of entries of Villages made and to be made in Registers of the preceding column.		Registers completed and forwarded to the Collector.		Registers completed, but not yet forwarded.		Total completed.	Number of entries of Villages in Registers of the preceding column.		Remaining incomplete.		Number of entries of Villages made and to be made in Registers of the preceding column.							
1st Division	Rajabahye	44	43	2	44	15,493	...	42	2	44	15,493	...	...	...	42	2	44	11,705	...	...	...	42	2	44	11,705	...	...	...	...	
	Bograh	28	25	3	28	4,617	...	25	3	28	4,617	...	...	...	25	3	28	3,144	...	...	...	25	3	28	3,144	...	...	...	...	
	Rungpoor	68	45	0	64	7,133	...	45	11	56	7,818	...	...	...	45	0	54	6,002	...	2	...	46	11	50	6,592	...	...	...	...	
	Dinagepoor	104	...	70	76	8,507	...	...	87	87	10,040	...	...	...	...	93	93	7,880	...	11	...	...	104	104	13,320	...	...	...	...	
2nd Division	Tipperah	83	...	80	80	4,140	80	80	4,140	...	2	...	2,101	...	80	80	3,258	...	2	80	80	3,258	...	2	...	1,187				
	Bullooah	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3rd Division	Dacca	113	95	3	89	30,075	1	44	25	95	7	102	12,498	4	37	1,492	30,030	05	3	08	6,305	1	44	30	7,005	65	7	102	7,492	4	37	5,706		
	Sylhet	146	...	35	35	2,085	1	109	51	...	55	55	13,313	4	86	2,003	35	35	1,027	1	109	18	...	55	55	2,874	4	86	501			
	Cachar				
4th Division	Dackergunge	52	...	9	9	74	17	17	1,747	7	...	1,360	6	6	70	10	10	1,524	7	...	1,338			
	Furreedpore	59	34	...	34	1,054	34	20	54	6,117	6	...	0,390	1,050	31	...	31	1,934	...	10	...	31	20	51	7,375	5	...	8,001	8,981		
	Jessore	104	46	14	60	4,865	40	27	73	10,017	3	4	7,150	0,633	09	16	63	0,227	...	11	...	08	20	07	11,309	8	4	5,805	10,188		
	Pubna	49	49	...	49	5,019	49	...	49	5,019	49	...	49	3,315	49	...	49	3,815			

Expenses incurred on account of the Bengal Survey Superintendencies from 1st October 1863 to 30th September 1864.

1	2	3	4	5	6	7	8	9	10	11	12	13	PARTICULARS OF CONTINGENT CHARGES.														
													14														
MONTHS.	Salaries of Superintendents.	Salaries of Assistant Superintendents.	Salaries and Office Establishment of Deputy Collectors.	Officiating Deputy Collectors allowances.	Office Establishment of Superintendents.	Office Establishment of Assistant Superintendents or Deputy Collectors.	Extra Establishment.	Field Establishment.	Office Rent.	Extra and Miscellaneous Fees.	Contingent charges.	TOTAL.	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
1863.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
1864.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
October	2,650 0 0	900 0 0	3,562 5 2	200 0 0	1,505 4 0	200 0 0	333 5 4	2,859 14 3	252 0 0	97 14 0	2,554 0 4	15,142 11 1	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
November	2,650 0 0	1,125 0 0	4,046 10 8	340 0 0	1,405 4 0	289 8 2	346 10 8	3,640 10 10	252 0 0	111 0 0	3,802 2 8	18,089 0 0	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
December	2,650 0 0	1,401 9 9	1,200 0 0	350 0 0	1,605 4 0	557 11 4	383 5 4	5,690 9 1	262 0 0	182 13 0	2,423 0 11	10,236 5 5	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
January	2,700 0 0	1,850 0 0	3,893 8 8	360 0 0	1,508 4 0	625 7 10	383 5 4	5,584 15 3	252 0 0	124 1 0	2,475 13 7	19,027 7 8	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
February	2,700 0 0	1,000 0 0	3,800 0 0	350 0 0	1,509 0 0	491 0 0	383 5 4	5,400 10 4	252 0 0	149 10 0	5,091 11 8	22,107 5 4	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
March	2,700 0 0	1,900 0 0	3,800 0 0	350 0 0	1,477 8 0	491 0 0	383 5 4	5,590 14 1	252 0 0	171 0 0	3,012 8 7	20,127 10 0	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
April	2,700 0 0	1,900 0 0	3,800 0 0	350 0 0	1,485 0 0	491 0 0	383 5 4	5,578 7 3	252 0 0	138 12 0	2,238 13 8	19,349 6 4	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
May	2,700 0 0	1,900 0 0	3,683 13 11	350 0 0	1,507 0 0	491 0 0	383 5 4	5,415 15 1	261 0 0	140 13 0	2,376 5 0	19,200 4 4	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
June	2,700 0 0	1,000 0 0	3,500 0 0	350 0 0	1,507 0 0	374 5 4	383 5 4	3,444 9 7	201 0 0	118 14 0	1,193 11 11	14,832 14 2	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
July	2,874 3 0	1,000 0 0	3,500 0 0	350 0 0	1,484 8 0	351 0 0	383 5 4	3,108 0 8	261 0 0	120 12 0	890 4 4	11,329 7 2	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
August	3,000 0 0	1,900 0 0	3,577 6 8	350 0 0	1,505 4 0	351 0 0	383 5 4	3,200 13 11	264 11 4	109 5 0	891 11 9	14,422 10 0	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
September	3,000 0 0	016 10 8	4,100 0 0	350 0 0	1,505 4 0	274 5 4	383 5 4	2,876 1 8	260 0 0	70 2 0	849 0 0	14,562 6 0	DISTRIBUTION OF CONTINGENT CHARGES.														
													DISTRIBUTION OF CONTINGENT CHARGES.														
Total drawn for each Class	33,024 3 0	18,793 4 5	45,191 13 1	4,040 0 0	18,004 8 0	4,888 4 0	4,513 5 4	52,440 15 10	3,068 11 4	1,535 15 0	27,604 13 5	2,111,114 13 6	DISTRIBUTION OF CONTINGENT CHARGES.														
Authorized for each Class	33,024 3 0	18,793 4 5	47,638 11 3	4,200 0 0	18,048 0 0	5,891 5 4	4,513 5 4	57,984 0 0	3,188 0 0	1,535 15 0	34,404 1 5	2,27,278 13 0	DISTRIBUTION OF CONTINGENT CHARGES.														
Amount unexpended	.....	.....	2,446 14 2	160 0 0	43 8 0	983 1 4	.....	5,514 0 2	117 4 8	.....	6,889 4 0	18,161 0 4	DISTRIBUTION OF CONTINGENT CHARGES.													
The sum drawn is thus distributed divisionally:—														DISTRIBUTION OF CONTINGENT CHARGES.													
1st Division														DISTRIBUTION OF CONTINGENT CHARGES.													
2nd Division														DISTRIBUTION OF CONTINGENT CHARGES.													
3rd Division														DISTRIBUTION OF CONTINGENT CHARGES.													
4th Division														DISTRIBUTION OF CONTINGENT CHARGES.													
Ganges River Party														DISTRIBUTION OF CONTINGENT CHARGES.													
Total	33,024 3 0	18,793 4 5	45,191 13 1	4,040 0 0	18,004 8 0	4,888 4 0	4,513 5 4	52,440 15 10	3,068 11 4	1,535 15 0	27,604 13 5	2,111,114 13 6	DISTRIBUTION OF CONTINGENT CHARGES.														

The non-professional charges incurred in connection with the demarcation work in the Chota Nagpore Division are as follows:—

DISTRICTS.	Deputy Collector's Salary.			Office Establishment.			Demarcation Establishment.			Contingencies.			Travelling Allowance.			TOTAL.		
	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
Loharduggah	2,520	1	0	235	4	6	665	0	0	3,420	5	6
Manubhoom	2,651	9	10	1,204	0	0	3,577	0	3	383	8	6
Kamroop	1,251	9	8	205	0	0	1,024	0	0	181	8	5

NOTE.—The amounts realized from fees and costs of suit were as follows:—

1st Division	.....	Rupees 115	4	0
2nd Division	.....	379	13	9
3rd Division	.....	65	15	0
4th Division	.....	40	0	0
Ganges River Party	.....	203	8	6
Total	.....	854	9	3

Remitted to the Collector.

GENERAL REPORT
ON THE
REVENUE SURVEY OPERATIONS
OF THE
LOWER PROVINCES,
FOR SEASON 1863-64.

No. 14, dated Calcutta, 18th January, 1865.

GENERAL REMARKS.

The operations of the several Revenue and Waste Land Survey parties attached to the Lower Provinces during the past official year, or from 1st October, 1863 to 30th September, 1864, have been prosecuted with the usual vigor and are detailed in the following report in continuation of the one, No. 23, dated the 8th January, 1864, which is still before the Government of Bengal.

2. An addition was made during the past season to the number of parties mentioned in para. 2 of my last Annual Report, by the raising of another small Waste Land party for Lower Assam, of precisely similar strength with those already working in Darjeeling and Upper Assam: thus increasing the working strength of the Department in these Provinces alone to nine Survey Establishments, as per margin.

Regular	6
Waste Lands	3
Total... ..	9

3. During the period under review a grand total area of 9,915 square miles have been surveyed professionally, mapped, and recorded as usual. Of this, 5,321 square miles, comprised in 5,916 villages, with 425 square miles of Waste Lands, in 848 grants or allotments, is on the scale of 4 inches=1 mile for Revenue and general purposes. The remainder, 4,169 square miles, mostly of wild, hilly, unproductive tracts, or where village boundary demarcation was not considered necessary or practicable, has been laid down on the smaller scales of 2 and 1 inches=1 mile: such survey was confined to the Tipperah Hills and Palamow.

WASTE LANDS.

Darjeeling
Upper Assam.
Lower Assam.

4. The grand total of expenditure incurred in performing these operations was Rupees 3,43,925-5. This yields the following general average rates for the various descriptions of Survey, *viz.*, for Regular Revenue, or village by village survey, Rupees 42-12-9 per square mile, and Rupees 38-7-11 per village circuit; for Waste Lands, 3 annas per acre, and for Topographical Survey, Rupees 16-2-6 per square mile.

5. GENERAL RESULTS.—As compared with the out-turn and cost of the previous season, the results are as follows :—

Divisions.	Superintending Officers.	Number of Village Circuits.	Area surveyed in square miles	Total cost, including contingencies.			Average rate per square mile.			Average rate per village circuit.		
				Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
First or Northern Division ...	Mr. R. B. Smart ...	{ 1,877 River	1,150 234	42,577	10	7	30	12	3	22	10	11
Second or Southern „ ...	Cap. D. Macdonald ...	1,499	922	50,266	14	8	50	10	11	33	8	7
Third or Eastern „ ...	Mr. N. T. Davey ...	777	979	40,525	1	1	41	6	4	52	2	7
Fourth or Western „ ...	Lieut. W. J. Stewart ...	1,185	887	51,429	9	2	57	15	8	43	6	5
Fifth or Chittagong „ ...	Mr. J. H. O'Donel ...	.....	3505	52,354	4	0	14	14	11	Topl.		
Sixth or Hazareebaugh „ ...	Major G. H. Thomson ...	{ 578	1,079 664	42,941 15,000	15 0	4 0	39 22	12 9	9 5	4	4	8
Durjeeling Waste Land Survey ...	Mr. E. T. S. Johnson ...	.....	321	18,549	13	10	.....			.....
Upper Assam Waste Land Survey	Mr. A. D. Smart ...	.....	100	14,199	4	8	.....			.....
Lower Assam Waste Land Survey	Mr. J. O. Nicolson ...	.....	4	16,080	11	10	.....			.....
Total and average for season 1862-54	.....	5,916	9,915	3,43,925	5	2	31	1	6	38	7	11
Add Mehalwary charges; and arrears of uniform rate of Travelling Allowance for 1862-63	}		.....	.....	10,837	83	1	.....			.....
Grand Total	.....	5,916	9,915	3,54,763	2	10	32	3	0	40	0	0
Total and average for season 1862-63	.....	5,822	9,728	2,60,733	0	0	25	0	0	21	7	0
	.....	+ 94	+ 187	+ 94,030	2	10	+ 7	3	0	+ 18	9	0

(a.) Exclusive of the Waste Land Surveys.

(b.) Exclusive of the Topographical and Waste Land Surveys.

6. CAUSE OF INCREASED COST.—This shews a considerable increased cost for an area nearly the same as before. This is accounted for by the fact of the entire Military pay and allowances of the Officers employed having for the first time been brought into the Bills of this Department under the new Financial Rules. For the first time, also, travelling allowances for the Uncovenanted grades have been allowed, and two years' charges under this head appear in the season's Bills. These items and the heavy cost of the new Waste Land party in Lower Assam, for which no equivalent amount of work has been performed, very nearly make up the difference in the expenditure, and raises the mean average rate by Rupees 7-3 per square mile. With the general tendency to the advanced price of labor and provisions, as well as the cost of everything, in the present day, it must be expected that the old rates cannot be maintained. The nature of the work also increases in difficulty, but the energy of the Officers employed is as conspicuous as ever, and an excellent season's work has been accomplished by each.

7. DISTRICTS COMPLETED.—The only District finally completed during the year is that of British Tipperah, on Comillah; operations also in the Tipperah Hills adjoining were brought to a close, though the survey to the extreme East was not quite finished; but the Revenue

Surveyor having represented the remaining portion as covered with dense jungle into which man had seldom or never penetrated from the Westward, and quite uninhabited and impracticable, it was decided to leave this portion: the expense of cutting roads for the Survey parties to enter it, being far too great to make up in any way for any present benefit to be derived from filling up this small and distant tract to the extreme East.

8. **DISTRICTS UNDER SURVEY.**—Of the regular Districts of Bengal now in hand, Bulloah and Sylhet are likely to be completed during the current season, whilst Maunbhoom will occupy a portion of another season. Cachar has already been commenced by the Sylhet party, but cannot be finished this year. Palamow, of the Lohardugga, or Chota Nagpore District, is still in hand, and will demand another season after the present; whilst the services of the 5th Division, under Mr. O'Donel, have been transferred from Chittagong to take up the Survey of the Dooars recently annexed from Bhootan, and that Establishment is now on its way to Julpigoree, leaving behind a detachment to prosecute the measurement of Waste Lands in the Chittagong District.

9. This, therefore, forms another detached and separate party, for which it is uncertain how much work may be found, or how long it will be detained in the District in question. Thus, year by year, it will be seen how progressive the expansion of the Department becomes.

10. **FUTURE WORK.**—There remains but the re-survey of the entire District of Hooghly, and certain portions of Midnapoor—probably nearly all—to render our series of Maps, from the 4-inch scale downwards, complete, for the Provinces of Bengal, Behar, and Orissa. I have already mentioned (para. 10 of last Report) that the survey of Assam had been decided upon by His Honor the Lieutenant-Governor so soon as parties could be spared from Bengal; but it appears to me that whilst bearing in mind the requirements for surveying this fine and growing Province, the perhaps more urgent necessity of having good Maps of the Districts immediately adjoining the Capital of India, and through which passes the Grand Trunk Line of Rail, requiring numerous feeders to connect it eventually with the South-Western Frontier and other Western Districts, should not be lost sight of.

11. **DISTRICT HOOGHLY.**—The original survey of the Hooghly District was made in the years 1844 to 1846, and was subsequently, after a most careful, prolonged, and impartial enquiry, pronounced to be entirely worthless. The demarcations and the professional survey of the boundaries of villages were alike wrong, and the topography was equally defective; and we have, in short, not a map worthy of the name for any local purposes whatever, and the greatest inconvenience has been felt for many years past in consequence. When summing up, after the enquiry above alluded to, the Government of Bengal, of that day, thus expressed its opinion in a final reply to the Board of Revenue, Lower Provinces:—

“The Deputy Governor has learned with extreme regret the very discreditable manner in which these Surveys have been conducted.

“The full and clear review of the case submitted by the Board has satisfied him of the correctness of the opinion held by them and by the Commissioner as to the necessity for an entirely fresh Survey of the District of Hooghly.”

12. The Commissioner recommended that the re-survey of the Hooghly District should not be commenced until the primary survey had been made of the three adjoining Districts, Burdwan, Nuddea, and 24-Pergunnahs, out of portions of which the District of Hooghly

had been made up. As the work had to be done over again, the Board of Revenue concurred with that Officer that it would be better to complete the survey of the parent Districts before resuming operations in Hooghly, and issued orders accordingly. The Deputy Governor at the same time approved of the order given by the Board for the commencement of Zillah Nuddca.

13. The survey of the three Zillahs above specified have long been completed, as well as all the other Regulation Districts of the Lower Provinces; and it now only remains to re-demarcate and re-survey the Hooghly District, to enable the Civil Authorities to complete their Estate Registers of that part of the country, long a desideratum, and to afford true and reliable maps to guide the Revenue Authorities, and assist generally in the improvement of this rich and important District.

14. NUMBER OF PARTIES PROPOSED FOR ASSAM.—It seems to me, therefore, most advisable to delay this important work no longer, but to provide for it by the trained Establishment now close to the spot, in Maunbhoom; and the more so, as from the constitution of that party it is particularly qualified to deal with the work. The Tipperah and the Sylhet 1st and 3rd Division parties will speedily be available for Assam, and the 5th Division now en route to the Bengal Dooars can, on the completion of that survey, also be transferred for employment in the contiguous Districts of Assam: with these three old Establishments it would be as much as the Civil Branch could prepare and provide for properly in Assam.

15. Should His Honor agree with my recommendation for the re-survey of Hooghly being undertaken by one of the Revenue Surveys of Bengal, on completion of its present work, measures should be at once taken for commencing the village boundary demarcations, in view to their being ready, prepared at least one year in advance of the professional parties, and proper Thâk-Bust Maps, on the most approved principles, furnished for comparison and guidance.

16. MASONRY PILLARS.—The erection of permanent land-marks, to define the exact position of every tri-junction point of village boundaries, should be a *sine qua non*. I have already urged so much on this subject in the body of this, and in various other reports, that I need only quote here the opinion of His Excellency the Viceroy on this important subject, given in answer to my last general report on the surveys under the Government of India, and commend it for special observance in the Lower Provinces, where permanent land-marks of any sort are even yet unknown.

17. ORIGINAL MAPS AND RECORDS RECEIVED.—The numbers and descriptions of Maps, Plans, and Records, completed by the different Survey Establishments during 1863-64, and lodged in this Office, (or, as in one instance only, reported as completed and ready for despatch,) are entered, in detail, in the margin. Various District Maps have been either completed, or continued up to the extent

Extract from letter No. 210, dated Simla, the 8th August, 1864, from the Secretary to the Government of India, Foreign Department, to the Surveyor-General of India.

4. His Excellency in Council has always been impressed with the importance of permanently making triple boundary junctions in the manner described in para. 76 of your Report, and directs that such precautions be adopted, so far as practicable, everywhere. When stone is not available, good burnt bricks should be used.

ABSTRACT.		
Index Maps of season's work	...	No. 9
Chart of Triangulation, Scale 4 Miles = 1 Inch	...	" 2
Main Circuit Maps, Scale 1 Mile = 1 Inch	...	" 44
Village plan sheets containing 6,764 villages, Scale 4 Inches = 1 Mile,	579	
Large Scale Plans of Civil Stations and Cantonments	...	" 9
Main Circuit Computations	...	Vol. 6
Village traverse Computations and Registers	...	" 17
Computations of Triangles	...	" 2

of materials furnished, as far as the limited means in my ministerial office permits, with reference to the very extended progress of the surveys all over this large Presidency, and the immense quantity of work thus thrown on our hands for reduction and compilation.

18. The one-inch Pergunnah Maps are also under progressive publication, and a good deal of work of this sort has been turned out; but heavy arrears of materials still exist, which the Lithographic Branch are totally unable to cope with. Civil Station and Cantonments plans of Burrisaul and Hazareebaugh have also been published.

19. Sheet No. 120 of the engraved Indian Atlas, containing the Districts as per margin, has been published, and the entire materials for Sheet No. 119 to the North of 120 have long been in the hands of the Geographer in England. Sheet No. 106, containing Sumbulpoor and various Cuttack Tributary States, has likewise been received and issued. Sheets 126, Dacca, Tipperah, &c., and 127, Backergunge, Bulloah, &c., will very shortly be filled up.

INDIAN ATLAS.

Moorsshedabad.
Patna.
Nuddea.
Burdwan, part of.
Furreehpore, do.
Rajshahye, do.

* Dinagepoor and Bogra; Dacca and Furreehpore.

20. Two excellent Lithographed Maps, as per margin, have also been received from England during the year and issued to officials.

21. RE-ADJUSTMENT OF DISTRICT AND SUB-DIVISION BOUNDARIES.—The progress made by the Boundary Commissioner, in regard to this important work, is detailed in the Appendix The re-adjustment of the Patna and Bhaugulpore Divisions, originally fixed by Major Sherwill, have been finally settled. The Dacca and Rajshahye Divisions are in hand, in consultation with the Local Authorities. The Statistical Registers of the New Police Circles are very elaborate and most useful documents, and the Maps of the same on the large scale of 4 inches to the mile, made in duplicate for the Commissioner of the Division and for record in this office, form a very extensive task. It is certainly desirable that the re-arrangement of these Civil and Criminal jurisdictions should advance more rapidly, and the more so, as the Maps are now available, either Manuscript or Lithographed, for nearly every District. The Boundary Commissioner states that, to enable him to effect this object, he requires more aid in the shape of Native Draftsmen, and this it will be good economy to allow. The subject will be treated of separately.

22. Lieutenant-Colonel Gastrell's labors in my own office have been multifarious; he has been of the utmost service to me; and, during my recent tour in the Upper and Central Provinces, has again performed all the current duties at head quarters for a period of three months. I feel under great obligations to this excellent officer for his active and energetic assistance on all occasions.

FIRST OR NORTHERN DIVISION,
Lower Provinces.

23. The work allotted to this party, as detailed in the margin, for the Field Season of 1863-64, consisted of the remaining and unsurveyed southern portions of the Tipperah District, the northern part of the adjacent District of Noacolly, and parts of the great Rivers Megna and Bamunee bordering thereon.

Mr. R. B. Smart, Revenue Surveyor.

ASSISTANTS.

Mr. J. R. Pringle, Assistant Revenue Surveyor, 1st class.
" J. F. Burrowes, Do. Do. Do. 3rd Do.
" D. W. Burnett, Sub-Assst. Do. Do. 1st Do.
" C. Brownfield Do. Do. Do. 1st Do.
" J. D. Lynch Do. Do. Do. 3rd Do.

34 Native Surveyors.

24. The Establishment accordingly quitted its recess quarters at Dacca, and commenced active operations during the first week of December 1863, and continued so

N. B.—Mr. R. B. Smart, junior-apprentice, was added to the strength of the Establishment in June 1864.

employed until the first week in June following, when, having completed all that was demarcated and allotted for survey, the party returned to Dacca again to bring up the computations and mapping.

	Square Miles.	Villages.
Of District Tipperah ...	437	848
" " Noacolly ...	712	1,029
Rivers ...	234	
Total ...	1,383	1,877

25. AREA.—The gross area accomplished was square miles 1,383, comprised in 1,877 villages, and sundry portions of large rivers, the details of which are given in the margin.

	Rs.	As.	P.
Permanent Establishment ...	37,442	4	9
Contingencies ...	5,136	5	10
Total professional expenses of the year ...	42,577	10	7
Estate area calculations for Civil Branch ...	864	0	0
Arrears of travelling allowance for 1862-63 ...	2,105	15	8
Grand Total of 1863-64 ...	45,547	10	3

vide professional expenses of the year, and excluding the arrears of contingent expense of former season, is Rupees 30-12-3, and per village circuit, Rupees 22-10-11; the former rate being lower, and the latter higher, than the corresponding ones of previous season. The out-turn is a very good one, the number of village circuits being large, averaging an area of 392 acres each.

27. LIMITS, GEOGRAPHICAL.—The portions of the two Districts of Eastern Bengal thus surveyed, are bounded, on the North, by that part of Tipperah District reported as surveyed in 1862-63; on the South, by the unsurveyed part of Noacolly District and the River Bamunee; on the East, by the Mohurree River and Fenny River, separating it from the Chittagong District; on the West, by the Megna River, dividing it from the Dacca and Backergunge Districts.

DISTRICT TIPPERAH.
Pergunnahs Mohubutpoor, Torra,
Melhar, and Chowdogoon.

DISTRICT NOACOLLY.
Pergunnahs Bulloah, Umrabad,
Dandra, Gopalpoor, Kanchumpoor,
and Saestanuggur.

28. The principal Pergunnahs included in the season's operations are marginally noted under their respective Districts.

29. JUNCTION WITH FORMER SURVEYS.—An excellent junction was effected throughout the whole length of the Megna River with the former surveys of the Dacca and Backergunge Districts, conducted under

the supervision of the Revenue Surveyors of the 3rd and 4th divisions respectively. The fixed points laid down and determined by these two Officers, in carrying out the triangulation of the Megna, and effecting a perfect junction between the Dacca and Backergunge Districts' surveys, were carefully incorporated by Mr. Smart, with his survey of Tipperah and Noacolly. The results are very satisfactory; the difference between the extreme distance from Angarea Station, on the left bank of the Megna, to the Saupoor Temple Station, on the right bank, being as follows:—

	Chains.
By 4th Division Triangulation	2110.73
By 1st Division Main Circuit Chain Measurements	2110.34
Triangulation ..	00.39

equivalent to 25.74 feet difference in 26.38 miles, or an average of 11.7 inches per mile.

30. POINTS OF VERIFICATION.—In the interior of the Districts of Tipperah and Noacolly thirty-three conspicuous buildings, generally Temples, were selected and fixed permanently with reference to the general measurements made throughout the District. These, and the stations along the Megna, &c., will afford ample means for testing the accuracy with which these surveys have been conducted, so soon as they have been taken up and brought into the series of Triangles, now being observed from the "Calcutta Meridional Series" on the West, to the "Eastern Frontier Series" on the East, under the direction of Lieutenant H. R. Thuillier, R. E., 1st Assistant, G. T. Survey of India. The comparison of these measurements will be duly noticed hereafter.

31. STATISTICAL NOTES, &c.—Some interesting extracts from the Annual Report of the operations of this survey party, as also from those of the other surveys of Bengal, relative to the aspect, wealth, and productions of the country, &c., will be found in the Appendix to this report.

32. MAPS AND RECORDS.—The Maps and Records of the season have all been duly lodged in this Office, and the duplicates likewise furnished to the Civil Authorities. The general or one-inch Maps are very complete and neatly drawn, the aid of Type printing having been extensively and successfully employed by Mr. Smart, who has contributed largely to the work himself. Both the village plans and pergunnah maps have also been drawn, especially to meet the requirements of Photography, in pen and ink only, without color, shewing great perspicuity and clearness. This is now necessary for the purposes of reduction, as well as to enable this Office to re-produce the maps by the new Photo-Lithographic process, which is under trial and experiment, and when completely successful, will afford vast facilities for the multiplication and circulation of maps, and at the same time prove the means of relieving the Executive Surveyors of the labor of making duplicates, which is a great desideratum, as every officer is now overworked, and the extent of mapping to be done annually is immense on a Revenue Survey.

33. EXECUTIVE OFFICER AND ESTABLISHMENT.—Mr. Smart has conducted his duties to my entire satisfaction. He is an excellent and painstaking officer, full of zeal for his profession. His Establishment is in an efficient state, and the assistants, as per margin, have been promoted to the higher grades in G. O. No. 236, dated the 17th instant, for their good services.

34. WORK FOR SEASON 1864-1865.—During the present Field Season of 1864-65, the completion of the Noacolly District, and of the large Islands of Dukhin Shabazpoor and Huttyah, also the Suddee Churs to its South and South-west, at the embouchure of the joint streams Ganges, Megna, and Brahmapootra, in the North-east corner of the Bay of Bengal, is contemplated, and I trust may all be effected. This will complete the survey of Bengal in that direction, and leave this party free to proceed to take up the survey of any of the Districts in the Valley of Assam.

2ND OR SOUTHERN DIVISION,

Lower Provinces.

35. Field operations were resumed by this Establishment, in the Maunbhoom District, in November 1863, and were prosecuted under the superintendence of Captain Macdonald, Assistant Revenue Surveyor, until the 30th April following.

MAUNBHOOM DISTRICT.

Major J. L. Sherwill, Revenue Surveyor, went on sick furlough from 21st December 1863, (vide G. O. G., G. No. 753, dated 14th December, 1863,) and died at sea on the 12th January, 1864.

Captain D. Macdonald, Staff Corps, Assistant Revenue Surveyor in charge, from 16th December (vide G. O. G. G. No. 1812, dated 31st December, 1863.)

36. DEATH OF EXECUTIVE OFFICER.—As mentioned in my last Annual Report,

ASSISTANTS.

Lieutenant Beavan, Probationary Assistant Revenue Surveyor, appointed in G. O. B. G. No. 1013, dated 7th February, 1864, and joined on 24th February, 1864.

Mr. W. Ivey, Assistant Revenue Surveyor, 1st class.

„ W. Sinclair, Sub-Assistant Do. 1st class.

„ A. Hyde, Sub-Assistant Revenue Surveyor, 1st class, (died 8th September, 1864.)

Mr. G. E. Nash, Sub-Assistants Revenue Surveyor, 3rd class, promoted to 2nd class, 1st January, 1864.

29 Native Surveyors.

the duties of supervision devolved on this young Officer, in consequence of severe illness rendering it imperative that Major J. Sherwill, who for many years had most ably conducted and directed this party, should proceed to England on medical certificate. He was not, however, I regret to have to record, spared to reach his native land, but died on the 12th January, 1864, a short time before the ship, in which he embarked, reached the Cape of Good Hope. In him the Department has lost one of its most energetic officers.

37. AREA.—The total area surveyed and mapped, during the season under review amounted to square miles 992, comprised in 1,499 villages, appertaining to the Pergunnahs marginally noted, of which the ten first were surveyed entirely, and the last four only partially.

Pergunnah	1 Bunkhudee.
„	Chunah.
„	Fulma.
„	Rakab.
„	5 Ledhoorka.
„	Bagda.
„	Lalchuda.
„	Mukoondpoor.
„	Bygoon Kodur.
„	10 Jhuldu.
„	Nagdah.
„	Cossyepara.
„	Chutra.
„	14 Soopoor.

38. With exception of Pergunnah Cossyepara (area 74 square miles), which was surveyed topographically, all others were brought under a regular Mouzawar Survey, defining the limits of each village. The

scale of the Survey, however, was the same throughout, viz., 4 inches=1 mile.

39. COST AND RATES.—The cost incurred in carrying out these operations came to

Permanent Establishment	Rs. 44,874	13	3	Rupees 50,266-14-8, as per margin, giving
Contingencies	„ 5,392	1	5	the following average rates—per square mile,
	Rs. 50,266	14	8	Rupees 51-2-1, and per village circuit,
Mehalwary charges	Rs. 444	6	1	Rupees 33-13-3. With the arrears of con-
Arrears of travelling allowance	„ 1,573	8	0	tingent charges for the previous season, on
for 1862-63				account of travelling allowances, the total
Grand Total of 1863-64	Rs. 52,284	12	9	expenditure comes up to 52,28½ Rupees.

40. DEMARCATIONS.—The Demarcation Maps furnished this season to the Revenue Surveyor, by the Demarcation Establishment, for reference and comparison, are spoken of as “most unsatisfactory.” “They appeared,” says the Officer in charge of the party, “to have been drawn without the aid of a surveying compass of any kind; and in many instances, on comparison with the professional work, they could hardly be identified.” Some of these Maps were not delivered to the Revenue Surveyor, until his return to recess quarters. This is much to be regretted. It is essential to good boundary surveying, that all comparisons be made in the Field, and all errors corrected, or reconciled, before return to recess quarters; and Demarcation Maps, to be worth anything for comparison purposes, must not be ideal sketches, but projected, by scale and compass, from actual measurement in the Field.

41. MINOR TRIANGULATION.—A minor series of triangulation was again made use of, as in previous seasons, in connection with the Village Traverse measurements, and good junctions were effected with the former surveys of the Districts of Bancoorah, to the East, and of Hazareebaugh and Singhbhoom, to the West. Several points of the Calcutta

Longitudinal and Parisnath Meridional Series of the Great Trigonometrical Survey were also compared with, during the Season's operations. A Statement of comparison of the direct distances is given below; the results are satisfactory. In this Statement several G. T. Stations, met with by this party in Season 1862-63, have also been included.

Names of Great Trigonometrical Stations.		Distances from Revenue Survey.	Distances from G. T. Survey.	Error of Revenue Survey.	Error per Mile.	REMARKS.
		Feet.	Feet.	Feet.	Feet.	
Doorgapoor	to Tilbani	166888.8	167011.7	-122.9	3.80	Calcutta Longitudinal Series.
Donaktad	to „	72883.7	72871.0	+12.7	0.92	
Chutna Tel	to „	143544.1	143628.0	-83.9	3.09	
Tilbani	to Susinia	145061.8	145369.7	-307.9	11.21	
„	to Seraipahar	161682.5	161613.3	+69.2	2.26	
„	to Gurdia	169566.1	169561.4	+4.7	0.15	
„	to Bowa	95216.6	95184.6	+32.0	1.77	
„	to Rughoonathpoor	54614.6	54608.0	+6.6	0.64	
„	to Sutabai	79193.6	79193.4	+0.2	0.01	
„	to Beharinath	142851.8	143073.7	-221.0	8.20	
Susia	to Doorgapoor	172169.9	172299.5	-129.6	3.97	
„	to Beharinath	66793.0	66801.5	-8.5	0.67	
„	to Rughoonathpoor	116701.8	116743.3	-41.5	1.88	
„	to Sutabai	66130.3	66190.7	-60.4	4.82	
„	to Bancoorah	64299.9	64296.7	+3.2	0.26	
„	to Mangia	75782.9	75823.7	-40.8	2.84	
Beharinath	to Doorgapoor	107728.4	107837.7	-109.3	5.35	
„	to Mangia	64694.5	64638.4	+56.1	4.58	
„	to Damoni	70880.4	70900.7	-20.3	1.51	
„	to Sutabai	81241.3	81379.0	-137.7	8.95	
„	to Rughoonathpoor	94404.4	94563.0	-158.6	8.87	
„	to Donaktad	100258.4	100987.1	-128.7	6.78	
Bowa	to „	137282.5	137312.8	-30.3	1.17	
Doorgapoor	to „	94045.1	94179.6	-134.5	7.55	
Rughoonathpoor	to „	27948.9	27917.4	+31.5	5.95	
Donaktad	to Sutabai	85655.5	85747.7	-92.2	5.68	
„	to Chutna Tel	149452.3	149565.2	-112.9	3.99	
Chutna Tel	to Susinia	31013.3	30982.1	+31.2	5.33	
Damoni	to Doorgapoor	87173.7	87329.6	-155.9	9.44	
Tilabani	to Bari	110053.3	110010.8	+44.5	2.13	South Parisnath Meridional Series.
„	to Parosa	115207.0	115261.6	-54.6	2.50	
Ratio of Error	} Average where the Error is+ Do. Do. is—	1.66	
			5.36

42. NATURE OF COUNTRY.—The greater part of the country was rugged and wild, densely covered with jungle, interspersed with cultivation, and more sparsely inhabited towards the South and West than to the North and East; for further details, the extracts in the Appendix may be consulted. Though this party did not suffer more than ordinarily, whilst actually in the Field, yet sickness prevailed to a very great extent, both amongst the European and Native Establishments, during the recess, from the effects of exposure in this District. Two Assistants had to leave on medical certificate; one of whom, Mr. A. Hyde, I regret to add, died at Rangoon on the 8th September last.

43. The limits of the portion of country surveyed were as follows:—North, the surveyed portion of Maunbhoom District; South, unsurveyed portion of Ditto; East, the District of Bancoorah; West, the Districts of Hazareebaugh and Singhbloom.

44. SURVEY OF CANTONMENTS OF BALLYGUNG AND ALIPORE.—In addition to the ordinary Field work performed, Captain Macdonald undertook and carried out, during the recess, a re-survey of the Military Cantonments of Ballygunge and Alipore. These have been mapped on a scale of 24 inches=1 mile.

45. MAPS AND RECORDS.—The whole of the documents prepared by this party, illustrative of the Field operations, have been duly lodged in this Office. They appear to be clearer maps than those previously produced by this Division, and being chiefly in pen and ink, are more suitable to reproduction by Photo-Lithographic process, and better adapted to the wants of the present day. I am glad to be able to notice the pains taken with these records, which shew that the discussions entered into on the subject, when I inspected the Surveyor's office on the 18th and 19th of August last, have had due effect. With the internal economy of Captain Macdonald's office, I was well pleased.

46. CURRENT SEASON'S OPERATIONS AND WORK REMAINING IN MAUNBHOOM.—The officer in charge of this party reports as follows, regarding the work remaining to be done in Maunbhoom, and the probable out-turn during 1864-65:—

“ In Maunbhoom, there still remains an area of about 2,200 square miles to be surveyed. This consists of the following Pergunnahs, *viz.*, part of Soopoor, Ombeekanugger, Belaidecha, Simlupal, Raiepoor, Koelupal and Matha, to be done Mouzawar; and Pergunnahs Maunbhoom Samsunderpoor, Phoolkoosmah, a portion of Cossyepara, Hesla, Torung, Patkoom, Bagmoon-dee, and Burrabhoom, to be done topographically. I have received the Thákust Maps of Simlupal and Belaidecha only, up to date; but I am given to understand that all these Pergunnahs have been demarcated, and that before the end of December all the Moojmillees and Thákusts will be lodged with me.

“ The probable out-turn during the ensuing Field Season will be about 1,000 or 1,100 square miles, of which about half will be Mouzawar. The work will be confined to the South-east corner of Maunbhoom, touching on Bancoorah and Midnapore.”

47. The area here stated as likely to be accomplished, is the minimum that may be expected for this season. Probably, much more may be effected of Topographical Survey of certain Pergunnahs to the South, which are declared to be unfit for detailed Revenue work. Under any circumstances, the District cannot be finished during the current season, and it may occupy the Establishment half of the ensuing season of 1865-66. It is therefore time to consider what shall be the destination of this party after the survey of Maunbhoom be completed.

48. I have already strongly urged in paragraph 13 of this Report, that the re-survey of the District of Hooghly be then taken in hand.

G. O. Government of Bengal, No. 1013, dated the 7th February, 1864.

Mr. W. Sinclair, from Rs. 200 to 250.

Mr. G. E. Nash, from Rs. 150 to 175.

49. MILITARY ASSISTANT.—Lieutenant R. C. Beavan, late 62nd Native Infantry, was appointed a Probationary Assistant on this Establishment, and joined on the 24th February, 1864.

50. The Assistants as per margin, have been promoted for approved services. Vide G. O. No. 236, dated 17th instant.

THIRD OR EASTERN DIVISION,

Lower Provinces.

51. The portion of country surveyed by this Establishment, lies in the Sylhet District,

Mr. N. T. Davey, Revenue Surveyor.

ASSISTANTS.

Mr. G. S. Swiney, Assistant Revenue Surveyor, 2nd Class.

„ P. Agabeg, Assistant Revenue Surveyor, resigned from 2nd November, 1863.

„ R. Barclay, Senior Sub-Assistant Revenue Surveyor.

„ S. M. Smylie, Sub-Assistant Revenue Surveyor, 2nd Class.

„ T. D. Moran, Junior Sub-Assistant Revenue Surveyor.

„ G. C. Bolst, Office Assistant.

„ J. Arratoon, Ditto.

35 Native Surveyors.

and is situated immediately to the South of that portion of the same District, reported as accomplished in my last Annual Report, and extending to the Hill Tipperah Frontier, is bounded as follows:—On the North by the Kooseara River and former season's survey; on the South by the Tipperah Hills; on the East by the unsurveyed portion of Sylhet and the Horarguj range of Hills; and on the West by that portion of Sylhet surveyed in 1860-61.

52. The tract thus bounded is about 40 miles in length, by 30 miles in breadth, and comprises a gross area of 979 square miles, of which 611 square miles, containing 777 villages, consisted of pure Mouzawar Survey, and the remaining square miles 337 were surveyed in connection with the operations carried on along the Tipperah Hill Frontier, for the identification of Captain Fisher's former survey, and the permanent definition of the boundary line between Hill Tipperah and the British possessions.

53. Field work extended over a period of five months, but heavy rains and the swampy, flooded nature of the country frequently put a complete stop to out-door work, and resulted, says the Surveyor, in a total loss of at least three weeks out of the above period. The staff of Assistants was also weakened by the resignation of Mr. Agabeg, Assistant Revenue Surveyor, and the deputation of another Sub-Assistant to survey the new Stations of Shillong and Yeodo, in the Cossyah Hills. These causes operated against the out-turn of the survey, which, considering also the many difficulties that had to be contended against in defining the Frontier boundary over such difficult ground, was nevertheless a good one.

54. COST AND RATES.—The cost of the work, inclusive of contingent expenses, was

* Permanent	...	...	...	...	Rs.	34,718	11	12
Contingencies	...	...	...	...	„	5,811	5	11
				Total expenses	„	40,525	1	1
Mehalwary	...	...	...	...	„	459	3	2
Arrears of travelling allowance for 1862-63	...	...	...	...	„	1,738	6	4
				Grand Total	„	42,722	10	7

Rupees 40,525-1-1,* which yields a general rate of Rupees 41-6-4 per square mile, the rate per village circuit not being applicable to the nature of a large portion of the work. With the other items of contingent charges, as

noted marginally, the total expenditure of the season amounts to Rupees 42,722.

55. CONNECTION WITH GREAT TRIANGULATION.—An excellent connection was made with the Eastern Frontier Series of Triangles of the Great Trigonometrical Survey, extending from Gowhatty southwards across the Sylhet plains, no less than nine points having been met with and connected upon in the course of the season. The results are excellent, as will be seen from reference to the Table of comparison entered below. The mean error on fifteen sides being 2·84 and 1·54 feet per mile on the quantities in excess and defect, respectively. They fully prove the care bestowed on the work throughout, and the success with which the detailed Revenue Survey measurements have been carried across the great swamps, and through the jungles and hills of Sylhet.

Names of Great Trigonometrical Stations.	Distances from Revenue Survey.	Distances from G. T. Survey.	Error of Revenue Survey.	Error per Mile.	REMARKS.
	Feet.	Feet.	Feet.	Feet.	
Subai Sara to Churamani	56887·2	56885·6	+1·6	0·15	
„ to Bachia	100175·3	100010·7	+164·6	8·68	
Bachia to Churamani	78770·5	78790·1	-19·6	1·31	
„ to Hiara	68214·6	68214·7	-0·1	0·007	
Hiara to Churamani	65725·5	65674·2	+51·3	4·12	
„ to Laoraga	83439·8	83428·2	+11·6	0·73	
Laoraga to Churamani	71707·3	71655·9	+51·4	3·78	
„ to Horarguj	101467·7	101427·8	+39·9	2·08	
Horarguj to Hiara	69222·7	69196·6	+26·1	1·99	
„ to Kulerai	103091·1	103130·5	-39·4	2·02	
„ to Pakibar	103503·8	103553·7	-49·9	2·54	
Kulerai to „	100161·6	100097·1	+64·5	3·40	
Pakibar to Laoraga	93956·5	93978·1	-21·6	1·21	
„ to Geapoor	67342·3	67329·6	+12·7	1·00	
Geapoor to Laoraga	74977·0	74974·3	+2·7	0·19	
Average where the error is + ... ..	...	...	...	2·84	
Do. do. is ... ..	...	...	...	1·54	

56. Many difficulties, it has been observed, were met with in the prosecution of the Tipperah Frontier Survey. In connection with these, the following satisfactory statement by the Surveyor appears in his Report:—

“ I would beg to acknowledge the invaluable assistance rendered to me last season by Mr. Campbell, the Rajah's Agent. His personal exertions and judicious management of the Hill Tribes along the Frontier enabled me to make my way through an inhospitable and almost impracticable country, without a single misunderstanding, though the Hill-men, naturally enough, received with suspicion the intrusion of the Survey Officers into their Native Hills.”

57. Taking up the continuation of the Frontier Boundary Survey from the point* where they had ceased in season 1862-63, the arbitrators, Mr. F. Jones,

* The Dholnah post.

Civil Superintendent of Survey, and Mr. W. F. Campbell, Agent for the Tipperah Rajah, met for the purpose of settling two miles of disputed boundary which

had not been included in the arbitrator's award of 1850. This done, the survey proceeded, and (80) eighty miles more of the boundary line were surveyed, on the scale of 4 inches = 1 mile, operations for this season ceasing at the Horarguj Hill G. T. Station, the principal points of the whole line being marked in the field with substantial wooden posts. Fuller details have been extracted from the Surveyor's Report, and will be found on reference to the Appendix.

58. DEFINITION OF FRONTIER BOUNDARY.—To ensure the erection of permanent pillars along this important line, the urgent necessity for which I pointed out in my last Annual Report, a plan of the whole line, as far as surveyed, was prepared by the Revenue Surveyor, and forwarded by myself to the Board of Revenue, in view to the pillars being all built during the present cold season, and before the jungle should again grow up and render the tracing of the temporary wooden poles difficult. I may repeat here that, unless permanently so marked, the present survey will be shortly rendered of no utility whatever.

59. The assimilation this year between the line now laid down, and agreed to by the Commissioners or arbitrators of both sides, with Captain Fisher's survey, is quite as good as could be expected, when the difficult nature of the country and the time elapsed, since the last survey, is considered. On this point, the Surveyor remarks as follows :—

“ Captain Fisher's survey of Sylhet was more of the nature of reconnoissance than a survey, and necessarily so, when it extended to the impenetrable hills and forests bordering on the Tipperah Frontier. It is not therefore to be expected that his survey of 40 years ago will assimilate minutely with the work of the present day; and on comparison, discrepancies, though not material ones, as far as the question of boundary is concerned, will everywhere be found. The streams I have traversed, by cutting through jungle every step of the way. Fisher could only have mapped from local information, or a rapid sketch. The boundary marked in the Field by Mr. Jones and myself, acting in concert throughout, is according to Fisher's map as closely as it could be followed. In the absence of a stream or a natural boundary, an imaginary line on the map drawn through ranges of hills was our only guide as to the limits. In these instances, the best boundary obtainable in the required direction was adopted, without objection on the part of the Tipperah Rajah, who was throughout the operations represented by Mr. Campbell, his agent. In one instance only, in the Adampoor Valley, Mr. Campbell raised doubts as to the identity of the Sonerai Churra forming the boundary. It was therefore necessary to measure the two streams * running parallel to one another, only a few miles apart, to find the boundary represented on Fisher's map. In the Balceceera and Rajkandy Hills two G. T. S. Stations † were found conveniently situated for permanently marking the boundary, and as these Hill ranges are not approachable, triangulated lines from the source of the Oodnah Churra to Churamani Station, and from the source of the Sonerai Churra to Hiara Station, were the best lines of boundary obtainable. To make a detail measurement of these lines would occupy a whole field season, and need special means and appliances to overcome the physical difficulties of a wild, uninhabited country.”

60. Besides the operations above detailed, a plan, on the scale of 4 inches = 1 mile, was made by Mr. Barclay, Sub-Assistant Surveyor, specially deputed for the purpose, of the lands required and taken for the stations and sanatorium of Shillong and Yeodo.

61. MAPS AND RECORDS.—The whole of the maps and records have been duly lodged in a satisfactory manner, and they are better specimens than the maps of the previous season. They have been prepared with a view to Photographic requirements, and credit is due to the

Surveyor, for the pains he has taken to improve the style of his records, and to bring them up to the standard of the best productions of the Department. Mr. Davey continues to conduct his duties very much to my satisfaction; he has had a very laborious season's work, with much exposure and difficult ground and people to deal with; and he has accomplished his task very well. When the remainder of the Tipperah Frontier Survey is finished, it will be a very complete and satisfactory job, as far as this Department is concerned.

62. CURRENT, SEASON 1864-65.—About 900 square miles remain for survey in the Sylhet District, of which probably 400 square miles, comprised in 470 villages, will be dealt with Mouzawar, or detail village survey, on the scale of 4 inches = 1 mile; whilst the remaining 500 square miles consist of almost impenetrable tracts of hill and jungle, within which much detail survey is at present impossible. Here triangulation will be resorted to across the hill ranges, and the hill streams will be traced and followed, wherever it may be practicable to do so. This, and the opening up of the survey of Cachar, and its valuable and extensive tea plantations, will constitute the chief employment of the Field Establishment of this survey, during the present season of 1864-65. Besides this, however, the Revenue Surveyor will personally complete the 50 miles remaining unsurveyed of the frontier boundary, from the Horarguj Hill Trigonometrical Station to the Chatterchoora Mountain.

63. This eastern portion of the frontier is the least known of all, and the Revenue Surveyor reports not having been able to obtain any information whatever regarding it, even from the servants of the Rajah who accompanied him last year. The Hill Tribes along the border are said to be most intractable; application has accordingly been made to the Commissioner of Chittagong, in view to ensuring the active co-operation of the Rajah in carrying out this difficult and delicate survey.

64. The whole Establishment has worked well, and the Assistants, as per margin, have been promoted to the next higher grades, which they well deserved.—Vide G. O. No. 236, dated 17th instant.

FOURTH OR WESTERN DIVISION,

Lower Provinces.

65. The re-survey of the conterminous villages on both banks of the River Ganges within the Presidency of Bengal, or bordering upon it, and the North-West Provinces, from the Kurum-nasa River downwards, and along the course of such affluents as the Ghogra, Guuduck, &c., as demanded, from their wanderings, a re-demarcation and adjustment of the village boundaries, was commenced by this Establishment in the middle of November 1863, after the work connected with the Backergunge District had been completed and disposed of.

Lieutenant W. J. Stewart, Staff Corps, Revenue Surveyor.

ASSISTANTS.

Lieutenant E. W. Samuels, Assistant Revenue Surveyor, on probation, appointed by B. G. O. No. 747, dated 25th January, 1864.
 Mr. J. K. Moran, Assistant Revenue Surveyor, 3rd Class.
 Baboo Lallaram, Sub-Assistant Do. 2nd Class.
 Mr C. David, Do. Do. Do.
 Mr. H. K. Littlewood, Sub-Assistant, 2nd Class, promoted to that class from 1st January, 1864.
 Mr. T. W. Nicolson Junior, Sub-Assistant Revenue, Surveyor.
 Mr. J. N. Stoelke, Do. Do.

24 Native Surveyors.

* Paras. 67, 68, and 69.

66. The general objects of this re-survey have been already explained in my last Annual Report* for Senaso 1863-64.

67. OPERATIONS.—Operations commenced on the Ganges near Buxar, in the Shahabad District, at the confluence of the Kurumnasa River, which here marks the limits between the Upper and Lower Provinces; and, following the course of the former stream, extended to the City of Patna on the southern bank, and to the point where it receives the waters of the Ghogra from the North. Thence the survey was continued up and along the latter River, dividing the Lower Provinces of Bengal from those of the North-West. The several Districts, as per margin, have thus been the scene of the Surveyor's labors. The average breadth of the tracts thus surveyed was about 4 miles, on either side of the several Rivers operated on, and embraces an area of 887 square miles, with 1,185 Villages and Dearehs, or sandbanks and islands of recent formation.

68. EXTENT OF WORK PERFORMED.—The extent of work performed is small in comparison with that of other seasons and other surveys; this may be said to have been caused, first, by the very backward state of the demarcations, which were only commenced upon as the survey was taking the field, the number of local Civil Authorities who were concerned both in the North-West Provinces as well as in the Lower Provinces jurisdictions, and the entire absence of permanent landmarks; and, secondly, from the fact of the Establishment having been recently moved up from the Soonderbuns and low Districts of Eastern Bengal, to commence a new description of work, with their ranks reduced by death and sickness, and employment of so many novices in their place. Towards the end of the season, the Surveyor reports that the work on the Dearehs and Churs, or sand-beds and islands of the Rivers, was most harassing, owing to the hot-winds raising an atmosphere so hostile for survey operations.

69. COST AND RATES.—The cost of the work, including all contingencies, amounts to Rupees 51,429-9-0, which yields the following average rates of Rupees 43-6-5 per village circuit, and of Rupees 57-15-8 per square mile. The contingent charges in this survey have been heavier than usual, owing to their change of ground, and new equipment required, which tends to increase the rates which are high.

Permanent	...	...	...	39,655	4	0
Contingencies	...	...	...	11,774	5	0
Total expenditure	...	...	...	51,429	9	0
Mehalwaree	...	...	...	540	0	0
Grand Total	...	...	...	51,969	9	0

70. BOUNDARY DISCREPANCIES.—The discrepancies in boundary between the villages of the present, and those of the previous survey of the Districts* of the Lower Provinces were, in many places, both numerous and great. In the villages North of the Ganges, appertaining to the Districts† of the North-West Provinces, disputes, owing to discrepancies in boundary, were at once remedied by the Revenue Surveyor, who, at the request of the Civil Demarcation Officer, deputed one of his Assistants, with a suitable party, to go out and relay the boundaries in the field, as nearly as possible, in accordance with those of the prior survey.

71. ABSENCE OF MASONRY PILLARS.—The absence of proper masonry tri-junction pillars, at the time of the first survey, made this a matter of difficulty. But the duty appears eventually to have been as satisfactorily accomplished as could have been expected, without the aid of permanent landmarks.

72. **DISCREPANT BOUNDARIES.**—The greatest number of discrepant boundaries appear to have occurred on the Bengal side of the River, both as regards the comparisons made, either between present and former village limits, or between the lines of present demarcation as shewn on the Professional and on the Demarcation Maps of the present survey.

73. **VILLAGERS OPPOSED TO RESTORE FORMER BOUNDARY.**—On the higher lands, which, though annually inundated, are not usually long submerged, the discrepancies in boundaries, of past and present survey, “may,” conjectures the Revenue Surveyor, “be accounted for by the fact that the boundaries of the villages, not being marked in a permanent manner on the ground (when first surveyed), and being submerged every rains, do alter by degrees, and that, with the mutual consent of the villagers, who strenuously oppose any desire to restore the former boundary.”

74. **EXCEPTIONS.**—This opposition to correcting wrong boundaries, however, was not invariably the case, as the Revenue Surveyor, in another part of his Report, speaks of the great extra work entailed on his Establishment in the Ghazeepoor and Shahabad Districts “in relaying in the field the boundaries from the old plans.”

75. In the lower lands (which are more liable to suffer from the effects of the *annual* inundations, and are consequently exposed to strong surface currents during a much longer period, and often greatly, sometimes totally, changed by the floods of the (Ganges, &c.) very little, if any, similarity could be traced to the former survey. Here the Demarcation Officers laid down the boundaries according to present possession, and without reference to those formerly existing, when these parts of the country were first brought under survey.

76. **DIFFICULTIES.**—Great difficulties also exist as to the proper line of boundary, to be now defined and laid down, between the North-West Provinces and Bengal. Certain lands of the former were known and shewn to exist on the Shahabad, or Bengal side of the Ganges, by the survey made of that District in 1844-45-46. But the fact of the earlier Bengal Survey having, in some places, overlapped that of the North-West Provinces, which preceded the Bengal surveys by some years, appears to have entirely escaped observation at the time this last survey took place; and thus, owing to the changes in the course of the Ganges, tracts of land have been recorded on the Plans and Maps of the two adjacent Presidencies of the North-West Provinces on the one side the Ganges, and of Bengal on the other, as belonging by the earliest survey to the former, and by the second survey to the latter, Presidency.

77. **COMPLICATION OF VILLAGE NAMES AND BOUNDARIES.**—The villages of these tracts are recorded under different names, and with different boundaries, in the Plans of the two first surveys; whilst, again, the present re-survey shews a further change of village names and boundaries, and consequently a still greater complication than ever.

78. **REFERENCE TO BOARD, L. P.**—Reference has been made to the Board of Revenue, Lower Provinces, regarding the questions involved in these discrepant results; *1st*, as to which of all the many conflicting boundaries are finally to be adopted and perpetuated on the Maps of Bengal and the North-West Provinces; and, *2nd*, whether boundaries once declared and authoritatively sanctioned in the *Government Gazette*, can be altered otherwise than by the decision of the higher Law Courts.

79. **DEFINITE LAW REQUIRED.**—The questions are most important, and some definite and well understood law requires to be laid down regarding them for the future.

80. FUTURE BOUNDARY BETWEEN THE N. W. AND L. PROVINCES.—Regarding the

* Letter No. 4056, dated 1st December, 1864, from Secretary, Government of Bengal, to Secretary to Government, N. W. P.

boundary to be adopted, for the future, between the North-West and Lower Provinces, His Honor the Lieutenant-Governor of Bengal has been pleased to propose* to the Government of the N. W. Provinces, as “the best and safest rule, that the deep stream of the Ganges shall always be regarded as the boundary, for the time being, between the Districts of Ghazee-poor and Shahabad, and between the Lieutenant-Governorships of the North-Western Provinces and Bengal.” * * * *

“If,” the letter adds, “the Lieutenant-Governor of the North-Western Provinces agrees in this view, all that will be necessary is, that this Government should declare the deep stream of the Ganges the boundary of the Zillah of Shahabad, under Act IV. of 1864, of the Local Legislature. That being done, all questions arising in respect to lands on the right bank of the River, will be settled by the Shahabad Courts and Revenue Authorities, and all questions relating to land on the left bank, by the Courts and Revenue Authorities of Ghazee-poor.”

81. If this course can be adopted, it will undoubtedly tend greatly to simplify matters, especially as regards the final preparation of areas, in connection with the present professional operations.

82. In regard to the question of discrepancies between the boundaries of the present and former surveys in Bengal, the Board of Revenue have pronounced in favour of observing and adhering to the plain rule of possession, and of demarcating and surveying village and other boundaries accordingly. As far as this Department is concerned, of course it is immaterial what boundaries are laid down; but it is an object that the Maps of a re-survey should be rendered really and absolutely valid and useful for all purposes, and not left open to doubt and uncertainty.

83. PERMANENT PILLARS.—It was mentioned in my last Annual Report that, when the re-survey of these Rivers had been finally sanctioned, the erection of permanent landmarks on both banks of the streams coming under survey, was also directed. In the Districts of Azimgurh and Ghazee-poor, pillars of a suitable description were accordingly erected on the village tri-junctions. But the Surveyor reports that, throughout the Districts of Shahabad, Sarun, and Patna, none had been built up to date of completion of survey. This was urged on the notice of the Board of Revenue, Lower Provinces, equally as upon that of the N. W. Provinces; but, unfortunately, it seems as if we are never to have permanent landmarks in Bengal: the erection of permanent pillars should precede professional survey operations, or, at the latest, be built simultaneously with its progress. Pillars may be erected subsequently, but their accuracy cannot be vouched for, unless the ground be again gone over by the professional parties; this, however, would almost double the expense of survey, and thus, through the delay in carrying out this important work, it cannot be undertaken over the tracts of country already surveyed in 1863-64. Under these circumstances, the Board of Revenue have decided to abandon, for the present, the erection of permanent pillars over those portions of the country already surveyed, and to enforce them for all future and present years' survey. Why more difficulty should exist in such a very simple thing as the erection of masonry pillars prior to surveys taking the field on one side of a River, or in one jurisdiction, more than on the other, it is difficult to understand. Fortunately, in the present instance, the prompt action of the local authorities in Ghazee-poor and Azimgurh has secured permanent boundary marks on that side of the River.

84. **MAPS AND RECORDS.**—No Maps or Records of any sort have been as yet received from this Surveyor, and in their absence it is very difficult to understand or to explain the precise nature and extent of the operations. My report has been delayed to the last moment on this account. In proceeding to the Upper and Central Provinces on a tour of inspection, I took the opportunity of visiting this Surveyor's Office at Dinapore, on the 17th and 19th September last, when, owing to various circumstances, I found the work considerably in arrears. The whole of the questions connected with the old and new survey boundaries were carefully discussed, and I had an interview with the Deputy Collector employed on the demarcations. The discrepancies between the former and recent survey have certainly tended to entail a good deal of extra trouble and confusion in preparing the new Records. Lieutenant Stewart and one of his Sub-Assistants were also obliged to attend at my Office here, for a period of about six weeks, to correct and revise the Records of the Backergunge and Soonderbun Survey of the former season, which were incomplete; and this, no doubt, had some effect in delaying the preparation of the work of the season under review. I trust that, during the present year, all these arrears may be satisfactorily brought up, and the records produced by this party, left in a perfectly complete and intelligible state.

85. **CURRENT OPERATIONS, 1864-65.**—The operations of the present season will be confined to the survey of the conterminous villages on both banks of the Gunduk River, which separates the District of Goruckpoor, of the N. W. Provinces, from Sarun-Chumparun, of Bengal, and forms lower down the line of common boundary between the Districts of Sarun-Chumparun and Tirhoot, both of Bengal. The length of this River from the Nepal boundary, where it debouches on the plains of Bengal, to its confluence with the Ganges, a little below the Town and Civil Station of Chupra, is 150 miles. The average breadth of the belt of country re-demarcated, including the River, is 8 miles, giving an area of 1,200 square miles. This, comprising 1,600 Village Hulkas, will afford ample employment for this party during the present season. After the completion of this part of the work, the operations will again be prosecuted along the Ganges.

86. Lieutenant Edward Samuells, General List, Infantry, a passed student of the Roorkee College, was appointed as a Probationary Assistant Surveyor on this Establishment, by the Orders cited in the margin, and joined his appointment on the 17th December, 1863.

Mr. C. David,	from Rs.	150	to	175.
" H. Littlewood,	"	150	"	175.
" T. W. Nicholson,	"	100	"	125.

87. The Assistants noted in the margin have been promoted under G. O. No 236, dated 17th instant.

FIFTH OR CHITTAGONG DIVISION,

Lower Provinces.

88. The survey operations of this Division were carried on, during season 1863-64,

J. H. O'Donel, Esq., Revenue Surveyor.

ASSISTANTS.

Mr. J. Pickard, Assistant Revenue Surveyor, 2nd class.
 Mr. W. Vyall, Sub-Assistant Revenue Surveyor, 2nd class, transferred from 2nd Division, Central Provinces, joined 3rd March, 1864.
 Mr. G. V. Thompson, Sub-Assistant Revenue Surveyor, 2nd class, promoted to that class in January 1864.
 Mr. R. Savage, Sub-Assistant Revenue Surveyor, 2nd class, promoted to that class in January 1864.
 Mr. J. H. O'Donel, (Jr.), Junior Sub-Assistant Revenue Surveyor.

10 Native Surveyors.

in those parts of the Chittagong and Tipperah Hills lying between the parallels of 22° 36' and 24° 24' North Latitude, and the Meridians of 91° 11' and 92° 19' East Longitude. This difficult tract of country, scarcely ever previously entered, is bounded on the North by the Sylhet District; on the South by the Thannah of Futtikcheree and that part of the Chittagong District surveyed

by Captain Siddons in the year 1837; on the East by Cachar and the unsurveyed and inaccessible portions of the Tipperah and other Frontier Hills; and on the West by Thannah Nizam-pore of Chittagong District and by British Tipperah.

89. AREA.—The area thus accomplished amounts to 3,505 square miles. Of this area 626 appertain to the District of Chittagong, and the remainder 2,879 square miles, to the Tipperah Hills. A net-work of minor triangles, based on the Eastern Frontier Meridional Series of the G. T. Survey, was thrown over the whole tract, excepting only about 480 square miles of uninhabited Hills, in which no means of penetrating existed, the whole being covered with impervious Jungle. The principal Hill peaks and such of the Streams in this portion as could be reached were intersected and sketched in.

90. DURATION OF SURVEY.—The whole party were actively engaged in the field from the beginning of December, and some of them up to the commencement of the following July: a preliminary survey of the Goomtee River having been commenced so early as the 13th November, as the Revenue Surveyor's detailed arrangements and disposition of parties greatly depended on obtaining correct information regarding the course of this River and its tributaries in the Hills.

91. PROGRESS RETARDED.—During the whole of December the progress made was much retarded, owing to opposition on the part of the Hill Rajah's officials, and want of proper assistance. Subsequently, and after fresh representations and requisitions had been made to the Rajah by the Commissioner, Mr. Young, work progressed well from the 15th January to 15th March, when the rains, which set in very early in these Eastern Districts, began to fall, and rendered the further progress of the party very slow and tedious.

		Rs.	As.	P.	
Permanent	}	37,112	0	4	amounted to Rs. 52,354-4-0, giving an average rate of Rs. 14-14-11 per square mile, or almost precisely the same as in the previous season of 1862-1863, when the rates averaged Rs. 14-4-10 per square mile.
Establishment		15,242	3	8	
Contingencies		52,354	4	0	
Total expenses		52,354	4	0	
Arrears of Travelling Allowances for 1862 1863.	}	1,264	6	5	
Grand Total		53,618	10	5	

93. These rates, although not so high as those of Topographical Surveys of the first class, are sufficiently so for the particular nature of the work performed. The contingent charges are extremely heavy, and said to be caused by the peculiar nature of the country, and the necessity of taking so many coolies for provisions, and for cutting lines, all at a high rate of wages. In short, it has been only with the utmost difficulty that any sort of survey has been effected at all, in so wild and inaccessible a country, where extreme minutiae of details of configuration were quite impossible.

94. SURVEYS CONNECTED.—A proper connection was also effected with the Revenue survey of the District of Sylhet to the North, and of Tipperah to the West; in both instances the Frontier boundary line, as laid down and surveyed by the 3rd and 1st Divisions respectively, has been carefully incorporated with and entered on the maps of the Tipperah Hill operations.

95. SMALL PORTION OF HILLS LEFT UNSURVEYED.—A small portion of these Hills remain unsurveyed to the extreme North-East and East. But the Revenue Surveyor having represented

that the inhabitants of the Tipperah Hills positively refused to enter these hitherto trackless forests and jungles, that only a very small portion in the North-East was believed to have inhabitants of any kind; and that to enter them at all, it would be necessary to cut paths throughout the Bengal Government concurred with myself as to the inutility of attempting anything further

Government of Bengal's letter, No. 5040, dated 19th October, 1864. in that direction at present, and accordingly ordered the discontinuance of further operations in these Hills.

96. WORK IN CHITTAGONG FOR 1864-65.—During the present season, a part of this Establishment will be employed in measuring certain elevated tracts within the District of Chittagong, which now prove to be valuable Tea-growing localities. Most of the waste lands in these low Hills have been already taken up, or applied for under the fee simple purchase rules, and the boundaries of all such grants and of those still available, will be carefully rendered with reference one to another, and to the cultivated zemindari tracts in the plains which bound them in that direction. This work has been entrusted to a well qualified Assistant and suitable staff of Native Surveyors and Measurers. The total area to be so dealt with will probably amount to 3 or 400 square miles.

97. PROGRESS MADE.—The progress that has been made during the current season up to date in these tracts, is thus reported on by the Revenue Surveyor.

“The clearing of boundary lines and fixing of secondary stations was commenced as early as practicable after taking the Field. Work had scarcely commenced and main circuit lines surveyed, when the orders of Government were received to proceed to Julpigooree, and parties were at once withdrawn from work on and after the 26th December 1864: Main Circuit lines, enclosing an area of about 80 square miles to the South of Seetakoond, have been surveyed; but this preliminary work cannot be reckoned as area till the grants and allotments within the main circuit have been surveyed.

“Mr. Pickard surveyed 128 main circuit lines, and was employed clearing rays for triangulation during the past month.”

98. BENGAL DOOARS.—The remainder, or head quarters of the Establishment, have proceeded under the immediate charge of the Revenue Surveyor, to the newly acquired strip of country of the Bengal Dooars, recently annexed from Bhootan, by the orders as per margin,

G. O. G. G. Foreign Department dated 12th November, 1864. and estimated at about 4,600 square miles; of this a Topographical survey on a scale of 2 inches=1 mile will be first made, care being taken to lay down and survey all boundaries defining the existing rights of proprietors in the soil, also of waste lands, forest tracts, &c., which may be met with in course of survey.

99. The immediate task of surveying the British Frontier to the North has been entrusted to Captain Godwin Austen, Topographical Surveyor, who is now employed in sketching the country and laying down routes with Brigadier-General Dunsford's column; but as it is probably more than he can possibly perform unaided, the Revenue Surveyor of this party has been instructed to take up and carry out the survey of such portions as he may be called upon for by the Commissioner; the object being to ensure a complete survey or sketch of this Frontier boundary, during the present season, if possible.

100. MAPS AND RECORDS.—The whole of the Maps and Records have been rendered in a satisfactory manner, and they have been jointly prepared by the Surveyor and his European Assistants, each taking a fair share of the work, which is commendable. The Chart of Triangulation is full and explicit, shewing at a glance the disposition of the Stations selected for

the primary and secondary Triangles, as well as the inaccessible points laid down therefrom. The whole of the Mapping has been neatly executed, and it is now in the compiler's hands, with the view of reduction and publication at an early date on the usual geographical scale.

101. The Assistants as per margin, who have been conspicuously noted in the Sur-

Mr. J. Pickard, from Rs. 300 to 350.†
Mr. W. H. Vynal, from Rs. 175 to 200.
Mr. R. Savage, from Rs. 150 to 175.

veyor's Annual Report, have been promoted* to the extent specified. The whole Establishment deserves credit for the cheerful manner in which they have borne several years' exposure and hardship on this

* *Vide* G. O. No. 236, dated 17th January, 1865.

Eastern Frontier. An inspection of the Maps best proves what they must have gone through, and it is a matter of congratulation that such an onerous duty has been performed without more loss of life and sickness.

† Transferred to the 6th Division, by G. O. B. G. No. 4894 dated the 27th September 1864.

102. Mr. O'Donell is an able Officer, who has shewn great

tact and judgment in conducting these operations, and his name will long be associated with the exploration of a great deal of our eastern possessions, before quite unknown, and than which, I believe, no ground can be found more difficult of access and hostile to survey operations. For further details connected with the state of the country and obstacles met with, the extracts from the Surveyor's Annual Report may be perused with advantage.

SIXTH OR HAZAREEBAUGH DIVISION.

Lower Provinces.

Major G. H. Thompson, Staff Corps, Revenue Surveyor.

ASSISTANTS.

Major W. S. Row, Staff Corps, Assistant Revenue Surveyor.

Mr. B. H. Billon, Sub-Assistant Revenue Surveyor, 2nd class.

„ P. H. W. Brady, Do. Do. promoted to that class from 1st January 1864.

„ R. Scott, Sub-Assistant Revenue Surveyor, 3rd class.

Serjt. L. G. Hill, Probationary Junior Sub-Assistant Revenue Surveyor, promoted to Serjeant.

„ H. Wray, Do. Do. Do.

Private C. Schofield, Do. Do. Do. was under suspension from 22nd April, and subsequently remanded to Regiment in July 1864.

Private G. Allen Do. Do. appointed as per G. O. B. G. No. 7092, dated 1st October 1863, joined 9th October 1863.

25 Native Surveyors.

103. This Establishment has been engaged on the Palamow and Torce Pergunnahs, appertaining to the Lohardugga or Chota Nagpore District, as referred to in Para. 97 of last Report. Although Palamow contains an area of upwards of 4,000 square miles, and is of a peculiar character, it is said to form only a Pergunnah of the latter District. As the local Divisions in this extensive agency of the South-West Frontier are exceedingly large, it may be worth considering whether Palamow ought not to be a separate District or Sub-Division. At present confusion seems to exist regarding the distinction of Pergunnahs, Tuppehs, and Districts.

104. AREA SURVEYED.—The area surveyed, comprises the whole of Pergunnah Torce and

Tuppeh Mankheree.
„ Seemah.
„ Chickaree.
„ Barasand.
„ Tuppah.
„ Sanniat.
„ Khancee.
„ Doorzaj.
Part of „ Bavee.
„ Foondug.
„ Mutttoolee.

the marginally noted Tuppehs or Estates of the Palamow Pergunnah, all appertaining to the Lohardugga or Chota Nagpore Deputy Commissionership or District, and is bounded on the North-East by the District of Hazareebaugh; on the South and the South-East by that portion of the Lohardugga or Chota Nagpore District, attached to Captain Deprec's Topographical Survey; on the West by Sirgojah, and on the North-West and North by the Koel River, and

remaining unsurveyed portions of Palamow.

105. Of this hilly and difficult tract of country 1,743 square miles have been laid down during the season under review; of which 1,079 square miles consist of village survey on the

large scale of 4 inches = 1 mile in the Pergunnah and Tuppehs of Palamow, and the remainder 664 square miles, of purely Topographical Survey in Pergunnah Toree, triangulated the previous season, and in which village boundary delineation was deemed unnecessary.

106. COST AND RATES.—The expense incurred in carrying out these operations, and including all contingent charges for the season, amounts to Rupees 57,941-15; of this the Revenue Surveyor estimates Rupees 15,000, as the cost of the purely Topographical Survey; or, at the rate of Rupees 22-9, per square mile. The balance Rupees 42,941-15, allotted to the Mouzahwar survey, yields an average rate of Rupees 39-12 per square mile. With the arrears of contingent charges appertaining to the previous season, the total expenditure comes up to Rupees 59,069. The general or mean average rate of the combined work for the season comes up to Rupees 33-3 per square mile.

Permanent	Rs. 51,059 2 0
Contingencies	„ 6,882 13 0
Total Expenditure	57,941 15 0
Arrears of Travelling Allowances for 1862-63	1,128 0 0
Grand Total, Rs.	59,069 15 0

107. FEATURES OF COUNTRY.—The out-turn is a very good one. The country was again of a most rugged nature, interspersed with large tracts of dense forest, numerous streams and ravines. The hill features were more numerous and detailed than in former years' operations, and the whole is stated by the Revenue Surveyor to have involved one of the heaviest season's work he has ever experienced. The mean average cost per square mile is moderate for the description of work.

108. TRIANGULATION.—The accuracy of the minor Triangulation, rendered necessary over such broken ground, was again controlled by the Triangulation of the Calcutta Longitudinal Series of the Great Trigonometrical Survey, which afforded ample points of departure and verification throughout the course of these operations. The results will be tabulated as soon as the necessary data is received.

109. MAPS AND RECORDS.—The Index and the three large Main Circuit Maps on the one inch scale have been rendered, and these are full and satisfactory. They exhibit a large amount of work, all in pen and ink, most favorable for Photography, and have been well drawn by Major Row and Mr. Billon. The rest of the records, including Atlas Sheets and Computations, are under despatch. Owing to the extent of hilly ground to be depicted on the large scale, of course the Establishment had much more trouble in completing the whole.

110. ESTABLISHMENT.—Hitherto, the Establishment has been weak in its European Agency, which should be highly efficient for such description of survey. I have therefore, though not without difficulty, transferred two Sub-Assistants from other Surveys, as per margin, who, I have every hope, will be able to render the assistance so much needed.

111. CURRENT SEASON'S OPERATIONS.—During the present season the survey of the Palamow Pergunnah will be continued, and for which purpose ample minor Triangulation has been prepared in advance. The work is difficult, and requires caution; I doubt, therefore, so large an area being again effected.

112. RE-SURVEY.—The result of the revisions brought to light in the survey of the Kurlhurballee Coal Field, as referred to in para. 96 of my last Report, has necessitated the

extension of further re-surveys in the main Circuits, Nos. 8 and 9 of the Hazarechaugh District, or of that portion of the country north of the Trunk Road lying to the North-West of the Kurhurballee Coal Field, North of the Burrakur River, and up to the Monghyr District Boundary. This important re-survey is now in hand, and will occupy a portion of the establishment a considerable part, if not, the whole of the current season. Until it is satisfactorily accomplished, it will not be possible to publish the District Map, which has been compiled for some time past, but requires verification in the parts specified. I trust that no greater delay may take place in bringing out the Geographical Map of this interesting District, as it is very much wanted.

113. PROBABLE TIME FOR COMPLETION OF DISTRICT.—The Palamow area remaining to be done will occupy at least another season after the current one.

114. ASSISTANTS.—Mr. Brady is particularly mentioned as having done more and better work than any other Assistant, and as highly deserving of an increase of salary to which he

Mr. P. H. W. Brady,	from	Rs. 250	to	175
Sergeant L. G. Hill,	"	"	"	100
" H. Wray,	"	"	"	100

has been promoted. Sergeants Hill and Wray are also commended, and have been similarly noted. I regret to have to record that Private Schofield, one of

the Roorkee Students, was remanded to his Regiment by the orders, as per margin, on the re-

General Order, dated 26th July 1864.

commendation of a Court of Enquiry, which the Surveyor was obliged to apply for, owing to the misconduct and general unsteady character of the Private. Sapper Allen, whose progress has not been so good as it ought to have been, has been transferred to the 3rd or Saugor Division of the Central Provinces to fill a vacancy there, and to make room for the other efficient Sub-Assistants posted to this party.

WASTE LANDS SURVEYS.

First or Darjeeling Tea Plantation Survey.

115. The Assistant employed on the measurement of the Waste Land Allotments, recommenced in the Darjeeling hills early in

Mr. E. T. S. Johnson, Assistant Revenue Surveyor, in charge.

Assistant.
Mr. P. Cowley, Sub-Assistant Revenue Surveyor, 2nd class, joined 1st November, 1863, from 1st Division, Central Provinces, promoted to that class from 1st January, 1864.

14 Native Surveyors.

November 1863. The tracts allotted for Survey lay in three different detached blocks. The largest of these was situated to the East of the Darjeeling Cart-road, and between it and the River Teesta, which bounded it on the East. Southwards it extended to the River Sivok, at the foot of the hills, whilst the Rungjo River formed the Northern limit. The second block lay on either side of the Balasun River, and extended Westwards to the Mechi River, which forms the boundary between the British possessions and Nepal. The third block lay immediately under, and to the West of, the Station of Darjeeling.

116. AREA. HILLS.—The area thus surveyed in the hills amounted to acres 81,319= square miles 127. The interior details of all which, with the exception of about 20 square miles of unallotted and uncleared ground, was as minutely surveyed as possible. Most of the blocks, however, being of recent allotment, the jungle was consequently less cleared than in former years, and the difficulties and delays greater; especial pains were taken by the Surveyor to depict faithfully and correctly the Topographical features of the Government Cinchona plantations.

117. This work was connected with, and checked, on the principal G. T. Stations of Birch Hill and Senechal, and the secondary ones of Mahalderain, Sitong, Nagri, and Goong.

118. Whilst Mr. Johnson was thus personally employed with a few of his Subordinates on the higher ranges and valleys, his Sub-Assistant, recently appointed, with the newly trained Establishment as mentioned in para. 112 of last Annual Report, entered the Morung, or Teraie Forests at the foot of the Darjeeling range of hills, and commenced on the Survey of the two Morung Pergunnahs of Hattighusa and Patterghatta. These Pergunnahs are situated between the Mechi and the Maha Nuddee Rivers, the first of which forms the boundary between the Darjeeling District and Nepal to the West, whilst the latter divides it from Rungpoor to the East.

119. AREA. PLAINS.—The contained area was 1,24,093 acres = 194 square miles, comprising 659 jotes, or small blocks or patches of cultivation farmed by inhabitants of the Teraie, 6 Hauts or market places, 73 blocks of Government Waste Lands, and 7 jhars, or blocks of Forests reserved for firewood.

120. Of the above area, 104 square miles have been completed in their interior topographical details, whilst the remaining 90 square miles were surveyed in boundary alone, and will be completed in interior details during the present season. Teraie or jungle fever of a severe nature breaking out amongst the parties, successively sent out by the Surveyor in charge, in the hopes of finishing the work last season, forced him reluctantly to withdraw, sooner than he would have done, all hands from the field, and leave the work to be prosecuted hereafter, at a more favorable season. Contingencies of this kind are to be expected, and are quite unavoidable in Surveying such malarious tracts of country as the Darjeeling Morung.

121. The total area for the season amounts therefore to square miles 321, or 2,05,413 acres, and comprises 778 separately demarcated blocks or holdings, and jotes.

122. The total cost of the season's operations was Rupees 22,061-6-0; this includes		all contingent expenses of the professional party, and a further sum of Rs. 3,511-8-0 paid by the Superintendent of Darjeeling on account of coolies for cutting jungle.	
	Cost.		
Permanent	Rs. 15,544 10 0		
Contingencies	" 3,005 4 0		
Coolies	" 3,511 8 0		
	<hr/>		
Total Expenditure...	" 22,061 6 0		
Arrears of Travelling Allowance for 1862-63	" 370 0 0		
	<hr/>		
Grand Total...	" 22,431 6 0		

123. The Main Circuits effected in the Teraie for the purpose of combining all the allotment measurements, yield a considerable area, which, if taken into the calculation of the average cost per acre, would reduce it very materially. But, in reality, many more measurements have yet to be made within these Main Circuits, and likewise in the Hills; the skeleton work is done, but the topography of the same area remains to be accomplished. It is not therefore practicable to give a fair average cost at present, and this must remain until the whole work is completed, and a fair calculation on the aggregate taken.

124. Every care has been taken by the Surveyor to render the work as clear and as useful as possible. Every detail has been entered as minutely as his means and the nature of the jungle permitted, and connection has been made, wherever practicable, with former operations conducted in the Morung under Major Sherwill, Revenue Surveyor, in 1852, and in the adjoining District of Rungpoor by the late Mr. Pemberton, Revenue Surveyor, in 1855 to 1859.

125. **POSTS.**—In the demarcation of the jote lands of the Morung, the survey parties put up posts, wherever practicable, to mark the holdings and serve as guides hereafter in recognizing the boundaries. Where wooden posts were not procurable, earthen mounds were erected. Application was also made by the Assistant Surveyor in charge, to the Superintendent of Darjeeling, for the erection of masonry pillars or platforms on the tri-boundaries of the holdings in the Morung; “but,” reports the Surveyor, “that Officer does not see any necessity for pillars being erected on the jote lands, but has issued orders to the Chowdries, and to the Deputy Magistrate of Phansée dewa, to have them put up along all Government lands.” But whether the orders have been carried out or not, was not known to him at the time of submitting the Report. It is most unfortunate that the immense and paramount utility of permanent landmarks being put up prior to survey, or at least during the course of survey operations, is not sufficiently appreciated by Civil Officers, and thus the labours of the survey, and the expense which Government annually incurs in these scientific operations, are not utilized for the future so fully as should, and might easily, be. The survey serves present purposes, it is true, without the erection of these marks, but to make it available for the future, these are indispensable adjuncts, and should on no account be suffered to be neglected.

126. **LAND MARKS REQUIRED.**—Speaking of the demarcations in the hill estates, the Surveyor reports—“ Posts, or Stones, have always been heaped up, and if the planters would only erect their pillars immediately after the survey has been completed, there would be no difficulty hereafter; but this they will not do. The Superintendent states, that he has no authority to enter the lands of purchasers of waste lands to erect boundary pillars, but that a period is fixed, and inserted on their deeds of conveyance, for the erection of them by the purchaser; after the lapse of which period any dispute arising, the Superintendent has authority to lay down the boundary, and his decision is to be considered as final.” This, in a measure, gets over the difficulty, but it contemplates legislation on disputed boundaries, which would, in all probability, never arise if the erection of pillars at the time of, or rather preceding, survey, was rendered, as it undoubtedly ought to be, imperative. I trust the time is not far distant when this essential of surveying will be acknowledged and acted upon everywhere, and be as rigorously carried out as in the Punjab, Oudh, and Central Provinces.

127. MAPS AND RECORDS. —The number of Maps and Plans prepared by this small party during the season are given in the margin; those intended for this office, with the exception of the Index Map illustrating the season's operations, have not been lodged as yet, consequently no opinion can be recorded of them. A large amount of work has been accomplished by this Surveyor, and he performs his duties very greatly to my satisfaction.			
Hill Portion.			
8	“ Chudder” Maps for Surveyor-General.	} 4 inches to the mile.	
8	do do for Deputy Commissioner.		
9	do do Rough for office.		
27	Maps for Proprietors.	} 20 inches to the mile.	
Of Locations.			
1	Chudder Map for Surveyor General.		
17	Location maps for Deputy Commissioner.		
17	do do for Proprietors.		
1	Index Map	1 inch = mile.	
<hr/>			
87	Total.		
Terai Portion.			
14	“ Chudder” Maps for Surveyor-General.	} 4 inches to the mile.	
14	do do for Deputy Commissioner.		
14	do do for office.		
1	Pergunnali map for Surveyor-General.	} Scale 2 ins. = 1 mile.	
1	do do for Deputy Commissioner.		
1	Index map	Scale 1 inch = 1 mile.	
<hr/>			
45	Total of Terai.		
<hr/>			
132	Grand Total.		

128. **WORK FOR 1864-65.**—The hilly portion of field operations during 1864-65 are reported by the Surveyor to

be too scattered to admit of description, as to relative situation, beforehand. He appears, however, to have ample work cut out for his parties, both in the hills and in the Morung, or Plains. If time and leisure from more pressing duties permit, he will also re-survey the interior details of the blocks surveyed in 1861-62, in which the general features of the hills have not been satisfactorily, or correctly, shewn. The work for a Surveyor, so situated, of course depends on the applications for grants. It is impossible for this Department to foresee when such duties are likely to terminate.

129. **ADDITIONAL WORK.**—Mr. Johnson has also received instructions to place himself in communication with Captain Godwin Austen, Topographical Surveyor, on special survey duty in the newly-annexed Bengal Dooars, in view to assist in laying down the boundary between the western and more hilly portion of our newly-acquired territory in the Dooars, and the Native state of Sikhim to the North, and Bhootan Proper to the East. The survey of the hills between the said portion of boundary and the plains of the Dooars will also be entrusted to this officer and his Establishment. And, in view to expediting its completion, without interfering with the survey of Darjeeling Waste Lands, I propose that the extra Establishment entertained and trained for the survey of the Morung Pergunnahs may, on the completion of their task, be retained for the survey of the North-Western Hills of the Bengal Dooars. These men will have become inured, in a measure, to the climate of the Teraie, and be better fitted to cope with any difficulties that may have to be encountered in the valleys of these ranges.

130. **ASSISTANT.**—Mr. P. Cowley, Sub-Assistant 2nd class, was transferred from the 1st or Jubbulpoor Division, Central Provinces, to this survey, on the 1st November 1864. He has worked very well during the season under review, and been promoted. The extracts from the Surveyor's Report, given in the Appendix, will shew the difficulties met with, and the great sickness which has resulted from employment in this Teraie.

Mr. P. Cowley, from Rupees
125 to 150 Vide G. O. No. 236
dated 17th Instant.

WASTE LANDS SURVEY.

Second or Upper Assam.

131. The progress of this waste land party has been somewhat more satisfactory during the past season than it was during the previous one of 1862-63, when, owing to defective arrangements in demarcation, only the very small area of 47 square miles was accomplished. During season 1863-64, the Assistant Revenue Surveyor reports 63,949 acres = 100 square miles of waste land survey completed. Of this 90 square miles formed one block, and was connected with the principal block of season 1862-63, filling up all the gaps that had previously existed in the work of that year, and greatly adding to the value of the survey. 3,840 acres = 6 square miles, contained in 6 grants, were likewise connected with the season's operations; but the balance, 2,560 acres = 4 square miles, contained in five other grants, were detached and too far separated from the rest of the work to be connected therewith with advantage at present.

A. D. Smart, Esquire, Assistant Revenue
Surveyor in charge
10 Native Surveyors.

132. This work extended over 16 Mouzahs,* the boundaries of which, however, were not laid down, because, says the Surveyor, "The Officer then in charge of this District (Secbsagur) when the subject was brought to his notice, said that, the Mouzah boundaries of this

* Note.—A Mouzah in Assam differs considerably from what is called a Mouzah or Village.

“ District were in such a state of confusion and dispute, that a regular demarcating establishment would be required to precede survey operations before they could be surveyed.”

133. CONTINUOUS DEMARCATION AND SURVEY.—Since then, however, a demarcation establishment has been deputed to Upper Assam to prepare the ground for survey, in view to the professional establishment carrying on their operations in a properly connected manner, instead of perpetuating the faulty and erroneous system of desultory measurements of grants scattered here and there over the country, and only regulated at the will of applicants.

134. This will not only tend, eventually, greatly to economize the cost of survey, but will enable this Department to utilize the present operations in the preparation of District and other Maps, without going over the same ground a second time; and if to this, the erection of tri-junction masonry pillars, in advance of survey, be rigorously enforced, all present and future requirements of the Government, and the Public, will be secured at a minimum cost, and very much needless litigation on disputed boundaries be saved hereafter.

				135. COST AND RATES.—The cost of
Permanent	...	Rs.	11,866 10 0	these operations amounted to Rupees 14,199-4
Contingencies	...	„	2,332 10 0	showing that the average expense of survey-
			<hr/>	ing each acre has been Rupees 0-3-6½, three
Total Expenditure...		„	14,199 4 0	annas, six and half pie, or nearly one anna
Arrears of Travelling Allowance		„	350 0 0	per acre less than last season. Nor can it
for 1862-63	...	„	<hr/>	be expected to be much reduced below this,
Grand Total...		„	14,549 4 0	if surveyors and their parties, instead of surveying, are to be employed in clearing rays

and cutting jungle.

136. OBSTRUCTIONS TO PROGRESS.—This season, it is true, the Surveyor reports, that the lines were all cleared at the expense of the grantees, who supplied the coolies; but, on taking the field, on the 20th November, not a single grant was ready, and the grantees begged for further delay. Not a single boundary was demarcated, and the Native Surveyors had nothing to guide them beyond the boundary descriptive lists supplied by the Deputy Commissioner, and the lines cut by grantees.

137. The Surveyor visited many grants personally, in the hope of inducing a hearty co-operation, and addressed the Officiating Deputy Commissioner several times on the subject, but it was not until January was well advanced, that a fair start in field work was made.

138. The Surveyor complains of the delays caused by failure of Mouzahdars, or holders of village lands, to attend to the wants of the survey in pointing out their respective boundaries touching on the Waste Allotments, or preparing them for survey. The Officiating Deputy Commissioner, it is stated, required a special application, on each occasion, accompanied by a sketch map of the land. All this retarded work very materially, and increased the expense. Unless well supported by local officers, a surveyor's duties are most harassing. The Surveyor's remarks on this will be found in the Appendix.

139. No maps and records of this survey have yet been received, but they have been promised to be despatched by Steamer, and may be daily expected.

140. Mr. A. Smart has, I regret to record, tendered his resignation, which was accepted by the orders as per margin. This secession from the Department has proved exceedingly inconvenient, owing to the

No. 26, dated 5th January, 1865.

impossibility of finding qualified Assistants for all the surveys in progress, or projected. Mr. A. Smart's loss will be severely felt; he has done excellent service in the Department for a period of 17 years, during which time he was conspicuous for zeal and knowledge of his profession.

141. My letter cited in the margin, detailed the arrangements proposed to be made for the continuance of the Waste Lands measurements in Upper Assam. His Honor directed that the survey should be converted into a regular one of the whole District of Sebsaugor, as soon as the services of an efficient Establishment can be found available from present duties. Mr. Brownfield, Senior Sub-Assistant of the 1st or Northern Division, has therefore preceded his party to relieve Mr. A. Smart, as a temporary arrangement, until the ensuing cold season, by which time it is hoped the Bulloah survey will be out of hand.

142. WORK FOR CURRENT SEASON.—A special demand was originally made for a survey of the coal tracts on the Dehing and Terap Rivers, but this was subsequently countermanded. In the vicinity of Jeypoor there are many Waste Land allotments to be taken up, and as the survey is now to be continuous, there is ample work for several years to come.

WASTE LANDS SURVEY,
Third or Lower Assam.

J. O. Nicolson, Esquire, Officiating Surveyor.
9 Native Surveyors.

* G. O., Bengal Government letter No. 4213, dated the 11th November, 1863.

143. Further requisitions having been made by the Commissioner of Assam for qualified Surveyors to be deputed to that Province for the purpose of meeting the great demand for the measurements of Waste Lands applied for under the Fee-simple Rules, sanction was given* to the raising of another small party, of similar strength to those already employed in the Darjeeling Hills and Upper Assam.

144. The best measures available, were taken to provide the necessary establishment for this purpose. Under the special direction of the Financial Department, the services of Mr. J. O. Nicolson, of the Great Trigonometrical Survey, who had just completed a series of Astronomical observations at the Andaman Islands, were placed at the disposal of the Revenue Survey Department for this duty; and he accordingly received his instructions and equipment, and formed the nucleus of his party during the months of November and December, 1863, in Calcutta, with such few natives as could be procured, and proceeded, on the 6th January, 1864, first to Cherra Poonjee in company with the Cossyah Hills Topographical party, of which he also had temporary charge, owing to the detached employment of Captain Godwin Austen, and subsequently to Gowhatty, where he placed himself in communication with the Commissioner of that Province, in view to carrying on such desultory operations in the plains of Lower Assam, as might be possible and necessary.

145. The usual Financial Statements were submitted, and sanction for the Budget Estimate, amounting to 1,970 Rupees per mensem, of this party, having been duly obtained, Mr. Nicolson was enabled to report himself ready to break ground in the Districts of Kamroop and Durrung, Lower Assam, by the end of February 1864; but it was not until the 1st April that any work at all could be commenced. The further proceedings of this party may be best given in the words of the Surveyor himself:—

REASONS FOR DEFICIENCY OF WORK.—"The grants surveyed are small, some of them not being more than 5 acres in extent, and only one above 500 acres; they are scattered in the midst of low hills, and separated from each other by heavy jungle. Those near Gowhatty have been joined together and formed into a group, but the rest are far from each other, and will have to be laid down by triangulation. It is proposed to carry on, in future, a series of triangles along the banks of the Bramapootra, to connect Tea grants, and fix conspicuous points in the country, so that the results of the Waste Lands Survey may come of use in the preparation of the Geographical Maps of the country. The survey of each grant was started with a fresh Azimuth, determined by the observations of the sun. There were 4 large grants measured, aggregating 4,686 acres, but as their boundaries have since been disputed, they have not been included in the Table B as work finally done.

"Eight men were entertained in Calcutta, for the purpose of being trained as Surveyors, Computers, and Draftsmen, and about 50 Khalasees and Burkundazes. This Establishment left the Presidency on the 6th January, 1864, and accompanied Mr. Nicolson to Cherra Poonjee, whence they were sent across the hills to Kamroop, and arrived at Gowhatty at the end of February. Early instructions were solicited from the Commissioner of Assam, regarding the employment of the party; but no steps were taken by the authorities to assign work to the party until the 1st of April, when the Deputy Commissioner furnished a list of grants to be surveyed. By this time it was almost too late to commence operations on a large scale. The grants made over for survey were neither previously defined nor cleared of jungle. Mr. Nicolson had to demarcate the boundaries himself, and then have them cleared under the superintendence of his own men; consequently, although every one was out all day, the work went on very slowly, and very little was done by the time the party retired from the field. The accompanying recent correspondence will explain the difficulties the party experienced in carrying on the survey operations in Kamroop District.

"Of the 17 grants surveyed, 68 plans have been prepared, on scales varying from 10 to 4 chains to an inch. The Office Establishment suffered very much from sickness, and out of the men trained as Surveyors, Draftsmen, and Computers, only two have remained in the Establishment. Most of the field work was done by Mr. Nicolson and Golam Ruhman, and all the computations by the former and Rubiool Hosein the computer; the latter also had to assist in the current duties of this Office, as well as that of the No. 6 Topographical party."

146. **OUT-TURN.**—From the above, and the other extracts from the Surveyor's Report given in the Appendix, it may be supposed the area completed was almost nothing; only 17 small grants, including an area of 2,498 acres, or less than 4 square miles of country, were accomplished, and even this is said to have been only done by remaining out during the months of April, May, and June. Four other large grants, aggregating 4,686 acres, were also measured; "but," says the Surveyor, "as their boundaries have since been disputed, they have not been included as work finally done." Thus the deputation of this Surveyor, on a high salary, with his Establishment, may be said to have been almost entirely thrown away.

147. **COST AND RATES.**—The expenditure and cost incurred in these operations was of course proportionately large, amounting to no less than Rs. 16,080-12-0, and yielding an average rate of 4,123-4-0 per square mile, or Rs. 6-7-0 per acre. These unsatisfactory results may be said to arise from the absence of proper arrangements and system of laying down boundaries of grants and

Permanent	12,707	12	0	
Contingencies	3,373	0	0	
Total expenses	16,080	12	0	

allotments as applied for by intending purchasers, and owing to the impossibility of the Surveyors moving in the dense jungle, peculiar to Assam, before proper clearances are made.

148. **PRESENT PROSPECTS.**—Due notice of the party taking the field, during the present season, was given by Mr. Nicolson to the Commissioner of Assam, on the 20th October last. His letter and the reply thereto are appended for information. I am unable, however, to assent to the principle laid down by the Commissioner, *viz.*, that “the system on which the Government have authorized the making of grants has necessarily imposed the duty of ascertaining their precise limits on the Surveyor sent to survey them.” The Commissioner’s letter appears tantamount to telling the Surveyor to trust exclusively to his own resources, to do what he can, which, without local active co-operation, cannot be much.—(See *Appendix.*)

149. The demarcation of the precise limits of grants applied for, according to specified areas or boundaries, and which appear to be given out by the local authorities to applicants, must be determined and provided for in advance of the professional survey, if any sort of reasonable progress is to be made; so that, as in other parts of India, survey may proceed uniformly and regularly, and the utmost economy be ensured by avoiding the necessity of again going over the same ground.

150. **SYSTEMATIC SURVEY ESSENTIAL.**—But if tracts of jungle, or waste lands, are surveyed and laid out in convenient blocks and allotments, numbered on the maps, and then either sold or allotted, the Surveyor would know how to act, and be able to arrange his operations properly. As it is, from the very nature of the applications specifying particular limits made by interested parties, the grants are scattered about in the wildest confusion, leaving strips or patches of land, intervening here and there, to the detriment of all order, and obviously to the injury of Government interests. The surveys of such grants, even when made, can be turned to little or no use, beyond the ascertainment of the area of each property.

151. The Thákbest, or demarcation records and maps, furnished by the Deputy Commissioner, are said by the Surveyor to have been “carelessly drawn out, as they do not describe accurately the landmarks, natural or artificial, given for the identification of boundaries; and the plans appended to them are generally utterly unreliable, as much from the unscrupulous character of the men by whom they are executed, as from want of system in the method of the Ameen Survey itself.”

152. The Waste Land allotments in Kamroop lie chiefly in the midst of low hills, and, with few exceptions, not contiguous to, but separated from, each other. Traverse lines to connect one with another could not, says the Surveyor, be carried, except at enormous expense through such jungle as existed there. It was too late in the season to execute any triangulation for this purpose, as the jungle was springing up on all sides, and coolies could not be procured for clearing hills for Trigonometrical Stations.

153. **RECESS WORK NOT COMPLETED.**—For the above reasons, Mr. Nicolson states that plans of the grants, to the extent of 68, have been prepared on the scales varying from 10 and 4 Inches = 1 Mile, and on sale for the use of grantees only. Those for my Office and for the local authorities, he proposes to prepare as soon as the whole can be connected by triangulation, so as to be able to shew their relative situations one to another, and

render the information given available for Geographical purposes. All this delay in preparing plans of simple allotments was quite unnecessary. There seems to be some misunderstanding on the part of Mr. Nicolson, who has had no previous experience in such Revenue Detail Surveys, and much time has, I fear, been lost in consequence. What is required in the Kamroop District is a regular Revenue Survey Establishment, under competent management, as soon as available, to deal with the work in a practical and systematic manner, and to prosecute a complete and continuous survey of the whole District in a similar manner as ordered by Government for the Seeksagur District.

154. During the present season it is proposed for the Surveyor to connect all the allotments measured last season, one with another, by triangulation, whilst his Assistants will proceed with the measurement of other grants in the Kamroop District. Up to the date* of last field report, but little progress, however, appears to

* 1st January, 1865. have been made ; one boundary party was fairly at work from the 1st December, but two other boundary parties are therein stated to have been obliged " to remain idle till the 20th, on account of the boundary lines not being cleared and ready for survey." Mr. Nicolson states, he was also employed on demarcation duty during the month, in addition to his other professional occupations. I am of opinion that the employment of Mr. Nicolson on these operations, in the manner they are now conducted in Lower Assam, is a waste of money. The results of the past season are almost *nil*, and the prospects for the current season are not much better.

155. Specimens of the Surveyor's work have been specially called for.

156. CONCLUSION.—The duties connected with the Waste Lands, in addition to all the other Revenue and Topographical Surveys under the various Governments of this wide Presidency, coming under my supervision, are increasing so fast as to call for extended means for controlling and inspecting the same. The sphere of superintendence of the Surveyor General is quite beyond the powers of any single man to do real justice to ; the subject has long been before the Supreme Government, but as yet no practical results have ensued. A separate Superintendent for the Revenue Surveys in the Lower Provinces is now an absolute necessity, and I trust the subject may receive the consideration it deserves from the Bengal Government.

H. L. THUILLIER, LIEUT. COL.,
Surveyor General of India.

SURVEYOR GENERAL'S OFFICE, }
REVENUE BRANCH, }
Calcutta, 18th January, 1865. }

TABLE A.

GENERAL RETURN of professional work for Season 1863-64, from 1st October 1863 to 30th September 1864, exhibiting cost, areas, and average rates per square mile and circuit.

DIVISION AND SUPERINTENDING OFFICERS.	Name of District.	Number of Villages.	Average size of Village Circuits.	AREA SURVEYED.		Cost of Professional Charges including Military Allowances and Contingencies.	Average Rate per Square Mile.	Average Rate per Village Circuit.	REMARKS.
				In Acres.	In Square Miles.				
First or Northern Division R. B. SMART, Esq., Revenue Surveyor.	Tipperah and Noacolly.	1,977	392	7,35,007	1,160	Rs. 12 10 3	12 10 11	Mehalwaroe charges excluded.	
				1,49,760	234	42,677 10 7	32 10 11		
Second or Southern Division. CAPTAIN D. MACDONALD, Asst. Reve. Surveyor, in charge.	Maunboom	1,409	392	6,34,775	902	60,286 14 6	10 11 33	8 7 Ditto.	
Third or Eastern Division. N. T. DAVY, Esq., Revenue Surveyor.	Sylhet	777	523	6,26,518	979	40,525 1 1	4 53 2 6	Ditto.	
Fourth or Western Division. LIEUT. W. J. STEWART, Revenue Surveyor.	Shahabad, Sarun, Patna, Ghazeepoor, & Aasingurh.	1,185	479	5,67,744	887	51,420 0 2	57 15 6 43	8 5 Mehalaroe charges excluded. River area included.	
Fifth or Chittagong Division. J. H. O'DONEL, Esq., Revenue Surveyor.	Tipperah Hills Chittagong.	30 Sub-Circuits, 167 Triangles.	.....	22,43,483	3,505	52,354 4 0	14 14 11 0 0 0	
Sixth or Hazareebaugh Division. MAJOR G. H. THOMPSON, Revenue Surveyor.	Loharduggah or Chota Nagpoor.	678 63 Triangles and 52 Sub-Circuits.	1,195	6,90,543	1,079	42,941 15 4	39 12 9 74	4 8	
	Topographical			4,31,861	684	15,000 0 0	22 9 5 0 0 0		
	Mousahwar	5,916	506	31,05,247	5,321	2,27,741 3 10	42 12 9 38	7 11	
	Topographical			26,63,304	4,169	67,354 4 0	16 2 6 0 0 0		
Grand Total and General Average				60,73,641	9,490	2,05,065 6 10	31 1 6 38	7 11	* Exclusive of the 6th Division and Topographical work.

NAME LANDS.	Name of District.	Number of Allotments, Grants, or Estates.	Average size of Allotments.	AREA SURVEYED IN.		Cost of Professional charges inclusive of Contingencies.	Average Cost per Acre.	Average Cost per Allotment.	
				Acres.	Square Miles.				
WASTE LANDS. 1st or Darjeeling. E. T. S. JOHNSON, Esq., Asst. Reve. Surveyor, in charge.	Darjeeling Hill Work. Terai.	33 745 Jotes, &c.	2,464	81,320	127	11,274 10 3	0 2 24	341 10 6	
				167	1,24,063	194	7,275 3 7	0 0 11	9 12 3
2nd or Upper Assam. A. D. SMART Esq., Asst. Reve. Surveyor, in charge.	Seebsaugor...	53	1,907	63,010	100	14,169 4 8	0 3 61	267 14 7	
3rd or Lower Assam. J. O. NICHOLSON, Esq., Off. Survey r, in charge.	Kamroop and Darrung	17	147	2,408	4	16,090 11 10	6 7 0 0	945 14 9	
Total		849	321	2,71,860	425	44,920 14 4	0 2 10	67 8 4	
SURVEYOR GENERAL'S OFFICE, Rangoon Branch, 12th January, 1865.						Total			
						Mehalwaroe Charges	3,43,025 5 2		
						Arrears of uniform rate of Travelling Allowance for 1862-63	2,307 0 3		
							8,530 4 5		
						Grand Total	3,54,761 2 11	2 3 0 40	0 0

H. L. THUILLIER, Lieut-Col.,
Surveyor-General of India.

TABLE E.
GENERAL STATEMENT of sums actually drawn, inclusive of Guards, for the nine Revenue Surveys, during Season 1863-64, exhibiting amount drawn in each class.

MONTHS.	Supervising Officers and Contract Allowances including Military and Civil Servants' Officers.	European Assistants including Military Pay of Covenanted Officers.	Apprentices or Office Assistants.	Native Establishment including Messengers and Computers.	Guards.	Total without Contingences.	Total with Contingences.
October 1863	7,555 12 0	6,263 11 9	455 0 0	5,950 14 7	250 15 5	20,600 5 9	21,303 4 8
November "	7,028 5 4	7,329 13 10	300 0 0	11,131 2 4	384 15 10	26,174 5 4	26,506 8 0
December "	9,854 3 0	7,009 11 5	300 0 0	11,501 2 11	670 4 5	29,623 5 9	33,028 1 6
January 1864	8,972 8 1	6,911 15 4	300 0 0	11,668 15 6	776 0 0	26,859 6 11	33,757 10 0
February "	7,027 10 5	6,983 7 10	300 0 0	11,961 13 4	792 14 4	27,085 13 11	41,240 9 9
March "	6,991 12 1	7,488 3 0	300 0 0	11,940 2 5	794 7 2	27,494 8 8	39,683 5 8
April "	7,024 4 0	7,442 12 11	300 0 0	11,876 5 11	794 0 0	27,427 6 10	36,177 7 8
May "	7,024 4 0	7,109 9 7	300 0 0	9,833 10 9	615 3 5	24,792 12 0	29,075 14 9
June "	7,024 4 0	7,346 7 8	350 0 0	6,734 7 6	549 2 9	20,803 5 10	22,700 2 5
July "	7,024 4 0	7,016 6 0	275 0 0	4,311 9 5	315 9 3	18,942 12 6	19,303 10 6
August "	7,024 4 0	7,022 14 9	275 0 0	4,431 8 3	315 0 0	19,048 11 0	19,703 7 9
September "	7,024 4 0	6,947 0 9	275 0 0	4,069 9 4	315 0 0	18,630 14 1	19,248 11 3
Arrears of uniform rate of Travelling Allowance for 1862-63	.....	.....	.....	.....	.....	.....	8,530 4 5
Total	87,686 10 11	84,685 2 10	3,730 0 0	1,04,691 6 3	6,380 6 9	2,97,383 12 9	3,04,763 3 10

Of the above Statement, the following Table exhibits the Expenses, under each Class, in each of the Nine Revenue Surveys.

DIVISIONS.	Districts.	Superintending Officers and Contract Allowance, including Military Pay of Governmental Officers.	European Assistants, including Pay of Governmental Officers.	Apprentices or Office Assistants.	Native Surveyors.	Khansias.	Triangulators.	Guards.	Total, without Contingencies.	Total with Contingencies.
		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.
First or Northern Division	Tipperah and Neocly	9339 0 0	13,116 10 7	200 0 0	7,714 7 3	7,691 2 11	664 0 0	462 0 0	38,306 4 9	43,941 10 7
	Masuloom	14,643 3 1	14,339 9 2	830 0 0	7,569 2 3	6,589 10 9	444 6 1	906 4 0	46,319 3 4	50,711 4 9
Second or Southern ditto	Sylhet	8,712 0 0	9,461 10 6	3,100 0 0	6,665 6 7	7,197 8 5	469 8 2	547 1 6	35,173 14 4	40,984 4 3
Third or Eastern ditto	Shahabad, Sarun, Patna, Obseerpore, and Azamgarh	11,088 9 3	14,168 8 7	800 0 0	5,088 14 2	7,697 13 2	640 0 0	627 6 11	40,106 4 1	51,869 9 2
Fourth or Western ditto	Tipperah Hills--Chattagong	9,712 0 0	12,274 5 1	.....	6,361 4 1	8,657 5 5	.....	1,207 1 8	37,112 0 4	53,354 4 0
Fifth or Chittagong ditto	Loharduggs or Chota Nagpore	15,990 8 3	20,916 6 9	.....	5,678 8 0	7,898 9 11	.....	774 0 0	51,669 1 11	67,941 15 4
Sixth or Hazarebough ditto	Darjeeling	5,556 0 0	1,900 0 0	.....	2,789 10 0	4,618 8 5	.....	460 7 4	15,644 9 9	18,649 13 10
First or Darjeeling Waste Lands	Sehsaugur	5,658 0 0	.....	.....	2,238 0 9	3,159 10 0	.....	614 15 5	11,866 10 2	14,199 4 8
Second or Upper Assam ditto	Kamroop and Durrung	7,683 5 4	.....	.....	2,162 10 4	2,420 8 7	.....	541 3 10	12,707 12 1	16,080 11 10
Third or Lower ditto	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,630 4 5
AREAS of uniform rate of Travelling Allowance		87,539 10 11	84,695 2 10	3,730 0 0	46,163 15 5	56,220 13 7	2,307 9 3	6,380 8 9	2,97,293 12 9	3,64,783 2 10
		1,04,991 6 3								

SURVEYOR GENERAL'S OFFICE
 BANGALORE BRANCH.
 Calcutta, 18th January, 1865.

H. L. THULLIER,
 Surveyor General of India.

APPENDIX.

Extract from Annual Report from MR. R. B. SMART, Revenue Surveyor, 1st Division, Lower Provinces, to the Surveyor-General of India, No.—dated 1st November, 1864.

4. NATURE OF COUNTRY SURVEYED.—The Noacolly District lies on the Eastern side of the River Megna, between the District of Tipperah to the North, and the Bay of Bengal to the South. The District was originally formed by the deposits of the Rivers, and consists of large Islands, which form every year at the mouths of the Rivers, and finally become attached to the mainland. The general tendency is to increase to the South and West, thus extending perceptibly further into the Bay. The River Megna is also gradually moving towards the West, leaving much dry land on the Noacolly side. Dr. Hooker, in his "Himalayan Journals," remarks: "The mainland of Noacolly is gradually extending seawards, and has advanced four miles within twenty-three years; this seems sufficiently accounted for by the recession of the Megna. The elevation of the land is caused by the overwhelming tides and South-west Hurricanes in May and October; these extend for thirty miles North and South of Chittagong, and carry the waters of the Megna and Fenny back over the land, in a series of tremendous waves, that cover Islands of many hundred acres, and roll three miles on to the mainland." The water of the Megna off Noacolly is brackish; the tide rises from forty (40) to eighty (80) feet. The bore is very violent between the Islands of Hattayah and Sundee; the force of this tidal wave upsets the largest boats. The mainland is flat, and of a very low level, and, being subject to very heavy rains, the greater portion is for a third of the year under water. During the dry months the rivers and khalls remain open to Khoonda boats. In the rainy season it is possible to sail across the country in almost any direction.

Copy of Letter No. 64, dated Dacca, the 27th May 1864, from R. B. SMART, Esq., Revenue Surveyor, 1st Division, to W. GORDON YOUNG, Esq., Commissioner of Revenue, 16th Division, Chittagong.

With reference to your letter No. 35 of the 13th instant, I have the honor to submit the following geographical and statistical remarks on the Northern half of the District Tipperah.

To provide full and complete information would occupy much more time than I can conveniently spare at present.

The Northern half of the District is bounded as follows:—On the North by the District of Sylhet; on the South by the Road from Comillah to Daoodkandee; on the East by Hill Tipperah; and on the West by the River Megna, and the Districts of Mymensing and Dacca.

Superficially, the country presents a continued flat and open surface; the land consisting of extensive and well cultivated fields, and intersected in all directions with numerous rivers and khalls, which are partially influenced by the tides. Near the large rivers, the lands are under water during the rainy months. All communications and transport are effected by means of boats, except during the few months of the hot weather, when the village footpaths are resorted to. The khalls are navigable throughout the year for small boats. Hackeries are almost unknown.

The surface soil in the low lands is light and sandy, but in the higher parts the country possesses a deep alluvial soil, alternating with bands of clay and sand.

The produce consists of rice, safflower, peas, chillies, indigo, moong, linseed, khesaree, and pulses of many kinds. The cultivation of the sugarcane is pursued with some success near Doolalpoor. The process of bruising the canes is on a rude plan, and there is great room for improvement in the mechanism for extracting and preparing the sugar.

The kinds of crops or produce most profitable and chiefly cultivated are safflower, betelnuts, rice, moong, linseed, khesaree, and muskullye.

The imports are, oil, tobacco, English piece goods, shoes, umbrellas, brass and copper utensils, iron and steel, salt, building materials and cotton.

Cheese, fish oil, dried fish, and seetulpatee mats are largely exported to Calcutta and the neighbouring Districts. The art of curing fish is not known. The fish sent to market is unwholesome; they are dried without salt, and a large proportion used is far advanced in putrescence. The portion of salt which the poor are able to procure is very small, and the expenses incidental to transport the dried fish amounts to considerably more than the value of the article. Improved means of transport will stimulate production, and the rural population receive in exchange other articles of use.

The principal marts for exportation and importation are, Serael, Chonta, Kalee Cachoo, Talsuar, Brahmunbaree, Dowlut Dooree, and Baher Chur.

The villages are substantial, and have an abundant population. In the tract of country lying North of the road from Comillah to Daoodkandee, there are thirty (30) villages, with more than two hundred and fifty (250) houses each. Kalee Cachoo contains (1,425) fourteen hundred and twenty five houses; Serael, seven hundred and five (705), of which five (5) houses are pukka. The population of the same tract of country may be estimated at 3,52,310, reckoning at five (5) souls to a house.

The rivers and khalls in the Districts of Tipperah and Noacolly are very tortuous, and not sufficiently straight to admit of being profitably navigated by country boats. The cheapest mode of conveyance is by rivers, and the next by means of canals. A few short canals or cuttings will be of the greatest utility in inland commerce. The surface of the country having an inclination to the West, an adequate supply of water can always be obtained. The time required by the common country boats to complete their journey from Chetowsee village, about 10 miles East of Hajeegunge Thanah, and on the Southern bank of the Dukuttya Nuddee, to Chandpoor on the Megna River, is about seven (7) days. By deepening the Chandpoor Khall, from the Dukuttya Nuddee to the Megna River, a distance of only five (5) miles, the journey would be shortened by four (4) days. The village of Chetowsee is the grand medium through which the trade in rice, of the Districts of Tipperah and Noacolly, is carried on. Pariah Sloops and Coasting Vessels frequently come up to Chandpoor, and carry away large cargoes of rice. Another short canal from Hajeegunge to Megna River, running North, may be undertaken with advantage, by deepening the bed of a khall. The distance from Comillah to Daoodkandee by the Goomtee River can be considerably reduced by a few short cuttings. The Stations, of Comillah and Noacolly can be as easily connected. The road at present is in a wretched condition and not passable for wheeled conveyances. The khalls are not bridged.

The features of the country on the boundary of Hill Tipperah differ considerably from the Champaign. The hills present the appearance of table-land, with an average height of forty (40) feet above the plains, and are covered with forest in a state of nature, and wherever cultivated, which is only in the valleys between the ridges, good crops of rice are produced. From the yearly flow of water from the hills, a good supply is procurable at all seasons for irrigation.

The Tipperah Hills seem to offer advantages for cultivation, the soil being decomposed gneiss. Almost the whole cotton supplied to the neighbouring Districts is grown on these hills, and is bartered for salt, cloth, and poultry; but the value of the cotton far exceeds the amount of these goods; this, coupled with the duties which are exacted by the Tipperah Rajah, will diminish the cultivation of the cotton, and which, I believe, has already taken place.

Large quantities of building materials, such as timber, bamboos, thatching-grass, and rattan, are brought from the hills.

If Europeans were permitted to hold lands in Hill Tipperah, and to embark capital on cotton and tea, this rich and fine tract of country would be much improved. The cotton that is now raised and sent to the market by the Tipperahs, is badly cleaned, and fetches a low price. There is no reason to doubt that the Tipperah Hills adjoining British Tipperah, are capable of producing tea and cotton to any extent, if sufficient capital and enterprise were exerted in the undertaking.

"The art by which the products of labor are transferred from place to place, is essential to social advancement, and a people who do not possess it, cannot be said to have emerged from barbarism. In proportion to the perfection of this art, will be the extent of commerce. Without roads and incapable of communicating with others, a people must subsist exclusively upon the productions of its own labor and its own soil. Good roads have a tendency to stimulate consumption and production, and thereby advance national wealth and prosperity. The cost of transport has great influence upon the price of the products of agricultural labor. If means of transport be provided, the productions find their way easily to the great centres of population in the towns, and the rural population which produces them, receives in exchange articles of use and luxury of which they were before deprived." No improvement can be expected till a great change for the better be made on the state of the roads.

Extract from Annual Report from CAPTAIN D. MACDONALD, Assistant Revenue Surveyor, in charge second Division, L. P., to the surveyor-General of India, No. 3, dated 1st November, 1864.

8. MAIN CIRCUIT No. 11.—Main Circuit No. 11 comprising portions of Pergunnahs Chatna and Soopoor, and the whole of Bunkhunde, is situated on the extreme East of the season's work. It is a wild and jungly tract, undulating, but devoid of hills. The villages are very small, averaging 188 acres. This circuit was surveyed by Mr. A. Hyde and his party, and has an area of 151693.41 acres = 237.02 square miles, and contains 807 villages.

9. MAIN CIRCUIT No. 12.—Main Circuit No. 12 comes next in order, proceeding westwards. This is the largest circuit surveyed this season. It contains an area of 278274.73 acres = 434.80 square miles, comprising 333 Villages with an average area of 726½ acres.

The following Pergunnahs are included in this Circuit, viz., Churrah, Pulma, Rakab Ledhoorka, Bagda, Lallchada, (a portion of). Mr. Sinclair, assisted by Rampersad, office assistant, and the rest of his camp, surveyed this Main Circuit.

This tract is tolerably open and well cultivated towards the North-West, and in the immediate neighbourhood of Pooroolia, the Sudder Station of the District, which is situated in Churrah, but towards the South and West it is covered with dense jungle, composed principally of bastard Sâl, and abounds with all kinds of wild animals.

10. MAIN CIRCUIT No. 13.—Main Circuit No. 13 is a very small one, having an area of only 29602·38 acres = 46·25 square miles, and consists of a single Pergunnah, viz., Nagdah, comprising 46 villages, with an average area of 643½ acres.

Nagdah is open and undulating, but the soil is very poor. The villages are large, and some of them rather populous.

11. MAIN CIRCUIT No. 14.—Main Circuit No. 14 contains three entire Pergunnahs, namely, Mookoondpoor, Bygoonkodur and Jhulda, with an area of 127914·90 acres = 199·86 square miles, comprising 263 villages, with an average area of 486½ acres. This circuit forms the extreme western limit of the season's work, having for its western boundary the River Soobhunreeka, which separates it from the Singbhoom district. This is, on the whole, a very jungly tract. On the confines of the Hazareebaugh District to the North-West, and again to the Southern portion of this Circuit, there are several small ranges of hills. Both this and No. 13 Circuit were surveyed by Mr. William Ivey and his native assistants.

All the Circuits hitherto mentioned were surveyed Monzahwar.

12. Main Circuit No. 15 consists of the northern portion of a large Pergunnah, called Cossaye-para, which, as the name indicates, is situated to the South of the Cossye River. This tract was surveyed topographically on the scale of four inches to a mile. The portion of this Pergunnah surveyed, contains an area of 47290·02 acres = 73·89 square miles. This is the best cultivated Pergunnah that has been surveyed this season, and contains large and populous villages. It was surveyed under the superintendence of Mr. George Nash, who personally surveyed a large portion of it.

Extract from Annual Report from N. T. DAVEY, Esq., Revenue Surveyor, 3rd Division, Lower Provinces, to the Surveyor-General of India, No.—dated 12th November, 1864.

7. VILLAGE CIRCUITS AND BOUNDARIES.—Village boundaries and traverse Circuits were measured by Mootsudees, furnished with properly adjusted 5 and 6 inch Theodolites. The boundaries were measured as marked in the field, and on comparison were found to assimilate perfectly with the Thak Bust Records. In some instances, in the large Howhurs or Marshes extending over an area of many square miles, the field marks were destroyed by the early inundation; and the village authorities themselves were unable to identify their lands and point out the boundaries which they had mutually agreed to at the time of demarcation. In these cases village boundaries have been adopted from Thak Bust Maps, and have been so recorded on the Atlas Sheet Maps.

8. INTERIOR SURVEY.—The topographical details have been well filled up to the scale of the survey, and the local names of paras, Beels, and streams, &c., have been recorded. In the hills along the frontier covered with impenetrable jungle, it was not practicable to trace out the numerous streams, or to do more than to depict the general features of the country. The streams as far as they were measured are shewn on the Maps; but the delineation of the hills has no pretension to be considered a correct representation of the actual height and extent of a difficult undulating country and almost inaccessible hills. To follow out the numerous hill streams, and delineate the contour of

the ground, must be the work of a future day, when cultivation extends to the hills, and tea and cotton and other valuable products cover the hundreds of square miles of country now in a state of nature, and a *terra incognita* to all but wandering Kookee and Tipperah hill tribes seeking a location free from payment of rent.

9. HILL TIPPERAH FRONTIER.—The survey of the boundary between Sylhet and Hill Tipperah was commenced on the 12th January last, and continued under my personal supervision for four months, till the 14th May. The survey was resumed from Dholnah post, the easternmost limit of the boundary reached by Mr. Reynolds and myself in May 1860; and 80 miles of the boundary line to Haraguj G. T. Survey Station, were surveyed on the usual scale of 4 inches to the mile.

10. DISPUTED PORTION.—The arbitrators, Mr. F. Jones, Civil Superintendent of Survey, and Mr. W. F. Campbell, the
 No. 4438
 From Junior Secretary to the Government of Bengal, L. P.
 To The Secretary to the Board of Revenue, L. P.
 Fort William, the 26th November 1863.

Sir,
 WITH reference to the recent correspondence, relative to the Survey of the boundary between Sylhet and Hill Tipperah, I am directed to forward, for the information of the Board, a copy of the correspondence marginally noted, and to say that the Lieutenant-Governor entirely agrees with the Board that the object of the survey must be to identify Captain Fisher's boundary between Sylhet and Hill Tipperah, and that no question impugning the correctness of the boundary as laid down by Captain Fisher and approved by Government, must, on any account, be entertained. His Honor also agrees that no revival of disputes respecting the portion of the boundary line laid down in 1850 can be permitted.

F. Campbell, the Tipperah Rajah's Agent, met at the starting point a few days before my arrival, to adjust the first 2 miles of boundary which were disputed, owing to this portion not having been included in the arbitrator's award of 1850. The arbitrators having settled the disputed portion,

I have &c.,
 (Sd.) S. C. BARRY,
Jr. Secy. to the Govt. of Bengal.

No. 76.
 Office Memo.
 Forwarded to the Revenue Surveyor, 3rd Division, Bengal, in continuation of Office Memo. of this date, No. 15, and with a request that Mr. Davey will carry out the orders of His Honor the Lieutenant-Governor in their strict sense.

(Signed) J. E. GASTRELL, LT. COL.,
In charge Surveyor General's Office

Surveyor-General's Office,
 Calcutta, 4th December 1863.

the rest of the boundary was traced out and surveyed, in obedience to the orders quoted on margin. With Mr. Jones' co-operation and Mr. Campbell's indefatigable exertions in supplying local labor for jungle clearing, the frontier boundary was surveyed, and marked in the field by substantial wooden posts 6 feet long and 2 feet in circumference, at the several points shown on the accompanying plan.

11. FRONTIER CIRCUITS AND WASTE LANDS.—In connection with the frontier survey, all the lands beyond the demarcated limits of District Sylhet up to the frontier boundary were surveyed in nine separate traverse Circuits of 40 and 50 square miles each. These hill and jungle tracts, or great portion of them the Zemindars claimed as parts of their decennially settled estates in the plains under a special assessment locally known as "Joom-ka-Jumma;" but they were unable or unwilling to point out the boundaries of their Joom lands, and consequently their claims could not be defined by survey. This "Joom-ka-Jumma" I believe to have been originally an annual payment, levied in the shape of a capitation tax, by each person licensed to cultivate and cut wood and grass in the Hills similar to the prevailing assessment in Hill Tipperah, bearing the same name, and the Kapas (or cotton) Mohal Jumma in Chittagong. Whether the temporary assessment or tax was abolished at the time of the permanent settlement of Sylhet, and the Zemindars acquired rights to the lands with defined areas and limits, I have not the means of ascertaining; but till the rights of the Zemindars in the Hills are determined, the extent of waste land in the District available for sale under the rules cannot be ascertained. During the season, 337 square miles of Hill and forest lands were surveyed; and a still larger area of similar land remains for survey during the ensuing season in the south-east of the District bordering on Cachar.

12. CAPTAIN FISHER'S SURVEY OF 1824.—Captain Fisher's survey of Sylhet was more of the nature of a reconnoissance than a survey, and necessarily so when it extended to the impenetrable hills and forests bordering on the Tipperah frontier. It is not therefore to be expected that his survey of 40 years ago, will assimilate minutely with the work of the present day; and on comparison, discrepancies, though not material ones, as far as the question of boundary is concerned, will every where be found. The streams I have traversed by cutting through jungle every step of the way: Fisher could only have mapped from local information or a rapid eye sketch. The boundary marked in the field by Mr. Jones and myself, acting in concert throughout, is according to Fisher's map as closely as it could be followed. In the absence of a stream or a natural boundary, an imaginary line on the Map drawn through ranges of Hills, was our only guide as to the limits. In these instances the best boundary obtainable in the required direction was adopted without objection on the part of the Tipperah Rajah, who was throughout the operations represented by Mr. Campbell his agent. In one instance only, in the Adampoor Valley, Mr. Campbell raised doubts as to the identity of the

* Sonerai churra and Chum- Sonerai churra forming the boundary. It was therefore necessary to
panai churra. measure the two streams* running parallel to one another only a few

miles apart, to find the boundary represented on Fisher's map. In the Balusura and Rajkandy Hills, two G. T. S. Stations † were found conveniently situated for permanently marking the boundary; and as these hill ranges are not approachable, triangulated lines, from the source of the Oodnah Churra to Churamani station, and from the source of the Sonerai Churra to Hiara station, were the best lines of boundary obtainable. To make a detail measurement of these lines, would occupy a whole field season, and need special means and appliances to overcome the physical difficulties of a wild uninhabited country.

19. PUCKA PILLARS ON THE TIPPERAH FRONTIER.—The Tipperah frontier, as far as surveyed, is marked in the field by 9 pukka pillars and 35 wooden posts, as shown on the accompanying map. Whatever was practicable, has been done by the Civil Superintendent and myself, to ensure the identification of the frontier boundary; and it only remains to place substantial masonry pillars, at the several points we marked by wooden posts, to permanently define territorial limits, that have now been under authority, and at so much cost, risk and labour, been adjusted after 40 years of recurring disputes and litigation. During the present cold season, and while traces of the survey routes are to be found in the jungle, the exact spots indicated for pillars could easily be found by local enquiry and the aid of the survey map. But the delay of a year would obviously make the duty one of considerable difficulty; and in the event of the destruction of the wooden posts, a very probable contingency, a re-survey would perhaps be the only means of tracing the frontier line through the hills and jungles in which the greater portion of it is situated.

Extract from Annual Report from J. H. O'DONEL, Esq., Revenue Surveyor, 5th Division, Lower Provinces, to the Surveyor-General of India, No. 7A, dated Chittagong, 7th November 1864, for season, 1863-64.

17. CHITTAGONG HILLS.—The Chittagong Hills embrace an area of 6796 square miles, surveyed during the past three seasons, well adapted to the growth of cotton, tea, and coffee, with the great advantages of cheap and abundant labor, water communication and a sea-port for the transport of produce.

The revenue received as capitation tax from the hill cultivators is about 10,000 Rs., and the 5 per cent. toll levied on bamboos, grass, and timber, brings in about the sum, in all about 20,000 Rs. or in round numbers 3 Rs. a square mile. The Poang Rajah, Kalindeo Rane, and Kejosine Chowdree called Manrajah, local Collectors of the Kupas Mehal capitation tax, derive but a small income from the settlements made with them. The country is in much the same state as it was a century ago. Border raids have attracted notice at times. Applications have lately been made for grants of waste lands on the borders of the cultivated low lands.

The hill district might be rendered not only secure but profitable, by assigning grants of waste lands to European applicants rent-free, or at low rates in the uninhabited parts towards Kassalong and the Burkul range. It would perhaps be some inducement to enterprising Europeans to settle in those parts, they would have to pay much higher rates for labor and be exposed to attacks from the wild tribes. One of four medals was awarded for Chittagong tea at the Exhibition of Agricultural Produce in Calcutta last cold season.

18. **TIPPERAH HILLS.**—The Tipperah Rajah's country is a hilly tract, bounded by the Chittagong Hills on the South and South-East; by Sylhet on the North; by Tipperah on the West; and by the Cachar Hills on the North-East. For a few miles along the borders of Sylhet and Tipperah it is thinly inhabited, and to the East there is an extensive tract of totally uninhabited country. Between the plains of Tipperah and the Chutterchoora range there are five ranges of hills which run almost parallel with each other, and divide the country towards Sylhet into river valleys, through which flow the Kwabee, Dhulaie, Munnoo, Deogang, and Langaie Rivers, from South to North into the Barak or Soormah River. Below Latitude $23^{\circ} 48'$ these ranges of hills are connected by a transverse branch, which separates the head-waters of the Goomtee, flowing West into Tipperah, and the Myanee and Kasalooing Rivers flowing South into Chittagong.

19. **RIVER VALLEYS FORMING PART OF THE BASIN OF THE BARAK RIVER.**—The Kwabee River flows between the Saisum range on the West, 816 feet high, and the Atarmura range, 1434 feet high. It is navigable for small boats as far as the mouth of the Choungmroo Surra, higher up the stream canoes only can be used. The average depth of water is from 3 to 6 feet. The next river to the East, the Dhulaie, flows between the Atarmura and Longturai ranges of hills, the latter attains an altitude of 1250 feet. It admits canoes as far as the Degulpack Surra, where it ceases to be navigable. The Munoo River flows between the Longturai and Komunta ranges of hills, the latter attains an altitude of 909 feet at Komunta. It is navigable for boats as far as Pakou Surra, and for canoes a few miles higher up the stream. The banks are high and steep, the depth of water is about 8 feet, and the bed muddy and sandy. The boats generally used can carry 14 maunds. The Deogang River joins the Munoo 3 miles south of the Village of Kozing, and is navigable for canoes as far as Bayjah Surra. The Langai River, which flows to the West of the Chutterchoora range, 1500 feet high, has not been surveyed. All these five streams flow from South to North, and form part of the basin of the Barak River. Koileshur is the only village of note, with a Thannah and a Bazar, where cotton is chiefly bartered for tobacco, betelnut, and dried fish; 1530 Kookees occupy villages within 10 miles of Koileshur.

20. **SMALL LOW LAND VALLEYS.**—The hills to the West of the Saisum range are very low, and terminate on the plains of Tipperah. The highest Hill, Rokhia, is 288 feet. The Howra and Beejoy Nuddees drain small low land valleys chiefly occupied by Bengalees. Agartulla, the Capital, is situated on the former, and Besalghur on the latter.

21. **GOOMTEE RIVER.**—The upper portion of the Goomtee River Valley is bounded on the East by the Sudaing range, and on the West by the Sujai range; both ranges run nearly parallel with each other for 25 miles at a mean distance of 8 miles, and, being connected on the North and South by hills, enclose a basin of 200 square miles, containing the sources of the Goomtee, spread out like a fan. The only outlet is the narrow gorge in the Sujai range, 2 miles North of the Chouphroo Stockade, where it has forced a passage for itself, 2 miles long across which it rushes in falls and rapids called Demroo forming a deep pool, from whence it begins to be navigable for canoes capable of carrying 16 maunds, and flows in a North-Westerly direction as far as the Saisum or Deotamoora range, receiving the waters of the Eshurah and Moelak Surras and Songang Nuddee, in this part of its course and lower down the Maharance, Rancee, Kanee, Peethra, and Kasee streams called Gangs. It enters the plains of Tipperah near the village of Sonamoora, where a heavy transit duty is levied by the Rajah at Rs. 1-8 on every maund of cotton leaving the hills in the vicinity. The places of note on the Goomtee are Oodchipoor, the former Capital, Eshshurah at the mouth of the stream of the same name, where a Thannah was formerly posted, and Chouphroo Stockade.

22. The country to the South of the Goomtee River is traversed by three ranges of hills. The Tichna range, situated to the East of the Comillah and Chittagong road, attains an altitude of 345 feet at Eta, the Gojalia range 12 miles more to the eastward, is 470 feet high. The Mohuree, the Northern branch of the Fenny River flows from the slopes of the Tulamura range 760 feet high, and enters the plains near Bilinea Thannah. It is shallow and admits small Canoes; bamboocrafts are used for the transport of cotton, one of the most important products of these hills.

23. TOWNS.—Agartalla, the Capital, 30 miles from Comillah, is situated on the North bank of the Howrah Nuddee, it is open towards the West, and has low hills on the North and South. There are a few shops in the bazar, a Thannah and Jail for convicts. The new Town is merely a straggling village, composed of thatched huts; the only masonry buildings are within the walls of the Rajbaree, a small enclosure when the Rajah and his family reside. The population is about 875 persons. The old town, now in a ruinous state, 4 miles to the eastward, contains 1,000 inhabitants, being very unhealthy; about 20 years ago, the Rajah's family removed to the new Town. There are no fortifications either in the old or new Towns. Oodehpoor or Rangamatee, the old Capital, 19 miles from Comillah, was once a place of importance. The ruins of old buildings and temples mark the site. It is situated on the south bank of the Goomtee River, near a marshy plain, 4 miles long and 4 broad, surrounded on all sides by low hills. It is now a Police Station, occupied by a Jemadar and 6 Sepoys. The huts are chiefly built on the banks of large old tanks. There is a small golah where cotton, ivory, timber, and bamboos are bartered by the hill people for tobacco, salt, and dried fish. The town was attacked by Kookees of Chittagong in February 1861, who massacred and plundered the inhabitants, chiefly Bengalees, carrying away many captives. Constant alarms of massacre have reduced the number of inhabitants of Oodehpoor and four adjacent low land villages to 1,670 persons.

24. ROADS.—There are no roads, the country is traversed by ranges of hills covered with Forest; the only open spots are the cultivated low lands 48 square miles. The road from Comillah to Agartalla, situated within Tipperah, is pretty fair for about 15 miles to Nyanpoor Bazar, from thence there is a footpath across paddy fields to Agartalla. Ranges of hills extend North into the Sylhet District, making the route to Koileshur very circuitous. There is no direct inland communication between Agartalla and the Thannahs to the North and South within the hills.

25. THANNAHS, AND OUT-POSTS.—The principal Thannahs are Amleeghat, Bilinea, Odehpoor, Besalghur, Agartalla, and Koileshur. Amleeghat on the Fenny is half a mile outside the boundary. This Thannah was formerly posted at Munoo Suree on the stream of the same name, 2 miles above its confluence with the Fenny River, the surrounding country being uninhabited, it was removed to Amleeghat. Bilinea on the Mohuree River is a mile within the boundary. Odehpoor on the Goomtee is 19 miles east of Comilla. Besalghur on the Bejoy Nuddee is 4 miles from the plains. Agartalla has 2 small Pharees, Nauchneemoora and Moocheetola. Koileshur on the Munoo River, the only Thannah on the north towards Sylhet, is close to the boundary. Eshshurah Thannah is now deserted. 1 Jemadar, 1 Duffadar, and 6 Sepoys are stationed at each Thannah, they are armed with muskets. The Chouphroo Stockade was held by 200 Sepoys after the Kookee massacres in 1860-61, it has since been abandoned, as the members of the Rajah's family, who were the chief instigators, have now settled in the Chittagong Hills as cultivators under the surveillance of the Police, and Superintendent of hill tracts.

26. LOW LANDS.—The area of the low lands is 78,266 acres, of which 31252 acres are under cultivation; 9410 forest jungle, 31,068 grass jungle, and 6506 Rivers and Jheels. The cultivated lands within the Howra and Bejoy valleys amount to 19,508 acres, the rest of the cultivation is in small detached portions. The water poured into the valleys from the hills during the rains is so great as to inundate completely the greater part of the low lands, rendering them unfit for agricultural purposes. Wild elephants, tigers, buffaloes, and deer, are very numerous in the reed and high grass-jungles. The chief agricultural products are rice and cotton.

27. **POPULATION.**—The inhabited parts of the Tipperah hills is a narrow strip along the borders of Tipperah and Sylhet? the country to the eastward has not been occupied for the last century. The estimated population of 10,844 families or 54,230 persons, consists of 4 classes of people. Bengalees 26,305, Muncepoorees 9,505, Tipperahs 15,130, and Kookees 3280.—The Bengalees, chiefly Mahomedans with a few Hindoos, and Muncepoorees, cultivate the low lands. Narrow glens and small patches of low land near the plains, are generally cultivated by non-resident Bengalees of the border villages. The cultivators in the hills are Tipperahs and Kookees, they select small spots of jungle on the slopes of hills for the cultivation of rice and cotton. Every two or three years the ground is changed, as it becomes unproductive. Regular settlements are made with the Bengalees and Muncepoorees; the rates of assessment vary from 4 to 20 Rs. a Doon of 7 acres. The Tipperahs pay no land rent, but a capitation Tax, from 4 to 10 Rs. for every family. The Kookees who have chiefs of their own, pay nominal tribute to the Rajah, but receive in return presents of the same value.

28. **HILL TRIBES.**—The Muncepoorees, Tipperahs, and Kookees, like the hill tribes of Chittagong and Arracan, are aboriginal tribes of the eastern frontier. The Muncepoorees left their own country during the first Burmese War, and have since settled in Cachar and Tipperah. The Tipperahs form the main body of the hill population, they do not use milk as an article of diet, and their houses are raised on posts, two marked distinctions between them and the neighbouring Bengalees of the plains; they are not particular about their food, a dog or a snake is considered much the same as a goat or a fish, but mixing so much with Bengalees they have begun to acquire some notions of caste, if a Bengalee touches an earthen pot in a Tipperah hut it is at once broken and thrown away.

29. **KOOKEES.**—306 families of Kookees live within 10 miles of Koileshur, and 350 families occupy scattered villages 10 to 20 miles from *Conillah*. The Koileshur Kookees were engaged as combatants in the disturbances last September and October, when the villages on the Peetra Gang (North of Oodehpoor) were burnt down, and about 200 Tipperahs massacred. There are no other Kookees living within the Rajah's jurisdiction. The Cachar Kookees called Kochaks, live to the East of the Chutterchoora range, and the Chittagong Kookees live near the sources of the Kurnafolee River.

30. There is now no trace left of the Rajpoot adventurers who conquered Tipperah before it became a part of the Mogul Empire. Like the Sepoys of the Upper Provinces, they must have returned to their homes after certain periods of service, they do not appear to have settled permanently in the country.

31. **TRANSIT DUTIES.**—A person proceeding into the hills to purchase cotton, pays 5 Rs. for a pass, and 1 Rupee for a pass. to cut bamboos and grass &c. All along the Frontier from the Fenny River to Koileshur, Ghats have been established, where Tuhseeldars collect transit duties. The average prices of articles and rates of duty are noted below:—

						Rs.	As.
Cotton with Seed	17	Rs. a Mauud—Duty	...	...	...	1	8
Bamboos	8	„ a thousand „	...	...	...	1	0
Grass (in bundles)	12	„ a hundred „	...	...	...	2	0
Posts for houses	35	„ Ditto „	...	...	...	12	8

32. **REVENUE.**—A large part of the Revenue is derived from the cultivated lands, and the Capitation Tax paid by the Tipperahs in lieu of land rent. About 30 or 40 per cent. of the Revenue appears to be obtained from the transit duty on cotton alone. Fines imposed for offences, and receipts for passes, are also items of Revenue. The amount of Revenue is about 60,000 Rupees a year.

33. **RAJGER OFFICIALS.**—The arrangements for the administration of the hill country called Khanabaree, are mixed up with the management of the large Zemindarees held by the Rajah in Tipperah and Sylhet. The Rajah, his Prime Minister Brijmohun Thakoor and chief Officials reside at Agartalla. Mr. Campbell, the Rajah's Agent, and the head Dewan, reside at Comillah. Bhyrub Singh, who collects the transit duties, lives in the plains of Tipperah. Thannah Jemadars on 8 to 10 Rs. a month, are the only Officials stationed in the interior at Koileshur, Besalghur, Oodehpoor, and Bilinea. The Prime Minister decides all Revenue, Criminal, and Civil cases. There are apparently no established laws in force, and pecuniary fines and imprisonment are the ordinary punishments for every crime. Every Tipperah village chief, calls himself Chowdree, and the Kookees have chiefs of their own to whom they make presents of various articles of consumption.

34. The Rajah's income from the Zemindarees is said to be about one and a half Lac of Rupees. The hill revenue from all sources is about 60,000 Rs. Under proper management the hills may yield much more, but to restore order will prove no small difficulty to the Rajah, for the debts of the Raj are considerable, lands and taxes are mortgaged, and the oppressive mode of levying, not only the revenue but fees and exactions, have contributed to turn the country into a wilderness. No expensive establishments appear to be kept up, except a number of useless Peons and Sepoys. The maintenance for the members of the Rajah's family, and Lawsuits, must form heavy items of expense.

35. **TIPPERAH RAJ.**—After a delay of more than 2 years on the 26th September last, the important case involving the succession to the Tipperah Raj was finally decided by the Calcutta High Court in favor of Beer Chunder, nominated Joobraj or heir apparent, by his elder brother Essun Chunder, the late Rajah on the day before his death. The family of the Rajah is Hindoo of the Khetree or mercantile tribe of Rajpoots, they settled in the Tipperah Hills many centuries ago. By intermarriage with Munccepoorees and other Indo-Chinese tribes of the Eastern frontier, manners and customs have been changed, and the peculiarities of personal appearance have been obliterated. Hindoo festivals and ceremonies are still observed, but they are no longer considered Hindoos by persons of that caste. Primogeniture does not determine the right of succession, the choice of a ruler is restricted to the brothers and sons of the family. The reigning Rajah is the first Rajah, the second is called Joobraj or heir apparent, the third Burra Thakoor, and the fourth Kurta. The Joobraj succeeds to the highest dignity, and each inferior Rajah advances a step. Every Rajah tries to set aside the previous election of Burra Thakoor and Kurta made by his predecessor, there is thus much confusion and apparently no strict rule of succession. Almost every vacancy in the Raj has preceded disturbances and frequently domestic wars, and exposed the inhabitants of the hill country to frightful disorders. A nondescript force of Sepoys and Peons is kept up for the maintenance of order; both the Rajah and the turbulent members of his family have however looked for aid to the Kookees and called them in as combatants, relying on them to fight and settle their quarrels. The services of the Kookees can always be secured by hopes of plunder, or the means of payment. The Kookees are much addicted to drinking, and ready for mischief on their own account. The domestic wars have been mistaken for border raids by the Kookees, and it is only by enquiring into the causes of the massacres on the frontier that we can distinguish one from the other. There can now be no doubt that the uncertainty of succession has led to family quarrels, and is the chief cause of the disturbances and massacres in the Tipperah and adjoining Chittagong Hills.

36. **OBSTACLES TO PROGRESS.**—The obstacles to progress in an unexplored country, with large tracts utterly unknown and entirely uninhabited, and destitute of all resources, must be serious. The late Rajah had given a most reluctant consent for the survey of his country, and the authority of the acting Rajah was not acknowledged by all his subjects. The dispute between the rival claimants for the Raj was then unsettled, and serious disturbances had taken place two months before my arrival in the hills. 200 Tipperahs are stated to have been killed, several villages were burnt down, the inhabitants of which villages, and many others being alarmed, left their crops on the

ground, and were wandering about the plains of Tipperah for shelter and food. Under these distressing circumstances, the apathy and indifference of the people about a survey being made can be imagined. Preliminary arrangements for commencing work were delayed for a month and a half for want of proper assistance, and opposition on the part of the Rajah's Officials, who were afraid the country would be annexed. The prospect of completing a fair season's work was unsatisfactory and discouraging till the arrival of Mr. W. G. Young, Commissioner of Chittagong, at Comillah, about the middle of January, who set matters right, and again issued orders to the Rajah to assist the survey. After this period the survey was vigorously prosecuted, and every attempt made to make up for lost time. The field operations were not finally closed till the 8th July last.

Extract from letter No. 17, dated Burulea, the 28th January 1865, from Mr. J. PICKARD, Assistant Surveyor, Chittagong Waste Land survey, to the Surveyor General of India.

In reply to Office Memo. No. 24½, dated the 16th instant, I have the honor to state that the survey of the Chittagong Waste Lands was started by the Revenue Surveyor, J. H. O'Donel, Esq., in December last. The entire establishment, during the month of December, were engaged in the tract of hill country south of Main Circuit No. 18, and within Thannahs Nizam-poor, Islamabad, Raojan, and Chuckureea. The work accomplished under the superintendence of the Revenue Surveyor, during the month ending the 31st December, was:—

The clearing of the lines of one Main Circuit, No. 20.
 The surveying Do. Do.
 The clearing of ten (10) hill points.

2. The clearing of rays for triangulating the boundaries of tea lots being in a backward state, only ten (10) points having been cleared, no survey of them could be made.

3. About the 1st instant, agreeably to the orders received by the Revenue Surveyor, I was placed in charge of the Waste Land Survey, and the Establishment placed under me was:—

1 Sub-Assistant.
 2 Boundary Surveyors.
 3 Interior Surveyors.
 1 (Baboo) Office Assistant.
 4 (Scholars) Native Surveyors.
 60 Tindals, Measurers, or Khalassies.
 6 Guard Burkundazes.

4. Since the 1st, up to date, the progress made in clearing and surveying and the approximate area completed is as follows:—

Field Work.	{	Cleared 145 lines of Main Circuit, No. 21.
		Do. 40 hill points in do. No. 20.
		Surveyed 40 triangles in do. do.
		Do. 20 intersected boundary points.
Office Work.	{	Do. 6 tea lots.
		Proved by Traverse 1 Main Circuit, No. 20.
		Do. do. 40 secondary triangles.
		Do. do. 20 intersected boundary points.
		Do. do. 6 interior circuit of tea lots.

5. Approximate area completed 20 square miles. The low hills within this Main Circuit are chiefly of an uniform height, and are covered with heavy forest and brushwood; some idea of the difficulties attending the clearing of hill points may be formed from the fact, that the clearing parties,

each party with 20 coolies daily, can, with difficulty, in five days' time prepare one day's work for the surveying parties. Judging from the rate of progress made during the past two months, I do not think it will be possible for me to complete more than 150 square miles this season, or two blocks out of the three, for survey in this District.

6. I am using every means in my power to expedite the works. My entire Native Establishment are engaged directing the clearing; and the survey of the interior circuits, triangles, and boundary points, completed and proved by Traverse, have chiefly been performed by myself and Sub-Assistant Mr. Thompson.

Extract from Annual Report from E. T. S. JOHNSON, Esq., Assistant Revenue Surveyor, in charge Darjeeling Waste Lands Survey, to the Surveyor General of India No. 4, dated Darjeeling, 21st November 1864, for season 1863-64.

23. EXTRACTS FROM MR. COWLEY'S REPORT.—“ It (Hattigheesa) is divided into seven Mouzabs which are again sub-divided into jotes; the Mouzabs are : (1) Nuksurbaree, (2) Paneesalee, (3) Raneegunge, (4) Birnabari, (5) Boorhagunge, (6) Kokogaon, (7) Hattigheesa. All these, with the exception of Hattigheesa and Nuksurbaree which are thickly wooded, are under cultivation, yielding the following description of grain &c., rice the staple produce, mustard, linseed, hemp, tobacco, “ Bhang,” a species of pulse called “ Kooltee,” chillies, Onions, garlic, sugarcane, and the “ Pann” leaf. Small quantities of cotton are grown in the more elevated parts and towards the foot of the hills, and I dare say with better care and management, the country could be made to yield a much larger supply.”

FRUIT.—“ The plantain and jack-fruit thrive luxuriantly in every village without much care being bestowed on them. Mangoes, pine, and custard apples, and various other fruits are also cultivated by the villagers.”

JHARS.—“ The principal “jhars” or dense forests are the Sath Bhaia and Tookria, both of which are densely wooded, “ sal,” “ sissoo” “ palans” “ khyr” or catechu, soap warts, “ semur” or silk cotton, cane, “ toon” and “ Lowdha,” may be numbered among the finest forest trees, besides these there are other extensive Government forests to the North of the Purgunnah.”

FEATURES OF THE COUNTRY.—“ The general appearance of the country is low and marshy. It is extensively irrigated for the cultivation of rice, and besides cut up by numerous running streams.”

RIVERS.—“ The Mechi, which forms our Western boundary with Nepaul, and the Chenga, may be classed as rivers, they are rapid mountain torrents frequently inundating their banks, and devastating a great portion of the country round about.”

POPULATION.—“ The Population consists of Rajbunsees, Dhimals, Mahomedans, Liquor-sellers, Naies, Malees, and Mecbeas, who inhabit the North of the Purgunnah. The inhabitants of this part of the country are generally indecently clad, which is owing, I am told, to the oppression formerly exercised by the Native Chiefs, upon well dressed persons, who were also supposed to be wealthy and therefore frequently robbed of all their property.”

ROADS.—“ The only traversable Roads for wheeled conveyances, are the one from Darjeeling *via* Nuksurbaree, Khorabaree, and Dabeegunge to Purneah, and the other from Nuksurbaree, east *via* Bagdogra to Phansedewa. All the rest are mere foot paths, which are ploughed up and altered yearly.”

MARKETS.—“ Hauts or markets are held weekly, bi-weekly, and tri-weekly, in the following places where the produce of the District in vegetables, grain, fruit, hard-ware, cloths, fowls, ducks, geese, pigs, and sometimes cattle is disposed of :—(1) Nuksurbaree, (2) Khorabaree, (3) Adhebaree, (4) Butlasee and (5) Bandurjhoolie.”

POLICE OUT-POSTS.—"Thannahs or Police Chowkees are situated at Nuksurbaree, and Khorai-baree."

WILD ANIMALS.—"Among the wild animals are the elephant, the tiger, the leopard, the panther, a few bears, the wild pig, jackals, monkeys and squirrels of various kinds.

"Among the many species of deer, are the "Cheetul" or spotted deer, the barking deer, and the elk or branch-horned deer, but these are now nearly exterminated by the numerous "Shikarees," who pursue them for the sake of a livelihood, and sell their flesh at the different markets."

"The elephants which cross the Nepaul Territory annually, during the rice season, frequently destroy whole fields at night, and retire at day-break to the densely wooded and swampy forests of the Dulka Jhars."

"Tigers have been known to lay waste entire villages, on account of their depredations on the cattle, and occasionally on the villagers themselves."

"Among the feathered species are the wild fowl, pea-fowl, and snipe."

"Having given you as briefly as possible every information regarding Pergunnah Hattigheesa, I shall now treat of Pergunnah Patturghatta surveyed and demarcated by me."

PERGUNNAH PATTURGHATTA.—"It adjoins Pergunnahs Hattigheesa, which forms its Western boundary; the District of Rungpoor its Eastern, the foot of the Himalayah Mountains its Northern, and the District of Purneah its Southern boundary. About one-half of this circuit is covered with dense "jungle and grass over 20 feet in height."

POPULATION AND FEATURES.—"Its Population, features and peculiarities are the same as those of Hattigheesa."

MOUZAHs.—"It is divided into 12 Mouzahs, of which the following are demarcated: (1) Nijamturra, (2) Thakoorgunge, (3) Hetmoone, (4) Sengijhora, (5) Kunnurbunga Jalass, (6) Gosienpoor, (7) Doornigoori, (8) Attarakhye."

JHARS.—"The principal Jhars are the Dulka and Bagdogra, the former derives its name from its low and marshy condition. It is covered with impenetrable cane brakes, bamboos, and other thick jungle."

ROADS.—"The principal roads for wheeled conveyances is the one from Darjeeling *via* Nagurkote, through the Mouzah of Attarakhye to Phanseedewa, and another from Nuksurbaree *via* Bagdogra, to Phanseedewa. The third runs from Khorai-baree *via* Thakoorgunge and the Tank of Ghoospoorkree to Phanseedewa."

MARKETS.—"Haats" or markets are held at the following places (1) Thakoorgunge, (2) Bagdogra and Phanseedewa, the latter is the largest village in the District, and the head Quarters of a Deputy Collectorate."

POLICE OUT-POSTS.—"Police Chowkees" or "Thannahs" are situated at Phanseedewa and Thakoorgunge."

VILLAGES.—"The principal villages are those in which the markets are usually held."

RIVERS.—"The Rivers are the old and new Balasun, and the Mahanuddy, which forms the Eastern boundary; the two former annually overflow their banks and frequently change their course.

24. **UNNATURAL APPEARANCE OF STREAMS EXPLAINED.**—" In the above extracts no mention is made of the stiff and unnatural appearance of some of the streams. (Vide Pergunnah map). This is easily explained; the people of the District are in the habit of cutting small canals for irrigation purposes, which from the low nature of the country are often flooded, and the soil being of a loose description, they are converted into wide beds and thereby often causing the main rivers to leave their natural channels."

25. **THE DIFFICULTIES OF THE SURVEY.**—" The difficulties which the survey had to contend against, have already been given in last season's report; but besides those, I regret to say, that during the season under review, sickness has also to be taken into account. From the very commencement the establishment has suffered from sickness, chiefly Fever and Dysentery. In the Terai camp, as many as 50 men have been laid up at one time. The hill establishment also suffered a great deal, this season, from the same complaints. In fact, I may say of the whole establishment not more than 15 men went to their homes in health. Many of the classics who went home sick have since died, and but few of the old men have rejoined, of these many look unwell. The Recess hands also suffered, and one man in particular has been very bad, he had to be put on half pay; he has since rejoined, but I am doubtful if he will be able to go through the field season. I may here remark that both Mr. Cowley and myself also suffered, the effects of which still continue, but notwithstanding we have endeavoured to do our duty. The difficulties of procuring coolies are also felt very much, there being so much labor for them, that the coolies are quite indifferent about taking employment, except upon their own terms; this difficulty will still further increase, as soon as the Railway works are set a going in the valley of the Teesta."

Extract from Annual Report from A. D. SMART, Esq., Assistant Revenue Surveyor, in charge 2nd or Upper Assam Waste Lands Survey, to the Surveyor-General of India,—No. 4, dated Noakhachree, 3rd November 1864, for Season 1863-64.

3. **NATURE OF COUNTRY.**—" The country over which the season's operations have been conducted was similar to that reported on for 1862-63: dense forest with underwood of thorny creepers, which swarm with millions of leeches, after the first shower of rain in March; this style of country is generally preferred for the cultivation of tea, as high forest land is considered by planters more suited for the cultivation of the plant than grass land. Where the land still lies waste, and where ryots settle, is tall ooloo-grass, 15 to 20 feet high, with patches of cultivation here and there. The whole country is dense forest and grass-jungle, intersected by numbers of small jans or streams, which flow from the Naga Hills to the Berhampooter. The greater number of these streams are not navigable for even canoes."

4. "The soil in general is light and sandy."

5. "The produce consists of tea, rice, sugarcane, mustard, pulses, &c. &c. A very fair amount of traffic in silks is carried on by the Natives in this District, and I believe throughout Assam; some kinds of thread selling for as much as 18 Rupees per lb."

6. "The working classes of the population are chiefly Hindoos; there is a very fair proportion of Mahomedans also, who do no manual work, but get their living by keeping petty shops and trading. The population is very thin, and the question of labor is getting a serious one, common coolies getting as much as Rupees (6) six per mense"

7. "Tea Factories are studded throughout the District, every grant, in fact, in time will have a Factory."

18. PUCKA PILLARS.—“ Pucka pillars will be erected hereafter by the grantees at all bends in the boundaries of their grants ; care has been taken to have a station at the points where the pillars will be erected, with a view to the station being preserved. All maps issued to grantees show the spots or stations where boundary pillars must be erected.”

21. JUNGLE CLEARING.—“ The cutting of the boundary lines was done at the expense of the grantees who supplied coolies.”

22. OBSTRUCTION TO DUE PROGRESS.—“ On the 9th of October 1863, I addressed the Officer then in charge of the District on the subject of my taking the field in November, and solicited his taking early measures to have boundary lines cut well in advance of my parties. As stated in para. 2 of this Report, having received a list of grants for survey from the Officiating Deputy Commissioner on 16th of November only, my parties commenced to take the field on the 20th of November, when they found that not even a single grant had been commenced upon, and several grantees asking for further delay. I visited some grants personally, and throughout December addressed the Officiating Deputy Commissioner several times on the subject ; most of my letters were not even answered. My parties were left to get through the work the best way they could, or leave it ; consequently we were far advanced into January before a start could be made. This loss was never recovered, and my parties had to wait at each grant till the boundaries were cut.”

23. “ Throughout the season a grantee, who holds a Lakhiraj grant, unfortunately in the centre of my season's work refused positively to cut the eastern boundary of his grant, according to the boundary supplied me by the Officiating Deputy Commissioner ; I addressed the Officiating Deputy Commissioner several times on the subject, and at last extracted an order from him for the Mouzahdar to cut the boundary. On the Mouzahdar applying for expenses to enable him to do so, nothing more was heard from the Officiating Deputy Commissioner, and I was compelled to abandon the grant, which remains without its eastern and southern boundaries ; the latter boundary depending on the former. I received no assistance from the Officer then in charge of this District, and I believe it was entirely out of his power to render me any, there being no hold on grantees who refuse to cut their boundaries.”

24. “ Another very great cause of delay was the Mouzahdars not attending to the survey. The Officiating Deputy Commissioner, instead of issuing orders to them to attend to the survey, whenever called on by me, required a special application from me on each occasion, with a sketch map of the ground that I required their attendance in ; this, as you will at once see, caused a great amount of unnecessary delay ; and at the close of the season I was compelled to leave some portions of work, which could have been well finished, because the Mouzahdars would not attend, and it was too late to apply to the Officiating Deputy Commissioner for his orders. Mouzahdars, or some one deputed by them, must attend to the survey parties working in their Mouzahs, to enable the survey to progress at all satisfactorily.”

Extract from Annual Report from J. O. NICHOLSON, Esq., Officiating Surveyor in charge, 3rd or Lower Assam Waste Lands Survey, to the Surveyor-General of India, No. 4A, dated 24th December 1864.

4. WHEN THE OPERATIONS COMMENCED.—The Deputy Commissioner having on the 1st of April furnished the list of the grants to be surveyed, no time was lost to send out parties to survey ; but the boundaries of the grants being neither defined nor cleared previously, no actual work was done till some time after ; I had to ascertain the boundaries first, and then have them cut under the superintendence of the Surveyors and Tindals of the Establishment.

5. DESCRIPTION OF WASTE LAND ALLOTMENTS.—The waste land allotments in Kamroop are chiefly in the midst of low hills, and, with few exceptions, are not contiguous, but separated from each

other by heavy jungle; owing to these circumstances each grant had to be surveyed by itself, as soon as the boundaries were cleared and ready. Traverse lines through such jungle could not be carried on without enormous expense, so the surveys must be put together by triangulation. It was too late in the season to execute any triangulation for this purpose, as the jungle was springing up on all sides, and coolies could not be procured for clearing hills for trigonometrical stations.

6. DURATION OF FIELD SEASON.—The field operation had to be carried on rather late in the season, during the months of April, May, and June, when the rainy days become frequent, and jungle was springing up rapidly; but it was necessary to make a beginning, and do as much field work as possible, especially in order to train the new surveyors and make them, by practice, efficient for next season's work. The survey parties were not always engaged in surveying, because the boundaries could not always be marked out and prepared in time, chiefly owing to the difficulties of procuring labor for cutting the necessary lines for measurement. The planters never refused coolies, but at the same time they never could be made to give them without much trouble and delay.

8. THE DEMARCATION OF BOUNDARIES.—The boundaries had to be marked out by me before any steps were taken to clear them of jungle for professional survey. I often experienced much difficulty in coming to the right conclusion as to the proper boundaries, and in three or four cases failed to do so. The pottahs and other papers furnished from the Deputy Commissioner's office are carelessly drawn out, as they do not describe accurately the land-marks, natural or artificial, given for the identification of boundaries; and the plans appended to them are, generally, utterly unreliable, as much from the unscrupulous character of the men by whom they are executed as from want of system in the method of the Ameen survey itself.

Copy of letter No. B dated Cherra Poonjee, the 20th October 1864, from J. O. NICOLSON, Esq., Officiating Surveyor in charge, 3rd or Lower Assam Waste Lands Survey, to Colonel H. Hopkinson, Commissioner of Assam.

I have the honor to report to you that the waste lands survey party under my charge will be prepared to resume operations some time next month, and to suggest that you will be kind enough to issue such instructions as you may deem necessary on the subject of having the boundaries of the grants properly ascertained, marked out, and cleared of jungle, previous to their being assigned to me for survey. It is a subject, I beg leave to state, which demands the earliest consideration of the authorities, and I trust no further time will be lost in dealing with it in a practical and efficient manner.

I beg to inform you that last season my party had little or no employment in Assam, as no grant was made over for survey which had its boundaries properly defined by posts or other permanent marks. I had first to find out the right boundaries the best way I could, with what assistance I could obtain from the Chaodries of the Pergunnahs and then beg for coolies to have proper lines cut for measurement. Of course, under these circumstances, very little progress was made and much money wasted.

Copy of letter No. 15, dated Cherra Poonjee, the 27th October 1864, from A. C. CAMPBELL, Esq., Personal Assistant to the Commissioner of Assam, to J. O. NICOLSON, Esq., Officiating Surveyor in charge, 3rd or Lower Assam Waste Lands Survey.

REVENUE DEPARTMENT.—I am directed by the Commissioner of Assam to forward, for your information, the accompanying copy of a letter addressed to the Deputy Commissioner of Kamroop, with reference to your letter to this office, No. 1 of the 20th instant.

2. I am directed, however, at the same time to say that the Commissioner apprehends that in many cases you will have to proceed, as you did last year, in finding out the right boundaries. The system on which the Government have authorized the making of grants, I am to observe, has necessarily imposed the duty of ascertaining their precise limits on the surveyors sent to survey them.

Copy of letter No. 59, dated Cherra Poonjee, the 27th October 1864, from A. C. CAMPBELL, Esq., Personal Assistant to the Commissioner of Assam, to the Deputy Commissioner of Kamroop.

I am directed by the Commissioner to forward to you the accompanying copy of a letter to this office from Mr. Nicolson, in charge 3rd or Lower Assam Waste Lands Survey; and with reference thereto to inform you that the field season for surveying is now about to open, and the Commissioner will hold you responsible that Mr. Nicolson is not delayed this year as he was last by the want of finding boundaries of grants properly ascertained, marked out and cleared of jungle ready for him to survey. I am further to request that you will report immediately, for the information of the Commissioner, what work you have ready for Mr. Nicolson to commence upon.

Copy of letter No. 106, dated Fort William, 3rd December 1864, from Lieutenant Colonel J. E. Gastrell, Boundary Commissioner, to the Surveyor-General of India.

I have the honor to submit, for incorporation with your annual report on the surveys of Bengal, and for submission to His Honor the Lieutenant-Governor, a tabular statement, shewing the numbers and description of maps, &c., prepared in my office, in connection with my duties as Boundary Commissioner, during the past season 1863-64.

2. The final lists of thannahs, sub-divisions, and districts of the Nuddea Division, have been published.

3. The duplicate 4 inch = 1 mile thannah maps of the Nuddea Division have been prepared, and are now being finally examined and mounted prior to sending over one copy to your office and the other to the Commissioner of the Division.

4. These maps will shew all the new roads projected, or made up to date, in connection with the eastern and south-eastern lines of Railway. If possible, I intend inserting Ferry Fund Local Roads also.

5. The thannah and sub-divisional boundary descriptive statements of the Patna Division have been submitted to Government for publication, together with the description of the re-adjusted district boundaries and the transfer lists connected therewith. Illustrative maps accompanied these statements.

6. The final thannah lists, shewing names of each village, &c. &c., are in course of preparation.

7. The volumes of the Nuddea Division in the Surveyor-General's Office have been carefully corrected, and the names of the thannahs to which the various villages belong in each district have been inserted. Changes from one district to another have been noted in the volumes in like manner.

8. The descriptive statements of boundaries of thannahs, sub-divisions, and districts of the Bhau-gulpoor Division, are prepared and are undergoing final examination previous to submission for publication.

9. The statement of the Rajshahye Division will next be taken up.

10. The arrangement of the thannahs in the district of Sylhet will be commenced upon at once, on the basis of the survey already completed.

11. The smallness of my establishment on which I had the honor of remarking in last annual report, has been still more felt during the past year, and will form the subject of a separate communication, recommending its increase, in view to expediting the completion of the work in hand.

LISTS PREPARED AND FINISHED.

1. The proof sheets of the Statistical Registers of (13,167) villages, comprised in seventy-eight thannahs, and twenty sub-divisions of the Nuddea Division, and Abstract Statements for each thannah and sub-division, have been carefully examined and corrected.

2. Original descriptive lists of boundaries of five districts, twenty sub-divisions, and eighty thannahs, included in Patna Division.

3. Twenty-three original detailed Statistical Registers of 10,093, villages of twenty-three thannahs of the Patna Division, shewing names of Pergunnahs, Thakbust number, area of each village, also number of houses and population in each, and the grand totals of each for each thannah.

4. Original descriptive lists of the boundaries of three zillahs, eleven sub-divisions, and thirty-four thannahs, included in the Bhaugulpoor Division.

5 (Two) Detailed lists of transfers of (686) villages, from one zillah to another, of the Bhaugulpoor Division, viz. from Bhaugulpoor to Monghyr, and from Purneah to Maldah zillahs.

6. (Two) Detailed lists of (563) villages, transferred from one zillah to another of the Dacca Division, viz. from Dacca to Backergunge, and from Rungpoor to Mymensing zillahs.

MAPS PREPARED AND FINISHED—SCALE 4 INCHES = 1 MILE.

1. (One-hundred and twenty-eight) Thannah maps (duplicate) of the zillahs of Nuddea, Jessore, and 24-Pergunnahs, containing (12,964) villages, and an area of (9756.81) square miles.

2. (Two) Maps shewing the limits and the villages in detail round the cantonments of Chinsurah and Dinapoor, within which the sale of liquor is to be regulated under Sections 29 and 31 of Act XXII. of 1864.

3. (Twenty) Trace maps of (270½) miles of country, for lines of Eastern Bengal Railway Feeder roads prepared for the Superintending Engineer, 2nd Circle, and for the Commissioner of the Nuddea Division.

4. Ten plans of River Hooghly, bordering on 24-Pergunnahs and Hooghly Districts, for Mr. Leonard, Superintending Engineer, employed on special duty.

5. One map, containing (94) villages of Sub-Division of Barrackpoor, prepared for Cantonment Joint Magistrate, Barrackpoor.

SCALE 1 MILE = 1 INCH.

1. (Eighteen) Thannah maps of Zillah Nuddea, for the Deputy Inspector-General of Police.

2. (Two) Maps. containing (188) villages of the Sub-Division of Barrackpoor, for the Government of Bengal, and for the Commissioner of the Nuddea Division.

3. (Twenty) Sub-division, and eighty thannah, boundaries marked off, and colored on two copies of maps of zillahs Patna, Sarun, Chumparun, Shahabad, Behar, and Tirhoot, for local authorities, and or office use.

4. (One) Map of Zillah Jessore, shewing new sub-division and thannah boundaries, marked off and colored for Judge of principal Court of Small Causes, Jessore.

5. (Three) Maps of the Sylhet District, to assist in re-arrangement of thannahs and sub-divisions comprising an area of 3,100 square miles.

SCALE 8 MILES = 1 INCH.

(Five) Maps of the Patna Division, shewing the new district, sub-division, and thannah boundaries. Two for Government of Bengal, one for Commissioner of the Patna Division, one for the Surveyor-General's Office, and the other for the Office use.

SCALE 32 MILES = 1 INCH.

(One) Map shewing the new-sub-divisional arrangements of the Zillahs of Bengal since 1862, for Government of Bengal.

(Sd.) JAMES E. GASTRELL, *Lieut.-Colonel,*
Boundary Commissioner.

(True Copies and Extracts.)

(Sd.) H. L. THUILLIER,
Surveyor-General of India.

No. 62.

FROM

J. B. WORGAN, Esq.,

Comtd. Dy. Collr., in charge of the 1st Dn., Survey Superintendency,

TO

THE SECRETARY TO THE BOARD OF REVENUE, LOWER PROVINCES.

Dated Dinagepore, the 25th October, 1864.

SIR,

I HAVE the honor to submit, herewith, the Annual Statements for the 1st Division of Survey, for the year ending on the 30th of September 1864.

2nd. The work has been confined almost entirely to the compilation and translation of the Bengalee Registers, the re-copying of the damaged Thakbust Maps and Field Books, and the classifying and cataloguing of the records.

3rd. The Bengalee Registers have been all finished, and 13 only remained to be translated at the end of the year. Five Clerks are now at work on these.

4th. The Registers actually turned out during the year are shewn in the following Table.

NAMES OF DISTRICTS.	ENGLISH.				VERNACULAR.			
	Mchalwar.	Entries.	Mowzahwar.	Entries.	Mchalwar.	Entries.	Mowzahwar.	Entries.
Rajshahye ...	3	4,883	3	1,931	2	1,249	2	444
Bograh ...	2	2,674	2	1,552	2	2,674	2	1,552
Rungpoor ...	6	1,970	6	1,507	8	2,655	8	2,137
Dinagepoor ...	31	4,176	48	4,116	27	12,519	39	9,739
	42	14,003	59	9,106	39	19,097	51	13,872

5th. With one exception all the Registers that have been translated have been compared and signed by Baboo Tarak Nath Ghose, and only require my final inspection and signature.

6th. I have to-day sent off the English and Bengalee Registers of 7 Pergunnahs to Rungpoor, and shall get rid of the others shortly. I have, however, found corrections so often called for, after the completion of one Register, in the course of preparation of another, that I have on this account delayed the transmission of several Registers (which might otherwise have been sent earlier to the Collector) for purposes of reference. These will all now be despatched without loss of time. The risk of their being damaged by rain has also weighed with me for their detention hitherto. Since the last Annual Report 11 new Pergunnahs have been found in Dinagepoor and 2 in Rungpoor, requiring separate Registers, which will explain the excess of Registry work done over the Statement then given of work pending.

7th. The Field Establishment were employed in replacing damaged Maps, of which they copied 829.

8th. Of the 5 thikka or extra Mohurirs sanctioned by Government on the 9th January, 1864, two were employed on the same work under the Khusreh Moonshee, and made copies of 157 Maps. I inspected monthly the work done by this branch of the office and made a note of the out-turn. The other extra Mohurirs worked under the Mohafez, in arranging and making A, B, & C lists of the records, and copying damaged Field Books on to the Maps.

9th. All the Maps that had become thoroughly unserviceable have been restored, and the others have been made over to the Duftry to repair. Of those that I have seen, the fronts are sufficiently good, though the backs look very clumsy, from the untidy manner in which the Duftry has patched them, and for which he has been punished, as well as the Khusreh Moonshee who have charge of the Maps, and who ought to have known better than to allow it.

10th. According to the Board's last instructions on the subject, the re-copying of records has been since confined to the copying of damaged Field Books, of which there were no duplicates on the Maps, where the Map contained the Field Books, the Field Book, if any, attached to the Thakbust missil has not been restored. Further, all Field Books since copied, have been copied on to the Maps, they being beyond doubt safer with them in volumes than inside bundles of non-arsenicated and worm-eaten records.

11th. A considerable quantity of Ijbars and other papers were at one time restored, but this was subsequently discontinued on receipt of the Board's letter No. 8. of the 26th May last, and nothing has since been done in the way of copying such papers; they have, however, been stamped, and catalogued in Missilwari and Pergunnahwari lists. This work has been finished, as regards Bograb, Rajshahye, and Rungpoor, and the lists signed and dated for the two former districts by the Deputy Collector, and for the latter by myself. The classification of the Dinagepoor papers will take another two months.

12th. The Field Peakhar and 7 Ameens resigned since the beginning of July. I have not discharged any of the other Amilah, however, as we have more than enough money for the pay of the extra English Clerks as it is.

13th. Baboo Tarak Nath Ghose left this Office at the commencement of the Dusserah vacation. During the time he was under me he gave me entire satisfaction, being very assiduous and steady at his work.

11th. The Serishtadar, Brindabun Chunder Ghose, and the Amlah of both the English and Vernacular Departments, have been also diligent, and have afforded me satisfaction, with the exception of the Mohafez and Khusreh Moonshee, for whom I cannot conscientiously say the same, considering the state into which they have allowed their Offices to fall, and the apathy displayed by them, especially by the latter.

I have, &c.,

J. B. WORGAN,

Covenanted Deputy Collector.

No. 200.

FROM

J. F. BROWNE, Esq.,

Superintendent of Survey, 2nd Division,

TO

THE SECRETARY TO THE BOARD OF REVENUE, LOWER PROVINCES.

Dated Comillah, the 22nd December, 1864.

SIR,

I have the honor to submit, herewith, the usual Annual Statement for the year ending 30th September 1864; Supplementary Statements Nos. 3 & 4 will be submitted by the Collector of Burdwan.

2. The annexed Statement shews the amount of work performed by the Officers of this Division.

Name and Designation of Officers.	Villages demarcated.	Mehalwar Chucks measured.	Boundary disputes decided.	Inar and Adum Nishan cases decided.	Miscellaneous cases decided.	Appeal cases decided.	Duplicate copy of Maps.
J. F. Browne, Esq., Supt. ....	...	...	...	840	192	86	...
L. B. B. King, Esq., Asst.	209	1,573	72	318	91	...	374
Mr. W. Davey, Deputy Collr.	368	2,627	71	1,577	165	...	156
Baboo D. S. Mitter, Dy. Collr.	875	5,490	288	587	628	...	1,002
Total	1,452	9,690	431	3,322	1,076	86	1,532

3. In addition to the work noted opposite to Mr. King's and Mr. Davey's names, the Monzawar Registers of 26 Pergunnahs (21 of District Tipperah, and 5 of District Bhulloah) have been prepared under their direction. These Pergunnahs are not shewn in Statement No. 3, owing to their not having been submitted to my personal examination before the termination of the year under review.

4. As stated in my last yearly report, Mr. Davey and Baboo Brojosoonder Mitter, Deputy Collectors, were directed by me to complete between them the Nonkholly mainland, whilst Mr. King was entrusted with the demarcation of the numerous Churs situated along the Nonkholly seaboard: but the progress made during a few months' work, revealed the necessity of deviating from the above

programme, and I found it advisable to re-distribute the work, making over the Island of Dakhin Shabbazpooor, in as equal portions as practicable, to the three Officers abovementioned. The result has been most satisfactory, and I have now much pleasure in reporting that the bulk of the Bhullooh demarcation work has been completed, and that only 32 villages have still to be accounted for. Of course the re-examination in my Office of the Towjeenikashes filed by the Deputy Collectors is likely to increase the number of missing villages, but not to such an extent as materially to affect the balance of demarcation work to be performed.

5. The estimated area demarcated during the year is 1,385 square miles, contained in 1,058 village circuits, in which 9,690 chucks have been duly plotted. The above out-turn is undoubtedly satisfactory, when it is remembered that quite a third of the Ameen's time was wasted in proceeding from one Chur to the other. Boats cannot be secured without some delay, and many of the Churs are so scantily peopled that demarcations can only proceed at a very slow pace indeed.

6. Statement No. 1 shows that the number of disputes on the file during the season was 431. All these cases were disposed of before the end of the year. The large number shown on Baboo Brojsoondar Mitter's file, as compared with the files of the other Officers of this Division, is to be attributed, not to any laxity of supervision on his part, but to the existence in his circuit of a considerable number of Lakheraj estates, styled Khooshbar, certain lands appertaining to each of which the Rajah of Bhullooh systematically attempted to get possession of by means of a survey award, thus rendering the institution of numerous cases quite unavoidable.

7. The appeal column shows 26 cases pending on the 30th September. All these cases have since been disposed of.

8. The state of the remaining files calls for no remark.

9. The Towjeenikash work has been progressing most satisfactorily; the Towjeenikashes of 19 out of the 32 Pergunnahs situate in the Bhullooh District were filed before the 30th September, and the remaining 13 have been since completed.

10. I now come to the subject of Registry work, in which I am happy to report most marked progress. Out of the 82 Tipperah Pergunnahs, of which the survey has been completed, no less than 80 have been completed. The remaining 2 have since been registered. The Registry work of District Bhullooh is also in a very advanced state. The rough village registers of no less than 964 estates out of the 1,764 situated in District Bhullooh, have been filed by Mr. Davey, Deputy Collector. Under such circumstances, I may venture to observe that the Registry work of this Division has been carried on with a rapidity unparalleled in the annals of the Bengal Surveys, a result mainly due to the more methodical arrangement of Mehals, and greater simplicity in the registry of survey details which I have succeeded in introducing into this Division.

11. The total expenses of the year amount to Rs. 66,837-12-5, which gives an average of Rs. 48-4-1 $\frac{1}{4}$ per square mile.

12. Mr. Davey and Mr. King have been removed from this Division, where their services were no longer required. It is my intention to make over the Registry work of Bhullooh to Baboo Brojsoondar Mitter, who will also complete the small amount of demarcation work still remaining to be carried out in the Bhullooh District.

13. In conclusion, I shall add a few words with reference to the manner in which my subordinates have acquitted themselves of their duties. Mr. Davey has continued to give me satisfaction, and the

rapidity with which he has prepared the rough registry work of several Bhulloah Pergunnahs is most creditable to him. Mr. King has also carried on the work entrusted to him in a manner which deserves great praise. He has filed the Towjeenkashes of all the Pergunnahs entrusted to him for demarcation, and has also prepared, during the recess, the rough registers of 21 Tipperah Pergunnahs. I trust that his recent transfer to another survey will lead to a promotion, which he well deserves, and from which he has been debarred by being removed from the regular line to this division of the survey. Baboo Brojsoonder Mitter is also entitled to high commendation. His circuit, owing to the greater number of disputes which unavoidably occurred, (*vide* paragraph 6) was, by far, the most harassing of the three, and the very bad health from which he has been suffering all through the cold weather, rendered it most difficult for him to undergo the hardships which are inseparable from all duties of survey supervision. He has, nevertheless, succeeded in filing all his Towjeenkashes and deciding all his boundary disputes, with the exception of a few made over to Mr. King before the close of the survey year, a fact which tells highly in favor of his zeal and energy. I must also mention two of my ministerial officers, my Serishtadar, Bunmalee Sing, and my Peshkar, Bisessur Banerjee, to whose intelligence and industry the great progress made in the Tipperah registry work is to a great extent attributable.

I have, &c.,

J. F. BROWNE,

Superintendent of Survey, 2nd Division.

No. 42.

FROM

F. JONES, Esq.,

Officiating Superintendent of Survey, 3rd Division,

TO

THE SECRETARY TO THE BOARD OF REVENUE, L P.

Dated Dacca, the 3rd December 1864.

SIR,

I HAVE the honor to submit the Annual Returns of this Division for the year ending 30th September 1864.

2. The annexed Statement shows the amount of work performed by the Officers attached to the Division:—

NAMES OF OFFICERS.	Number of Thakbusts.	Maps made over to the Revenue Surveyor.	Boundary disputes decided.	Enquiries regarding excess and missing villages.	Duplicates of Maps.	Miscellaneous.	Appeals.	REGISTERS, MOUZAHWAR AND MEHALWAR COMPLETED.		
								Bengalee.	English.	
Dacca Registers.	Mr. F. Jones, Officiating Superintendent of Survey, 3rd Division, from 1st October 1863 to 30th September 1864.	2	830	...	412	17	6	53	3	17
	Baboo Sat Cowry Roy, Uncovenanted Deputy Collector from 1st October 1863 to 30th September 1864	...	...	...	10	206	16	...	27	...
	Moulvie Mahommed Saduck, Uncovenanted Deputy Collector, from 1st October 1863 to 30th September 1864	...	...	9	378	289	454	...	...	...
	Mr. H. J. Reynolds, Officiating Collector, from 13th December 1863 to 28th January 1864; and Mr. E. Drummond, Collector, from 29th January to 20th September 1864	...	...	...	145	...	199	...	8	8
	Baboo Doorga Persad Ghose, Uncovenanted Deputy Collector, from 6th to 30th September 1864	...	...	...	166	...	239	...	...	...
		2	830	9	1,111	512	914	53	38	25
Mr. J. C. Geddes, Assistant Superintendent of Survey, 3rd Division, from 1st October 1863 to 30th September 1864.	67	...	...	...	422	...	...	...	...
Mr. J. O'Keefe, Assistant Superintendent of Survey, from 16th November 1863 to 9th June 1864	7	...	4	...	71	...	...	...	...
Mr. C. A. Kelly, Assistant Superintendent of Survey, 3rd Division, from 1st January to 30th May 1864	87	...	4	...	169	5	...	...	...
	13	830	17	1,111	1,122	919	53	38	25	

3. The following changes in the personnel of the Division have occurred during the year.— Deputy Collector Moulvie Mahommed Saduck has been transferred to the General Department, his services being no longer required in the Division. He made over charge of his office on the 1st October last. Deputy Collector Baboo Doorga Persad Ghose, who was directed to take charge of the Dacca Registers, joined his appointment on the 6th September. Messrs. O'Kinealy and Kelly, the two extra Assistants appointed to carry on the Cachar demarcations, were re-transferred to the General Department, the former quitting Dacca to join his appointment at Maunbhoom on the 10th June, and the latter to join his appointment at Chittagong on the 30th May.

4. The progress made by the Dacca Registers during the year has not been very satisfactory, but, under the circumstances, this is not surprising. For the greater part of the time they were under charge of the Collector, who could of course spare but little time for them from his other duties, and who had no special acquaintance with survey work. Besides, the Establishment at his command was a very limited one, consisting only of 3 Amlah and 10 Ameens supplied from my own Establishment. I hope, however, shortly to be able to report very satisfactory progress, as the Deputy Collector (Doorga Persad Ghose) now in charge of the Registers is an Officer of well known ability and industry, and thoroughly acquainted with Registry work, and he has besides a large and efficient Establishment.

5. The Sylhet Registry work has been going on steadily during the year; 35 Registers in Bengallee and 17 in English have been prepared, making with those prepared in former years, a total of 55 in Bengallee and 35 in English. The work has been carried on both in my own Office and in that of Deputy Collector Baboo Sat Cowry Roy, but chiefly in the latter. The Deputy Collector deserves great credit for the very satisfactory progress made.

6. With the exception of the measurement of the Khas Mehals referred to in my last Annual Report, and of the renewal of marks in the tract taken up by the professional parties, there was no Field work done in the Sylhet District during the year. There were, however, a considerable number of enquiries regarding missing villages remaining to be made. These, the Board are already aware, were entrusted to the Deputy Collector, Moulvie Mahommed Saduck, who had completed them by the end of May.

7. The Cachar demarcations were conducted during the cold weather by the Assistants, Messrs. Geddes, O'Kinealy, and Kelly. Owing to circumstances already fully detailed in my letter to the Board, No. 117 of the 13th July 1864, the out-turn of work was much smaller than had been anticipated, but the Board have acquitted me of blame in the matter, and the Assistants did all in their power to secure a more favorable result. Messrs. O'Kinealy and Geddes, in particular, were very successful in the management of their field parties, and in obtaining the assistance of the grantees.

8. The number of boundary disputes was, as might have been expected, very small. Nine of them related to the Sylhet District, the rest to Cachar. All have been disposed of.

9. Of the 53 appeals on the file during the year, the greater part were instituted late in the previous year. None remain pending.

10. In my last Annual Report I mentioned that at the close of the year 335 Mymensingh copy Maps for the Board still remained unfinished. These have been completed and forwarded to the Collector of the District.

11. The Board are aware that Mr. Geddes, the Assistant Superintendent, has already recommenced work in Cachar. With such a large field party as he now has under him, 6 Peshkars and 60 Ameens, he ought to be able to complete the demarcation of the remaining applications by the end of May next. At the same time it must be borne in mind that the boundaries of Cachar grants lie through dense forest jungle, and rapid progress cannot therefore be looked for, and it is, moreover, possible that the fresh applications for lands under the new Rules may be numerous.

12. Deputy Collectors Baboo Doorga Persad Ghose and Baboo Sat Cowry Roy will remain at head-quarters during the cold season, the former superintending the preparation of the Dacca Registers, and the latter those of Sylhet. With regard to my own movements, I have already informed the Board that I shall be sufficiently occupied in completing the definition of the Tipperah Frontier, and in laying down a portion (about 11 miles, left undefined on account of the Cossya rebellion) of the boundary between Sylhet and the Cossya Hill States. I hope, however, to be able to visit Cachar at some period of the season, in order to satisfy myself that the work is proceeding satisfactorily. The 4 Peshkars and 40 Ameens, who are to be employed in renewing the field marks this season in Sylhet, can, on the completion of this duty, be either dismissed, or placed at Mr. Geddes' disposal as circumstances may require.

13. The ministerial officers of the Division have all worked well during the year under review, but I wish in particular to mention the Sheristadar of my own office, Moyzooddeen Moonsee, and the Head Writer, Kallee Persad Dutt as deserving Officers, who have given me great satisfaction by the manner in which they have discharged their duties.

I have, &c.,

F. JONES,

Offg. Supdt. of Survey, 3rd Division.

No. 187.

FROM

F. H. PELLEW, Esq.,

Superintendent of Survey, 4th Division,

TO

THE SECRETARY TO THE BOARD OF REVENUE, L. P.,

Dated Burisaul, 2nd November 1864.

SIR,

I HAVE the honor to forward the Statements for the year 1863-64.

2. Progress has been made in the Jessore registry work, though, in consequence of the prolonged absence of a Deputy Collector, there has been a falling off. The following shews the number of vernacular village entries made in each year from the commencement:—

	Estate Registers.	Village Registers.	Total.
1858-59	872	800	1,472
1859-60	5,154	2,507	7,661
1860-61	1,844	3,192	5,036
1861-62	463	4,138	4,601
1862-63	5,766	4,005	9,771
1863-64	3,877	2,762	6,629
Total	17,776	17,394	35,170

3. There remain 19,821 entries to be made. In 1862, I reported that one-third had been finished : last year, that half only remained ; little more than one-third now remains unfinished.

4. In Furreedpoor the register entries made in each year from the commencement are as follows :—

	Estate Registers.	Village Registers.	Total.
1859-60	13	13	26
1860-61	3,605	4,453	8,058
1861-62	6,144	7,696	13,840
1862-63	715	10	725
1863-64	2,036	3,857	5,893
Total	12,513	16,029	28,542

There remain only 3,037 entries to be made.

5. During the early part of the year the Deputy Collector, Baboo Mohendernath Bose, had still a considerable number of boundary disputes to investigate and decide ; still he was less entirely engrossed with them than in the previous year. They are now all decided.

6. The vernacular registers completed in each year respectively are as follows :—

	Estate Registers.	Village Registers.	Total.	Average number of entries in each Register.	Total number of entries in the Registers.
1859-60	6	6	12	2	24
1860-61	21	21	42	30	1,260
1861-62	12	12	24	68	1,632
1862-63	5	0	5	414	2,070
1863-64	10	12	22	385	8,484
Total	54	51	105	.....	13,470

This shews, if we consider the size of the Registers completed, a very rapid improvement in each year.

7. In Backergunge the village entries made in vernacular Registers, whether complete or incomplete, since the commencement are as follows :—

	Estate Registers.	Village Registers.	Total.
1861-62	11	10	21
1862-63	1,409	1,466	2,875
1863-64	1,696	1,386	3,082
Total	3,116	2,862	5,978

and, as far as regards completed Registers only, the following shews the progress made :—

	Estate Registers.	Village Registers.	Total.	Average number of entries in each.	Total number of entries in the Registers completed.
1861-62	2	2	4	5	20
1862-63	9	7	16	20	320
1863-64	6	7	13	226	2,938
Total	17	16	33	...	3,278

as is shewn in Statement No 1. The Backergunge Establishment have still on their hands a considerable number of enquiries into excess and missing villages, and until these are cleared off, only a few officers can be employed in preparing Registers. In 1862, these enquiries were completed in regard to 44,000

village entries; in 1863, in regard to 51,026. In the present year, in regard to 56,728. There remain 7,052 village entries, the enquiries regarding which are incomplete, though commenced on. These enquiries form the arrears shewn in column 3, head Izad and Adumulnishan cases of Statement No. 1.

8. The appeals from the Deputy Collectors' decisions were very few and on most frivolous grounds, as they had all been carefully enquired into on the spot.

9. All the arrears of the Kotwalipara boundary disputes, alluded to in former reports, have been cleared off. These cases amounted to 1,400, yet only one appeal was made to the Commissioner from the orders of the Survey Authorities, and it is therefore to be hoped that the distribution of the lands of Purgunnah Kotwalipara has been correctly made. The cases appear to me to have originated less from litigiousness than from ignorance on the part of both the contending parties as to the boundaries of their lands. This ignorance arose from the practice prevalent in the Purgunnah of the owners of estates selling specific portions of them for a price paid down. Many of the Talukdars, though paying the Government revenue, are not in possession of a single acre of land, which has all been sold by their fathers or by themselves. Where these sales had been made long ago, the man in possession was sometimes unable to say from what estate his ancestors had purchased, and the nominal proprietors were equally ignorant of the position of the lands which had been sold. The survey will stop this confusion of lands for the future.

10. The following is a synopsis of the Registers, English and Bengalee, completed during the year :—

	ESTATE REGISTER.		VILLAGE REGISTER.	
	English.	Vernacular.	English.	Vernacula.
Jessore	12	1	12	2
Furreadpore	12	10	9	12
Backergunge	5	6	5	7
Pubna	1	0	1	0
Total	30	17	27	21

The Pubna District is now finished, the last Register having been sent to the Collector.

I have, &c.,

F. H. PELLEW,

Superintendent of Survey, 4th Division.

No. 34.

FROM

G. F. COCKBURN, Esq.,

Commissioner of Patna.

TO

THE SECRETARY TO THE BOARD OF REVENUE, L. P.

Camp Chuprah, 17th December, 1864.

SIR,

ADVERTING to your letter No. 19 of 12th September last, I have the honor to submit, herewith, the annual Statements Nos. I., II., and IV., in connection with the demarcation of the banks and islands of the Rivers Gauges, Gogra, and Gunduck, in the Patna Division, for the year ending 30th September 1864.

2. Statement No. III. is blank, and so are the first and second sub-headings of Column 5, Statement II. The Khusrah and Mouzawar and Mehalwar Registers prepared during the late general survey of the Districts, having been in existence at the several Collectorates, were made use of during the present operations, which were undertaken in accordance with the Board's instructions as contained in their letter No. 1, dated 22nd May, 1863.

3. The demarcation party consisted of three Deputy Collectors, who each joined on the dates noted in the margin, with Moulvee Ahsan Ahmed, working as a Superintending Agency over the other two, and a staff of 6 Peshkars and 60 Ameens, and commenced operations simultaneously in all the Districts on the 7th November 1863; but the services of Moulvee Fida Alli were in a short while required for other duty, and he was relieved from this Department on the 18th January, 1864.

4. The total number of village circuits demarcated in the season under report is 2,281; the professional survey of the said tract not having yet been completed, it is difficult to ascertain the exact number of square miles demarcated. Deputy Collector Ahsan Ahmed, however, estimates at 2,547 square miles, as detailed below.

Districts.	No. of Village Circuits.	Square Miles.
Shahabad	356	281
Sarun and Chumparun	798	1,066
Patna	556	536
Tirhoot	571	664
Total.....	2,281	2,547

5. The following is a synopsis of the work performed for each of the Districts to which the operations have been extended :—

DISTRICT.	NAMES OF OFFICERS.	Number of Villages and Village Circuits demarcated.		Number of completed Thakbusts made over to the surveyor.	Boundary disputes.	Excess and missing land cases.	Duplicate Maps.	Miscellaneous cases.	REMARKS.
		Villages	Village Circuits.						
Shahabad, Sarun, and Chumparun	Moulvee Ahsan Ahmed Khan ...	333	356	333	64	21	0	111	In addition to these, 35 Moojmilias and 13 Haddus Registers were prepared and forwarded to the Revenue Surveyor.
	Moulvee Fida Alli Khan and Baboo Hurshahoy Sing ...	493	798	504	52	3	510	142	
Patna	Moulvee Ahsan Ahmed ...	600	656	499	7	1	479	41	
Tirhoot	Ditto ditto and Baboo Hurshahoy Sing	584	671	459	0	0	671	49	
Total		2,320	2,291	1,908	129	25	1,600	343	

6. Column 5, Statement No. I., contains only as many Maps as have been actually forwarded to the Revenue Surveyor, whereas other Maps have been detained in the Deputy Collector's office, pending decision of the objections laid against them by the proprietors of the villages, &c.

7. The number of boundary disputes on the file during the year were 196, of which 129 have been disposed of, leaving 67 pending on the 30th September last; but these latter consist chiefly

of the tracts demarcated but not yet surveyed; and local enquiries regarding them had been postponed, owing to the submerged state of the country. A great many of the contending parties have petitioned for disposal of their cases, in accordance with the former survey, which of course cannot be done unless the re-survey takes place. Four of the pending cases also refer to such tracts which have already undergone the professional survey, and are the following:—

One between Sarun and Azimghur.

Three between Shahabad and Ghazeeপুর.

Commissioner to Board, No.
125 of 13th July 1864.

Board to Commissioner, No.
17 of 18th August 1864.

8. One case of boundary dispute was disposed of by Mr. Deputy Collector O'Reilly, in charge of the Sewan Sub-division—*vide* correspondence noted on the margin.

9. The arrear of excess and missing land cases is in consequence of the professional survey not having kept pace with the demarcation, and of duplicate Maps, because many such uncopied Maps have been furnished to the Revenue Surveyor, in order to expedite his operations and prevent the least impediment to them. The arrears of miscellaneous cases are proportionately light and call for no special remark.

10. With regard to appeals, there had been 28 on the whole, and of these 18 have been disposed of by the Collectors of Patna and Shahabad, and in all of them the orders have been upheld. The remaining 10 appeals are pending with the Collector of Sarun, who, I understand, has not as yet been able to dispose them off, but will probably do so without delay.

11. At a rough glance of Statement No. I, the work performed by Deputy Collectors Ahsan Ahmed and Hurshahoy Sing, appears to be very disproportionate; the correspondence cited on the margin of paragraph 8th above reconciles the matter in some respects, and it is also explained that the villages and village circuits of the latter were much larger in size than that of the former; in other words, the quality of the work which fell to the lot of Baboo Hurshahoy Sing, it is said, nearly compensated for the quantity of the work of the other Deputy Collector.

12. Statement No II. shows that the demarcation work of the Patna Division is completed, as far as field work is concerned. As regards the erection of masonry pillars at the tri-junction of villages, only 162 of them have been erected, and 1,813 held in abeyance, as reported on in my letter No. 331 of 21st ultimo.

13. The total expenses of the year amount to Rupees 21,451-12-3, exclusive of the cost of erection of masonry pillars, as shown in Statement No. IV. which gives an average of Rs. 8-6-9 per square mile, and Rs. 9-6-5 per village circuit, thus leaving a large amount sanctioned in the Budget unexpended; and considering the difficulties which at first presented to the demarcation party, I think the expenses are by no means disproportionate to the quantity of work gone through.

14. The arrangements for next season's work are as follows:—Moulvee Ahsan Ahmed will have the country south of the Ganges, extending all along the Bhaugulpore Division; and Baboo Hurshahoy Sing, on the other hand, the country north of the Ganges.

The Field Establishment, consisting of 5 Peshkars and 50 Ameens, has already been deputed to work in the said Division; but the Deputy Collectors, especially Moulvee Ahsan Ahmed Khan, will for the present remain in the jurisdiction of the Patna Division, investigating cases, assisting the Revenue

Surveyor in his operations, and looking after the erection of masonry pillars. In fact, the Moulvee cannot conveniently remove himself and his establishment for good from this to Bhangulpore, until the professional survey of my Division is completed; but he must now and then make short trips to Bhangulpore, Monghyr, and other places, in order to superintend that portion of his work there which has already been commenced upon. Bahoo Hurshahoy Sing will in the meantime be desired to remove self and his camp to the next Division as soon as possible, as the working season is now on hand and should not be lost.

15. In conclusion, I beg to record my entire satisfaction with the manner in which Deputy Collectors Moulvee Ahsan Ahmed Khan and Baboo Hurshahoy Sing have performed their duties; the former is a most experienced Officer in the department, and has well borne the reputation hitherto given him. The latter, though new to his work, has acquitted himself well through intelligence, industry, and habitual zeal.

I have, &c.,

G. F. COCKBURN,

Commissioner.

No. 1994.

FROM

LIEUTENANT-COLONEL E. T. DALTON,

Commissioner of Chota Nagpore,

TO

R. B. CHAPMAN, Esq.,

Secretary to the Board of Revenue, L. P.

Dated Chota Nagpore, the 16th November 1864.

Survey.

SIR,

I have the honor to submit copies of Reports* and Statements shewing the results of the demarcation operations in the Palamow Sub-division of the Lohardugga District, under Major G. H. Thompson, and in the Maunbhoom District, under Baboo Rakhal Dass Haldar, Deputy Collector.

* Major Thompson's Report, No. 912, dated 27th October 1864. Baboo Rakhal Dass Haldar's Report, No. 299, dated 15th Idem.

2. Major Thompson has, during the year under review, worked in Palamow with a very small Establishment of 1 Peshkar and 3 Ameens, who have been employed in searching out and pointing out to the Surveyors the boundaries laid down under Major Thompson's superintendence in 1859-60. The Revenue Survey not having, in Palamow, immediately followed the demarcation operation, this second demarcation became necessary to indicate the boundaries to the Surveyors as they proceeded, especially through hill tracts and heavy jungle, where the marks formerly made had been destroyed or were overgrown.

3. The four men thus employed re-defined the boundaries of 587 villages, and a satisfactory amount of work was also performed in the preparation of Moojmillee Maps and Pergunnah or Estate Registers.

4. Major Thompson, in consequence of the desultory nature of the field work, is unable to calculate it according to area and give the average rate per mile; the total expenditure has been Rupees 3,420-5-6 as detailed under three heads in the margin.

Establishment ...	Rs. 2,520-1-0
Travlg. allownce....	" 666-0-0
Contingencies ...	" 235-4-6
<hr/>	
Total Rupees	3,420-5-6

5. In addition to the above, and under the permission accorded in the Board's letter No. 7 of the 19th July last, a Khureh Survey, under Major Thompson's superintendence, of 20 villages in the confiscated Pergunnahs Siri and Oodeypore, forming the Burkagurh Estate, lately belonging to Thakoor Bishoonauth Sahee, has been effected. This is made preliminary to settlement of the Estate, and the expence is borne on the books of the Settlement Officer. Major Thompson wishes the Establishment employed in this work to be brought on his Survey Budget, but I am not aware of any necessity for the transfer: it is settlement rather than survey works.

6. I solicit the Board's favorable consideration of the concluding paragraph of Major Thompson's letter. The superintendence of the Civil branch of his Survey has thrown much extra work on Major Thompson, for the performance of which, in a very satisfactory manner, he has hitherto received no remuneration.

7. The work performed by the Deputy Collector in charge of operations in Maunbhoon is of two kinds—Mowzahwar for the Pergunnahs in the open plain, and Pergunnahwar for Estates in the hill and jungle tracts. In all, 16 Pergunnahs have been demarcated during the period under report; 7 Mowzahwar containing 1,818 villages, and 9 Pergunnahwar. In the collection of statistics and preparation of moojmillee Maps and Registers, a fair amount of work has been done, and the total cost is roughly estimated at about Rs. 3-4-4 per square mile.

8. In the estates demarcated Pergunnahwar for topographical survey, the Deputy Collector is required by me to demarcate separately all *Ghatwallee* lands in which the Government has a direct interest. It is expected that from this much litigation regarding these tenures will be saved, and a process of absorption from which they are supposed to have long been suffering put an end to.

9. It is a satisfactory feature in the Report that though the Deputy Collector has settled a large number (150) of boundary disputes besides miscellaneous cases, very few appeals against his decisions have been preferred; the result of the appeals is given below.

Pending from last year	Instituted during 1863-64.	Total.	Upheld.	Reversed.	Remanded.	Pending on 30th Sept. 1863.	REMARKS.
3	9	12	7	0	1	4*	* Pending non-appearance of the respondents; 1 case since disposed of.

10. I observe with regret the number of death casualties in the Deputy Collector's Establishment during the past working season, but he has now got through the most unhealthy parts of the District, and it is to be hoped such heavy mortality will not appear again in his returns.

11. Baboo Rakhai Dass Haldar is himself a very painstaking and deserving Officer, but his Establishment have not worked well with him, and it was found necessary to make examples of some of them.

I have, &c.,

E. T. DALTON,

Commissioner of Chota Nagpore.

No. 912.

FROM

MAJOR G. HUNTER THOMPSON,

Superintendent, Revenue Survey, Chota Nagpore Division,

TO

THE COMMISSIONER OF CHOTA NAGPORE,

RANCHEE.

Dated Hazareebagh, the 27th October 1864.

SIR,

I have the honor to forward, for submission to the Board of Revenue, Annual Statements of work performed, expenditure, &c., on the Civil or demarcation operations of the Chota Nagpore Division Revenue Survey, for season 1863 and 1864, viz., from 1st October 1863 to 30th September 1864.

2. Excepting the Khusrah survey of a few Government villages in Chota Nagpore, the operations have been confined to Palamow, and as the field work has been of a desultory nature, chiefly *partaling* demarcation of 1859-60, and otherwise assisting the professional survey, it is difficult to shew it in a Tabular Statement.

3. Much, however, has been done, without which the professional survey would be much retarded.

4. The present field establishment only consists of one Peshkar and three Ameens; these four men have *partaled* the boundaries of 587 villages: one part of their duty was to clear the boundaries of estates of jungle, through the Zemindars, for the professional survey, and this they did for nine estates, viz., Kote, Imlee, Jaipoor, Dugra, Shapoor, Kookoo, Jumalpoor, Nowdeeha, Hoolsa, the north-east portion Palamow near Deogur, on which the professional survey will be employed during the ensuing field season.

5. The Peshkar was constantly with the professional surveyors on other estates, rendering information, or pointing out boundaries, in dense jungle, or over hills, that could not be regularly demarcated with pillars.

6. As I have stated in previous reports, this small demarcating establishment will always be required to assist the professional surveyors in such a country as Palamow.

7. The Khusrah surveys of 20 Government villages (confiscated) in the estates of Seeree and Oodypoor have been completed.

8. 136 Thakbust Maps of villages, for which those Maps had not been previously prepared, have been made.

9. 5 Boundary disputes and 30 miscellaneous cases have been disposed of.

10. The Mouzawar Registers for nine estates, Chickaree, Barsaud, Sumieah, Khamee, Doorjag, Seemah, Munkheree, Tappah, and Muttoulee, have been completed, and those for two other estates, Baree and Poondog, have been completed for the villages (about half) that have been surveyed professionally.

11. Detail Maps, with area and Statistical Statements for fifty-one Palamow Government villages, have been got ready for settlement purposes.

12. The total expense of the season has been Rupees 3,420-5-6. It cannot be divided over any particular area for the purpose of obtaining a mileage rate, as the work has been of a scattered nature, as it will be now, till its completion, when the whole Palamow cost can be divided over the total area of the Pergunnah, to give a general average rate.

13. As the Khusrah survey of the Government villages in Palamow and Chota Nagpore are to be undertaken by this Department, I would suggest that the establishment of Ameens for this purpose be brought on the Survey Budget, which would be more satisfactory for many reasons, than their remaining as at present on the District Budget.

14. In consequence of the Right Honorable the Secretary of State for India having in his Dispatch No. 21, dated India Office, London, 31st July 1863, recognized my claim for remuneration for performing the Civil survey duties, the Surveyor-General, in December last, wrote to the Board, quoting all his former reports and opinions on this subject, and expressed a hope, that the Government would respond to the Secretary of State's call.

15. I am not yet aware of what notice the Board took, or may intend to take, of the Surveyor-General's representation ; but I should hope that they will now admit the justice of my claim, and that Government will sanction the allowance of Rupees 200 a month from the 1st, that I applied for as remuneration for these extra and responsible duties.

I have, &c.,

(Sd.) G. HUNTER THOMPSON,

Superintendent, Revenue Survey, Chota Nagpore Division.

GENERAL STATEMENT showing Work performed and Cost of the operations on the Demarcation Branch of the Chota Nagpore Division, Revenue Survey, for the Season 1863-64, October 1863 to September 1864.

Name of Superintending Officer.	Districts in which operations have been conducted.	Names of the Pergunahs.	Number of villages demarcated.	Number of Thakbust Maps and Missils prepared.	Number of Moolmee Maps and Khatas Lists prepared.	Number of boundary disputes registered.	Number of boundary disputes disposed of.	Number of Isad, Admissian, or miscellaneous cases registered and disposed of.	Muzawar Registers prepared.	Ferginah or Khatas Registers prepared.	Total expenditure of the season in Rupees.	Total estimated area of the operations.	Average rate per square mile.	REMARKS.
Major G. Hunter Thompson.	Lohardugga or Chota Nagpore.	Palanow, Siree, Godypore.	687	136 and 20 Khuzerehs, with 51 Settlemnt Maps.	3 Maps—3 Lists.	9	5 disposed of, 6 remaining.	31	587	9 complete, 2 partly complete.	Rs. 3,420-5-6.	Scattered.		The detail of expenditure is as follows: Estab. Rs. 2,520 1 0 Travelling allowance, Rs. 665 0 0 Contingencies, Rs. 235 4 6 Total Rs. 3,420 5 6

REVENUE SURVEY OFFICE,
HAZAREBAGH,
The 27th October 1864.

G. HUNTER THOMPSON,
Superintendent, Revenue Survey,
Chota Nagpore Division.

No. 299.

FROM

THE DEPUTY COLLECTOR OF SURVEY,

Maunbhoom,

TO

THE DEPUTY COMMISSIONER OF MAUNBHOOM,

Dated Purulia, October 15th, 1864.

SIR,

I HAVE the honor to submit, herewith, the Annual Statement for the year ending 30th September 1864.

WORK DONE DURING THE YEAR.—The tract of country demarcated since I relieved Moulvie Ahsan Ahmed, on the 13th October 1863, lay mostly to the south and east of the River Kassaie, the area being supposed to be about 2,500 square miles. Sixteen Pergunnahs have been demarcated, seven Mouzawar (1,818 villages or Hulkas) and 9 Pergunnawar, (195 running miles.) In the latter 153 Ghatwalee villages, and in all the Pergunnahs 2,336 Chucks came under demarcation. The collection of statistics is now complete, (requiring to be duly arranged and rendered into English), such information having been obtained from 3,828 villages during the year under report. The number of village Thakbust Maps prepared is 1,971; of Pergunnah T. B. Maps, 9; of Mujmilees, 16; of Kham Mujmilli, 1; and of Hadbust or Thakbust Lists, 8. It has been found necessary to *partal* the Pergunnah of Soopoor and portion of Ambica Nugger; these two, however, will be ready in time for the Surveyors.

Although 9 Pergunnahs out of 16 have been only demarcated exteriorly, you may be pleased to observe that the compass has been largely used this season, unlike the case of the previous one; 2,336 chucks or patches of land, beside about 300 entire villages, have been demarcated with compass during the year under review.

As to registry work, six English area and Statistical Registers have been written up. These are not thoroughly complete as yet, as in some cases the area of villages will have to be obtained.

COST.—The total expenditure from 1st October 1863 to 30th September 1864 is Rs. 8,154-0-7, and approximately speaking, the rate per square mile is about Rs. 3-4-1.

COPIES OF THAKBUST MAPS REQUIRED AND TAKEN BY ZEMINDARS AND OTHERS.—People in this District are now beginning to perceive the importance of having copies of Thakbust Maps; copies of 164 Maps have been taken on 358 sheets of stamped paper of 8 annas value each. The amount of fees, Rs. 412-0-4, has been credited to Government.

SUBORDINATES.—Some of the subordinates did not work properly, and I was under the necessity of bringing their conduct to your notice on more than one occasion; several of them were fined, and two convicted of forging and criminal misappropriation of public property in the Criminal Court. The rest did their duty well, and I can state with truth and pleasure that some of them rendered me appreciable assistance, especially Peshkar Lalla Atchoy Bur-lall, a man of good abilities and rare honesty.

CASUALTIES.—The tract of country demarcated this season is the most insalubrious in the whole District, being generally covered with dense jungles. In some places the atmosphere is poisonous, and, with the exception of localities bordering on the large rivers, good drinkable water is a scarcity. The consequence of all this has been that 4 Ameens and 10 Muzkuri Peons died of jungle fever, while about 12 men suffered more or less from that malady.

● **BOUNDARY DISPUTE CASES.**—During the year 150 dispute cases have been decided. Three cases were appealed against, one was remanded on the production of fresh and material evidence, and one upheld by the Commissioner, Chota Nagpore; of the rest I do not as yet know the result.

MISCELLANEOUS CASES.—In three cases appeals were preferred; in two cases the Commissioner was pleased to uphold my orders; one case is yet pending.

I have, &c.,

(Sd.) R. D. HALDAR,

Deputy Collector of Survey, Maunbhoom.

GENERAL STATEMENT shewing Area, Cost &c., and work performed in the Demarcation of District Maunbhoom for Season 1863-64, or from 1st October 1863 to 30th September 1864.

Name of Suptd. Officer.	District in which operations were in progress.	Names of the Pergunnahs.	Number of Villages demarcated.	Total estimated area in square miles.	Number of Thakbust Maps and Missils prepared.	Number of Thakbust Lists and Moojmilas Maps prepared.	Number of boundary disputes registered.	Number of boundary disputes disposed of or remaining.	Number of miscellaneous cases disposed of.	Number of Mouzanah or Jumma-khurch lists prepared.	Number of Pergunnah or Estate Registers prepared.	Total expenditure of the season.	Average rate per square mile.	REMARKS.
Laboo Rakhial Doos Haldar, Deputy Collector in charge.	Maunbhoom.	Simhul Bhabeleh Shoobar Arabica Nuggar Patpoor Maha Koenal Shansunderpoor Phoolkonsa Manbhoom Burrabhoom Patkoom Bagmoondee Heslah Torang Cassatepar	1,971	About 2,500	1,971 Villages T. B., 9 Pergn. T. B.	Moojmilas ... 16 Hothust ... 6 Kham Moojmilas ... 1	152	Disposed of 150 1st October 1862.	138	.....	In Persian 17 In English 6.	*9,154-0-7	About 3-4-4	* Dr. Collr.'s Salary, Rs. 2,551 9 10 Travelling " " 377 8 0 Office Establishment " 1,264 0 0 Field Ditto " " 3,577 6 3 Contingencies " " 217 5 0 Stationery " " 166 3 6 Total Rs. 8,154 0 7

DISTRICT OF MAUNBHOOM ;
OFFICE OF THE DEPUTY COLLECTOR OF SURVEY, FURULLA,
The 15th October, 1864.

(sd.) R. D. HALDAR,
Deputy Collector of Survey,
Maunbhoom.

FROM

THE OFFICIATING DEPUTY COLLECTOR,

TO

THE DEPUTY COMMISSIONER OF KAMROOP.

Gowhatty, the 9th October, 1864.

SIR,

I HAVE the honor to submit, herewith, my report for the year ending with the 30th of September 1864.

2. It was only on the 24th of March last that I assumed charge of my Office. But as the necessary instruments, forms, and the Collector's lists were not at that time available, I was unable to commence with the demarcation work. I hope, however, to commence the demarcation operations on the 15th of October next.

3. The locality in which the measurement should be confined, extends from the conjunction of the Rivers Bramapootra and Boronody, which separates Durrung from Kamroop, to the extremity of the Bhootan Hills.

4. As the Ameens who have been ordered to proceed to Gowhatty from Tipperah have not yet reached the station, I intend to commence the operations with the assistance of the two Peshkars, who, as you are aware, were appointed by me as soon as I took charge of my Office. Under these Peshkars I shall place the 25 Ameens, whom I intend to appoint here; as soon as the Ameens from Tipperah come in, I shall appoint the two other Peshkars as sanctioned in the Board's letter No. 7, dated 29th August 1864.

5. As it was necessary for me to be possessed of the Collector's lists of estates and moujas, I appointed 7 Ameens on salaries of Rs 12 per mensem. They have not as yet been able to prepare all the lists required. I regret here to state that these estates, which are about 300 in number, have no regular numbers prefixed to them. But the numbers that are to be found denote promiscuously the lands that are placed under the control of each Chowdry. Each Chowdry, if I mistake not, has under him Mohuls of three descriptions, such as Khash, Lukharaj, Bajaupty, and Oagooshasty, and these Mohuls have only one number prefixed to them. The inconvenience that will be felt by me in carrying out the Towjeenikash, as the numbers will recur often and often if these estates be allowed to retain the numbers as they have at present, cannot be too much overrated. I am therefore of opinion that these Mohuls, instead of having one number to denote them, should have different numbers in regular order prefixed to them. The number should be placed thus $\frac{3}{10}$, the numerator shows the number put by the Deputy Collector, and the denominator, the original number these estates had before. By this arrangement, I believe, the number of estates will show an increase of 200, which will make up the number more than 500.

6. As I have not up to this day received any order from you to whom copies of Thakbust Maps should be given for professional survey as stated in Survey Series, Section V., I should request favor of your instructing me on the subject.

7. The following Tabular Statement will show the number of miscellaneous cases which were instituted, disposed of, and are still remaining on the file during the year under review. These cases, as you are aware, were referred to me by the Revenue Commissioner of Assam. The case on the file should be taken with me while I shall be out during the field season.

U

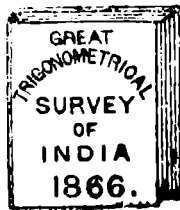
	No. Instituted.	No. Disposed of.	No. On the file.
Miscellaneous cases.	} 965	158	807

8. So far as I have been able to form my opinion of the character of the landholders and their agents here, from a short interview that I had with them while I went out to the Mofussil, they appear to be very remiss in assisting me to carry on my operations, I should therefore beg of you to get the Board's sanction to your authorizing me to exercise the full powers under Regulation VII. of 1822, as the Deputy Collectors in other Divisions exercise. This power should be only exercised over the inhabitants of Kamroop and the Zillahs bordering it.

9. The climate of the northern and southern parts of this country is so very unhealthy, that it will be nothing but right on my part to ask you to authorize me to avail myself of the services of a Native Doctor on a salary of Rs. 25 a month during the field season. The services of the Native Doctors are always available for the Officers of my rank in other Divisions; as no mention of it has been made in the Budget for 1863-64, I ask authority of Government for availing myself of the services of one.

I have, &c.,

(Signed) BHOGOWAN CHUNDER SEIN,
Offg. Deputy Collector.



Programme for Season 1864-65.

142. The following is the work reported by the Superintendent to remain for completion during the current Season:—

“In Promé District a small portion of arrears, Map No. 4, must be completed. But in the Toung-ngoo District the main portion of the Season's operations will fall; some work will also be conducted in the Tha-Yawa-dee and Rangoon Districts, as also in a part of Martaban.”

“The greater part comprises wild, uninhabited, and hilly tracts covered with dense jungle and extremely unhealthy.”

“Sub-Assistant W. S. Barnett to execute traverses with Theodolite and chain in the vicinity of Toung-ngoo, also to take mountain heights when necessary.”

“Sub-Assistant A. Cooper to execute traverses in the vicinity of Shuay-gyeng, also to take mountain heights where necessary.”

“Surveyor Moug-pho to complete arrears in Promé District.”

“Surveyors Shuay-pho, Moug-keng, Moug-ngoo to complete Survey in Tha-Yawa-dee District.”

“Surveyors Ramloosain, Gour Chundra, Moug-gyeweng, Shuay-leng, Kyanzan to complete Toung-ngoo District.”

“Surveyor Moug-gay-gyan to complete what is requisite in Rangoon District, then to work up to Surveyor Kyanzan in Toung-ngoo District.”

“Surveyors Shuay-chan, Moug-kya, Moug-pho-Moug, Moug-tot to be employed in that part of the Martaban Division which is in close proximity to the Pegu Division, principally with a view to improving their skill as well as to form a reserve in case of any accidents or casualties amongst the other Surveyors.”

“Detailed instructions in writing, with rough Maps of the tracts to be surveyed, are furnished to each Surveyor.”

“By the traverse survey upwards of 474 miles will be accomplished; by the detail survey an area of 8691.9 square miles in the Pegu Division, and probably 2025.9 square miles in the Martaban Division, will be filled in, *i. e.*, the entire survey of Pegu will be completed, and such portions of the Martaban Division as fall within Map No. 3 of that Division also.”

143. It has unfortunately happened that the services of Lieutenant Bagge could very ill be spared just at this time. When the usual period arrived for the Pegu Establishment to take the field, Captain FitzRoy submitted, with letter of the 13th December, his application for leave to Europe on medical certificate for 10 or 12 months. This unexpected announcement caused serious embarrassment, because it was fully anticipated that the Superintendent would be able to carry out his promise of bringing the survey of Pegu to a termination by the close of the current year. With the loss of both Superintending Officer and his Military Assistant, however, it was not at all apparent how the above object could be realised, especially with an Establishment so weak in European subordinate agency. In his proposed programme the Superintendent observes as follows:—

“Various circumstances have of late occurred, more or less, tending to hamper the operations of this survey and to enhance the difficulty of completing the work within the period formerly specified.

“The Superintendent has, however, now but little anxiety on this head, provided that the services of an Officer are speedily procured, to whom charge of the Office could be made over during his own temporary absence on medical certificate.”

144. To this end a representation was made by myself, urgently recommending that the services of Captain Edgcome, Royal Engineers, the former Superintendent of this Survey, should be applied for to the Madras Government with the view of his relieving Captain FitzRoy from the charge of the Pegu Survey, and thus endeavouring to bring it to a completion

Home Department, No. 2075, dated 6th March 1865.

within the time specified. By the orders, as per margin, Captain Edgcome's services have been granted, and he has accordingly proceeded to Rangoon for the above purpose. It is obvious that no other Officer

could possibly prove so useful in bringing these lengthy proceedings to a termination. The knowledge of the previous history of this survey, as well as his experience of the language and country, must give Captain Edgcome great facilities for taking up the duty; it is therefore a matter of congratulation that an Officer of such known ability and energy has been secured for the work in question.

145. It has not been without considerable inconvenience that the Madras Government have been able to spare Captain Edgcome's services from the appointment of Principal of the Civil Engineering College at Madras, which he at present holds, and he is required to return to it again as soon as possible. It is therefore proposed that as soon as the whole of the field work shall have been completed, and the materials are in a fit and intelligible state to be taken away from Burmah, that the Superintendent shall take the General Map back to Madras with him and finish it there, as he will have particular facilities for doing so at the College. This I believe to be the best way of winding up the Pegu Survey, and it is to be hoped that Captain Edgcome's exertions may prove in every way successful. He will have the fullest support from this Office for the purpose.

146. Under the orders from the Foreign Department cited in the margin, Mr. Mont-		gomerie, an Assistant Surveyor employed for some
No. 285, dated the 30th September 1864, to Chief		time at Moulmein under the Commissioner in
Commissioner, British Burmah.		making a survey of the town and other desultory
	Rs.	survey work, was transferred to the Pegu Survey,
1 Assistant	70	together with the small Establishment as per mar-
2 Draftsmen, at Rs. 30 each	60	gin. The salary of the Assistant is Rs. 400 per
1 Tindal	14	mensem, which was not provided for in our Depart-
9 Classies, at Rs. 10 each	90	mental Budget for the current financial year, but the
1 Peon	10	surplus under other heads is sufficient to cover it.
	Total	
Mr. Montgomerie	400	
	Total	
	644	

REVENUE SURVEYS.

1st DIVISION.

CENTRAL PROVINCES.

147. The survey of the District of Hoshungabad was again taken up by this Establishment in November 1863, under the superintendence of Lieutenant Osborne, Assistant Revenue Surveyor, who received charge from Captain Sconce, Revenue Surveyor, on that Officer being appointed to the charge of the 3rd Division, Central Provinces, consequent on the absence on sick leave to Europe of Captain A. D. Vanrenen, Revenue - Surveyor.
- District Hoshungabad.
- Captain J. Sconce, Royal Artillery, Officiating Revenue Surveyor, transferred to 3rd Division, Central Provinces, from 22nd August, vide G. O. G. No. 1812, dated 31st December 1863.
- Lieutenant J. H. W. Osborne, late 44th Native Infantry, Assistant Revenue Surveyor in charge, from 13th November 1863 to 10th of March 1864.
- Captain R. E. Oakes, Staff Corps, Revenue Surveyor, rejoined from leave on the 11th of March 1864.
- Assistants.*
- Lieutenant J. H. W. Osborne, late 44th Native Infantry, transferred to 3rd Division, Central Provinces, from 22nd August, vide G. O. G. No. 758, dated 25th July 1864.
- Mr. J. Campbell, Assistant Revenue Surveyor, 1st Class.
- „ F. Grant, ditto ditto, 3rd Class.
- „ P. Cowley, Sub-Assistant ditto ditto, 2nd Class, transferred to Darjeeling, from 1st November 1863.
- „ G. Rac, Sub-Assistant Revenue Surveyor, 2nd Class.
- „ E. Little, Junior Sub-Assistant ditto ditto.
- 30 Native Surveyors, &c.

148. Lieutenant Osborne successfully conducted the field operations from the time of his taking over charge, until relieved on the 11th of March 1864 by Captain Oakes, the permanent Revenue Surveyor of this Division, who returned from leave to Europe on medical certificate on that date.

149. The out-turn for the season was a good and successful one, and most creditable to the young Officer under whose superintendence it was mainly effected, the total area being 1,414 square miles contained in 628 village circuits. Of this 1,043 square miles, comprised in 543 villages of the Pergunnahs noted in the margin, were surveyed on the large scale of 4 inches=1 mile; whilst the remainder, lying chiefly in the Southpoora range of hills, and extending over broken and hilly country, containing in the aggregate only 85 villages and an area of 371 square miles, was surveyed topographically only on the reduced scale of 2 inches=1 mile.

	Out-turn.
Pergunnah	Southpoora.
"	Rajwara.
"	Hoshungabad.

150. In speaking of the survey of tracts of the latter description, and what it was essential should be taken up on the Revenue Survey system, the Chief Commissioner thus expressed himself:—

“Mr. Temple has recently given further consideration to this subject, and he has come to the opinion that it will be very expedient to show, even on Topographical Maps, all boundaries that may have been demarcated by Settlement Officer. In these hilly and forest tracts, there will occur occasionally, and perhaps even rarely, boundaries of three kinds; (1) boundaries of estates which are the property of native land-owners; (2) boundaries of blocks of Government Waste Lands available for purchase under the Waste Land Sale Rules; (3) boundaries of reserved forest tracts demarcated by Officers of the Forest Department under recent Regulations.

“It is very important that the areas of Waste Land blocks should be accurately determined, and the boundaries of private properties and Government Wastes clearly defined.”

151. To ensure the above requisitions, and make the present survey of the boundaries, within the Topographical area, available for any scale that hereafter may be undertaken in connection with such future survey operations as may become necessary, when allotting to grantees blocks of available Waste Lands, the Surveyor has been directed to measure, map, and record all boundaries in the field, as usual, on the 4 inch=1 mile scale, so as to enable this Office to avail itself of the first survey, and reproduce the boundaries on any required scale.

152. The separation of the two descriptions and scales of survey, as referred to in the * Foreign Department No. 210 Government reply* to my last Report, has been carefully dated 8th August 1864. provided for, and the whole subject discussed and agreed on with the Chief Commissioner, Central Provinces, when I visited Nagpoor in November last. The Surveyors were at the same time carefully instructed, and I trust that beneficial results may ensue from a clear mutual understanding of the question, which is one attended with some difficulty.

153. The cost of Establishment from 1st October 1863 to 30th September 1864, including contingent expenses for the season, amounted to Rs. 45,665-14: assigning Rs. 37,612-12 to the purely large scale survey, and Rs. 8,023-2 to the topographical work, the following mean average results are obtained, viz., for the former, Rs. 36-1 per square mile and Rs. 69-5 per Village Circuit, and for the latter description of Topographical Survey, Rs. 21-10 per square mile. The

additional or arrear expenditure under the head of Contingencies, noted, in the margin, has been duly included in the general cost and rate for the whole of the surveys.

154. One station† of the Great Arc Series of Great Trigonometrical Survey, met within the course of the operations carried over the Southpoora range of hills, was carefully connected and incorporated with the calculations of the season. Additional points of this series of triangulation will be met with in the course of the current season's operations, and so give a better connection and means of establishing hereafter a comparison of the data derived from the two surveys.

† G. T. Station—Tch.

Cost and Rates.		Rs.	As.	P.
Permanent charges	... ..	39,358	5	0
Contingent do.	... ..	6,307	9	0
Total expenses	... ..	45,665	14	0
Arrears of travelling allowance for 1862-63	... ..	2,229	0	0
Grand Total, Rs.	... ..	47,894	14	0

155. During the month of November last, I proceeded to Jubbulpoor in the course of my annual tour to inspect this Party, which had not before come under my personal observation. The Establishment has always been held in high estimation, being one of the most efficient in the Department, and specially qualified to deal with intricate and difficult ground such as constitutes a great part of the Jubbulpoor Division. The General Maps on the 1 inch scale, as produced by this Party, are works of the greatest merit; many of them have been lithographed and issued to the Department as standard specimens, and the credit of this is due to Mr. J. Campbell, the Senior Assistant Surveyor of the Party, who has had many years' experience, and is an Officer of great intelligence and merit.

156. In the course of the three days, 14th to 17th of November, I spent in the examination of the Office of this Surveyor, the results of the past season were fully discussed, and everything connected with future progress entered into. The state of the work I found in every respect most satisfactory. The manner in which Captain Oakes performs his duties, and his relations with the local Officers as well as with his subordinates in the conduct of his affairs, reflect much credit on him. It was a pleasure to perceive the order and regularity of his Office, as well as the zeal and efficiency of his subordinates, both European and Native.

157. The numbers and descriptions of the various Maps and Records furnished by this Establishment for the season under review, are noted in the margin.* The whole of the Maps and Plans have, for the first time, been prepared in pen and ink exclusively, without any color; they show, in the most minute manner, all the marked features of the country. The hilly and more rugged portions have been exceedingly well drawn; and although the large scale Village Sheets prepared in the new way are not so well up to the old standard in point of excellence of drawing and artistic effect, yet a very material point has been gained in delineating the hilly features in pen and ink for the purpose of reduction by photography, and for the general combination of that art in our manipulation of the geographical materials.

158. From the change made in the style of preparation of the General Maps, as well as the Village Plans, a very great increase in the amount of labor has been caused; this has, in the present instance, been well responded to by the Establishment generally, and I was much gratified, not only with the quantity of work effected, but at the manner in which each portion was carried out. As the original records prepared by Executive Officers fulfil all the requirements of photography, I have every hope of relieving them of the great labor of making duplicate copies for the local authorities, which duty at present renders the out-turn of each season's work on a Revenue Survey quite overwhelming; indeed, without the aid of stencil plates and type for combination with the manuscript Maps, the work could not be brought up.

159. The comparisons instituted between the boundaries, as shown by the professional Surveyors and Civil Settlement Maps, are reported to have been generally satisfactory. In all cases of discrepancies re-survey was resorted to, and the Village Plans corrected accordingly. The Surveyor also acknowledges the cordial co-operation afforded him on all occasions by the Settlement Officer, and by the Civil Authorities generally in the prosecution of his work. Extracts from the Surveyor's Report will be found in the Appendix.

160. The work remaining in the Hoshungabad District along the Nerbudda River, demanding revenue detail survey, is estimated at about 1,200 square miles; in addition to which there is a considerable area marked off to the south along the Southpoora range, which is to be dealt with topographically only. It is anticipated that the whole of the former will be finished during the

current season, and the district will be completed, with the exception of the hilly and more difficult portion which will come under the regular topographical operations, and be conducted on a trigonometrical basis.

161. Instead of the programme of districts next for survey, as given in the 42nd para. of my last Report, it is the Chief Commissioner's wish that this party should, as soon as Hoshungabad is finished, take up Seonee, of which the settlement operations are in a very forward state. This district is most conveniently situated for Survey, lying immediately to the south of Jubbulpoor already surveyed by the same Party, and on the new series of principal triangulation on the meridian of 80° now in course of execution. Thus the extension of the revenue operations into the Seonee District will have a better base than if projected still more to the westward into the Nimar and Baitool Districts adjoining Hoshungabad. These latter are to be provided for by the 3rd Division on the completion of the Saugor Districts north of the Nerbudda.

162. The good and efficient services of the Assistants of this Establishment, named in the margin,* have been most conspicuous, and I had great satisfaction in expressing my approval of the same when inspecting the Office. Mr. Campbell's zeal and talents as a Draftsman are not excelled in the Department. The two last named have each received the promotion specified. Of the Native Surveyors, those mentioned in the margin † are specially commended; the field sketches of these men possessed considerable merit.

* Subordinates.		
	Salary.	
	Rs.	
Mr. J. Campbell	400	
„ J. Grant	250	
	Promoted.	
Mr. G. Rae from	Rs. 150 to 175	} G. O. G. G. No. 1433, dated 15th February 1865.
„ E. Little	100 to 125	

† Seetulpersaul.
Imrit Lall.
Gunoo Lall.
Gunput Lall.
Dulmeer Khan.
Goordial.
Kewul Ram.

163. Owing to the unfortunate loss of the whole of the General or 1 inch manuscript Maps of this survey, of the work of season 1862-63, during transit from Jubbulpoor by the Post Office Department, the whole of these records have had to be done over again by Captain Oakes' Establishment; and this laborious task they volunteered to perform, in addition to their regular duties, on a small payment by contract. Thus these valuable Maps, four in number, of the Nursingpoor District, have all been replaced to my entire satisfaction.

2ND DIVISION.

CENTRAL PROVINCES.

164. The efforts of this Establishment, under the superintendence of Lieutenant Taylor, Assistant Revenue Surveyor, were chiefly confined during the past season to the accomplishment of the survey of such portions of the remaining Pergunnahs of the Bhundara District as required village boundary demarcation, and, consequently, professional measurement on a large scale, together with a careful detail survey of the cultivation, fallow and waste areas included, in each village.

District Bhundara.	
Lieutenant J. W. Taylor, Staff Corps, Assistant Revenue Surveyor, in charge.	
Assistants.	
Mr. W. Ellison, Assistant Revenue Surveyor, 2nd Class.	
„ W. R. Vvall, Sub-Assistant Revenue Surveyor, 2nd Class, transferred to 5th Division, Lower Provinces, 3rd March 1864.	
„ A. F. Bonny, ditto ditto, 2nd Class, resigned 1st July 1864.	
„ G. Bonny, ditto, 3rd Class.	
Corporal W. Bourne, Probationary Sub-Assistant Revenue Surveyor, 3rd Class, appointed as per G. O. No. 1491, dated 8th October 1863, joined 22nd October 1863.	
Private John Newland, ditto ditto.	
27 Native Surveyors, &c.	

165. In consequence of the system pursued during the preceding season, as detailed in last Report, the tracts thus brought under survey were situated in three detached blocks, extending from Pergunnahs Dhunsooa in the extreme north-east of the district to Pergunnah Pertaubgurh, on the confines of the district of Chanda to the south-east. They were bounded to the west by the surveys of former seasons and the Bagh River; and to the east by the unsurveyed portions of Pergunnahs Dhunsooa, Chutlah, and Lanjee, by the district of Raepoor; and further south by the densely covered portion of Pergunnah Pertaubgurh, which is left for Topographical Survey. It was an object to square up the work in this district, and to complete all that demanded Revenue Survey, which has been done.

166. These operations in Bhundara extended over an area of 982 square miles, contained in 460 villages and appertaining to 4 Pergunnahs marginally noted.* Besides this, certain villages of Pergunnahs Khyrgurh and Nandgaon, situated along the main road from Nagpoor to Raepoor, in the adjoining district of Raepoor to the east, were taken up in conformity with the wishes of the Chief Commissioner, with the view of forming a connection between the Bhundara and the Raepoor District Revenue operations, so as to permit of the survey carrying on the work in those Pergunnahs and tracts requiring detail revenue measurements, and leaving for future treatment those hilly or jungly Pergunnahs, both in Bhundara and Raepoor Districts, which are intended for topographical delineation only. The area of this line of 77 villages amounted to 153 square miles; this, added to the total above shown, gives a grand total area of the season of 1,135 square miles, contained in 537 villages.

167. The expenditure, including all contingent expenses, amounted to Rs. 42,989-11. Taking the cost of the survey in the two districts of Bhundara and Raepoor to have been proportionately the same, the charges incurred in the Bhundara operations come to Rs. 37,185, and those in Raepoor to Rs. 5,804-11, giving general mean average rates for the two districts of Rs. 37-14 per square mile, and Rs. 80 per village circuit. These rates again assimilate very nearly with those of former seasons in 1858 to 1861, and contrast favorably with the exceptionally high rates of the two last years, 1861 to 1863. They are still high, but the country is difficult, and the establishment requires time to regain the efficiency which it lost under previous management.

168. The minor triangulation of previous seasons was extended over the more hilly and broken parts of the country by the Assistant Surveyor with a 12-inch Theodolite; this was the more necessary, as the operations of the Great Trigonometrical Survey have not yet extended to these districts of the Central Provinces.

169. The state of this Party generally had for a long time caused much anxiety and trouble as stated in former reports, and there were many points requiring personal investigation; I therefore proceeded to Nagpoor in the course of my recent tour of inspection, and, from the 23rd to the 27th of November last, attended the Surveyor's Office at that place. The settlement of the accounts of the late Superintendent, and the unadjusted claims against him, formed my first duty. These were all minutely enquired into, adjusted, and paid, and it is satisfactory to be able to state that this business has at length been finally disposed of.

170. The Establishment being all assembled preparatory to taking the field, and the results of the past season's survey being just completed, I had the opportunity of going over the whole of the work, and discussing the merits of the same with each individual employed. The Maps and Records of previous seasons had been in arrears, and there were many details on which a better and

	* Area.	
Pergunnah	Dhunsooa.	
"	Lanjee (part of.)	
"	Komptha.	
"	Purtaubgurh (part of.)	
	Cost and Rates.	
Permanent charges	... .. Rs. 35,943 14 0	
Contingent ditto...	... .. " 7,045 13 0	
	Total Rs. 42,989 11 0	

more rigorous method of procedure was necessary to be understood and observed. Lieutenant Taylor, since the date of taking charge, has made laudable efforts towards bringing everything into proper system and order; he has had an inefficient Establishment to aid him, and many difficulties which it was not possible to overcome all at once, but which, I trust, will now cease. Ample precautions have been taken to enforce strict discipline and systematic procedure on all points in future.

171. Several changes have been made in the subordinate staff, both European as well as Native, which, I have every reason to believe, will have a beneficial effect on the future working of the party. New Sub-Assistants have been transferred from other Surveys, and the Establishment brought up to full strength with the view of securing better results than heretofore; the field has thus been taken the present season with every prospect of success.

* Maps and Records.

- Arrears of 1858 to 1861 lodged.
- 11 Volumes of Village Statistical Register.
- Arrears of 1861-62 lodged.
- 1 Volume of Village Traverse Computations.
- Arrears of 1862-63 lodged.
- 2 Volumes of Congregated Village Plan Sheets, Main Circuits 21 and 22.
- 1863-64.
- 1 Index Map, scale 4 miles=1 inch.
- 2 Main Circuit Maps, scale 1 mile = 1 inch.
- 2 Volumes of Congregated Village Plan Sheets, Main Circuits 23, 24, 29, and 30, scale 4 inches=1 mile.
- 1 Volume of Main Circuit Traverse Calculations.

172. The Maps and Records of several seasons, as per margin,* have been received in this Office, and the arrears existing for a long time are being gradually worked off. There is a manifest improvement in the general style and finish of the Pergunnah Maps, which is satisfactory; and the Village Plans, although not equal to those of other Surveys, bear fair promise. On the whole, I have every hope that the inspection made of this Office, and the orders personally inculcated, may prove advantageous in many ways.

173. The Assistant Revenue Surveyor in charge speaks well generally of the assistance rendered him by Zemindars in some of the most jungly parts where line cutting on boundary was more than usually needed, and specially mentions the Mohassee of Poorar, in the Pergunnah of Komptha, who readily furnished him with every assistance. Others, again, were not so ready to lend their aid; but two principal men having been fined by the Civil Authorities for not attending properly to the wants of the professional branch, no further difficulty appears to have been experienced.

174. The state of the demarcations in this district does not appear to have been so well advanced as is desirable, and in consequence the Assistant Revenue Surveyor was unable, up to date of taking the field for current Season, to close the computations, and furnish the Maps and final areas of the portions surveyed during the past season. Disputes still remained unsettled. This subject was duly referred to the Chief Commissioner, who is fully alive to the importance of well prepared boundaries ahead of the Professional Survey, and he has taken decisive measures to prevent a recurrence of the inconvenience. The wants and requirements of the Survey, and its future progress in the Chutteesghur Division, were fully discussed with the Chief Commissioner, and I am greatly indebted to that gentleman for the most cordial and valuable assistance rendered to this department at all times.

175. In the Bhundara District there still remain two large tracts for Topographical Survey, viz., Saleetkere Hills, or high lands of Pergunnahs Dhunsooa, Chutta, and Lanjee to the north-east, and the eastern portion of Pergunnah Pertaubgurh to the south-east. The comprised area is about 1,700 square miles, which might be easily completed during a single Season, were it not that the unhealthiness of the jungle, with which the country is covered, precludes the possibility of any Survey Parties being sent into them with safety except in certain months. The nature of the Pergunnahs remaining being of little importance in a revenue point of view, the Chief Commissioner has urged the survey into the large adjoining District of Raepoor. The topographical work will therefore have to stand over for the present

which is so far inconvenient as it will prevent the completion of Bhundara, and the publication of the District Map. It is to be hoped, therefore, that what remains to be done in Bhundara may not be postponed longer than is absolutely necessary.

176. The Establishment has therefore proceeded to the Droog Tehseelee of the District of Raepoor immediately adjoining the Nandgaon Zemindaree, the few villages of which, situated on the main road from Nagpoor to Raepoor, have already been surveyed. The area of the Raepoor District is stated to amount to about 11,000 square miles, of which the Assistant Revenue Surveyor says, he understands, the greater portion has come under demarcation, and requires a regular large scale village survey, but the precise area of which cannot at present be ascertained.

177. The Zemindaree Pergunnahs of Khyreghur and Nandgaon, which are for the most part wild and jungly in their character, lying between the Droog Pergunnah to the east, and the Bhundara District to the west, and appertaining to the Raepoor District, have also been directed to be put in hand, topographically, in view to filling up the gap that would otherwise exist between the completed work in Bhundara and the revenue work of the current Season, so as to afford a proper base for the continuation of the survey and to ensure accuracy and uniformity in the operations. A very large amount of work has thus to be provided for by this Establishment.

* Subordinate Staff.

Mr. W. Ellison, promoted to 1st Class Assistant.

„ A. F. Bonny, Sub-Assistant, 2nd Class, resigned from the 1st July 1864.

„ G. Bonny, ditto ditto 30th November 1864.

„ R. Vyall, ditto transferred to 5th Division, Lower Provinces, 3rd March 1864.

„ P. M. Brennan, Sub-Assistant, 2nd Class, received from 3rd Division, Central Provinces, 14th November 1864.

„ H. Meany, Sub-Assistant, 2nd Class, received from 3rd Oudh Survey, 14th November 1864. Services dispensed with from 7th December 1864.

† G. O. G. G. No. 1408, dated the 6th October 1864.

Vide letter No. 1520, dated 26th October 1864, from Secretary, Government of India, Foreign Department.

Assistant on this Division by the orders as per margin,† and he joined his appointment on the 21st November 1864.

178. Since the last Report, the changes, as per margin,* have taken place in the Subordinate Staff.

179. Lieutenant J. E. Sandeman, General List, Infantry, a passed Student of the Roorkee College, was appointed a Probationary

3RD DIVISION.

CENTRAL PROVINCES.

180. My last Annual Report mentioned the charge of this Establishment having devolved on Captain Sconce, Revenue Surveyor, consequent on the departure of Captain A. D. Vanrenen, Revenue Surveyor, to Europe, on leave on Medical Certificate. Captain Sconce conducted the field and recess duties of the Establishment most efficiently until the month of July 1864, when severe illness obliged him also to make over

Districts Saugor and Dumoh.

Capt. A. D. Vanrenen, Staff Corps, Revenue Surveyor, on leave, transferred to 3rd Division, Oudh. Vide G. O. G. G. No. 1812, dated 31st December 1863.

Capt. J. Sconce, Royal Artillery, Revenue Surveyor (transferred from 1st Division, Central Provinces), on leave. Vide G. O. G. G. No. 614, dated 25th July 1864.

Lieutenant J. H. W. Osborne, late 44th N. I., Assistant Revenue Surveyor in charge, from 22nd August 1864. Vide G. O. G. G. No. 758, dated 25th July 1864.

Assistants.

Lieutenant D. C. Andrew, Staff Corps, Probationary Assistant Revenue Surveyor, confirmed from 18th January 1864. Vide G. O. G. G. No. 13, dated 8th January 1864.

Mr. H. L. Pemberton, Assistant Revenue Surveyor, 3rd Class.

„ P. M. Brennan, Sub-Assistant Revenue Surveyor, 2nd Class.

„ J. S. Pemberton, ditto ditto.

Corporal A. Lawson, Probationary Sub-Assistant Revenue Surveyor, 3rd Class.

Privale J. McKewan, ditto, ditto, died 6th April 1864.

Mr. J. H. Barler, Junior Sub-Assistant Revenue Surveyor.

27 Native Surveyors, &c.

G. O. G. G. No. his charge 614, dated the and proceed to 25th July 1864. England, on Medical Certificate, for 20 months to recruit his health.

181. The loss of two such good and experienced Officers, so shortly one after the other, was most embarrassing. The

most experienced Assistant available was Lieutenant J. H. Willoughby Osborne, of the 1st-Central Provinces Division at Jubbulpoor, who was at once appointed by the orders as per margin,* and took over the charge at Saugor on the 22nd August following.

* G. O. G. G. No. 758, dated the 25th July 1864.

182. During the Field Season, the Establishment was enabled to bring the survey of the Saugor District to a conclusion, and to make a good opening in the adjoining District of Dumoh, lying to the east of the Saugor District, and between it and that of Jubbulpoor. The operations in the Saugor District were detached, part lying in the extreme north-east in the Pergunnah of Shahgurh, which was confiscated and annexed to the British possessions as part of the Saugor District in 1857, in consequence of the disloyalty of the petty Rajah who formerly owned it; and part in the contiguous Pergunnahs of Deoree, Rehlee, and Nahurmow, to the extreme south-east of the district. Four small outlying villages appertaining to the Native States of Bijawar and Punna were also met with and surveyed in the Shahgurh Pergunnah.

183. The total area included in the two blocks amounted to 987 square miles, as per margin, and comprised in 493 Village Circuits. The work prosecuted in the Dumoh District immediately adjoining the south-eastern block of Saugor comprised portions of the southern Pergunnah of Tejgurh, with an area of 353 square miles, and 105 contained villages. This brought up the total of the Season to 1,341 square miles and 598 villages, which, considering the difficult nature of the country, may be considered a most satisfactory out-turn and creditable to Captain Sconce, on whom devolved the superintendence and management of the whole of the Field Season. The average size of the villages is very large.

Area.		
Villages.	Sq. Miles.	
Saugor District	489	974
Bijwar State ...	2	7
Punna ...	2	6
Total ...	493	987

184. The whole was accomplished at a total outlay of Rs. 45,565-2-0.* This includes all current contingent expenses for the Season, and yields average rates of Rs. 33-15 per square mile, and of Rs. 76-3 per Village Circuit.

	Cost and rates.	
* Permanent Charges ..	...	Rs. 4,270 10 0
Contingent ditto ...	...	" 4,294 8 0
	Total	Rs. 45,565 2 0
Arrears of Travelling Allowance for 1862-63 ..	...	" 2,725 8 0
	Grand Total	Rs. 48,290 10 0

185. The grand total area of the District of Saugor is now ascertained to be 4,060 square miles, comprised in 2,131 villages, as detailed in the margin, the whole having been effected for Rs. 1,74,364, or at the rate of Rs. 42-15 per square mile, and Rs. 81-13 per Village. The Map of the District is now nearly completed and ready for publication; the

Area of Saugor District.

District.	No. of Villages.	Area in Square Miles.
District Saugor ...	2,102	3,973
Native States lying within the District	24	63
Outlying Villages of District Dumoh ...	5	24
Total ...	2,131	4,060

geographical materials thus furnished will contribute largely to the filling up of Sheets Nos. 70 and 71 of the Indian Atlas.

186. Throughout this District, the Surveyor reports that the boundaries of villages are clearly marked by slabs of stone 5 feet in length, which are sunk into the ground for about a third of their height. The trijunctions of villages are generally marked by small square masonry platforms. The boundary between the Saugor and Dumoh Districts is marked by masonry pillars throughout its length.

187. The Officer in charge of the Party records his thanks for the admirable arrangement made by Major Maclean, Deputy Commissioner and Settlement Officer, and Mr. Hastings Reade, Assistant

Local Officers.

Commissioner, as well as for the assistance rendered by them in the prosecution of the survey. The demarcation Maps, or Thakbusts, were all received well in advance of the professional operations, and all discrepancies discoverable on close comparison with the professional Maps were at once reconciled.

188. Satisfactory connection was made with four Great Trigonometrical Stations of the Budhou and Rangir Meridional Series met with in the north of the Saugor District. The results of comparisons of the true direct distances between these points, as compared with those derived from the Revenue Survey operations, are as follows :—

Names of Great Trigonometrical Stations.	Direct distance from Revenue Survey data.	Direct distance from Great Trigonometrical Survey data.	Error of Revenue Survey.	Error per Mile.	
Dalipoor to Tinsmal ...	130,943.0	130,792.8	+ 150.2	6.06	Rangir Meridional Series.
Tinsmal to Dhobun ...	51,377.0	51,239.0	+ 124.0	12.74	
Do. to Talimpoor ..	26,350.2	26,375.0	- 24.8	4.97	} Budhou Meridional Series.
Dhobun to do. ...	58,692.7	58,655.0	+ 37.7	3.39	
Average where the error is plus ...	...	...	...	6.83	
Do. do. the error is minus ...	...	...	...	4.97	

189. After visiting the 1st and 2nd Divisions at Jubbulpoor and Nagpoor respectively, I proceeded to the Dumoh District to inspect Lieutenant Osborne's Office, where I was engaged from the 4th to the 7th of December last inclusive. A close inspection of all the results of all the past Season's mapping and computations satisfied me that the work had been well executed, and was in every way trustworthy, and in accordance with the strict principles laid down for guidance. The disposition of the field work had been well laid out by Captain Sceonce, and carried to completion by that excellent Officer, whilst his instructions for the recess duties appear to have been carefully followed by his successor, Lieutenant Osborne, and the entire records finished off in the usual creditable style which has long characterised this Party, of the efficiency of which I have often had the gratification to enlarge upon.

190. The nature of the country on which this Party has been and is still engaged is difficult, being much diversified by undulating and broken ground, with hills of moderate altitude. Great care has, therefore, to be exercised in laying down the features. The Officer in charge has been personally instructed on this essential point, and to employ his European agency on this division of the work, as I was glad to find had been done with the conduct of the principal observations of the Main Circuits.

191. The whole of the Maps and Records have been duly furnished to this Office and the Local Authorities, and have been carefully prepared and finished. The Main Circuit Map, executed by Lieutenant Andrew, Assistant Surveyor, is particularly deserving of praise, both as regards the quantity and quality of the work therein delineated; and I found every thing done by this promising young Officer to evince much ability and zeal for his professional duties. Messrs. Pemberton's and Brennan's Maps are also well executed, and merit commendation. To these three Assistants credit is due for all the Maps rendered this Season for my Office on the 1 inch = 1 mile scale.

Maps and Records.

- 1 Index Map.
- 3 Main Circuit Maps.
- 2 Atlas Volumes of Congregated Village Plans in 87 Sheets.
- 2 Volumes of Main Circuit Traverse Calculations.
- 2 Volumes of Village Traverses and Register Headings.

192. The Village Plans, on the scale of 4 inches to the mile, have been prepared in the usual satisfactory manner, and arrangements have been made for following out the new system of delineating all the topographical details in pen and ink suitable for photographic reduction, which important subject occupied much discussion with all the Survey Parties visited during the past year.

193. During the present season further progress is being made in the Dumoh District working northwards through the Pergunnahs of Dumoh, Nursingpoor, Mangurh, Puthureea, and Tejgurh, and filling up the gap between the Districts of Saugor and Jubbulpoor, lying to the east and west respectively. The remaining area of the Dumoh District is about 2,400 square miles. This will take one more Season after the present to complete, after which the Establishment will move into the Minar or Baitool District, south of the Nerbudda, adjoining the completed work of Hoshungabad, and work eastwards. The Great Arc Series of Triangulation furnishes ample data on which to base the survey of these districts.

194. Lieutenant Osborne, who has before acted temporarily in charge of a Survey, gives proof of ability and judgment in the management of the duties entrusted to him. He has had good training and shows great energy and zeal. With all his arrangements for conducting the current Season's survey, I was well satisfied, and he is in possession of my views on all points of procedure for the future.

Subordinates promoted.	
<i>G. O. G. No. 1433, dated 15th February 1865.</i>	
Mr. P. M. Brennan, Sub-Assistant, 2nd Class, from	Rs. 150 to 175
<i>Transferred to No. 2 Nagpoor Division.</i>	
„ J. S. Pemberton, Sub-Assistant, 2nd Class, from	„ 150 to 175
„ J. H. Barter, ditto, 3rd Class, from	„ 100 to 125
Sergeant A. Lawson, ditto, ditto, from	„ 80 to 100
Mr. C. W. T. Seyers appointed Junior Sub-Assistant from 1st December 1864.	

195. The Sub-Assistants, marginally noted, being reported highly deserving, have received promotion as specified.

1ST DIVISION, OUDH.

196. During the Season under review, this Establishment resumed the survey of the District of Sooltanpoor and Seetapoor. Capt. F. C. Anderson, Staff Corps, Revenue Surveyor. Assistant. Lieutenant A. D. Butter, Staff Corps, Assistant Revenue Surveyor. Mr. C. W. Campbell, Assistant Revenue Surveyor, 3rd Class. „ G. R. Buttress, Sub-Assistant Revenue Surveyor, 2nd Class. „ W. S. Buttress, ditto ditto, 3rd Class. „ J. A. Swyny, Junior ditto ditto, ditto. „ H. T. Hanby ditto ditto, ditto. 36 Native Surveyors. The operations were again conducted under the superintendence of Captain F. C. Anderson, Revenue Surveyor.

197. The area accomplished in the District of Sooltanpoor, including eight villages detached and outlying in the adjacent District of Jounpoor of the North-West Provinces jurisdiction, amounted to 705 square miles, included in 1,115 Village Circuits, and appertaining to the Pergunnahs marginally noted. Whilst in the Seetapoor District 800 square miles, comprised in 871 Village Circuits of the Pergunnahs as per margin, were also completed, making together, with 12 square miles of the Gogra River between Sooltanpoor and Baraitech, a grand total of survey on the revenue or large scale of 1,517 square miles and 1,986 villages.

198. This was effected for the sum of Rs. 50,108-13-0, inclusive of the contingent expenses of the Season, or at the rate of Rs. 33 per square mile, and Rs. 25-3 per Village Circuit. The completion of the Sooltanpoor District fills up the gap on Atlas Sheet No. 88 that was left between the Districts of Pertaubgurh and Fyzabad of the Fyzabad Division, south of the Gogra River. The total area of the District is now ascertained to be 1,575 square miles, comprised in 1,915 villages.

199. The above out-turn in itself is an excellent one and above average. But in addition to these duties, the Surveyor, in conformity with the orders of the Government of the North-Western Provinces, proceeded (in conjunction with Mr. W. G. Probyn, c. s.), as Boundary Commissioner, to lay down and survey a portion of the boundary line between the Nepaul and British Territories along the Rohilcund frontier, from Ghoosree Ghat, on the Sarda River, to the foot of the hills; and further to erect permanent boundary pillars along the already sanctioned frontier line.

200. A copy of the Report of the Boundary Commissioner is appended, from a reference to which,* it will be seen that a small portion of the boundary still remains unsettled in consequence of claims put forward by the Nepaulese Commissioner to certain villages of Pergunnah Bilheree of Rohilcund.

* Paras. 12 to 15.

Cost of frontier operations.		Rs.	A.	P.	201. The cost of these frontier operations amounted, as per margin, to Rs. 2,522-7, and was specially provided for by the North-West Government, under Budget Grant F. VI of 1863-64.
Audited for survey, including Travelling Allowance and line clearing...	...	843	15	0	
Ditto feed and keep of elephants, with camel hire...	...	376	10	0	
Ditto erection of masonry pillars	...	1,301	14	0	
	Total	2,522	7	0	

202. Further progress was also made in carrying out a preliminary or skeleton survey of the Sâl Forest Tracts in the north-east of Oudh. In the beginning of March, the Revenue Surveyor, accompanied by a Native Surveyor and Party, again proceeded to Bhugora Tal to start the work from a platform laid down there by the Boundary Commissioners in 1859-60.

203. The forest tracts from Bhugora Tal eastwards skirt the foot of a low range of hills on the left bank of the Raptée River. The water-shed line of this range here forms the boundary between Nepaul and Oudh, up to the point where the Arra River breaks through the line and debouches on the plains.

204. Four hundred forty square miles more of forest area were similarly surveyed in 80 blocks, or Traverse Circuits, at an expenditure of Rs. 3,033-6, which was separately provided for and defrayed by the local Government. This, with the area already reported in my last Annual Report,† brings up the surveyed area of Sâl Forests and intermediate blocks of land to 811 square miles, thus forming a very large and varied extent of work performed during the season, too much, in fact, for the careful supervision of a single Officer.

† Para. 110.

205. Nine Great Trigonometrical Stations of the Series marginally noted were met with in course of the operations in Districts Sultanpoor and Seetapoor; these were carefully incorporated with the work, and afforded ample means for testing the accuracy of the linear and angular measurements of

Connection with G. T. Stations.

3	Stations of the Amua Meridional Series.	
3	" " Kurara	ditto.
4	" " Gurwani	ditto.

the Revenue Survey. The results of the comparison of distances are highly satisfactory, as follows:—

Names of G. T. Stations.	Direct distance from Revenue Survey data.	Direct distance from G. T. Survey data.	Error of Reve- nue Survey.	Error per Mile.	REMARKS.
	Feet.	Feet.	Feet.	Feet.	
Saifabad to Newa	57,790·5	57,796·2	— 5·7	0·52	} Gurwani Meridional Series.
„ to Dhopap	58,331·6	58,335·0	— 3·4	0·31	
Dhopap to Newa	60,594·4	60,603·2	— 8·8	0·77	
„ to Sirwara	61,059·2	61,036·8	+ 22·4	1·94	
Newa to „	65,603·3	65,492·5	+110·8	8·92	
Samnadio to Ragaopoor	67,405·0	67,452·7	— 47·7	3·74	} Kurara Meridional Series.
„ to Imlia	59,616·2	59,676·2	— 60·0	5·31	
Ragaopoor to „	71,199·4	71,219·2	— 19·8	1·47	
„ to Amoli	73,108·1	73,171·5	— 63·4	4·58	
„ to Thana	72,200·3	72,263·0	— 62·7	4·59	
Thana to Imlia	67,056·3	66,957·9	+ 98·4	7·75	} Amua Meridional Series.
Baraoli to Futehnuggur	95,018·0	95,073·9	— 55·9	3·11	
„ to Nimkar	99,922·6	1,00,034·4	—111·8	5·91	
Nimkar to Futehnuggur	63,709·6	63,679·1	+ 30·5	2·53	
„ to Durawal	75,535·0	75,526·1	+ 8·9	0·62	
Futehnuggur to „	85,490·1	85,552·1	— 62·0	3·83	
Average where the error is plus...	4·30	
„ where the error is minus	3·30	

206. A careful connection was also made in the Sooltanpoor District with the former survey of Pertaubgurh to the south, and with that at present progressing in Fyzabad to the north-east.

207. In Seetapoor also a good junction was formed with that of Hurdui to the west, both surveys being referred to one common meridian, and with the former surveys of Lucknow and Dariabad to the south.

208. The demarcation arrangements and Maps of the Sooltanpoor District are reported to have been very good; but in that of Seetapoor the demarcations on the ground are said to have been imperfect, causing to the professional survey loss of time and extra labor. The absence of numerous boundary pillars, only discovered after survey, and comparison of professional with the demarcation Maps, rendered it necessary to keep up a Party for the re-survey of incorrect boundaries for two months, solely for the purpose of making revisions. The Revenue Surveyor attributes this probably to the fact of the land in the Barea Tuhseel, where survey was progressing, being generally low and much under water during heavy rains.

209. The Maps and Records of this Division, as noted in the margin, have all been duly lodged in this Office by the Revenue Surveyor in a very satisfactory manner. The Maps are, if any thing, better executed than those of last season, and on which I passed the full meed of praise. Lieutenant Butter has again shown his great capabilities as a Draftsman, and produced an excellent specimen of pen and ink mapping. This Officer has worked well and gives good promise in every way. Mr. Campbell's mapping and printing is also deserving of commendation.

210. It affords me much pleasure to again testify to the continuous and unflinching exertions of Captain Anderson and his efficient Establishment. The Revenue Surveyor himself speaks in high terms of all his subordinates. All, he says, have done their best and worked well; and those marginally noted have been promoted to superior grades. The amount of work performed is not only large, but it is invariably turned out in a most complete and masterly manner by this zealous Officer, who has taken the field this year without any arrears whatever, a point of great importance, and redounding much to the credit of his management.

211. During the current Season, survey operations have been continued in the Seetapoor District; and although a considerable area remains, the whole is likely to be completed before the setting in of the rainy season. This district will fill up a portion of Atlas Sheet No. 87. It is proposed to advance afterwards into the adjoining district of Baraitch, trans-Gogra, where the demarcations are in preparation, and will be sufficiently ready by the cold weather of 1865-66. This will leave free action to the eastward of the Province of Oudh for this Division, whilst Mohumdee will be available for No. 2 Division, in regular succession to the District of Hurdui, on which that Party is now engaged.

212. In this district, it is to be hoped that, in conformity with the instructions of the Government of India, as referred to in letter as per margin,* the field measurements may be started and proceeded with simultaneously with the professional survey, precisely according to the plan followed so successfully in the Punjab, and that thus the professional measurements may be fully utilized, and a thorough and complete check be established over all the internal detailed settlement measurements.

* Foreign Department No. 210, dated the 8th August 1864, para. 7.

G. O. G. No. 1433, dated 15th February 1865.	
Mr. G. R. Buttress from	... Hrs. 150 to 175
" W. S. Buttress "	" " 125 to 150
" J. A. Swinney "	" " 100 to 125
" H. T. Hanby "	" " 100 to 125

Maps and Records.

- 2 Index Maps of season's operations, scale 4 miles = 1 inch.
- 4 Main Circuit Maps, scale 1 mile = 1 inch.
- 2 Volumes of Congregated Village Plans in 95 Sheets, scale 4 inches = 1 mile.
- 3 Sheets of River Sardah, and boundary between Nepal and Rohilkund, scale 2 inches = 1 mile.
- 6 Sheets of the Oudh Forest, scale 2 inches = 1 mile.
- 1 Plan of Cantonments and Civil Station of Sooltanpoor, scale 8 inches = 1 mile.
- 2 Volumes of Main Circuit Traverse Calculations.
- 3 " of Village Traverse Calculations and Register Headings,

Districts Durriabad and Hurdul.

Lieutenant Colonel D. C. Vanrenen, Royal Artillery, Revenue Surveyor.

Assistants.

Lieutenant F. Coddington, Staff Corps, Assistant Revenue Surveyor, transferred to 3rd Division, Oudh.

Lieutenant W. A. Frank, late 12th N. I., Probationary Assistant Revenue Surveyor, appointed on the 31st July 1864, vide G. O. G. No. 389, dated 9th June 1864.

Mr. F. W. Kelly, Assistant Revenue Surveyor, 3rd Class.

Mr. J. Todd, Sub-Assistant Revenue Surveyor, 2nd Class, formerly on the Sindh Survey, re-appointed on the 27th December 1863 by G. O. G. No. 1815, dated 31st December 1863.

Mr. C. Sheridan, Sub-Assistant Revenue Surveyor, 2nd Class.

Corporal J. Mills, Probationary Sub-Assistant Revenue Surveyor, 3rd Class.

Mr. W. Street, ditto ditto ditto.

Mr. T. S. Martin, Junior Sub-Assistant, appointed 15th October 1863, vide G. O. No. 861, dated 4th November 1863.

43 Native Surveyors, &c.

213. In October 1863, this Establishment, under the superintendence of Lieutenant Colonel D. C. Vanrenen, Revenue Surveyor, re-entered on the survey of the District of Durriabad, the only remaining unsurveyed portion of the Lucknow Division.

214. Of this District, square miles 764 of the

Pergunnah Besowree.
" Muwuyee Mhowlara.
" Rudowlee.
" Durriabad.
" Sooripoor.
" Ramnuggur, &c.

Pergunnahs noted in the margin, including a portion of the Rivers Gogra and Chonba, forming the north-east boundary, remained for survey, and were comprised in 849 villages and 2 River Circuits.

215. On its completion, the various Parties, as they finished their allotted work, moved across the intervening District of Lucknow, surveyed in 1861 to 1863, and opened up the survey of the District of Hurdul, immediately to the north-west, including also two small detached portions of Pergunnahs Mohan, Ouras, and Mullechabad of the Lucknow District; and another of Pergunnah Bangermow of the Oonao District, omitted when surveying those Districts originally, these villages not having then been demarcated. This district forms the southern portion of the Khyrabad Division of Oudh, and separated from the District of Furruckabad of the North-Western Provinces by the Ganges to the south-west, is conterminous with and bounded by the Shajehanpoor District, also of the North-Western Provinces, to the west.

Work of 1863-64.

Area.
Pergunnah Sundeela.
" Gondwa.
" Kahan Mul.
" Balamow.
" Gopa Mow.

216. Here a further area of square miles 734 contained in 535 villages, appertaining to the Pergunnahs marginally specified, was accomplished, yielding the excellent out-turn of 1,498 square miles* as the result of the season's operations:—

	Square miles.	Villages.
* Of Durriabad District	719	846
„ Hurdul „	704	509
„ Lucknow „	27	22
„ Oonao „	3	4
„ Baraitch „	3	3
„ River Gogra	42	0
Total	1,498	1,384

Cost and rates.

		Rs.	A.	P.
Permanent charges	...	47,947	14	0
Contingent ditto	...	4,866	0	0
Total	...	52,813	14	0
Arrears of Travelling Allowance for 1862-63	...	2,175	0	0
Grand Total	...	54,988	14	0

217. This was effected at a total cost, including current contingent expenses for the Season, of Rs. 52,513-14-0, or at an average of Rs. 35-1-0 per square mile, and of Rs. 37-15-0 per Village Circuit. The balance of former Season's contingent charges has been calculated in the general cost of the whole work performed. This rate is moderate and considerably reduced from what it was two or three Seasons ago.

218. Throughout the work in both districts every care has been taken to make the junction with adjoining districts, whether surveyed or in progress, and with the principal triangulation which traverses the Karara and Amua Meridians, as complete as possible in every respect. The comparison of distances derived from the data of the two independent operations of Trigonometrical and Revenue Surveys are given in the following Tabular Statement. Some of the differences are not quite so good as might have been expected to be attained in so level a country.

Error per mile of Revenue Survey.

Names of G. T. Stations.	Direct distance from Revenue Survey data.	Direct distance from G. T. Survey.	Error of Revenue Survey.	Error per Mile.	REMARKS.
Turkani to Amoli	66,277.2	66,346.8	- 69.6	5.54	} Karara Meridional Series.
„ to Utiamao	65,598.7	65,461.5	+ 137.2	11.06	
„ to Pesar	67,949.0	67,984.6	- 35.6	2.77	
„ to Basuntpoor	68,920.5	68,806.2	+ 114.3	8.75	
Asu to Bukseria	83,454.4	83,410.4	+ 44.0	2.78	
„ to Etora	85,831.7	85,975.0	-143.3	8.81	} Amua Meridional Series.
„ to Baraoli	68,046.7	68,074.8	- 28.1	2.17	
Etora to Baraoli	84,837.7	84,908.5	- 70.8	4.36	
Asu to Nimkar	100,008.4	99,959.1	+ 49.3	2.60	
Average where the error is plus	5.73	
„ „ „ is minus	4.92	

219. In the Durriabad District the demarcations and consequent comparisons of professional and settlement Maps are said to have been very good, few re-measurements being necessary. But in District Hurdul, they were the reverse of satisfactory, and very many boundaries had to be re-measured in consequence of the village proprietors having failed to replace their landmarks, and in some cases altering their sites, and fixing them contrary to the decision of the Settlement Officers.

220. Errors of this kind can only be discovered after a first survey has been made, and after a comparison with the settlement records; hence great delay and hindrance to the otherwise steady and uniform progress of the survey. "In both districts," says the Revenue Surveyor, "the professional operations have got entirely ahead of the khusrah" (field measurements conducted by the Settlement Department). "In the Durriabad District, two out of the four Tubseels were, I believe, completed, whilst in Hurdul a portion of one Tubseel only was taken in hand. I obtained a few of these khusrah Maps, which were ready, and compared them with ours; they tallied very fairly."

221. In para. 163 of my last Annual Report, I had occasion to remark and express my regret on the want of simultaneous procedure and check in the combined operations, which, if conducted according to professional methods, might make as good a cadastral survey as could be desired for this country.

Maps and Records.

2 Index Maps of Season's operations, scale 4 miles = 1 inch.
 5 Main Circuit Maps, scale 1 mile = 1 inch.
 2 Volumes of Congregated Village Plans in 95 Sheets, scale 4 inches = 1 mile.
 2 large scale Plans of Cantonments and City of Lucknow, scale 8 inches = 1 mile.
 1 Volume of Main Circuit Traverse Calculations.
 2 Volumes of Village Traverse Calculations and Register Headings.

Inspection of Party.

222. All Maps and Records connected with the above operations, as detailed in the margin, have been duly received and lodged in this Office.

223. On the 4th and 6th of October last, I had an opportunity of again inspecting this Party at Landour and looking into the whole of the details of work produced by the very large out-turn of area, which proved a most laborious task to perfect in duplicate, for lodgment in this and the local Offices. The Maps and Plans have been well turned out, and are an improvement on those of the former Season. The topographical features of the country have been very minutely surveyed and shown on the large scale Plans, whilst the generalisation of the same on the 1-inch Maps has produced good effects.

224. The original Village Plans have been done chiefly in pen and ink style; this is a good step towards the requirements of photography, full success in which is of great importance, as respects the means of relieving Executive Surveyors of the heavy task of making duplicate copies by the hand, a point on which I am very solicitous, because at present the amount of work exacted from each Establishment during the recess is too great, and it becomes most difficult for a Surveyor to clear off one Season's Returns before he has to take the field again and commence another campaign.

225. During the current Season the survey is progressing in the Hurdui District, but owing to defective arrangements in demarcation, the professional Parties have found an immense number of village boundaries disputed and unsettled. Every exertion has been made to remedy the evil since brought to light; but the result must inevitably be felt in a smaller out-turn and enhanced rates. The operations will be confined to the Tuhseels of Hurdui, Shahabad, and Bilgram; it is in these last mentioned Tuhseels that the defective demarcations occur. In these the Revenue Surveyor contemplated the completion of 1,450 square miles. He also proposes taking up a complete survey of the Ganges River, extending along the southern boundary of the district, on Furruckabad, as this important feature was altogether left out in the old survey of all the North-Western Province Districts.

Revenue Surveyor and Staff.

Mr. J. Todd, Sub-Assistant, 2nd Class, from Rs. 175 to 200, (transferred to No. 6, Hazarcebaugh Division, Lower Provinces, from the 15th November 1864.)
 Sergeant J. Mills, Sub-Assistant, 3rd Class, from Rs. 80 to 100.
 " W. Street, " " " from " 80 to 100.
 Mr. C. Sheridan, Sub-Assistant, 2nd Class, resigned on 1st Nov. 1864.
 " L. Evans, appointed Junior Sub-Assistant from 12th " "

226. The Party in question have worked most zealously, and Lieutenant Colonel Vanrenen and his Assistants are entitled to my best thanks for the creditable manner in which every thing has been brought up. The promotions, as per margin, have been authorized by the General Order before quoted.

227. Lieutenant W. A. Franks, late 12th Native Infantry, Officiating Superintendent of Police at Cawnpoor, was appointed a Probationary Assistant by the orders as per margin, and joined on the 31st July 1864. Lieutenant Franks has

Covenanted Assistant.

G. O. G. No. 388, dated 9th June 1864.

not yet passed the initiatory examination laid down by the orders of 27th June 1864, No. 531. Under special instructions, Lieutenant Foreign Department No 75, dated 12th Jan. 1865. Franks was directed to return to Cawnpoor on matters connected with his Police appointment, and he has not since rejoined this Department.

3RD DIVISION, OUDH.

228. As mentioned in paragraph 173 of my last Annual Report, the charge of this

District Fyzabad.

Lieutenant Penton Thompson, Royal Artillery, Revenue Surveyor, resigned 31st December 1863, vide G. O. G. G. No. 317, dated 9th February 1864.

Captain A. D. Vanrenen, Staff Corps, Revenue Surveyor (on sick furlough), transferred from 3rd Division, Central Provinces.

Lieutenant F. Coddington, Staff Corps, Assistant Revenue Surveyor in charge, from 1st January 1864, vide G. O. G. G. No 1812, dated 31st December 1863.

Assistants.

Lieutenant W. A. Wilkins, Staff Corps, Probationary Assistant Revenue Surveyor, confirmed from 11th May 1864, vide G. O. G. G. No. 63, dated 31st May 1864.

Mr. G. H. Blyth, Assistant Revenue Surveyor, 2nd Class.
 " W. A. Wilson, Sub-Assistant ditto 3rd "
 " T. W. Reilly ditto ditto "
 " H. Walsh, Sub-Assistant Revenue Surveyor, " "
 " H. Meany, Junior Sub-Assistant Revenue Surveyor, " "
 " C. W. Wilson ditto ditto ditto.
 30 Native Surveyors, &c.

Establishment devolved on Lieutenant Coddington, Assistant Surveyor from the 2nd Division, consequent on the resignation of Lieutenant Penton Thompson, Revenue Surveyor, in December 1863. The field work of the Season was fairly started, and continued uninterruptedly until all that had been demarcated and allotted for survey had been completed.

229. The operations extended over the whole, or portions of 8 Pergunnahs of Dis-

Pergunnah	Area.
Ukburpoor.	
"	Uldimow.
"	Birhar.
"	Tandah Dtifalgunj.
"	Umsin.
"	Mujhowra.
"	Pachhmurath.
"	Sooltanpoor Burnsa.

trict Fyzabad, as detailed in the margin, including the River Gogra bordering the tract to the north and separating it from the District of Goruckpoor; to the east and south lie the portions of the Fyzabad District surveyed in 1862-63, whilst to the west is situated the District of Sooltanpoor, with the River Goomtee forming the common line of boundary, and the unsurveyed portions of

Fyzabad. One thousand six hundred and sixty-two villages and an area of square miles 982 constituted the total out-turn of the year.

	Cost and rates.	Rs.	A.	P.
* Permanent	...	35	239	4 0
Contingencies	...	3	529	1 0
	Total	38	768	5 0
ARRANGEMENT of Travelling Allowance for 1862-63		1	555	13 0
	Grand Total	40	324	2 0

230. This was effected at a cost, current contingent expenses included, of Rs. 38,768-5,* or at an average rate of Rs. 39-7 per square mile, and of Rs. 23-5 per Village Circuit.

231. A good connection was effected with the survey operations of the 1st Division in the Sooltanpoor District, the old stations of which were adopted by this Division. Six Great Trigonometrical Stations of the Gurwani Meridional Series were taken up and incorporated with the Revenue Survey. This triangulation traverses the Districts of Sooltanpoor and Fyzabad, and passes northwards into that of Goruckpoor. The topography of a belt of country about one mile in width Trans-Gogra has been laid down for the purpose of obtaining common points for the assimilation of the two Maps.

Connection with other surveys.
Sirwari.
Kapradi.
Braoli.
Nansa.
Rahet.
Basaol.

232. The comparisons of Great Trigonometrical and Revenue Survey distances are very favorable except in one instance, the average error per mile being under four feet.

Names of Great Trigonometrical Stations.	Distances from Revenue Survey.	Distances from Great Trigonometrical Survey.	Error of Revenue Survey.	Error per Mile.	REMARKS.
Dopap to Sirwara	61,097.2	61,036.8	+60.4	5.22	Gurwani Meridional Series.
„ to Kapradi	67,005.3	67,070.5	-65.2	5.14	
Sirwara to „	57,444.1	57,501.6	-57.5	5.29	
„ to Raraoli	63,762.8	63,785.1	-22.3	1.85	
Kapradi to „	53,247.1	53,138.5	+108.6	10.77	
„ to Nausa	60,916.9	60,867.1	+49.8	6.05	
Raraoli to „	57,863.1	57,862.8	+0.3	0.03	
„ to Rahet	61,354.8	61,355.5	-0.7	0.06	
Rahet to Nausa	58,382.9	58,378.8	+4.1	0.37	
„ to Basaol	71,264.3	71,238.6	+25.7	1.90	
Nausa to „	56,935.6	56,942.1	-6.5	0.60	
Average where the error is in excess				3.62	
„ „ is in defect				2.62	

233. It being the first year of Lieutenant Coddington's management of a Party, I was anxious to examine closely into the state of his Office, and accordingly inspected it at Landour on the 6th and 7th of October last. I have much satisfaction in stating that I found the system of working both in the Field and Office all that I could wish. Lieutenant Coddington's previous training in a good Party was most favorable; he has profited by it, and is a very deserving and intelligent Officer. The Establishment has been brought into an efficient state, capable of now effecting a full return of work in the best style.

234. The Season's Maps and Records, noted in the margin, have been received in good order in this Office, having all been completed prior to commencing the present Season's field work. The Plans and Maps are very well and carefully executed, full of details, and creditable to those employed in their preparation. Those executed by Lieutenant Wilkins are especially deserving of notice; this Officer has shown great aptitude, zeal and ability in the performance of all his duties, and I was much pleased with all his work which came before me. The drawing of Mr. Reilly, Sub-Assistant, is also much approved.

235. In order to relieve the pressure in the Settlement Department as referred to in my last Report, it has been determined by the Government to withdraw this Party from Oudh on the completion of the district in hand; and by the orders, as per margin, the Establishment was directed to be broken up if suitable employment could not be found for it elsewhere. The task of completing the remaining districts of Oudh will therefore fall to the 1st and 2nd Divisions, respectively.

236. The services of the Party were accordingly applied for by the North-West Government for employment in the Dehra Dhoon District in the ensuing Season of 1865-66, but by the correspondence as per margin the application was overruled, and final orders given for its abolition at the close of the ensuing recess.

237. The area remaining to complete the Fyzabad District is in hand during the present Season, and lies entirely in the two western Tulseels. This is estimated at about 600 square miles, comprising about 1,000 villages. The Military and Civil Station of Fyzabad, together with the large native city of Ajoodhya (the old capital of Oudh), will also be surveyed minutely on the large scale of 10 inches per mile. All this will be completed in good time.

238. As this area was not likely to keep the full Establishment employed the whole Season, reductions were at once made on receipt of the instructions above mentioned. The Covenanted Assistant, Lieutenant Wilkins, was transferred to the 1st Division, Central Provinces, where a vacancy existed; Mr. Reilly, Sub-Assistant, 2nd Class, was provided for in my own Office; Mr. Meany was transferred to the 2nd Division, Nagpoor; corresponding reductions being made in the Native Establishment down to the strength required to meet the probable extent of work to be performed both in field as well as in recess.

239. As soon as all the Maps and computations of the current Season have been completed and lodged, steps will be taken to absorb the Superintending Officer, as well as all the remaining Assistants, by transfers to other Parties, and such members of the Native Establishment as may not be required will be discharged. The instrumental equipment and camp equipage will also be returned into store.

G. O. G. No. 1433, dated 15th February 1865.

Mr. W. A. Wilson	from Rs. 125	to 150.
.. T. W. Reilly	.. " 125	.. 150.
.. H. Walsh	.. " 125	.. 150.

240. In the Departmental promotions the Assistants as per margin were included.

NORTH-WESTERN PROVINCES.

ROHILCUND DIVISION.

241. The operations of this small detached Survey Party in 1863-64 consisted in the completion of the Pergunnahs of Thakoordwara and Kasheepoor of the Moradabad District, and supplying by a re-survey certain deficiencies in the existing Maps and Records of Pergunnahs Rehur, Kceruthpoor, and Nujeeabad of the adjoining District of Bijnour, the accuracy of which, as shown on the only Maps then extant, could not be vouched for in the absence of the original data, all of which had been destroyed during the mutinies, together with numerous other original survey records of the North-Western Provinces.

242. The details of square mileage and numbers of villages surveyed in these desultory operations by Mr. H. B. Talbot, during the Season under review, are as noted in the margin, showing a total area of 379 square miles with 529 villages. A survey on the large scale of 16 inches=1 mile was also executed of the city and canton-

Area.	Square miles.	No. of villages.
District Moradabad ..	.. 245	282
.. Bijnour ..	.. 134	247
Total	.. 379	529

ments of Moradabad, to show the alterations which have taken place, and to meet a want which always exists for plans of important civil stations or cantonments. Advantage is therefore always taken of the presence of a Survey Party in a district to attain this object.

Cost and rates.			
* Permanent charges .. ..	..	10,815	7 0
Contingent ,, .. ..	..	1,449	14 0
	Total ..	12,265	5 0
Arrears of Travelling Allowance for 1862-63 .. ..	..	713	0 0
	Grand Total ..	12,978	5 0

243. The expenses incurred in performing the above amounted to Rs. 12,265-5-0*, the average rate per square mile being Rs. 32-6-0, and per Village Circuit Rs. 23-3-0. The out-turn is a very fair one, and the cost moderate for operations conducted by so small an Establishment.

244. Care was taken to make the junction with former surveys in 1833 to 1840 as complete and perfect as possible. The old trijunction pillars erected on village boundaries were selected as survey stations whenever found in convenient situations, and the Great Trigonometrical Station of Nundhai, the only one met with, was incorporated with the field measurements.

245. This Surveyor was recessing at Mussooree, and his Office thus came under my inspection on the 10th October last. The work of the Season was carefully examined, and the details gone into in personal communication with the Assistant in charge, to whom full instructions were imparted as to the mode of prosecuting his operations and rendering his Maps and Records in future.

Maps and Records.

- 1 Index Map of Season's operations, scale 4 miles = 1 inch.
- 2 Main Circuit Maps, scale 1 mile = 1 inch.
- 1 Atlas Volume of Congregated Village Plans in 26 Sheets.
- 1 Volume of Main Circuit Traverse Calculations.
- 1 Volume of Village Traverse Calculations and Register Headings.

246. The Records and Maps for the Season have been furnished as per margin, but I regret to say they are not up to the required standard and as produced by the older Establishments. Various defects were pointed out to the Surveyor and an improved style of drawing inculcated, which, I trust, will be easy of accomplishment.

247. During the current Season a Topographical Survey of the Rampoor estate, or Jagheer, having been decided on in preference to a regular Revenue Survey, with village boundaries as recommended, is now in progress on a scale of 2 inches to the mile. This survey is being very carefully carried out, and the boundaries of the adjoining Districts of Bareilly and Moradabad, as shown by the old survey, have been marked out with masonry pillars. This will form, when completed, an important addition to our geographical knowledge of that part of the country, and fill up the unsightly blank that has hitherto existed in Sheet No. 67 of the Great Atlas of India. The whole area of this State, including the recent transfers of land made in favor of the present Newab and his heirs by the Government of India on account of good services during the Indian mutinies, is about 900 square miles, and will occupy another Season or two.

Establishment strengthened.		Per annum.
1 Assistant Revenue Surveyor .. ..	..	4,656
Contract Allowance .. ..	..	1,200
1 Sub-Assistant .. ..	..	1,200
13 Clerks, Draftsmen, and Native Surveyors ..	..	3,397
1 Native Doctor .. ..	..	240
100 Tindals, Measurers, and Classies ..	..	3,688
5 Guards, Burkundazes .. ..	..	298
		14,669
Contingencies .. ..	..	4,880
Total for 1864-65 .. ..	..	19,549

248. For the purpose of enabling the Assistant Surveyor in charge of this Party to make greater progress in the above work and ensure the greatest possible economy, the Establishment was placed on a similar footing with other special detached surveys as detailed in the margin, under the orders of Government, North-Western Provinces, No. 908, dated 8th August 1864.

NORTH-WESTERN FRONTIER.

(PUNJAB.)

240. As detailed in paras. 224 to 230 of my Annual Report for 1862-63, the duties

Districts Peshawur, Shalpoor, &c.
 Major H. C. Johnstone, Staff Corps, Revenue Surveyor.
Assistants.
 Lieutenant W. Barron, Staff Corps, Assistant Revenue Surveyor.
 Mr. G. Housden, Assistant Revenue Surveyor, 1st Class.
 " E. Foy, Assistant Revenue Surveyor, 3rd Class.
 " W. Reynolds, Sub-Assistant Revenue Surveyor, 3rd Class.
 " A. Gibson, Sub-Assistant Revenue Surveyor, 3rd Class.
 Baboo Huree Singh, Sub-Assistant Revenue Surveyor, 3rd Class.
 Mr. G. B. Scott, Junior Sub-Assistant Revenue Surveyor.
 21 Native Surveyors, &c.

performed by this Establishment and its Superintending Officer, Major H. C. Johnstone, during the period under review, were of a more than ordinarily desultory or detached nature. Whilst the Revenue Surveyor was employed in the early part of the Season and up to 10th

January 1864 in reconnoitering with a small staff, as per margin, the routes and country

Lieutenant W. Barron, Assistant Revenue Surveyor.
 Mr. E. Foy, Assistant Revenue Surveyor, 3rd Class.
 " Reynolds, Sub-Assistant Revenue Surveyor, 3rd Class.
 Baboo Huree Singh, Sub-Assistant Revenue Surveyor, 3rd Class, and
 2 Native Surveyors.

traversed by the troops under the command of Sir N. Chamberlain, K. C. B., in the operations on the northern frontier of Eusufzaie, an-

other Party under Mr. Housden, Assistant Revenue Surveyor, was again detached to the Sindh Saugor and Jech Doabs for the re-survey of certain new boundaries lately laid down and demarcated between the Districts of Shahpoor and Jhung (Cis Jhelum), and between Noorpoor Illaqua in the Shahpoor District and the adjoining Pergunnahs appertaining to the District of Dera Ishmael Khan (trans Jhelum.)

250. This portion of the Establishment also surveyed certain new village or rukh* boundaries in the Shalpoor District which had not been demar-

Area.
 * Reserved forest tracts.

was made topographically only in 1854-55. Some other boundaries of villages lying along the salt range came also under survey; these were not completed. The Surveyor reports that

Illaquas Noorpoor.
 " Dhrema.
 " Dhara.
 " Jaha.
 " Sukeaur.

the whole of the Illaquas mentioned in the margin were included in the re-survey, and the total area returned amounts to 1,877 square miles. The necessity for this work was caused by the absence of village demarcations at the time

of the original survey and the subsequent discovery by the local authorities of the pressing necessity for more detail measurements in the Barh or desert of these Doabs and the sub-division of the tracts into village jurisdictions. The large area thus returned consists chiefly of waste or jungle in the Barh, entailing skeleton survey of boundaries only, with very little interior detail features or topography.

251. The remainder of the Party under the Superintending Surveyor, at a late date, after

Survey of the Eusufzaie Valley.

their return from Military duty with the expedition on the 10th January 1864, entered upon the regular Revenue Survey

of the Eusufzaie Valley of the Peshawur District, as proposed by the Punjab Government and fully explained in the last Report. Here, owing to the excited state of the country consequent on the recent fighting on the Frontier, coupled with the fact that the Settlement Establishment was not available for its regular demarcation work during the time the expedition lasted, rendered the adjustment of boundary disputes throughout the Eusufzaie District tedious and slow. In numerous instances boundaries had not been defined at all.

252. Under these circumstances and with a view of not losing the whole Season, the Revenue Surveyor made a general Topographical Survey on the usual village scale of as much

Nowshera, Murdan, Yar Hossain,
 Zeydah.

of the Eusufzaie country as possible. The Pergunnahs, as per margin, thus fell under survey; and at the same time all such boundaries as had been demarcated and finally

settled were taken up, Survey Stations being fixed relatively to unsettled boundaries in such manner as would enable him, during the current Season, to measure and map all the missing

boundaries, and so complete the records of 1862-63. Of this description of survey 659 square miles were accomplished; but as it is incomplete, the whole area cannot fairly be credited to the operations of the Season under review.

253. The approximate total area returned by the Revenue Surveyor for all the above			is square miles 2,536; but this is susceptible
Approximate total area.			of future adjustment. The outlay incurred is
• Permanent charges	48,351	2 0	Rs. 57,880-6,* inclusive of contingent expenses,
Contingent "	9,529	4 0	amongst which travelling allowances to the Reve-
Total	57,880	6 0	nue Surveyor and his covenanted Military Assist-
Arrears of Travelling Allowance			ant for employment trans Indus form a specially
for 1862-63	2,168	5 0	authorized charge not common to other surveys
Grand Total	60,048	11 0	

under charge of Military Officers except those of Sindh.

254. Greater and more reliable details of areas and rates of work cannot be given in the present unfinished state of the work. On the conclusion of the present Season's operations, however, a complete Statement of areas and rates will be duly furnished.

255. The few Maps of the past Season that the Surveyor has been able to complete and

Maps and Records.	
Season 1862-63.	
1 Chart of Triangulation of "Dalhousie," scale 4 inches 1=mile.	
1 Plan of the Dalhousie Sanatorium, scale 4 inches=1 mile,	
1 Ditto of the Bukloh Hill and road to Dalhousie, scale 4 inches=	
1 mile.	
1 Skeleton Plan of Dalhousie Sanatorium showing Estates, scale	
10 inches=1 mile.	
1 Plan of the Murree Sanatorium, scale 10 inches=1 mile.	
1 ditto, ditto ditto ditto.	
Season 1863-64.	
2 Index Maps Season's operations, scale 4 and 2 miles=1 inch.	
2 Main Circuit Maps, scale 1 mile=1 inch.	
1 Atlas Volume of Congregated Village Plans, scale 4 inches =1	
1 mile.	
2 Volumes of Village Traverse Calculations and Register Headings.	

transmit to this Office, together with others of previous Season, are enumerated in the margin. They are well got up in the usual style of this Establishment. The Plans of the sanatoria, although carefully executed and showing great detail, are very peculiar and not easily readable as regards the hill shading; they will have all to be redrawn in this Office in accordance with professional principles before they can be published.

This I propose to do whenever time will permit, the influx of geographical materials being very heavy, and altogether beyond the competence of my small Ministerial Establishment to provide for.

256. During the current Season the measurement and incorporation on the Maps of last Season of the numerous omitted boundaries of villages, of which, as before mentioned, only the Topography had been laid down, has formed the first object. This the Revenue Surveyor states is a very much more tiresome and difficult task than he had anticipated. The extension of the survey to the remaining portions of the Eusufzaie is now proceeding simultaneously with this operation, and it is hoped the whole may be completed by the end of the Season.

257. The tract of country thus denominated Eusufzaie is, according to the Revenue Surveyor's description, bounded by the Swat River from the point where it debouches from the hills at Abazai to its junction with the Kabul or Lundæ River, and thence by that River as far as Attock. The Indus then forms the limit as far as Kihyara on the right bank, whence it follows an irregular line skirting generally various ranges of hills by Ponjinaw, Salim Khan, Umbeyla, Sunghow, Hurkai, Shergurh, and Killa again to Abazai, as shown approximately on Sheet No. 14 of the Great Atlas of India, the whole comprising an area of about 12 or 1,300 square miles.

258. Adverting to the remarks contained in the 10th para. of the letter, as per margin, regarding the expediency of the extension of the Foreign Department No. 210, dated 6th August 1864. Revenue Survey operations in the Peshawur Valley and Huzara, a reference has been made to the Punjab Government, and definite orders will be sought from the Supreme Government before any steps are taken in the matter.

259. The Sub-Assistants, as per margin, have been promoted for approved service, and Mr. E. Foy, Assistant Surveyor, has been transferred to the Central Provinces to supply a vacancy in the 4th Division.

Mr. W. H. Reynolds from Rs. 125 to 150 „ A. J. Gibson „ „ 125 to 150	and Mr. E. Foy, Assistant Surveyor, has been transferred to the Central Provinces to supply a vacancy in the 4th Division.
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1st SINDH, OR RIGHT BANK INDUS.

260. The operations on which this Establishment, under the superintendence of Captain J. Macdonald, Revenue Surveyor, was engaged during the Field Season of 1863-64, consisted in the completion of the southern and remaining portion of the Kotree Talooqua of District Sehwan in Sindh and of the unsurveyed Talooquas of the Jhirruck District lying immediately to the south of Talooqua Kotree and extending thence along the right bank of the River Indus, and between it and the Railway line from Kurrachee to Kotree, down to the Arabian Sea, including all the north-western creeks and islands of the mouths of the Indus from the Ghara Creek on the north to that of Recchul on the south.

Districts Sehwan and Jhirruck.

Captain J. Macdonald, Staff Corps, Revenue Surveyor.

Assistants.

Captain H. C. B. Tinner, Royal Artillery, Bombay, Assistant Revenue Surveyor.

Mr. W. H. Bolton, Assistant Revenue Surveyor, 1st Class.

Mr. J. E. Hodgson, Sub-Assistant Revenue Surveyor, (transferred to left bank Indus.)

Mr. E. C. Barrett, Sub-Assistant Revenue Surveyor, 3rd Class.

Serjeant J. Parker, Probationary Sub-Assistant Surveyor, 3rd Class.

Serjeant J. Guilford, ditto ditto, 3rd Class.

31 Native Surveyors.

261. In addition to these more or less cultivated tracts of country, the Surveyor undertook and completed a Topographical Survey or reconnoissance of what remained of the hill districts, or Kohistan of the Kurrachee Collectorate, and of that portion of the country lying along the British Frontier in Beloochistan, comprised between the western limits of Kurrachee Collectorate, and certain points fixed by the Great Trigonometrical Survey on various hill ranges, situated within 25 miles of the Great Trigonometrical Stations of Muggur and Myo, common to the western section of the Great Longitudinal Series, and to the Great Indus Meridional Series of triangulation.

262. This hill tract is bounded on the east by the District of Sehwan; on the south by the hills, or Kohistan surveyed in 1858-59; and on the west by the foreign territories of Kelat and Lus Beila. Towards the north the work terminated in a point on the Great Trigonometrical Hill Station of Chutta.

263. These peculiar operations to the east and west of the Kurrachee Collectorate chiefly unprofitable, barren and arid tracts, extended over the immense area of 6,836 square miles; of this the more important and valuable lands, amounting to 1,517 square miles, comprised in 160 Village Circuits along the River Indus, and inclusive of the area of the river itself, were surveyed on the usual large village scale of 4 inches = 1 mile. 1,748 square miles, consisting of hilly tracts to the west of the above-mentioned line of villages in the Indus Valley, and of the low-lying delta lands and creeks at the mouth of the Indus, were surveyed topographically on the scale of 2 inches = 1 mile, whilst the remainder, comprising the Kohistan and wild country beyond the border, was triangulated and sketched on the smallest scale used in the Topographical Survey of India, viz., 1 inch = 1 mile.

264. These extensive areas were got through owing to the absence of detail in the delta lands, which appear to have required mere skeleton survey on half the usual scale, and from the style of the reconnoissance of the hilly tract beyond the frontier. The work performed is certainly one of the largest out-turns yet met with by any Party, but Captain Macdonald's Establishment was considerably larger than any other.

265. The grand total of professional expenditure, inclusive of all contingent expenses

Cost and rates.			
Permanent Charges	...	51,879	3 0
Contingent	..	7,083	7 0
Total		58,962	10 0
Arrears of Travelling Allowance for 1862-63	...	402	12 0
Grand Total	...	59,365	6 0

incurred in carrying out these extensive operations, amounted to Rs. 58,962-10-0, yielding the following rates:—Rs. 11-9-0 per square mile, and Rs. 198-8-0 per Village Circuit for village measurements, and Rs. 5-15-0 per square mile for Topographical and Reconnoitering Survey. These rates are exceedingly low, and different to those prevailing in other provinces, owing to the extensive tracts of waste and desert met with, which afford large areas with little or no detailed survey, as explained in previous Reports.

266. Not less than 18 stations of the above-mentioned Series of the Great Trigonometrical Survey of India were met with and closed on during the course of the Season's work. These

afforded ample data to base the minor triangulation upon for the hill work, and also for testing the value of the linear measurements in the plains, the results of which will be tabulated hereafter, as the records and calculations of the past Season have not all been received as yet.

267. The survey of the districts and British Frontier on the right bank of the Indus, together with Rohree on the left bank, is now

Completion of work.		Sq. miles.
Kurrachee	.. .. .	2,366
Jacobabad	.. .. .	2,009
Shikarpoor	.. .. .	1,238
Larkhana and Hills on Western Frontier	.. .. .	2,241
Mohur	ditto	2,504
Schwan	ditto	2,765
Jhirruck and Hill Districts	.. .. .	6,836
Total right bank		19,959
District Robree, left bank		4,359
Total surveyed		24,318
Average per annum		3,039

completed. These operations commenced under Captain J. Macdonald in 1855-56, and during the eight years that have elapsed, the Establishment presided over by this energetic Officer has surveyed and mapped 24,318 square miles of country at a general mean average rate of Rs. 13-6 per square mile and giving an average of 3,039 square miles per Season, comprised in the districts marginally noted. In the words of the Surveyor:—"We have surveyed sandy deserts; high rugged rocky

"ranges; great plains of soft mud covered with grass and mangrove, where thousands of deep black gutters of the tidal creeks lay like big worms all over the dead level of the Indus delta. Over all such countries a regular Commissariat system had to be established, and added greatly to the expense of the work and the anxiety of the Surveyor. Such a survey as we have conducted is more applicable to a country like Sindh, of which two-thirds is a desert, than the slower and more detailed work in Bengal and Oudh, over land which represents Revenue in every mile."

268. Of the whole of this we have reliable and excellent Maps chiefly on the large scale of 4 inches; but some of the desert tracts comprising very large dehs or villages are on 2 inches, whilst the hills only are on 1 inch to the mile. The whole has been well generalised and reduced to the 1-inch scale, giving the topography of the country in a very clear and minute style.

269. The Maps and Records lodged in this Office are specified in the margin; similar

Maps and Records.	
1862-63.	
9	Main Circuit Maps, scale 1 mile=1 inch.
4	Atlas Volumes of Congregated Village Plans in 70 Sheets, scale 4 inches=1 mile.
1	Main Circuit Traverse Computation.
4	Village Traverses and Register Headings.
1863-64.	
2	Index Maps of Season's operations, scale 4 miles=1 inch.
4	Main Circuit Maps, scale 1 mile=1 inch.

Maps, &c., have been duly supplied to the Civil Authorities in Sindh for local use and information. The detention of the Maps, &c., of 1862-63 by the Surveyor so long after the time they were due in this Office was entirely owing to the faulty and inefficient state of the village boundary demarcations during that Season, which obliged him to wait until 1863-64 ere he could measure, map, and enter them on the Village Plans, and calculate the areas of the various villages.

270. As remarked on in my last Annual Report, the professional and settlement operations have not been used in Sindh as checks one upon the other. The discrepancies noticeable between the Tuppehdars' measurements and those finally made by this Department are of course large.

271. It was proposed, as stated in para. 253 of last Annual Report, to transfer the services of this Party, on the completion of the survey of the right bank Indus Districts in Sindh, to our own provinces, where much remained to be done. An urgent application for another Survey Party, in addition to the three already employed in the Central Provinces, having been submitted to the Government of India by the Chief Commissioner of those provinces, orders were issued in June 1864 directing that the proposed transfer of Captain Macdonald's Party from Sindh to Central Provinces should be carried out without delay.

272. Captain Macdonald was consequently directed, after leaving a small Party behind under Captain Tanner, Assistant Surveyor, for the purpose of completing some triangulation in the Kohistan or hilly tracts of Kurrachee on the Beloochistan Frontier, which was necessary to perfect that work, and as soon as the recess duties of mapping, &c., connected with the surveys of Season 1863-64 would permit, to proceed, via Bombay, to take up the Southern Division of the Central Provinces, comprising Chanda, Seroncha, the Godavery Talooks, and part of Bustar and its dependencies. The first named district had been demarcated and selected by the Chief Commissioner for commencing operations, and the work is now going on there as satisfactorily as could be expected. During my visit to Nagpoor in November last, the requirements for this survey were discussed with the Chief Commissioner, and through his excellent arrangements no impediments are likely to arise.

273. Captain Macdonald completed all his Maps for the Sindh local Authorities, and made all his preparations in time to leave Kurrachee with his Establishment about the middle of December 1864, and after a long and tedious journey by steam, rail and marching, arrived at his new ground, and commenced operations in the Chanda District on the 20th February 1865. With such a heavy Season's work as above shown, it was of course impossible to perfect the whole of the mapping and computations for this Office, which he has yet to send in. This duty will occupy a considerable portion of the ensuing recess. What he has achieved is most praiseworthy. This Surveyor cannot be excelled for zeal and energy. His services in Sindh appear to me highly meritorious and deserving of recognition.

274. Of Captain Tanner, Assistant Surveyor, the following opinion is recorded in the Surveyor's Report, and which I have great pleasure in prominently noticing :—

“Captain Tanner has fully supported all that I have before said in his favor. He is an active, energetic man in the field ; a rapid and skillful Draftsman in the Office ; altogether he is admirably suited for our Department ; he allows no difficulty to overcome his powers, and is an excellent Officer in all respects.”

275. The District of Chanda, estimated to contain about 8,500 square miles, is stated by the Chief Commissioner “ to require Mouzahwar Survey excepting certain extensive forest tracts, Zemindaree lands, lying on the left bank of the Wyngunga, and excepting also certain smaller forest tracts to the west of that river. These excepted tracts should require Topographical Survey only. About 3,000 square miles of the Chanda District have had the village boundaries demarcated,” so that there is ample work provided ahead for this Establishment.

276. On leaving Sindh several changes were made in the subordinate staff of the Party.

Changes in subordinate staff. Mr. Bolton, the Senior Assistant Surveyor, received an appointment in the Settlement Department of a very materially enhanced value, and so tendered his resignation, which was accepted; his loss to the Department in which he had a long and useful service is great. Mr. J. E. Hodgson, Sub-Assistant, was transferred to the left bank Division Survey under Mr. Lane, whose Establishment required reinforcing. The Sub-Assistants named in the margin, who have accompanied Captain Macdonald to the Central Provinces, were included in the departmental promotions. The Native Surveyors and Draftsmen specified in the margin are very highly spoken of as valuable men and most assiduous in their duties.

Mr. E. C. Barrett from 125 to 150 Rs.
 Serjeant J. Parker " 80 to 100 ..
 .. J. Guilford " 80 to 100 ..
 Mr. E. Lincoln, appointed a Junior Sub-Assistant from 15th February 1863.

Meer Fuzul Hoosain.
 Meer Inait Hoosain.
 Toolsee Ram.
 Mace Dyal.
 Amcer Buksh.
 Shaik Abdoollah.

277. An excellent Map of the entire Shikarpoor Collectorate, comprising the districts in Upper Sindh as per margin, has been compiled on the usual geographical scale of 4 miles to the inch, and lithographed in colors in this Office. This is now under distribution, and will prove very useful to the local Authorities.

Map of Shikarpoor.
 Jacobabad.
 Shikarpoor.
 Rohree.
 Larkhana.
 Mchur.

2ND SINDH, OR LEFT BANK INDUS.

278. The operations of this Establishment, under the direction of Mr. Lane, Revenue Surveyor, during Season 1863-64, embraced two distinct tracts of country immediately to the east and west of the Talooquas of Shahdadpoor and Saugor, surveyed 1862-63. That to the west extended along the left bank of the Indus River from 26° 6' to 25° 24' North Latitude, or down to the parallel of the Hyderabad Fort, and between the meridians of 68° 20' and 68° 58' of East Longitude in the Halla District of the Hyderabad Collectorate. The other comprising all the "Bhit," or desert portion of Talooqua Khipra of Thur Parkur Political Superintendency, lies between the parallels of 25° 30' and 26° 15' North Latitude and the meridians of 69° 16' and 70° 16' East Longitude.

Districts Halla, Hyderabad, and Thur Parkur.
 W. Lane, Esq., Revenue Surveyor.
Assistants.
 Mr. E. Loftee, Assistant Revenue Surveyor, 3rd Class.
 " W. G. Johnson, Sub-Assistant Revenue Surveyor, 3rd Class, (resigned 15th July 1864.)
 " H. Downman, Junior Sub-Assistant Revenue Surveyor.
 " P. Ford, do. (appointed 15th December 1863.)
 29 Native Surveyors, &c.

279. The first portion on the Indus River includes the entire Talooqua of Halla and parts of the Talooquas of Allah Yar and Hyderabad, with an area, including that of the River, of square miles 1,019 contained in 363 Village and 4 River Circuits, which were surveyed on the large scale of 4 inches=1 mile.

280. The other or desert tract bounding on Khyrpoor, Jesulmeer, and Jodhpoor, Native States, covered an area of square miles 1,712, and was surveyed topographically only on the scale of 1 inch = 1 mile.

Over the whole of this a complete net work of minor triangulation was thrown numbering 180 triangles, the long sides of the exterior boundaries in the desert being very carefully fixed by triangulated distances, verified by data derived from independent triangles; the sand hills affording great facilities for these operations, which ensured ample points, at short intervals, for filling in the interior details by plane tabling, which were carefully laid down and checked by re-surveys under European Agency.

281. The sum total of the area, therefore, amounts to square miles 2,732, the cost of which including expenses of every kind incurred in carrying out and bringing the work to a conclusion, came to Rs. 33,765-15-0*. This the Revenue

Total area, cost, and rates.			
* Permanent charges	...	...	30,368 2 0
Contingent	"	...	3,399 13 0
Total			...
Arrears of Travelling Allowance for			...
1862-63			377 6 0
Grand Total			34,143 5 0

Surveyor allots in the proportion of Rs. 20,064-15-0 for the Mouzahwar, and Rs. 13,701-0-0 for the Topographical Survey, on which the rates will be per square mile of the former Rs. 19-11 and per village Rs. 55-4, and for the latter description of

survey Rs. 8 per square mile. All these rates are exceedingly low. They can, however, only be maintained or hoped for in countries presenting equal facilities for chain measurements, and, having similar large tracts unencumbered by the minute and tortuous village boundary divisions and endless intermixture of topographical details met with on this side of India.

282. The triangulation across and over the desert tracts was based on one of the sides of the

Triangulation.	Great Trigonometrical Survey between the stations of Karoora and Nereethul in the extreme south-east, and checked on the other sides by closing on carefully measured lines of the Revenue Survey. Numerous fixed points were also established throughout the cultivated tracts along the line of the Indus, where no Great Trigonometrical Stations existed so as to admit of identification and verification in case of any new survey operations being undertaken in the Collectorate of Hyderabad hereafter.
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283. Comparison of the boundaries, as given by the Settlement Ameens and the professional Parties, was duly made and proved satisfactory. All the

Comparison of boundaries.	Thakbust or demarcation Maps were also rendered to the Revenue Surveyor in good time. But one thing was needed to have made the survey complete in all respects, viz., the khusrah or detail measurements of fields. This, however, as I had occasion also to notice in my Report for 1862-63, had unfortunately not been commenced, and hence the full force and value of the present expensive operations, as a check on the Revenue Returns yielded from the soil, can never be properly felt or appreciated. This omission to carry on the detailed or field measurements of the khusrah by the settlement branch simultaneously with the professional survey was noticed by the Supreme Government in the reply to my last Report before quoted.
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284. I append in the margin a list of all Maps and Records lodged in this Office by the

<p style="text-align: center;">Maps and Records.</p> <p>1 Index Map Season's operations, scale 4 miles=1 inch.</p> <p>7 Main Circuit Maps, scale 1 mile=1 inch.</p> <p>2 Volumes of Congregated Village Plans in 86 Sheets, scale 4 inches=1 mile.</p> <p>1 Volume of Main Circuit Traverse Calculations.</p> <p>1 Volume of Triangle Computations.</p> <p>2 Ditto of Village Traverse Calculations and Statistical Registers.</p>	<p>Revenue Surveyor in connection with these operations of 1863-64. All have been excellently got up, and bear the same stamp of professional knowledge and skill which I have before remarked on when reviewing Mr. Lane's work. The Maps received from this Surveyor are elaborately drawn, with the utmost artistic taste. Those now received are all in pen and ink without color and admirably adapted for photographic treatment. Mr. Lane's appreciation of this object has been very successful, and I am indebted to him for the able and complete manner in which he carries out all his duties.</p>
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285. During the present Season the Hyderabad Collectorate and Nuggur Parkur Political Agency is still under survey; a large area of both Revenue

Current Season's work.	and Topographical work remains to be done as shown in para. 276 of last Report, and the nature of the country is as bad as can well fall to the lot of
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Surveyors to deal with. The operations are proceeding systematically southwards in due connection with the work on the right bank, already finished, and likewise well identified with the Great Longitudinal Series of the Great Trigonometrical Survey which traverses this part of Sindh nearly on the parallel of 26° and just south of Omerkote.

Subordinate Staff.

- Mr. J. E. Hodgson, Sub-Assistant, 1st Class, transferred from Right Bank Indus Division.
- „ H. Dowman, Junior Sub-Asst., promoted from Rs. 100 to 125.
- „ G. Barrett appointed Junior Sub-Asst. from 17th October 1864.
- „ J. Connor } appointed ditto from 15th Feb.
- „ T. Dunne } 1865.

286. The additions and promotions, as per margin, have been made to this Party since the last report.

287. The foregoing account of all the Executive Surveys, in continuation of the several previous printed Reports, places the state of the Department and of the general operations, from the period of my own incumbency up to the date of my temporarily delivering over charge, during my absence in Europe, clearly on record for future reference.

Conclusion.

SURVEYOR GENERAL'S OFFICE; }
 Calcutta, 6th April 1865. }

H. L. THULLIER, *Lieut. Colonel,*
Surveyor General.

TABLE A.

General Return of Professional Work for Season 1863-64, exhibiting Area, Cost, and average Rate per Square Mile and Village Circuit of the Central Provinces, Oudh, N. W. Provinces, Punjab, and Sindh Surveys.

Divisions and Superintending Officers.	Number of Villages.	Average size of Village Circuits in acres.	AREA SURVEYED.		Cost of professional charges, including Contingencies.	Average rate per Square Mile.	Average rate per Village Circuit.
			Acres.	Square Miles.			
<i>1st Division, Central Provinces.</i>							
Lieutenant J. Sconce, Officiating Revenue Surveyor (from 1st October to 13th November)...	M	1,229	667,600	1,043	37,642	36	5
Lieutenant J. H. W. Osborne, Assistant Revenue Surveyor in charge (from 14th November to 11th March) ...	T	.....	237,155	371	8,023	21	5
Captain R. E. Oakes, Revenue Surveyor (from 1st March) ...							
<i>2nd Division, Central Provinces.</i>							
Lieut. J. W. Taylor, Asst. Revenue Surveyor in charge ...	537	1,352	726,118	1,135	42,989	37	14
<i>3rd Division, Central Provinces.</i>							
Capt. J. Sconce, Revenue Surveyor up to 3th July 1864 ...	598	1,425	858,383	1,341	45,565	33	15
Lieut. J. H. W. Osborne, Asst. Revenue Surveyor in charge (from 22nd August 1864) ...							
<i>1st Division, Oudh.</i>							
Capt. F. C. Anderson, Revenue Surveyor ...	1,886	485	970,621	1,517	50,108	33	0
<i>2nd Division, Oudh.</i>							
Lieut. Col. D. C. Vanrenen, Revenue Surveyor ...	1,384	673	959,014	1,498	52,513	35	0
<i>3rd Division, Oudh.</i>							
Lieut. F. Coddington, Asst. Revenue Surveyor in charge ...	1,662	364	628,396	982	38,768	39	7
<i>N. W. Provinces, Rohilkand Division.</i>							
H. B. Talbot, Esq., Asst. Revenue Surveyor in charge ...	529	458	242,395	379	12,265	32	6
<i>North-Western Frontier.</i>							
Major H. C. Johnstone, Revenue Surveyor ...	281	5,708	1,623,315	2,586	57,880	22	13

5 2 0 11 3 1 8 1 3 0 23 5 3 0 8 15 1 23 5 3 23 3 0 205 15 8

SINDH.

Right Bank Indus.

Capt. J. Macdonald, Revenue Surveyor

Left Bank Indus.

W. Lane, Esq., Revenue Surveyor

	M { V. 160 Sc. 30 T	10,996	2,089,481 2,285,694	3,265 3,571	37,719 21,243	6 4	7 0	11 5	8 15	10 2	198	8 ..
	M { 363 T	1,718	652,054 1,096,084	1,019 1,712	20,064 13,701	15 0	0 2	19 8	11 0	1 0	55	4 ..
	Mouzahwar 8,073 Topographical ...	1,166	9,417,377 3,618,933	14,715 5,654	3,95,518 42,967	11 6	6 5	26 7	14 9	0 7	48	15 ..
Total and average ... ..	.....	.....	13,036,310	20,369	4,38,486 14,624	1 7	11 5	21	8 ..	5..	.....	.....
Arrears of uniform rate of Travelling Allowance for 1862-63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand Total and average ... ..	.....	.....	.....	.....	4,53,110	9	4	22	3	11	.....	.....

ABSTRACT OF THE ABOVE.

No. of Parties.	Jurisdiction.	Area surveyed in Square Miles.	Total Cost.	Average rate per Square Mile.	REMARKS.
3	Central Provinces	3,890	1,34,221	34 8	{ Exclusive of arrears of uniform rate of Travelling Allowance for 1862-63.
3	Oudh	3,997	1,41,391	35 6	
1	N. W. Provinces	379	12,965	32 6	
1	N. W. Frontier	2,536	57,880	22 13	
2	Sindh (Bombay)	9,567	92,729	9 11	
		20,369	4,38,486	21 8	

SURVEYOR GENERAL'S OFFICE;
REVENUE BRANCH,
Calcutta, 6th April 1865.

(Examined) J. P. ADELS,
Head Assistant.

H. L. THULLIER,
Surveyor General of India.

TABLE E.

General Statement of Sums actually drawn, inclusive of Guards, for the Central and North-Western Provinces, Oudh, Punjab, and Sindh Revenue Surveys, during the Season 1863-64, exhibiting amount drawn in each Class.

Months.	Superintending Officers and Contract Allowance, including Military Pay of Governmented Officers.		Assistants, including Military Pay of Governmented Officers.		Office Assistants.		Native Establishment.		Guards.		Total Cost without Contingencies.		Total Cost with Contingencies.						
October 1863	..	9,257	0	9	10,287	6	8	17,740	12	0	825	0	3	38,275	3	8	42,939	11	5
November	..	10,275	9	9	10,530	6	5	15,553	14	3	881	15	3	37,406	13	8	43,300	12	4
December	..	10,360	2	4	9,994	5	6	15,641	6	6	833	6	10	36,994	15	2	43,111	0	8
January 1864	..	9,548	11	0	9,479	10	0	15,608	5	11	819	4	2	35,630	15	1	43,251	4	4
February	..	9,548	11	0	9,629	10	0	14,919	3	4	846	7	2	35,118	15	6	43,216	9	4
March	..	10,951	10	2	10,638	7	8	14,345	6	5	821	6	2	36,831	14	5	44,041	12	2
April	..	9,865	0	6	10,031	4	11	12,015	15	8	717	1	9	32,804	6	10	39,028	11	6
May	..	9,865	0	6	10,081	12	6	8,797	0	11	433	11	6	29,352	9	5	32,368	5	10
June	..	9,865	0	6	10,089	0	8	6,619	11	0	363	4	9	27,112	0	11	29,757	4	5
July	..	9,510	4	5	9,885	10	10	5,642	8	9	333	1	9	25,546	9	9	26,114	4	7
August	..	9,886	7	10	9,692	9	1	5,325	2	0	316	12	1	25,595	15	0	26,014	4	2
September	..	9,316	11	10	9,565	0	3	5,341	10	1	321	8	0	24,719	14	2	25,342	1	2
Arrears of uniform rate of Travelling Allowance for 1862-63	14,624	7	5
		1,18,251	0	7	1,19,905	4	6	1,37,751	0	10	7,512	15	8	3,85,490	5	7	4,53,110	9	4

Of the above Statement, the following Table exhibits the expense under each Class of the Revenue Surveys respectively:—

Survey.	Surveyors and Con- tract Allowance, in- cluding Military Pay of Convalesced Offi- cers.	Assistants including Military Pay of Co- vacanted Officers.	Office Assistants.	Native Surveyors.	Tindals, Klases, or Measurers.	Guards.	Total expense with- out Contingencies.	Total expense with Contingencies.
1st Division	11,515	14,014	...	5,480	7,468	878	39,358	45,665
2nd do.	9,405	11,132	600	5,375	8,588	841	35,943	42,989
3rd do.	13,250	13,864	870	5,482	7,077	726	41,270	45,565
1st Division	13,201	13,974	600	7,358	8,129	1,056	44,318	50,108
2nd do.	17,816	11,303	...	9,917	8,138	681	47,947	52,513
3rd do.	9,418	14,866	...	4,599	5,650	695	35,230	38,768
Rohilkand ... N. W. Provinces ...	5,328	...	...	2,479	2,715	291	10,815	12,265
N. W. Frontier ... Punjab ...	16,402	19,024	...	5,690	7,336	898	45,351	57,880
Right Bank Indus }	13,201	16,296	...	10,240	11,099	1,041	51,879	58,962
Left do. do. }	8,712	6,340	...	6,623	8,289	401	30,366	33,765
Arrears of uniform rate of Travelling Allowance for 1862-63 ... ..	...	...	...	...	...	...	...	14,624
Total	1,18,251	1,19,905	2,070	63,247	74,503	7,512	3,85,490	4,58,110

1,37,751 0 10

SURVEYOR GENERAL'S OFFICE;
REVENUE BRANCH,
Calcutta, 6th April 1865.

(Examined) J. P. ADELS,
Head Assistant.

H. L. THULLIER,
Surveyor General of India.

T A B L E H.

Statement showing the Area, Cost, Rate per square mile, &c., of the Districts of the Central Provinces, Oudh and Sindh, the survey of which has been completed, in continuation of Statement H. of last Report.

Districts.	When commenced to be surveyed.	When finished.	By whom surveyed.	AREA IN		Cost, inclusive of Contingent expenses.	Rate per Square Mile.	
				Acres.	Square Miles.			
Saugor*	Season. 1854-55 ...	Season. 1863-64 ...	Captain J. W. B. Blagrove ...	} 2,598,410	4,060	1,74,364	42 15 2	
Sooltanpoor	Season. 1862-63 ...	Season. 1863-64 ...	" A. D. Vanrenen ...		1,007,987	1,575	45,670	28 15 11
Durrabad	Season. 1862-63 ...	Season. 1863-64 ...	" J. Sconce ...		829,307	1,296	43,398	33 7 10
Kurrachee Collectorate, comprising the Districts of Sehwan, Jharruck, Kurrachee, and Hill Districts.	Season. 1862-63 ...	Season. 1863-64 ...	Lieut. Colonel D. C. Vanrenen... Captain J. Macdonald ...	6,341,511	9,909	1,10,676	11 2 8	

* The survey of the Saugor District was suspended during the Seasons 1857-58 to 1861-62 (inclusive.)

SURVEYOR GENERAL'S OFFICE;
REVENUE BRANCH,
Calcutta, 6th April 1865.

(Examined) J. P. ADELS,
Head Assistant.

H. L. THULLIER,
Surveyor General of India.

APPENDIX.

*Extract from Narrative Report No. 56A, dated 1st October 1864, on No. 1
Topographical Party, Gwalior and Central India Survey.*

BY CAPTAIN A. B. MELVILLE, *Officiating in charge.*

Season 1863-64.

7. The country plane tabled last field season was principally in Kurrowlee and Gwalior, and lay more immediately along the Chambal Valley. The most remarkable physical feature is the sand shore scarp, which rises a few miles north of the Chambal to the height of about 500 feet, gently dipping N. N. W., and which continues regularly along from Dholpoor to the Baieas River. The country may be generally described as barren and uncultivated. On either side of the Chambal, for about two miles, there extends an intricate mass of clay ravines, while on the top of the northern scarp, undulating rocky downs, covered with brushwood and, with only a little cultivation, consisting principally of rice in the ravines, form the main feature of the country. South of the river, east of Satalgurh there is much more cultivation, (particularly along the Assun and Koaree Rivers), while west of Satalgurh, you enter into the dense forest that extends south up the Koonoo River. During this season, the small remaining portion of the State of Dholpoor was finished, and a large portion of Kurrowlee completed. Kurrowlee is a very barren hilly country, with a small amount of cultivation, principally rice, which is exported to a considerable extent. Large quantities of charcoal are manufactured and a good deal of iron smelted, the one being imported from Jeypore. The imports consist principally of salt and gram. Mr. Horst, whose Plane Table included the city of Kurrowlee, reports as follows:—Iron ore, containing as much as 50 per cent. of the metal, is brought in very large quantities from hills lying a few miles to the south-west of Hindoun in the Jeypore territory. Salt is brought from the Samber Salt Lake, and taken towards Gwalior and other parts of Central India. Gram is brought in large quantities from the Jeypore and British territories, and generally taken in exchange for rice. Kurrowlee is the only city of any importance that came into the last season's Plane Tables; the old capital was situated at Bahadarpoor, where extensive ruins are still to be seen on the right bank of the river, opposite the present village.

The present city, in latitude 26° 29' 43," longitude 77° 4' 17," is situated in the midst of a net-work of ravines, and can only be approached from north-west and south-west; it is surrounded by a pukka wall varying in thickness from 2 feet to 6, with 5 gates each, known as follows:—Nahar Gate to the south-east of the city into which the Mandrel road enters; Ghoor Gate so called from the ravines near it, through which the road from Jeypore passes; Hindoun Gate, Bahman Gate, and Nuddi Gate. About 600 yards beyond the pukka wall, a kutch wall, with pukka bastions rapidly falling to ruin, forms an outer defence on the western and southern side. The palace is situated in the centre of the city, and is surrounded by a high pukka wall having towers at the north-east and north-west corners. Kurrowlee city contains 5,222 houses, and the population is estimated at 23,600. In the district there is fine pasturage on the top of the scarp over the Chambal, and there are considerable flocks of sheep and goats; however, from some local superstition, sheep are not allowed to be sold for slaughter. There is a celebrated place of pilgrimage dedicated to Kala Devi, about 15 miles west of Kurrowlee, and all the Hindoos about bring offerings there at a great festival which takes place in April. The Rajah annexes all the offerings and clears about Rs. 800 a year by it. His whole revenue is three lakhs, and is likely to decrease, as he can neither read nor write, and never interferes in the administration, which is left entirely in the hands of a few Delhi Mussulmen, who form the Punch or council of administration.

8. The roads through Kurrowlee State are mostly bad, and few in number, on account of the rocky nature of the country, and the few places where it is possible to descend the scarp into the Chambal Valley. From Kurrowlee city, the main roads are to Koshalgurh, Hindoun, Dholpoor, and Mandrel. With the exception of on the first two roads, carts are unknown and are only there procurable with great difficulty. As in all the other states of this part of India, camels thrive in large numbers in the Kurrowlee District.

10. Lieutenant G. Strahan's triangulation, as before stated, was north of the latitude of Kurrowlee. Native Surveyors, Abdool Samad Khan and Kalka Pershad, had been sent on to lay out the triangulation and pole up the country.

This triangulation lay partly in Jeypore, but principally in Ulwar, according to Lieutenant Strahan's description. Ulwar is a very easy country to survey, consisting of parallel ranges of sandstone hills several hundred feet high, covered with low brushwood, with well cultivated valleys between them.

The people seem particularly civil and obliging, thereby offering a strong contrast to their neighbours in Jeypore, and I am in hopes that the Ulwar territory will be quickly and satisfactorily surveyed. Lieutenant Strahan reports as follows:—The State of Ulwar visited by me in season 1863-64 lies between the Rivers Banganga on the south and Satee on the north. The former river runs about 18 miles outside and parallel to the southern boundary. The central portion of the State appears to be a most intricate mass of sandstone hills running in parallel ranges about 2 miles apart with very few passes through them, so that these hills can be crossed from east to west only by very circuitous routes. They rise, on the average, about 2,100 feet above the sea and about 1,200 above the plains at the foot; they are so steep as to be almost inaccessible on foot and entirely so for any beasts of burden, except in a few places, where there are steep paths leading to their summits on which are a few straggling villages. In some places they are covered with short scrubby jungle, especially on their tower flanks, in which abundance of wild animals are found, including tigers, leopards, pigs, sambar, neelgye, and a species of hog-deer. Small pukka loop-holed houses have been built in several places by the Rajah for tiger-shooting at night. These hills apparently occupy only the centre of the State, and probably do not exceed 50 miles in any direction.

The eastern part, which was that chiefly visited by me this season, is a plain highly cultivated and broken only by narrow ridges of sandstone, rising abruptly from it at intervals of 10 or 12 miles, and all running in a direction north north-east and by a few streams running from the central hills; one which runs eastward out of the hills near Koshalgurh and past Sadpoor, H. S. G. T. S., is subject to most extensive and disastrous floods. The capital is situated on the eastern border of the hill district, the greater part of the houses and the residency being at the foot of the hills, and overlooked by a fort built on their sides and summit; the highest point of the fort is 1,955 feet above the sea. North of the city, the hills rapidly diminish in height, till they finally sink into the plain, a few miles south of the River Sabee. I found the inhabitants, throughout the whole district, very civil and anxious to assist me in obtaining information about the country, and in procuring supplies, &c.

The ground is very easy for surveying, and will, I expect, be completed very rapidly and at small expense.

Lieutenant Strahan, in conjunction with myself, connected the Great Arc with the Rahoon Series about the latitude of $26^{\circ} 30'$ by a polygon and a quadrilateral, all the angles of which were carefully measured on not less than 4 zeros. Colonel Robinson had long been anxious that this should be done to determine the approximate cause of a discrepancy that existed between the two Series. Our values of the Great Arc depend upon taking the old value of the Seronj base, *viz.*, $\text{Log} = 4.5844818$ while Rahoon Series values are calculated on a new value of Seronj base $\text{Log} = 4.5844842$. Our linear value of the side between Jhoonoon and Siwassa differs from the Rahoon Series value as follows:—

$$\left. \begin{array}{l} \text{Our values} = \text{Log} = 4.8146292 \\ \text{G. T. S. value} = \text{Log} = 4.8146183 \end{array} \right\} \text{on difference in feet} = 1.65.$$

Our latitudes and longitudes differ from G. T. values as follows:—

	Jhoonoon.	Siwassa.
Our value Latitude ...	$26^{\circ} 22' 44.46''$	$26^{\circ} 33' 30.61''$
Longitude ...	$76^{\circ} 17' 5.45''$	$76^{\circ} 16' 47.70''$
Azth. ...	$178^{\circ} 35' 5.11''$	$358^{\circ} 34' 57.84''$
G. T. S. values Latitude ...	$26^{\circ} 22' 43.85''$	$26^{\circ} 33' 29.98''$
Longitude ..	$76^{\circ} 17' 5.40''$	$76^{\circ} 16' 47.65''$
Azth. ...	$178^{\circ} 35' 5.52''$	$358^{\circ} 34' 57.61''$

but as there appears to be a discrepancy between the Rahoon and Great Arc, we have, for the present, retained our own values of latitude and longitude, which can be corrected when the error is discovered.

12. After finishing his share of these observations, Lieutenant G. Strahan ran a first class secondary triangulation north through Ulwar, covering the country with intersceted points for Plane Tabling. He reached latitude $27^{\circ} 45'$ by the 26th March, and the weather then becoming hot, and Lieutenant Strahan's health having suffered from exposure, he was granted a month's privilege leave by the Surveyor General to enable him to proceed to recess quarters.

13. I commenced my triangulation from Bairon Station and ran a principal series of triangulation to join the Rahoon Series. I then broke up the principal triangulation into secondary, and intersected as many Plane Table points as I could; this part of the country not having been regularly poled up.

My triangulation passed through that portion of the Jeypore hills, in which the celebrated forts of Kimtimbour and Kurdhar are situated. As it is impossible to say when a disturbance may arise, I made a reconnoissance of the country about these forts, and also took eye sketches and sections of them. I append a short description of them with a Sketch. Both these forts would be almost impregnable to Infantry alone, but could very easily be shelled if an Artillery road were made to the top of the ghât. Kimtimbour is the stronger position of the two, being situated in the midst of a mass of ravines, while Kandhar is on an isolated hill, projecting out into the Chambal Valley. These forts are considered so important that even the Maharajah of Jeypore has not absolute authority in them. Each of the principal clans of the Jeypore Rajpoots has its own Killadar in the fort, and without the consent of all the other Killadars, the Maharaja's Killadar can do nothing. Though backed by an order of the Jeypore Durbar, I was refused admittance to either of these forts, and once or twice was openly abused by the Sepoys in them.

14. The State of Jeypore, as far as I saw it, appeared very easy both for plane tabling and triangulation, consisting of a very fertile well cultivated plain with parallel ridges of sandstone hills and isolated mounds scattered over it. The great cultivation at present seems to be opium, but I think a large portion of the soil is well suited for cotton.

The really difficult ground lies south of the Chambal, and judging by Native report, it appears probable that the party will be greatly troubled with jungle the whole way down to the Nerbudda.

*Extract from Narrative Report No. 267, dated 1st November 1864, on No. 2
Topographical Party, Hyderabad Survey.*

By J. MULHERAN, Esq., *Surveyor in charge.*

Season 1863-64.

10. The Mahore triangulation was undertaken for the purpose of furnishing Trigonometrical points for a re-survey of a portion of the Mahore Circar. It embraces an area of 960 square miles and consists of 100 triangles, the common sides of which do not differ more than 36 inches per mile. The angles were observed with the 12-inch Theodolite, and were limited to observations on $\frac{F L}{F R} \frac{0}{180}$ but repeated when the differences were larger than usual. The average triangular error does not exceed $7'' \cdot 9$ which is within the divisions of the instrument. Excepting the principal Stations of Sukli, Bitargao, and Jerban, upon which the triangulation has been based, there are no known stations of the Great Arc Series within the area triangulated. Old platforms, however, in excellent preservation were found, and used as Stations at the following places, viz., Gargawan, Tomsa, Omri, Hatla, Shivala, and Digris.

11. The entire tract is highly cultivated, and as densely populated as any portion of Berar, Omerkeir having been for many years the residence of the Ser-Naib of the several Pergunnahs into which this portion of the Penganga Valley is divided. No difficulty of any kind was experienced in moving through a country in which supplies could be procured at most of the large villages, and as the forest on the ridges was comparatively scanty, the flagmen detached, in the course of a month, erected staves upon all the points it was necessary to occupy. The observations did not detain me much more than a month; and as illustrations of the fort of Narnala were required for the report on Gangra, I availed myself of your permission to visit Ellora and Adjunta on my way to Narnala for the purpose of furnishing photographs of the rock-cut temples and caves at those places, as well as of the Makurbah at Aurlungabad, and the remarkable fort of Dowlatabad.

12. In the Juma Musjid of the latter place there is a large slab covered with Pelwi characters, which has not yet been deciphered, but which I have reason to believe, would afford some idea of the age of the neighbouring temples of Ellora, as well as of the fort itself, which was formerly known as Deogur, or the fort of the Gods. If any thing, the fort is more remarkable than any of the rock-cut temples at Ellora, the artificial scarp extending from 1,500 to 1,700 yards, and being from 85 to 100 feet in height, with a deep ditch cut out of the living rock. The entrance to the upper fort is through a dark passage cut out of the rock, the top of which can be closed with a heavy lid of iron.

13. The photographs taken, 32 in number, are herewith enclosed* for submission to Government, should you consider the same necessary in explanation of my having undertaken to illustrate the peculiarities of some of the caves.

* Will be forwarded in 2 separate packets.

3. Previous to reaching Doli, the flagman, Seocheran, by whom the Station had been selected, returned to camp with a frightful account of the risk attending the carriage of the 14-inch Theodolite to the summit of the hill. Feeling anxious to judge for myself, I moved from Mangapet and crossed the Godavery on a small canoe with the instrument, a few carriers, and the head flagman to the H. S. of Raspali to take a view of the country and make the necessary enquiries regarding the most accessible approach to Doli; none of the Gonds employed to cut a path for the instrument through the forest could give me any information, and as the only villages north-east of the Station of Raspali were those of Jala and Panur, I moved next morning to the latter village, where I was joined by the flagman Tikite, whose description of the route to the Station was more alarming than that of Seocheran's.

Hearing, however, from the Potal of Jala that there was a footpath across the range into the Bustar Valley, I detached Tikite with two men to ascertain whether the line from the ridge to the Station was practicable. I moved again the next morning through the village of Jala 4 miles distant, and did not halt until I reached the saddle of the range over which the path crossed into Buster. It being nearly 2 P. M., I halted to search for water, which was discovered about half a mile to the east. After the people had quenched their thirst, I moved on again along the ridge, taking the instrument over a number of rocks and broken ground until I perceived the staff, the approach to which for nearly 2 miles was over fearful chasms, characteristic of the whole surface of the hill. Not deeming it prudent to cross such ground late in the evening, I returned for the night to the vicinity of the spot where water was discovered, and at 7 in the evening was joined by Tikite, who still expressed doubts regarding the possibility of carrying the instrument to the Station. A pool of water, however, having been discovered by Tikite near the Station, I marched again the following morning at 6½ A. M., and by a very circuitous and difficult route reached the pool at noon, and after a halt of two hours, to allow the people to cook their food, commenced the ascent to the staff, which I reached at 4 P. M., the rocks and chasms that had to be crossed (vide Sketch appended) being most appalling and dangerous, and such as induced me to make presents to all who had assisted me in surmounting the difficulties of the route. Prior to leaving Doli the following day, the Gonds discovered some extraordinary looking bulbous roots, which they eat most greedily, and which in appearance and taste resembled the "Shakar-kand" or sweet potatoe.

7. The expense this season for clearing forest is higher than usual. In explanation of this I would mention that in addition to the expense of clearing the summits of hills, I was obliged, while moving through the Yellapuram forest, to engage from 10 to 15 men to open paths through bamboo and other underwood, and to pay them at rates slightly in excess of what was allowed to coolies employed upon the Godavery works, to ensure my obtaining the number required.

8. The forest south of Partabgiri consists principally of Teak, Bijasal, Daora, Sisam, and Salai, with bamboo and other underwood. The teak tree grows to a considerable size, and from its abundance and girth, must be very valuable. That adjoining the Godavery and Pranita is farmed by the Madapore and Godavery Contractors.

9. The little cultivation existing around the small villages south and west of Partabgiri, is irrigated entirely by tanks. The Sali-wag which runs through the Yellapuram forest is a broad mountain Nala and is entirely dry, except during the rainy months. The cultivation is principally rice, but on the banks of the Godavery, the Dadri, Jowaree, and Maize (of an excellent description) are grown, in addition to gram, dall, and koolthee (horse gram of the Madras Presidency).

10. The population of the tract triangulated, except on the banks of the Godavery, is very scanty, consisting principally, if not entirely, of people of the Telegu caste. I have met very few Gonds. Their villages consist of 1 or 2 huts and are situated in the

heart of the forest. They live principally upon wild roots and upon grain resembling Kutki and Mandghi, which is grown upon the slopes of hills. The forest abounds with bison; and elephants, I was informed, were frequently seen during the rainy months. Tigers and bears are found in all parts of the forest, but the people do not appear to care about them.

Extract from Narrative Report No. 6, dated October 1st 1864, on No. 3 Topographical Party, Ganjam and Orissa Survey.

BY LIEUTENANT COLONEL G. H. SAXTON, *in charge.*

Season 1863-64.

14. This season I shall confine my remarks to the country triangulated by myself, and forming the area given in the chart now submitted. The Remarks in the country triangulated. 2,500 square miles done by Lieutenant Armstrong and Mr. D. Atkinson, though standing to credit of this season, will not be reported on in detail. My triangulation extends pretty closely over the whole of the country between latitude 21° and $22^{\circ} 15'$ and longitude $82^{\circ} 15'$ to 83° ; the south-east $15'$ square of that block (already nearly all surveyed in detail) is blank, but compensated by a similar square added on to the south-west, and in addition, in the south-west corner, a little more than another $15'$ square is well filled up, giving an area of about 4,500 square miles. The object of selecting that area has been given in para. 6. A description of the country on which this triangulation extends might be carried to great length, comprising, as it does, features of the greatest diversity of character, coupled with the area surveyed in detail; the past season's ground takes in perhaps

Rivers.

the most interesting mass of hills in all Orissa, and the course of the chief river (the Mahanuddy), at its most interesting part, where it becomes a mighty river by the confluence of its several chief sources. The drainage from the Ummurkuntak hills (that central shed from which flow the other great rivers Soane and Nerbudda, carrying their respective shares of the same rain-fall into the Ocean on opposite sides of this Continent), must, I imagine, give an important share of the water brought down by the Mahanuddy. It comes from the north-west in several channels. The stream

Mahanuddy.

which continues to retain the name of "Mahanuddy," flows from south-west or south. Its source, alluded to in my last year's Report, is given in Mr. Harper's Field Map, and is incorporated in the compiled Map on the south-west extremity. From the source it runs as an inconsiderable stream towards the west, gradually turning up to north, receiving along its course through the Raipore District, several rivers which are shown in this season's compiled Map, running from the high hills towards the west or north-west. It then becomes much enlarged, where it turns to the east, and in latitude about $21^{\circ} 43'$ takes its final direction to the sea.

Sew or Seonat.

Another larger river, the "Sew," comes more directly from the west; it receives the several streams from the north and joins the Mahanuddy, which then becomes a great river, and in about latitude $21^{\circ} 43'$ flows almost due west to east through my triangulation chart. My Village Station "Jabri," latitude $21^{\circ} 42' 52''$ and longitude $82^{\circ} 34' 55''$, is on the high left on western bank of the "Jong" River, just before its junction with the Maha-

Jong.

nuddy. The Jong is in its upper course given entirely in this season's Maps. It takes its source in the hills reported on last year, and surveyed in detail this season. In its descent from the highlands, it twice forms a water-fall of considerable height. Mr. Chew states of about 150 feet drop in each case. Its course runs thence nearly due north, first for 30 miles through plain country of poor soil, and then through the hilly country called Sonakan, after which it enters the Chutteesgurh open plain for a few miles before falling into the Mahanuddy. It is nearly dry for great part of the year. Lower down, in about longitude $82^{\circ} 47'$, the

Hutso.

River "Hutso" falls into the Mahanuddy. This river conveys the drainage of a large area, containing the several Gurjat Estates from Sirgoojah to the south through Koorbah where coal exists, and thence, becoming a considerable stream, it runs nearly due south and enters the Chutteesgurh plain, through which its course is remarkably straight till it enters the Mahanuddy. This stream has at all times a good deal of water in its bed, which is notorious for quicksands. Below this, the Mahanuddy receives a few considerable tributaries, chiefly on the northern side in Sumbulpoor, and the very large one (the "Tel") at Sonpore. The navigation of the Mahanuddy is a subject receiving great notice.

Navigation of the Mahanuddy.

A Report by Mr. Temple, Chief Commissioner, Central Provinces, clearly points out the facilities and difficulties. There appears no difficulty in the course of the Sew coming from the heart of

the rich country west of Raipur, and on down the Mahanuddy to Chunderpore. Below that there are rocky beds until the Burmoal Pass. This portion, I think, should be divided into two parts, each to be improved by distinct works. The upper part from Chunderpore to Sonpore could,

Canals required.

few locks which would be necessary could, I imagine, be placed so as to lessen, in a great measure, the necessity of cutting through the only ridge of high ground on that line. Below Sonpore, a canal

The tributaries of Mahanuddy only admit of floating down timber.

floating down timber during the

Udet or Udanti.

Sondol.

Pairi.

Suka and Bagnai.

Under.

east side of the same hills, flows

I think, readily be got over by a canal running pretty straight between those two places on the south side of the river. The amount of difficulty. None of the tributaries of the Mahanuddy could be made available for navigation purposes beyond floods. The small rivers shown in the compiled Map are the "Udanti" (which runs through valuable teak and other timber forests), coming from the "Jeypur" side on south, where the Tel rises, into which it falls. The "Sondol," coming from the same direction and joining the "Pairi," one of the rivers rising in the hills of this season's Map, and falling by north-west course into the Mahanuddy. The "Suka" and Bagnai, running in the same direction as the Pairi from the same hills a little north, fall into the Mahanuddy; and the "Under," a similar river as to size, which, rising on the through the previous season's Map, and joins the Tel.

The hilly tracts shown in the compiled Map were remarked upon in my last year's Report.

Hills.

Stewart, an Officer of the Police Department, in a Report to the Chief Commissioner, describes the extreme northern part of this elevated country. His Report is illustrated in great part by the Map now submitted, though in some parts I was unable to follow his remarks, owing, I imagine, to his writing partly from hearsay. What might be a delightful place of resort has become entirely desolate, from its being the retreat of all the most desperate of the rebels from Sumbulpore and neighbouring States. Even the low country all around this famous retreat of Manickgurh is marked by sites of deserted villages

Place of shelter for the chief rebels of Sumbulpore and neighbouring States.

and an appearance of general poverty. On examining the Map you will be struck by the

Remarkable ridge of hill about 2,000 feet high.

which it is separated by a deep and narrow valley. On the extreme south end of this valley, near the small village of "Kotgaon," there is a hot spring, from which at all seasons flows a considerable stream. The spring

Hot Spring.

is at the bottom of a pool, a few yards in diameter, and 4 or 5 feet deep. The water rises at a temperature of some height; when taken from the pool, it is rather warm for a tepid bath. To the north of these is a ridge of high rocky hills, the highest tops of which have the heights given in the Maps. In some instances the rocky tops are of very fantastic shape. The area triangulated has its remarkable hills. The Peak "Dalha"

Dalha Peak.

is seen prominently from the neighbouring plain of Chutteesgurh at a great distance. It is very precipitous, especially on its south side, the rock being quite perpendicular for a great depth from the top, on which there is very little space for a tent. "Kasi" and the higher hills on the extreme north-east of chart form the western end of a range running thence about due

Kasi Hill.

east through the northern part of the country surveyed the previous season by a Surveyor from No. 4 Party, and ending in the Maps of former years near "Raipur." Further north, the country is a wild, jungly, and hilly tract, the hills increasing in height, as shown by that of my distant No. 6, H * * *. On the south, after crossing the narrow eastern end of Chutteesgurh plain through which the Mahanuddy River flows, as before said, in about latitude 21° 43', the country again becomes jungly; at first barren rocky steps very gradually rise, and then bold hills again rise to a considerable height. These hills extend from about longitude 82° 20' due east for about a degree until the boundary of Sumbulpore District Proper is reached. There are, however, along this distance several gaps. The "Jong" River forms one through a very wild and unhealthy tract, and in "Sarungar" there are openings, giving north and south passes through this range, which must have been shown in the No. 4 Party Surveyor's work. South of these hills, about the parallel of 21° 15' latitude, the country is again flat,

Roads.

but uncultivated and very thinly inhabited. Along this part, the chief road in Orissa runs nearly east and west between Sumbulpore and Raipur, being the old Mail Route between Calcutta and Bombay. The road being through soil naturally favorable, is in fair order. My Stations of "Basna" and "Sankra" are on the road side, and show the elevation of the country to be about 900 feet above sea level.

This road which at "Sankra" crosses the "Jong" is, I believe, unbridged throughout these districts. Besides this trunk road, there are several Bunjary roads running through the detail Maps. Immense numbers of pack bullocks pass along these roads, which in fair weather are in excellent condition. The traffic is in grain and cotton from Chutteesgurh to the coast. These roads run in a south-easterly direction, and are marked on my Maps by a double line in burnt Sienna. The principal route is that shown in your Sketch Map of Kharonde and Bustar Dependencies, and running from Raipore through Nurrah to Jonagush, &c.

15. My own movements during the field season, extending, as they do, over such a lengthened distance, do not admit of much examination of particular localities. Throughout the area surveyed in detail and triangulated during the past season, are scattered the valuable teak forests of these provinces. Along the "Udet" or "Udanti" River, which runs from the west through Abdool Rayman's boards on the south of my compiled Map, there is a large quantity of very fine teak timber. This river is called by both the names given, Udet being that used chiefly in its lower course before joining the Tel. Near the junction, on the opposite bank of the Tel, there are a few stunted specimens of teak. During my marching I passed through these forests, but not where the teak is most plentiful. I however saw a good deal and some very fine trees. One tree in particular I was so struck with that I dismounted and measured its girth; at one foot from the ground, the girth was 8 feet and at 6 feet it was 7. This is not much, but the tree then, with scarcely perceptible decrease, rose quite straight for about 90 feet, apparently the whole perfectly sound timber. Another sound tree I measured was 13 feet in girth, but had no great height. On the same ground I was struck with the variety of other splendid forest trees. I cannot give names, but some were doubtless of value for timber. Throughout the course of the Udet, which runs for about 40 miles through this season's Map, there is abundance of teak, which extends throughout the neighbouring country for many miles. Mr. Meik (the fact of this gentleman being employed has before been noticed) has cut and secured a large quantity, indeed all that was conveniently situated, for being floated down the river, a means of transit, however, which is practicable only as far up as about longitude $82^{\circ} 30'$, above which the bed is rocky and of abrupt ascent. The teak extends upwards along the river into Jeypore, below where Mr. Meik has secured it. I am told that the Rajah of Kharonde has entirely destroyed the trees with the double object of securing what is at present valuable for his own purposes, and for the future preventing enterprising persons like Mr. Meik from coming into his estate and making calls upon him for assistance. If that Rajah has acted on such principles, which could be readily ascertained, I should think that Government would take notice and forbid such destruction in future. On the left or western bank (perhaps on both) of the "Jong" River, where it passes through the wild hilly tract, about latitude $21^{\circ} 20'$, there are again large teak forests. I don't know how far the Jong could be made available for floating down timber. Mr. Meik has here secured a large quantity of land under the late provision for sale of waste lands. I believe his purchase of this property lately formed the subject of discussion and legislation in the House of Parliament. I learn that the teak forests have been reserved by Government, and Mr. Meik's possession extends only to the land, which includes some of considerable value except for its extreme unhealthiness, which, until further clearing and improvement, is prohibitive of progress or profit which European Agency could superintend. Further north, in the midst of the cultivated plain of Chutteesgurh, I met with a very remarkable clump of teak trees. At the village of "Dongakora," about latitude $21^{\circ} 51'$ and longitude $82^{\circ} 28'$ just on the south of my Station of "Pamgar," there are numerous tanks, with broad bunds, and all along these bunds, everywhere in and about the village, there are teak trees, as close together as convenient for growth. They are all young sound trees, but not yet of sufficient size for use as timber. I enquired as to how they came there, but the inhabitants could give me no information as to their origin. I was told that their number was about 1,000 (one thousand), which I should say was a fair estimate. On the north of 22° latitude I did not much enter into the forest lands. As is the case throughout Orissa, the "Saul" and the "Asan" are found generally in abundance in all the jungly tracts.

16. My lengthened experience as a Surveyor has seldom taken me into country where the amount of cultivation and population approaches that of Chutteesgurh; where the characteristic of the country has been hitherto such an abundance of agricultural produce as, under the unimproved state of the country as to roads, &c., &c., to be in fact an evil. Mr. Temple, in his Reports, one of which (specially on Chutteesgurh) has just come under the notice of the world, treats more ably and fully than I could on the position, character, and prospects of the inhabitants, particularly of the more civilized parts. The wilder districts have their slender population, with which only those obliged to enter these places of retreat can come into contact. My Surveyors and myself sometimes only so far become acquainted with their existence as to see their hamlets deserted for the time on our approach, and perhaps see a retreating fugitive. Such was the case on the hills before faintly described, forming the very prominent feature on the central portion of my Map. I visited on my ascent to Katpar

Station last year, a hamlet so deserted. My detail Surveyors during this season met with them. I had the pleasure of submitting for your perusal some of the interesting reports I received from my Sub-Assistants employed on those hills. Several Surveyors managed to induce some of them to render assistance; they often refused all attempt to remunerate them by money payments, but accepted grain. When their timidity is overcome, I have always found such people willing allies. There are two classes who frequent those hills. The "Bhonjias," who have their small hamlets on the high lands, and the "Komars," whose villages are in the low country, but who live entirely on the hills for half the year, during which time they exist entirely on wild products and collect the lac, the propagation of which they cultivate and superintend rudely on the Kussum tree chiefly. In clearing jungles they will at times object to destroying the Kussum tree. The lac is collected in the usual way, on the smaller twigs, and sold to traders who come to collect it. I have frequently seen carts laden with this produce so purchased. The Bhonjias have a custom which would be very inconvenient if more intercourse existed with other tribes. Any stranger entering a

Curious caste law.

village of the Bhonjia caste, obliges every inhabitant to desert the village, which is usually burnt down, and the site not again occupied until it has undergone the purification of, at any rate, a rainy season. Captain Stewart, in his Report before referred to, mentions this fact, and the instance he met with occurred from one of Mr. Chew's party entering a village. The collection of lac and honey and making baskets, with which they trade, and the rudest type of cultivation, are the only approaches these people make towards civilized existence. In other parts, even close to the rich plain of Chutteesgurh, within a few miles of where I have ridden through beautiful fields of growing wheat, I have met with people living entirely a jungle life, and shunning any intercourse with more civilized neighbours. This was instanced by a man bringing a tiger skin, which he was anxious to give me with or without any trifling return, but who would not think of carrying it where he would receive a Government reward, of amount beyond his pecuniary experience.

17. Such a country is of course infested with destructive wild animals. Generally through-

Wild animals.

out the area under report, the wild buffaloe is very abundant.

Buffaloes very abundant.

As a sportsman, I find the personal occupation, conducting my triangulation, does not admit of my ever indulging myself in even one day's organized Shikar. It is seldom that I attempt more than can be had by having my loaded guns with me whilst marching. I frequently met with buffaloes on the march, but though at times allowed to approach a herd as near as I chose, I brought none to bay. On one occasion, while passing through a village, the Zemindar came and told me that a herd was daily feeding on village cultivation to its total destruction. He mounted his pony, and brought out some people to try and find them, but though their marks were everywhere, we saw none. This petty Zemindar told me that he estimated the number of wild buffaloes on his estate at 3,000. They roam over the plains of Chutteesgurh far away from the shelter of any jungle, and are very destructive to most crops. In the waste country again, where for many miles there is nothing but rank grass, they are everywhere, and the frequent sites of villages deserted as untenable against their depredations, prove their strength and destructiveness. When I visited Mr. Adams about half the field season had passed, and that Sub-Assistant had killed eight buffaloes and two tigers, merely whilst moving about on surveying duty. Only on one or two occasions, was he led away for a few hours after the game. The two tigers were shot, one at dusk of evening as he was returning with his Plane Table, and the other on a Sunday, the animal having come into Mr. Adam's camp and killed one of

Neelgye.

his bullocks in the middle of the day. The Neelgye is also very abundant. That animal appears to find a favorite haunt in the remarkable belt of waste ground which separates the Chutteesgurh plain from the Gurjat hills. This belt runs from just above the source of the Mahanuddy in a curved line, keeping parallel with that river as far as "Sarungar" and Sumbulpore. This belt is characterized throughout by a change from rich soil to rock, which rises in steps sometimes for a considerable distance with very gentle ascent, but nothing but barren rock with stunted trees, shrubs, and grass, growing in the crevices; at other times the ascent is more rapid, and after rising seldom beyond 2 or 300 feet, in great part it abruptly falls again on the other side, with spurs running out at intervals, as is very characteristically shown in Lieutenant Armstrong's Plane Table Sheet. On ascending one of those spurs on the south, the appearance of the others running out beyond each other, as far as can be seen, is very remarkable. The favorite

Favorite ground for Neelgye.

haunt of the Neelgye is on those rocky steps, almost level, and so bare that there appears nothing for them to browse upon. I have only in Saugor territory found this animal so abundant. A herd scampering over the rocky ground, can be heard a long way. My Observatory Assistant, Mr. Claudius, killed one, and the meat was excellent. Samber pigs and all kinds of deer, with tigers, leopards, and bears, are found in the heavier jungles, and in the richer tracts, the large game frequently seeks shelter in the ravines about the large streams, far away from the extensive tracts of jungle. In this way, especially in the dry months, sportsmen have little difficulty in getting at them.

*Extract from Narrative Report No. 35, dated 8th November 1864, on No. 4
Topographical Party, Chota Nagpore Division Survey.*

BY CAPTAIN G. C. DEPREE, R. A.—*In Charge.*

Season 1863-64.

12. For the reason given in my para. 4, I devoted myself entirely to the inspection, teaching of the Surveyors, and testing of their boards, and I believe with very favourable and immediate results. I marched from the Station of Dorundah on this duty on 27th November, and returned to quarters on 19th April, having visited the nine Surveyors on an average twice each, and tested their field sections by ascending some commanding Hill and picking out each village, bend of cultivation, nullah, hill, or other feature in sight, and noting its correct delineation on their respective boards. In addition, I accompanied every Surveyor on his ordinary day's work, and approved of, or taught him to modify his style of surveying, while in the case of the two fresh hands, Messrs. Girdlestone and Wilson, Junior, I spent many days in instructing them, and in satisfying myself of their knowledge of contouring and sketching before I left them to work alone.

13. I have introduced two novelties during the late season. First, all Stations made by the detail Surveyor, or, wherever he has set up his table, are marked by him on his field section by a small dot and concentric circle (thus \odot). I consider this to be a most important improvement, for it is evident that, the oftener a Surveyor sets his table, the more accurate his sketching must be. With this system, the Executive Officer can at once judge the amount of labor expended on any Map by counting the number of Stations thereon, and so form an estimate of the degree of correctness and value of the Map. Again, when a discrepancy exists between the border lines of the sections of two Surveyors, he knows that the man, who has a Station nearer to the point in dispute, is more likely to be correct than the other, and he adjusts accordingly. These dots are not shown on the fair copy Maps. Second, I have directed all villages, where the country admits of it, to be laid down by tangential rays. The polygon so formed is afterwards filled in with small squares in the proportion of one square to ten houses. The value of this is that the correct shape of the village is obtained, and the number of houses, or size of the village, is apparent by mere inspection.

15. I am of opinion that the Detail Maps are superior to those of any former season. I believe that the scale would not admit of more minute or accurate delineation; my repeated inspections of the sections show me that no slip of cultivation or ground feature has been omitted, except where obscured by dense jungle; all the points on hill ranges have been laid down by numerous intersections, and all ravines or water-courses have been seen and laid down by rays, except in the valleys between lofty hills, where no Trigonometrical points can be made visible: I believe that no "fancy work" has been admitted.

16. I find that the overlap into the Hazaribagh District coincides with the Map of the Revenue Survey, except in the spelling of names. When the Manbhoom District is completed, you will be able to judge of that coincidence. Again, where this season's work joins that of Messrs. Vanderputt and Pew of former seasons, the coincidence is perfect.

*Extract from Narrative Report No. 54A, dated 10th November 1864, on No. 6
Topographical Party, Cossyah and Garrow Hills Survey.*

BY J. O. NICOLSON, Esq., *Officiating in Charge.*

Season 1863-64.

It will be seen that the whole season was entirely devoted to Triangulation. This was necessary as there were very few points fixed in the country for detail survey, and there was only one Assistant present with the party who was qualified to act in the field without professional advice and assistance, besides the most favorable months in these Hills for field work had been lost by the time the party arrived on the ground of survey and could set to work.

The Triangulation is based on the operations of Cherra Poonjee and Sylhet Series, Great Trigonometrical Survey, which crossed the Khassiah Range from Assam during season 1859-60 and 1860-61, and embraces a small tract of that portion of the Khassiah Territory the survey of which has been most urgently needed, and within which are the three important European Stations of Cherra Poonjee, "Shillong Yeodo," and Jowai. There is now a sufficient number of points fixed to give employments next season to two detail Surveyors.

In most part the surface of the hills being very undulating and wavy, it became necessary to lay down Stations much closer than it is usually done, where the features are rugged and bold, affording conspicuous peaks for marks; were it not for this, 300 or 400 miles more might have been triangulated during the season.

The results of the observations made by Mr. Belletty may be considered satisfactory, considering the Instrument employed was only a 7-inch Theodolite, and signals used were mere poles with a tuft of grass on top. Heliotropes were not brought into use on account of the hills being more or less enveloped in fogs.

Mr. Civil Assistant Belletty, who was transferred from the Rewah Survey, arrived at the Presidency early in November, and was busily occupied during that month and the following, in forming the nucleus of the Establishment, collecting data, Books, Instruments, &c., and hastening on all the necessary arrangements to enable the party to depart for the Field on arrival of Captain Austen from the Upper Provinces. These duties were performed very satisfactorily.

Having been in Lower Assam before, I was well acquainted with the climate and general aspect of that country; I was aware that the lower ranges of hills skirting the Garrow and Khassiah Hills on the west and on the Assam sides were terribly unhealthy; that it would be no use entering them late in the season, as very little would be effected by the time it would be necessary to withdraw the party, and to keep the Establishment inside of these hills beyond the middle of March would be to cause their destruction. On these grounds, with your sanction, it was determined to commence operations first in the Khassiah Hills, as being more easy of access, healthy, and from having had the advantage of being for some years under the direct control and management of British Officers more civilized than the neighbouring Hill Territories.

Rangsanobo, a principal Station of the Great Trigonometrical Survey, close to Cherra Poonjee, was selected as the starting point; accordingly arrangements were made to proceed to that Station by the nearest and most practicable route.

Very stormy and wet weather set in two days after our arrival, which lasted for ten days; owing to this circumstance and the delays in procuring Khassiah Porters to proceed into the interior for carriage of supplies and baggage, the operations were not fairly set a-going until the 22nd February, when Mr. Belletty broke camp and, accompanied by Mr. Low, left for Mollong, and Mr. Hussey for Surrarim, a Station on the high road to Gowhatty. I followed them as soon as I could make arrangements to push on the Establishment belonging to the Waste Lands Survey across the hills, and after inspection of the two parties, being satisfied that they were fairly at work, I started on the 8th March for Gowhatty to find employment for my own Survey in the adjoining district of Kamroop. I was never again able to visit the party in the Field, as my time was fully occupied in training Native Surveyors and endeavouring to get work for them; besides, after March, the road between Gowhatty and the mountains cannot be traversed without considerable risk on account of the excessive insalubrity of the lower hills on the Assam side, which are impregnated with malaria.

An attempt was made when we first arrived to recruit the Establishment from the inhabitants of the country, but it proved a perfect failure. The Khasias, although laborious when actually at work, are very indolent and object to regular work. It was with no end of trouble that the services of 30 men were secured on the monthly pay of Rs. 10 each to accompany the party into the interior, but, except as porters, they proved of no use on account of their dissolute and drunken habits; I do not now think that their introduction to the permanent Establishment would at all add to its efficiency.

I may add that as there are very few made roads in the country, every thing has to be carried on coolies. They were very scarce when we arrived, which was just after the rebellion; consequently, all the heavy baggage, tents, &c., had to be left behind, and the Assistants obliged to go out with only 7 coolie-loads each, and put up in village huts.

Cooly carriage only practicable in the Hills.

The party returned to **Recess Quarters** by the first week of July. They had been engaged in field work about $4\frac{1}{2}$ months, but owing to wet and foggy weather, had only about 75 dry working days.

Duration of Field Season.

The chain of hills commonly denominated the Garrow and Khassiah Hills is inhabited by the Garrow, Khassia, and Jynteah tribes, and divides the valley of Lower Assam from the plains of Mymensing and Sylhet Districts. On the west it rises from the Brahmaputra, where that river bends its course directly south, and proceeding nearly due east, joins the Kachar and Naga Mountains of which it may be considered as a great spur.

The Garrow country is nearly 85 miles long from west to east, and about 50 in breadth from north to south. The hills rise gradually from the west until they attain the level of the Khassiah Mountain. The inner ranges are entirely unknown, and belong to independent Chiefs.

Garrow Country.

The Garrows are a wild blustering people, and have never been properly brought under British control. They remain in as barbarous a condition as when we first knew them some fifty years ago. The chief cause of this unfortunate state of things may be attributed to the terrible unhealthiness of the climate of the tract they inhabit, which will not admit of troops being sent against them, except at an extreme risk of life. The Garrows have a very extraordinary custom of burying human skulls with their dead; it leads them frequently to commit murders on the people of the plains. General Jenkins, former Commissioner of Assam, says, "the Garrows are an energetic, industrious people; their country is fertile in the extreme, the forests producing numbers of all kinds of timber and supplying grass and fuel to all the Districts around; the little valleys between the hills are very carefully cultivated, and yield the richest crops of planted rice; hill tracts, when cleared, are cropped with cotton, rice, chillies, and yams, which give most abundant return."

Garrow Inhabitants.

The Deputy Commissioner in charge of the Hill Districts at Yeodo should be consulted before any steps are taken to enter the Garrow country, or any marks put up beyond the Khassia boundary in that direction, as our relations with the Garrows are far from being satisfactory at the present time. It is doubtful also whether, under any circumstance, these turbulent and suspicious people would not offer a very strong opposition to the survey of their country.

The tract of country inhabited by the Khassia Proper and Jynteah people is bounded on the north by the Assam Valley, on the south by the Sylhet District, on the east by North Kachar, and on the west by the Garrow Hills. Its length is about 75 miles from east to west, and breadth about 60. The hills are flat-topped and rise suddenly from the plains on the south side, until they attain an elevation of about 4,500 feet, and then gradually with undulating and irregular slopes to the central crest, another 1,000 feet. The highest elevation on the central crest is Shillong Hill, being 6,450 feet above the level of the sea.

It overlooks to the north Shillong Civil Station and Yeodo Valley. From the northern crest on which Nunklow is situated, the hills descend abruptly almost 2,000 feet to Barpani River, and then by a succession of low ranges thickly wooded reach the Assam Valley. On the southern flank of the range, very deep and large Kurums (glens) occur, formed by the many streams which drain the ridges and carry off the great fall of rain that annually takes place. The northern portion of the tract is remarkably wavy and undulating, and has wide river valleys, in which villages and cultivation are to be seen. The tops of the hills are perfectly bare and free from trees; there is nothing to relieve the barrenness of the view, except a few religious groves and dwarf fir trees on the upper slopes, but the glens and hollows between the steep heights are wild and wooded, and add much to the beauty of the scenery.

The Khassias are a good, humourous, and inoffensive race, but they are very lazy and have great aversion to taking service; amongst their bad qualities, their dissoluteness of manuer and drunkenness may be considered as the most prominent.

Khassia Inhabitants.

Their trade consists chiefly in the bartering of iron, oranges, and potatoes for rice, dry fish, cotton, and cloth. Potatoes are extensively cultivated in the valleys and on the slopes of the hills, and appear to be the main stay of the population.

Khassia Trade.

The Khassias can neither read nor write: the Alphabet is unknown to them. They understand no language but their own, which, although simple, is not generally understood by the inhabitants of the plains.

Language.

The Jynteeah Territory is now a Sub-Division of the Khassia Districts, and has its Head Quarters at Jowai. The population consists of a race of people nearly allied in language and customs to the Khassias. I have no personal knowledge of this part of the country.

Extract from Narrative Report, dated 24th December 1864, on No. 8 Topographical Party, Pegu Survey.

BY CAPTAIN F. FITZROY,—*Superintendent.*

Season 1863-64.

The system pursued in the Pegu Survey (described in a former Narrative) entails a somewhat excessive amount of Office labors, but admitting of remarkable despatch in the operations of the Field, it is, it would seem thereby, rendered the more conformable to the climate of the country which only allows of about five months in the year being devoted to them.

From the above remarks, it will be comprehended that the ordinary season for Office duties in British Burmah lasts from May to December. During this period in 1863 the operations of the establishment and their results may be thus capitulated :—

I. The completion of sheet No. 2 (of the 4 sheets into which the Map of Pegu is divided) upon the scale 4 miles to the inch, and its submission for publication on the 11th December 1863; the outline only of this Map having been completed at the close of the previous recess.

II. The completion of all computations and Maps connected with the previous season's traverses in due form amounting to 193 miles.

III. The completion of all the past season's "Detail Survey" Maps upon the large scale, the 1 inch scale and the $\frac{1}{4}$ inch scale in proper form :—

IV. The projection of the Traverses and the compilation of the detail surveys above alluded to upon Sheet No. 4 of the General Map to the extent of 3,745.9 square miles.

V. The preparation of the fair copies of 4 Township Maps on the $\frac{1}{4}$ inch scale of the previous season's field work, viz.,

Heng-tha-da	... Township.
Ot-pho	... Ditto.
Ka-n-oung	.. Ditto.
Myan-oung	} .. Ditto.
Kyan-keng	
in one Map	

VI. The preparation of a Map of the Town and "environs" of Rangoon on the scale 1 inch = 1 mile, embracing an area of 400 square miles. This Map being submitted for publication on the 11th December 1863.

VII. The completion of all village Gazetteers pertaining to the past season's detail survey, both in the Vernacular and in English, extensive notes on the Local Geography being also attached.

VIII. Some arrears of field work from old books brought up, principally traverses (for these arrears, the present Establishment does not hold itself responsible.)

7. The cost of the Pegu survey up to 30th November 1863 amounted to Rs. 3,82,448-6-2.

8. Some difficulty having been experienced in providing for the expenditure of this Survey in the Civil estimates by Financial Resolution No. 2900, dated 12th July 1863, it was placed under the orders of the Surveyor General of India.

Pegu Survey Department placed under the orders of the Surveyor General of India.

FIELD OPERATIONS, 1864.

9. The operations of the recess, as above detailed, were not satisfactorily accomplished until the middle of January 1864. The main body of the Surveyors, however, left Rangoon before the 23rd December 1863, the Superintendent joining them in the Prome District one month later.

10. The principal object of the operations of the season now under consideration was the completion of Sheet No. 4 of the General Map. On the 18th December 1863 notice was received from the Local Government to the effect that the survey of that portion of the Arracan Division embraced by Sheet No. 4, was also desired.

11. To obtain these ends, the following disposition of the Establishment and arrangements for the Field were made. The Superintendent having completed all that was requisite in the Rangoon Office, to inspect the survey parties in the Prome District, and then to proceed to Meng-don with a view to carrying a triangulation from that town to La-moo in Arracan. The Assistant Superintendent to conduct a traverse for a few miles along the Telegraph line towards Da-na-bhyoo with Mr. A. Cooper for the purpose of instruction, then to measure heights in various parts of the Pegu mountains barometrically, and to carry a triangulation from Toung-lay to the summit of those mountains. The Sub-Assistant Surveyors to execute the traverses requisite for the completion of Sheet No. 4. The Native Surveyors to finish the detail survey of the same Sheet.

12. The Superintendent although deterred by frequent attacks of fever and the delays incident thereto from finally completing the triangulation between Meng-don and La-moo, a distance of 42 miles across the Arracan Mountains, nevertheless succeeded in selecting and building all the Stations between those places, amounting to 13 in number, with but one exception, in which instance, the Station was unavoidably left half-finished. A base at La-moo was also selected, cleared, and measured (with the chain only). A rough triangulation of the whole work was made from Meng-don to La-moo, with Prismatic Compass. The heights of all the Stations and of many hills in the neighbourhood were taken with the Barometer and Boiling Point Thermometer; much information was also secured regarding the principal mountains and mountain streams in the vicinity. The average height of the main range here is about 3,500 feet.

13. The work was closed upon the 11th May, owing to the health of the Superintendent, and the falling of the rains which had already commenced in the hills somewhat earlier than usual; could another ten days have been secured, all the angles might have been satisfactorily observed, and this desirable piece of work finally accomplished.

14. The obstacles encountered were unusually trying, owing to the unhealthiness of the country, covered as it is with dense forests of trees and bamboos—the extreme difficulty of procuring provisions and labour, the want of experienced guides, and the fact that not a hamlet is to be found between Meng-don and Lamoo, the whole distance comprising one dreary waste of mountain and jungle.

15. As the object of this triangulation was principally to connect the traverses in that portion of the Arracan Division, falling within Sheet No. 4, the survey of which, it would appear from subsequent instructions, is now prohibited, no arrangements have been made to complete the work during the present season 1865.

16. On the 20th December 1863, Lieutenant A. H. Bagge, R. E., Assistant Superintendent, commenced a traverse from Rangoon towards Da-na-bhyoo along the Telegraph Line, mainly with the view of instructing Sub-Assistant Surveyor A. Cooper. By the 23rd January 1864, this traverse had been carried a distance of 30 miles as far as the village of Pu-lay.

17. Lieutenant Bagge reports that he was much delayed by the difficulty he experienced in procuring coolies for the purpose of clearing the line where requisite.

18. Mr. A. Cooper being now quite conversant with his work, was deputed to take up the duties allotted to him in the Prome District, Lieutenant Bagge himself proceeding to Thon-hay en route for the Pegu Mountains.

19. Repeated attacks of fever unfortunately debarred him from entering there. Traveling, therefore, along the foot of the western slope, he reached Prome on the 19th February, having been unsuccessful in obtaining the heights of a single hill.

20. The opportunity being thus unavoidably lost (a circumstance much to be regretted), all idea of completing this part of the Field Season's Programme was abandoned. Lieutenant Bagge left Prome for Toung-lay on the 25th February, and succeeded in completing a difficult triangulation from that place to the summit of the Pegu Mountains, a distance of 12 miles, by the 12th April.

21. The height of the main range here above the surrounding country is 1,150 feet; the hills are somewhat characterized by sharp and narrow ridges, and covered with forests principally of teak. The instrument supplied to Lieutenant A. H. Bagge was an 8-inch Theodolite. The Stations, 11 in number, were constructed upon the model of those described in the last narrative as having been used in a triangulation across the Arracan Mountains in April 1863. The expenditure incurred was very moderate, not exceeding Rs. 25 a Station.

22. But with reference to this work, it is necessary to state that the Superintendent, while fully recognizing the difficulties encountered, nevertheless inclines to the opinion that larger triangles might have been constructed.

23. Lieutenant Bagge now proceeded to join the Superintendent in the Arracan Hills; with a view to rendering assistance in the work progressing there, owing to the nature of the country and the difficulties of communication, he did not meet that Officer till the 9th May, soon after which date the operations in this part were closed.

24. The Survey Parties, on the whole, suffered much less from fever than usual, a circumstance which may doubtless, in some measure, be attributed to the written medical instructions supplied this year, for the first time, with medicine boxes to each man.

25. The Superintendent returned to Rangoon on the 23rd May 1864, Lieutenant Bagge, Assistant Superintendent, a few days afterwards, and the remainder of the Establishment on various dates during the month of June.

26. The cost of the survey from the 30th April 1863 to the 30th April 1864, as given in a Sketch Report, dated 15th June 1864, amounted to Rs. 29,646-12-3: under instructions since received, however, from the Surveyor General of India, an addition must be made on account of certain items paid for subsequent to the 30th April, but for which the expenditure was actually incurred prior to that date. The total cost for the year 1863-64, as thus corrected, amounts to Rs. 34,509-3-1, including expenditure in the Arracan Division.

27. The total cost of the survey, from its commencement in November 1853 up to the 30th April 1863, is Rs. 3,99,441-6-4.

28. As a sketch of the general system pursued and the period allotted to the duties of the recess has before been submitted, it appears that a brief statement of the general rules established for the guidance of the operations will not be without advantage when recording the results for the season under consideration."

Extract from Annual-Report of the Operations of the 1st Division, Central Provinces, Revenue Survey.

BY CAPTAIN R. E. OAKES.

Season 1863-64.

"10. Mr. Elliott, the Settlement Officer, has in all cases cordially co-operated with the Professional Survey, and I have much pleasure in acknowledging his prompt attention to any points that it was found necessary to bring to his notice.

17. As I only rejoined my appointment shortly before the completion of the field season, I am unable to enter minutely into the description of the country surveyed during the season; but as far as I saw of it, the culturable portions seem to be most excellent, producing first rate wheat, by far the principal crop raised. Vast quantities of grain are sold and sent to Indore and Bhopal. In the latter country, I understand, a great deal of cotton was grown, and brought into our territories last year, where it was sold or exchanged for grain; the culture of wheat having been greatly neglected, owing to a prohibition on the part of the Bhopal Government to the transport of that serial out of the country. The great demand will account for the high price of grain in the Nursingpore and Hosungabad Districts, in spite of an unprecedentedly abundant harvest.

18. The jungle patches when met with in the plains are generally good soil, but in the hilly districts are very stony and utterly unfitted for cultivation; although in places, even here, the Gonds clear small patches and raise kodoo, a worthless grain in the market, and the only crop that will grow on such poor soil.

19. The agricultural populations seem well to do. The high prices of grain, and the extensive field for labor offered by the Railway running through the district, have doubtless tended greatly to ameliorate their condition.

20. The crops principally grown in the district consist of wheat, grain, cotton, rice, pulse of various kinds, including mussoor, oorud, urhur, sugar-cane, ulsie, tillee, castor-oil, kodoo, kootkee, jowar, tobacco, &c.

21. The principal villages of the district under survey are as follows:—In Hosungabad Pergunnah, Hosungabad Khas, Raepore, Jhasulpore, Nimsandiya, Jumanee, Rusulpore, Semkhera, Doluriya, Atarsee, Semree, and Khupureea. In Sohagpore and Rajwara, Sohagpore, Turon, Kulan, Soobhapore, Khapakhera, Futtehpore, Babai, Langakhera, Semree, Auchulkhera, Chorapet Bagree, Managaon.

22. The principal rivers are the Nerbudda, which bounds the district on the north, and on which there are ferries at the following villages, viz. :—Hosungabad, Satungree, Bhogurpore, Raepore, Saugakhera Khoord, Nusseerabad, Bankherce, and Gowra, called Chekleeghat; also at Nuddinpore, Gooaree, and Balree. The River Tawar is very broad and shallow, except when in the hilly districts, the Denwa and the Sonbud-r.

23. The principal roads are the Jubbulpore and Bombay Road, which passes through Nursingpore, Hosungabad, and Baitool; also a road from Hosungabad to Bhopal, *vid* Satnugree and Raepore ferries. The G. I. P. Railway runs through the district. It crosses the Tawar River by a bridge of 11 arches in the village of Bagra Managaon, where the river debouches from the hills. The nearest point of the Railway to Hosungabad is in the village of Atarsee, where, I understand, a considerable Station will be built. The district under survey is bounded on the north by the Nerbudda; on the south by the Satpoora range; on the east by last season's work in Hosungabad and Nursingpore Districts; on the west by Nimar.

24. I have much pleasure in testifying to the good conduct of the whole of the Establishment during the season, which is best proved by the absence of complaints from the villagers, many of whom I am in the habit of personally questioning whilst on circuit duty in the field."

Extract from Annual Report of the Operations of the 2nd Division, Central Provinces, Revenue Survey.

B* LIEUTENANT J. W. TAYLOR.

Season 1863-64.

"43. I will now proceed to describe the country. The Raepore Road having to some extent been surveyed last season, I will first say a few words regarding it.

Description of country.
Raepore Road

44. The road from the Bagh Nuddee to Anjora runs from west to east. It forms the division between the zemindarees of Khyragurh and Nandgaon, as far as the village of Woorarbandh or Woorarpath, where the Khyragurh boundary turns off to the north, and the road then runs through Nandgaon only.

45. Some years ago the road did not form the boundary between the two zemindarees. Villages belonging to Khyragurh and Nandgaon were situated promiscuously on either side of it. This, however, led to many and serious disputes between the two Zemindars, Ghuna Ram, Mohunt of Nandgaon (who was a very wily and intriguing man), and Lall Futteh Sing of Khyragurh. The Pergunnahs, in consequence, were for a time confiscated by the Nagpore Rajah.

46. The two Zemindars at last agreed to go to the British Authorities at Hazareebaugh for a settlement of their disputes. The present boundary was then fixed.

47. The country from Bagh Nuddee to Woorarbandh originally belonged neither to Khyragurh or Nandgaon; it formed part of the Dongurgurh zemindaree. The Zemindar, however, proving unruly and troublesome, was outlawed, his estate confiscated and divided between the Zemindars of Khyragurh and Nandgaon, who had rendered assistance against the factious Zemindar.

48. For some miles after leaving the Bagh Nuddee, and till within half a mile of the village of Ghortalao, the road passes through a wild and closely wooded country, infested with tigers. Some years ago, however, their depredations were much more frequent than they are now. From Ghortalao the country becomes more open and cultivated for two miles, when the jungle again commences extending to the village of Khaleetola; after this no more jungle is met with. At Woorarpath the road passes over a low range of hills, the change then is most remarkable; the eye sweeps over a vast undulating plain dotted over with villages, with scarcely a tree to be seen, except in the villages themselves.

49. The importance of this road cannot be over-rated. It is the great outlet for the produce of the fertile plateau of Chutteesgurh, which is to Nagpore what Egypt of old was to Rome. This road also was the most direct route to Calcutta.

50. The value of the exports from Chutteesgurh must be much greater than that of the imports; as carts when going to Nagpore are fully laden, while on their return they are all, or nearly all, empty. The principal exports to Nagpore are grain and cotton; the imports, hardware, groceries, and English piece goods.

51. The price of grain in Chutteesgurh was a few years ago nearly four times as cheap as elsewhere; it is still twice as cheap. So little demand is there for it, or rather so difficult the means of transport, that it frequently rots in the stack. The chief mode of carriage is by carts and pack bullocks; the cost is about 3 annas per ton per mile; perhaps for the pack bullocks it may be rather more.

52. To facilitate transit a tramway has been proposed by Mr. Temple, one terminus to be at Droog, the other near the bridge over the Kanhan River at Kamptee. The route would be *via* Pathree, Seeda-gotha, Amgaon, Thirora, Toomsur, and Chachar. The advantages of this route would be, that it would command the traffic of the productive Pergunnahs of Lanjee, Komptha, Huttah, and Rampallec. The subject has been most ably treated in a Report to Government by the Chief Commissioner.

53. The principal villages along the road are Paidree Pathree, Nandgaon, and Somnee. The first and last of these are in no way remarkable. Pathree contains between 300 and 400 houses. It is surrounded by tanks. The houses are all built of wood, and bamboos plastered with mud; over this a kind of white clay is spread, which gives to the village a clean appearance. The Khyragurh Zemindar has established a Thannah here; vegetables and opium are largely cultivated at this village. At Chichoolee, close to Pathree, there is a Dâk Bungalee.

54. Nandgaon, the head quarters of a zemindaree, is situated in a plain to the south of the road, and is surrounded with tanks. It contains about the same number of houses as Pathree. The Zemindar resides in a large quadrangular enclosure, surrounded on three sides by a deep moat 12 feet wide and a wall about 5 feet high. On the fourth side is a tank; bamboos are thickly planted close to the wall. Inside the enclosure are some brick houses, one or two being double storied. There are two entrances, one a large gateway to the east, the other, to the west, is only intended for foot passengers. There are several large trees within this fort; also a very nice garden, producing, among other fruits, the pineapple.

55. There are three temples to the north of the fort, one dedicated to Deybee; the others are intended for meetings of the order of the Byrag. I will presently say a few words about the Byragies.

56. The principal streams along the road are the Argaon and Moola Nuddees, and the Chabook, Gondee, Bakul, Sondispara, Rainga, Kuttara, and Tehree Nullahs. During the monsoons these are all much swollen, and generally unpassable except by ferry boats. The Shaonath River, which flows into the Mahauddy, forms the south-eastern boundary of Main Circuit No. 24.

57. The portion of Komptha surveyed this season is very hilly and broken, with much jungle. In places there is a good deal of cultivation. Along the banks of the Bagh River especially there are rich fields of castor-oil, vegetables, sugar-cane, &c. Main Circuits 25 and 26 are bounded on the north by Pergunnah Lanjee; on the south by Pergunnah Pertahgurh. The Raepore District forms the eastern, and the portion of Komptha already surveyed the western, boundary.

58. The only river of any consequence is the Bagh, which, rising near Cheesgurbh, flows north, and falls into the Wein-Gunga, opposite the village of Satona. I ought to mention that the stream which forms the southern boundary of the Lanjee Pergunnah and joins the Bagh River near the village of Nansurree, is also called the Bagh Nuddee.

59. The main road from Nagpore to Raepore passes through the villages of Moondepar and Deoree, and crosses the Bagh River by an old bridge near the village of Bagh Nuddee. There is another important (though unmetalled) road which passes through the villages of Pandurwane and Kotra. A good portion of the produce of Chutteesgurbh is conveyed by this road to Toomsur and Kamptee. Should the proposed tramway (referred to in para. 50) ultimately be constructed, this road will become of still greater importance.

60. The principal villages where Bazars are held are Poorara, Deoree, Wurgaon, Saleekussa, Peepreea, Saonlee, and Teerkharee. Poorara is very extensive, containing more than 19 square miles. On Bazar days great cock-fights are held here. Deoree is a large village, and its importance is enhanced by its being situated on the main road. It is also the only village of any size for some miles round. Iron ore is worked at Amgaon, Koosunturra, Jamree, Dhunsooa, Lohara, Kapargurbh, Dhundaree, Peepreea, Moorkuddo, Bakulsurra, Bujeeapar, Pandurwane. At Peepreea, Bujeeapar, Koosunturra, and Bakulsurra especially there are a large number of furnaces. There is a Police Thannah at Deoree.

61. The portion of Lanjee surveyed this season is divided into two Main Circuits, Nos. 27 and 28. It is an extensive plain about 1,000 feet above the level of the sea. Pergunnah Komptha forms its southern and south-western, Pergunnah Huttah its northern and north-western, boundary. The high range of the Salectekree hills (in some places 1,400 feet above the plain, and 2,100 above the sea level,) forms a natural barrier to the east.

62. The plain is well watered by numerous small streams from the hills, affluents of the Bagh, the Soane, and Deo Nuddees. The hills are clothed with thick jungle, which also extends some way into the plain. There is no metalled road in this Pergunnah. The principal fair-weather roads are those from Lanjee to Komptha, *vid* Paturgaon and Sowree, and from Lanjee to Huttah, *vid* Bolegaon and Kirnapore.

63. The chief villages in Lanjee are Lanjee Khas, Kirnapore, Baila, Koolpa, Kenec, Kandree Kulan, Kuttepar, Karinjah, and Paturgaon. Lanjee is situated in a low unhealthy swamp, and is surrounded by tanks and mangoe groves. It has a fort surrounded by a broad wet ditch. This stagnant ditch caused so much sickness that it has recently been drained by orders of the Deputy Commissioner. The walls of the fort are all in ruins. Lanjee must formerly have been more populous than it is now. Its unhealthy situation has, I conclude, been the cause of its being deserted by many. There is a Police Thannah here. The Darogah holds cutcherry in the fort.

64. Kirnapore is a large village, but in no way remarkable, except as being the head quarters of a Zemindar owning twenty-four villages. There is a very large Bazar held at Baila once a week. Numbers of brass and iron utensils, horses and cattle, are sold here. At Koolpa, Kenec, Kandree Kulan, Pathurgaon, Kuttepar, Sakreetolah, and Karinga, weekly Bazars are held; also at the following places, though the attendance is not so large as at the villages above mentioned, *viz.*:—Newara, Matta, Dhydee, Ghat Temnee, Munairee, Mooree, Mohara, Resaiwara, Koshta, Burgaon, Peepulgaon, Mohajurree, Bolegaon, Bionsee, Kholmara, Peepreea, Gondree.

65. Iron ore is worked in the following villages:—Gopalpore, Pectaipance, Chungira, Kadhla Borhanpore, Kupra, Waree, Nara, and Sirce. Gold is washed in the Soane River: it is difficult to obtain any information about it, as the washers try and keep the matter secret.

66. Dhunsooa is a hilly and jungly Pergunnah, though there is some rich cultivation between the foot of the hills and the Wein-Gunga River. It is bounded on the north by District Mundla; on the south by Pergunnah Huttah; on the east and north-east by the Salectekree hills, while the Wein-Gunga River on the west divides it from District Seonee. Several large nullahs from the hills unite

just above Linga and form a considerable stream, which flows south, and joins the Bagh River near the village of Buggurmara; another smaller nullah falls into the Wein-Gunga near the village of Dhurpeewara.

67. The principal villages in Dhunsooa are Boorha, Linga, Sumnapore, Dhunsooa, Managaon, Dhurpeewara, Bhorec, and Kosumbee, in all of which there is a weekly Bazar. The hills abound in iron, which is worked in the following villages:—Lowaghur, Tullaborec, Suddam Koorseetola, and Phundar. There are Police Stations at Boorha and Sumnapore.

68. Main Circuit No. 30 (a portion of Pergunnah Pertabgurb) is bounded on the north by Pergunnah Sabangurhee; on the south by District Chanda; on the east by the unsurveyed portion of Pertabgurb; on the west by the Choolbund River, which divides it from Pergunnah Pownee. The country is generally open and cultivated, though there is a hilly and jungly tract, which, commencing at Peepulgaon, extends northwards in the direction of Sabangurhee. To the east also the country about Pertabgurb is hilly and jungly.

69. Besides the Choolbund already mentioned, there is only one other large stream, the Garwee Nuddee, which, rising in the high plateau of Cheesgurb, close to the sources of the Bagh, flows in a south-west-erly direction and falls into the Wein-Gunga, not far from the confluence of the Choolbund with that river. There are several large tanks in this Pergunnah at the villages of Sonaigaon, Peepulgaon, Kunnargaon, Morgaon, Khumkhoora, Surgaon, and Pulasgaon.

70. There are not many important villages in Pertabgurb, the principal ones being Mahagaon, Urjoonce, Lakundoor, Chichoolee, and Pertabgurb. The first of these is the head quarters of a Zemindar, who pays about Rs. 1,500 a year to Government. There is an outpost of the Police at Urjoonce. A large weekly market is held at Lakundoor, where numbers of cattle are brought for sale. Pertabgurb, formerly the chief town of the Pergunnah, has now become an insignificant village. Iron is obtained at Kombha.

71. It may not be uninteresting if I say a few words regarding the Zemindars whose lands have come under survey this season. Their status has hitherto been uncertain; they are in some respects not subject to our authority. They collect the revenue of their own Talooks, and maintain their own Police, and dispose of petty civil cases. They pay a certain fixed tribute to Government. To raise these men in their own esteem, as well as in that of others, the Chief Commissioner has, I believe, directed that they be not degraded by the infliction of petty fines, nor be liable to be summoned by the Deputy Commissioner for every offence. At the same time, should it be deemed necessary, they might be suspended, or their zemindares even confiscated. The Nandgaon and Khyragurb Zemindars pay about Rs. 34,000 per annum to Government; the Kirnapore Zemindar about Rs. 5,000. The ancestors of the present Kirnapore Zemindar exercised sway over the whole of Komptha.

72. The Nandgaon Zemindar is ex-officio the Deputy Grand Master or "Mohunt" of the Byragee sect. The present "Mohunt" is "Ghasee Ram;" his predecessor was "Ghunna Ram," already referred to in this Report. There are two other sects much resembling the Byragees, viz., the "Goosaens" and the "Sunnasees." A strong spirit of jealousy exists between these three orders, especially between the Sunnasees and Byragees. The Goosaens may be distinguished from the Byragees by their tying their long hair in a knot over their heads. These worship only "Mahadeo," while the Byragees' chief deity is "Deybee," though they also do "Pooja" to "Bhugwan" and "Vishnoo."

A Goosaen will partake of the food cooked by a Byragee, though the Byragee will never touch any thing prepared by a Goosaen. This is accounted for by the fact of none but the highest caste Hindoos being admitted into the order of the Byrag. In February they had a grand festival, when Byragees from long distances assembled at Nandgaon. Some had come attended by large retinues, with elephants, horses, &c. During the festival they were assembled five times a day in the temples, the "Mohunt" presiding. In the evening food was distributed to all Byragees present.

73. These Zemindars, or rather the Malgoozars to whom they sublet, have a curious method of assessing. This is determined by the number of ploughs a tenant uses. There are two sorts of ploughs, one heavy, drawn by four bullocks, the other lighter and drawn by two. For the former the assessment rate is about Rs. 7 to 8½ per annum; for the latter a good deal less.

74. When cultivators employ servants to work for them at the plough or otherwise, they generally give them one-fourth of the produce : on the whole, labor is very cheap, fixed wages seldom exceeding Rs. 2 per mensem. This is in a manner balanced by the cheapness of food.

75. There are several tribes or castes in these provinces, the principal being Brahmins, Mahomedans, Rajpoots, Mahrattas, Byragees, Kayeths, Konbees, Pathans, Gonds, Dhicmurs, Koshtees, Dhers, Telees, Ponwars, Bunjarahs, and Chumars ; nearly all these have taken to agriculture for a livelihood. Chumars especially are found in large numbers as cultivators to the east of the Bagh River. The Rajpoots are not of pure descent, having intermarried with "Gonds;" they are large landholders. The "Marwarrees" are a very intelligent class ; they are the great merchants and bankers of the country.

76. "Gonds" are principally found in the wild and hilly tracts. They formerly possessed nearly the whole of what are now the Central Provinces. They are short of stature, but active and powerful. They are known among themselves by the number of gods they worship ; these are usually six or seven, though some worship only three. The young men generally serve about seven years for a wife.

At funerals they sacrifice a cow, if rich enough to do so. The "Dhecmurs" are the fishermen ; the "Koshtees," the weavers, and the "Telees," the oil-sellers of this part of the country. The "Dher" caste is a very low one.

77. The "Bunjarahs" are the great carriers of the Central Provinces. They use pack bullocks, and, during the cold and hot weather, travel about with their wives and families. Their caravans are often very large. On reaching their halting place, they take the packs off the bullocks and pile them up very neatly, making three sides of a square, taking care to have the open side to leeward. Behind this they cook their food and sleep. The women are very fond of dressing in gaudy colors, and are always covered with ornaments. During the rainy season they build rough huts in some jungly village, where there is pasture for their bullocks. No people are more exposed to the climate than these "Bunjarahs."

78. As a rule, the people are very dirty in their habits ; this, together with the bad drinking water of many villages, is no doubt the cause of the fearful epidemics which annually carry off numbers. This season cholera was raging all throughout the district. Jhummun Lall, (a Native Surveyor,) and three classics died. We were very fortunate in not losing more. So rife was this dreadful plague that whole villages were totally deserted, and numbers dying by the road-side were left unburied.

79. Generally speaking the people are very indolent ; this, no doubt, arises from the cheapness of food. They have few or no luxuries, and a large amount of money must be hoarded. Belief in witchcraft is very general ; this is more especially the case in Raepore.

80. Particular classes or tribes seem to be more addicted to certain crimes than others. Thus the Chumars are great cattle-stealers. The Telees commit minor thefts. The Byragees, Goosacns, Rajpoots, and Mahomedans are hot tempered, and to them are frequently brought home the graver crimes of murder, robbery, and violence. There is a class of vagrants called "Kunjurs," who rob the caravans of Bunjarahs, unless allowed subsistence by them. Since the establishment of the Police, these "Kunjurs" are not so successful as they formerly were.

81. The best soil met with is "Kalee" (black cotton), which produces magnificent crops near Kirnapore, and also at several other places there is hard red soil. On this it is scarcely necessary to have made-roads ; even the common country carts, the tires of which are very narrow indeed, take very long to destroy the roads on this red soil. Four other descriptions of land are recognized by the Settlement Officer, viz., Kalee, 2nd sort, Morund, Raitharee, and Burdee.

82. The climate has, deservedly, a bad repute. No European could ever live here during, and for some time after, the rainy season. Thunder-storms are frequent and destructive, especially in the Raepore District.

83. Of agricultural products the most valuable is cotton, which, hitherto little cultivated, has been lately more extensively grown. Rice is the staple produce of the country ; after it has been cut (about the end of November) other crops are sown in the same fields. There are several descriptions of rice ;

the best is Chinoor; the inferior sorts are Tilasee, Ramkail, Pissoo, Chota Ramkail, Chunga, and many more. The cultivation of the sugar-cane is very profitable, though it requires much attention. Five sorts are grown, *viz.*, Puchrung, Kalasata, Sufae Sata, Kuttie, and Kera. The last of these is, I believe, only used medicinally. "Goor" sells at from twelve to sixteen seers per Rupee in the district, though much dearer in Nagpore.

84. The poppy is cultivated in Nandgaon and Khyragurh. In some of the largest villages "Pann" is grown. Wheat and gram are frequently sown in the dry beds of tanks. Shallow tanks are expressly made for this purpose. After the rains the water is drained off and the seed sown. Among the oil-seeds may be mentioned castor-oil, ulsie, tillee. There are rich fields of chillies and vegetables of sorts along the banks of the large streams. Melons are grown in the sandy beds of the Wein-Gunga and Choolbund.

85. The jungle is much the same as that already described in my last Report. Mowa (*Bassialatifolia*), Mangoe (*Mangifera Indica*), Babal (*Mimosa Arabica*), Burr (*Ficus Indica*), Peepul (*Ficus Religiosa*), Tamarind (*Tamarindus Indica*), Neem (*Melia Azadirachta*), Bel (*Eggle Marmelos*), Karonda (*Carissa Carandas*), Plantain (*Musa Sapientum*), Toddy-palm (*Borassia flabelliformis*), Kadam (*Nancelea Orientalis*), Custard Apple (*Annona squamosa*), Shaddock (*Citrus decumantus*), Pomegranate (*Puma Granarum*), Rose-apple (*Eugema Jambolana*), Guava (*Psidium pyrifera*), Orange (*Citrus Aurantium*), Lemon (*Citrus limonum*), are the trees usually grown in and about villages. Several of these, together with Teak (*Tectona Grandis*), Sisu (*Dalbergia Sisu*), Sal (*Shorea Robusta*), Dhak (*Butea frondosa*), Cheronujee (*Chirongia Sapida*), Aoula (*Phyllanthus Emblica*), Bamboo (*Bambusa*), Kossum (*Sleichera Trijuga*), Saj or Ain (*Pentaptera Tomentosa*), Harada (*Terminalia Chebula*), Tendu (*Deospyros Ebenum*), various sorts of Acacia (*Mimosa Catechu*, *farnesiona*, *latronum*, *alba*, *ramkanta*, *serissa tomentosa*), Bijasal (*Pterocarpus marsapium*), Rohun (*Sweetema febrifuga*), Dhamun, (?), Arjoon (*Pentaptera Arjoon*), Seevun (*Gmelina arborica*), Toon (*Codrela toona*), Dhewus (?), also several others too numerous to mention, are found in these jungles.

86. Bees-wax, honey, lacdye, resin, catechu, and cocoons of the tassa-moth are the chief products of the jungly and hilly tracts. The insect (*coccus lacca*) which forms the lacdye usually lives on the Kossum tree (*Sleichera trijuga*). The dye called "mahawar" in the vernacular is principally exported to Mirzapore. The worm of the tassa-moth is found on the Saj tree (*Pentaptera tomentosa*), and a very useful silk is manufactured from its cocoons in Nagpore, Bhundara, and several large villages in the Bhundara and Chutteesgurh Districts.

87. The jungle abounds in game. Tigers are very numerous and destructive, especially along the banks of the Bagh River: nearly 100 human beings are annually destroyed by wild beasts in the Bhundara District. A reward of Rs. 50 is granted for every full grown tiger that is killed, and smaller rewards for bears, panthers, leopards, hyænas, &c. Sometimes, indeed, where a tiger becomes a regular man-eater, a reward of Rs. 100 and even more is set on his head. Villages contiguous to hilly and jungly tracts suffer much from the depredations of sambar, neelgye, spotted deer, pig, &c. In nearly every field muchans or watch-towers are erected; these are usually elevated twelve or fourteen feet from the ground. Unless a regular watch is kept every night, or the field is surrounded by a high and strong fence, the crop is soon destroyed.

88. This being a rice-producing country, snipes are very abundant: the tanks are covered with several varieties of duck and teal; herons, cranes, pelicans, and other waders are also numerous."

Extract from Annual Report of the Operations of the 3rd Division, Central Provinces, Revenue Survey.

BY LIEUTENANT J. H. W. OSBORNE.

Season 1863-64.

"30. The country brought under survey this season consists of two tracts:—

1st.—Pergunnah Shahgurh, and the 2nd containing portions of Pergunnahs Deoree, Rehlee, Nahurmow, and Tejgurh. The general features of the first tract may be described in a few words; it is undulating, much cut up in places by ravines and small streams, and to the

north-east and south it is very hilly and covered with dense jungle. The second tract is well cultivated in the valleys, but on approaching the hills which divide them, the country is very wild and picturesque. Pergunnah Tejgurh is covered with dense jungle, and is very thinly populated, owing to its unhealthiness.

40. On account of the disloyalty and mismanagement of the petty Rajah by whom it was governed, Pergunnah Shahgurh was confiscated in 1857 and incorporated with the Saugor District. The area under cultivation in this Pergunnah is very limited, as the soil in most parts is unfitted for it; but to the north-west and south, where the soil is much better, large tracts of cultivation are to be met with. The uncultivated portion is a waste covered with tree and scrub jungle; large herds of cattle are sent into these parts for the sake of the luxuriant grass which abounds in the more open parts.

Pergunnah Shahgurh.
Villages of Punnah and Bijawar States.

41. A few villages of the Punnah and Bijawar States, which have been taken up this year, are for the most part well cultivated.

42. The whole of Pergunnah Deoree is of a much higher elevation than the valley of the Nerbudda, to which there is a rapid descent of some hundred feet. This Pergunnah is divided into valleys by spurs of the Vindhya range, which runs along the northern part of it. The largest of these valleys is that in which Deoree itself is situated, and covers the whole of the centre of the Pergunnah; it is traversed by many rivers and small streams, which supply the water necessary for the successful cultivation of this naturally fertile valley. The other valley through which the Sonar River flows is also highly cultivated, but not nearly so much as the Deoree valley, owing to the ground being much more broken by the hills. The land in the vicinity of the hills is very undulating and covered with stones and rocks, which renders it quite unfit for cultivation; it is for the most part covered with jungle, in which are a few stunted forest trees, but small patches of land cleared of the jungle are to be met with close to the villages on which koot-kee and kodon are grown. The whole of the eastern portion of this Pergunnah is a large forest, and is almost entirely deserted, it is said, on account of its unhealthiness.

43. The small portion of this Pergunnah which has been surveyed this year lies to the north-east of Deoree; it is divided into two parts by a spur of the Vindhya range; that portion situated to the east and south is most desolate and wild, and, with the exception of one or two villages on the borders of the Deoree valley, is totally uninhabited. On the other side of the spur is a flourishing and well cultivated valley watered by the Kopra Nuddee and its tributaries.

Pergunnah Reblee.

44. Only two villages of Pergunnah Nahurmow remained to be surveyed; these which form part of the Sonar valley have been taken up in Main Circuit No. 6, with a portion of Pergunnah Deoree.

Pergunnah Nahurmow.

45. On the completion of the Saugor District it was found to be necessary to commence upon the Dumoh District; so a portion of Pergunnah Tejgurh, included in Main Circuits Nos. 1 and 2, was taken up at the latter end of the season. This portion of the season's work is by far the inhospitable of any; it is a mass of jungle with a few low hills interspersed over it. It adjoins the Saugor District, and is traversed by the Berma River, and the Burree River runs along the northern boundary; notwithstanding the plentiful supply of water, there is little or no land under cultivation, which, I believe, is attributable to the paucity of inhabitants, the poor nature of the soil, and the difficulty of disposing of the grain. It was whilst engaged in surveying in this Pergunnah that Private Mackewan caught the malignant fever, which was the cause of his death.

46. By far the largest and most important of the rivers is the Nerbudda, which flows for a short distance along the southern boundary of Pergunnah Deoree. Though it is a large stream there is very little traffic on it, owing to the many rapids and falls which are met with; it is fordable in many places during the dry season, but these are not available during the rains, on account of the considerable height to which this river rises, which necessitates the use of ferry boats for all traffic; beyond this there is no use whatever for boats of any size.

Norbudda River.

47. The Dussan, which is the next largest river, forms the north-west boundary of Pergunnah Shahgurh. As the bed of this river is covered with enormous boulders, the passage of wheeled carriage across it is always a difficult operation. During the hot weather it dwindles down to a small stream, and is fordable at almost any point but where there are deep pools. In the rains it assumes such proportions, and flows with such rapidity, that all intercommunication ceases for days. Small ferry boats or canoes made of trees hollowed out, ply on some of the more important ferries.

The Dussan River.

48. The Berma, Burree, Sendhor, Brauj, Bhamundey, Bela, Bewns, Sonar, and Kopra Rivers all partake of the same character; they all have rocky beds and are subject to very sudden rises, being frequently unfordable for weeks during the rainy season. The Sonar, though an inconsiderable stream, here attains a large size before its junction with the Cane River.

49. There are no tanks of any size; the largest is Rancee Tal in the village of Pepureea Goshain. All the others are very small, and many of them are allowed to run dry for the sake of cultivating the rich alluvial deposits forming their beds.

50. A portion of the high road from Saugor to Nursingpore is shown in Map No. 1; it is very inferior, unmetalled, and but few bridges are to be found over the numerous streams which cross it. It is by this road that all the cotton grown in the Saugor and surrounding districts is carried to Bombay; and in the months of November and December it is crowded with merchants, pilgrims, and others on their way to the Birman Fair.

51. The high road from Saugor to Cawnpore runs through the Shahgurbh Pergunnah. I believe some time ago it was decided to make this into a 3rd Class Imperial Road, but, up to the present time, very little has been done towards bridging the rivers and nullahs or laying down metal.

52. The other roads marked in the General Maps are mere village tracks, which during the rains are almost unpassable, and require superficial repairs at the commencement of every cold season to render them available for wheeled carriage.

53. The only hills of any size are in the Vindhya range, which runs along to the north of Pergunnah Deoree. The Kodrakho and Rumna Hills are the two highest peaks in this portion, their height being from 3,000 to 4,000 feet above the level of the sea. There are also some hills in the Shahgurbh Pergunnah, on which are the two primary Stations of Dalipore and Tisma; and three secondary Stations, viz., Morari, Zalimpore, and Dhobun.

54. The forests are not of much importance for the timber they yield. A list of the largest and most useful trees to be found in the district is given below:—

Sagaon (Teak) (*Tectona grandis*.)
 Sal (*Shorea robusta*.)
 Goolur (*Ficus racemosa*.)
 Dhak (*Butia frondosa*.)
 Peepul (*Ficus religiosa*.)
 Mahooa (*Bassia latifolia*.)
 Mangoe (*Mangifera Indica*.)
 Jamun (*Java Plum*.)
 Sheshum (*Dalbergia Sisu*.)
 Imlee (*Tamarindus Indica*.)

55. Wheat, gram, mahesoor dall, linseed, and cotton are the staple productions; rice, arrur, jowar, sugar-cane, kootkec, and kodou are also grown in small quantities.

56. The town of Deoree, owing to its position on the high road to Nursingpore, is of some importance; in it is a fort built about the year 1650, during the Gond rule by one Doorg Singh, from whose descendants it was taken by the Mahrattas in the year 1793 and given to Peishwa, by whom it was considerably enlarged. It fell into our hands in the year 1825. The traffic carried on here is chiefly in cotton and gram. A market is held here daily.

57. Shahgurbh appears to have been a town of considerable importance in former times. In it are to be seen extensive ware-houses, four shops and a fort, all of which are now in ruins.

58. The other large villages are Maharajpore, Gungye, Keslee Singhpore, Pithara, Heerapore, and Dolcheepore. In Singhpore a school is in the course of construction for the village children.

59. There are small forts or gurbhees at Dolcheepore, Shahgurbh, Bema, and Deoree, but they are all, more or less, in ruins and of no importance.

60. Tigers, leopards, panthers, bears, wolves, spotted deer, antelope, ravine deer, sambur, neelgye, and wild boar abound. The deer and wild boar are a great source of annoyance to the villagers, who are compelled to watch their crops day and night, from the time the seed is sown until the harvest is gathered in, to guard against their incursions."

Copy of Report of the Boundary Commissioners, appointed for the demarcation of the boundary between Nepal and Rohilcund, dated the 6th August 1864.

In 1859-60 Captains F. C. Anderson and J. F. McAndrew were appointed Boundary Commissioners on the part of the British Government to determine and demarcate the boundary between Nepal and Oude. Their operations were brought to a close near the old site of Bilwree, on the banks of the old Sarda, at the pueka pillar numbered 211 on the Nepal and Oude Boundary Map, in conformity with the orders of the Supreme Government, which directed that they should carry the demarcation of the new line up to the point at which it struck the Rohilcund frontier.

2. From this pillar No. 211 northward to Goosree Ghât, the boundary between Nepal and Rohilcund is marked by pueka pillars erected by Mr. Buller in 1849 along the old bed of the Sarda.

3. In 1860, Mr. W. G. Probyn, the Collector of Shahjehanpore, was deputed to carry the boundary from Goosree Ghât up to Burumdeo, and having been strictly prohibited from re-opening any question that had been settled in 1849, he commenced his operations from the most northerly pillar of Mr. Buller's demarcation and proceeded northwards, determining the boundary between Nepal and Rohilcund. In this duty he was associated with an accredited Agent from Nepal, Sirdar Siddheman Singh. Mr. Probyn has described fully his proceedings, while thus employed, in his letter No. 191 of date 22nd March 1861, addressed to the Officiating Commissioner of Rohilcund; and for elucidation of his Report, a rough Putwaree Map of the River Sarda was executed by the Kanoongos of Poorunpore and Nigohee for submission with it, and answered admirably for the purpose for which it was compiled.

4. In December 1861, the Supreme Government expressed their approval of Mr. Probyn's proposed line, and declaring it to be finally settled, communicated their decision to the British Resident at Katmandoo, forwarding at the same time the Putwaree Map above referred to. This Map, as has been already stated, was a very rough one, compiled on a small scale for the sole purpose of explaining Mr. Probyn's Report, and was never calculated to serve as an authoritative document for the settlement of the boundary between two independent States. It was nevertheless assumed by the Government, without the application of professional tests, or the support of professional authority, to be a correct delineation of the boundary between Nepal and Rohilcund, and was forwarded as such to Katmandoo.

5. It was also forwarded to the Surveyor General of India, who had been called upon by the Supreme Government to compile a Map of the entire new boundary from the Goruckpore frontier to Burumdeo. Colonel Thuillier addressed the Collector of Shahjehanpore on the 23rd June 1862, asking to be informed whether any better trace existed in his Office of the portions of the Sarda River between Goosree Ghât and Burumdeo, as without more correct data than that contained on the Putwaree Map, he would be unable to carry out the orders of the Supreme Government, and would be under the necessity of recommending a fresh survey. In reply Mr. Fendall Thompson, acting temporarily for Mr. Probyn, informed Colonel Thuillier that the Maps in question had been compiled by the Kanoongos of the Powain Tuhseel, and, though answering generally the purposes of a rough sketch of the boundary, could not, of course, be implicitly relied on, nor were the Kanoongos able to make any improvement upon it from their field-books.

6. The necessity for a more correct survey having thus been manifested, the Government of India sanctioned, on the 4th September 1862, the Surveyor General's proposition to extend the professional survey to Burumdeo, from the point at which it had closed under the first Commissioner in 1859-60. In pursuance of this order, the Surveyor General directed Captain Anderson, Revenue Surveyor of the 1st Division in Oude, to make early arrangements to take up the work, and to carry out the wishes of the Supreme Government in such manner as should leave no further excuse for dispute or litigation.

7. Accordingly, in January 1863, Captain Anderson left his Survey Party then working in Roy Bareilly and proceeded to the Shahjehanpore frontier. He commenced work from the Sooltanpore Great Trigonometrical Station, where he observed an azimuth; and cutting through the forest, took up, for the purposes of connection, one of his Theodolite Stations of

the Nepal Boundary Survey of 1859-60. Captain Anderson then surveyed the Sarda up to Khujjooria Ghât, where a satisfactory connection was again effected with the pucka pillar, No. 211, mentioned in the first para. of this Report. Proceeding northward, the whole of the work was connected with the Mochni Hill Station, situated on the summit of the first range north of Burumdeo; and with a 7-inch Theodolite three azimuths were observed at stated distances, and a series of Stations were laid down on the left bank of the Sarda, which served as a basis for the interior survey of the river. In this manner a complete survey of the Sarda, including all the numerous Islands into which the river is divided, was satisfactorily completed by the 12th February 1863, and a Map on four separate sheets was duly compiled on the scale of 40 chains = $\frac{1}{2}$ a mile to the inch, which was sent down to the Surveyor General's Office in December last.

8. The line of demarcation was found to have been laid down for but a very short distance between Goosree Ghât and Burumdeo, and therefore Captain Anderson could only mark upon his Maps, as the boundary between the two States, the particular bank, of the many caused by the receding of the river, which was pointed out to him as having been fixed upon by Mr. Probyn to be the dividing line between Nepal and Rohileund; but as such uncertain definition of frontier between two independent States could not answer the purposes of permanent land-marks, Mr. Probyn and Captain Anderson were appointed Boundary Commissioners by the Government, North-Western Provinces, and deputed to erect masonry pillars along the north-eastern confines of the Rohileund Division, from Goosree Ghât to Burumdeo, uniform in design with those that had been erected by Captains Anderson and McAndrew, between Nepal and Oude. The Nepal Durbar was informed of this decision, in order that, if thought necessary, an Agent might be nominated to represent the interests of that Government in the demarcation of the boundary, and an Official styled the Sooba Sahib joined them at Goosree Ghât on the 13th January 1864.

9. At pucka pillar No. 211 of the Oude and Nepal boundary there is also an old pillar built by Mr. Buller in 1849, between which and Goosree Ghât four other pillars of Mr. Buller's were identified. These have been numbered upon Captain Anderson's Map 2, 5, 6, and 8; and as they were found to be too far apart for the purposes of demarcation, eight intermediate ones were built, numbered 1, 3, 4, 7, 9, 10, and 11, in conformity with the sanction of His Excellency the Governor General, communicated to the Durbar in the Resident's "Yad dasht," of which an extract is appended to Colonel G. Ramsay's letter No. 3, dated 20th February 1862, addressed to the Under Secretary of Government, Foreign Department.

10. The most northerly of Mr. Buller's pillars is numbered on the accompanying Map of the Sarda, 8, and is situated on the left bank of the Chounder Nala. Beyond this no trace of the demarcation could be found on the ground; but from a Map in the possession of the Kanoongos, it was evident that two other pillars had once existed; one on the left bank of the Chounder, west of the village of Baibah, and the other on a spot over which the Sarda now flows. On what was believed to have been the site originally occupied by the first named of the two pillars, a new one has been erected, and has been numbered on the Map, 11. From it Mr. Buller's boundary crossed the Chounder Nala, and taking a westerly course along the old bed of the Sarda struck the river at the pucka pillar, which is now supposed to be under the stream opposite Goosree Ghât. To make this portion of the demarcation more clear, pillars Nos. 12 and 13 were built; the former on the left bank of the old bed of the Sarda, and the latter on the left bank of the Bamni Nuddee, a little north of its junction with the stream of the Sarda. Here the old boundary laid down by Mr. Buller ends, and Mr. Probyn's new demarcation commences, marked by his first pillar numbered on the Map, 1, which stands on the right bank of the Bamni Nuddee.

11. Twelve masonry pillars, numbered consecutively, define Mr. Probyn's boundary on the east of the Sarda, along one of the numerous banks caused by the receding of the river, between pucka pillars Nos. 12 and 14, which last is built on the right bank of the western channel: the boundary traverses the two branches of the Sarda, where they unite at the south-east extremity of the Chandnee Chouk Island. This Island has been ceded to Nepal; therefore, from Nos. 14 up to 29, both inclusive, the pillars have been built on the right bank of the western branch of the Sarda, the mid-deep stream, or, should there hereafter be no stream, the mid-dry channel, of which here forms the boundary between the two States. From pillar No. 29 the boundary line recrosses the Sarda, a little below its point of bifurcation at the northern extremity of the Island of Chandnee Chouk, where pucka pillar No. 30 has been placed, No. 31 standing on the left bank of the river. All the insular lands of the Sarda above Chandnee Chouk have been adjudged to the British; and therefore, from Nos. 31 to 38, the pillars have been built on the left bank, throwing all these Islands on the British side of the boundary. From pucka pillar No. 38 up to Burumdeo, and further into the hills, the old Goorkha boundary has been maintained as it has always existed.

12. The Putwaree Map already referred to, made up by the Poorunpore Kanoongo, was, as has been stated, not sufficiently correct to be taken as the only guide for the erection of the boundary pillars; but as the line colored upon it, supposed to represent the position of the bank, gave to the Nepalese lands to which, otherwise, even they could not have pretended to lay any claim, the Sooba Sahib who had accompanied the Commissioners as far as Mela Ghât, without making the smallest objection to their proceedings, here declared that his instructions were to abide strictly by the Map, and that, therefore, he would consent to the demarcation following the colored line laid down upon it and no other. The British Commissioners urged that the Map was a compilation made three years before from a rough Prismatic Compass Survey, and was intended simply to explain Mr. Probyn's Report; that the Supreme Government had declared the boundary, as proposed in that Report, to be finally determined upon, with but one slight modification, and had ruled that as the Island of Chandnee Chouk had been ceded to Nepal, the mid-deep stream of the western channel of the Sarda should be the dividing line opposite this Island, and that in the event, at any future period, of the whole of the waters of the Sarda flowing into the eastern channel, the Chandnee Island should not revert to the British, but that the mid-dry western channel should then be upheld as the boundary between the two States. Further, that as all the Islands in the Sarda north of Chandnee Chouk had been adjudged to the British, the now mid-dry channel immediately under the left bank between pukka pillars Nos. 31 and 38 should be the boundary.

13. The Sooba Sahib still declared that he had no authority to deviate from the line colored on the Map in his possession, and that therefore he could consent to no demarcation that did not exactly follow it. As the Commissioners found it impossible consistently with their duty to act upon the Sooba Sahib's wishes, he left them, and Mr. Probyn and Captain Anderson proceeded with the work of demarcation alone.

14. Independently, however, of the inability of the Commissioners to deviate from the instructions of the Supreme Government, communicated to them from time to time for their guidance, they would have found it impossible, from the incorrectness of the Putwaree Map, to have adopted the line colored upon it, to which the Sooba Sahib pertinaciously held. Take for example, the village site of Nugla. This village will be found laid down upon both the Revenue Survey and Putwaree Maps, in the former on the scale of 40 chains = $\frac{1}{2}$ a mile to the inch, and on the latter on the scale of one mile to the inch. If the colored line on the Putwaree Map had been laid down on the ground at a distance from the village site of Nugla, corresponding with that shown on the Map, the boundary pillars must necessarily have been built nearly half a mile within the Island of Chandnee Chouk, thus taking from the Nepalese a strip of the Island which has been altogether made over to them; while, on the other hand, if following the colored line, the demarcation had been laid down half a mile westward from the water's edge, which was what the Sooba Sahib wanted, considerable portions of the village lands of Nugla, Aoula, Sisya, &c., &c., all in the British Pergunnah of Bilharee, the property of the Harsey family, must have been given over to the Nepalese, and by the same ruling the Mela or Girwa and Nurah Ghâts. At the former, which as considered sacred, an annual fair is held.

15. The promise of the Governor General in Council simply guaranteed to the Durbar the restoration of all lands that had been taken from them in 1811; but this cannot be perverted by the Nepalese into an obligation on the part of the British Government to uphold every error to their advantage that may possibly creep into Maps during the process of compilation, when the incorrectness of the Map is beyond all doubt. Mr. Probyn's decision of the boundary, which was approved of and sanctioned by the Supreme Government, and which was accepted by the Nepalese Durbar, ruled that from Moondeea Ghât northward, and opposite the Island of Chandnee Chouk, the mid-deep stream of the western channel should be the dividing line, and that above Chandnee Chouk opposite the Islands of the Sarda, the mid-dry channel immediately under the left bank of the river should be the boundary.

16. It cannot be too clearly stated that the pukka pillars from No. 14, situated opposite the southern extremity of Chandnee Chouk northward, up to No. 38, are not boundary pillars, and do not mark the boundary between Nepal and Rohilkund. They have been erected by the orders of Government as a precautionary measure to meet the contingency of the river at any time taking an entirely new channel and forsaking its present bed, when the pillars would be useful to determine the channel, the middle of which had been decided, dry or fluent, to be the dividing line between the two States. These 25 pillars have all been built on the bank of the river not far from the water's edge; and as in the course of time it is possible that some of them may be washed away, the Commissioners considered it advisable to sink three masonry platforms, $4 \times 4 \times 3$, which will be found noted on the Map; No. 1 situated above Moondeea Ghât, 13 chains below pukka pillar No. 14; No. 2 on the right bank of the Sunnees

Nala, about 50 chains south of the village site of Nugla, and about 28 chains west of pukka pillar No. 23; and No. 3 situated on the high bank about 12 chains north of the old fort of Bunbursa. From these platforms the exact positions of the pillars can be at any time ascertained, and their re-construction, if necessary, effected with facility.

17. The expenditure incurred for the demarcation and survey of the line from pukka pillar No. 211 of the Oude and Nepal boundary up to Burumdeo, aggregates Rs. 2,522-7-8 in detail as follows:—

	Rs. A. P.
For pay of Surveyors and Establishment employed, including clearing of survey rays, &c.	843 15 6
For hire of camels, and feed of elephants employed on the line	376 10 4
For erection of masonry pillars, including lime, bricks, labor, and carriage	1,301 13 10
Total expended ...	2,522 7 8"

Extract from Annual Report of the Operations of the 2nd Division, Oude, Revenue Survey.

BY LIEUTENANT COLONEL D. C. VANRENNEN.

Season 1863-64.

19. The total area surveyed during this season in the Durriabad District amounts to 489304.22 acres, or 764.13 square miles, contained in 849 villages and 2 river circuits, of which 27133.43 acres are included in the river surveys. Excluding, then, the river areas, the average size of village circuits in acres is 544.37.

Total area in Durriabad District surveyed in season 1863-64, with average size of each village.

20. The tract surveyed is richly cultivated, well wooded and well watered, and I have been favorably impressed with the general appearance of this district. Cultivation is rapidly increasing. The people are well to do, they are well clothed and well fed, and the poorer classes especially seem much better off than in the districts of Oonao and Lucknow.

Brief description of this part of the district and its inhabitants.

21. Under the régime which obtained when the survey first commenced, the Lucknow Division or Commissionership was composed of the three Districts of Lucknow, Oonao, and Durriabad; and there were four Commissioners, each having three districts. But this has been since altered; we have three Commissioners, each with four districts, with a Settlement Commissioner for the whole province.

Former and present arrangements of Commissioners.

22. It is certain that extensive territorial changes, involving alterations in the limits of Pergunnahs and even Districts, are contemplated; and until these have been finally determined upon, it would be advisable not to mark on any general compilation Map the present territorial limits.

Further territorial changes contemplated.

23. Our Maps, however, both on the 1-inch and 4-inch scale have indicated Pergunnah and District boundaries as they existed at the time of survey.

Our Maps give the limits of Pergunnahs and Districts as they were at time of survey.

24. As our Survey Parties completed the portion of work assigned to each camp, they were moved across to the Hurdui District, where Tuhseel Sundeela had been demarcated and prepared ready for us.

On parties finishing work in Durriabad District, moved across to Hurdui.

42. There is a marked contrast in the general appearance of the country in this (Hurdui) and the Durriabad District. Here the cultivation is scanty, with large tracts of uncleared jungle land and abounding in jheels. There are no Imperial Roads. The District Roads consist, 1st, that leading from Hurdui to Lucknow, *vid* Kuchona and Sundeela Khas; 2nd, from Madhogunj, *vid* Balamow Khas and Beneegunj, to Seetapore; 3rd, from Mulawun to Sundeela; 4th, from Bangermow to Sundeela, and the last connecting Sundeela with Beneegunj. The Goomtee separates this district from Seetapore."
- General appearance of the country as contrasted with Durriabad.
- Its roads.
- Goomtee River.

Extract from Annual Report of the Operations of the 3rd Division, Oude, Revenue Survey.

BY LIEUTENANT F. CODDINGTON.

Season 1863-64.

"37. The portion of the district that has been under survey may be described as a campaign country, generally well cultivated and watered. In parts, however, there are large and small patches of low jungle. The country is very well wooded, and presents a pleasing aspect in this particular. There are abundance of mangoe topes, and the bamboo also grows, with which some village sites are surrounded and almost hid from view.

38. District Roads traverse the country in different directions, but are not kept in any repair; none of them are metalled, and they are only very partially bridged, and are almost impassable for cart and wheel traffic. The District Road from Fyzabad to Tanduh Khas runs through the northern portion of the country surveyed, and is in somewhat better repair, being better than the other roads. In many places the roads are taken through large jheels and tanks, up to the edge of which the road leads and suddenly stops, and a long detour is necessary before the road on the other side can again be reached. On this account, and on account of want of repairs to the roads, cart traffic in the district is seldom met with. The traffic between the different villages is carried on by bullocks; on this account carriage of any other kind is with great difficulty procurable in the district; but in Fyzabad itself carts can usually be obtained.

39. The new Imperial Metalled Road from Fyzabad to Allahabad passes through the western portion of the country surveyed, and is in good repair and bridged with masonry, and forms a great contrast with the other roads. The bridge over the Goomtee, at the southern extremity of the district, is at present only a temporary one and made of wood; but it is intended to be replaced by a masonry bridge. The bridges over the Murba and Biswi Nuddees are both at present under construction, and will be finished in a short time: small wooden bridges are over both for temporary use. The running streams and bridges are all complete. The traffic at the present time on the road is not very great; this is accounted for by the road not yet being completed towards Allahabad.

40. The principal rivers and streams in the portion now surveyed are the River Ghogra, which runs all along the northern extremity of the district. It is a grand and very large river, with a large body of water at all times; and during the rains River Steamers occasionally come up from Allahabad to Fyzabad. The Ghogra separates this district from Goruckpore. The next largest river is the Goomtee, which runs all along the southern extremity of the district. Next in importance are the Murba and Biswi Nuddees, which after uniting form the Tonse Nuddee; this stream runs through the district in a south-western direction and has a very circuitous course. The Therwa Nuddee runs into the Ghogra near Tanduh; it rises in Pergunnah Umsi and flows between Pergunnahs Tandub, Iltifutgunj, and Ukburpore, and there empties itself.

41. Over the Tonse Nuddee at Ukburpore Khas there is a long masonry bridge of ancient date, built in the time of King Akbar, and which is still in good repair, and very convenient and useful, as the Tonse Nuddee is deep and difficult to cross.

Native-built bridge over Tonse Nuddee.

42. There are a great many thieves in the district, and our camp was constantly kept on the alert and in a state of alarm all night long, particularly when it was situated near the Tuhseel and Thannah of Bhurteepore, where, I am sorry to say, the thieves, notwithstanding the Guards, succeeded in stealing a 5-inch Theodolite out of one of the Sub-Assistant's tents at night. Several articles of private property were also stolen: the thieves were most daring in their attempts at robbery, and caused the camp at nights considerable trouble and annoyance, and seemed to be more than a match for the Police."

Extract from Annual Report of the Operations of the Rohilcund Forest Survey.

By H. B. TALBOT, Esq.

Season 1863-64.

"5. At the time of survey the two Pergunnahs were under one Tuhseel, with the Tuhseel Station at Thakoordwarah; but latterly the Tuhseel of Pergunnah Kasheepore has been separated from that of Thakoordwarah. The Police Stations were at Thakoordwarah and Kasheepore, with outposts at Juspore, or, properly speaking, within the boundary of Imrutpore and Jaitpore Ghosee, called by the people of the place Kosee Ghat Chowkey; but the last mentioned outpost has been done away with.

6. The Tuhseel of Thakoordwarah is situated in the village of the same name, which of itself is a small place; but the sites of Futtehoollahgunj and Jumawalah, together with Thakoordwarah, is called Thakoordwarah. There is a decent pukka Bazar in it and a few other pukka houses; the rest are kutcha: there is also the new Sudder Distillery in this village. The only other large villages in Pergunnahs Thakoordwarah and Kasheepore are Juspore, where there is a market held every week, and Furreednugur, which, I believe, was a Tuhseel Station before the British took possession of Rohilcund.

7. The town of Kasheepore is situated in the villages of Bailjoree and Muhaispore, the greater portion of it being in Bailjoree; it has one or two pukka Bazars running through it on the south side, and lately the Rajah of Kasheepore has built a range of pukka shops from his own residence running up north; but it did not appear to be a popular part, as very few of the shops were occupied. All the timber from the Kumaon Forest is brought down for sale to Kasheepore. There are two Surais in this town, and, I believe, the Rajah intends building a Bungalow for European travellers; there is also a pukka house for Europeans built by Choba Ramdial.

8. There are small patches of jungle all over the two circuits; they consist of Kurounda, Mucko, and other small shrubs only fit for firewood.

9. The principal rivers are the Ramgunga and Kosee, or Kosilla; the next in size is the Dhela, which is also of a good width in the rains; the Dhandee Nuddee is an insignificant stream till it joins the Tomureea; after the junction it forms the boundary of the two Pergunnahs.

10. The villages of Kumalpore and Baijnathpore in Atlas Sheet No. 3 should have been surveyed in one hulka or round, but the Boundary Surveyor by some mistake surveyed them separately, and the error was not discovered till I had finished all that was required of me in the Moradabad District.

11. These two Pergunnahs are the most unhealthy in the district, particularly Kasheepore; the water in this Pergunnah is very bad, and water filled in earthen-pots over night has invariably an oily substance floating on the top of it next morning.

12. The eastern part of Pergunnah Kasheepore is intersected with gools or watercuts; but there are very few of these watercuts in Pergunnah Thakoordwarah and the other parts of Kasheepore.

14. These two Pergunnahs sadly require a good canal, and I have every reason to think that one could be easily brought down from the Kosee River. I believe Mr. Battie, in charge of the irrigation canals in Rohilcund, was sent down, in 1862, to take the levels, but what the result of his levelling came to I never heard. The cultivators have to depend chiefly on the monsoons, as there are very few wells in the Pergunnahs, and, as I mentioned in my last year's Report, are chiefly kept for drinking purposes.

15. There are three kinds of soil in these Pergunnahs; the best is called Sewai, second Mutteear, and third Bhoor. There is a small quantity of the third quality in the south-east of the Kasheepore Pergunnah, but the chief soil of the two Pergunnahs is Sewai and Mutteear.

16. The only Great Trigonometrical Survey Station that has been taken up is that of Nundhai; the other two of Juspore and Kasheepore could not be found, although every enquiry was made about them. The Nundhai pillar was knocked down, and I had it covered with earth to prevent its being entirely destroyed."

*Extract from Annual Report of the Operations of the Right Bank Indus,
Revenue Survey.*

BY CAPTAIN J. MACDONALD.

Season 1863-64.

28. The climate of the Jherruck District is the best to be met with in the whole province, for the sea breeze sweeps over its breadth with full power, District Jherruck. Climate. tempering the heat of the sun's rays. Here, as elsewhere, fever and ague are rife between October and January. Though on an average the mercury stands at a high figure in temperature, the heat is rarely very oppressive, owing to the constant sea breeze. The air is generally damp. In a good house on a commanding open situation, a "punkah" is rarely required. During the months of May and June the air is sufficiently dry and hot to render the use of a tatty necessary for the comfort of delicate persons: on the whole, it can be stated that there is no other district of the plains in Sindh wherein a man could spend so many days out of the whole year in the open air with impunity to his health.

29. The varieties of landscape are numerous, as hills, water, and forest, abound. The hills are table-topped, varying in height from 60 to 100 feet above the plain. The formation is of limestone, and on numerous hills the stone is exceedingly good for building purposes. The forests are numerous and large; in them the timber of the *Accacia Arabica* is the only wood useful for building purposes. The southern portion of the district contains the delta of the Indus, a vast plain furrowed by tidal creeks, whose salt pastures support immense herds of cattle, principally buffaloes. Another feature in this district is the number of large lakes or Dhunds; some of them are vast sheets of water. The Kinjur Lake has an area of 6,227 acres, and the Sooneyree Dhund, which is adjacent, 3,187. These sheets of water add much to the brilliancy of the landscapes of which they form part.

30. The River Indus which spreads out into its delta from a point a few miles below Tatta is the only river of the district. I can add nothing to my former descriptions of its appearance, its fisheries, and the traffic on its waters. The survey of the delta presented entirely novel obstacles to surmount, and quagmires and water had to be crossed over thousands of chains in interior work. The whole area was surveyed in 2 main circuits sub-divided into 21 sub-circuits. The villages of Dhareja and Meerwah are situated in these circuits; when the steam traffic was maintained through these creeks, signs of population were more frequent than at present, when the solitary hut of a herdsman is often the only mark of man. Fresh water is brought in boats for the cattle, and it is curious to observe the instinct with which the animals of each herd recognize the approach of their separate boat and supply of fresh water; at high tide the grazing beasts stand contentedly in the water until the ebbing shows the top of the grass. The sight is curious. The animals pastured on these salt marshes give an abundant supply of milk.

31. The work in the hills extends from the south of the Gaj to G. T. Chirowlee south of the Hubb and below Muggurpeer. It connects Kohistan. the work of season 1861-62 with the Kohistan work of 1858-59 up to the Great Trigonometrical Stations on the Pubb and Andar west of the Hubb River. The principal ranges are the continuation of the Kurthur from the Gaj to Teeka Great Trigonometrical Station, and the great Myo plateau within our boundary, and beyond it the great hills of Lakan and Andar, also a portion of the Pubb range. The Pubb range is of sandstone formation, covered with a rich mould to its summit, from which springs a luxuriant vegetation. There is a delightful climate on these hills, which are well worth occupying as a sanatorium; reservoirs could easily be constructed to remove the difficulty of a water supply. The hills may be divided into three distinct forms; the first has a steep face on one side generally

the west, and a long gradient to the east. The whole of the Kurthur is chiefly of this formation, and so are Gooroo, Lakhau, Bidoor, Buggau, such hills are rugged and scarped, have little soil and scanty vegetation; all are of nummulite, and so are the hills of the second form which have flat tops and rounded sides, pierced with deep ravines and impassable fissures. Andar, Bhit, Sulimance are hills of this form. The third kind may be described as vast plateau of table land. Mole and Myhee, Great Trigonometrical Stations, are situated on such; the stone of which they are composed is a soft rotten limestone full of fossils. The direction of all the ranges is in parallels from south to north.

For the most part the plains between the hills are exceedingly barren. The chief support of the inhabitants is derived from their flocks.

Two large hill streams rise in these hills: the Barrun, which empties itself into the Indus, a few miles below Kotree, has its source in the Kurthur, a few miles to the north of Great Trigonometrical Station Teeka. The Mulleer, which enters the sea in the Ghizree Creek near Kurrahee, rises on the summit of the great Myo plateau.

The spots most worthy of note are the shrine of Shah Billawul and the adjacent stalactite cave of Lahoot, full of immense stalagmite pillars. The shrine of Shah Billawul is itself in a lovely spot, with every beauty that foliage, water, rock, and mountain can give; both the shrine and the caves are yearly visited by every man in the country."

*Extract from Annual Report of the Operations of the Left Bank Indus,
Revenue Survey.*

BY W. LANE, Esq.

Season 1863-64.

"28. I now proceed to offer a brief description of Talooka Halla; the other Talookas having been surveyed only in part, an account of them will be given when they are completed.

Talooka Halla is bounded on the north by Talooka Sukkurund; on the east by Talookas Shahdadpore and Alah-yar-ka Tanda; to the south by Talooka Hyderabad; and to the west by the River Indus, across which lies the District of Sehroan of the Kurrahee Collectorate. It comprises an area of 340303.47 acres, or 531.71 square miles, and is divided into 6 Tuppas or circles, and 79 Dehs, and is over-spread with no less than 93 jageer estates.

The soil is alluvial and generally of a good quality. Except where annually submerged, the lands require to be left fallow for some time.

Crops. The crops are of the usual description—

"Rubbee"—Wheat, barley, gram, peas, jambha, and suron.

"Peshrus"—Cotton and indigo.

"Khureel"—Joar, bajri, moong, til, bhang, and tobacco.

There were 2,868 acres sown with cotton, and only 25 with indigo and 34 with sugar-cane.

The canals by which this Talooka is watered are the Surfaz Wah, Nusseer Wah, Ali Buhur, Mobarik Wah, Jam Wah, Vendrahee, Lohano, Gharoo Wudho, Noor Wah, Golo Wah, Sangro, Aligunj Sarung, and several others of minor note.

The high road from Hyderabad to Roree intersects this Talooka in its entire length. The post road, which takes a more direct course, joins it at Ubreh-janee, and on crossing the "Ali Buhur" Wah at about 8½ miles north of Ubrehjane, separates and advances almost due north. A new road is, however, under construction, which is to supersede the others, and be the postal as well as the Trunk line. In most parts this new line very nearly follows the course of the old main road.

From Halla, district roads lead to Shahdadpore, Ghotana, Shah-ji-Bhit, Bhanot, Oodera Lall, thence to Alah-yar-ka Tanda. Besides, a road from Mutdari, *via* Nussurpore, goes to Alah-yar-ka Tanda also, from Sekhat, *via* Oodera Lall, to Adam Khan-ka Tanda, and one from Ghotana to ditto.

Halla (new), founded in the time of the Kulhoras, is the most important town in the Talooka. It is not only the head quarters of the Mookhtyarkar or Native Revenue and Magisterial Officer, but of the Magistrate and Deputy Collector of the district. It possesses a large Bazar and a pretty considerable trade; and to the north of the town are the Government buildings, such as the Deputy Collector's Bungalow, a Traveller's Bungalow, a Hospital, a Moosafirkhana, a Kardar's Office, and a School.

Towns.

"Halla" (old) is said to have been founded about 650 years ago, and owing to the encroachment of the River Indus up to its very walls in the Hijri year 1180, it led to the removal of several families of wealth and influence to the site now occupied by new Halla, and its consequent decay. It is no longer a place of much importance.

"Muttari" is said to have been founded about 470 years since by emigrants from Afghanistan. It is a large town situate on a height, with several Musjids in and about it, whose minarets are viewed from afar. Its inhabitants are chiefly Syuds, who have been noted for their turbulence during the time of the Meers, and have proved themselves the most refractory of our subjects since.

"Oodera Lall" is a village of considerable size, noted chiefly for its shrine, which stands in the midst of a fortified enclosure. A large fair is annually held here.

Saltpetre is manufactured in "Syudabad," Ubrehjanee, Punj Moro, Dethkee, and Ameen Lakho; coarse cotton fabrics, earthen-ware, and the like for home consumption form the rest of the manufactures.

Manufactures.

The Mookhtyarkar reports the area of the Government lands under cultivation during the past year to have amounted to acres 36,296. By the Professional Survey it was found to be acres 39,766, showing a total difference of 3,470 acres, or about 9½ per cent. This, considering the rough mode of measurement pursued by the Tuppadars, is a pretty fair approximation.

Extent of cultivation.

Revenue.

The revenue derived from land for the past year amounted to Rs. 84,225-7-0; from sayer, &c., Rs. 13,359-5-6; making a total of Rs. 97,584-12-6."

No. 15.

FROM

THE SURVEYOR-GENERAL OF INDIA,

To

THE SECRETARY TO THE GOVERNMENT OF BENGAL.

FORT WILLIAM,

Surveyor-General's Office, Calcutta, 18th January, 1865.

SIR,

I HAVE the honor to submit, for the information of His Honor the
REVENUE BRANCH. Lieutenant-Governor of Bengal, the annexed Annual
No. 14, dated the 18th instant. Report on the operations of the Revenue Surveys in
the Lower Provinces, for the Season 1863-64.

I have the honor to be,

Sir,

Your most obedient Servant,

H. L. THUILLIER,

Surveyor-General of India.

GENERAL REPORT
ON THE
REVENUE SURVEY OPERATIONS
OF THE
LOWER PROVINCES,
FOR SEASON 1863-64.

No. 14, dated Calcutta, 18th January, 1865.

GENERAL REMARKS.

The operations of the several Revenue and Waste Land Survey parties attached to the Lower Provinces during the past official year, or from 1st October, 1863 to 30th September, 1864, have been prosecuted with the usual vigor and are detailed in the following report in continuation of the one, No. 23, dated the 8th January, 1864, which is still before the Government of Bengal.

2. An addition was made during the past season to the number of parties mentioned in para. 2 of my last Annual Report, by the raising of another small Waste Land party for Lower Assam, of precisely similar strength with those already working in Darjeeling and Upper Assam: thus increasing the working strength of the Department in these Provinces alone to nine Survey Establishments, as per margin.

Regular	6
Waste Lands	3
Total... ..	9

3. During the period under review a grand total area of 9,915 square miles have been surveyed professionally, mapped, and recorded as usual. Of this, 5,321 square miles, comprised in 5,916 villages, with 425 square miles of Waste Lands, in 848 grants or allotments, is on the scale of 4 inches=1 mile for Revenue and general purposes. The remainder, 4,169 square miles, mostly of wild, hilly, unproductive tracts, or where village boundary demarcation was not considered necessary or practicable, has been laid down on the smaller scales of 2 and 1 inches=1 mile: such survey was confined to the Tipperah Hills and Palamow.

Tipperah and Bulloah.
Mumbhoom.
Sylhet.
Ganges River, conterminous villages.
Tipperah and Chittagong Hills.
a lamow of Lohardugga.

WASTE LANDS.

Darjeeling
Upper Assam.
Lower Assam.

4. The grand total of expenditure incurred in performing these operations was Rupees 3,43,925-5. This yields the following general average rates for the various descriptions of Survey, viz., for Regular Revenue, or village by village survey, Rupees 42-12-9 per square mile, and Rupees 38-7-11 per village circuit; for Waste Lands, 3 annas per acre, and for Topographical Survey, Rupees 16-2-6 per square mile.

5. GENERAL RESULTS.—As compared with the out-turn and cost of the previous season, the results are as follows :—

DIVISIONS.	Superintending Officers.	Number of Village Circuits.	Area surveyed in square miles	Total cost, including contingencies.			Average rate per square mile.			Average rate per village circuit.		
				Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
First or Northern Division ...	Mr. R. B. Smart ...	{ 1,877 River	1,150 234	42,577	10	7	30	12	3	22	10	11
Second or Southern ,, ...	Cap. D. Macdonald ...	1,499	922	50,266	14	8	50	10	11	33	8	7
Third or Eastern ,, ...	Mr. N. T. Davey ...	777	979	40,525	1	1	41	6	4	52	2	7
Fourth or Western ,, ...	Lieut. W. J. Stewart ...	1,185	887	51,429	9	2	57	15	8	43	6	5
Fifth or Chittagong ,, ...	Mr. J. H. O'Donel ...	.....	3505	52,354	4	0	14	14	11	Topl.		
Sixth or Hazareebaugh ,, ...	Major G. H. Thomson ...	{ 578	1,079 664	42,941 15,000	15 0	4 0	39 22	12 9	9 5	74	4	8
Darjeeling Waste Land Survey ...	Mr. E. T. S. Johnson ...	.....	321	18,549	13	10	.....			.....
Upper Assam Waste Land Survey	Mr. A. D. Smart ...	.....	100	14,199	4	6	.....			.....
Lower Assam Waste Land Survey	Mr. J. O. Nicolson ...	.....	4	16,080	11	10	.....			.....
Total and average for season 1863-64 ...	.....	5,916	9,915	3,43,925	5	2	31	1	6 ^(a)	38	7	11 ^(b)
Add Mehals charges ; and arrears of uniform rate of Travelling Allowance for 1862-63	.....	.....	.....	10,837	83	1	.....			.....
Grand Total ...	.....	5,916	9,915	3,54,763	2	10	32	3	0 ^(a)	40	0	0 ^(b)
Total and average for season 1862-63 ...	.....	5,822	9,728	2,60,739	0	0	25	0	0	21	7	0
		+ 94	+ 187	+94,030	2	10	+7	3	0	+18	9	0

(a.) Exclusive of the Waste Land Surveys.

(b.) Exclusive of the Topographical and Waste Land Surveys.

6. CAUSE OF INCREASED COST.—This shews a considerable increased cost for an area nearly the same as before. This is accounted for by the fact of the entire Military pay and allowances of the Officers employed having for the first time been brought into the Bills of this Department under the new Financial Rules. For the first time, also, travelling allowances for the Uncovenanted grades have been allowed, and two years' charges under this head appear in the season's Bills. These items and the heavy cost of the new Waste Land party in Lower Assam, for which no equivalent amount of work has been performed, very nearly make up the difference in the expenditure, and raises the mean average rate by Rupees 7-3 per square mile. With the general tendency to the advanced price of labor and provisions, as well as the cost of everything, in the present day, it must be expected that the old rates cannot be maintained. The nature of the work also increases in difficulty, but the energy of the Officers employed is as conspicuous as ever, and an excellent season's work has been accomplished by each.

7. DISTRICTS COMPLETED.—The only District finally completed during the year is that of British Tipperah, or Comillah : operations also in the Tipperah Hills adjoining were brought to a close, though the survey to the extreme East was not quite finished ; but the Revenue

Surveyor having represented the remaining portion as covered with dense jungle into which man had seldom or never penetrated from the Westward, and quite uninhabited and impracticable, it was decided to leave this portion: the expense of cutting roads for the Survey parties to enter it, being far too great to make up in any way for any present benefit to be derived from filling up this small and distant tract to the extreme East.

8. DISTRICTS UNDER SURVEY.—Of the regular Districts of Bengal now in hand, Bulloah and Sylhet are likely to be completed during the current season, whilst Maunbhoom will occupy a portion of another season. Cachar has already been commenced by the Sylhet party, but cannot be finished this year. Palamow, of the Lohardugga, or Chota Nagpore District, is still in hand, and will demand another season after the present; whilst the services of the 5th Division, under Mr. O'Donel, have been transferred from Chittagong to take up the Survey of the Dooars recently annexed from Bhootan, and that Establishment is now on its way to Julpigoree, leaving behind a detachment to prosecute the measurement of Waste Lands in the Chittagong District.

9. This, therefore, forms another detached and separate party, for which it is uncertain how much work may be found, or how long it will be detained in the District in question. Thus, year by year, it will be seen how progressive the expansion of the Department becomes.

10. FUTURE WORK.—There remains but the re-survey of the entire District of Hooghly, and certain portions of Midnapoor—probably nearly all—to render our series of Maps, from the 4-inch scale downwards, complete, for the Provinces of Bengal, Behar, and Orissa. I have already mentioned (para. 10 of last Report) that the survey of Assam had been decided upon by His Honor the Lieutenant-Governor so soon as parties could be spared from Bengal; but it appears to me that whilst bearing in mind the requirements for surveying this fine and growing Province, the perhaps more urgent necessity of having good Maps of the Districts immediately adjoining the Capital of India, and through which passes the Grand Trunk Line of Rail, requiring numerous feeders to connect it eventually with the South-Western Frontier and other Western Districts, should not be lost sight of.

11. DISTRICT HOOGHLY.—The original survey of the Hooghly District was made in the years 1844 to 1846, and was subsequently, after a most careful, prolonged, and impartial enquiry, pronounced to be entirely worthless. The demarcations and the professional survey of the boundaries of villages were alike wrong, and the topography was equally defective; and we have, in short, not a map worthy of the name for any local purposes whatever, and the greatest inconvenience has been felt for many years past in consequence. When summing up, after the enquiry above alluded to, the Government of Bengal, of that day, thus expressed its opinion in a final reply to the Board of Revenue, Lower Provinces:—

“ The Deputy Governor has learned with extreme regret the very discreditable manner “ in which these Surveys have been conducted.

“ The full and clear review of the case submitted by the Board has satisfied him of the “ correctness of the opinion held by them and by the Commissioner as to the necessity for an “ entirely fresh Survey of the District of Hooghly.”

12. The Commissioner recommended that the re-survey of the Hooghly District should not be commenced until the primary survey had been made of the three adjoining Districts, Burdwan, Nuddea, and 24-Pergunnahs, out of portions of which the District of Hooghly

had been made up. As the work had to be done over again, the Board of Revenue concurred with that Officer that it would be better to complete the survey of the parent Districts before resuming operations in Hooghly, and issued orders accordingly. The Deputy Governor at the same time approved of the order given by the Board for the commencement of Zillah Nuddea.

13. The survey of the three Zillahs above specified have long been completed, as well as all the other Regulation Districts of the Lower Provinces; and it now only remains to re-demarcate and re-survey the Hooghly District, to enable the Civil Authorities to complete their Estate Registers of that part of the country, long a desideratum, and to afford true and reliable maps to guide the Revenue Authorities, and assist generally in the improvement of this rich and important District.

14. NUMBER OF PARTIES PROPOSED FOR ASSAM.—It seems to me, therefore, most advisable to delay this important work no longer, but to provide for it by the trained Establishment now close to the spot, in Maunbhoom; and the more so, as from the constitution of that party it is particularly qualified to deal with the work. The Tipperah and the Sylhet 1st and 3rd Division parties will speedily be available for Assam, and the 5th Division now *en route* to the Bengal Dooars can, on the completion of that survey, also be transferred for employment in the contiguous Districts of Assam: with these three old Establishments it would be as much as the Civil Branch could prepare and provide for properly in Assam.

15. Should His Honor agree with my recommendation for the re-survey of Hooghly being undertaken by one of the Revenue Surveys of Bengal, on completion of its present work, measures should be at once taken for commencing the village boundary demarcations, in view to their being ready, prepared at least one year in advance of the professional parties, and proper Thâk-Bust Maps, on the most approved principles, furnished for comparison and guidance.

16. MASONRY PILLARS.—The erection of permanent land-marks, to define the exact position of every tri-junction point of village boundaries, should be a *sine qua non*. I have already urged so much on this subject in the body of this, and in various other reports, that I need only quote here the opinion of His Excellency the Viceroy on this important subject, given in answer to my last general report on the surveys under the Government of India, and commend it for special observance in the Lower Provinces, where permanent land-marks of any sort are even yet unknown.

17. ORIGINAL MAPS AND RECORDS RECEIVED.—The numbers and descriptions of Maps, Plans, and Records, completed by the different Survey Establishments during 1863-64, and lodged in this Office, (or, as in one instance only, reported as completed and ready for despatch,) are entered, in detail, in the margin. Various District Maps have been either completed, or continued up to the extent

ABSTRACT.		
Index Maps of season's work	...	No. 9
Chart of Triangulation, Scale 4 Miles = 1 Inch	...	" 2
Main Circuit Maps, Scale 1 Mile = 1 Inch	...	" 44
Village plan sheets containing 6,764 villages, Scale 4 Inches = 1 Mile,	...	578
Large Scale Plans of Civil Stations and Cantonments	...	" 9
Main Circuit Computations	...	Vol. 6
Village traverse Computations and Registers	...	" 17
Computations of Triangles	...	" 2

of materials furnished, as far as the limited means in my ministerial office permits, with reference to the very extended progress of the surveys all over this large Presidency, and the immense quantity of work thus thrown on our hands for reduction and compilation.

18. The one-inch Pergunnah Maps are also under progressive publication, and a good deal of work of this sort has been turned out; but heavy arrears of materials still exist, which the Lithographic Branch are totally unable to cope with. Civil Station and Cantonments plans of Burrisaul and Hazareebaugh have also been published.

19. Sheet No. 120 of the engraved Indian Atlas, containing the Districts as per margin, has been published, and the entire materials for Sheet No. 119 to the North of 120 have long been in the hands of the Geographer in England. Sheet No. 106, containing Sumbulpore and various Cuttack Tributary States, has likewise been received and issued. Sheets 126, Dacca, Tipperah, &c., and 127, Backergunge, Bulloah, &c., will very shortly be filled up.

* Dinagepore and Bogra; Dacca and Furreedpore.

20. Two excellent Lithographed Maps, as per margin, have also been received from England during the year and issued to officials.

21. RE-ADJUSTMENT OF DISTRICT AND SUB-DIVISION BOUNDARIES.—The progress made by the Boundary Commissioner, in regard to this important work, is detailed in the Appendix. The re-adjustment of the Patna and Bhaugulpore Divisions, originally fixed by Major Sherwill, have been finally settled. The Dacca and Rajshahye Divisions are in hand, in consultation with the Local Authorities. The Statistical Registers of the New Police Circles are very elaborate and most useful documents, and the Maps of the same on the large scale of 4 inches to the mile, made in duplicate for the Commissioner of the Division and for record in this office, form a very extensive task. It is certainly desirable that the re-arrangement of these Civil and Criminal jurisdictions should advance more rapidly, and the more so, as the Maps are now available, either Manuscript or Lithographed, for nearly every District. The Boundary Commissioner states that, to enable him to effect this object, he requires more aid in the shape of Native Draftsmen, and this it will be good economy to allow. The subject will be treated of separately.

22. Lieutenant-Colonel Gastrell's labors in my own office have been multifarious; he has been of the utmost service to me; and, during my recent tour in the Upper and Central Provinces, has again performed all the current duties at head quarters for a period of three months. I feel under great obligations to this excellent officer for his active and energetic assistance on all occasions.

FIRST OR NORTHERN DIVISION,
Lower Provinces.

23. The work allotted to this party, as detailed in the margin, for the Field Season of 1863-64, consisted of the remaining and unsurveyed southern portions of the Tipperah District, the northern part of the adjacent District of Noacolly, and parts of the great Rivers Megna and Barunee bordering thereon.

Mr. R. B. Smart, Revenue Surveyor.

ASSISTANTS.

Mr. J. R. Pringle, Assistant Revenue Surveyor, 1st class.			
" J. J. Burrows, Do. Do. Do. 3rd Do.			
" D. W. Burnett, Sub-Assst. Do. Do. 1st Do.			
" C. Brownfield Do. Do. Do. 1st Do.			
" J. D. Lynch Do. Do. Do. 3rd Do.			

34 Native Surveyors.

N. B.—Mr. R. B. Smart, junior-apprentice, was added to the strength of the Establishment in June 1864.

24. The Establishment accordingly quitted its recess quarters at Dacca, and commenced active operations during the first week of December 1863, and continued so

employed until the first week in June following, when, having completed all that was demarcated and allotted for survey, the party returned to Dacca again to bring up the computations and mapping.

	Square Miles.	Villages.	
Of District Tipperah	437	848	25. AREA.—The gross area accomplished was square miles 1,383, comprised in 1,877 villages, and sundry portions of large rivers, the details of which are given in the margin.
„ Noacolly	712	1,029	
Rivers	234		
Total	1,383	1,877	

26. COST AND RATES.—The total expenses incurred during the period under review,		Rs.		As.		P.		
Permanent Establishment	...	37,442	4	9				inclusive of all contingencies and arrears of travelling allowance to Uncovenanted Officers, for the previous season, subsequently authorized by Government, amounted to Rupees 45,547-10-3, as per margin. The mean average rate per square mile, calculated on the <i>bonâ</i>
Contingencies	...	5,135	5	10				
Total professional expenses of the year	...	42,577	10	7				
Estate area calculations for Civil Branch	...	864	0	0				fide professional expenses of the year, and excluding the arrears of contingent expense of former season, is Rupees 30-12-3, and per village circuit, Rupees 22-10-11; the former rate being lower, and the latter higher, than the corresponding ones of previous season. The out-turn is a very good one, the number of village circuits being large, averaging an area of 392 acres each.
Arrears of travelling allowance for 1862-63	...	2,105	15	8				
Grand Total of 1863-64	...	45,547	10	3				

27. LIMITS, GEOGRAPHICAL.—The portions of the two Districts of Eastern Bengal thus surveyed, are bounded, on the North, by that part of Tipperah District reported as surveyed in 1862-63; on the South, by the unsurveyed part of Noacolly District and the River Bamunee; on the East, by the Mohurree River and Fenny River, separating it from the Chittagong District; on the West, by the Megna River, dividing it from the Dacca and Backergunge Districts.

28. The principal Pergunnahs included in the season's operations are marginally noted under their respective Districts.

DISTRICT TIPPERAH.
Pergunnahs Mohubutpoor, Tora, Mohar, and Chowdogoon.

DISTRICT NOACOLLY.
Pergunnahs Bullooh, Umrabad, Dandra, Gopalpoor, Kanchunpoor, and Saestanuggur.

29. JUNCTION WITH FORMER SURVEYS.—An excellent junction was effected throughout the whole length of the Megna River with the former surveys of the Dacca and Backergunge Districts, conducted under the supervision of the Revenue Surveyors of the 3rd and 4th divisions respectively. The fixed points laid down and determined by these two Officers, in carrying out the triangulation of the Megna, and effecting a perfect junction between the Dacca and Backergunge Districts' surveys, were carefully incorporated by Mr. Smart, with his survey of Tipperah and Noacolly. The results are very satisfactory; the difference between the extreme distance from Augarea Station, on the left bank of the Megna, to the Sanpoor Temple Station, on the right bank, being as follows:—

	Chains.
By 4th Division Triangulation	2110.73
By 1st Division Main Circuit Chain Measurements	2110.34
Triangulation	00.39

equivalent to 25.74 feet difference in 26.38 miles, or an average of 11.7 inches per mile.

30. POINTS OF VERIFICATION.—In the interior of the Districts of Tipperah and Noacolly thirty-three conspicuous buildings, generally Temples, were selected and fixed permanently with reference to the general measurements made throughout the District. These, and the stations along the Megna, &c., will afford ample means for testing the accuracy with which these surveys have been conducted, so soon as they have been taken up and brought into the series of Triangles, now being observed from the "Calcutta Meridional Series" on the West, to the "Eastern Frontier Series" on the East, under the direction of Lieutenant H. R. Thuillier, R. E., 1st Assistant, G. T. Survey of India. The comparison of these measurements will be duly noticed hereafter.

31. STATISTICAL NOTES, &c.—Some interesting extracts from the Annual Report of the operations of this survey party, as also from those of the other surveys of Bengal, relative to the aspect, wealth, and productions of the country, &c., will be found in the Appendix to this report.

32. MAPS AND RECORDS.—The Maps and Records of the season have all been duly lodged in this Office, and the duplicates likewise furnished to the Civil Authorities. The general or one-inch Maps are very complete and neatly drawn, the aid of Type printing having been extensively and successfully employed by Mr. Smart, who has contributed largely to the work himself. Both the village plans and pergunnah maps have also been drawn, especially to meet the requirements of Photography, in pen and ink only, without color, shewing great perspicuity and clearness. This is now necessary for the purposes of reduction, as well as to enable this Office to re-produce the maps by the new Photo-Lithographic process, which is under trial and experiment, and when completely successful, will afford vast facilities for the multiplication and circulation of maps, and at the same time prove the means of relieving the Executive Surveyors of the labor of making duplicates, which is a great desideratum, as every officer is now overworked, and the extent of mapping to be done annually is immense on a Revenue Survey.

33. EXECUTIVE OFFICER AND ESTABLISHMENT.—Mr. Smart has conducted his duties
Mr. D. W. Burnett, from 200 to 250. to my entire satisfaction. He is an excellent and pains-
Mr. J. D. Lynch, from 125 to 150. taking officer, full of zeal for his profession. His
Establishment is in an efficient state, and the assistants, as per margin, have been promoted to the higher grades in G. O. No. 236, dated the 17th instant, for their good services.

34. WORK FOR SEASON 1864-1865.—During the present Field Season of 1864-65, the completion of the Noacolly District, and of the large Islands of Dukhin Shabazpoor and Huttyah, also the Suddee Churs to its South and South-west, at the embouchure of the joint streams Gauges, Megna, and Brahmappootra, in the North-east corner of the Bay of Bengal, is contemplated, and I trust may all be effected. This will complete the survey of Bengal in that direction, and leave this party free to proceed to take up the survey of any of the Districts in the Valley of Assam.

2ND OR SOUTHERN DIVISION,

Lower Provinces.

35. Field operations were resumed by this Establishment, in the Maunbhoon District, in November 1863, and were prosecuted under the superintendence of Captain Macdonald, Assistant Revenue Surveyor, until the 30th April following.

MAUNBHOON DISTRICT.
Major J. L. Sherwill, Revenue Surveyor, went on sick furlough from 21st December 1863, (vide G. O. G., G. No. 753, dated 14th December, 1863,) and died at sea on the 12th January, 1864.

Captain D. Macdonald, Staff Corps, Assistant Revenue Surveyor in charge, from 16th December (vide G. O. G. No. 1812, dated 31st December, 1863.)

36. DEATH OF EXECUTIVE OFFICER.—As mentioned in my last Annual Report,

ASSISTANTS.

Lieutenant Beavan, Probationary Assistant Revenue Surveyor, appointed in G. O. B. G. No. 1013, dated 7th February, 1864, and joined on 24th February, 1864.

Mr. W. Ivey, Assistant Revenue Surveyor, 1st class.

„ W. Sinclair, Sub-Assistant Do. 1st class.

„ A. Hyde, Sub-Assistant Revenue Surveyor, 1st class, (died 8th September, 1864.)

Mr. G. E. Nash, Sub-Assistant Revenue Surveyor, 3rd class, promoted to 2nd class, 1st January, 1864.
29 Native Surveyors.

the, duties of supervision devolved on this young Officer, in consequence of severe illness rendering it imperative that Major J. Sherwill, who for many years had most ably conducted and directed this party, should proceed to England on medical certificate. He was not, however, I regret to have to record, spared to reach his native land, but died on the 12th January, 1864, a short time before the ship, in which he embarked, reached the Cape of Good Hope. In him the Department has lost one of its most energetic officers.

37. AREA.—The total area surveyed and mapped, during the season under review amounted to square miles 992, comprised in 1,499 villages, appertaining to the Pergunnahs marginally noted, of which the ten first were surveyed entirely, and the last four only partially.

Pergunnah	1 Bunkhudee.
„	„ Chunah.
„	„ Pulma.
„	„ Rakab.
„	5 Ledhoorha.
„	„ Bagdn.
„	„ Lallehada.
„	„ Mukoonpooor.
„	„ Bygoon Kodur.
„	10 Jhuldu.
„	„ Nagdah.
„	„ Cossyepara.
„	„ Chaitra.
„	14 Soopoor.

38. With exception of Pergunnah Cossyepara (area 74 square miles), which was surveyed topographically, all others were brought under a regular Mouzawar Survey, defining the limits of each village. The

scale of the Survey, however, was the same throughout, viz., 4 inches=1 mile.

39. COST AND RATES.—The cost incurred in carrying out these operations came to				
Permanent Establishment ...	Rs. 44,874	13	3	Rupees 50,266-14-8, as per margin, giving
Contingencies	„ 5,392	1	5	the following average rates—per square mile,
	Rs. 50,266	14	8	Rupees 51-2-1, and per village circuit,
Mehalwary charges	Rs. 444	6	1	Rupees 33-13-3. With the arrears of con-
Arrears of travelling allowance	„			tinent charges for the previous season, on
for 1862-63	„ 1,573	8	0	account of travelling allowances, the total
Grand Total of 1863-64 ...	Rs. 52,284	12	9	expenditure comes up to 52,284 Rupees.

40. DEMARICATIONS.—The Demarcation Maps furnished this season to the Revenue Surveyor, by the Demarcation Establishment, for reference and comparison, are spoken of as “most unsatisfactory.” “They appeared,” says the Officer in charge of the party, “to have been drawn without the aid of a surveying compass of any kind; and in many instances, on comparison with the professional work, they could hardly be identified.” Some of these Maps were not delivered to the Revenue Surveyor, until his return to recess quarters. This is much to be regretted. It is essential to good boundary surveying, that all comparisons be made in the Field, and all errors corrected, or reconciled, before return to recess quarters; and Demarcation Maps, to be worth anything for comparison purposes, must not be ideal sketches, but projected, by scale and compass, from actual measurement in the Field.

41. MINOR TRIANGULATION.—A minor series of triangulation was again made use of, as in previous seasons, in connection with the Village Traverse measurements, and good junctions were effected with the former surveys of the Districts of Bancoorah, to the East, and of Hazareebaugh and Singhbhoom, to the West. Several points of the Calcutta

Longitudinal and Parisnath Meridional Series of the Great Trigonometrical Survey were also met and connected with, during the Season's operations. A Statement of comparison of the direct distances is given below; the results are satisfactory. In this Statement several G. T. Stations, met with by this party in Season 1862-63, have also been included.

Names of Great Trigonometrical Stations.		Distances from Revenue Survey.	Distances from G. T. Survey.	Error of Revenue Survey.	Error per Mile.	REMARKS.
		Feet.	Feet.	Feet.	Feet.	
Doorgapoor	to Tilbani	166888.8	167011.7	-122.9	3.89	Calcutta Longitudinal Series.
Donaktad	to "	72883.7	72871.0	+12.7	0.92	
Chutna Tel	to "	143544.1	143628.0	-83.9	3.09	
Tilbani	to Susinia	145061.8	145369.7	-307.9	11.21	
"	to Seraipahar	161682.5	161613.3	+69.2	2.26	
"	to Gurdia	169566.1	169561.4	+4.7	0.15	
"	to Bowa	95216.6	95184.6	+32.0	1.77	
"	to Rughoonathpoor	54614.6	54608.0	+6.6	0.64	
"	to Sutabai	79193.6	79193.4	+0.2	0.01	
"	to Beharinath	142851.8	143073.7	-221.9	8.20	
Susinia	to Doorgapoor	172169.9	172299.5	-129.6	3.97	
"	to Beharinath	66793.0	66801.5	-8.5	0.67	
"	to Rughoonathpoor	116701.8	116743.3	-41.5	1.88	
"	to Sutabai	66130.3	66190.7	-60.4	4.82	
"	to Bancoorah	64299.9	64296.7	+3.2	0.26	
"	to Mangia	75782.9	75823.7	-40.8	2.84	
Beharinath	to Doorgapoor	107728.4	107837.7	-109.3	5.35	
"	to Mangia	64694.5	64638.4	+56.1	4.68	
"	to Damoni	70880.4	70900.7	-20.3	1.51	
"	to Sutabai	81241.3	81379.0	-137.7	8.95	
"	to Rughoonathpoor	94404.4	94563.0	-158.6	8.87	
"	to Donaktad	100258.4	100987.1	-128.7	6.78	
Bowa	to "	137282.5	137312.8	-30.3	1.17	
Doorgapoor	to "	94045.1	94179.6	-134.5	7.55	
Rughoonathpoor	to "	27948.9	27917.4	+31.5	5.95	
Donaktad	to Sutabai	85655.5	85747.7	-92.2	5.68	
"	to Chutna Tel	149452.3	149565.2	-112.9	3.99	
Chutna Tel	to Susinia	31013.3	30982.1	+31.2	5.33	
Damoni	to Doorgapoor	87173.7	87329.6	-155.9	9.44	
Tilabani	to Bari	110055.3	110010.8	+44.5	2.13	South Parisnath Meridional Series.
"	to Purosa	115207.0	115261.6	-54.6	2.50	
Ratio of Error	Average where the Error is+	1.66	
		Do. Do. is-	5.36

42. NATURE OF COUNTRY.—The greater part of the country was rugged and wild, densely covered with jungle, interspersed with cultivation, and more sparsely inhabited towards the South and West than to the North and East; for further details, the extracts in the Appendix may be consulted. Though this party did not suffer more than ordinarily, whilst actually in the Field, yet sickness prevailed to a very great extent, both amongst the European and Native Establishments, during the recess, from the effects of exposure in this District. Two Assistants had to leave on medical certificate; one of whom, Mr. A. Hyde, I regret to add, died at Rangoon on the 8th September last.

43. The limits of the portion of country surveyed were as follows :—North, the surveyed portion of Maunbhoom District; South, unsurveyed portion of Ditto; East, the District of Bancoorah; West, the Districts of Hazareebaugh and Singhbhoom.

44. SURVEY OF CANTONMENTS OF BALLYGUNG AND ALIPORE.—In addition to the ordinary Field work performed, Captain Macdonald undertook and carried out, during the recess, a re-survey of the Military Cantonments of Ballygung and Alipore. These have been mapped on a scale of 24 inches=1 mile.

45. MAPS AND RECORDS.—The whole of the documents prepared by this party, illustrative of the Field operations, have been duly lodged in this Office. They appear to be clearer maps than those previously produced by this Division, and being chiefly in pen and ink, are more suitable to reproduction by Photo-Lithographic process, and better adapted to the wants of the present day. I am glad to be able to notice the pains taken with these records, which shew that the discussions entered into on the subject, when I inspected the Surveyor's office on the 18th and 19th of August last, have had due effect. With the internal economy of Captain Macdonald's office, I was well pleased.

46. CURRENT SEASON'S OPERATIONS AND WORK REMAINING IN MAUNBHOOM.—The officer in charge of this party reports as follows, regarding the work remaining to be done in Maunbhoom, and the probable out-turn during 1864-65 :—

“ In Maunbhoom, there still remains an area of about 2,200 square miles to be surveyed. This consists of the following Pergunnahs, *viz.*, part of Soopoor, Ombeekanugger, Belaidecha, Simlupal, Raiepoor, Koelupal and Matha, to be done Mouzawar; and Pergunnahs Maunbhoom Samsunderpoor, Phoolkoosmah, a portion of Cossyepara, Hesla, Torung, Patkoom, Bagmoon-dee, and Burrabhoom, to be done topographically. I have received the Thâkbust Maps of Simlupal and Belaidecha only, up to date; but I am given to understand that all these Pergunnahs have been demarcated, and that before the end of December all the Moojmillees and Thâkbusts will be lodged with me.

“ The probable out-turn during the ensuing Field Season will be about 1,000 or 1,100 square miles, of which about half will be Mouzawar. The work will be confined to the South-east corner of Maunbhoom, touching on Bancoorah and Midnapore.”

47. The area here stated as likely to be accomplished, is the minimum that may be expected for this season. Probably, much more may be effected of Topographical Survey of certain Pergunnahs to the South, which are declared to be unfit for detailed Revenue work. Under any circumstances, the District cannot be finished during the current season, and it may occupy the Establishment half of the ensuing season of 1865-66. It is therefore time to consider what shall be the destination of this party after the survey of Maunbhoom be completed.

48. I have already strongly urged in paragraph 13 of this Report, that the re-survey of the District of Hooghly be then taken in hand.

G. O. Government of Bengal,
No. 1013, dated the 7th February, 1864.

Mr. W. Sinclair, from Rs. 200
to 250.

Mr. G. E. Nash, from Rs. 150
to 175.

49. MILITARY ASSISTANT.—Lieutenant R. C. Beavan, late 62nd Native Infantry, was appointed a Probationary Assistant on this Establishment, and joined on the 24th February, 1864.

50. The Assistants as per margin, have been promoted for approved services. Vide G. O. No. 236, dated 17th instant.

THIRD OR EASTERN DIVISION,

Lower Provinces.

51. The portion of country surveyed by this Establishment, lies in the Sylhet District,

Mr. N. T. Davey, Revenue Surveyor.

ASSISTANTS.

Mr. G. S. Swiney, Assistant Revenue Surveyor, 2nd Class.
 ,, P. Agabeg, Assistant Revenue Surveyor, resigned from 2nd November, 1863.
 ,, R. Barclay, Senior Sub-Assistant Revenue Surveyor.
 ,, S. M. Smylic, Sub-Assistant Revenue Surveyor, 2nd Class.
 ,, T. D. Moran, Junior Sub-Assistant Revenue Surveyor.
 ,, G. C. Bolst, Office Assistant.
 ,, J. Arratoon, Ditto.

35 Native Surveyors.

and is situated immediately to the South of that portion of the same District, reported as accomplished in my last Annual Report, and extending to the Hill Tipperah Frontier, is bounded as follows:—On the North by the Kooscara River and former season's survey; on the South by the Tipperah Hills; on the East by the unsurveyed portion of Sylhet and the Horarguj range of Hills; and on the West by that portion of Sylhet surveyed in 1860-61.

52. The tract thus bounded is about 40 miles in length, by 30 miles in breadth, and comprises a gross area of 979 square miles, of which 641 square miles, containing 777 villages, consisted of pure Mouzawar Survey, and the remaining square miles 337 were surveyed in connection with the operations carried on along the Tipperah Hill Frontier, for the identification of Captain Fisher's former survey, and the permanent definition of the boundary line between Hill Tipperah and the British possessions.

53. Field work extended over a period of five months, but heavy rains and the swampy, flooded nature of the country frequently put a complete stop to out-door work, and resulted, says the Surveyor, in a total loss of at least three weeks out of the above period. The staff of Assistants was also weakened by the resignation of Mr. Agabeg, Assistant Revenue Surveyor, and the deputation of another Sub-Assistant to survey the new Stations of Shillong and Yeodo, in the Cossyah Hills. These causes operated against the out-turn of the survey, which, considering also the many difficulties that had to be contended against in defining the Frontier boundary over such difficult ground, was nevertheless a good one.

54. COST AND RATES.—The cost of the work, inclusive of contingent expenses, was

* Permanent	...	Rs.	34,713	11	12
Contingencies	...	„	5,811	5	11
	Total expenses	„	40,525	1	1
Mehalwary	...	„	159	3	2
Arrears of travelling allowance for 1862-63	...	„	1,798	6	4
	Grand Total	„	42,722	10	7

noted marginally, the total expenditure of the season amounts to Rupees 42,722.

Rupees 40,525-1-1,* which yields a general rate of Rupees 41-6-4 per square mile, the rate per village circuit not being applicable to the nature of a large portion of the work. With the other items of contingent charges, as

55. CONNECTION WITH GREAT TRIANGULATION.—An excellent connection was made with the Eastern Frontier Series of Triangles of the Great Trigonometrical Survey, extending from Gowhatty southwards across the Sylhet plains, no less than nine points having been met with and connected upon in the course of the season. The results are excellent, as will be seen from reference to the Table of comparison entered below. The mean error on fifteen sides being 2·84 and 1·54 feet per mile on the quantities in excess and defect, respectively. They fully prove the care bestowed on the work throughout, and the success with which the detailed Revenue Survey measurements have been carried across the great swamps, and through the jungles and hills of Sylhet.

Names of Great Trigonometrical Stations.	Distances from Revenue Survey.	Distances from G. T. Survey.	Error of Revenue Survey.	Error per Mile.	REMARKS.
	Feet.	Feet.	Feet.	Feet.	
Subni Sara to Churamani	56887·2	56885·6	+1·6	0·15	
„ to Bachia	100175·3	100010·7	+164·6	8·68	
Bachia to Churamani	78770·5	78790·1	-19·6	1·31	
„ to Hiara	68214·6	68214·7	-0·1	0·007	
Hiara to Churamani	65725·5	65674·2	+51·3	4·12	
„ to Laoraga	83439·8	83428·2	+11·6	0·73	
Laoraga to Churamani	71707·3	71655·9	+51·4	3·78	
„ to Horarguj	101467·7	101427·8	+39·9	2·08	
Horarguj to Hiara	69222·7	69196·6	+26·1	1·99	
„ to Kuleraï	103091·1	103130·5	-39·4	2·02	
„ to Pakibar	103508·8	103553·7	-49·9	2·54	
Kuleraï to „	100161·6	100097·1	+64·5	3·40	
Pakibar to Laoraga	93956·6	93978·1	-21·6	1·21	
„ to Geapoor	67342·3	67329·6	+12·7	1·00	
Geapoor to Laoraga	74977·0	74974·3	+2·7	0·19	
Average where the error is + ... ..	...	...	...	2·84	
Do. do. is ... ..	...	...	...	1·54	

56. Many difficulties, it has been observed, were met with in the prosecution of the Tipperah Frontier Survey. In connection with these, the following satisfactory statement by the Surveyor appears in his Report :—

“ I would beg to acknowledge the invaluable assistance rendered to me last season by Mr. Campbell, the Rajah's Agent. His personal exertions and judicious management of the Hill Tribes along the Frontier enabled me to make my way through an inhospitable and almost impracticable country, without a single misunderstanding, though the Hill-men, naturally enough, received with suspicion the intrusion of the Survey Officers into their Native Hills.”

57. Taking up the continuation of the Frontier Boundary Survey from the point* where they had ceased in season 1862-63, the arbitrators, Mr. F. Jones, Civil Superintendent of Survey, and Mr. W. F. Campbell, Agent for the Tipperah Rajah, met for the purpose of settling two miles of disputed boundary which

* The Dholnah post.

had not been included in the arbitrator's award of 1850. This done, the survey proceeded, and (80) eighty miles more of the boundary line were surveyed, on the scale of 4 inches = 1 mile, operations for this season ceasing at the Horarguj Hill G. T. Station, the principal points of the whole line being marked in the field with substantial wooden posts. Fuller details have been extracted from the Surveyor's Report, and will be found on reference to the Appendix.

58. DEFINITION OF FRONTIER BOUNDARY.—To ensure the erection of permanent pillars along this important line, the urgent necessity for which I pointed out in my last Annual Report, a plan of the whole line, as far as surveyed, was prepared by the Revenue Surveyor, and forwarded by myself to the Board of Revenue, in view to the pillars being all built during the present cold season, and before the jungle should again grow up and render the tracing of the temporary wooden poles difficult. I may repeat here that, unless permanently so marked, the present survey will be shortly rendered of no utility whatever.

59. The assimilation this year between the line now laid down, and agreed to by the Commissioners or arbitrators of both sides, with Captain Fisher's survey, is quite as good as could be expected, when the difficult nature of the country and the time elapsed, since the last survey, is considered. On this point, the Surveyor remarks as follows:—

“ Captain Fisher's survey of Sylhet was more of the nature of reconnoissance than a survey, and necessarily so, when it extended to the impenetrable hills and forests bordering on the Tipperah Frontier. It is not therefore to be expected that his survey of 40 years ago will assimilate minutely with the work of the present day; and on comparison, discrepancies, though not material ones, as far as the question of boundary is concerned, will everywhere be found. The streams I have traversed, by cutting through jungle every step of the way. Fisher could only have mapped from local information, or a rapid sketch. The boundary marked in the Field by Mr. Jones and myself, acting in concert throughout, is according to Fisher's map as closely as it could be followed. In the absence of a stream or a natural boundary, an imaginary line on the map drawn through ranges of hills was our only guide as to the limits. In these instances, the best boundary obtainable in the required direction was adopted, without objection on the part of the Tipperah Rajah, who was throughout the operations represented by Mr. Campbell, his agent. In one instance only, in the Adampoor Valley, Mr. Campbell raised doubts as to the identity of the Sonerai Churra forming the boundary. It was therefore necessary to measure the two streams * running parallel to one another, only a few miles apart, to find the boundary represented on Fisher's map. In the Baleeseera and Rajkandy Hills two G. T. S. Stations † were found conveniently situated for permanently marking the boundary, and as these Hill ranges are not approachable, triangulated lines from the source of the Oodnah Churra to Churamani Station, and from the source of the Sonerai Churra to Hiara Station, were the best lines of boundary obtainable. To make a detail measurement of these lines would occupy a whole field season, and need special means and appliances to overcome the physical difficulties of a wild, uninhabited country.”

60. Besides the operations above detailed, a plan, on the scale of 4 inches = 1 mile, was made by Mr. Barclay, Sub-Assistant Surveyor, specially deputed for the purpose, of the lands required and taken for the stations and sanatorium of Shillong and Yeodo.

61. MAPS AND RECORDS.—The whole of the maps and records have been duly lodged in a satisfactory manner, and they are better specimens than the maps of the previous season. They have been prepared with a view to Photographic requirements, and credit is due to the

Surveyor, for the pains he has taken to improve the style of his records, and to bring them up to the standard of the best productions of the Department. Mr. Davey continues to conduct his duties very much to my satisfaction; he has had a very laborious season's work, with much exposure and difficult ground and people to deal with; and he has accomplished his task very well. When the remainder of the Tipperah Frontier Survey is finished, it will be a very complete and satisfactory job, as far as this Department is concerned.

62. CURRENT, SEASON 1864-65.—About 900 square miles remain for survey in the Sylhet District, of which probably 400 square miles, comprised in 470 villages, will be dealt with Mouzawar, or detail village survey, on the scale of 4 inches = 1 mile; whilst the remaining 500 square miles consist of almost impenetrable tracts of hill and jungle, within which much detail survey is at present impossible. Here triangulation will be resorted to across the hill ranges, and the hill streams will be traced and followed, wherever it may be practicable to do so. This, and the opening up of the survey of Cachar, and its valuable and extensive tea plantations, will constitute the chief employment of the Field Establishment of this survey, during the present season of 1864-65. Besides this, however, the Revenue Surveyor will personally complete the 50 miles remaining unsurveyed of the frontier boundary, from the Horarguj Hill Trigonometrical Station to the Chatterchoora Mountain.

63. This eastern portion of the frontier is the least known of all, and the Revenue Surveyor reports not having been able to obtain any information whatever regarding it, even from the servants of the Rajah who accompanied him last year. The Hill Tribes along the border are said to be most intractable; application has accordingly been made to the Commissioner of Chittagong, in view to ensuring the active co-operation of the Rajah in carrying out this difficult and delicate survey.

64. The whole Establishment has worked well, and the Assistants, as per margin, have been promoted to the next higher grades, which they well deserved.—Vide G. O. No. 236, dated 17th instant.

FOURTH OR WESTERN DIVISION,

Lower Provinces.

65. The re-survey of the conterminous villages on both banks of the River Ganges within the Presidency of Bengal, or bordering upon it, and the North-West Provinces, from the Kurumasa River downwards, and along the course of such affluents as the Ghogra, Gunduck, &c., as demanded, from their wanderings, a re-demarcation and adjustment of the village boundaries, was commenced by this Establishment in the middle of

Lieutenant W. J. Stewart, Staff Corps, Revenue Surveyor.

ASSISTANTS.

Lieutenant E. W. Samuela, Assistant Revenue Surveyor, on probation, appointed by B. G. O. No. 747, dated 25th January, 1864.

Mr. J. K. Moran, Assistant Revenue Surveyor, 3rd Class.

Baboo Lallaram, Sub-Assistant Do. 2nd Class.

Mr C. David. Do. Do. Do.

Mr. H. R. Littlewood, Sub-Assistant, 2nd Class, promoted to that class from 1st January, 1864.

Mr. T. W. Nicolson Junior, Sub-Assistant Revenue, Surveyor.

Mr. J. N. Stoelke, Do. Do.

24 Native Surveyors.

November 1863, after the work connected with the Backergunge District had been completed and disposed of.

* Paras. 67, 68, and 69.

66. The general objects of this re-survey have been already explained in my last Annual Report* for Senaso 1863-64.

67. OPERATIONS.—Operations commenced on the Ganges near Buxar, in the Shahabad District, at the confluence of the Kuruunasa River, which here marks the limits between the Upper and Lower Provinces; and, following the course of the former stream, extended to the City of Patna on the southern bank, and to the point where it receives the waters of the Ghogra from the North. Thence the survey was continued up and along the latter River, dividing the Lower Provinces of Bengal from those of the North-West. The several Districts, as per margin, have thus been the scene of the Surveyor's labors. The average breadth of the tracts thus surveyed was about 4 miles, on either side of the several Rivers operated on, and embraces an area of 887 square miles, with 1,185 Villages and Dearehs, or sandbanks and islands of recent formation.

68. EXTENT OF WORK PERFORMED.—The extent of work performed is small in comparison with that of other seasons and other surveys; this may be said to have been caused, first, by the very backward state of the demarcations, which were only commenced upon as the survey was taking the field, the number of local Civil Authorities who were concerned both in the North-West Provinces as well as in the Lower Provinces jurisdictions, and the entire absence of permanent landmarks; and, secondly, from the fact of the Establishment having been recently moved up from the Soonderbuns and low Districts of Eastern Bengal, to commence a new description of work, with their ranks reduced by death and sickness, and employment of so many novices in their place. Towards the end of the season, the Surveyor reports that the work on the Dearehs and Churs, or sand-beds and islands of the Rivers, was most harassing, owing to the hot-winds raising an atmosphere so hostile for survey operations.

69. COST AND RATES.—The cost of the work, including all contingencies, amounts to Rupees 51,429-9-0, which yields the following average rates of Rupees 43-6-5 per village circuit, and of Rupees 57-15-8 per square mile. The contingent charges in this survey have been heavier than usual, owing to their change of ground, and new equipment required, which tends to increase the rates which are high.

Permanent	...	...	...	39,655	4	0
Contingencies	...	...	...	11,774	5	0
Total expenditure	...	...	...	51,429	9	0
Mehalwaree	...	...	...	540	0	0
Grand Total	...	...	...	51,969	9	0

70. BOUNDARY DISCREPANCIES.—The discrepancies in boundary between the villages of the present, and those of the previous survey of the Districts* of the Lower Provinces were, in many places, both numerous and great. In the villages North of the Ganges, appertaining to the District† of the North-West Provinces, disputes, owing to discrepancies in boundary, were at once remedied by the Revenue Surveyor, who, at the request of the Civil Demarcation Officer, deputed one of his Assistants, with a suitable party, to go out and relay the boundaries in the field, as nearly as possible, in accordance with those of the prior survey.

* District Shahabad.	Season of survey	...	2844-45-46
Do. Sarun.	Do. do.	...	1843 to 1846
Do. Patna.	Do. do.	...	1841 to 1843

† District Ghazepoor	...	...	1839 to 1841
Do. Azimgurh	...	...	1835 to 1836

71. ABSENCE OF MASONRY PILLARS.—The absence of proper masonry tri-junction pillars, at the time of the first survey, made this a matter of difficulty. But the duty appears eventually to have been as satisfactorily accomplished as could have been expected, without the aid of permanent landmarks.

72. DISCREPANT BOUNDARIES.—The greatest number of discrepant boundaries appear to have occurred on the Bengal side of the River, both as regards the comparisons made, either between present and former village limits, or between the lines of present demarcation as shewn on the Professional and on the Demarcation Maps of the present survey.

73. VILLAGERS OPPOSED TO RESTORE FORMER BOUNDARY.—On the higher lands, which, though annually inundated, are not usually long submerged, the discrepancies in boundaries, of past and present survey, “may,” conjectures the Revenue Surveyor, “be accounted for by the fact that the boundaries of the villages, not being marked in a permanent manner on the ground (when first surveyed), and being submerged every rains, do alter by degrees, and that, with the mutual consent of the villagers, who strenuously oppose any desire to restore the former boundary.”

74. EXCEPTIONS.—This opposition to correcting wrong boundaries, however, was not invariably the case, as the Revenue Surveyor, in another part of his Report, speaks of the great extra work entailed on his Establishment in the Ghazeepoor and Shahabad Districts “in relaying in the field the boundaries from the old plans.”

75. In the lower lands (which are more liable to suffer from the effects of the *annual* inundations, and are consequently exposed to *strong surface currents during a much longer period*, and often greatly, sometimes totally, changed by the floods of the Ganges, &c.) very little, if any, similarity could be traced to the former survey. Here the Demarcation Officers laid down the boundaries according to present possession, and without reference to those formerly existing, when these parts of the country were first brought under survey.

76. DIFFICULTIES.—Great difficulties also exist as to the proper line of boundary, to be now defined and laid down, between the North-West Provinces and Bengal. Certain lands of the former were known and shewn to exist on the Shahabad, or Bengal side of the Ganges, by the survey made of that District in 1844-45-46. But the fact of the earlier Bengal Survey having, in some places, overlapped that of the North-West Provinces, which preceded the Bengal surveys by some years, appears to have entirely escaped observation at the time this last survey took place; and thus, owing to the changes in the course of the Ganges, tracts of land have been recorded on the Plans and Maps of the two adjacent Presidencies of the North-West Provinces on the one side the Ganges, and of Bengal on the other, as belonging by the earliest survey to the former, and by the second survey to the latter, Presidency.

77. COMPLICATION OF VILLAGE NAMES AND BOUNDARIES.—The villages of these tracts are recorded under different names, and with different boundaries, in the Plans of the two first surveys; whilst, again, the present re-survey shews a further change of village names and boundaries, and consequently a still greater complication than ever.

78. REFERENCE TO BOARD, L. P.—Reference has been made to the Board of Revenue, Lower Provinces, regarding the questions involved in these discrepant results; *1st*, as to which of all the many conflicting boundaries are finally to be adopted and perpetuated on the Maps of Bengal and the North-West Provinces; and, *2nd*, whether boundaries once declared and authoritatively sanctioned in the *Government Gazette*, can be altered otherwise than by the decision of the higher Law Courts.

79. DEFINITE LAW REQUIRED.—The questions are most important, and some definite and well understood law requires to be laid down regarding them for the future.

80. FUTURE BOUNDARY BETWEEN THE N. W. AND I. PROVINCES.—Regarding the

* Letter No. 4056, dated 1st December, 1864, from Secretary, Government of Bengal, to Secretary to Government, N. W. P.

boundary to be adopted, for the future, between the North-West and Lower Provinces, His Honor the Lieutenant-Governor of Bengal has been pleased to propose* to the Government of the N. W. Provinces, as "the best and safest rule, that the deep stream of the Ganges shall always be regarded as the boundary, for the time being, between the Districts of Ghazee-poor and Shahabad, and between the Lieutenant-Governorships of the North-Western Provinces and Bengal." * * * *

"If," the letter adds, "the Lieutenant-Governor of the North-Western Provinces agrees in this view, all that will be necessary is, that this Government should declare the deep stream of the Ganges the boundary of the Zillah of Shahabad, under Act IV. of 1864, of the Local Legislature. That being done, all questions arising in respect to lands on the right bank of the River, will be settled by the Shahabad Courts and Revenue Authorities, and all questions relating to land on the left bank, by the Courts and Revenue Authorities of Ghazee-poor."

81. If this course can be adopted, it will undoubtedly tend greatly to simplify matters, especially as regards the final preparation of areas, in connection with the present professional operations.

82. In regard to the question of discrepancies between the boundaries of the present and former surveys in Bengal, the Board of Revenue have pronounced in favour of observing and adhering to the plain rule of possession, and of demarcating and surveying village and other boundaries accordingly. As far as this Department is concerned, of course it is immaterial what boundaries are laid down; but it is an object that the Maps of a re-survey should be rendered really and absolutely valid and useful for all purposes, and not left open to doubt and uncertainty.

83. PERMANENT PILLARS.—It was mentioned in my last Annual Report that, when the re-survey of these Rivers had been finally sanctioned, the erection of permanent landmarks on both banks of the streams coming under survey, was also directed. In the Districts of Azimgurh and Ghazee-poor, pillars of a suitable description were accordingly erected on the village tri-junctions. But the Surveyor reports that, throughout the Districts of Shahabad, Sarun, and Patna, none had been built up to date of completion of survey. This was urged on the notice of the Board of Revenue, Lower Provinces, equally as upon that of the N. W. Provinces; but, unfortunately, it seems as if we are never to have permanent landmarks in Bengal: the erection of permanent pillars should precede professional survey operations, or, at the latest, be built simultaneously with its progress. Pillars may be erected subsequently, but their accuracy cannot be vouched for, unless the ground be again gone over by the professional parties; this, however, would almost double the expense of survey, and thus, through the delay in carrying out this important work, it cannot be undertaken over the tracts of country already surveyed in 1863-64. Under these circumstances, the Board of Revenue have decided to abandon, for the present, the erection of permanent pillars over those portions of the country already surveyed, and to enforce them for all future and present years' survey. Why more difficulty should exist in such a very simple thing as the erection of masonry pillars prior to surveys taking the field on one side of a River, or in one jurisdiction, more than on the other, it is difficult to understand. Fortunately, in the present instance, the prompt action of the local authorities in Ghazee-poor and Azimgurh has secured permanent boundary marks on that side of the River.

84. **MAPS AND RECORDS.**—No Maps or Records of any sort have been as yet received from this Surveyor, and in their absence it is very difficult to understand or to explain the precise nature and extent of the operations. My report has been delayed to the last moment on this account. In proceeding to the Upper and Central Provinces on a tour of inspection, I took the opportunity of visiting this Surveyor's Office at Dinapore, on the 17th and 19th September last, when, owing to various circumstances, I found the work considerably in arrears. The whole of the questions connected with the old and new survey boundaries were carefully discussed, and I had an interview with the Deputy Collector employed on the demarcations. The discrepancies between the former and recent survey have certainly tended to entail a good deal of extra trouble and confusion in preparing the new Records. Lieutenant Stewart and one of his Sub-Assistants were also obliged to attend at my Office here, for a period of about six weeks, to correct and revise the Records of the Backergunge and Soonderbun Survey of the former season, which were incomplete; and this, no doubt, had some effect in delaying the preparation of the work of the season under review. I trust that, during the present year, all these arrears may be satisfactorily brought up, and the records produced by this party, left in a perfectly complete and intelligible state.

85. **CURRENT OPERATIONS, 1864-65.**—The operations of the present season will be confined to the survey of the conterminous villages on both banks of the Gunduk River, which separates the District of Goruckpoor, of the N. W. Provinces, from Sarun-Chumparun, of Bengal, and forms lower down the line of common boundary between the Districts of Sarun-Chumparun and Tirhoot, both of Bengal. The length of this River from the Nepal boundary, where it debouches on the plains of Bengal, to its confluence with the Ganges, a little below the Town and Civil Station of Chupra, is 150 miles. The average breadth of the belt of country re-demarcated, including the River, is 8 miles, giving an area of 1,200 square miles. This, comprising 1,600 Village Hulkas, will afford ample employment for this party during the present season. After the completion of this part of the work, the operations will again be prosecuted along the Ganges.

86. Lieutenant Edward Samuells, General List, Infantry, a passed student of the Roorkee College, was appointed as a Probationary Assistant Surveyor on this Establishment, by the Orders cited in the margin, and joined his appointment on the 17th December, 1863.

Mr. C. David,	from Rs.	150 to 175.	87. The Assistants noted in the margin have been promoted under G. O. No 236, dated 17th instant.
„ H. Littlewood,	„ „	150 „ 175.	
„ T. W. Nicholson,	„ „	100 „ 125.	

FIFTH OR CHITTAGONG DIVISION,
Lower Provinces.

88. The survey operations of this Division were carried on, during season 1863-64, in those parts of the Chittagong and Tipperah Hills lying between the parallels of 22° 36' and 24° 24' North Latitude, and the Meridians of 91° 11' and 92° 19' East Longitude. This difficult tract of country, scarcely ever previously entered, is bounded on the North by the Sylhet District; on the South by the Thannah of Futtikherree and that part of the Chittagong District surveyed

J. H. O'Donel, Esq., Revenue Surveyor.

ASSISTANTS.

Mr. J. Pickard, Assistant Revenue Surveyor, 2nd class.
Mr. W. Vyall, Sub-Assistant Revenue Surveyor, 2nd class, transferred from 2nd Division, Central Provinces, joined 3rd March, 1864.
Mr. G. V. Thompson, Sub-Assistant Revenue Surveyor, 2nd class, promoted to that class in January 1864.
Mr. R. Savage, Sub-Assistant Revenue Surveyor, 2nd class, promoted to that class in January 1864.
Mr. J. H. O'Donel, (Jr.), Junior Sub-Assistant Revenue Surveyor.

19 Native Surveyors.

by Captain Siddons in the year 1837; on the East by Cachar and the unsurveyed and inaccessible portions of the Tipperah and other Frontier Hills; and on the West by Thannah Nizam-pore of Chittagong District and by British Tipperah.

89. AREA.—The area thus accomplished amounts to 3,505 square miles. Of this area 626 appertain to the District of Chittagong, and the remainder 2,879 square miles, to the Tipperah Hills. A net-work of minor triangles, based on the Eastern Frontier Meridional Series of the G. T. Survey, was thrown over the whole tract, excepting only about 480 square miles of uninhabited Hills, in which no means of penetrating existed, the whole being covered with impervious Jungle. The principal Hill peaks and such of the Streams in this portion as could be reached were intersected and sketched in.

90. DURATION OF SURVEY.—The whole party were actively engaged in the field from the beginning of December, and some of them up to the commencement of the following July: a preliminary survey of the Goomtee River having been commenced so early as the 13th November, as the Revenue Surveyor's detailed arrangements and disposition of parties greatly depended on obtaining correct information regarding the course of this River and its tributaries in the Hills.

91. PROGRESS RETARDED.—During the whole of December the progress made was much retarded, owing to opposition on the part of the Hill Rajah's officials, and want of proper assistance. Subsequently, and after fresh representations and requisitions had been made to the Rajah by the Commissioner, Mr. Young, work progressed well from the 15th January to 15th March, when the rains, which set in very early in these Eastern Districts, began to fall, and rendered the further progress of the party very slow and tedious.

		Rs.	As.	P.	
Permanent Establishment	}	amounted to Rs. 52,354-4-0, giving an average rate of Rs. 14-14-11 per square mile, or almost precisely the same as in the previous season of 1862-1863, when the rates averaged Rs. 14-4-10 per square mile.
		
Contingencies		
Total expenses		
Arrears of Tra- velling Allow- ances for 1862 1863.	}	93. These rates, although not so high as those of Topographical Surveys of the first class, are sufficiently so for the particular nature of the work performed. The contingent charges are extremely heavy, and said to be caused by the peculiar nature of the country, and the necessity of taking so many coolies for provisions, and for cutting lines, all at a high rate of wages. In short, it has been only with the utmost difficulty that any sort of survey has been effected at all, in so wild and inaccessible a country, where extreme minutiae of details of configuration were quite impossible.
		
Grand Total		

92. COST AND RATES.—The cost of this survey, of an hitherto totally unknown country, amounted to Rs. 52,354-4-0, giving an average rate of Rs. 14-14-11 per square mile, or almost precisely the same as in the previous season of 1862-1863, when the rates averaged Rs. 14-4-10 per square mile.

93. SURVEYS CONNECTED.—A proper connection was also effected with the Revenue survey of the District of Sylhet to the North, and of Tipperah to the West; in both instances the Frontier boundary line, as laid down and surveyed by the 3rd and 1st Divisions respectively, has been carefully incorporated with and entered on the maps of the Tipperah Hill operations.

94. SMALL PORTION OF HILLS LEFT UNSURVEYED.—A small portion of these Hills remain unsurveyed to the extreme North-East and East. But the Revenue Surveyor having represented

that the inhabitants of the Tipperah Hills positively refused to enter these hitherto trackless forests and jungles, that only a very small portion in the North-East was believed to have inhabitants of any kind; and that to enter them at all, it would be necessary to cut paths throughout the Bengal Government concurred with myself as to the inutility of attempting anything further

Government of Bengal's letter, No. 5040, dated 19th October, 1864. in that direction at present, and accordingly ordered the discontinuance of further operations in these Hills.

96. WORK IN CHITTAGONG FOR 1864-65.—During the present season, a part of this Establishment will be employed in measuring certain elevated tracts within the District of Chittagong, which now prove to be valuable Tea-growing localities. Most of the waste lands in these low Hills have been already taken up, or applied for under the fee simple purchase rules, and the boundaries of all such grants and of those still available, will be carefully rendered with reference one to another, and to the cultivated zemindaree tracts in the plains which bound them in that direction. This work has been entrusted to a well qualified Assistant and suitable staff of Native Surveyors and Measurers. The total area to be so dealt with will probably amount to 3 or 400 square miles.

97. PROGRESS MADE.—The progress that has been made during the current season up to date in these tracts, is thus reported on by the Revenue Surveyor.

“The clearing of boundary lines and fixing of secondary stations was commenced as early as practicable after taking the Field. Work had scarcely commenced and main circuit lines surveyed, when the orders of Government were received to proceed to Julpigooree, and parties were at once withdrawn from work on and after the 26th December 1864: Main Circuit lines, enclosing an area of about 80 square miles to the South of Seetakoond, have been surveyed; but this preliminary work cannot be reckoned as area till the grants and allotments within the main circuit have been surveyed.

“Mr. Pickard surveyed 128 main circuit lines, and was employed clearing rays for triangulation during the past month.”

98. BENGAL DOOARS.—The remainder, or head quarters of the Establishment, have proceeded under the immediate charge of the Revenue Surveyor, to the newly acquired strip of country of the Bengal Dooars, recently annexed from Bhootan, by the orders as per margin,

G. O. G., Foreign Department dated 12th November, 1864. and estimated at about 4,600 square miles; of this a Topographical survey on a scale of 2 inches=1 mile will be first made, care being taken to lay down and survey all boundaries defining the existing rights of proprietors in the soil, also of waste lands, forest tracts, &c., which may be met with in course of survey.

99. The immediate task of surveying the British Frontier to the North has been entrusted to Captain Godwin Austen, Topographical Surveyor, who is now employed in sketching the country and laying down routes with Brigadier-General Dunsford's column; but as it is probably more than he can possibly perform unaided, the Revenue Surveyor of this party has been instructed to take up and carry out the survey of such portions as he may be called upon for by the Commissioner; the object being to ensure a complete survey or sketch of this Frontier boundary, during the present season, if possible.

100. MAPS AND RECORDS.—The whole of the Maps and Records have been rendered in a satisfactory manner, and they have been jointly prepared by the Surveyor and his European Assistants, each taking a fair share of the work, which is commendable. The Chart of Triangulation is full and explicit, shewing at a glance the disposition of the Stations selected for

the primary and secondary Triangles, as well as the inaccessible points laid down therefrom. The whole of the Mapping has been neatly executed, and it is now in the compiler's hands, with the view of reduction and publication at an early date on the usual geographical scale.

101. The Assistants as per margin, who have been conspicuously noted in the Surveyor's Annual Report, have been promoted* to the extent specified. The whole Establishment deserves credit for the cheerful manner in which they have borne several years' exposure and hardship on this Eastern Frontier. An inspection of the Maps best proves what they must have gone through,

† Transferred to the 6th Division, by G. O. B. G. No. 4894 dated the 27th September 1864.

and it is a matter of congratulation that such an onerous duty has been performed without more loss of life and sickness.

102. Mr. O'Donnell is an able Officer, who has shewn great tact and judgment in conducting these operations, and his name will long be associated with the exploration of a great deal of our eastern possessions, before quite unknown, and than which, I believe, no ground can be found more difficult of access and hostile to survey operations. For further details connected with the state of the country and obstacles met with, the extracts from the Surveyor's Annual Report may be perused with advantage.

SIXTH OR HAZAREEBAUGH DIVISION.

Lower Provinces.

Major G. H. Thompson, Staff Corps, Revenue Surveyor.

ASSISTANTS.

Major W. S. Row, Staff Corps, Assistant Revenue Surveyor.

Mr. B. H. Billon, Sub-Assistant Revenue Surveyor, 2nd class.

„ P. H. W. Brady, Do. Do. promoted to that class from 1st January 1864.

„ R. Scott, Sub-Assistant Revenue Surveyor, 3rd class.

Serjt. L. G. Hill, Probationary Junior Sub-Assistant Revenue Surveyor, promoted to Serjeant.

„ H. Wray, Do. Do. Do.

Private C. Schofield, Do. Do. Do. was under suspension from 22nd April, and subsequently remanded to Regiment in July 1864.

Private G. Allen Do. Do. appointed as per G. O. B. G. No. 7092, dated 1st October 1863, joined 9th October 1863.

25 Native Surveyors.

103. This Establishment has been engaged on the Palamow and Torce Pergunnahs, appertaining to the Lohardugga or Chota Nagpore District, as referred to in Para. 97 of last Report. Although Palamow contains an area of upwards of 4,000 square miles, and is of a peculiar character, it is said to form only a Pergunnah of the latter District. As the local Divisions in this extensive agency of the South-West Frontier are exceedingly large, it may be worth considering whether Palamow ought not to be a separate District or Sub-Division. At present

confusion seems to exist regarding the distinction of Pergunnahs, Tuppehs, and Districts.

104. AREA SURVEYED.—The area surveyed, comprises the whole of Pergunnah Torce and

Tuppeh Munkherce.
 „ Seemah.
 „ Chickaree.
 „ Burasand.
 „ Tuppah.
 „ Sunmint.
 „ Khauee.
 „ Doorzaj.
 Part of „ Baree.
 „ „ Foondag.
 „ „ Muttloulee.

the marginally noted Tuppehs or Estates of the Palamow Pergunnah, all appertaining to the Lohardugga or Chota Nagpore Deputy Commissionership or District, and is bounded on the North-East by the District of Hazareebaugh; on the South and the South-East by that portion of the Lohardugga or Chota Nagpore District, attached to Captain Depree's Topographical Survey; on the West by Sirgojah, and on the North-West and North by the Koel River, and

remaining unsurveyed portions of Palamow.

105. Of this hilly and difficult tract of country 1,743 square miles have been laid down during the season under review; of which 1,079 square miles consist of village survey on the

large scale of 4 inches = 1 mile in the Pergunnah and Tuppehs of Palamow, and the remainder 664 square miles, of purely Topographical Survey in Pergunnah Toree, triangulated the previous season, and in which village boundary delineation was deemed unnecessary.

106. **COST AND RATES.**—The expense incurred in carrying out these operations, and including all contingent charges for the season, amounts to Rupees 57,941-15; of this the Revenue Surveyor estimates Rupees 15,000, as the cost of the purely Topographical Survey; or, at the rate of Rupees 22-9, per square mile. The balance Rupees 42,941-15, allotted to the Mouzahwar survey, yields an average rate of Rupees 39-12 per square mile. With the arrears of contingent charges appertaining to the previous season, the total expenditure comes up to Rupees 59,069. The general or mean average rate of the combined work for the season comes up to Rupees 33-3 per square mile.

Permanent	Rs. 51,059 2 0
Contingencies	„ 6,882 13 0
Total Expenditure	57,941 15 0
Arrears of Travelling Allowances for 1862-63	1,128 0 0
Grand Total, Rs.	59,069 15 0

107. **FEATURES OF COUNTRY.**—The out-turn is a very good one. The country was again of a most rugged nature, interspersed with large tracts of dense forest, numerous streams and ravines. The hill features were more numerous and detailed than in former years' operations, and the whole is stated by the Revenue Surveyor to have involved one of the heaviest season's work he has ever experienced. The mean average cost per square mile is moderate for the description of work.

108. **TRIANGULATION.**—The accuracy of the minor Triangulation, rendered necessary over such broken ground, was again controlled by the Triangulation of the Calcutta Longitudinal Series of the Great Trigonometrical Survey, which afforded ample points of departure and verification throughout the course of these operations. The results will be tabulated as soon as the necessary data is received.

109. **MAPS AND RECORDS.**—The Index and the three large Main Circuit Maps on the one inch scale have been rendered, and these are full and satisfactory. They exhibit a large amount of work, all in pen and ink, most favorable for Photography, and have been well drawn by Major Row and Mr. Billon. The rest of the records, including Atlas Sheets and Computations, are under despatch. Owing to the extent of hilly ground to be depicted on the large scale, of course the Establishment had much more trouble in completing the whole.

110. **ESTABLISHMENT.**—Hitherto, the Establishment has been weak in its European Agency, which should be highly efficient for such description of survey. I have therefore, though not without difficulty, transferred two Sub-Assistants from other Surveys, as per margin, who, I have every hope, will be able to render the assistance so much needed.

Mr. J. Todd, Senior Sub-Assistant, From 2nd Division Oudh, joined 15th November, 1864.

Mr. W. R. Vyall, Senior Sub-Assistant, From 5th Division L. P., joined 15th November, 1864.

111. **CURRENT SEASON'S OPERATIONS.**—During the present season the survey of the Palamow Pergunnah will be continued, and for which purpose ample minor Triangulation has been prepared in advance. The work is difficult, and requires caution; I doubt, therefore, so large an area being again effected.

112. **RE-SURVEY.**—The result of the revisions brought to light in the survey of the Kurhurballee Coal Field, as referred to in para. 96 of my last Report, has necessitated the

extension of further re-surveys in the main Circuits, Nos. 8 and 9 of the Hazareebaugh District, or of that portion of the country north of the Trunk Road lying to the North-West of the Kurhurballee Coal Field, North of the Burrakur River, and up to the Monghyr District Boundary. This important re-survey is now in hand, and will occupy a portion of the establishment a considerable part, if not, the whole of the current season. Until it is satisfactorily accomplished, it will not be possible to publish the District Map, which has been compiled for some time past, but requires verification in the parts specified. I trust that no greater delay may take place in bringing out the Geographical Map of this interesting District, as it is very much wanted.

113. PROBABLE TIME FOR COMPLETION OF DISTRICT.—The Palamow area remaining to be done will occupy at least another season after the current one.

114. ASSISTANTS.—Mr. Brady is particularly mentioned as having done more and better work than any other Assistant, and as highly deserving of an increase of salary to which he has been promoted. Sergeants Hill and Wray are also commended, and have been similarly noted. I regret to have to record that Private Schofield, one of the Roorkee Students, was remanded to his Regiment by the orders, as per margin, on the recommendation of a Court of Enquiry, which the Surveyor was obliged to apply for, owing to the misconduct and general unsteady character of the Private. Sapper Allen, whose progress has not been so good as it ought to have been, has been transferred to the 3rd or Saugor Division of the Central Provinces to fill a vacancy there, and to make room for the other efficient Sub-Assistants posted to this party.

Mr. P. H. W. Brady, from	Rs.250	to	175
Sergeant L. G. Hill, "	80	"	100
" H. Wray, "	80	"	100

General Order, dated 26th July 1864.

WASTE LANDS SURVEYS.

First or Darjeeling Tea Plantation Survey.

115. The Assistant employed on the measurement of the Waste Land Allotments, recommenced in the Darjeeling hills early in November 1863. The tracts allotted for Survey lay in three different detached blocks. The largest of these was situated to the East of the Darjeeling Cart-road, and between it and the River Teesta, which bounded it on the East. Southwards it extended to the River Sivok, at the foot of the hills, whilst the Rungjo River formed the Northern limit. The second block lay on either side of the Balasun River, and extended Westwards to the Mechi River, which forms the boundary between the British possessions and Nepal. The third block lay immediately under, and to the West of, the Station of Darjeeling.

116. AREA. HILLS.—The area thus surveyed in the hills amounted to acres 81,319= square miles 127. The interior details of all which, with the exception of about 20 square miles of unallotted and uncleared ground, was as minutely surveyed as possible. Most of the blocks, however, being of recent allotment, the jungle was consequently less cleared than in former years, and the difficulties and delays greater; especial pains were taken by the Surveyor to depict faithfully and correctly the Topographical features of the Government Cinchona plantations.

117. This work was connected with, and checked, on the principal G. T. Stations of Birch Hill and Senechal, and the secondary ones of Mahalderain, Sitong, Nagri, and Goong.

118. Whilst Mr. Johnson was thus personally employed with a few of his Subordinates on the higher ranges and valleys, his Sub-Assistant, recently appointed, with the newly trained Establishment as mentioned in para. 112 of last Annual Report, entered the Morung, or Teraic Forests at the foot of the Darjeeling range of hills, and commenced on the Survey of the two Morung Pergunnahs of Hattighusa and Patterghatta. These Pergunnahs are situated between the Mechi and the Maha Nuddee Rivers, the first of which forms the boundary between the Darjeeling District and Nepal to the West, whilst the latter divides it from Rungpoor to the East.

119. AREA. PLAINS.—The contained area was 1,24,093 acres = 194 square miles, comprising 659 jotes, or small blocks or patches of cultivation farmed by inhabitants of the Teraic, 6 Hauts or market places, 73 blocks of Government Waste Lands, and 7 jhars, or blocks of Forests reserved for firewood.

120. Of the above area, 104 square miles have been completed in their interior topographical details, whilst the remaining 90 square miles were surveyed in boundary alone, and will be completed in interior details during the present season. Teraic or jungle fever of a severe nature breaking out amongst the parties, successively sent out by the Surveyor in charge, in the hopes of finishing the work last season, forced him reluctantly to withdraw, sooner than he would have done, all hands from the field, and leave the work to be prosecuted hereafter, at a more favorable season. Contingencies of this kind are to be expected, and are quite unavoidable in Surveying such malarious tracts of country as the Darjeeling Morung.

121. The total area for the season amounts therefore to square miles 321, or 2,05,413 acres, and comprises 778 separately demarcated blocks or holdings, and jotes.

	Cost.				
Permanent	Rs.	15,544	10	0	all contingent expenses of the professional party, and a further sum of Rs. 3,511-8-0 paid by the Superintendent of Darjeeling on account of coolies for cutting jungle.
Contingencies	"	3,005	4	0	
Coolies	"	3,511	8	0	
Total Expenditure...	"	22,061	6	0	123. The Main Circuits effected in the Teraic for the purpose of combining all the allotment measurements, yield a considerable area, which, if taken into the calculation of
Arrears of Travelling Allowance for 1862-63	"	370	0	0	
Grand Total...	"	22,431	6	0	

the average cost per acre, would reduce it very materially. But, in reality, many more measurements have yet to be made within these Main Circuits, and likewise in the Hills; the skeleton work is done, but the topography of the same area remains to be accomplished. It is not therefore practicable to give a fair average cost at present, and this must remain until the whole work is completed, and a fair calculation on the aggregate taken.

124. Every care has been taken by the Surveyor to render the work as clear and as useful as possible. Every detail has been entered as minutely as his means and the nature of the jungle permitted, and connection has been made, wherever practicable, with former operations conducted in the Morung under Major Sherwill, Revenue Surveyor, in 1852, and in the adjoining District of Rungpoor by the late Mr. Pemberton, Revenue Surveyor, in 1855 to 1859.

125. **POSTS.**—In the demarcation of the jote lands of the Morung, the survey parties put up posts, wherever practicable, to mark the holdings and serve as guides hereafter in recognizing the boundaries. Where wooden posts were not procurable, earthen mounds were erected. Application was also made by the Assistant Surveyor in charge, to the Superintendent of Darjeeling, for the erection of masonry pillars or platforms on the tri-boundaries of the holdings in the Morung; “but,” reports the Surveyor, “that Officer does not see any necessity for pillars being erected on the jote lands, but has issued orders to the Chowdries, and to the Deputy Magistrate of Phansée dewa, to have them put up along all Government lands.” But whether the orders have been carried out or not, was not known to him at the time of submitting the Report. It is most unfortunate that the immense and paramount utility of permanent landmarks being put up prior to survey, or at least during the course of survey operations, is not sufficiently appreciated by Civil Officers, and thus the labours of the survey, and the expense which Government annually incurs in these scientific operations, are not utilized for the future so fully as should, and might easily, be. The survey serves present purposes, it is true, without the erection of these marks, but to make it available for the future, these are indispensable adjuncts, and should on no account be suffered to be neglected.

126. **LAND MARKS REQUIRED.**—Speaking of the demarcations in the hill estates, the Surveyor reports—“ Posts, or Stones, have always been heaped up, and if the planters would only erect their pillars immediately after the survey has been completed, there would be no difficulty hereafter; but this they will not do. The Superintendent states, that he has no authority to enter the lands of purchasers of waste lands to erect boundary pillars, but that a period is fixed, and inserted on their deeds of conveyance, for the erection of them by the purchaser; after the lapse of which period any dispute arising, the Superintendent has authority to lay down the boundary, and his decision is to be considered as final.” This, in a measure, gets over the difficulty, but it contemplates legislation on disputed boundaries, which would, in all probability, never arise if the erection of pillars at the time of, or rather preceding, survey, was rendered, as it undoubtedly ought to be, imperative. I trust the time is not far distant when this essential of surveying will be acknowledged and acted upon everywhere, and be as rigorously carried out as in the Punjab, Oudh, and Central Provinces.

127. **MAPS AND RECORDS.**—The number of Maps and Plans prepared by this small party during the season are given in the margin; those intended for this office, with the exception of the Index Map illustrating the season's operations, have not been lodged as yet, consequently no opinion can be recorded of them. A large amount of work has been accomplished by this Surveyor, and he performs his duties very greatly to my satisfaction.

Hill Portion.		} 4 inches to the mile.	given in the margin; those intended for this office, with the exception of the Index Map illustrating the season's operations, have not been lodged as yet, consequently no opinion can be recorded of them. A large amount of work has been accomplished by this Surveyor, and he performs his duties very greatly to my satisfaction.
8	“ Chudder” Maps for Surveyor-General.		
8	do do for Deputy Commissioner.		
9	do do Rough for office.		
27	Maps for Proprietors.		
Of Locations.		} 20 inches to the mile.	of them. A large amount of work has been accomplished by this Surveyor, and he performs his duties very greatly to my satisfaction.
1	Chudder Map for Surveyor General.		
17	Location maps for Deputy Commissioner.		
17	do do for Proprietors.		
1	Index Map	1 inch = mile.	
<hr/>			
87	Total.		
Terai Portion.		} 4 inches to the mile.	of them. A large amount of work has been accomplished by this Surveyor, and he performs his duties very greatly to my satisfaction.
14	“ Chudder” Maps for Surveyor-General.		
14	do do for Deputy Commissioner.		
14	do do for office.		
1	Pergunnah map for Surveyor-General.	Scale 2 ins. = 1 mile.	
1	do do for Deputy Commissioner.	not taken in hand.	
1	Index map	Scale 1 inch = 1 mile.	
<hr/>			
45	Total of Terai.		
<hr/>			
132	Grand Total.		

128. **WORK FOR 1864-65.**—The hilly portion of field operations during 1864-65 are reported by the Surveyor to

be too scattered to admit of description, as to relative situation, beforehand. He appears, however, to have ample work cut out for his parties, both in the hills and in the Morung, or Plains. If time and leisure from more pressing duties permit, he will also re-survey the interior details of the blocks surveyed in 1861-62, in which the general features of the hills have not been satisfactorily, or correctly, shewn. The work for a Surveyor, so situated, of course depends on the applications for grants. It is impossible for this Department to foresee when such duties are likely to terminate.

129. **ADDITIONAL WORK.**—Mr. Johnson has also received instructions to place himself in communication with Captain Godwin Austen, Topographical Surveyor, on special survey duty in the newly-annexed Bengal Dooars, in view to assist in laying down the boundary between the western and more hilly portion of our newly-acquired territory in the Dooars, and the Native state of Sikkim to the North, and Bhootan Proper to the East. The survey of the hills between the said portion of boundary and the plains of the Dooars will also be entrusted to this officer and his Establishment. And, in view to expediting its completion, without interfering with the survey of Darjeeling Waste Lands, I propose that the extra Establishment entertained and trained for the survey of the Morung Pergunnahs may, on the completion of their task, be retained for the survey of the North-Western Hills of the Bengal Dooars. These men will have become inured, in a measure, to the climate of the Teraie, and be better fitted to cope with any difficulties that may have to be encountered in the valleys of these ranges.

130. **ASSISTANT.**—Mr. P. Cowley, Sub-Assistant 2nd class, was transferred from the 1st or Jubbulpoor Division, Central Provinces, to this survey, on the 1st November 1864. He has worked very well during the season under review, and been promoted. The extracts from the Surveyor's Report, given in the Appendix, will shew the difficulties met with, and the great sickness which has resulted from employment in this Teraie.

Mr. P. Cowley, from Rupees
125 to 150 Vide G. O. No. 236
dated 17th Instant.

WASTE LANDS SURVEY.

Second or Upper Assam.

131. The progress of this waste land party has been somewhat more satisfactory during the past season than it was during the previous one of 1862-63, when, owing to defective arrangements in demarcation, only the very small area of 47 square miles was accomplished. During season 1863-64, the Assistant Revenue Surveyor reports 63,919 acres = 100 square miles of waste land survey completed. Of this 90 square miles formed one block, and was connected with the principal block of season 1862-63, filling up all the gaps that had previously existed in the work of that year, and greatly adding to the value of the survey. 3,840 acres = 6 square miles, contained in 6 grants, were likewise connected with the season's operations; but the balance, 2,560 acres = 4 square miles, contained in five other grants, were detached and too far separated from the rest of the work to be connected therewith with advantage at present.

132. This work extended over 16 Mouzahs,* the boundaries of which, however, were not laid down, because, says the Surveyor, "The Officer then in charge of this District (Secbsagur) when the subject was brought to his notice, said that, the Mouzah boundaries of this

* Note.—A Mouzah in Assam differs considerably from what is called a Mouzah or Village.

“ District were in such a state of confusion and dispute, that a regular demarcating establishment would be required to precede survey operations before they could be surveyed.”

133. CONTINUOUS DEMARCATION AND SURVEY.—Since then, however, a demarcation establishment has been deputed to Upper Assam to prepare the ground for survey, in view to the professional establishment carrying on their operations in a properly connected manner, instead of perpetuating the faulty and erroneous system of desultory measurements of grants scattered here and there over the country, and only regulated at the will of applicants.

134. This will not only tend, eventually, greatly to economize the cost of survey, but will enable this Department to utilize the present operations in the preparation of District and other Maps, without going over the same ground a second time; and if to this, the erection of tri-junction masonry pillars, in advance of survey, be rigorously enforced, all present and future requirements of the Government, and the Public, will be secured at a minimum cost, and very much needless litigation on disputed boundaries be saved hereafter.

		135. COST AND RATES.—The cost of		
Permanent	Rs.	11,866 10 0	these operations amounted to Rupees 14,199-4 shewing that the average expense of surveying each acre has been Rupees 0-3-6½, three annas, six and half pie, or nearly one anna per acre less than last season. Nor can it be expected to be much reduced below this,
Contingencies	... ..	..	2,332 10 0
	Total Expenditure...	..	14,199 4 0	if surveyors and their parties, instead of surveying, are to be employed in clearing rays and cutting jungle.
	Arrears of Travelling Allowance for 1862-63	..	350 0 0	
	Grand Total...	..	14,549 4 0	

135. COST AND RATES.—The cost of these operations amounted to Rupees 14,199-4 shewing that the average expense of surveying each acre has been Rupees 0-3-6½, three annas, six and half pie, or nearly one anna per acre less than last season. Nor can it be expected to be much reduced below this, if surveyors and their parties, instead of surveying, are to be employed in clearing rays and cutting jungle.

136. OBSTRUCTIONS TO PROGRESS.—This season, it is true, the Surveyor reports, that the lines were all cleared at the expense of the grantees, who supplied the coolies; but, on taking the field, on the 20th November, not a single grant was ready, and the grantees begged for further delay. Not a single boundary was demarcated, and the Native Surveyors had nothing to guide them beyond the boundary descriptive lists supplied by the Deputy Commissioner, and the lines cut by grantees.

137. The Surveyor visited many grants personally, in the hope of inducing a hearty co-operation, and addressed the Officiating Deputy Commissioner several times on the subject, but it was not until January was well advanced, that a fair start in field work was made.

138. The Surveyor complains of the delays caused by failure of Mouzahdars, or holders of village lands, to attend to the wants of the survey in pointing out their respective boundaries touching on the Waste Allotments, or preparing them for survey. The Officiating Deputy Commissioner, it is stated, required a special application, on each occasion, accompanied by a sketch map of the land. All this retarded work very materially, and increased the expense. Unless well supported by local officers, a surveyor's duties are most harassing. The Surveyor's remarks on this will be found in the Appendix.

139. No maps and records of this survey have yet been received, but they have been promised to be despatched by Steamer, and may be daily expected.

140. Mr. A. Smart has, I regret to record, tendered his resignation, which was accepted by the orders as per margin. This secession from the Department has proved exceedingly inconvenient, owing to the

No. 26, dated 5th January, 1865.

impossibility of finding qualified Assistants for all the surveys in progress, or projected. Mr. A. Smart's loss will be severely felt; he has done excellent service in the Department for a period of 17 years, during which time he was conspicuous for zeal and knowledge of his profession.

141. My letter cited in the margin, detailed the arrangements proposed to be made No. 37, dated 4th April, 1864. for the continuance of the Waste Lands measurements in Upper Assam. His Honor directed that the survey should be converted into a regular one of the whole District of Seebaugor, as soon as the services of an efficient Establishment can be found available from present duties. Mr. Brownfield, Senior Sub-Assistant of the 1st or Northern Division, has therefore preceded his party to relieve Mr. A. Smart, as a temporary arrangement, until the ensuing cold season, by which time it is hoped the Bulloah survey will be out of hand.

142. WORK FOR CURRENT SEASON.—A special demand was originally made for a Government to Board, No. 3937, dated 22nd November, 1864. survey of the coal tracts on the Dehing and Terap Rivers, but this was subsequently countermanded. In the vicinity of Jeypoor there are many Waste Land allotments to be taken up, and as the survey is now to be continuous, there is ample work for several years to come.

WASTE LANDS SURVEY,

Third or Lower Assam.

J. O. Nicolson, Esquire, Officiating Surveyor.
9 Native Surveyors.

143. Further requisitions having been made by the Commissioner of Assam for qualified Surveyors to be deputed to that Province for the purpose of meeting the great demand for the measurements of Waste Lands applied for under the Fee-simple Rules, sanction was given* to the raising of another small party, of similar strength to those already employed in the Darjeeling Hills and Upper Assam.

* G. O., Bengal Government letter No. 4213, dated the 11th November, 1863.

144. The best measures available, were taken to provide the necessary establishment for this purpose. Under the special direction of the Financial Department, the services of Mr. J. O. Nicolson, of the Great Trigonometrical Survey, who had just completed a series of Astronomical observations at the Andaman Islands, were placed at the disposal of the Revenue Survey Department for this duty; and he accordingly received his instructions and equipment, and formed the nucleus of his party during the months of November and December, 1863, in Calcutta, with such few natives as could be procured, and proceeded, on the 6th January, 1864, first to Cherra Poonjee in company with the Cossyah Hills Topographical party, of which he also had temporary charge, owing to the detached employment of Captain Godwin Austen, and subsequently to Gowhatty, where he placed himself in communication with the Commissioner of that Province, in view to carrying on such desultory operations in the plains of Lower Assam, as might be possible and necessary.

145. The usual Financial Statements were submitted, and sanction for the Budget Estimate, amounting to 1,970 Rupees per mensem, of this party, having been duly obtained, Mr. Nicolson was enabled to report himself ready to break ground in the Districts of Kamroop and Durrung, Lower Assam, by the end of February 1864; but it was not until the 1st April that any work at all could be commenced. The further proceedings of this party may be best given in the words of the Surveyor himself:—

REASONS FOR DEFICIENCY OF WORK.—“The grants surveyed are small, some of them not being more than 5 acres in extent, and only one above 500 acres; they are scattered in the midst of low hills, and separated from each other by heavy jungle. Those near Gowhattay have been joined together and formed into a group, but the rest are far from each other, and will have to be laid down by triangulation. It is proposed to carry on, in future, a series of triangles along the banks of the Bramapootra, to connect Tea grants, and fix conspicuous points in the country, so that the results of the Waste Lands Survey may come of use in the preparation of the Geographical Maps of the country. The survey of each grant was started with a fresh Azimuth, determined by the observations of the sun. There were 4 large grants measured, aggregating 4,686 acres, but as their boundaries have since been disputed, they have not been included in the Table B as work finally done.

“Eight men were entertained in Calcutta, for the purpose of being trained as Surveyors, Computers, and Draftsmen, and about 50 Khalasees and Burkundazes. This Establishment left the Presidency on the 6th January, 1864, and accompanied Mr. Nicolson to Cherra Poonjee, whence they were sent across the hills to Kamroop, and arrived at Gowhattay at the end of February. Early instructions were solicited from the Commissioner of Assam, regarding the employment of the party; but no steps were taken by the authorities to assign work to the party until the 1st of April, when the Deputy Commissioner furnished a list of grants to be surveyed. By this time it was almost too late to commence operations on a large scale. The grants made over for survey were neither previously defined nor cleared of jungle. Mr. Nicolson had to demarcate the boundaries himself, and then have them cleared under the superintendence of his own men; consequently, although every one was out all day, the work went on very slowly, and very little was done by the time the party retired from the field. The accompanying recent correspondence will explain the difficulties the party experienced in carrying on the survey operations in Kamroop District.

“Of the 17 grants surveyed, 68 plans have been prepared, on scales varying from 10 to 4 chains to an inch. The Office Establishment suffered very much from sickness, and out of the men trained as Surveyors, Draftsmen, and Computers, only two have remained in the Establishment. Most of the field work was done by Mr. Nicolson and Golam Ruhman, and all the computations by the former and Rubiool Hoscin the computer; the latter also had to assist in the current duties of this Office, as well as that of the No. 6 Topographical party.”

146. OUT-TURN.—From the above, and the other extracts from the Surveyor's Report given in the Appendix, it may be supposed the area completed was almost nothing; only 17 small grants, including an area of 2,498 acres, or less than 4 square miles of country, were accomplished, and even this is said to have been only done by remaining out during the months of April, May, and June. Four other large grants, aggregating 4,686 acres, were also measured; “but,” says the Surveyor, “as their boundaries have since been disputed, they have not been included as work finally done.” Thus the deputation of this Surveyor, on a high salary, with his Establishment, may be said to have been almost entirely thrown away.

147. COST AND RATES.—The expenditure and cost incurred in these operations was of course proportionately large, amounting to no less than Rs. 16,080-12-0, and yielding an average rate of 4,123-4-0 per square mile, or Rs. 6-7-0 per acre. These unsatisfactory results may be said to arise from the absence of proper arrangements and system of laying down boundaries of grants and

Permanent	12,707	12	0
Contingencies	3,373	0	0
Total expenses	16,080	12	0

allotments as applied for by intending purchasers, and owing to the impossibility of the Surveyors moving in the dense jungle, peculiar to Assam, before proper clearances are made.

148. **PRESENT PROSPECTS.**—Due notice of the party taking the field, during the present season, was given by Mr. Nicolson to the Commissioner of Assam, on the 20th October last. His letter and the reply thereto are appended for information. I am unable, however, to assent to the principle laid down by the Commissioner, *viz.*, that “the system on which the Government have authorized the making of grants has necessarily imposed the duty of ascertaining their precise limits on the Surveyor sent to survey them.” The Commissioner’s letter appears tantamount to telling the Surveyor to trust exclusively to his own resources, to do what he can, which, without local active co-operation, cannot be much.—(See *Appendix.*)

149. The demarcation of the precise limits of grants applied for, according to specified areas or boundaries, and which appear to be given out by the local authorities to applicants, must be determined and provided for in advance of the professional survey, if any sort of reasonable progress is to be made; so that, as in other parts of India, survey may proceed uniformly and regularly, and the utmost economy be ensured by avoiding the necessity of again going over the same ground.

150. **SYSTEMATIC SURVEY ESSENTIAL.**—But if tracts of jungle, or waste lands, are surveyed and laid out in convenient blocks and allotments, numbered on the maps, and then either sold or allotted, the Surveyor would know how to act, and be able to arrange his operations properly. As it is, from the very nature of the applications specifying particular limits made by interested parties, the grants are scattered about in the wildest confusion, leaving strips or patches of land, intervening here and there, to the detriment of all order, and obviously to the injury of Government interests. The surveys of such grants, even when made, can be turned to little or no use, beyond the ascertainment of the area of each property.

151. The Thâkbust, or demarcation records and maps, furnished by the Deputy Commissioner, are said by the Surveyor to have been “carelessly drawn out, as they do not describe accurately the landmarks, natural or artificial, given for the identification of boundaries; and the plans appended to them are generally utterly unreliable, as much from the unscrupulous character of the men by whom they are executed, as from want of system in the method of the Ameen Survey itself.”

152. The Waste Land allotments in Kamroop lie chiefly in the midst of low hills, and, with few exceptions, not contiguous to, but separated from, each other. Traverse lines to connect one with another could not, says the Surveyor, be carried, except at enormous expense through such jungle as existed there. It was too late in the season to execute any triangulation for this purpose, as the jungle was springing up on all sides, and coolies could not be procured for clearing hills for Trigonometrical Stations.

153. **RECESS WORK NOT COMPLETED.**—For the above reasons, Mr. Nicolson states that plans of the grants, to the extent of 68, have been prepared on the scales varying from 10 and 4 Inches = 1 Mile, and on sale for the use of grantees only. Those for my Office and for the local authorities, he proposes to prepare as soon as the whole can be connected by triangulation, so as to be able to shew their relative situations one to another, and

render the information given available for Geographical purposes. All this delay in preparing plans of simple allotments was quite unnecessary. There seems to be some misunderstanding on the part of Mr. Nicolson, who has had no previous experience in such Revenue Detail Surveys, and much time has, I fear, been lost in consequence. What is required in the Kamroop District is a regular Revenue Survey Establishment, under competent management, as soon as available, to deal with the work in a practical and systematic manner, and to prosecute a complete and continuous survey of the whole District in a similar manner as ordered by Government for the Seeksagur District.

154. During the present season it is proposed for the Surveyor to connect all the allotments measured last season, one with another, by triangulation, whilst his Assistants will proceed with the measurement of other grants in the Kamroop District. Up to the date* of last field report, but little progress, however, appears to

* 1st January, 1865. have been made ; one boundary party was fairly at work from the 1st December, but two other boundary parties are therein stated to have been obliged "to remain idle till the 20th, on account of the boundary lines not being cleared and ready for survey." Mr. Nicolson states, he was also employed on demarcation duty during the month, in addition to his other professional occupations. I am of opinion that the employment of Mr. Nicolson on these operations, in the manner they are now conducted in Lower Assam, is a waste of money. The results of the past season are almost *nil*, and the prospects for the current season are not much better.

155. Specimens of the Surveyor's work have been specially called for.

156. CONCLUSION.—The duties connected with the Waste Lands, in addition to all the other Revenue and Topographical Surveys under the various Governments of this wide Presidency, coming under my supervision, are increasing so fast as to call for extended means for controlling and inspecting the same. The sphere of superintendence of the Surveyor General is quite beyond the powers of any single man to do real justice to ; the subject has long been before the Supreme Government, but as yet no practical results have ensued. A separate Superintendent for the Revenue Surveys in the Lower Provinces is now an absolute necessity, and I trust the subject may receive the consideration it deserves from the Bengal Government.

H. L. THUILLIER, LIEUT. COL.,
Surveyor General of India.

SURVEYOR GENERAL'S OFFICE, }
REVENUE BRANCH, }
Calcutta, 18th January, 1865. }

TABLE A.

GENERAL RETURN of professional work for Season 1863-64, from 1st October 1863 to 30th September 1864, exhibiting cost, areas, and average rates per square mile and circuit.

DIVISION AND SUPERINTENDING OFFICERS.	Name of District.	Number of Villages.	Average size of Village Circuits.	ABNA SURVEYED.		Cost of Professional Charges, including Military Allowances and Contingencies.	Average Rate per Square Mile.	Average Rate per Village Circuit.	REMARKS.
				In Acres.	In Square Miles.				
First or Northern Division R. B. SMART, Esq., Revenue Surveyor.	Tipperah and Noacolly. ...	1,877 River.	392	7,35,907	1,160	Rs. As. P. 42,577 10 7	Rs. A. P. 32 10 11	32 10 11	Mehalwaree charges excluded.
				1,49,780	234				
Second or Southern Division. CAPTAIN D. MACDONALD, Asst. Reve. Surveyor, in charge.	Maunbhoom	1,499	392	6,34,775	892	60,286 14 6	60 10 11	33 8 7	Ditto.
Third or Eastern Division. N. T. DAVEY, Esq., Revenue Surveyor.	Sylhet	777	522	6,26,518	979	40,525 1 1	41 6 4	52 2 6	Ditto.
Fourth or Western Division. LIEUT. W. J. STEWART, Revenue Surveyor.	Shahabad, Soruu, Patua, Ghazeeppoor, & Azingurh.	1,185	470	5,67,744	887	51,429 9 2	52 15 9	43 6 5	Mehalwaree charges excluded, River area included.
Fifth or Chittagong Division. J. H. O'DONNELL, Esq., Revenue Surveyor.	Tipperah Hills Chittagong.	80 Sub-Circuits, 167 Triangles.	.....	22,43,433	3,505	52,354 4 0	14 14 11	0 0 0	
Sixth or Hazareebough Division. MAJOR G. H. THOMPSON, Revenue Surveyor.	Loharduggah or Chola Nagpoor.	679 63 Triangles and 52 Sub-Circuits.	1,185	6,90,543	1,079	42,941 15 4	43 12 9	74 4 8	
	Topographical			4,24,981	664	15,000 0 0	22 9 5	0 0 0	
	Mouzahwar	6,916	608	34,05,247	5,321	2,27,741 2 10	42 12 9	39 7 11	
	Topographical			26,89,304	4,189	87,364 4 0	16 2 6	0 0 0	
Grand Total and General Average				80,73,641	9,400	2,95,095 6 10	31 1 6	38 7 11	* Exclusive of the 5th Division and Topographical work.

	Name of District.	Number of Allotments, Grants, or Estates.	Average size of Allotments.	ABNA SURVEYED IN.		Cost of Professional charges inclusive of Contingencies.	Average Cost per Acre.	Average Cost per Allotment.	
				Acres.	Square Miles.				
WATER LANDS.									
1st or Darjeeling.	Darjeeling	Hill Work.	33	2,464	81,320	127	11,274 10 3	0 2 24	341 10 5
E. T. S. JOHNSON, Esq., Asst. Reve. Surveyor, in charge.		Terai.	745 Jotes, &c.	167	1,21,003	194	7,275 3 7	0 0 11	9 12 2
2nd or Upper Assam.	Seebanigor...		53	1,907	63,949	100	14,189 4 8	0 3 61	267 14 7
A. D. SMART Esq., Asst. Reve. Surveyor, in charge.									
3rd or Lower Assam.	Kamroop and Durrung		17	147	2,404	4	18,080 11 10	6 7 0	946 14 9
J. O. NICHOLSON, Esq., Offr. Survey r, in charge.									
Total		848	321	2,71,800	425	48,820 14 4	0 2 10	57 9 4	
SURVEYOR GENERAL'S OFFICE, Revenue Branch, 18th January, 1865.			Total			3,43,825 6 2			
			Mehalwaree Charges			2,307 0 3			
			Arrears of uniform rate of Travelling Allowance for 1862-63			8,530 4 5			
			Grand Total			3,54,743 2 11	12 3 0	40 0 0	

H. L. THUILLIER, Lieut.-Col.,
Surveyor-General of India.

TABLE E.

GENERAL STATEMENT of sums actually drawn, inclusive of Guards, for the nine Revenue Surveys, during Season 1863-64, exhibiting amount drawn in each class.

MONTHS.	Supervising Officers and Contract Allowance including Militia and Commissioned Officers.	European Assistants including Military Pay of Commissioned Officers.	Apprentices or Office Assistants.	Native Establishment including of Native Comptrollers.	Guards.	Total without Contingencies.	Total with Contingencies.
October 1863	7,555 12 0	6,288 11 9	455 0 0	5,050 14 7	268 15 5	20,500 5 9	21,305 4 9
November "	7,029 5 4	7,323 13 10	300 0 0	11,131 2 4	384 15 10	28,174 5 4	29,608 8 8
December "	6,634 3 0	7,009 11 6	300 0 0	11,801 2 11	670 4 5	29,623 5 9	35,028 1 6
January 1864	6,972 8 1	6,911 15 4	300 0 0	11,868 15 8	778 0 0	26,859 8 11	33,757 10 0
February "	7,057 10 5	6,983 7 10	300 0 0	11,861 13 4	782 14 4	27,085 13 11	41,240 9 9
March "	6,961 13 1	7,468 3 0	300 0 0	11,840 2 5	764 7 2	27,464 6 8	39,683 5 8
April "	7,024 4 0	7,442 12 11	300 0 0	11,876 5 11	784 0 0	27,427 8 10	35,177 7 6
May "	7,024 4 0	7,109 9 7	300 0 0	9,683 10 9	615 3 8	24,762 12 0	29,075 14 9
June "	7,024 4 0	7,346 7 8	350 0 0	6,734 7 6	348 2 8	20,803 5 10	22,700 2 5
July "	7,024 4 0	7,016 6 0	275 0 0	4,211 9 5	315 9 3	18,842 12 8	19,803 10 6
August "	7,024 4 0	7,002 14 9	275 0 0	4,431 8 3	315 0 0	19,545 11 0	19,709 7 9
September "	7,024 4 0	6,947 0 9	375 0 0	4,069 9 4	315 0 0	18,630 14 1	19,248 11 3
Arrears of uniform rate of Travelling Allowance for 1862-63	.....	.....	.....	.....	.....	.....	8,530 4 5
Total	87,686 10 11	84,695 2 10	3,730 0 0	1,04,861 8 8	6,380 8 9	2,27,333 13 9	3,54,793 2 10

Of the above Statement, the following Table exhibits the Expenses, under each Class, in each of the Nine Revenue Surveys.

DIVISIONS.	Districts.	Superintending Officers and Commandants, including Allowance for their Families and Pay of Commandant Officers.	European Assistants, including Military Pay of Commandant Officers.	Apprentices or Office Assistants.	Native Surveyors.	Khalasies.	Triangulators.	Guards.	Total without Contingencies.	Total with Contingencies.
		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.
First or Northern Division	} Tipperah and Nowcolly	8238 0 0	12,116 10 7	200 0 0	7,714 7 3	7,691 2 11	864 0 0	482 0 0	38,806 4 9	43,941 10 7
		14,912 3 1	14,339 9 2	830 0 0	7,568 2 3	6,688 10 9	444 6 1	908 4 0	45,219 3 4	60,711 4 9
		8,712 0 0	9,481 10 8	2,100 0 0	6,665 6 7	7,197 9 5	459 3 2	547 1 6	35,172 14 4	40,984 4 3
		11,068 9 3	14,166 8 7	670 0 0	5,088 14 2	7,597 13 2	640 0 0	627 6 11	40,195 4 1	51,969 9 2
Fifth or Chittagong ditto	} Tipperah Hills—Chittagong	9,712 0 0	12,274 5 1	.....	6,361 4 1	8,657 5 5	.....	1,207 1 9	37,112 0 4	52,354 4 0
		15,900 9 3	20,916 6 9	.....	5,678 8 0	7,899 9 11	.....	774 0 0	61,039 1 11	67,941 15 4
Sixth or Hazareebaugh ditto	} Loharlugga or Chola N'agpore	5,568 0 0	1,600 0 0	.....	2,789 10 0	4,819 8 5	.....	480 7 4	15,544 9 9	19,549 13 10
		5,856 0 0	.....	.....	2,236 0 9	3,159 10 0	.....	914 15 5	11,866 10 2	14,199 4 8
		7,583 5 4	.....	.....	2,102 10 4	2,420 8 7	.....	641 8 10	12,707 12 1	16,060 11 10
Arrears of uniform rate of Travelling Allowance	} .....	.....	.....	.....	.....	.....	.....	.....	.....	6,530 4 5
		87,536 10 11	64,895 2 10	3,720 0 0	46,182 15 5	55,220 13 7	2,307 9 3	6,390 8 9	2,97,588 12 9	3,54,793 2 10
Total		1,04,991 6 3								

Surveyor General's Office
 Mysore Branch,
 Calcutta, 18th January, 1885.

H. L. THULLIER,
 Surveyor General of India.

APPENDIX.

Extract from Annual Report from Mr. R. B. SMART, Revenue Surveyor, 1st Division, Lower Provinces, to the Surveyor-General of India, No.—dated 1st November, 1864.

4. NATURE OF COUNTRY SURVEYED.—The Noacolly District lies on the Eastern side of the River Megna, between the District of Tipperah to the North, and the Bay of Bengal to the South. The District was originally formed by the deposits of the Rivers, and consists of large Islands, which form every year at the mouths of the Rivers, and finally become attached to the mainland. The general tendency is to increase to the South and West, thus extending perceptibly further into the Bay. The River Megna is also gradually moving towards the West, leaving much dry land on the Noacolly side. Dr. Hooker, in his "Himalayan Journals," remarks: "The mainland of Noacolly is gradually extending seawards, and has advanced four miles within twenty-three years; this seems sufficiently accounted for by the recession of the Megna. The elevation of the land is caused by the overwhelming tides and South-west Hurricanes in May and October; these extend for thirty miles North and South of Chittagong, and carry the waters of the Megna and Fenny back over the land, in a series of tremendous waves, that cover Islands of many hundred acres, and roll three miles on to the mainland." The water of the Megna off Noacolly is brackish; the tide rises from forty (40) to eighty (80) feet. The bore is very violent between the Islands of Hattayah and Sundeep; the force of this tidal wave upsets the largest boats. The mainland is flat, and of a very low level, and, being subject to very heavy rains, the greater portion is for a third of the year under water. During the dry months the rivers and khalls remain open to Khoonda boats. In the rainy season it is possible to sail across the country in almost any direction.

Copy of Letter No. 64, dated Dacca, the 27th May 1864, from R. B. SMART, Esq., Revenue Surveyor, 1st Division, to W. GORDON YOUNG, Esq., Commissioner of Revenue, 16th Division, Chittagong.

With reference to your letter No. 35 of the 13th instant, I have the honor to submit the following geographical and statistical remarks on the Northern half of the District Tipperah.

To provide full and complete information would occupy much more time than I can conveniently spare at present.

The Northern half of the District is bounded as follows:—On the North by the District of Sylhet; on the South by the Road from Comillah to Daoodkandee; on the East by Hill Tipperah; and on the West by the River Megna, and the Districts of Mymensing and Dacca.

Superficially, the country presents a continued flat and open surface; the land consisting of extensive and well cultivated fields, and intersected in all directions with numerous rivers and khalls, which are partially influenced by the tides. Near the large rivers, the lands are under water during the rainy months. All communications and transport are effected by means of boats, except during the few months of the hot weather, when the village footpaths are resorted to. The khalls are navigable throughout the year for small boats. Hackeries are almost unknown.

The surface soil in the low lands is light and sandy, but in the higher parts the country possesses a deep alluvial soil, alternating with bands of clay and sand.

The produce consists of rice, safflower, peas, chillies, indigo, moong, linseed, khesaree, and pulses of many kinds. The cultivation of the sugarcane is pursued with some success near Doolal-poor. The process of bruising the canes is on a rude plan, and there is great room for improvement in the mechanism for extracting and preparing the sugar.

The kinds of crops or produce most profitable and chiefly cultivated are safflower, betelnuts, rice, moong, linseed, khesaree, and muskullye.

The imports are, oil, tobacco, English piece goods, shoes, umbrellas, brass and copper utensils, iron and steel, salt, building materials and cotton.

Cheese, fish oil, dried fish, and seetulpatee mats are largely exported to Calcutta and the neighbouring Districts. The art of curing fish is not known. The fish sent to market is unwhole-some; they are dried without salt, and a large proportion used is far advanced in putrescence. The portion of salt which the poor are able to procure is very small, and the expenses incidental to transport the dried fish amounts to considerably more than the value of the article. Improved means of transport will stimulate production, and the rural population receive in exchange other articles of use.

The principal marts for exportation and importation are, Serael, Chonta, Kalee Cachoo, Talshar, Brahmunbaree, Dowlut Dooree, and Baher Chur.

The villages are substantial, and have an abundant population. In the tract of country lying North of the road from Comillah to Daoodkandee, there are thirty (30) villages, with more than two hundred and fifty (250) houses each. Kalee Cachoo contains (1,425) fourteen hundred and twenty five houses; Serael, seven hundred and five (705), of which five (5) houses are pukka. The population of the same tract of country may be estimated at 3,52,310, reckoning at five (5) souls to a house.

The rivers and khalls in the Districts of Tipperah and Noacolly are very tortuous, and not sufficiently straight to admit of being profitably navigated by country boats. The cheapest mode of conveyance is by rivers, and the next by means of canals. A few short canals or cuttings will be of the greatest utility in inland commerce. The surface of the country having an inclination to the West, an adequate supply of water can always be obtained. The time required by the common country boats to complete their journey from Chetowsee village, about 10 miles East of Hajeegunge Than-nah, and on the Scuthern bank of the Dukutya Nuddee, to Chandpoor on the Megna River, is about seven (7) days. By deepening the Chandpoor Khall, from the Dukutya Nuddee to the Megna River, a distance of only five (5) miles, the journey would be shortened by four (4) days. The village of Chetowsee is the grand medium through which the trade in rice, of the Districts of Tipperah and Noacolly, is carried on. Pariah Sloops and Coasting Vessels frequently come up to Chandpoor, and carry away large cargoes of rice. Another short canal from Hajeegunge to Megna River, running North, may be undertaken with advantage, by deepening the bed of a khall. The distance from Comillah to Daoodkandee by the Goomtee River can be considerably reduced by a few short cuttings. The Stations, of Comillah and Noacolly can be as easily connected. The road at present is in a wretched condition and not passable for wheeled conveyances. The khalls are not bridged.

The features of the country on the boundary of Hill Tipperah differ considerably from the Champaign. The hills present the appearance of table-land, with an average height of forty (40) feet above the plains, and are covered with forest in a state of nature, and wherever cultivated, which is only in the valleys between the ridges, good crops of rice are produced. From the yearly flow of water from the hills, a good supply is procurable at all seasons for irrigation.

The Tipperah Hills seem to offer advantages for cultivation, the soil being decomposed gneiss. Almost the whole cotton supplied to the neighbouring Districts is 'grown on these hills, and is bartered for salt, cloth, and poultry; but the value of the cotton far exceeds the amount of these goods; this, coupled with the duties which are exacted by the Tipperah Rajah, will diminish the cultivation of the cotton, and which, I believe, has already taken place.

Large quantities of building materials, such as timber, bamboos, thatching-grass, and rattan, are brought from the hills.

If Europeans were permitted to hold lands in Hill Tipperah, and to embark capital on cotton and tea, this rich and fine tract of country would be much improved. The cotton that is now raised and sent to the market by the Tipperahs, is badly cleaned, and fetches a low price. There is no reason to doubt that the Tipperah Hills adjoining British Tipperah, are capable of producing tea and cotton to any extent, if sufficient capital and enterprise were exerted in the undertaking.

"The art by which the products of labor are transferred from place to place, is essential to social advancement, and a people who do not possess it, cannot be said to have emerged from barbarism. In proportion to the perfection of this art, will be the extent of commerce. Without roads and incapable of communicating with others, a people must subsist exclusively upon the productions of its own labor and its own soil. Good roads have a tendency to stimulate consumption and production, and thereby advance national wealth and prosperity. The cost of transport has great influence upon the price of the products of agricultural labor. If means of transport be provided, the productions find their way easily to the great centres of population in the towns, and the rural population which produces them, receives in exchange articles of use and luxury of which they were before deprived." No improvement can be expected till a great change for the better be made on the state of the roads.

Extract from Annual Report from CAPTAIN D. MACDONALD, Assistant Revenue Surveyor, in charge second Division, L. P., to the surveyor-General of India, No. 3, dated 1st November, 1864.

8. MAIN CIRCUIT No. 11.—Main Circuit No. 11 comprising portions of Pergunnahs Chatna and Soopoor, and the whole of Bunkhudee, is situated on the extreme East of the season's work. It is a wild and jungly tract, undulating, but devoid of hills. The villages are very small, averaging 188 acres. This circuit was surveyed by Mr. A. Hyde and his party, and has an area of 151693.41 acres = 237.02 square miles, and contains 807 villages.

9. MAIN CIRCUIT No. 12.—Main Circuit No. 12 comes next in order, proceeding westwards. This is the largest circuit surveyed this season. It contains an area of 278274.73 acres = 434.80 square miles, comprising 383 Villages with an average area of 726½ acres.

The following Pergunnahs are included in this Circuit, viz., Churrah, Pulma, Rakab Ledhoorka, Bagda, Lallhada, (a portion of). Mr. Sinclair, assisted by Rampersad, office assistant, and the rest of his camp, surveyed this Main Circuit.

This tract is tolerably open and well cultivated towards the North-West, and in the immediate neighbourhood of Pooroolia, the Sudder Station of the District, which is situated in Churrah, but towards the South and West it is covered with dense jungle, composed principally of bastard Sâl, and abounds with all kinds of wild animals.

10. MAIN CIRCUIT No. 13.—Main Circuit No. 13 is a very small one, having an area of only 29602.38 acres = 46.25 square miles, and consists of a single Pergunnah, viz., Nagdah, comprising 46 villages, with an average area of 643½ acres.

Nagdah is open and undulating, but the soil is very poor. The villages are large, and some of them rather populous.

11. MAIN CIRCUIT No. 14.—Main Circuit No. 14 contains three entire Pergunnahs, namely, Mookoondpoor, Bygoonkodur and Jhulda, with an area of 127914.90 acres = 199.86 square miles, comprising 263 villages, with an average area of 486½ acres. This circuit forms the extreme western limit of the season's work, having for its western boundary the River Soobhunreeka, which separates it from the Singbhoom district. This is, on the whole, a very jungly tract. On the confines of the Hazarebough District to the North-West, and again to the Southern portion of this Circuit, there are several small ranges of hills. Both this and No. 13 Circuit were surveyed by Mr. William Ivey and his native assistants.

All the Circuits hitherto mentioned were surveyed Monzahwar.

12. Main Circuit No. 15 consists of the northern portion of a large Pergunnah, called Cossyepara, which, as the name indicates, is situated to the South of the Cossye River. This tract was surveyed topographically on the scale of four inches to a mile. The portion of this Pergunnah surveyed, contains an area of 47290.02 acres = 73.89 square miles. This is the best cultivated Pergunnah that has been surveyed this season, and contains large and populous villages. It was surveyed under the superintendence of Mr. George Nash, who personally surveyed a large portion of it.

Extract from Annual Report from N. T. DAVEY, Esq., Revenue Surveyor, 3rd Division, Lower Provinces, to the Surveyor-General of India, No.—dated 12th November, 1864.

7. VILLAGE CIRCUITS AND BOUNDARIES.—Village boundaries and traverse Circuits were measured by Mootsudees, furnished with properly adjusted 5 and 6 inch Theodolites. The boundaries were measured as marked in the field, and on comparison were found to assimilate perfectly with the Thak Bust Records. In some instances, in the large Howhurs or Marshes extending over an area of many square miles, the field marks were destroyed by the early inundation; and the village authorities themselves were unable to identify their lands and point out the boundaries which they had mutually agreed to at the time of demarcation. In these cases village boundaries have been adopted from Thak Bust Maps, and have been so recorded on the Atlas Sheet Maps.

8. INTERIOR SURVEY.—The topographical details have been well filled up to the scale of the survey, and the local names of paras, Beels, and streams, &c., have been recorded. In the hills along the frontier covered with impenetrable jungle, it was not practicable to trace out the numerous streams, or to do more than to depict the general features of the country. The streams as far as they were measured are shewn on the Maps; but the delineation of the hills has no pretension to be considered a correct representation of the actual height and extent of a difficult undulating country and almost inaccessible hills. To follow out the numerous hill streams, and delineate the contour of

the ground, must be the work of a future day, when cultivation extends to the hills, and tea and cotton and other valuable products cover the hundreds of square miles of country now in a state of nature, and a *terra incognita* to all but wandering Kookee and Tipperah hill tribes seeking a location free from payment of rent.

9. HILL TIPPERAH FRONTIER.—The survey of the boundary between Sylhet and Hill Tipperah was commenced on the 12th January last, and continued under my personal supervision for four months, till the 14th May. The survey was resumed from Dholnah post, the easternmost limit of the boundary reached by Mr. Reynolds and myself in May 1860; and 80 miles of the boundary line to Haraguj G. T. Survey Station, were surveyed on the usual scale of 4 inches to the mile.

10. DISPUTED PORTION.—The arbitrators, Mr. F. Jones, Civil Superintendent of Survey, and Mr. W. F. Campbell, the Tipperah Rajah's Agent, met at the starting point a few days before my arrival, to adjust the first 2 miles of boundary which were disputed, owing to this portion not having been included in the arbitrator's award of 1850. The arbitrators having settled the disputed portion,

No. 4438

From Junior Secretary to the Government of Bengal, L. P.

To The Secretary to the Board of Revenue, L. P.

Fort William, the 26th November 1863.

Sir,

WITH reference to the recent correspondence, relative to the Survey of the boundary between Sylhet and Hill Tipperah, I am directed to forward, for the information of the Board, a copy of the correspondence marginally noted, and to say that the Lieutenant-Governor entirely agrees with the Board that the object of the survey must be to identify Captain Fisher's boundary between Sylhet and Hill Tipperah, and that no question impugning the correctness of the boundary as laid down by Captain Fisher and approved by Government, must, on any account, be entertained. His Honor also agrees that no revival of disputes respecting the portion of the boundary line laid down in 1850 can be permitted.

I have &c.,
(Sd.) S. C. BARRY,
Jr. Secy. to the Govt. of Bengal.

No. 76.
Office Memo.

Forwarded to the Revenue Surveyor, 3rd Division, Bengal, in continuation of Office Memo. of this date, No. 15, and with a request that Mr. Davey will carry out the orders of His Honor the Lieutenant-Governor in their strict sense.

(Signed) J. E. GASTRELL, Lt. COL.,
In charge Surveyor General's Office

Surveyor-General's Office,
Calcutta, 4th December 1863.

the rest of the boundary was traced out and surveyed, in obedience to the orders quoted on margin. With Mr. Jones' co-operation and Mr. Campbell's indefatigable exertions in supplying local labor for jungle clearing, the frontier boundary was surveyed, and marked in the field by substantial wooden posts 6 feet long and 2 feet in circumference, at the several points shown on the accompanying plan.

11. FRONTIER CIRCUITS AND WASTE LANDS.—In connection with the frontier survey, all the lands beyond the demarcated limits of District Sylhet up to the frontier boundary were surveyed in nine separate traverses of 40 and 50 square miles each. These hill and jungle tracts, or great portion of them the Zemindars claimed as parts of their decennially settled estates in the plains under a special assessment locally known as "Joom-ka-Jumma;" but they were unable or unwilling to point out the boundaries of their Joom lands, and consequently their claims could not be defined by survey. This "Joom-ka-Jumma" I believe to have been originally an annual payment, levied in the shape of a capitation tax, by each person licensed to cultivate and cut wood and grass in the Hills similar to the prevailing assessment in Hill Tipperah, bearing the same name, and the Kapas (or cotton) Mehal Jumma in Chittagong. Whether the temporary assessment or tax was abolished at the time of the permanent settlement of Sylhet, and the Zemindars acquired rights to the lands with defined areas and limits, I have not the means of ascertaining; but till the rights of the Zemindars in the Hills are determined, the extent of waste land in the District available for sale under the rules cannot be ascertained. During the season, 337 square miles of Hill and forest lands were surveyed; and a still larger area of similar land remains for survey during the ensuing season in the south-east of the District bordering on Cachar.

12. CAPTAIN FISHER'S SURVEY OF 1824.—Captain Fisher's survey of Sylhet was more of the nature of a reconnoissance than a survey, and necessarily so when it extended to the impenetrable hills and forests bordering on the Tipperah frontier. It is not therefore to be expected that his survey of 40 years ago, will assimilate minutely with the work of the present day; and on comparison, discrepancies, though not material ones, as far as the question of boundary is concerned, will every where be found. The streams I have traversed by cutting through jungle every step of the way: Fisher could only have mapped from local information or a rapid eye sketch. The boundary marked in the field by Mr. Jones and myself, acting in concert throughout, is according to Fisher's map as closely as it could be followed. In the absence of a stream or a natural boundary, an imaginary line on the Map drawn through ranges of Hills, was our only guide as to the limits. In these instances the best boundary obtainable in the required direction was adopted without objection on the part of the Tipperah Rajah, who was throughout the operations represented by Mr. Campbell his agent. In one instance only, in the Adampoor Valley, Mr. Campbell raised doubts as to the identity of the

* Sonerai churra and Chum- Sonerai churra forming the boundary. It was therefore necessary to
parai churra. measure the two streams* running parallel to one another only a few

miles apart, to find the boundary represented on Fisher's map. In the Balusura and Rajkandy Hills, two G. T. S. Stations † were found conveniently situated for permanently marking the boundary; and as these hill ranges are not approachable, triangulated lines, from the source of the Oodnah Churra to Churamani station, and from the source of the Sonerai Churra to Hira station, were the best lines of boundary obtainable. To make a detail measurement of these lines, would occupy a whole field season, and need special means and appliances to overcome the physical difficulties of a wild uninhabited country.

19. PUCKA PILLARS ON THE TIPPERAH FRONTIER.—The Tipperah frontier, as far as surveyed, is marked in the field by 9 pukka pillars and 35 wooden posts, as shown on the accompanying map. Whatever was practicable, has been done by the Civil Superintendent and myself, to ensure the identification of the frontier boundary; and it only remains to place substantial masonry pillars, at the several points we marked by wooden posts, to permanently define territorial limits, that have now been under authority, and at so much cost, risk and labour, been adjusted after 40 years of recurring disputes and litigation. During the present cold season, and while traces of the survey routes are to be found in the jungle, the exact spots indicated for pillars could easily be found by local enquiry and the aid of the survey map. But the delay of a year would obviously make the duty one of considerable difficulty; and in the event of the destruction of the wooden posts, a very probable contingency, a re-survey would perhaps be the only means of tracing the frontier line through the hills and jungles in which the greater portion of it is situated.

Extract from Annual Report from J. H. O'DONEL, Esq., Revenue Surveyor, 5th Division, Lower Provinces, to the Surveyor-General of India, No. 7A, dated Chittagong, 7th November 1864, for season, 1863-64.

17. CHITTAGONG HILLS.—The Chittagong Hills embrace an area of 6796 square miles, surveyed during the past three seasons, well adapted to the growth of cotton, tea, and coffee, with the great advantages of cheap and abundant labor, water communication and a sea-port for the transport of produce.

The revenue received as capitation tax from the hill cultivators is about 10,000 Rs., and the 5 per cent. toll levied on bamboos, grass, and timber, brings in about the sum, in all about 20,000 Rs. or in round numbers 3 Rs. a square mile. The Poang Rajah, Kalindee Rance, and Kejosine Chowdree called Manrajah, local Collectors of the Kupas Mehal capitation tax, derive but a small income from the settlements made with them. The country is in much the same state as it was a century ago. Border raids have attracted notice at times. Applications have lately been made for grants of waste lands on the borders of the cultivated low lands.

The hill district might be rendered not only secure but profitable, by assigning grants of waste lands to European applicants rent-free, or at low rates in the uninhabited parts towards Kasalong and the Burkul range. It would perhaps be some inducement to enterprising Europeans to settle in those parts, they would have to pay much higher rates for labor and be exposed to attacks from the wild tribes. One of four medals was awarded for Chittagong tea at the Exhibition of Agricultural Produce in Calcutta last cold season.

18. **TIPPERAH HILLS.**—The Tipperah Rajah's country is a hilly tract, bounded by the Chittagong Hills on the South and South-East; by Sylhet on the North; by Tipperah on the West; and by the Cachar Hills on the North-East. For a few miles along the borders of Sylhet and Tipperah it is thinly inhabited, and to the East there is an extensive tract of totally uninhabited country. Between the plains of Tipperah and the Chutterchoora range there are five ranges of hills which run almost parallel with each other, and divide the country towards Sylhet into river valleys, through which flow the Kwahee, Dhulaie, Munoo, Deogang, and Langaie Rivers, from South to North into the Barak or Soormah River. Below Latitude 23° 48' these ranges of hills are connected by a transverse branch, which separates the head-waters of the Goomtee, flowing West into Tipperah, and the Myanee and Kasalong Rivers flowing South into Chittagong.

19. **RIVER VALLEYS FORMING PART OF THE BASIN OF THE BARAK RIVER.**—The Kwahee River flows between the Saisum range on the West, 816 feet high, and the Atarmura range, 1434 feet high. It is navigable for small boats as far as the mouth of the Choungmroo Surra, higher up the stream canoes only can be used. The average depth of water is from 3 to 6 feet. The next river to the East, the Dhulaie, flows between the Atarmura and Longturai ranges of hills, the latter attains an altitude of 1250 feet. It admits canoes as far as the Degulpack Surra, where it ceases to be navigable. The Munoo River flows between the Longturai and Komunta ranges of hills, the latter attains an altitude of 909 feet at Komunta. It is navigable for boats as far as Pakou Surra, and for canoes a few miles higher up the stream. The banks are high and steep, the depth of water is about 8 feet, and the bed muddy and sandy. The boats generally used can carry 14 maunds. The Deogang River joins the Munoo 3 miles south of the Village of Kozing, and is navigable for canoes as far as Bayjah Surra. The Langai River, which flows to the West of the Chutterchoora range, 1500 feet high, has not been surveyed. All these five streams flow from South to North, and form part of the basin of the Barak River. Koileshur is the only village of note, with a Thannah and a Bazar, where cotton is chiefly bartered for tobacco, betelnut, and dried fish; 1530 Kookees occupy villages within 10 miles of Koileshur.

20. **SMALL LOW LAND VALLEYS.**—The hills to the West of the Saisum range are very low, and terminate on the plains of Tipperah. The highest Hill, Rokhia, is 288 feet. The Howra and Beejoy Nuddes drain small low land valleys chiefly occupied by Bengalees. Agartulla, the Capital, is situated on the former, and Desalghur on the latter.

21. **GOOMTEE RIVER.**—The upper portion of the Goomtee River Valley is bounded on the East by the Surdaing range, and on the West by the Sujai range; both ranges run nearly parallel with each other for 25 miles at a mean distance of 8 miles, and, being connected on the North and South by hills, enclose a basin of 200 square miles, containing the sources of the Goomtee, spread out like a fan. The only outlet is the narrow gorgo in the Sujai range, 2 miles North of the Chouphroo Stockade, where it has forced a passage for itself, 2 miles long across which it rushes in falls and rapids called Demroo forming a deep pool, from whence it begins to be navigable for canoes capable of carrying 16 maunds, and flows in a North-Westerly direction as far as the Saisum or Deotamoora range, receiving the waters of the Eshurah and Moeclak Surras and Songang Nuddce, in this part of its course and lower down the Maharanee, Ranece, Kanece, Peethra, and Kasee streams called Gaugs. It enters the plains of Tipperah near the village of Sonamoora, where a heavy transit duty is levied by the Rajah at Rs. 1-8 on every maund of cotton leaving the hills in the vicinity. The places of note on the Goomtee are Oodchpoor, the former Capital, Eshurah at the mouth of the stream of the same name, where a Thannah was formerly posted, and Chouphroo Stockade.

22. The country to the South of the Goomtee River is traversed by three ranges of hills. The Tichna range, situated to the East of the Comillah and Chittagong road, attains an altitude of 345 feet at Eta, the Gojalia range 12 miles more to the eastward, is 470 feet high. The Mohuree, the Northern branch of the Fenny River flows from the slopes of the Tulamura range 760 feet high, and enters the plains near Bilinea Thannah. It is shallow and admits small Canoes; bamboorafts are used for the transport of cotton, one of the most important products of these hills.

23. TOWNS.—Agartalla, the Capital, 30 miles from Comillah, is situated on the North bank of the Howrah Nuddee, it is open towards the West, and has low hills on the North and South. There are a few shops in the bazar, a Thannah and Jail for convicts. The new Town is merely a straggling village, composed of thatched huts; the only masonry buildings are within the walls of the Rajbaree, a small enclosure when the Rajah and his family reside. The population is about 875 persons. The old town, now in a ruinous state, 4 miles to the eastward, contains 1,000 inhabitants, being very unhealthy; about 20 years ago, the Rajah's family removed to the new Town. There are no fortifications either in the old or new Towns. Oodehpoor or Rangamatee, the old Capital, 19 miles from Comillah, was once a place of importance. The ruins of old buildings and temples mark the site. It is situated on the south bank of the Goomtee River, near a marshy plain, 4 miles long and 4 broad, surrounded on all sides by low hills. It is now a Police Station, occupied by a Jemadar and 6 Sepoys. The huts are chiefly built on the banks of large old tanks. There is a small golah where cotton, ivory, timber, and bamboos are bartered by the hill people for tobacco, salt, and dried fish. The town was attacked by Kookees of Chittagong in February 1861, who massacred and plundered the inhabitants, chiefly Bengalees, carrying away many captives. Constant alarms of massacre have reduced the number of inhabitants of Oodehpoor and four adjacent low land villages to 1,670 persons.

24. ROADS.—There are no roads, the country is traversed by ranges of hills covered with Forest; the only open spots are the cultivated low lands 48 square miles. The road from Comillah to Agartalla, situated within Tipperah, is pretty fair for about 15 miles to Nyanpoor Bazar, from thence there is a footpath across paddy fields to Agartalla. Ranges of hills extend North into the Sylhet District, making the route to Koileshur very circuitous. There is no direct inland communication between Agartalla and the Thannahs to the North and South within the hills.

25. THANNAHS, AND OUT-POSTS.—The principal Thannahs are Amleeghat, Bilinea, Odehpoor, Besalghur, Agartalla, and Koileshur. Amleeghat on the Fenny is half a mile outside the boundary. This Thannah was formerly posted at Munoo Surec on the stream of the same name, 2 miles above its confluence with the Fenny River, the surrounding country being uninhabited, it was removed to Amleeghat. Bilinea on the Mohuree River is a mile within the boundary. Odehpoor on the Goomtee is 19 miles east of Comilla. Besalghur on the Bejroy Nuddee is 4 miles from the plains. Agartalla has 2 small Pharces, Nauchneemoora and Moocheetola. Koileshur on the Munoo River, the only Thannah on the north towards Sylhet, is close to the boundary. Ebshurah Thannah is now deserted. 1 Jemadar, 1 Duffadar, and 6 Sepoys are stationed at each Thannah, they are armed with muskets. The Chouphroo Stockade was held by 200 Sepoys after the Kookee massacres in 1860-61, it has since been abandoned, as the members of the Rajah's family, who were the chief instigators, have now settled in the Chittagong Hills as cultivators under the surveillance of the Police, and Superintendent of hill tracts.

26. LOW LANDS.—The area of the low lands is 78,266 acres, of which 31,252 acres are under cultivation; 9,440 forest jungle, 31,068 grass jungle, and 6,506 Rivers and Jheels. The cultivated lands within the Howra and Bejroy valleys amount to 19,508 acres, the rest of the cultivation is in small detached portions. The water poured into the valleys from the hills during the rains is so great as to inundate completely the greater part of the low lands, rendering them unfit for agricultural purposes. Wild elephants, tigers, buffaloes, and deer, are very numerous in the reed and high grass-jungles. The chief agricultural products are rice and cotton.

27. **POPULATION.**—The inhabited parts of the Tipperah hills is a narrow strip along the borders of Tipperah and Sylhet & the country to the eastward has not been occupied for the last century. The estimated population of 10,844 families or 54,230 persons, consists of 4 classes of people. Bengalees 26,305, Muneepoorees 9,505, Tipperahs 15,130, and Kookees 3280.—The Bengalees, chiefly Mahomed-dans with a few Hindoos, and Muneepoorees, cultivate the low lands. Narrow glens and small patches of low land near the plains, are generally cultivated by non-resident Bengalees of the border villages. The cultivators in the hills are Tipperahs and Kookees, they select small spots of jungle on the slopes of hills for the cultivation of rice and cotton. Every two or three years the ground is changed, as it becomes unproductive. Regular settlements are made with the Bengalees and Muneepoorees, the rates of assessment vary from 4 to 20 Rs a Doon of 7 acres. The Tipperahs pay no land rent, but a capitation Tax, from 4 to 10 Rs. for every family. The Kookees who have chiefs of their own, pay nominal tribute to the Rajah, but receive in return presents of the same value.

28. **HILL TRIBES.**—The Muneepoorees, Tipperahs, and Kookees, like the hill tribes of Chittagong and Arracan, are aboriginal tribes of the eastern frontier. The Muneepoorees left their own country during the first Burmese War, and have since settled in Cachar and Tipperah. The Tipperahs form the main body of the hill population, they do not use milk as an article of diet, and their houses are raised on posts, two marked distinctions between them and the neighbouring Bengalees of the plains; they are not particular about their food, a dog or a snake is considered much the same as a goat or a fish, but mixing so much with Bengalees they have begun to acquire some notions of caste, if a Bengalee touches an earthen pot in a Tipperah hut it is at once broken and thrown away.

29. **KOOKEES.**—306 families of Kookees live within 10 miles of Koileshur, and 350 families occupy scattered villages 10 to 20 miles from *Comillah*. The Koileshur Kookees were engaged as combatants in the disturbances last September and October, when the villages on the Peetra Gang (North of Oodehpoor) were burnt down, and about 200 Tipperahs massacred. There are no other Kookees living within the Rajah's jurisdiction. The Cachar Kookees called Kochaks, live to the East of the Chutterchoora range, and the Chittagong Kookees live near the sources of the Kurnafoolee River.

30. There is now no trace left of the Rajpoot adventurers who conquered Tipperah before it became a part of the Mogul Empire. Like the Sepoys of the Upper Provinces, they must have returned to their homes after certain periods of service, they do not appear to have settled permanently in the country.

31. **TRANSIT DUTIES.**—A person proceeding into the hills to purchase cotton, pays 5 Rs. for a pass, and 1 Rupee for a pass to cut bamboos and grass &c. All along the Frontier from the Fenny River to Koileshur, Ghats have been established, where Tuhseeldars collect transit duties. The average prices of articles and rates of duty are noted below:—

						Rs.	As.
Cotton with Seed	17	Rs. a Maund—Duty	...	...	...	1	8
Bamboos	8	„ a thousand „	...	...	...	1	0
Grass (in bundles)	12	„ a hundred „	...	...	...	2	0
Posts for houses	35	„ Ditto „	...	...	...	12	8

32. **REVENUE.**—A large part of the Revenue is derived from the cultivated lands, and the Capitation Tax paid by the Tipperahs in lieu of land rent. About 30 or 40 per cent. of the Revenue appears to be obtained from the transit duty on cotton alone. Fines imposed for offences, and receipts for passes, are also items of Revenue. The amount of Revenue is about 60,000 Rupees a year.

33. **RAJGER OFFICIALS.**—The arrangements for the administration of the hill country called Khanabaree, are mixed up with the management of the large Zemindarees held by the Rajah in Tipperah and Sylhet. The Rajah, his Prime Minister Brijmohun Thakoor and chief Officials reside at Agartalla. Mr. Campbell, the Rajah's Agent, and the head Dewan, reside at Comillah. Bhyrub Singh, who collects the transit duties, lives in the plains of Tipperah. Thannah Jemadars on 8 to 10 Rs. a month, are the only Officials stationed in the interior at Koileshur, Besalghur, Oodehpoor, and Bilinea. The Prime Minister decides all Revenue, Criminal, and Civil cases. There are apparently no established laws in force, and pecuniary fines and imprisonment are the ordinary punishments for every crime. Every Tipperah village chief, calls himself Chowdree, and the Kookees have chiefs of their own to whom they make presents of various articles of consumption.

34. The Rajah's income from the Zemindarees is said to be about one and a half Lac of Rupees. The hill revenue from all sources is about 60,000 Rs. Under proper management the hills may yield much more, but to restore order will prove no small difficulty to the Rajah, for the debts of the Rajah are considerable, lands and taxes are mortgaged, and the oppressive mode of levying, not only the revenue but fees and exactions, have contributed to turn the country into a wilderness. No expensive establishments appear to be kept up, except a number of useless Peons and Sepoys. The maintenance for the members of the Rajah's family, and Lawsuits, must form heavy items of expense.

35. **TIPPERAH RAJ.**—After a delay of more than 2 years on the 26th September last, the important case involving the succession to the Tipperah Raj was finally decided by the Calcutta High Court in favor of Beer Chunder, nominated Jooobraj or heir apparent, by his elder brother Essun Chunder, the late Rajah on the day before his death. The family of the Rajah is Hindoo of the Khetree or mercantile tribe of Rajpoots, they settled in the Tipperah Hills many centuries ago. By intermarriage with Muneepoores and other Indo-Chinese tribes of the Eastern frontier, manners and customs have been changed, and the peculiarities of personal appearance have been obliterated. Hindoo festivals and ceremonies are still observed, but they are no longer considered Hindoos by persons of that caste. Primogeniture does not determine the right of succession, the choice of a ruler is restricted to the brothers and sons of the family. The reigning Rajah is the first Rajah, the second is called Jooobraj or heir apparent, the third Burra Thakoor, and the fourth Kurta. The Jooobraj succeeds to the highest dignity, and each inferior Rajah advances a step. Every Rajah tries to set aside the previous election of Burra Thakoor and Kurta made by his predecessor, there is thus much confusion and apparently no strict rule of succession. Almost every vacancy in the Raj has produced disturbances and frequently domestic wars, and exposed the inhabitants of the hill country to frightful disorders. A nondescript force of Sepoys and Peons is kept up for the maintenance of order; both the Rajah and the turbulent members of his family have however looked for aid to the Kookees and called them in as combatants, relying on them to fight and settle their quarrels. The services of the Kookees can always be secured by hopes of plunder, or the means of payment. The Kookees are much addicted to drinking, and ready for mischief on their own account. The domestic wars have been mistaken for border raids by the Kookees, and it is only by enquiring into the causes of the massacres on the frontier that we can distinguish one from the other. There can now be no doubt that the uncertainty of succession has led to family quarrels, and is the chief cause of the disturbances and massacres in the Tipperah and adjoining Chittagong Hills.

36. **OBSTACLES TO PROGRESS.**—The obstacles to progress in an unexplored country, with large tracts utterly unknown and entirely uninhabited, and destitute of all resources, must be serious. The late Rajah had given a most reluctant consent for the survey of his country, and the authority of the acting Rajah was not acknowledged by all his subjects. The dispute between the rival claimants for the Raj was then unsettled, and serious disturbances had taken place two months before my arrival in the hills. 200 Tipperahs are stated to have been killed, several villages were burnt down, the inhabitants of which villages, and many others being alarmed, left their crops on the

ground, and were wandering about the plains of Tipperah for shelter and food. Under these distressing circumstances, the apathy and indifference of the people about a survey being made can be imagined. Preliminary arrangements for commencing work were delayed for a month and a half for want of proper assistance, and opposition on the part of the Rajah's Officials, who were afraid the country would be annexed. The prospect of completing a fair season's work was unsatisfactory and discouraging till the arrival of Mr. W. G. Young, Commissioner of Chittagong, at Comillah, about the middle of January, who set matters right, and again issued orders to the Rajah to assist the survey. After this period the survey was vigorously prosecuted, and every attempt made to make up for lost time. The field operations were not finally closed till the 8th July last.

Extract from letter No. 17, dated Burulea, the 28th January 1865, from Mn. J. PICKARD, Assistant Surveyor, Chittagong Waste Land survey, to the Surveyor General of India.

In reply to Office Memo. No. 24 $\frac{1}{2}$, dated the 16th instant, I have the honor to state that the survey of the Chittagong Waste Lands was started by the Revenue Surveyor, J. H. O'Donel, Esq., in December last. The entire establishment, during the month of December, were engaged in the tract of hill country south of Main Circuit No. 18, and within Thannahs Nizam-poor, Islamabad, Raojan, and Chuckureea. The work accomplished under the superintendence of the Revenue Surveyor, during the month ending the 31st December, was :—

The clearing of the lines of one Main Circuit, No. 20.
 The surveying Do. Do.
 The clearing of ten (10) hill points.

2. The clearing of rays for triangulating the boundaries of tea lots being in a backward state, only ten (10) points having been cleared, no survey of them could be made.

3. About the 1st instant, agreeably to the orders received by the Revenue Surveyor, I was placed in charge of the Waste Land Survey, and the Establishment placed under me was :—

1 Sub-Assistant.
 2 Boundary Surveyors.
 3 Interior Surveyors.
 1 (Baboo) Office Assistant.
 4 (Scholars) Native Surveyors.
 60 Tindals, Measurers, or Khalassies.
 6 Guard Burkundazes.

4. Since the 1st, up to date, the progress made in clearing and surveying and the approximate area completed is as follows :—

Field Work.	{	Cleared 145 lines of Main Circuit, No. 21.
		Do. 40 hill points in do. No. 20.
		Surveyed 40 triangles in do. do.
		Do. 20 intersected boundary points. Do. 6 tea lots.
Office Work.	{	Proved by Traverse 1 Main Circuit, No. 20.
		Do. do. 40 secondary triangles.
		Do. do. 20 intersected boundary points.
		Do. do. 6 interior circuit of tea lots.

5. Approximate area completed 20 square miles. The low hills within this Main Circuit are chiefly of an uniform height, and are covered with heavy forest and brushwood; some idea of the difficulties attending the clearing of hill points may be formed from the fact, that the clearing parties,

each party with 20 coolies daily, can, with difficulty, in five days' time prepare one day's work for the surveying parties. Judging from the rate of progress made during the past two months, I do not think it will be possible for me to complete more than 150 square miles this season, or two blocks out of the three, for survey in this District.

6. I am using every means in my power to expedite the works. My entire Native Establishment are engaged directing the clearing; and the survey of the interior circuits, triangles, and boundary points, completed and proved by Traverse, have chiefly been performed by myself and Sub-Assistant Mr. Thompson.

Extract from Annual Report from E. T. S. JOHNSON, Esq., Assistant Revenue Surveyor, in charge Darjeeling Waste Lands Survey, to the Surveyor General of India No. 4, dated Darjeeling, 21st November 1864, for season 1863-64.

23. EXTRACTS FROM MR. COWLEY'S REPORT.—“ It (Hattigheesa) is divided into seven Mouzahs which are again sub-divided into jotes; the Mouzahs are: (1) Nuksurbaree, (2) Paneesalee, (3) Raneegunge, (4) Birnabari, (5) Boorhagunge, (6) Kokogaon, (7) Hattigheesa. All these, with the exception of Hattigheesa and Nuksurbaree which are thickly wooded, are under cultivation, yielding the following description of grain &c., rice the staple produce, mustard, linseed, hemp, tobacco, “Bhang,” a species of pulse called “Kooltee,” chillies, Onions, garlic, sugarcane, and the “Paun” leaf. Small quantities of cotton are grown in the more elevated parts and towards the foot of the hills, and I dare say with better care and management, the country could be made to yield a much larger supply.”

FRUIT.—“ The plantain and jack-fruit thrive luxuriantly in every village without much care being bestowed on them. Mangoes, pine, and custard apples, and various other fruits are also cultivated by the villagers.”

JHARS.—“ The principal “jhars” or dense forests are the Sath Bhaia and Tookria, both of which are densely wooded, “sal,” “sissoo” “palans” “khyr” or catechu, soap warts, “semur” or silk cotton, cane, “toon” and “Lowdha,” may be numbered among the finest forest trees, besides these there are other extensive Government forests to the North of the Purgunnah.”

FEATURES OF THE COUNTRY.—“ The general appearance of the country is low and marshy. It is extensively irrigated for the cultivation of rice, and besides cut up by numerous running streams.”

RIVERS.—“ The Mechi, which forms our Western boundary with Nepaul, and the Chenga, may be classed as rivers, they are rapid mountain torrents frequently inundating their banks, and devastating a great portion of the country round about.”

POPULATION.—“ The Population consists of Rajbunsees, Dhimals, Mahomedans, Liquor-sellers, Naies, Malees, and Mecheas, who inhabit the North of the Purgunnah. The inhabitants of this part of the country are generally indecently clad, which is owing, I am told, to the oppression formerly exercised by the Native Chiefs, upon well dressed persons, who were also supposed to be wealthy and therefore frequently robbed of all their property.”

ROADS.—“ The only traversable Roads for wheeled conveyances, are the one from Darjeeling *via* Nuksurbaree, Khoraibaree, and Dabeegunge to Purneah, and the other from Nuksurbaree, east *via* Bagdogra to Phanseedewa. All the rest are mere foot paths, which are ploughed up and altered yearly.”

MARKETS.—“ Hauts or markets are held weekly, bi-weekly, and tri-weekly, in the following places where the produce of the District in vegetables, gram, fruit, hard-ware, cloths, fowls, ducks, geese-pigs, and sometimes cattle is disposed of:—(1) Nuksurbaree, (2) Khoraibaree, (3) Adhebaree, (4) Butlasee and (5) Bandurjhoolee.”

POLICE OUT-POSTS.—"Thannahs or Police Chowkees are situated at Nuksurbaree, and Khorai-baree."

WILD ANIMALS.—"Among the wild animals are the elephant, the tiger, the leopard, the panther, a few bears, the wild pig, jackals, monkeys and squirrels of various kinds."

"Among the many species of deer, are the "Chectul" or spotted deer, the barking deer, and the elk or branch-horned deer, but these are now nearly exterminated by the numerous "Shikarees," who pursue them for the sake of a livelihood, and sell their flesh at the different markets."

"The elephants which cross the Nepal Territory annually, during the rice season, frequently destroy whole fields at night, and retire at day-break to the densely wooded and swampy forests of the Dulka Jhars."

"Tigers have been known to lay waste entire villages, on account of their depredations on the cattle, and occasionally on the villagers themselves."

"Among the feathered species are the wild fowl, pea-fowl, and snipe."

"Having given you as briefly as possible every information regarding Pergunnah Hattigheesa, I shall now treat of Pergunnah Patturbhatta surveyed and demarcated by me."

PERGUNNAH PATTURBHATTA.—"It adjoins Pergunnahs Hattigheesa, which forms its Western boundary; the District of Rungpoor its Eastern, the foot of the Himalayah Mountains its Northern, and the District of Purneah its Southern boundary. About one-half of this circuit is covered with dense "jungle and grass over 20 feet in height."

POPULATION AND FEATURES.—"Its Population, features and peculiarities are the same as those of Hattigheesa."

MOUZAHs.—"It is divided into 12 Mouzahs, of which the following are demarcated: (1) Nijam-turra, (2) Thakoorgunge, (3) Hetmoone, (4) Sengijhora, (5) Kunnurbunga Jalass, (6) Gosienpoor, (7) Doomrigoori, (8) Attarakhye."

JHARS.—"The principal Jhars are the Dulka and Bagdogra, the former derives its name from its low and marshy condition. It is covered with impenetrable cane brakes, bamboos, and other thick jungle."

ROADS.—"The principal roads for wheeled conveyances is the one from Darjeeling *via* Nagur-kote, through the Mouzah of Attarakhye to Phanseedewa, and another from Nuksurbaree *via* Bagdogra, to Phanseedewa. The third runs from Khorai-baree *via* Thakoorgunge and the Tank of Ghoospoorkree to Phanseedewa."

MARKETS.—"Haats" or markets are held at the following places (1) Thakoorgunge, (2) Bagdogra and Phanseedewa, the latter is the largest village in the District, and the head Quarters of a Deputy Collectorate."

POLICE OUT-POSTS.—"Police Chowkees" or "Thannahs" are situated at Phanseedewa and Thakoorgunge."

VILLAGES.—"The principal villages are those in which the markets are usually held."

RIVERS.—"The Rivers are the old and new Balasun, and the Mahanuddy, which forms the Eastern boundary; the two former annually overflow their banks and frequently change their course."

24. UNNATURAL APPEARANCE OF STREAMS EXPLAINED.—“ In the above extracts no mention is made of the stiff and unnatural appearance of some of the streams. (Vide Pergunnah map). This is easily explained; the people of the District are in the habit of cutting small canals for irrigation purposes, which from the low nature of the country are often flooded, and the soil being of a loose description, they are converted into wide beds and thereby often causing the main rivers to leave their natural channels.”

25. THE DIFFICULTIES OF THE SURVEY.—“ The difficulties which the survey had to contend against, have already been given in last season's report; but besides those, I regret to say, that during the season under review, sickness has also to be taken into account. From the very commencement the establishment has suffered from sickness, chiefly Fever and Dysentery. In the Terai camp, as many as 50 men have been laid up at one time. The hill establishment also suffered a great deal, this season, from the same complaints. In fact, I may say of the whole establishment not more than 15 men went to their homes in health. Many of the classies who went home sick have since died, and but few of the old men have rejoined, of these many look unwell. The Recess hands also suffered, and one man in particular has been very bad, he had to be put on half pay; he has since rejoined, but I am doubtful if he will be able to go through the field season. I may here remark that both Mr. Cowley and myself also suffered, the effects of which still continue, but notwithstanding we have endeavoured to do our duty. The difficulties of procuring coolies are also felt very much, there being so much labor for them, that the coolies are quite indifferent about taking employment, except upon their own terms; this difficulty will still further increase, as soon as the Railway works are set a going in the valley of the Teesta.”

Extract from Annual Report from A. D. SMART, Esq., Assistant Revenue Surveyor, in charge 2nd or Upper Assam Waste Lands Survey, to the Surveyor-General of India,—No. 4, dated Noakachree, 3rd November 1864, for Season 1863-64.

3. NATURE OF COUNTRY.—“ The country over which the season's operations have been conducted was similar to that reported on for 1862-63: dense forest with underwood of thorny creepers, which swarm with millions of leeches, after the first shower of rain in March; this style of country is generally preferred for the cultivation of tea, as high forest land is considered by planters more suited for the cultivation of the plant than grass land. Where the land still lies waste, and where ryots settle, is tall ooloo-grass, 15 to 20 feet high, with patches of cultivation here and there. The whole country is dense forest and grass-jungle, intersected by numbers of small jans or streams, which flow from the Naga Hills to the Berhampooter. The greater number of these streams are not navigable for even canoes.”

4. “ The soil in general is light and sandy.”

5. “ The produce consists of tea, rice, sugarcane, mustard, pulses, &c. &c. A very fair amount of traffic in silks is carried on by the Natives in this District, and I believe throughout Assam; some kinds of thread selling for as much as 18 Rupees per lb.”

6. “ The working classes of the population are chiefly Hindoos; there is a very fair proportion of Mahomedans also, who do no manual work, but get their living by keeping petty shops and trading. The population is very thin, and the question of labor is getting a serious one, common coolies getting as much as Rupees (6) six per mense”

7. “ Tea Factories are studded throughout the District, every grant, in fact, in time will have a Factory.”

18. PUCKA PILLARS.—“ Pucka pillars will be erected hereafter by the grantees at all bends in the boundaries of their grants ; care has been taken to have a station at the points where the pillars will be erected, with a view to the station being preserved. All maps issued to grantees show the spots or stations where boundary pillars must be erected.”

21. JUNGLE CLEARING.—“ The cutting of the boundary lines was done at the expense of the grantees who supplied coolies.”

22. OBSTRUCTION TO DUE PROGRESS.—“ On the 9th of October 1863, I addressed the Officer then in charge of the District on the subject of my taking the field in November ; and solicited his taking early measures to have boundary lines cut well in advance of my parties. As stated in para. 2 of this Report, having received a list of grants for survey from the Officiating Deputy Commissioner on 16th of November only, my parties commenced to take the field on the 20th of November, when they found that not even a single grant had been commenced upon, and several grantees asking for further delay. I visited some grants personally, and throughout December addressed the Officiating Deputy Commissioner several times on the subject ; most of my letters were not even answered. My parties were left to get through the work the best way they could, or leave it ; consequently we were far advanced into January before a start could be made. This loss was never recovered, and my parties had to wait at each grant till the boundaries were cut.”

23. “ Throughout the season a grantee, who holds a Lakhiraj grant, unfortunately in the centre of my season's work refused positively to cut the eastern boundary of his grant, according to the boundary supplied me by the Officiating Deputy Commissioner ; I addressed the Officiating Deputy Commissioner several times on the subject, and at last extracted an order from him for the Mouzahdar to cut the boundary. On the Mouzahdar applying for expenses to enable him to do so, nothing more was heard from the Officiating Deputy Commissioner, and I was compelled to abandon the grant, which remains without its eastern and southern boundaries ; the latter boundary depending on the former. I received no assistance from the Officer then in charge of this District, and I believe it was entirely out of his power to render me any, there being no hold on grantees who refuse to cut their boundaries.”

24. “ Another very great cause of delay was the Mouzahdars not attending to the survey. The Officiating Deputy Commissioner, instead of issuing orders to them to attend to the survey, whenever called on by me, required a special application from me on each occasion, with a sketch map of the ground that I required their attendance in ; this, as you will at once see, caused a great amount of unnecessary delay ; and at the close of the season I was compelled to leave some portions of work, which could have been well finished, because the Mouzahdars would not attend, and it was too late to apply to the Officiating Deputy Commissioner for his orders. Mouzahdars, or some one deputed by them, must attend to the survey parties working in their Mouzahs, to enable the survey to progress at all satisfactorily.”

Extract from Annual Report from J. O. NICOLSON, Esq., Officiating Surveyor in charge, 3rd or Lower Assam Waste Lands Survey, to the Surveyor-General of India, No. 4A, dated 24th December 1864.

4. WHEN THE OPERATIONS COMMENCED.—The Deputy Commissioner having on the 1st of April furnished the list of the grants to be surveyed, no time was lost to send out parties to survey ; but the boundaries of the grants being neither defined nor cleared previously, no actual work was done till some time after ; I had to ascertain the boundaries first, and then have them cut under the superintendence of the Surveyors and Tindals of the Establishment.

5. DESCRIPTION OF WASTE LAND ALLOTMENTS.—The waste land allotments in Kamroop are chiefly in the midst of low hills, and, with few exceptions, are not contiguous, but separated from each

other by heavy jungle; owing to these circumstances each grant had to be surveyed by itself, as soon as the boundaries were cleared and ready. Traverse lines through such jungle could not be carried on without enormous expense, so the surveys must be put together by triangulation. It was too late in the season to execute any triangulation for this purpose, as the jungle was springing up on all sides, and coolies could not be procured for clearing hills for trigonometrical stations.

6. DURATION OF FIELD SEASON.—The field operation had to be carried on rather late in the season, during the months of April, May, and June, when the rainy days become frequent, and jungle was springing up rapidly; but it was necessary to make a beginning, and do as much field work as possible, especially in order to train the new surveyors and make them, by practice, efficient for next season's work. The survey parties were not always engaged in surveying, because the boundaries could not always be marked out and prepared in time, chiefly owing to the difficulties of procuring labor for cutting the necessary lines for measurement. The planters never refused coolies, but at the same time they never could be made to give them without much trouble and delay.

8. THE DEMARCATION OF BOUNDARIES.—The boundaries had to be marked out by me before any steps were taken to clear them of jungle for professional survey. I often experienced much difficulty in coming to the right conclusion as to the proper boundaries, and in three or four cases failed to do so. The pottahs and other papers furnished from the Deputy Commissioner's office are carelessly drawn out, as they do not describe accurately the land-marks, natural or artificial, given for the identification of boundaries; and the plans appended to them are, generally, utterly unreliable, as much from the unscrupulous character of the men by whom they are executed as from want of system in the method of the Ameen survey itself.

Copy of letter No. B dated Cherra Poonjee, the 20th October 1864, from J. O. NICOLSON, Esq., Officiating Surveyor in charge, 3rd or Lower Assam Waste Lands Survey, to Colonel H. Hopkinson, Commissioner of Assam.

I have the honor to report to you that the waste lands survey party under my charge will be prepared to resume operations some time next month, and to suggest that you will be kind enough to issue such instructions as you may deem necessary on the subject of having the boundaries of the grants properly ascertained, marked out, and cleared of jungle, previous to their being assigned to me for survey. It is a subject, I beg leave to state, which demands the earliest consideration of the authorities, and I trust no further time will be lost in dealing with it in a practical and efficient manner.

I beg to inform you that last season my party had little or no employment in Assam, as no grant was made over for survey which had its boundaries properly defined by posts or other permanent marks. I had first to find out the right boundaries the best way I could, with what assistance I could obtain from the Chaodrics of the Pergunnahs and then beg for coolies to have proper lines cut for measurement. Of course, under these circumstances, very little progress was made and much money wasted.

Copy of letter No. 15, dated Cherra Poonjee, the 27th October 1864, from A. C. CAMPBELL, Esq., Personal Assistant to the Commissioner of Assam, to J. O. NICOLSON, Esq., Officiating Surveyor in charge, 3rd or Lower Assam Waste Lands Survey.

REVENUE DEPARTMENT.—I am directed by the Commissioner of Assam to forward, for your information, the accompanying copy of a letter addressed to the Deputy Commissioner of Kamroop, with reference to your letter to this office, No. 1 of the 20th instant.

2. I am directed, however, at the same time to say that the Commissioner apprehends that in many cases you will have to proceed, as you did last year, in finding out the right boundaries. The system on which the Government have authorized the making of grants, I am to observe, has necessarily imposed the duty of ascertaining their precise limits on the surveyors sent to survey them.

Copy of letter No. 59, dated Cherra Poonjée, the 27th October 1864, from A. C. CAMPBELL, Esq., Personal Assistant to the Commissioner of Assam, to the Deputy Commissioner of Kamroop.

I am directed by the Commissioner to forward to you the accompanying copy of a letter to this office from Mr. Nicolson, in charge 3rd or Lower Assam Waste Lands Survey; and with reference thereto to inform you that the field season for surveying is now about to open, and the Commissioner will hold you responsible that Mr. Nicolson is not delayed this year as he was last by the want of finding boundaries of grants properly ascertained, marked out and cleared of jungle ready for him to survey. I am further to request that you will report immediately, for the information of the Commissioner, what work you have ready for Mr. Nicolson to commence upon.

Copy of letter No. 106, dated Fort William, 3rd December 1864, from Lieutenant Colonel J. E. Gastrell, Boundary Commissioner, to the Surveyor-General of India.

I have the honor to submit, for incorporation with your annual report on the surveys of Bengal, and for submission to His Honor the Lieutenant-Governor, a tabular statement, shewing the numbers and description of maps, &c., prepared in my office, in connection with my duties as Boundary Commissioner, during the past season 1863-64.

2. The final lists of thannahs, sub-divisions, and districts of the Nuddea Division, have been published.

3. The duplicate 4 inch = 1 mile thannah maps of the Nuddea Division have been prepared, and are now being finally examined and mounted prior to sending over one copy to your office and the other to the Commissioner of the Division.

4. These maps will shew all the new roads projected, or made up to date, in connection with the eastern and south-eastern lines of Railway. If possible, I intend inserting Ferry Fund Local Roads also.

5. The thannah and sub-divisional boundary descriptive statements of the Patna Division have been submitted to Government for publication, together with the description of the re-adjusted district boundaries and the transfer lists connected therewith. Illustrative maps accompanied these statements.

6. The final thannah lists, shewing names of each village, &c. &c., are in course of preparation.

7. The volumes of the Nuddea Division in the Surveyor-General's Office have been carefully corrected, and the names of the thannahs to which the various villages belong in each district have been inserted. Changes from one district to another have been noted in the volumes in like manner.

8. The descriptive statements of boundaries of thannahs, sub-divisions, and districts of the Bhau-gulpoor Division, are prepared and are undergoing final examination previous to submission for publication.

9. The statement of the Rajshahye Division will next be taken up.

10. The arrangement of the thannahs in the district of Sylhet will be commenced upon at once, on the basis of the survey already completed.

11. The smallness of my establishment on which I had the honor of remarking in last annual report, has been still more felt during the past year, and will form the subject of a separate communication, recommending its increase, in view to expediting the completion of the work in hand.

LISTS PREPARED AND FINISHED.

1. The proof sheets of the Statistical Registers of (13,167) villages, comprised in seventy-eight thannahs, and twenty sub-divisions of the Nuddea Division, and Abstract Statements for each thannah and sub-division, have been carefully examined and corrected.

2. Original descriptive lists of boundaries of five districts, twenty sub-divisions, and eighty thannahs, included in Patna Division.

3. Twenty-three original detailed Statistical Registers of 10,093, villages of twenty-three thannahs of the Patna Division, shewing names of Pergunnahs, Thakbust number, area of each village, also number of houses and population in each, and the grand totals of each for each thannah.

4. Original descriptive lists of the boundaries of three zillahs, eleven sub-divisions, and thirty-four thannahs, included in the Bhaugulpoor Division.

5. (Two) Detailed lists of transfers of (686) villages, from one zillah to another, of the Bhaugulpoor Division, viz. from Bhaugulpoor to Monghyr, and from Purneah to Maldah zillahs.

6. (Two) Detailed lists of (563) villages, transferred from one zillah to another of the Dacca Division, viz. from Dacca to Backergunge, and from Rungpoor to Mymensing zillahs.

MAPS PREPARED AND FINISHED—SCALE 4 INCHES = 1 MILE.

1. (One-hundred and twenty-eight) Thannah maps (duplicate) of the zillahs of Nuddea, Jessore, and 24-Pergunnahs, containing (12,964) villages, and an area of (9756.51) square miles.

2. (Two) Maps shewing the limits and the villages in detail round the cantonments of Chinsurah and Dinapoor, within which the sale of liquor is to be regulated under Sections 29 and 31 of Act XXII. of 1864.

3. (Twenty) Trace maps of (270½) miles of country, for lines of Eastern Bengal Railway Feeder roads prepared for the Superintending Engineer, 2nd Circle, and for the Commissioner of the Nuddea Division.

4. Ten plans of River Hooghly, bordering on 24-Pergunnahs and Hooghly Districts, for Mr. Leonard, Superintending Engineer, employed on special duty.

5. One map, containing (94) villages of Sub-Division of Barrackpoor, prepared for Cantonment Joint Magistrate, Barrackpoor.

SCALE 1 MILE = 1 INCH.

1. (Eighteen) Thannah maps of Zillah Nuddea, for the Deputy Inspector-General of Police.

2. (Two) Maps, containing (188) villages of the Sub-Division of Barrackpoor, for the Government of Bengal, and for the Commissioner of the Nuddea Division.

3. (Twenty) Sub-division, and eighty thannah, boundaries marked off, and colored on two copies of maps of zillahs Patna, Sarun, Chumparun, Shahabad, Behar, and Tirhoot, for local authorities, and for office use.

4. (One) Map of Zillah Jessore, shewing new sub-division and thannah boundaries, marked off and colored for Judge of principal Court of Small Causes, Jessore.

5. (Three) Maps of the Sylhet District, to assist in re-arrangement of thannahs and Sub-Divisions comprising an area of (3100) square miles.

SCALE 8 MILES = 1 INCH.

(Five) Maps of the Patna Division, shewing the new district, sub-division, and thannah boundaries. Two for Government of Bengal, one for Commissioner of the Patna Division, one for the Surveyor General's Office, and the other for the Office use.

SCALE 32 MILES = 1 INCH.

(One) Map shewing the new sub-divisional arrangements of the zillahs of Bengal since 1862, for Government of Bengal.

(Sd.) JAMES E. GASTRELL, *Lieut.-Colonel,*
Boundary Commissioner.

(True Copies and Extracts.)

H. L. THULLIER,
Surveyor-General of India.