

GENERAL REPORT

ON THE

Hb-3

REVENUE SURVEY OPERATIONS



OF THE



BENGAL PRESIDENCY,

FOR

SEASONS 1861-62 AND 1862-63.

BY

LIEUT. COL. H. L. THULLIER,
SURVEYOR GENERAL OF INDIA.



CALCUTTA:

O. T. CUTTER, MILITARY ORPHAN PRESS,
1864.

No. 17 A.

FROM

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

TO

THE SECY. TO THE GOVT. OF INDIA,
FOREIGN DEPARTMENT.

Dated Calcutta, 13th June 1864.

REVENUE BRANCH.

SIR,

I have the honor to submit, for the information of the Government of India, the annexed General Report,* with Appendix, on the operations of the Revenue Surveys in the Upper and Central Provinces and Sindh, for the two seasons 1861-62 and 1862-63.

2. The accounts of the Revenue Surveys in the Lower Provinces, as reported on separately to the Bengal Government, as well as of the Topographical Surveys under the Military Department, are likewise attached, bringing the narrative of the entire working of the Topographical and Revenue Branches of the Department down to the close of the past year, with a brief resumé of the programme of the proceedings of the current season.

I have the honor to be,

SIR,

Your most obedient Servant,

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

INDEX TO CONTENTS.

GENERAL REMARKS.	Paras.
Introductory ...	1
Executive Establishments ...	4
Where employed ...	5
Area performed ...	6
Results under each Government or Province ...	7
Area effected by Topographical Surveys..	10
Revenue Surveys, Cost, and Rates ...	11
Comparative Rate ...	12
Opinion of Results ...	13
Merits of Executive Officers ...	14
Districts completed and in progress ...	15
Lower Provinces' Districts finished ...	16
Aggregate Areas brought forward ...	17
Mean Rate for 17 Seasons ...	18
Maps and Records lodged... ..	19
Special Enquiry ...	20
Mapping, Head Quarter Office ...	21
Photography ...	22
Lithographic Branch ...	23
Sale and Distribution of engraved and lithographed Maps ...	24
Tour of Inspection ...	26
Officer in charge of Head Quarter Office	27
Tabular Statements ...	28
Departmental Budget ...	29
Sapper Sub-Assistants ...	30
Statistical and geographical Reports ...	31

EXECUTIVE SURVEYS.

1st or Jubbulpoor Division, Central Provinces.

Districts Jubbulpoor and Nursingpooor... ..	32
Nature of Country ...	34
Triangulation ..	35
Cost and Rates ...	37
Connection with Great Trigonometrical Survey ...	38
Maps and Records furnished ...	39
Demarcations ...	40
Demarcation Maps ...	41
Employment for current Season ...	42
Subordinates ...	43
Change of Superintendence ...	44

2nd or Nagpoor Division, Central Provinces.

District Bhundara ...	46
Area surveyed ...	47
Cost and Rates ...	50
Aspect of Country ...	51
Triangulation and connection with other Surveys ...	52
Demarcation Papers and Maps ...	55
Demarcations ...	56
Arrears ...	57
Change in Executive Officer ...	58
Lieutenant Taylor in charge ...	58

	Paras.
Maps and Records ...	59
Current Season's Operations ...	60
Future destination of the Survey Party..	62

3rd or Saugor Division, Central Provinces.

Completion of District Lullutpoor, Jhansee Division, N. W. Provinces, by the same Party ...	64
Bundela State surveyed ...	66
District Saugor, Central Provinces ...	68
Part of Saugor surveyed prior to Mutiny	69
Total Area performed ...	72
Total Cost and average Rates ...	73
Connection with the Great Triangulation	74
Permanent Boundary marks ...	75
Demarcations ...	77
Junction with other Surveys ...	79
Comparison of Distances ...	80
Description of Country ...	81
Inspection of Party ...	82
Maps and Records furnished ...	84
An object to relieve Surveys of duplicate Maps and Plans ...	86
Work for the Current Season ...	88
District next for Survey ...	89
Change in Executive Surveyor	90
Captain A. D. Vaurenen proceeded to Europe ...	90
Captain Sconce succeeded ...	91
Subordinate Staff ...	92
Military Assistant ...	93
Head Assistant Surveyor, detached ...	94
Sapper Sub-Assistants ...	94

1st or Baiswarrah Division of Oudh.

District Roy Barielly ...	96
Re-distribution of Divisions in Oudh ...	97
Re-survey of Villages on opposite Bank of Ganges River ...	98
Area surveyed ...	99
Detached Survey ...	100
Sarda River and Nepal Frontier Survey..	101
Frontier Boundary Pillars... ..	104
Cost ...	105
Cost of Frontier Survey ...	107
Survey of Sal Forests ...	108
Style of Survey ...	109
Cost of Survey of Sal Forest Tracts ...	110
Survey of Kumaon Iron-works Grant ...	112
Inconvenience of detached Surveys ...	114
Connection with other Surveys ...	115
Comparative Results ...	116
Inspection of Party ...	117
Maps and Records ...	118
Records rendered ...	120
Subordinate Staff ...	121
Employment for current Season, 1863-64	124

	Paras.		Paras.
<i>2nd or Lucknow Division of Oudh.</i>		<i>27</i>	
Districts Oonao, Lucknow, and Duriabad	125	Division of Establishment...	197
City, Cantonments, and Environs of		Nature of Survey ...	198
Lucknow ...	130	Season 1862-63 ...	200
Cost and Rates ...	132	Hill Sanataria ...	201
Comparative Rates ...	133	Out-turn ...	202
Inspection of Party ...	134	Hill Stations ...	203
Maps and Records furnished ...	136	Jagheers Jhujjur and Bahadoorgurh ...	204
Changes in Territorial Boundaries ...	138	" Dadree ...	205
Serious effects of such changes ...	139	" Bawul and Kanti ...	206
Connection with the principal Triangu-		" Loharoo ...	207
lation ...	141	Remaining Area ...	208
Comparison of Data ...	141	Total Area effected ...	209
Demarcations ...	142	Cost and Rates ...	210
Khusrah or native measurement of Fields	143	Great Trigonometrical Stations ...	211
Employment in current Season ...	145	Comparison of direct distances ...	212
Efficiency of Establishment ...	146	Maps and Records ...	213
Transfer of Covenanted Assistant ...	148	Intended disposal of Establishment ...	216
		Further work in the Punjab ...	219
		Consultation with Revenue Authorities...	220
		Inspection of the Revenue Surveyor's	
<i>3rd or Fyzabad Division of Oudh.</i>		<i>27</i>	
District Fyzabad ...	149	Office ...	221
Organization of Party ...	150	Subordinates ...	222
Locality assigned ...	152	Lawrence Asylum Youths... ..	223
Tract surveyed ...	153	Employment during current Season ...	224
Connection with the Triangulation ...	155	Detached Military Employment ...	225
Limits of Area surveyed ...	156	Sketch of route and surrounding coun-	
Cost and Rates ...	157	try ...	226
Style of Survey ...	160	Lieutenant Barron severely wounded ...	228
Masonry Land Marks ...	161		
Demarcations ...	162		
Khusrah or Native measurement of Fields	163	<i>1st Division or Right Bank, Indus, Sindh.</i>	
Maps and Records furnished ...	165	District Mehur ...	231
Operations of current Season ...	166	District Schwan ...	232
Proposal to dispense with Survey Party..	167	Area ...	233
Objections to stopping Survey Opera-		Style and Scale of Survey... ..	234
tions Trans-Gogra ...	168	Limits of the Survey executed ...	235
Insufficiency of Work for 1864-65 ...	170	Cost and Rates ...	236
Subordinates ...	172	Results creditable to Executive Surveyor	238
Resignation of Revenue Surveyor ...	173	Connection with Great Trigonometrical	
		Survey ...	239
		Demarcations ...	240
		Comparison of the preliminary Settle-	
<i>Rohilcund Division Re-Surveys.</i>		<i>31</i>	
District Moradabad ...	174	ment and Survey Results ...	242
Reason of making this Survey ...	175	Advantage and necessity of simultaneous	
Special Supervision ...	179	measurements and comparisons ...	244
Desultory employment ...	180	Maps and Records ...	248
Re-adjustment of British and Native		Description of Country, &c. ...	250
States' Boundaries ...	181	Current Season's Work ...	251
Out-turn ...	184	Removal of Party from Sindh ...	253
Cost and Rates ...	186		
Masonry Pillars ...	187		
Records and Maps ...	188	<i>2nd Division or Left Bank, Indus, Sindh.</i>	
Inspection of Party ...	188	District Nowshera ...	254
Additional Work ...	189	Area surveyed, Season 1861-62 ...	256
Rampoor Jageer ...	190	District Halla... ..	257
Advantage of the large scale with Re-		Area surveyed, Season 1862-63 ...	257
venue boundaries ...	193	Cost ...	259
		Rates ...	260
		Survey of principal Towns ...	263
<i>Delhi and Hissar Division.</i>		<i>27</i>	
Districts Delhi, Goorgaon, Rohtuck, &c.	195	Great Trigonometrical Survey not extend-	
Rawul Pindie Division ...	196	ed to Hyderabad District ...	264
		Land-marks and means of future con-	
		nection afforded ...	265

	Paras.		Pages.
Connection with Right Bank Survey ...	266	TABLE A.	
Demarcations ...	267	General Return of Professional Work ...	51
Boundary Land-marks ...	268		
Khusrah or native measurements of Fields	269	TABLE E.	
Check of Professional Survey useful ...	271	General Statement of sums actually	
Description of Country ...	272	drawn ...	56
Maps and Records furnished ...	273		
Current Season's Operations ...	275	TABLE H.	
Remaining for Survey in Sindh ...	276	Statement of Area, Cost, Rate per	
Conclusion ...	278	Square Mile, &c. <i>on Proposed District</i>	57

APPENDIX.

<i>Extracts from Annual Reports.</i>	Pages.		Pages.
By Lieutenant J. Sconce, 1st Division, Central Provinces, Season 1861-62, on District Jubbulpoor ...	i	By Major H. C. Johnstone, Delhi and Hissar Division, Season 1861-62, on District Delhi ...	xix
By Captain J. Sconce, 1st Division, Central Provinces, Season 1862-63, on District Nursingpoor ...	ii	By ditto ditto ditto 1862-63, on Jageers... ..	xx
By Captain J. H. Grant, 2nd Division, Central Provinces, Season 1861-62, on District Bhundara ...	v	By Captain J. Macdonald, Right Bank, Indus, Sindh, Season 1861-62, on District Mehur, Upper Sindh ...	xxi
By Lieutenant J. W. Taylor, 2nd Division, Central Provinces, Season 1862-63, on District Bhundara ...	vi	By ditto ditto ditto 1862-63, on District Sehwan ...	xxx
By Captain A. D. Vanrenen, 3rd Division, Central Provinces, Season 1861-62, on District Lullutpoor ...	vii	By W. Lane, Esq., Left Bank, Indus, Sindh, Season 1861-62, on District Nowshera, Upper Sindh ...	xxxii
By ditto ditto ditto 1862-63, on District Saugor ...	xi	By ditto ditto ditto 1862-63, on Districts Nowshera, Halla, and Thur-Parkur ...	xxxiv
By Captain F. C. Anderson, 1st Division, Oudh, Season 1862-63, on District Roy Bareilly ...	xiii		
By Lieutenant Colonel D. C. Vanrenen, 2nd Division, Oudh, Season 1861-62, on District Oonao ...	xvi	ACCOMPANIMENT.	
By ditto ditto ditto 1862-63, on District Lucknow ...	xvii	(<i>Subjoined.</i>)	
		Report on the Survey Operations of the Lower Provinces from 1st October 1862 to 30th September 1863.	

GENERAL REPORT

ON THE

REVENUE SURVEYS OF THE BENGAL PRESIDENCY,

FOR

SEASONS 1861-62 AND 1862-63.

No. 17,—Dated Calcutta, 13th June 1864.

1. My last Report, dated the 15th September 1862, on the Revenue Surveys, brought the history of the operations, with final results, down to the end of season 1860-61, and briefly alluded to the work, then current, of season 1861-62. The narrative is now continued for that and the other completed season of 1862-63, or from the 1st October 1861 to the 30th September 1863, including an account of the programme of the field work of the present season up to date.

2. In the former Report, a history of the Survey operations and system pursued was entered into, together with a full explanation as to the existing state of the Geography of India, as well as of the means and appliances available for prosecuting the mapping and publication of the important and extensive results of the Survey of India, now in such full force. It is not necessary, therefore, to go into these details again in the present narrative, which will be one rather of the progress made.

3. The present Report includes all the Revenue Surveys, at present in progress in the several Provinces and jurisdictions as marginally cited. The first five have hitherto been reported on together to the Foreign Department, whilst the latter has always been treated on separately, and the Reports submitted to the Bengal Government are herewith annexed, instead of recapitulating their contents over again in the body of this document. The Topographical Surveys being a distinct branch are likewise treated of separately to the Military Department.*

1. Central Provinces.
2. Oudh.
3. North-Western Provinces.
4. Punjab.
5. Sindh.
6. Lower Provinces.

* No. 33, dated 26th April 1864.

4. The number of parties employed in the Upper Provinces, or beyond the jurisdiction of the Lieutenant Governor of Bengal, are ten, and in the latter eight, making a total of 18 parties. Of these, 15 are full and effective Establishments of the regular and uniform allowed strength, and three are small detached parties, specially deputed either for revisions, or for the measurement of waste lands under the fee simple rules in the Lower Provinces, as fully particularised in my Reports on the latter. There are no special parties employed for waste lands in the Upper Provinces, but one small Establishment, under a single Assistant, for desultory measurements in Rohilcund, connected with the particular wants of the Revenue Authorities, and chiefly with reference to the loss of the Survey Records of some Pergunnahs during the mutiny.

EXECUTIVE ESTABLISHMENTS.

5. The several parties have been employed in the Divisions and Districts, and under the superintendence of the Officers, as follows. The amount of work performed by each, the total cost, and the average

WHERE EMPLOYED.

mileage rate, is also shown in the following Abstract of Table A, the details of which will be found in the Appendix :—

No. of Division.	Division.	Districts.	Superintending Officers.	Area in square miles.	Total cost.	Average rate per square mile.	REMARKS.
1	Jubbulpore Division Central Provinces...	Nursingpore ... Hoshungabad ...	Capt. J. Sconce ...	2,577	Rs. 78,682	Rs. A. 30 9	318 square miles, Topographical Work.
2	Nagpore Division... Central Provinces...	Bhundara ...	Capt. J. H. Grant Lieut. J. W. Taylor	1,726	83,743	48 8	
3	Saugor Division ... Central Provinces...	Saugor ...	Capt. A. D. Vanrenen	2,308	67,239	29 2	480 square miles, ditto.
4	Baiswarrah, Oudh	Roy Bareilly ... Sooltanpoor ...	Capt. F. C. Anderson.	2,844	80,651	28 6	
5	Lucknow do.	Lucknow ...	Lieut. Col. D. C. Vanrenen	2,391	76,434	32 0	
6	Fyzabad do. ...	Fyzabad ...	Lieut. Penton Thompson	729	34,902	47 14	One season only. Ditto.
7	Rohilcund ...	Moradabad ...	H. B. Talbot, Esq. ...	142	8,170	57 5	
8	Dehli and Hissar, Punjab ...	Dehli, Goorgaon, Rohtuk, Jhujjer, Dadree, Loharoo, Narnoul, Kan- nound, Baurel	Major H. C. Johnstone	3,449	80,291	23 4	1,929 square miles of Topographical Work.
9	Right Bank Indus, Sindh ...	Sehwan, Kurrachee, Mehur, Jhurruk...	Capt. J. Macdonald...	5,270	89,431	16 15		2,303 ditto ditto.
10	Left Bank Indus, Sindh ...	Nowsherra, Halla, Thurr—Parkur ...	W. Lane, Esq. ...	4,025	56,079	13 15	919 ditto ditto.
10	Total Upper Provinces	...	.....	25,461	6,55,622	25 12	5,951 ditto.
8	Total Lower Provinces	...	Eight Supg. Officers...	20,371	5,07,287	24 14	11,006 ditto.
81	Grand Total	...	.....	45,832	11,62,909	25 6	16,957 ditto.

6. Of the total area, 25,461, performed in the Upper Provinces, during the two seasons under review, 19,510 square miles is pure Revenue Village

AREA PERFORMED.

Survey, on the large scale of 4 inches to the mile, and 5,951 square miles is Topographical only, on the smaller scale of one inch to the mile, the latter being, for the most part, large tracts of desert or hilly territory on the Frontier in Sindh, or Jagheers belonging to Native Chiefs in the new Delhi and Hissar Division, which it was not necessary to delineate, except for Geographical purposes. The extent of the area dealt with in this manner is twice as large in the Lower Provinces as it is in the Upper.

RESULTS UNDER EACH JURISDICTION.

7. The proportion of work performed for each Government, the cost, and rate of the same, is as follows :—

No. of Parties.	Jurisdiction.	Area Surveyed in square miles.	Total cost, Rupees.	General average Rate per Square mile.
3	Central Provinces	6,611	2,29,664	34.12
3	Oudh	5,964	1,91,937	32.3
1	North Western Provinces	142	8,170	57.5
1	Punjab	3,449	80,291	23.4
2	Sindh	9,295	1,45,510	15.10
8	Lower Provinces	20,371	5,07,287	24.14
18	Total	45,832	11,62,909	25.6

8. In all the above jurisdictions, a considerable area has been effected. In the Punjab, the whole of the work there assigned for survey has been concluded, and the Province entirely

completed, as regards its first survey. In the jurisdiction of the Lieutenant Governor of the North-Western Provinces, but very little has been effected, as the very small party engaged there is merely employed in desultory revisions and patch-work, and the results therefore cannot bear any comparison with those of a regular and large Establishment carrying on ordinary operations; the rate is therefore altogether exceptional.

9. Thus, 25,461 square miles of country have been laid down, the details of which are now reported on. In the Lower Provinces, during the same period, 20,371 square miles have likewise come under those operations, as exhibited in the separate Reports annexed, making a grand total of 45,832 square miles, as the result of the

Seasons.				Square Miles.	Cost.		Rate.	
Season	1861-62		Rs.	Rs. A.		
	1861-62	...	...	10,643	2,46,554	26 13	
	1862-63	...	...	9,728	2,60,733	23 3	
				20,371	5,07,287	24 14		

labors of the Revenue Branch only, or 22,916 square miles per annum. After deducting the waste lands and the small revision parties, the mean average area performed by each regular party of the usual strength is 1,593 square miles. In the 3rd Oudh Survey, the out-turn is small, being for a first and single season only, by a party newly organized, and therefore working under disadvantages.

10. In addition to the area thus effected by the Revenue Branch, which consists of AREA EFFECTED BY TOPOGRAPHICAL SURVEY.

* No. 33, dated 26th April 1864.

	Sq. miles.
Season 1861-62	8,882
„ 1862-63	12,965
Total Topographical	<u>21,847</u>

COMBINED AREA FOR TWO SEASONS.

	Sq. miles.
Revenue Branch	45,832
Topographical Branch	<u>21,847</u>
Total	<u>67,679</u>

Revenue detail with mixed Revenue and Topographical Surveys, we have the ordinary or regular Topographical Surveys by that Branch of the Department, employed for the most part in Native States, or in other wild and inhospitable Districts, which are not worth, and indeed are not susceptible of such minute measurements for Revenue purposes. The area produced by these Establishments, and which is reported on separately to the Military Department,* amounts to 21,847 square miles, as specified in the margin, the produce of five parties. The whole of this work is on the one inch scale, and, if added to what is above given for the Revenue Surveys, the aggregate area turned out for the two seasons under review, is 67,679 square miles.

11. The total expenditure for the 25,461 square miles, surveyed in the Upper Provinces, is Rs. 6,55,622, which gives a mean average rate of 25-12 per square mile. The cost of the operations in the Lower Provinces is Rs. 5,07,287, at an average of 24-14 per square mile, making an aggregate of 45,832 square miles for Rs. 11,62,909, which yields an average of 25-6-0 per square mile. The proportion of pure Revenue detail work to Topographical is 28,875 to 16,957 square miles, on which the cost is Rs. 9,26,895 and Rs. 2,36,014 respectively, giving a mean average of Rs. 32-2 for the former, and Rs. 13-15 for the latter.

12. The mean average rate for the three preceding seasons, as recorded in the last Report, was Rs. 21-14 per square mile. The present rate is still very moderate. On such extensive operations, differences in the rates are to be expected, there being so many causes to affect progress over such diversified ground. The rates must also increase under the new financial system, and they will be still higher, when the salaries of the Military Officers are added to the calculations, which they will be for the current season.

COMPARATIVE RATE.

13. The extent of work performed for the outlay incurred is highly favorable. The

OPINION OF RESULTS.

Tabular Statement in para. 5 shows that every Executive Officer has been successful in rendering an out-turn fully up to the means placed at his disposal. The labors of all Officers employed have been unremitting, and they have been zealously responded to by the subordinate staff. Full details regarding each Survey will be found recorded, from which the respective merits and comparative results of each will be apparent.

14. It affords me great satisfaction, to have it in my power to lay before the Government again my humble testimony to the valuable services rendered by the Officers of this Department. They vie with each other in laudable emulation to produce the best results attainable, under the system allowed; and I feel convinced that no body of Officers serving under the Government of this country could more thoroughly and efficiently perform the duties entrusted to them, duties arduous in their character, producing fruits of great and lasting importance to the State, which are eminently deserving of that recognition from superior authority, without which the zeal and ardor of the best of men must flag.

15. The Districts completed in the Upper Provinces, during the two seasons, are as specified in the margin. Good progress has likewise been made in the various Districts in hand. The whole of the work in the Punjab has been completed, and the remaining Survey Party there was ordered by the Supreme Government down to the Central Provinces, but subsequently, on the urgent requisition of the Punjab Government, extensive employment has been found for Major Johnstone, Trans-Indus, to make a Revenue detailed Survey of the Euzofzae and Peshawur Valley, which several years ago had been laid down only Topographically. In the Central Provinces, in Oudh, and in Sindh, there remains a great deal to be yet

DISTRICTS COMPLETED AND IN PROGRESS.

Districts Completed.

Jubbulpoor and Nursingpoor	...	Central Provinces.
Lullutpoor	...	N. W. Provinces.
Pertabgurh, Roy Bareilly	...	Oudh.
Oona, Lucknow	...	Ditto.
Delhi and Hissar Division	...	Punjab.
Mehor and Sehwan	...	Sindh.
Jhurruck	...	Ditto.
Nowsherra	...	Ditto.

Districts in hand near completion.

Rhundara	...	Central Provinces.
Saugor	..	Ditto.
Sooltanpoor	...	Oudh.
Durriabad	...	Ditto.
Kurrachee Collectorate on Right Bank Indus.	...	Indus.
Halla, Left Bank Indus.	...	Indus.

done, which will tax the energies of the Department to the utmost. In addition to which, fresh questions are arising continually, which threaten us with more Surveys of very great extent.

16. In the Lower Provinces, it will be observed that, although the Regulation Districts have very nearly been brought to a conclusion, yet another Province, Assam, has been added, which, together with the work in hand and for revision, amounts to upwards of one hundred thousand square miles of difficult country, which will occupy the Establishments now employed for many years. The Survey Department was never so extensive or more efficient than it is at the present moment. It will be seen that the amount of work actually effected is enormous, but still, in such a country as this, there always remains much to be done, and the first Survey of India cannot long suffice for the wants inseparably connected with the development of its resources, now beginning to make rapid strides.

Lower Provinces, Districts finished.

Backergunge.
Hazareebaugh.
Chittagong or Kookee Hills.

will occupy the Establishments

		<i>Sq. Miles.</i>
<i>Lower Provinces Districts in hand and remaining for Survey</i>	...	14,060
<i>Do. Do. for re-survey</i>	...	12,932
<i>Do. Upper and Lower Assam</i>	...	27,555
<i>Do. Topographical Surveys</i>	...	45,736
		<hr/> 1,01,183

17. The area effected in the period embraced in my last Report, added to that now reported on, performed by the Revenue Branch only, in five seasons, or from 1858-59 to 1862-63, is about equivalent to the extent of the British Isles, and the grand total, from the season brought forward and referred to in para. 14 of last Report, with the total cost and mean rate for 17 seasons, is as follows, showing an area greater than that of the whole

AGGREGATE AREAS BROUGHT FORWARD.		<i>Sq. Miles.</i>
3 Seasons	...	65,160
2 Ditto	...	45,832
Total 5 seasons' Revenue	...	<hr/> 1,10,992

of France. This is exclusive of the purely Topographical Surveys, which produce on an average about 10,000 square miles annually :—

Seasons.	Square Miles.	Cost.	Rate.
Last reported 15 seasons 1846-47 to 1860-61	2,37,028	53,52,802	22 9 0
Now reported 1861-62 and 1862-63	45,832	11,62,909	25 6 0
Total 17 Seasons	2,82,860	65,15,711	23 1 0

18. The mean rate, Rs. 23-1, is thus kept down very much to its ordinary level, and speaks well for the economy with which the whole MEAN RATE FOR 17 SEASONS. of these Revenue Survey operations have been conducted, over a long series of years, in every part of this wide Presidency.

MAPS AND RECORDS LODGED.

	PROVINCES.		Total.
	Upper.	Lower.	
Index Maps of Seasons' Work	21	14	35
Charts of Triangulation ... ..	...	3	3
Pergunnah Maps, scale one inch to the mile	103	57	160
Village Plan Sheets, on scale 4 inches to the mile, containing 21,776 villages	1,086	610	1,696
Pergunnah, or Main Circuit Computations, Volumes	21	13	34
Village Computation, Volumes	35	20	55
Triangulation ditto ... ditto	1	6	7
Ditto Statistical Registers ditto	33	20	53
City and Cantonment Plans	4	1	5

19. The results of the extensive areas performed by each Executive Surveyor are received in this Office annually with the most praiseworthy regularity. The number lodged for the two seasons under review are detailed in the margin. The examination, compilation and reduction of these materials, with the view to publication and transmission to England, is a laborious and anxious task, which has now altogether exceeded the powers of my Superintending Office Establishment.

20. The amount of work devolving on this Office has lately formed the subject of a special enquiry by Lieutenant Colonel Dickens, who was deputed by the Financial Department for this purpose, and entered into an elaborate enquiry into everything connected with the working and organization of the Department. This Officer's Report is now before the Government, and the details he has entered into will give a more vivid description than anything I can urge on the subject. The several recommendations made by Colonel Dickens will be noticed separately, and need not be further alluded to at present.

MAPPING.

Atlas Sheets.

No. 1)	
.. 8)	Sindh.
.. 9)	
.. 5)	
.. 6)	Bunnoo and Ishmael Khan.
.. 15)	
.. 16)	
.. 43)	Delhi and Hissar Jageers, &c.
.. 85)	Oudh.
.. 121)	Backergunge, &c.

21. The following statement exhibits the present state of the several District Maps and general compilations, with the extent of work performed in the Mapping Branch. The sheets of the Atlas of India specified in the margin will be completely filled up by the results of the Revenue Surveys now reported on. After the very minute returns on this subject rendered to Colonel Dickens, and embodied in his Report, it is unnecessary for me to attempt to go into greater detail here.

SCALE 4 MILES=1 INCH.		COMPILATIONS.
District Nagpoo	... ..	{ Final Map despatched to England. Preliminary Map lithographed.
„ Jubbulpoo	... ..	Completed and lithographed.
„ Bhundara	... ..	} Completed as far as the materials have been lodged in this Office.
„ Saugor	... ..
State of Khyrpoor, Sindh	... ..	Lithographed.
Districts Larkhana and Mehur in the Shikar- poor Collectorate	... ..	} Added to the Map of Upper Sindh and sent to Press. Half lithographed.
Delhi and Hissar Division lapsed Jaheers	... ..
Districts Dehra Ishmael Khan and Bunnoo.	... ..	} Completed and sent to Press, Lithograph nearly completed.
„ Lucknow, Oonao, Roy Bareilly, and Pertabgurh of Oudh...	... ..
District Backergunge	... ..	Completed and sent to Press.
„ „ portion of, lying in At- las Sheet No. 121	... ..	} Sent to England.
District Hazareebaugh	... ..
„ Maunbhoom	... ..	} Completed as far as the materials have been lodged in this Office.
„ Sylhet	... ..
„ Tipperah	... ..	} Ditto ditto ditto.
„ Akyab	... ..

SCALE 2 MILES=1 INCH.		COMPILATIONS.
District Nagpoo with village boundaries	... ..	Completed and lithographed.
„ 24-Pergunnahs. } Without village „ Nuddea ... } boundaries. }	... ..	Completed and ready for Press.

SCALE 1 MILE=1 INCH.		PERGUNNAH MAPS.
Jubbulpoo	... ..	Some Pergunnahs lithographed.
Jhansie and Lullutpoor Districts and the Native States of Tehree and Oorcha in Bundlekund	... ..	} Ditto ditto
Dacca and Furreedpoor	... ..
Dinagepoor	... ..	Nearly all Pergunnahs lithographed.
Maunbhoom	... ..	} Several Pergunnahs lithographed.
Hazareebaugh	... ..
Backergunge	... ..
Kurrachee Kardarate, with Town and Har- bour of Kurrachee (Sindh)	... ..	} Lithographed.
	

CITY AND CANTONMENT PLANS, (LARGE SCALE.)

Dacca, Serampoor, Furreedpoor, Kurrachee, Hazareebaugh (Enlarged Plan) City of Kash-
meer, Plan of the Sanitarium of Simla.

INDEX MAPS OF DISTRICTS.		SCALE 8 MILES=1 INCH.
Burdwan	... ..	} Compiled and lithographed.
Bancoorah	... ..
Hazareebaugh	... ..
Dinagepoor and Bograh	... ..	Compiled and sent to Press.

GENERAL COMPILATIONS.

India, showing Districts and Divisions ...	Compiled and lithographed.
„ showing Financial Circles ...	ditto ditto
India, (Skeleton large scale) showing Railways, Roads, Rivers, Navigable Canals, and the disposition of the Army. Additional information compiled and sent to England.	
Jhelum and Rawul Pindie Districts, Skeleton } Map }	Compiled and lithographed.
Bhootan and part of Assam } Duplicate copies supplied for the Bhootan } Mission }	Compiled and photographed.
Hydrabad Assigned Districts Topographical } Survey }	Compiled as far as the materials have been lodged.
Chota Nagpoor Division ditto	Ditto ditto.
Ganjam and Orissa Topographical Survey ...	Ditto up to work of season 1861-62.
Punjab Map	{ Added on the better portion of Kashmeer, all the Derah-jat, and Mooltan Division portion of the Cis-Sutlej States, and Delhi and Hissar Division. This map is now ready for lithography.
Eastern Bengal	{ Added on the Akyab District, and revised portions in Assam, and the Cossyah and Jynteah Hills.
Topographical Surveys of Hydrabad, Ganjam, and Orissa, and Chota Nagpore Division.	{ Duplicate copies made, and also copies of Charts for the season 1861-62.

22. The aid of Photography has continued to be brought into play, for re-producing, as well as reducing, some of the maps of the Revenue Surveys. The large map of the Trans-Indus Districts of Bunnoo and Derah Ishmael Khan has been copied in this manner, on the $\frac{1}{4}$ inch scale, and copies have been issued, for local purposes, pending the publication of the map in the usual manner, which has proved of the greatest advantage. Some of the one-inch Pergunnah Maps of Hazareebaugh and Maunbhoom Districts have been re-produced, on the same scale, to meet emergent wants by the Geological Surveyors. Various maps of the Topographical Surveys have likewise been photographed, and rendered of very great use for immediate practical purposes, and specimens have been submitted with my Report* on those Surveys, wherein the subject will be found explained more at large.

23. The capability of the Lithographic Department, in respect to the present expanded state of the Executive Surveys, the quantity of materials furnished annually, and the increased demands for published general maps of every description, is fully set forth in Colonel Dickens' Report, and is likewise mentioned in my Topographical† Report. With such ample information of the working and out-turn of this part of my Office, before the Government, it would be redundant to repeat it in this place. With regard to what Colonel Dickens has stated on this subject we are in perfect accord, and his recommendations cannot, I submit, be carried out too soon, if the Government is to derive a full return for the large outlay made on Surveys, by the publication of the results within a reasonable period. The style in which Lithography, both Plain and Tinted, is now brought out at this Office is very good indeed, and what is wanted is plenty more of it.

* PARAS. 14 to 18.

† PARAS. 20 to 22.

SALE AND DISTRIBUTION OF
ENGRAVED AND LITHO-
GRAPHED MAPS.

No. 3837, dated 18th August 1863.
cash for maps, as previously enjoined, was altered, and from this Office Public Notice, dated

	No.	Value Rs.
On payment ..	4,459	14,251
Without payment, to officials ..	4,020	13,166
Total ..	8,479	27,417

24. The heavy business of coloring and distributing the published maps to officials, and to the public, on sale, has continued unabated, since the last Report. By a Financial Order as per margin, the system of making all officials pay cash for maps, as previously enjoined, was altered, and from this Office Public Notice, dated 4th September 1863, they have been issued free.

The number of maps issued between the 1st August 1862 and 10th June 1864 is 8,479, and the total value of the same amounts to Rs. 27,417. The sums actually realized, with the account current, will be as follows:—

By Dr.

	Rs.	As.	P.
Balance outstanding or deposited in Bank of Bengal, as per last Report to 31st July 1862, inclusive of miscellaneous items, as brought forward from balance given in Annual Report for 1857-58	3,011	14	9
Maps of sorts sold by this Office, and by the several Book-sellers, [as per their Accounts Current, less commission], and amount realized from 1st August 1862 to 10th June 1864 inclusive	14,161	9	9
Total realized up to 10th June 1864 inclusive	17,173	8	6

By Cr.

	Rs.	As.	P.
17th April 1863.—Amount paid into General Treasury, as per Receipt No. 3045 of Bank of Bengal	5,000		
30th Jany. 1864.—Ditto do. No. 2-3123 do.	6,000		
7th June 1864.—Ditto do. No. 3-431 do.	4,000		
	15,000	0	0
Balance unadjusted	2,173	8	6

25. From the 1st May 1864, the practice of selling maps has been altogether discontinued at this Office, and the entire business transferred to the leading Calcutta Book-sellers, the duty of supplying officials, *bonâ fide* on the public service only, being retained, and thus the necessity of keeping cash and innumerable petty accounts with private individuals scattered all over India is avoided, a business for which this Department is not calculated. With the aid of the advice of this Office, I believe the Book-sellers may be well able to supply such maps as are called for by the public.

26. During the past year, I visited the several Revenue Survey Parties, as per margin, in their Recess Quarters, where I had an opportunity of meeting all the Subordinate Staff. I also personally conferred with the Punjab Government at Lahore and Murree, regarding the extension of the Revenue Operations Trans Indus, and the further wants for the Punjab generally. The details connected with my inspection of these Surveys will be found in the paras.* cited. Some of the

TOUR OF INSPECTION.

- 1st.—Bajawarrah Division, Oudh.
- 2nd.—Lucknow " "
- Rohilcand " "
- Punjab " "
- 3rd.—Saugor Central Provinces.

* Paras. 82 and 83, 117 to 119, 134 to 137, 189, 220 to 223.

Topographical Parties were also visited during the same tour, and these have already been reported on. In my next tour, I hope to be able to meet all those Survey Parties in the Upper Provinces not already visited.

27. In consequence of my absence from the Presidency, for several months, the charge of my OFFICER IN CHARGE OF HEAD QUARTER OFFICE. Head Quarter Offices devolved on Lieutenant Colonel Gastrell, Boundary Commissioner of Bengal, who has, for the last two years, assisted me generally in the business of my Department, which has so materially increased in every way with the expansion of the Executive. I have frequently had occasion to bring the

merits of this excellent Officer to the favorable notice of the Government, and I cannot, on the present occasion, sufficiently express the sense of the obligations I am under to him, for the zealous and effective assistance he renders me on all occasions.

TABULAR STATEMENTS.

1. Nagpoor	...	Central Provinces.
2. Jubbulpoor	...	
3. Nursingpoor	...	
4. Lullutpoor	...	N. W. Provinces.
5. Pertabgurh	...	Oudh.
6. Oonao	...	
7. Roy Bareilly	...	
8. Lucknow	...	
9. Itohree	...	Sindh.
10. Shikarpoor	...	
11. Jacobabad	...	
12. Larkhana	...	
13. Mehur	...	

28. The several Tables given in the Appendix marked A, E, and H enter into minute details, as to the cost and rates for every portion of the work, the expenditure under each class, the strength of the European and Native Establishments, as well as the final areas and cost of 13 completed Districts of the Upper Provinces, as per margin. It is usual to declare the survey of the completed Districts as approved by the Government, and this is always done in the Lower Provinces under the provisions of Act IX of 1847.

29. The Budget for 1864-65, as submitted for this branch of the Department, amounts to Rs. 9,66,173 for the several jurisdictions and Estimates as per margin. This shows an increase over the Civil Estimates for the Revenue Surveys, as given in last Report, of Rs. 1,66,719, caused by the addition of the Military Allowances of the Covenanted Officers, one new Survey Party, and other miscellaneous items, as fully explained in the Financial Department, together with the grant of Travelling or Field Allowance to the Uncovenanted Assistants, which the Government of India were good enough to concede* on my earnest recommendations.

DEPARTMENTAL BUDGET.

	Rs.	Rs.
Central Provinces ...	1,60,164	
Oudh ...	1,57,252	
N. W. Provinces ...	19,549	
Punjab ...	58,442	
Sindh ...	1,13,058	
Departmental Elephants ...	5,000	
		5,13,465
Lower Provinces ...		4,52,708
Total...		9,66,173

* Financial Resolution No. 256 G, dated the 14th January 1863.

30. Additional Sappers, or Soldiers, joined the Department from the Roorkee College in October 1863, and have been posted to parties as per margin. One of the former batch has been transferred to the Department Public Works from the 26th September 1863. One of the present season attached to the Saugor Division Survey, I much regret to report, died from the effects of jungle fever, on the 6th April 1864, after a very short service. The Sappers with the Sindh Party were received from the Corps of Bombay Engineers. With one exception, I am happy to say, the conduct of these men has been most praiseworthy, and they have given much satisfaction in the performance of their duties. I am anxious to obtain more qualified or passed men from the Roorkee College as Sub-Assistants, to fill up the vacancies now existing in the Department.

SAPPER SUB-ASSISTANTS.

- 2, Nagpoor.
- 2, Hazareebaugh.
- 1, Saugor.
- 2, Sindh.

31. Several excellent Statistical and Geographical Reports of Districts have been furnished by the Revenue Surveyors cited in the margin. The five former have been printed with maps and illustrations and published. The latter is also under publication. Reports of this nature are very useful, and on the conclusion of a survey should be rendered by all Surveyors, whose professional reputations are considerably enhanced by such publications, but owing to the very arduous and pressing nature of their duties, and the difficulty of completing one season's work before another commences, it is not every Officer who is able to fulfil these conditions.

Dera Gaze Khan, by Major Johnstone.
Sind—Saugor Doab, by Captain Anderson.
Bancoorah, } By Lieut. Colonel
Moorshebad, } Gastrell.
Hazareebaugh, by Major G. H. Thompson.
Dinapore, by Major Sherwill.

of India were good enough to concede* on my earnest recommendations.

EXECUTIVE SURVEYS.

1ST OR JUBBULPOOR DIVISION.

CENTRAL PROVINCES.

32. During the two seasons under review, the first of which has already been

DISTRICT JUBBULPOOR.

Pergunnah Koombhee.

* No. 43 A, dated 15th September 1862.

† Captain R. E. Oakes, Staff Corps, Revenue Surveyor, on Furlough S. C., 10th July 1862 to 11th March 1864.

Captain J. Sconce, R. A. Officiating Revenue Surveyor, in charge, from 24th July 1862 up to 12th November 1863.

Assistants.

Lieutenant J. W. Osborne, late 44th Native Infantry.

Mr. J. Campbell, 1st Class.

Sub-Assistants.

Mr. F. A. Grant, 1st Class.

.. P. Cowley, 3rd Class.

.. G. Rae, ditto.

.. E. Little, Junior Sub-Assistant.

.. J. Doran, Office Assistant.

30 Native Surveyors, &c.

DISTRICT NURSINGPOOR.

‡ Pergunnah Sreenuggur.

.. Nursingpoor.

.. Buchaie.

.. Gururwara.

.. Chawurpatha.

DISTRICT HOOSHUNGABAD.

Pergunnah Rajwarra.

2,576 square miles, and 1,424 villages, as the out-turn for the two seasons, or an average of 1,288 square miles and 712 villages for each, which, considering the difficult nature of the country and the intricacy of the details laid down, is a very satisfactory amount of work.

33. These two last tracts of country lie contiguous, the one to the other, to the south-west of the Jubbulpoor District, and along the great valley of the Nerbudda River, and will be eventually traversed from north-east to south-west by the "Great Indian Peninsula Railway," from Allahabad to Bombay, the line for which has been marked out and is now under construction through them. They are bounded on the north by the Districts of Bhopal, Saugor, Dumoh, and Jubbulpoor; on the east by those of Seonee and Jubbulpoor; on the south by District Chindwarra; and on the west by the unsurveyed portion of Hooshungabad.

34. The nature of the country is well described by the Officiating Revenue Surveyor, Captain Sconce, extracts of whose Annual Reports are given in the Appendix. It was much diversified, some parts being wild and hilly in the extreme, whilst others were open and well cultivated; and in such parts the want of proper area records of village plans and of the geographical information, furnished in the 1 inch = 1 mile Pergunnah Maps, had long been felt.

35. To ensure the utmost accuracy, the greater portion of the country, especially the

TRIANGULATION.

wilder portions of the Jubbulpoor District, and of that of Nursingpoor, were covered with a net work of triangles, which were again connected with the Village Survey Stations. The barren and uncultivated hilly tracts, amounting in the aggregate to 319 square miles, were treated topographically and mapped accordingly.

36. In my last Report, I mentioned that the survey of the two tracts of country, applied for under lease by the "Nerbudda Coal and Iron Company," had been completed. These tracts consist of portions of Pergunnahs Gururwara and Chawurpatha of the Nursingpoor District, and embrace an area of 356 square miles as per margin. This area is included in the gross area for the two seasons already given. The expense incurred in the execution of this special work (excepting the supervision) was provided for by a separate grant from the Department Public Works, amounting to Rs. 4,124-3-11, and drawn for in a Contingent Bill. The maps were duly rendered to the North West Government.

TRACTS.	Square miles.
Mopani, south of Nerbudda ...	82
Tendookhera, north of Nerbudda ...	274
Total ...	356

COST AND RATES.

37. The cost of the Regular Revenue Survey operations, irrespective of the above sum, was for the two years as follows: viz:—

			Rs.	As.	P.
For 1861-62 ...	{	Establishment ...	...	33,064	3 7
		Contingencies ...	...	4,517	1 3
For 1862-63 ...	{	Establishment ...	...	36,593	2 9
		Contingencies ...	...	4,507	0 10
Total ...			...	78,681	8 5

adding thereto the cost of the mining tracts brings up the grand total to Rs. 82,805-12-4, which yields the following average rates:—

For purely Revenue Survey.

	Rs.	As.	P.
Per square mile ...	34	10	0
Per village circuit ...	54	14	6

For Topographical Survey.

Per square mile ...	14	8	2
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These rates are moderate for the style of country, and approximate closely to the mean general average of all the surveys for this description of work.

38. A first rate connection was established with the Great Trigonometrical Survey operations, which in former years had crossed this District; two principal Stations of the Great Longitudinal Series having been met with, Pemchi and Lora, and included in the minor series of triangulation of the Revenue Survey, which, emanating from one of the sides of the previous year's minor series, extended across the whole country under Survey, and closed on another minor series, carried on by Lieutenant Colonel D. C. Vanrenen, Revenue Surveyor, when conducting his operations in the same District in 1856-57, thus intimately uniting the work of these two parties.

MAPS AND RECORDS FURNISHED.

Season 1861-62.

- 1 Index Map, scale 4 miles to the inch.
- 2 Main Circuit Maps, scale 1 mile to the inch.
- 2 Atlas Volumes, containing 29 sheets of Congregated Village Plans.

- 1 Volume of Statistical Returns.
- 2 Volumes of Main Circuit Traverses.
- 2 Volumes of Village Traverses.
- 1 Volume of Triangulation.

Season 1862-63.

- 1 Index Map.
- 4 Main Circuit Maps despatched, but not yet received.
- 2 Atlas Volumes, 96 sheets.
- 1 Volume of Statistical Returns.
- 2 Volumes of Main Circuit Traverses.
- 2 Volumes of Village Traverses.

39. A list of all maps and other records furnished to this Office is given in the margin. The style and general finish of the maps are excellent, and evince the great care bestowed in mapping all topographical details, whether of the hills, or of the plains. They are alike creditable to the able superintendence of the Revenue Surveyor, and to the activity and carefulness of his subordinates, European and Native, both in Field and in Office.

40. The demarcations in this Division are reported to have been perfect and to have left nothing to be desired; all documents necessary to enable the professional operations to advance unimpeded having been furnished to the Revenue Surveyor by the Settlement Officer, prior to the Establishment moving into the Field.

DEMARICATIONS.

41. The demarcation maps, furnished to guide the village boundary delineation, are also stated to have been carefully prepared. The few discrepancies that were apparent, on comparison of these maps with those of the Professional Survey, were at once checked and rectified by re-survey. Both Civil and Professional Establishments worked well together, and the best results followed from the unanimity displayed.

DEMARICATION MAPS.

42. During the present season, this Party will be employed in prosecuting the survey of the Hooshungabad District, immediately to the west of the operations of season 1862-63, south of the River Nerbudda, skirting the Sathpoora range of hills and along the Great Trunk line of Rail from Allahabad to Bombay, where the demarcations have been already completed in advance. This District, estimated at 3,325 square miles, will not be completed during the current season of 1863-64. Baitool, lying immediately to the south of Hooshungabad, will be next taken up by this Party, the general operations of which will henceforth be confined to the Districts south of the Nerbudda, of which many yet remain to be taken up, and may probably follow in the order noted in the margin.

EMPLOYMENT FOR CURRENT SEASON.

- Hooshungabad.
- Baitool
- Chindwarra.
- Seonce.
- Mandlah.

43. During the period under review, the several Assistants named in the margin have been promoted to the salaries specified, on the favorable recommendations made in their favor. The Establishment is a very good and efficient one, and the whole of the work is turned out in a most satisfactory manner. Mr. P. Cowley, Sub-Assistant, Second Class, has been transferred to the Darjeeling Waste Land Party, to meet an urgent want there.

SUBORDINATES.

	To
Mr. J. Campbell	400
" F. Grant	250
" P. Cowley	150
" G. Rae	150

44. During the period Captain Sconce has officiated in charge, from the 24th of July 1862 to the 12th of November 1863, the duties have been performed in a masterly manner, meeting my entire approval. Captain Sconce, who is an excellent Officer and thoroughly up to his work, has been appointed, by the orders cited marginally, as a full Revenue Surveyor, and posted to the 3rd or Saugor Division, in the room of Captain A. D. Vanrenen, proceeded to Europe. Captain Oakes, the permanent Executive Officer of this Division, returned to India from Furlough on the 9th January 1864, and rejoined his appointment on the 11th March last.

CHANGE OF SUPERINTENDENCE.

G. O. G. No. 1812, dated the 31st December 1863.

Captain Oakes returned from Furlough.

45. It was important for Captain Sconce to proceed and take charge of the Saugor Party, as early as possible, after completing the past season's Field operations, which have been necessarily carried out by the Assistant Surveyor, Lieutenant Osborne, who has been in temporary charge, from the 13th November 1863 to the 10th March 1864, pending the return of Captain Oakes, who had been delayed longer than was expected.

LT. OSBORNE IN TEMPORARY CHARGE.

2ND OR NAGPOOR DIVISION.

CENTRAL PROVINCES.

46. At the close of season 1860-61, about 4,000 square miles of the Bhundara

DISTRICT BHUNDARA.

Captain J. H. Grant, Staff Corps, Officiating Revenue Surveyor, in charge up to 19th May 1863.
Lieutenant J. W. Taylor, R. A., Assistant Revenue Surveyor, in charge from the same date.

Assistant.

Mr. W. Ellison, 2nd Class.

Sub-Assistants.

Mr. J. J. Burrows, Senior Sub-Assistant, transferred to 1st Tipperah Division, L. P., from 1st January 1863.

Mr. W. R. Vyall, 2nd Class.

„ A. F. Bonny, „ „
„ G. Bonny, 3rd „
„ J. Crerar, Office Assistant.
31 Native Surveyors, &c.

District still remained to be surveyed, the greater portion of which was supposed to be so jungly, hilly, and thinly populated, as not to require a definite Village Survey on a large scale. The researches and proceedings of the Civil demarcation or Settlement Establishment have, however, since shown that, with the exception, perhaps, of the hills and forests to the north-east of Pergunnahs Huttah and Lanjee, the remainder of the District, though wild in parts, has so much cultivation, in proportion to and interspersed with the jungles, as to render it expedient to carry on generally the regular professional operations, on the

large scale of 4 inches=1 mile, throughout the greater part of the above.

47. During the two past seasons, therefore, this Party was employed first (in 1861-62)

AREA.

in completing the Pergunnah of Salungurra, which had been commenced on, the previous year, and in the adjoining large Pergunnahs of Kompta and Huttah, lying to the east of the work of 1860-61, in which an area of 1,030 square miles was accomplished, and again, in 1862-63, further to the north-west in the Pergunnahs of Rampalee and Chandpoor, aggregating 696 square miles, which completed the survey of the District to the north-west, and where it abuts on the District of Seonee. Some detached villages in the Raepoor District, along the main road from Nagpoor to Raepoor, were also taken up for survey, on the special requisition of the Chief Commissioner, but, owing to the absence of all supervision on the part of the Officiating Revenue Surveyor, and his failure to take the Field with his European Assistants, in the usual way, the survey had to be rejected, and left for adjustment during the current season.

48. The reduced area thus performed, during the past season, only 696 square miles, is

No. 26, dated the 9th March 1863.

No. 77 M, dated 17th October 1863.

accounted for in a similar manner, the particulars concerning which have formed the subject of a special report on this survey, as cited in the margin, and on which the orders of Government have been issued.

* Pergunnahs Sahangurhee, Kompta, Huttah, Rampalee, and Chandpoor.

49. The area thus accomplished amounted to 1,726 square miles, contained in 738 villages of the five Pergunnahs* named.

COST AND RATES.

50. The cost of the two seasons' Survey Proceedings aggregated, including all contingent expenses, as follows:—

				Rs.	A.	P.
In 1861-62	...	...	...	43,037	2	7
In 1862-63	...	...	...	40,705	7	3
Total	...	...	...	83,742	9	10

yielding an average of Rs. 48.8-2 per square mile, and of Rs. 113-7-6 per village circuit. This is considerably above the mean average rate for the three previous seasons (Rs. 34-5), as shown in last Report, which is accounted for by the various difficulties and absence of proper management connected with this Division, already brought to notice.

51. As in former seasons, the aspect of the country was very diversified, the low lands being generally clear and well cultivated, and the up lands rugged and covered with shrub and forest. In the latter the

labor of cutting lines, for the survey of village boundaries, is said to have been great, and, owing to the difficulty of procuring help from the Zemindars and country people generally, in the less inhabited parts, exceedingly difficult to accomplish. Water and provisions were also procured in such parts with difficulty.

52. The minor triangulation, which it had been found necessary to throw over the country, in former seasons, to restrain and keep the otherwise tendency to errors in chain measurements, over rough and broken ground, within due limits, was also extended in 1861-62 over the Pergunnahs of Sahangurhee, Kompta, and Huttah, and connection was again effected with the triangulation carried on by Lieutenant Stewart for the Topographical Survey of Nagpoor in 1831, six of whose Stations as per margin were identified and included in the Revenue Survey operations.

TRIANGULATION AND CONNECTION WITH OTHER SURVEYS.

Jamree.
Cheecharband.
Neesunec.
Pertabgurh.
Leela.
Mungajhurree.

53. In 1862-63, a further connection was made between this survey and that of the Nagpoor District, performed under the superintendence of Lieutenant Colonel (then Captain) D. C. Vanrenen, in 1858-59.

54. Extracts from the Reports of the Officers in charge of the Bhundara District Survey, illustrative of the nature of the country, its chief productions, and other interesting statistical information, will be found in the Appendix.

55. The demarcation papers and maps of this District appear to have been again, these seasons, in a backward state, causing great delay and hindrance to the progress of the professional operations; this has been pointed out to the Officiating Commissioner, who has issued stringent orders in view to preventing a recurrence of the evil complained of.

56. The general assimilation of the details of the Khureh Survey, under the superintendence of the Settlement Officers, with those furnished from the professional records, is stated to have been good. The chief discrepancies arose in defining the nature of the different soils, and whether they were culturable or barren waste. These chiefly occurred in the jungly tracts, where the thickness of the underwood rendered it often a task of difficulty to determine the point correctly, or in the peculiar khurdee soil, which, owing to its arid stony appearance, was sometimes marked as barren waste by mistake. In such cases, fresh enquiry was made and the records corrected accordingly.

57. In para. 116 of my last Report to Government, I was constrained to remark on and bring to notice the management exercised by the Officiating Revenue Surveyor, Captain Grant, and the state of the arrears of mapping and computations of former seasons existing in this Division. These have since been cleared off and lodged in the Head Quarter Office by Lieutenant Taylor, now in charge, leaving only those of the past season, together with the Statistical Registers of the previous seasons, to be sent in. These, it is hoped, will be shortly rendered.

ARREARS.

58. The circumstances under which the name of the Officiating Revenue Surveyor, Captain Grant, has been removed* from the Department are already before the Government, and need no further comment.

* G. O. G. No. 1681, dated the 5th December 1863. Captain Grant was relieved of the charge of the Party on the 19th of May last, but he continued as an Assistant on the Establishment until the 23th of December last. Owing to the impossibility of finding an older executive to succeed Captain Grant, the charge of the Party has devolved on his Assistant Lieutenant Taylor, Royal Artillery, who had been attached to this Division and served in it during the two previous seasons.

LIEUT. TAYLOR IN CHARGE.

He will have an arduous task to perform, in recovering the tone of this Party, and in reducing the Office to proper order. Every allowance will have to be made for this young Officer, in succeeding to a charge after so

much mismanagement, but I trust, with proper care and energy, he may soon be able to effect the required reform.

MAPS AND RECORDS.

- Arrears of 1858-59 lodged.*
- 3 Volumes of Village Traverses Main Circuits, Nos. 2, 4, and 6.
- Arrears of 1859-60 lodged.*
- 1 Volume of Congregated Village Plans in 28 sheets, Main Circuit, No. 9.
- 3 Volumes Village Traverses of Main Circuits, Nos. 7, 9, and 10.
- Arrears of 1860-61 lodged.*
- 2 Volumes of Congregated Village Plans in 27 sheets, Main Circuits, Nos. 14 and 15.
- 1 Volume of Main Circuit Traverses, Nos. 12 to 16.
- 3 Volumes of Village Traverses Main Circuits, Nos. 14, 15, and 16.
- Season 1861-62.*
- 1 Index Map of season's operations—scale 4 miles to the inch.
- 4 Main Circuit or Pergunnah Maps, Nos. 17 to 20, scale 1 mile to the inch.
- 3 Volumes of Congregated Village Plans in 77 sheets of Main Circuits, Nos. 17, 18, 19, & 20.
- 1 Volume of Main Circuit Traverses, Nos. 17 to 20.
- 2 Volumes Village Traverses Main Circuits, Nos. 17, 18, and 19
- Season 1862-63.*
- 1 Index Map.
- 1 Main Circuit or Pergunnah Map, No. 21.
- 1 Volume Main Circuit Traverse, No. 21.

59. In the margin are noted all the maps and records received from this Division, since the date of last Report. The maps have been more carefully prepared than the last, and are, on the whole, an improvement on those previously sent in.

60. During the present Field season, the labors of this Establishment have been directed to prosecute the remaining open portions of Pergunnahs Kompta and Huttah; and such parts of Pergunnahs Lanjee and Dhunsooh to the north-east of the District as are sufficiently well cleared and cultivated. The extreme north-eastern part of high plateau of Lanjee Pergunnah appears, so far as it is at present known, to be more than ordinarily rough and hilly, and covered with dense forest, with few or no clearings, demanding, if so, a mere topographical delineation. It is very doubtful, whether this plateau can be completed during the current season.

61. The large Pergunnah of Pertabgurh, to the south of the District, still remains for survey. It is now under demarcation, but the Surveyor is unable to take it up this season, in consequence of the area in hand as above noted, and the urgent demand for the survey of the villages along the Raepoor Road, in the latter District, which have been taken up for disposal. The District of Bhundara is estimated at 5,180 square miles; of this 2,925 have been accomplished; it cannot therefore be completed, under another full season; much that was considered only to require a topographical delineation, now proves, on more minute revenue investigation, to demand the usual village definition survey.

62. On the completion of the Bhundara District, the Establishment will move eastward, into the District of Raepoor, of the Chutteesghur Division, along the great valley of the Sew and Mahanuddy Rivers, which tracts of country, as mentioned in my last Report, the Chief Commissioner was particularly desirous to bring under Revenue Survey. At present, little is known of these parts; the only maps being such as partial and scanty route surveys have afforded.

63. The two Districts of Raepoor and Belaspoor, of the Chutteesghur Division, aggregate nearly 20,000 square miles of varied description of area. How much of this may require revenue and topographical delineation respectively, it is impossible to say at present. All the southern and northern portions of the Division are described by the Chief Commissioner as unproductive and of little value, whilst some of the extreme eastern portion has already fallen under Major Saxton's Topographical Survey operations. It is stated to be probable, that from 60 to 70 per cent. of the whole area may eventually come under the topographical operations.

64. Under the instructions of Government, Mr. Vvall, Sub-Assistant, 2nd Class, has been transferred from the Central Provinces to a survey in Bengal.

3RD OR SAUGOR DIVISION.

CENTRAL PROVINCES.

DISTRICT LULLUTPOOR, JHANSIE DIVISION, N. W. PROVINCES.

Captain A. D. Vanrenen, Staff Corps, Revenue Surveyor, in charge.

Assistants.

Captain J. Sconce, transferred to 1st Division, Central Provinces, 24th July 1862.

Lieutenant D. C. Andrew, General List, Infantry, joined 19th January 1863.

Mr. H. B. Talbot, on deputation, Rohilcund Survey, from 1st October 1862.

Sub-Assistants.

Mr. H. L. Pemberton, 1st Class.

„ M. P. Brennan, 3rd Class.

„ J. S. Pemberton, ditto.

„ J. H. Bartar, Junior Sub-Assistant.

Serjeant A. Lawson, ditto.

1st Corporal J. Bartram, Junior ditto, transferred to Department Public Works from 26th September 1863.

23 Native Surveyors, &c.

- * Pergunnah Lullutpoor.
- „ Banpoor.
- „ Mehrownnee.
- „ Muroora Nurhut.

65. During the prior season of 1861-62, this Establishment, under the superintendence of Captain A. D. Vanrenen, Revenue Surveyor, was occupied in completing the survey of the British Districts, on the western side of Bundelcund, within the Commissionership of Jhansie, and also the portions of the native state of Tehree or Oorcha. The survey of the former included the whole, or parts, of the 4 Pergunnahs, marginally* noted, of the Lullutpoor District, comprising 412 villages and an area of 1,028 square miles, all conducted according to the Revenue Survey system, and mapped on a scale of 4 inches=1 mile.

66. The adjoining Tehree State, which had been commenced topographically, prior to the mutiny, and geographically situated in close contact with the Jhansie District, was continued in the same manner, and the portion remaining, 457 square miles, was also accomplished, giving a total out-turn for the year, of square miles 1,485.

BUNDELA STATE.

67. The above tracts of country are bounded on the north by the formerly surveyed portions of the Lullutpoor and Banpoor Pergunnahs; on the south by the District of Saugor; on the east by the Dupau River, dividing it from the Shahghur Pergunnah, now attached to the District of Saugor, and the Bundela States of Punnah and Bijawur; and on the west by the Betwa River, which separates it from the Gwalior State. The survey of this area brought to a conclusion all that remained to be done connected with the jurisdiction of the North-West Government in the Jhansie Division.

68. In 1862-63 the Supreme Government having concurred in my recommendation to transfer this efficient Establishment, from the duty of prosecuting the geographical survey of the Bundelcund States, as had been previously determined on, to the more important object of assisting in the Revenue Survey operations, so urgently demanded prior to the re-settlement of the several Districts of the Central Provinces, the Establishment was transferred from the North-West Government Budget to that of the Central Provinces, and the whole of the unsurveyed Districts north of the Nerbudda River assigned to it, as described in my last General Report, paras. 153 to 156. On completion, therefore, of the mapping and records of 1861-62, the party marched into the District of Saugor, immediately adjoining Lullutpoor, and recommenced the survey, which had been discontinued since the year 1857.

PART OF SAUGOR SURVEYED PRIOR TO MUTINY.

Pergunnah Kunjiah.
 „ Shahghur.
 „ Nahrown.
 „ Gourjhamur.
 „ Rehlee.
 „ Gurhakotah.
 „ Deoree.

69. During the operations of the party previously employed there from 1855-56 to 1856-57 eleven (11) out of the eighteen 18 Pergunnahs which compose the District had been surveyed, leaving the seven, marginally noted, to the south and east of the District, to be now dealt with.

70. The Pergunnah of Kunjiah, in the extreme north of the District, though intrinsically of less consequence, in a revenue point of view, than those of the other Pergunnahs to the south, whose term of last settlement had nearly run out, was, however, the only portion of the District, in that direction, left unsurveyed, and it formed an unsightly gap in the otherwise continuous map of the Lullutpoor and Saugor Districts. The Revenue Surveyor,

accordingly, judiciously determined to finish it in continuous succession with his former work, and then take up the remaining Pergunnahs of the District situated some eighty miles to the south. Two small portions of the native state of Koorwace, lying in the fork of the Beena and Betwa Rivers, and adjoining Pergunnah Kunjiah to the south-west, were also completed.

71. These tracts yielded an area of square miles 217 and 104 villages. A further area was accomplished in the south-east of the Saugor District of square miles 607, contained in portions of four Pergunnahs* and 343 villages, giving a total of 824 square miles and 447 villages for the season.

* Gourjhamur.
Rehlee.
Garhakotah.
Nahurmow. } Parts of

72. Thus, the out-turn, for the two seasons under review, amounted to square miles 2,308, and the number of villages to 859. Of this square miles 1,828 and 859 villages were pure Revenue, or Village by Village Survey, and the remainder square miles 480 Topographical. The average area performed for the two seasons is 1,154 square miles.

73. The whole was accomplished at a total cost of Rs. 67,238-15-10, including all contingent charges, or at average rate for Village Survey of Rs. 31-11-7 per square mile, and Rs. 67-7-11 per village circuit; and for the Topographical work of Rs. 19-4-3 per square mile, or a mean rate on the whole work of Rs. 29-2-2, which is very moderate.

74. Good connection was formed in Bundelcund with two principal Stations, Patna and Dargawa, and four secondary Stations, Ero, Bara Dongra, Sarkaora, and Lakhanjir of the Great Trigonometrical Survey, and through them, with the former Revenue Survey operations in the District of Saugor to the south, the whole of the old Stations of which, along the line of boundary, had been either obliterated or could not be identified, from the marks of precisely a similar kind used by the Settlement Officers, in demarcating the country.

75. Throughout this part of the country, also, the triple junction points of villages being marked by a square masonry platform, and generally all bends of boundary, by a long solid sandstone slab let into the ground, the permanence and value of the measurements, and facility of adjudicating any disputes that may arise in future with regard to boundaries, are alike secured. Where such arrangements for the perpetuity of the survey exist, the expense of conducting any further more detailed operations, should they ever be needed, such as a field by field survey, is reduced to a minimum.

76. In the Saugor District also, stone being plentiful, the same wise precautions, as have been already mentioned as existing in the Lullutpoor District, had been adopted for marking the triple junctions and boundaries of villages. The District boundary is also carefully marked in the same manner. It is impossible to speak too highly in favor of this mode of marking triple junctions permanently, by either masonry platforms or stone pillars, and I would strongly urge on the Supreme Government the expediency of directing its adoption for all future surveys throughout India. In the end, it cannot fail to be of the greatest use to the Government and to the public generally, in a financial point of view, as immensely decreasing the outlay in all future investigations, whether Judicial, Geographical, or Geological.

77. The excellent character of the demarcations in the Lullutpoor District, and the cordial co-operation afforded by the Settlement Officers, are both warmly testified to by the Revenue Surveyor, as will be seen from extracts* given in the Appendix, from his Report.

DEMARCATIIONS.
* Paras. 28 and 29.

78. In the Saugor District also the demarcations were well in advance of the survey, and, in consequence, the professional operations proceeded smoothly and uninterruptedly, forming a strong contrast with those in the Bhundara District already adverted to.

79. An excellent junction was again formed with the Survey Stations in the Lullutpoor District, in the Pergunnah of Kunjah, in the north of the Saugor District, and in the Pergunnahs to the south, with the old Survey Stations of the year 1855-56, and also with the Great Trigonometrical Stations.

80. The following Statement exhibits the results of comparison of the Great Trigonometrical with the Revenue Survey direct distances. Those for 1861-62 are fair, for the rugged nature of the ground over which the chain measurements had to be carried, whilst those for 1862-63 are very favorable.

Names of G. T. Stations.		Distances from Revenue Survey.	Distances from G. T. Survey.	Total error of Revenue Survey.	Error per mile	
SEASON 1861-62.	Andhiari to Patna	181,597.3	181,572.7	+ 24.6	0.71	Bullion Meridional Series.
	Ditto to Ero	59,789.6	59,668.0	+121.6	10.74	
	Ero to Dhandkua	152,277.0	152,081.0	+196.0	6.80	
	Bara Dongra to Dhandkua	147,432.7	147,207.0	+225.7	8.08	
	Patna to Dhandkua	170,292.4	170,133.6	+158.8	4.92	
	Ditto to Dargawa	170,006.9	169,936.2	+ 70.7	2.20	
	Ditto to Lakhanjir	85,781.3	85,778.0	+ 3.3	0.20	
	Lakhanjir to Dargawa	148,063.3	147,863.0	+200.3	7.14	
	Sarkaora to Ditto	43,582.4	43,521.0	+ 61.4	7.44	
	Dhandkua to Sarkaora	101,420.6	101,237.0	+183.6	9.56	
Ditto to Dargawa	118,512.8	118,335.0	+177.8	7.92		
SEASON 1862-63.	Narmao to Sajpur	69,345.2	69,324.0	+ 21.2	1.61	Calcutta Longitudinal Series.
	Ditto to Tikhi	93,494.7	93,546.5	- 51.8	2.93	
	Ditto to Mandra	105,694.6	105,751.1	- 56.5	2.82	
	Garakota Ramna Spire to Mandra	64,375.7	64,265.8	+109.9	9.01	
	Ditto to Sajpur	107,583.3	107,494.7	+ 90.6	4.4	
	Ditto to Narmao	154,452.5	154,434.7	+ 17.8	0.61	
	Mandra to Sajpur	45,278.9	45,316.5	- 37.6	4.39	
Tikhi to Mandra	14,957.5	14,961.9	- 4.4	1.55		
Average on the whole where the error is +					4.95	
Ditto ditto ditto ditto -					3.06	

81. In the Appendix will be found full and copious notes by the Revenue Surveyor, descriptive of the nature of the tracts of country surveyed during the seasons under review, of their internal communications, resources, &c., &c., which will be found of interest.

82. During my late tour of inspection in the Upper Provinces, in the past year, undertaken under orders of the Government of India in the Military Department, cited in the margin, I frequently visited Captain Vanrenen's Office at Landour, and minutely inspected the whole of the work of the past season, both the Field Sections and fair maps and plans, together with the computations and all Office details. The operations, past and future, were also fully discussed, and the labors and relative merits of the several subordinates came under close observation.

83. The favorable opinion I gave of the management of Captain A. D. Vanrenen in my last Report, has been amply verified by what I have personally seen. It is impossible to witness the zeal and energy, as well as the method, with which this excellent Executive Officer carries out everything entrusted to him, without being impressed with the high value of his services. It is a source of great satisfaction to me, to be able to express my full approval of the manner in which all the duties, both Field and Office, have been conducted in this important Division.

84. The number and description of maps and records that have been prepared and

MAPS AND RECORDS FURNISHED.

Season 1861-62.

- 1 Index Map of season's operations, scale 4 miles to the inch.
- 3 Maps of Main Circuits, Nos. 17 to 23, scale 1 mile to the inch.
- 1 Atlas Volume of Congregated Village Plans in 67 sheets, scale 4 inches to the mile, of Main Circuits, Nos. 17 to 21.
- 1 Volume of Main Circuit Traverses, Nos. 17 to 23.
- 1 Volume of Village Traverses and Register headings, Main Circuits, Nos. 17 to 21.

Season 1862-63.

- 1 Index Map of season's operations.
- 3 Maps of Main Circuits, Nos. 1, 2, 3, & 4.
- 1 Atlas Volume of Congregated Village Plans in 53 sheets of Main Circuits, Nos. 1 to 4.
- 1 Volume of Main Circuit Traverses, Nos. 1 to 4.

furnished by this Party, for the past two years, are enumerated in the margin. They are all that could be desired, carefully got up, complete and full in all details, which depict faithfully the nature of the country surveyed, and which is of a difficult character, and reflect great credit on all concerned. The one-inch maps, especially those of the last season, have been very well drawn, those executed by Lieutenant Andrew, Assistant Surveyor, and Mr. H. Pemberton, Senior Sub-Assistant, being much admired for the manner in which the broken and hilly ground and other features have been handled.

85. The village plans, in the like manner, are very full of details, and the coloring and printing very neatly executed. The preparation of the mapping of the season has been made, with special reference to the requirements of Photography. I was careful to see this carried out to the fullest extent practicable, although it entailed more work on the Executive Office. This subject materially affects the future working of this Department, and is therefore of great importance, especially when the progress of the Executive Surveys and the great and increasing demand for the published results is considered.

86. The very great amount of mapping, which every Executive Surveyor has to produce annually, in the shape of duplicates of both the four-inch plans and the one-inch maps, renders it most desirable to relieve them of some portion of it, and to this end the Photographic process may perhaps best meet the object. During my tours of inspection, I have had ample opportunities of witnessing the laborious efforts of a whole Establishment to get through the work during the Recess months. It requires very great exertions, and the closest application of all hands, to clear off everything prior to taking the Field for a fresh season's work, and I can testify to the praiseworthy manner in which Surveyors and their subordinates do strive to prevent arrears from accumulating. The arduous labors of the Field are succeeded by ones equally severe in the Recess, and the life of the Surveyor is a perpetual struggle against time.

87. The multiplication of the maps of the survey, as executed in the present day by Lithography, is so tedious, and in such heavy arrears, owing to the very small Printing Establishment allowed this Office, that it is quite hopeless to expect to be able to furnish local Authorities with lithographed copies, within a reasonable period, and consequently the Surveyors must of necessity render their work in duplicate, until such time as the reproduction of the same in this Office can be attained with sufficient promptness, and which can alone be effected by suitable and adequate means being granted for the purpose.

88. During the present season, it is anticipated that the remainder of the Saugor District will be surveyed and completed, and a junction be effected with the survey operations of the 1st Division, in the Nursingpooor District, on the Nerbudda River, filling up the gap in the maps that at present exists in that direction. The Shahghur Pergunnah to the north of the Saugor District, which was confiscated from the native state of that name, after the rebellion, and incorporated with the Saugor District, will also be included in the same operations. The adjoining District of Dumoh has also been commenced on. The probable area of all will be about 1,000 square miles.

89. The District of Dumoh to the east of Saugor is estimated to contain an area of about 3,000 square miles, and in which the demarcations are reported to be well advanced. This District will supply work

DISTRICT NEXT FOR SURVEY.

for the next three seasons, after the current one. The operations will progress regularly from west to east.

90. Owing to severe illness, after his return from the last season's Field Work, Captain Vanrenen has been compelled to follow the advice of his medical attendant, and proceed to Europe, under medical certificate, for 15 months, as per orders cited in the margin. The usual preparatory leave having been granted, the Revenue Surveyor, on the completion of the Recess Work at Landour, made over charge of his Party to Captain Sconce, then officiating in charge of the 1st Division at Jubbulpore, and who met the Party at Saugor, and joined on the 13th of November last. Captain Vanrenen embarked for England on the 30th December last, and it is impossible to lose the valuable services of this Officer, even for a time, without the greatest regret. I express the hope that he may return with renewed health and vigor, to give the Department the benefit of his experience and excellent management.

91. The services of Captain Sconce were rendered available by the return of Captain Oakes, to resume his old place in the 1st Division, and in order to give the former Officer his standing as a permanent full Surveyor, to which he succeeded departmentally, by other vacancies occurring; the name of Captain Vanrenen has been transferred as a non-effective for the time being, to the 3rd Division in Oudh. These arrangements were duly sanctioned by the orders cited in the margin.

92. Under so able and energetic a Superintending Officer, it is to be expected that the subordinate staff will be found efficient. From the frequent inspections I made of the Office, I can testify to the zeal and intelligence displayed by the several Assistants and Sub-Assistants, who have all worked well, and those noted in the margin have been promoted to the extent specified.

SUBORDINATE STAFF.		To Rs.
Mr. H. L. Pemberton, Assistant Revenue Surveyor	...	250
Mr. M. Brennan, Sub-Assistant Revenue Surveyor, 2nd Class	...	150
Mr. J. S. Pemberton, Sub-Assistant Revenue Surveyor, 2nd Class	.. ..	150

Mr. Henry Pemberton is especially brought to notice as a most deserving Assistant, which I fully endorse.

93. In the place of Captain Sconce promoted, Lieutenant D. C. Andrew, General List, Infantry, was appointed a Probationary Assistant Surveyor, and joined the Establishment on the 18th of January 1863, and, on the strong recommendation of the Revenue Surveyor, was brought permanently on the strength of the Department, after serving 12 months, with full salary of an Assistant Surveyor. Lieutenant Andrew is a very promising Assistant, and has given much satisfaction; he is a superior draftsman, and is reported to be hard-working and possessing a great interest in the profession.

94. Mr. H. B. Talbot, the Senior Assistant on this Survey, was withdrawn, on 1st October 1862, for detached employment in Rohilcund. The Military element introduced into this Survey in November 1862 has answered so far well. Both the passed Sappers from the Roorkee College, posted to the Party, have conducted themselves as well as could have been desired. Corporal Lawson has answered the expectations formed of him, from the high character he received at the Roorkee College; he promises to become an excellent draftsman, and is declared to be painstaking, and likely to turn out a valuable Assistant. This Non-Commissioned Officer, has been recommended for promotion to the rank of Serjeant, through the proper channel. Corporal Bartram's qualifications, at the end of his probationary year in the Department, were not found up to the required mark, and he therefore had the option given him, when

he passed through the College, of being transferred to the Public Works Department, which was done accordingly, by General Orders as per margin, and he quitted this Department on the 26th September 1863. Private J. McKewon, Passed Student from the Roorkee College, was posted to this Party, to fill the vacancy, by the orders quoted in the margin.

95. The good services of Radhanath Chuckerbutty, Computer and Office Assistant, are very strongly dwelt on, and he is reported as having again done excellent work both in the Field and in Recess, and of which I had personal proof; he has therefore been promoted to a salary of Rupees 75, as a Sub-Assistant Surveyor.

1ST OR BAIWARRAH DIVISION
OF OUDH.

96. The regular professional Revenue operations of this Establishment, which, under the

DISTRICT ROY BAREILLY.

Captain F. C. Anderson, Revenue Surveyor, in charge.

Assistants.

Lieutenant A. D. Butter, 107th Foot, joined 17th July 1862.

Mr. W. H. Patterson, 3rd Class, transferred to Head Quarter Office from 1st September 1862.

Mr. C. W. Campbell, 3rd Class.

Sub-Assistants.

Mr. G. R. Buttress, 2nd Class.

" W. J. Buttress, Junior Sub-Assistant.

" J. A. Swyny, ditto ditto, joined 13th February 1862.

" H. T. Hanby, ditto ditto, ditto 13th November 1862.

37 Native Surveyors, &c.

* Pergunnah Moostafabad.

" " Selon.

† Tehseel Inhonah.

" " Mohungunj.

‡ Tehseel Roy Bareilly.

" " Hydergurb.

" " Dulinow.

" " Behar.

superintendence of Captain F. C. Anderson, Revenue Surveyor, was again employed in the south-eastern Districts of the Province of Oudh, resulted in the completion of the two unfinished Pergunnahs,* or Tehseels, of District Pertabgurb, and of about one half of the adjoining District of Sooltanpoor,† both of which Districts now appertain to the Fyzabad Division of Oudh; and also of the whole of the District of Roy Bareilly of the Lucknow Division, comprising the Tehseels ‡marginally noted.

RE-DISTRIBUTION OF DIVISIONS
IN OUDH.

Lucknow Division.

Lucknow.

Oonao.

Durriabad.

Roy Bareilly.

Fyzabad Division.

Fyzabad.

Gonda.

Sooltanpoor.

Pertabgurb.

Khyrabad Division.

Sectapoor.

Hurdui.

Mahomdee.

Baraitch.

97. At the time of making my last Annual Report to the Supreme Government, the abovenamed Districts were included in the Baiswarrah Division, or Commissionership, which has been since abolished, and its Districts included in the adjoining Divisions of Lucknow and Fyzabad. By the territorial re-distribution of the Province of Oudh, made under the sanction of Government, the present arrangement of Divisions and Districts is as per margin. By this re-distribution, there exist in Oudh at present only three Divisions, or Commissionerships, of four Districts each, instead of four Divisions of three Districts each as formerly. It is earnestly to be hoped that this arrangement will prove final.

98. The River Ganges, by which the Districts of Pertabgurb and Roy Bareilly are sub-

RE-SURVEY OF VILLAGES ON
OPPOSITE BANK OF GANGES
RIVER.

tended to the south-west, was carefully surveyed with all its sand banks, islands, and both banks with conterminous villages, for the purpose of making the junction of the Oudh Survey as complete as possible, with that of the old North-West Provinces Survey of the Districts of Allahabad, Futtehpoor, and Cawnpoor, which did not embrace the river at all, and of which all the old Survey Stations had long since been obliterated; all the villages along the right bank of the river were carefully remeasured and mapped in detail, thus affording excellent information, as to the changes made on the Doab or North-West Province juris-

diction side of the river, and rendering the maps of the present Survey useful for all investigations connected with proprietary rights on either bank.

99. The area thus accomplished amounts to square miles 2,709, distributed over the two seasons as follows, viz :—

Seasons.	Districts.	Villages.	Square Miles.	Total Square Miles.
1861-62	Pertabgurh	365	327	1,274
	Roy Bareilly	941	790	
	Ganges River and Villages of N. W. P. ...	72	157	
1862-63	Roy Bareilly	537	565	1,435
	Sooltanpoor	802	870	
	Total	2,717	.....	2,709

100. In addition to the above work, the Surveyor was called upon by the Government, North-West Provinces, to detach a small Party to re-survey, during the latter season of 1862-63, the River Sarda, and the extension of the boundary line between the Rohilcund and Nepalese territories, in continuation of the Oudh Frontier Survey, which, in 1859-60, he had, in conjunction with the Boundary Commission specially deputed for the purpose, carried out between Oudh and Nepal.

101. The re-survey of the River Sarda was performed by Captain Anderson himself, aided by two Native Assistants, whereby 135 square miles were added to the Return of the season, making up the grand total to square miles 2,844, or a mean average annual area of 1,422 square miles, an excellent out-turn most creditable to all concerned in its accomplishment.

102. The extension and laying down of the line of boundary, although very troublesome, was not complete. The changes that had taken place, in the course of the Sarda River, since the boundary pillars were laid down by Mr. Buller, the Collector of Shahjehanpoor in 1833, the absence of those pillars in most parts, and the difficulty of obtaining reliable evidence, added to the claims of the Nepalese, made it impossible for the Revenue Surveyor to identify with any degree of certainty which of the banks of the many old beds of the Sarda River had originally been selected as the true line of boundary, and the map was consequently incomplete, as to the exact definition in one or two places.

103. The Revenue Surveyor's proceedings in the execution of this important duty, are clearly and concisely given in his Annual Report of operations for 1862-63, paragraphs 11 to 16 inclusive, to this Office, copy of which is appended.

104. A Report of the state of the boundary pillars was duly made to the North-West Provinces Government, by the Surveyor, with a proposition for their re-erection, by careful re-survey, on the plan of those previously erected on the Oudh Frontier, viz., good substantial masonry pillars, surrounded by a ditch 3 feet deep by 3 feet wide, and dug at not less than 3½ feet distant from the plinth of the pillar, to protect it from cattle. At the request of His Honor the Lieutenant Governor, who at once accepted the tender of assistance made by the

Revenue Surveyor, I therefore placed the services of Captain Anderson, temporarily, at the disposal of the Government of the North-West Provinces, for the purpose of re-erecting the boundary pillars, as reported in my letter* to the Foreign Department. Mr. W. G. Probyn, the present Collector of Shahjehanpore, and the Surveyor being nominated as Boundary Commissioners by the Government of the North-West Provinces, have accordingly proceeded, during the current season, to lay down permanent artificial land marks, northwards from the Oudh Frontier to Burumdeo in Kumaon, dividing Rohilcund from Nepal. Every assistance in the way of maps, together with the data of the various G. T. points along the line, have been duly furnished to the Boundary Commissioners from this Office, and it is hoped that a complete and satisfactory survey will be now effected.

105. The above described operations involved a total outlay of Rs. 80,651-5-1, distributed over the two years as follows:—

			Rs.	A.	P.
1861-62	...	{ Establishment ...	...	36,932	0 8
		{ Contingencies ...	...	3,298	12 10
1862-63	..	{ Establishment ...	...	37,273	13 11
		{ Contingencies ...	..	3,146	9 8
				<hr/>	
		Total	..	80,651	5 1

showing the work to have been completed at an average of Rs. 28-5-9 per square mile, and of Rs. 29-10-11 per village circuit.

106. In my last Report, I remarked on the high rates prevailing in the Pertabgurh work; I explained the reasons for their being so, and expressed myself confident that these rates would soon diminish as the operations progressed. The above averages fully bear me out in the conclusions then arrived at, as the following comparison of rates on the Oudh work only will show:—

				Average rate per Square Mile.	Average rate per Village Circuit.
				Rs. A. P.	Rs. A. P.
Former two years	...	...	...	47 7 0	31 11 0
Present two years	...	...	...	28 5 9	29 10 11
Difference in favor of present rates				19 3 3	2 0 1

107. The actual cost of the River Sarda detached operations, included in the above grand total for the two seasons, is estimated by the Revenue Surveyor at Rs. 3,460-13-0, or at the rate of Rs. 25-12-0 per square mile.

108. When the British Government restored to the Nepal Government their original possessions on the Oudh Northern Frontier, it was believed that the transfer involved the entire belt of S&I Forests lying under the hills, which then formed the boundary. But further experience, when the exact boundary line was finally laid down, proving this to be erroneous, and disclosing the fact of many valuable S&I Forests still remaining within the British boundary, it became necessary to

define their extent and ascertain their exact locality. Accordingly, Captain Anderson, in conformity with the wishes of the Chief Commissioner, was permitted to undertake the preliminary survey of these tracts, extending from Bughora Tal on the east, to the Goruckpoor boundary, in addition to his other current duties in the Sooltanpoor District.

109. This being merely a definition of the Forests, minute detail of all the surrounding features of the country was not attempted. This was beyond

the power of the Revenue Surveyor, to execute within the time and for the special sum allowed, as well as with reference to the other onerous duties elsewhere pressing upon him. This must be left, until the country is better prepared for extensive detailed operations, when the Regular District Survey approaches. But a very useful series of skeleton maps for present urgent purposes resulted, fully suited [the Revenue Surveyor states in his Report, paragraphs 17 to 21, as appended,] to meet immediate practical wants, as required by the Conservator of Forests.

110. The cost for this extra work was provided for by a special grant by the Chief Commissioner, and is shown, together with the area of each season, in the following Table :—

Seasons.	Area surveyed in Square Miles.	Cost.		
		Rs.	As.	P.
1861-62... ..	229.6	1,958	4	0
1862-63... ..	241.0	1,795	5	0
Total	470.6	3,753	9	0

111. When the Regular Survey reaches the Districts of Muhumdee, Gondah, and Baraitch, these tracts will, as a matter of course, fall within the scope of the Revenue operations, and will then be finally surveyed, mapped, and recorded, with due attention to all minute topographical details.

112. During the Recess season of 1862-63, this Establishment further completed the survey of the grant of land in the Kumaon Hills, conferred on the Kumaon Iron Works Company, defining all the boundaries except that to the south, where the absence of all demarcation precluded the possibility of doing so. This blank in the otherwise completed maps will be filled, so soon as the line shall have been permanently defined on the ground. Application has been made by the Revenue Surveyor to the Government of the North-West Provinces, accordingly, requesting that the Commissioner of Kumaon may be requested to provide for this want.

113. For this purpose also, a separate sum of money was allotted by the North-West Provinces Government, the amount of which has not been stated, and the Field work was performed by men of the Establishment, who would otherwise, during the Recess months, have been unemployed, with the exception of the delineation of the hills, the calculations and mapping, which were performed by one of the European Sub-Assistants, Mr. Buttress, out of Office hours. The boundary pillars to the north, east, and west were erected under the immediate eye of the Revenue Surveyor himself, who also, of course, superintended the execution of the Survey.

114. Desultory and detached employment, to the extent performed by Captain Anderson, on the urgent requisitions of the local Authorities, adds most seriously to the labours and responsibilities of a Surveyor, who, with such a large Establishment employed in a District Survey, has as much work to attend to as he can possibly manage satisfactorily, or with justice to himself and the reputation of the Department. Such extraneous employment, therefore, however urgent the necessities of local Authorities may be, is to be deprecated.

115. A careful connection was effected in the survey of the Districts abovenamed, with the various points fixed during the operations of the Karara meridional series of the Great Trigonometrical Survey of India in 1841-45, and also on the confines of the adjoining Division of Lucknow to the west and north, with the operations of the 2nd Division, Revenue Survey, under Lieutenant Colonel Vanrenen; the connection with the several Districts, across the River Ganges to the south, has been already remarked upon.

116. Annexed is a Tabular Statement of the comparative results of the measurements effected by this Party, with those of the Great Trigonometrical Survey, averaging 3.30 feet per mile, which is highly satisfactory, and shows the amount of care bestowed in effecting it:—

		Names of G. T. Stations.	From G. T. Survey.	From Revenue Survey.	Error of Revenue Survey.	Error per Mile.	REMARKS.
SEASON 1861-62.	}	Parriawan, T. S., to Horesa	51,863.7	51,789.5	- 74.2	- 7.5	Karara Meridional Series.
		Ditto to Selon	75,689.5	75,696.7	+ 7.2	+ 0.5	
		Horesa „ ditto	78,231.9	78,184.9	- 47.0	- 3.1	
		Ditto „ Tangun	46,551.6	46,499.6	- 52.0	- 3.6	
		Ditto „ Khara	77,687.2	77,729.5	+ 42.3	+ 2.8	
		Tangun „ Selon	58,238.5	58,244.3	+ 5.8	+ 0.5	
		Ditto „ Munai	52,910.2	52,914.8	+ 4.6	+ 0.4	
		Ditto „ Khara	43,755.3	43,789.0	+ 33.7	+ 4.0	
		Munai „ Selon	66,049.3	66,071.9	+ 22.6	+ 1.8	
Ditto „ Khara	57,696.6	57,666.8	- 29.8	- 2.7			
SEASON 1862-63.	}	Munai to Janni	68,371.7	68,432.1	+ 60.4	+ 4.6	
		Ditto „ Sora	59,805.7	59,857.4	+ 51.7	+ 4.5	
		Sora „ Junai	57,712.8	57,693.2	- 19.6	- 1.8	
		Ditto „ Taoli	60,603.5	60,638.3	+ 34.8	+ 4.7	
		Ditto „ Khara	59,181.4	59,134.7	- 46.7	- 4.1	
		Junai „ Taoli	56,557.9	56,576.5	+ 18.6	+ 1.7	
		Ditto „ Tikiri	64,449.7	64,467.5	+ 17.8	+ 1.4	
		Tikiri „ Taoli	62,043.7	62,034.7	- 9.0	- 0.7	
		Ditto „ Purewa	65,218.7	65,254.8	+ 36.1	+ 2.9	
		Ditto „ Bassantpoor	65,142.9	65,165.7	+ 22.8	+ 1.8	
Purewa „ Taoli	66,297.8	66,332.1	+ 34.3	+ 2.7			
Ditto „ Bassantpoor	64,923.7	65,060.0	+ 136.3	+ 10.9			
		...	...	.....	+ 3.06	
		...	.....	.....	- 3.30	

117. Captain Anderson met me by appointment at Lucknow, on the 24th of November last, and I had great satisfaction in going over all the maps and records of the past season, and discussing with him the nature and extent of his operations, past and prospective. During the four days I remained at Lucknow, the Surveyor laid all the details of his Office before me, and I found everything in the most systematic and approved order. The Recess work has been very heavy, and a number of additional maps turned out on account of detached surveys. The area surveyed by this Party is always large, but the whole is brought up annually in a very efficient manner, and the Field is taken without arrears, which enables the Establishment to devote their entire attention to the fresh work, a point of great importance.

118. The maps and records connected with the above proceedings are executed in the usual, clear, and elaborate style, which has always marked the preparation of these documents under Captain Anderson's able superintendence. They have all been duly rendered to this Office and to the local Authorities.

The one-inch maps contain the fullest detail up to the capability of the scale, and are beautiful specimens of artistic drawing. Those prepared by Messrs. Campbell and George Buttress are especially admired, the printing of the former Assistant being of a very superior order. The map drawn by Lieutenant Butter, Assistant Surveyor, is likewise a very creditable production, and full of promise: this Officer is an accomplished draftsman. The village plan sheets are also well executed, and the printing very good.

119. The exertions and successful results produced by Captain Anderson entitle him to the highest commendation. A more thoroughly useful, and energetic Officer, I believe, is not to be found. His work is always done well and up to time, and it is a real pleasure to be associ-

RECORDS RENDERED.

Season 1861-62.

- 1 Index Map of season's operations, Main Circuits, Nos. 8 and 9, of District Pertabgurh, and Nos. 1, 2, and 3 of District Roy Bareilly.
- 1 Map of Main Circuits, Nos. 8 and 9, of Pertabgurh.
- 3 Ditto ditto, Nos. 1, 2, and 3, of Roy Bareilly. } Scale 1 mile to the inch.
- 4 Maps of forests tracts, scale 40 chains to the inch.
- 1 Atlas Volume of Congregated Village Plans, in 25 sheets, of Main Circuits, Nos. 8 and 9, of Pertabgurh.
- 1 Atlas Volume of Congregated Village Plans, in 53 sheets, of Main Circuits, Nos. 1 to 3, of Roy Bareilly. } Scale 20 chains to the inch.
- 1 Volume of Main Circuit Traverse Computations.
- 3 Volumes of Village Traverses of Main Circuits, Nos. 8 and 9, and Nos. 1, 2, and 3.

Season 1862-63.

- 1 Index Map of season's operations, Main Circuits, Nos. 4 and 5, of District Roy Bareilly, and Nos. 1 and 2 of District Sooltanpoor.
- 2 Maps of Main Circuits, Nos. 4 and 5, of Roy Bareilly.
- 2 Ditto ditto, Nos. 1 and 2, of Sooltanpoor.
- 4 Maps of River Sardah between Nepal and Rohilcund.
- 1 Atlas Volume of Congregated Village Plans, in 34 sheets, of Main Circuits, Nos. 4 and 5, of Roy Bareilly.
- 1 Volume of Main Circuit Traverse Computations.
- 1 Plan of City of Roy Bareilly. } Scale 10 chains to the inch.
- 1 Ditto of Cantonments of ditto }
- 1 Atlas Volume of Congregated Village, in 54 sheets, of Main Circuits, Nos. 1 and 2, of Sooltanpoor.

ated with him. I can confidently lay his services, which are most valuable to the Department, before the Government for favorable notice.

120. In the margin, is a list specifying the description and number of maps and computations completed and lodged, each season.

121. In consequence of the Survey operations being then in prosecution, in two detached

Districts, Seetapoor and Sooltanpoor, I was unable to inspect the whole staff of subordinates. The Senior Assistant,

SUBORDINATE STAFF.

Mr. Campbell, was in the Surveyor's Camp at Lucknow, and I had much satisfaction in expressing to this Assistant my opinion of his work, which has been well turned out in every way.

122. The several Assistants, as per margin, have received promotion, for approved services, to the extent specified, since last report. Lieutenant Penton

Mr. C. W. Campbell to	Rs.	250
" G. R. Buttress to	"	150
" W. S. Buttress to	"	125

Thompson, Assistant Surveyor, was appointed to the charge of the new Party raised expressly for the Fyzabad Division,

and left this Party on the 1st October 1862. In his room, Lieutenant A. D. Butter, of Her

G. O. G. G. No. 1779, dated 12th September 1862.

Majesty's 107th Regiment, was appointed, and he has continued to do duty up to the present time; this young Officer is

reported to have acquired some experience in his professional duties, and to promise well, being both willing and earnest.

123. Mr. W. H. Patterson, Assistant Surveyor of this Party, was selected, for his professional qualifications, as an Assistant in the Revenue Branch of my own Office, to fill the vacancy caused by the death of Mr. Walter Graham, and he joined on the 1st September 1862,

Mr. J. A. Swyny, G. O. G. G. No. 1330, dated 27th June 1862.
Mr. H. T. Hamby, G. O. G. G. No. 2322, dated 2nd December 1862.

and, having served 9 months on probation and given me much satisfaction, was granted the full salary of the appointment from the 1st June last. Two additional Junior Sub-Assistants, as per margin, were appointed to complete the

Establishment.

124. During the current season, the Revenue Surveyor contemplates finishing the remaining

EMPLOYMENT FOR CURRENT SEASON 1863-64.

area of the District of Sooltanpoor, about 800 square miles, which will complete all the Districts of the Lucknow

Division, as well as of the Fyzabad Division, Cis-Gogra. It has consequently been necessary to assign to this Surveyor the Seetapoor District of the Khyrabad Division, estimated to contain about 1,500 square miles, in which ground has already been broken, and about 400 or 500 square miles may be anticipated there this season, giving an approximate out-turn of 1,200 or 1,300 square miles. Captain Anderson has to pass over the intermediate completed Districts of the Lucknow or 2nd Division, surveyed by Lieutenant Colonel Vanrenen. After Seetapoor, the adjoining District of Baraitch, Trans-Gogra, will be taken up by this Party.

2ND OR LUCKNOW DIVISION

OF OUDH.

125. The operations of this Establishment, under the superintendence of Lieutenant Colonel D. C. Vanrenen, Revenue Surveyor, were directed to the survey of the three Districts, as per margin, composing the Lucknow Division.

DISTRICT OONAO.
" LUCKNOW.
" DURLABAD.

Lieutenant Colonel D. C. Vanrenen, Revenue Surveyor, in charge.

Assistants.

Lieutenant F. Coddington, R. A., joined 13th January 1862.
Mr. W. A. Wilson, retired on pension, 4th January 1863.

Sub-Assistants.

Mr. F. W. Kelly, 1st Class.
" W. Reilly, 3rd Class, transferred to 3rd Oudh Division, 1st October 1862.
Mr. C. Sheridan, 3rd do.
" W. A. Wilson, (Junior) do., transferred to 3rd Oudh Division, 1st January 1863.
Sergeant J. Mills, Junior Sub-Assistant, } Joined 3rd November 1862.
Ditto W. Street, do. }
42 Native Surveyors, &c.

Tehseels Suffeeper, Oonao, (part of)

126. In the first place, in season 1861-62, the remainder of the Oonao District (of which about two-thirds had been surveyed the previous season) was brought to a close, comprising 385 villages, and an area of 412 square miles, together with the River Ganges and villages on opposite bank, covering an area of 31 square miles.

127. On the completion of Oonao, the adjoining District of Lucknow situated to the east, was taken up, and an area of 724 square miles, with 683 villages, accomplished in the Tehseels as per margin, making a total of 1,167 square miles, and 1,068 village circuits for the season.

128. In the following season of 1862-63, 693 square miles of the Lucknow District, with 759 villages, completed that District. The Party then moved further eastward, and surveyed an area of 531 square miles, in 759 villages appertaining to the Tehseels detailed in the margin, of the Durriabad District, which gives a total for the season of 1,224 square miles and 1,518 village circuits.

129. The grand total of the area thus achieved, during the period under review, amount-

	Square Miles.	Villages.
District Oonao	412	385
River Ganges in do.	31	...
" Lucknow	1,417	1,442
" Durriabad	531	759
Total	2,391	2,586

ed*, therefore, to 2,391 square miles, comprised in 2,586 villages, averaging 592 acres each. This gives an average out-turn of 1,195 square miles, and 1,293 village circuits per season, which, considering the minuteness of the detail, is a very good return, and testifies strongly to the unremitting exertions of the Revenue Surveyor and his Assistants, European and Native.

130. The above area includes also that of the city, cantonments, and environs of Lucknow, which were mapped on the large scale of 8 inches = 1 mile. This survey, containing a mass of detailed information, extended over no less than 22

CITY, CANTONMENTS, AND ENVIRONS OF
LUCKNOW.

square miles, formed a difficult task, and added very considerably to the otherwise arduous labors of the season.

131. The Revenue Surveyor states that, "although the Great Trigonometrical Survey had extended over many parts of the old city of Lucknow and its suburbs, yet that he was unable to detect any marks, which they may have left as points of verification and reference." But a more recent survey having been made under the orders of the Chief Engineer, Colonel Crommelin, the Surveyor placed himself in communication with that Officer, and he was enabled to recognize and take up many of the Stations fixed under that Officer's superintendence. These were duly incorporated with the materials of the present survey, which was based on a minor triangulation of 18 of the principal objects of the city, and duly connected with the District operations, and, through the latter, with the principal triangulation of the Great Trigonometrical Survey.

132. The expenses incurred in the performance of the above operations are given marginally, and show a grand total of Rs. 76,433-13-1, inclusive of contingencies of all kinds, which gives a mean average per square mile of Rs. 31-15-7, and per village circuit of Rupees 29-8-11.

		COST AND RATE.			Rs. A. P.	
Season	1861-62	Establishment	...	...	37,332	4 10
		Contingencies	...	...	847	3 4
"	1862-63	Establishment	...	...	37,141	8 10
		Contingencies	...	...	1,112	12 1
		Total	...	...	76,433	13 1

133. The material improvement shown on comparing these rates with those given in my

COMPARATIVE RATES.

Seasons.	Area surveyed in Square Miles.	Average rate per Square Mile.			Average rate per Village Circuit.		
1860-61	926	48	5	11	55	14	0
1862-63	1,195	31	15	7	29	8	11
	Difference ...	16	5	6	26	5	1

last Report, and which I then explained, were entirely consequent on the newly raised Establishment, and first starting in a new Province, is most decided. The difference in favor of the seasons now under review is Rs. 16-5-6, or one-third less on the square mile, and one-half less on the village circuits, as shown in the margin, a result very similar to that produced on the first Division, and highly creditable to the exertions of the Revenue Surveyor, evincing, as it does, the success with which he has increased the efficiency of his Establishment, as well as the zealous exertions made by the subordinates to arrive at such improved progress.

134. The nature and extent of the above operations were minutely enquired into, by myself personally, on several occasions during the Recess at

INSPECTION OF PARTY.

Landour in the months of July and August last, when I inspected the Revenue Surveyor's Office. The whole of the work of the past season was submitted to me, and I had ample opportunity of judging of the manner in which both the Field and Recess work was performed. I found that the professional operations were based on correct principles, as laid down for Departmental guidance, and carried out with great care and judgment by Lieutenant Colonel Vanrenen.

135. The mode of surveying the topographical details and checks, established for ensuring the greatest amount of accuracy with Native agency, were also very good, and likely to produce reliable work. This important point, I am happy to say, I found well attended to, on all the Surveys which I visited. All the arrangements, which met my eye in this Surveyor's Office, reflect credit on his superintendence.

136. The maps and records prepared and lodged by this Establishment for the two

MAPS AND RECORDS FURNISHED.

SEASON 1861-62.

- 1 Index Map of season's operations, scale 4 miles = 1 inch.
- 1 Map of Main Circuits, Nos. 9, 10, and 11.
- 1 Map of Main Circuits, Nos. 12, 13, and 14. } Scale 1 mile = 1 inch.
- 1 Map of Main Circuits, Nos. 15 and 16. }
- 2 Atlas Volumes of Congregated Village Plans of above Main Circuits, aggregating 72 sheets, scale 4 inches = 1 mile.
- 1 Volume Main Circuit Traverse Calculations of Nos. 9 to 16
- 2 Volumes of Village Traverse Calculations of Main Circuits, Nos. 9 to 16.

SEASON 1862-63.

- 1 Index Map of season's operations, scale 4 miles = 1 inch.
- 1 Map of Main Circuits, Nos. 17 and 18.
- 1 Map of Main Circuit, No. 19. } Scale 1 mile = 1 inch.
- 1 Map of Main Circuit, No. 20. }
- 1 Map of Main Circuits, Nos. 21 and 22. }
- 2 Atlas Volumes of Congregated Village Plans of above Main Circuits, aggregating 69 sheets, scale 4 inches = 1 mile.
- 1 Volume Main Circuit Traverse Calculations of Nos. 17 to 22
- 2 Volumes of Village Traverse Calculations of Main Circuits, Nos. 17 to 22.

seasons are detailed in the margin. They are very complete and carefully executed in every respect. The maps of 1862-63 have also been specially prepared, chiefly in pen and ink, without color, in view to their reduction by Photography, whenever hereafter

it may be needed to do so. This has added more labor on the Surveyor's Office. The physical aspect of the present state of the country, its cultivation, and waste, roads, rivers, &c., are clearly depicted in the most minute manner, and the maps on both scales have been filled up, to the fullest extent practicable; they are all most valuable records, and have my unqualified approval.

137. The maps produced by Lieutenant Coddington, Assistant Surveyor, and Messrs. Kelly and Sheridan, Sub-Assistants, are very creditably got up indeed, and deserving of notice. I had great satisfaction in witnessing the great attention to business on the part of these gentlemen, who are very painstaking and efficient. The village plan sheets executed by Corporals Mills and Street show great improvement, and promise of these Sub-Assistants becoming excellent draftsmen. The Revenue Surveyor expresses himself well pleased with their qualifications and good conduct, and considers them most attentive to their duties, and intelligent, which I am well able to corroborate from my own observations. The military element, as far as it has been carried, may be considered highly successful.

138. In the Lucknow as well as in the other Divisions of Oudh, a great deal of intermixture of the lands of one Pergunnah or Tehseel with another was observed. To form compact territorial divisions, it became, therefore, necessary to re-adjust such outlying villages by transfer, and otherwise to re-apportion the several Pergunnah boundaries. This, it appeared to me, could best be effected by the Surveyor bringing to early notice of the Settlement Officer the relative positions of such outlying villages, and this was done as soon as the survey was sufficiently advanced to render the course sure and distinct.

CHANGES IN TERRITORIAL BOUNDARIES.

139. SERIOUS EFFECTS OF SUCH CHANGES.

Considerable remodelment has already taken place, not only in the Pergunnahs or Tehseels, but also as to the limits of Districts and Divisions. The Sub-Divisions, as at present decided on, appear compact and well chosen, and may not, I trust, be again altered. Alterations of boundary after the maps and records have been completed and lodged in this Office tend fearfully to confuse and negative the otherwise clearness and conciseness of the several lists and maps, the results of the Survey operations, and detract very greatly from the value of maps already published. All such changes, therefore, should be thoroughly and finally disposed of, at the time of survey, and duly notified by competent Authority, so as to admit of the Survey Officers submitting their various documents, in a complete and finished state, and thus leaving nothing for subsequent revision and alteration, or for doubt and misconception.

140. I am aware, there may be difficulties in arriving at final arrangements, as to territorial divisions and sub-divisions, in a new Province. I merely urge, that the object should be enforced, wherever it be practicable, and that all such changes should be notified in the Government Gazette. This Department suffers most severely from the constant changes made,

from time to time, in the limits of Districts and Divisions, or Commissionerships, which render it at times quite impossible to publish maps of a revenue character.

141. Several Great Trigonometrical Stations of the Karara and Anna meridional series, met with during the course of the operations, were carefully identified and incorporated with the Revenue Survey measurements. A comparison of the results of the distances, derived from the two methods of survey, is given below, as a means of judging of the relative value of the Revenue Survey measurements. The average error of the latter is therein shown to be 5·88 feet per mile about excess measurements, and 3·33 feet in those in defect. With one exception, the comparisons are very good, and the Revenue Survey will be susceptible of easy adjustment and incorporation with the Atlas of India, by means of so many points.

Names of G. T. Stations.		From Revenue Survey.	From G. T. Survey.	Error of Revenue Survey.	Error per Mile.	REMARKS.
		Feet.	Feet.	Feet.	Feet.	
SEASON 1861-62...	{ Etorā to Bakseria ...	58,904·6	58,942·4	— 37·8	3·39	Anna Meridional Series.
	{ Ditto „ Jalhote ...	77,306·7	77,207·7	+ 99·0	6·76	
SEASON 1862-63 ...	{ Pesar to Bassantpoor ...	64,171·1	64,010·7	+ 160·4	13·20	Karara Meridional Series.
	{ Ditto „ Utiamao ...	67,581·0	67,573·3	+ 7·7	0·60	
	{ Ditto „ Paharnagar ...	53,593·1	53,516·0	+ 77·1	7·60	
	{ Utiamao to Amoli ...	60,201·6	60,227·5	— 25·9	2·27	
	{ Ditto „ Samnadio ...	61,758·6	61,741·5	+ 17·1	1·46	
	{ Amoli „ Ditto ...	59,418·8	59,467·6	— 48·8	4·34	
Average on the whole where the error is				...	...	+ 5·88
Ditto ditto			error is	...	...	— 3·33

142. The demarcations appear to have been well prepared beforehand, and the comparison of the boundaries of villages, as shown on the Thakbust or Settlement Officer's rough maps, with those of the finished professional maps, was very satisfactory. Re-measurements are reported to have been invariably made, in case of discrepancies existing, and the result of comparison noted on the maps, ere returning them to the Settlement Officers.

143. The Surveyor briefly alludes to the native measurement of Fields or Khusrah, by the Settlement Department, in the extract given in the Appendix from his Report for 1861-62. Endeavors appear to have been made, to keep this important part of the combined operations going simultaneously the one with the other, but no recent information has been afforded on this head, and the duty is solely under the Settlement Department.

144. Brief extracts, descriptive of the country, as well as of the city of Lucknow, that came under survey, have been given in the Appendix, from the Revenue Surveyor's Annual Report. A full Geographical and Statistical Report is promised, on the completion of the Division.

145. The survey of the remaining portion of the Durriabā District of the Lucknow Division occupied the first care of the Revenue Surveyor, on resuming Field work, this season. This will be completed, and thus conclude the survey of the Division or Commissioner-

EMPLOYMENT IN CURRENT SEASON.

ship. The probable area of this remaining portion will be about square miles 820, which, not being sufficient to fully occupy the Establishment, for one whole season, on its completion, the District of Hurdni to the west, and which forms the south-western portion of the Khyrabad Division of Oudh, will be entered. This embraces an area of about 1,800 square miles, of which about 400 square miles may possibly be got out of hand, before the season terminates. The adjoining District of Mohumdee, estimated at 2,400 square miles, has been allotted to this party.

EFFICIENCY OF ESTABLISHMENT.

Mr. F. W. Kelly, Assistant Revenue Surveyor, to	Rs. 250
„ C. Sheridan, Sub-Assistant ditto, 2nd Class	„ 150
„ W. A. Wilson, ditto ditto, 3rd Class, transferred to 3rd Division, Oudh, from the 1st January 1863	„ 125
* Corporals J. Mills and W. Street, passed students from the Roorkee College	{ G. O. G. G. No. 2497, dated 30th December 1862.
* Mr. J. Martin, Junior Sub-Assistant	{ G. O. G. G. No. 681, dated 4th November 1863.
* Mr. J. Todd, Sub-Assistant, 2nd Class, re-appointed to Department	{ G. O. G. G. No. 1815, dated 31st December 1863.

146. The Establishment, although of young growth, has been raised to an efficient state, able now to compete in producing a full return of approved work, as above shown. The merits of the Assistants, before briefly alluded to, have been rewarded by promotion to the extent specified in the margin, and the several new appointments* were made, to fill vacancies, and to bring the Establishment up to full strength.

147. Mr. W. A. Wilson, Assistant Surveyor, 1st Class, was transferred to the Pension List, under the special sanction conveyed in the letter, dated the 7th of December 1863, No. 593, Foreign Department. He ceased to do duty from the 4th January 1863.

148. Lieutenant Coddington, of whose qualifications and aptitude for business I received the fullest proof, was transferred to the charge of the 3rd or Fyzabad Division, from the 1st January last, in the room of Lieutenant Penton Thompson, resigned. The vacancy thus caused has not yet been filled up, but a Military Assistant will be recommended, as soon as a qualified young Officer can be found. In the meanwhile, an additional Sub-Assistant has been posted to this party, by the re-appointment of Mr. J. Todd, under the sanction of Government quoted marginally.

TRANSFER OF COVENANTED ASSISTANT.

3RD OR FYZABAD DIVISION
OF OUDH.

149. Under the orders of the Government of India, in the Foreign Department, marginally cited, a third Revenue Survey Party, as detailed,* was raised for the Province of Oudh, in view to expediting the survey of the Fyzabad Division, as alluded to in paragraph 213 of my last printed Report. Measures were at once taken by this Office, and a supplemental Budget Estimate, amounting to Rs. 69,674, as the cost of the new Establishment, having been submitted, met the approval of Government.

DISTRICT FYZABAD.

No. 114, dated 5th March 1862.

* Lieutenant Penton Thompson, B. A., Revenue Surveyor, from 1st Division, Oudh Survey, in charge from 1st July 1862.
Lieutenant W. H. Wilkins, B. A., Assistant Revenue Surveyor (on probation), joined 11th May 1863.
Mr. G. H. Blyth, Assistant Revenue Surveyor, 2nd Class, from the Hazareebaugh Survey, joined 1st October 1862.
Mr. T. W. Reilly, Junior Sub-Assistant Revenue Surveyor, from the 2nd Oudh Division, joined 1st October 1862.
Mr. H. Walsh, Junior Sub-Assistant Revenue Surveyor, from the Delhi and Hissar Survey, joined 1st October 1862.
Mr. H. Menney, Junior Sub-Assistant Revenue Surveyor, re-appointed from 8th October 1862.
Mr. W. A. Wilson, Junior Sub-Assistant Revenue Surveyor, from the 2nd Division, Oudh Survey, joined 1st January 1863.

4	Native Surveyors from the 2nd Division, Oudh.
2	„ „ from 1st „ „
2	„ „ from Nagpoor Division. „
2	„ „ from Hazareebaugh Division.
16	„ „ (new appointments.)

150. The several European Assistants, with a fair proportion of Native Establishment, were drawn from other Surveys, to form the nucleus of the new one, which was placed under the charge of Lieutenant Penton Thompson, the Senior Assistant in the Department, who had received four years good practical training, under the able tuition of Captain F. C. Anderson, of the 1st Division, Oudh, and who had therefore had considerable experience in the adjoining Districts.

151. The ranks of the new party were still further recruited, by the entertainment of Native Surveyors and Measurers, who, being carefully trained in the interim, between the date of commencing to raise the party on the 1st July 1862 and its taking the Field, were enabled also to take some part in the subsequent Field operations. Finally, I was enabled, in the month of * G. O. G. No. 95, dated 27th April 1863. May 1863, to complete the Establishment, by the appointment* of Lieutenant Wilkins, of the Royal Artillery, an Officer of ability and promise, who had distinguished himself at the Roorkee College, and who joined on the 11th May 1863. For a new Establishment, therefore, the operations were started under the most favorable circumstances.

152. The Fyzabad Division, then consisting of three Districts as per margin, was allotted to the new Establishment, which assembled in the District in good time to make all preliminary arrangements, and the Fyzabad District, as next in succession to those under survey, having been previously demarcated, was entered on the 7th November 1862.

153. Operations commenced in the eastern portion of the District, on the 20th of the same month, in the Tehseels as per margin, and were prosecuted without interruption until May following. With an entire new Establishment, of course, some delays and difficulties had to be encountered, in getting into proper working order, under a new Superintending Officer, but very fair progress was made, and an area of

	Number of Villages.	Area in Square Miles.
District Fyzabad	1,089	683.20
Outlying villages of District Fyzabad, situated in Districts Azimgurh and Jounpoor.	11	5.35
Outlying villages of Districts Azimgurh and Jounpoor, situated within District Fyzabad.	3	4.22
River Gogra ... ..	...	36.45
Total	1,103	729.22

729 square miles contained in 1,103 villages, as detailed in the margin, completed, after which the party retired to Jounpoor, the nearest Station where sufficient accommodation could be found.

154. The left bank of the Gogra River, and the sites of the principal villages for a mile in breadth along it, have been carefully surveyed, to form a junction with the old survey of the Goruckpoor District, and to admit of the old and new maps being incorporated together in the same Atlas Sheets, Nos. 77 and 78, and also to show the changes in the river, since the last survey.

155. The Gurwani meridional series of the Great Trigonometrical Survey, passing directly through the western portion of the District, and the city of Fyzabad, afforded opportunity for connection on one principal Station only, which was duly adopted, but the current season will bring a larger area in direct contact with the triangulation, which will complete and perfect the connection, and afford a full test of the value of the detail survey, by comparison of the direct distances derived from both operations.

156. The above tract of country is bounded on the south-west by the River Goomtee, dividing it from the Districts of Sooltanpoor and Pertabgurh, recently surveyed by Captain Anderson; on the south-east by

LIMITS OF AREA SURVEYED.

CONNECTION WITH THE TRIANGULATION.

LOCALITY ASSIGNED.

District Fyzabad.
 " Gondah.
 " Baraich.

TRACT SURVEYED.

Tehseel Dostpoor.
 " Ukurpoor.

the Districts of Jounpoor and Azimgurb, which came under the old North-West Provinces Survey; on the north-east by the River Gogra, separating it from the District of Goruckpoor; and on the north-west by the unsurveyed portion of the District of Fyzabad.

157. The total expenditure for the season, during which the above area was effected, amounted to Rs. 28,648-15-5, on which the mileage rate comes to Rs. 39-4-7 per square mile, and Rs. 25-15-7 per village circuit.

COST AND RATE.

158. In addition to the above cost, however, the preliminary expenses for the three months of the season 1861-62, during which time the Surveyor was organizing and training his new Establishment, amounted to Rs. 6,253-4-8. This has not been included in the first season's average rates, because it is usual to charge only 12 months' expenses against the Field season. This charge has therefore been brought forward for the first three months separately in the Tabular Statement, so as to make the comparison of financial results of this party, on the same footing precisely as in other Survey Establishments reviewed in this Report. The entire expenditure will be thrown on the rates of the work, on the completion of the District.

159. Considering that this was the first season, the rates struck on a small area are as favorable as could be expected, and promise well for the future. The cost is below that of either of the other Divisions, for their first seasons in Oudh, and may therefore be accepted as satisfactory.

160. The style of survey, and the degree of minuteness observed in delineating the topographical and other revenue details of fallow and waste, &c., were precisely the same as those observed in the other two Divisions in the Oudh Province, as fully described in para. 197 of my last Report on the Revenue Surveys of India.

STYLE OF SURVEY.

161. Permanent land marks have been wisely erected at all the triple junction points of villages, and these have formed the Survey Stations. Two serviceable pillars have also been built on the River Goomtee, to facilitate the connection with the survey of the Sooltanpoor District. The great future utility of the survey has therefore been well provided for.

MASONRY LAND MARKS.

162. Two years had elapsed since the demarcations of this part of Oudh were first made, and consequently many of the boundary pillars had disappeared; yet, owing to the personal exertions of Mr. Kavanagh, the Settlement Officer of the Division, who is thoroughly conversant with the wants and requirements of the Surveyor, all difficulties in identifying the boundaries, as then laid down, and in adjusting all discrepancies, were overcome, and the comparison of the professional and settlement boundary maps satisfactorily made. The latter are described to be very correct, and drawn on a scale of 16 miles to the inch, or four times larger than the scale of the professional.

DEMARICATIONS.

163. The detailed measurements or Khusrah of fallow, waste, &c., by the Settlement Ameens, not having preceded the Professional Survey, and only having been commenced during the season under review, no comparison of their calculated areas, the Revenue Surveyor states, could be made; they must accordingly be carried out hereafter. The want of simultaneous procedure in the combined operations is to be regretted, as it cannot fail to be detrimental to the real interests of the Government.

KHUSRAH OR NATIVE MEASUREMENT OF FIELDS.

164. The Revenue Surveyor also acknowledges the assistance his Establishment received in their Field labors, from the kind and hearty co-operation of Mr. Bradford, late Deputy Commissioner of Fyzabad.

165. The maps and records of the season's work were all well and creditably prepared,

MAPS AND RECORDS FURNISHED.

Season 1862-63.

- 1 Index Map of season's operations, scale 4 miles=1 inch.
- 2 Main Circuit Maps Nos. 1 and 2, scale 1 mile=1 inch.
- 2 Atlas Volumes of Congregated Village Plans in 40 sheets, scale 4 inches to the mile.
- 1 Volume of Main Circuit Traverse Calculations, Nos. 1 & 2.

and have been lodged in this Office by the Revenue Surveyor. Their number and description are detailed in the margin. The delineation of the country has been well attended to, in preparing the various maps, on the one-inch and four-inch=1 mile scales,

and is all that could be desired. For the results of a first season, the work turned out is perfectly satisfactory. The drawing of Lieutenant Wilkins and the printing of Messrs. Reilly and Menney, Sub-Assistants, are deserving of encouragement.

166. During the present Field season, this Establishment will continue the survey of the

OPERATIONS OF CURRENT SEASON.

Fyzabad District, in the Tehseels Bhurteepoor and Fyzabad, immediately to the north-west of, and in continuation of the part completed in 1862-63. The estimated area remain-

ing is about 1,478 square miles, which cannot all be accomplished. At the close of the season, probably not more than 550 or 600 square miles will remain, in addition to the survey of the Gogra River and villages on the opposite bank. This will not afford sufficient employment, for the entire season of 1864-65, and I have represented to the Chief Commissioner the necessity of providing demarcations in the adjoining District of Gonda, which appears to afford a fine Field for employment.

167. But I regret to find, that the Chief Commissioner of Oudh states his inability to

PROPOSAL TO DISPENSE WITH SURVEY PARTY.

provide any more work at all for this party in Oudh, and he is consequently desirous of being relieved of it altogether, owing to the great difficulty in keeping the Settlement operations in a sufficiently advanced state.

The summary settlement not expiring in the two Trans-Gogra Districts until May 1867, it is declared to be unadvisable to commence on the survey of either of them, before the Surveyors of the 1st and 2nd Divisions respectively will be ready to take them up. The 3rd Division Party he therefore wishes to dispense with, as soon as the survey of the Fyzabad District may be completed.

168. There are several difficulties in the way of following this course, which have been

OBJECTIONS TO STOPPING SURVEY OPERATIONS TRANS-GOGRA.

pointed out to the Chief Commissioner of Oudh. In the first place, the Establishment was specially raised for the purpose of expediting the survey of this Division or Commissionership, on the express application of the Oudh Civil

Authorities, and the resources of the Department were taxed to the utmost, to obtain sufficient aid to supply the machinery required. Survey Establishments are most difficult to recruit and train, to a proper degree of efficiency, and the cost of survey operations is in proportion to the degree of experience of the agency employed. It is not therefore easy or economical to dispense with Professional Survey Establishments, when once in full and effective working order.

169. By the time the Fyzabad District is completed, this party will be fully in a position to make rapid progress, and compete with any others in the cost of their work; but if they are removed from Oudh, without commencing a second District, then the original object of appointing a new Survey Establishment will not have been carried out. It will take several

No. 1 Division	...	{ Seetapoor.
		{ Baraitel.
.. 2 ..	...	{ Hurdul.
		{ Mohumdee.

years before the other two Survey Parties can finish the Districts already allotted to them, as per margin, and which have only just been commenced; and if therefore the Gonda District is not prosecuted by No. 3 Party, it must be very much

protracted, and inconvenience will be felt by this Department, in having to provide work elsewhere for it.

170. Under any circumstances, it will not be practicable to find suitable work for the party, to fill up the small portion of time likely to be left in the ensuing season, unless the Gonda District can be commenced, as the Fyzabad Field work cannot be out of hand before February or March, when it would be too late to move the Establishment to any distance.

INSUFFICIENCY OF WORK FOR 1864-65.

171. The filling up of the entire map of Oudh appears to me a matter of the utmost importance. Advantage should therefore be taken of turning the services of experienced professional survey staff, whilst on the spot, to the best account, and to push the professional survey of the entire Province on towards completion, without any interruption. The more so, since the triangulation of the Great Trigonometrical Survey has remained for so many years without being filled up, and it is a special object to complete and publish the Sheets of the Indian Atlas. The party in Fyzabad could not possibly be so advantageously employed anywhere else. I trust therefore that they may be permitted to prosecute their useful labors Trans-Gogra in the Gonda District, without interruption, on the conclusion of the Fyzabad District.

172. The Sub-Assistants, transferred to this party, who had departmental service to count and were recommended favorably, have been promoted to the extent noted in the margin, under the orders of Government. Mr. H. Meaney, 3rd Class Sub-Assistant, who resigned his situation in the Punjab Survey, on the 1st October 1860, was re-appointed on this Survey, on the 8th October 1862.

SUBORDINATES.

Mr. Reilly, Sub-Assistant, 3rd Class,	Rs. 125
to,	Rs. 125
„ Walsh ditto,	„ 125

173. Lieutenant Penton Thompson, having tendered the resignation of his appointment, the same was accepted by the Government in the orders as per margin, and he made over the charge of his office, on the 31st December, to Lieutenant Coddington, Assistant Surveyor appointed to the charge, after having fairly started the Field work of the current season, and completed all the maps and records of the past season, thus preventing any inconvenience. The vacancy has thus been well provided for, and from Lieutenant Coddington's training in the Lucknow Division, under Lieutenant Colonel D. C. Vanrenen's able tuition, I entertain no fears for the future success of the work of this Division.

RESIGNATION OF REVENUE SURVEYOR.

- G. O. G. No. 317, dated the 9th February 1864.
- G. O. G. No. 1812, dated the 31st December 1863.

NORTH-WEST PROVINCES.

ROHILCUND DIVISION.

174. Re-surveys in the Terai of Rohilcund or the Bhabur or Forest lands of Kumaon, at the foot of the hills, have been prosecuted at different periods for many years past. The investigations of Mr. J. Strachey, Collector of Moradabad, whilst in the performance of the duties connected with his Office in 1856, led to the discovery of the existence of some small unsurveyed gaps, three in number, lying between the original survey of Captain B. Brown, made in 1834 to 1841, and that conducted by Captain D. C. Vanrenen, in 1852-53. The question was laid before the Government of the North-West Provinces, but ere the measures to be adopted for supplying the omission had been finally determined upon, the mutinies commenced.

RE-SURVEYS, DISTRICT MORADABAD.

Rohilcund Forest Survey.

Mr. H. B. Talbot, Assistant Revenue Surveyor in charge, on deputation from 3rd Central Provinces Division, 1st October 1862.
 Nine Native Surveyors.

175. In 1860, however, Mr. Strachey again took up the question, and, in so doing, pointed to the fact of the loss, during the mutinies, of all records of the settled estates, lying to the south of the Forest, surveyed by Captain B. Brown, before the settlement under Regulation IX. of 1833, and further, that, as the only original record of the Moradabad District Survey then existing,

REASON OF MAKING THIS SURVEY.

was a manuscript map, on the scale of 1 mile=1 inch, which did not include the Pergunnahs of Kasheepoor and Thakoordwara, which border on the Forest, no records of the survey of this portion of the District remained.

176. He recommended, therefore, that whenever it might be possible to appoint a Survey Party to supply these deficiencies, the work undertaken should include the whole of those Pergunnahs, excepting such portions of Pergunnah Kasheepoor as had come under the more recent survey of Captain D. C. Vanrenen.

177. This re-survey was also declared to be the more necessary, because a large portion of these Pergunnahs had been then lately brought under the direct management of Government, and consequently works of irrigation, it was stated, must necessarily, sooner or later, be undertaken for their improvement.

178. As alluded to, therefore, in the 3rd para. of my last Report, it was decided on by the North-West Government, to detach a single Assistant's party to make the necessary re-investigations, and to survey the several patches required to complete the records. For this purpose, a qualified Assistant Surveyor, Mr. H. B. Talbot, was taken from the

		Rs. As. P.
Mr. H. B. Talbot, Assistant	300 0 0	
Revenue Surveyor	100 0 0	
Deputation Allowance	<u>400 0 0</u>	
Nine Native Surveyors, and proportionate number of Tindals and Measurers... ..	500 0 0	
Contingencies	342 8 0	
Per month	<u>1,242 8 0</u>	
For six months, from 1st. October 1862 to 31st March 1863	<u>7,455 0 0</u>	

Bundelcund Survey Establishment, then at Landour, together with a sufficient number of Native Surveyors, to form the party as per margin, and the sanction of the Government of India was conveyed in Financial Resolution No. 1030 G, dated 24th November 1862, to the Estimate amounting to Rs. 7,455, which was included in the Budget of season 1862-63.

179. The work to be performed having intimate connection with the operations conducted by Captain D. C. Vanrenen, that Officer was instructed to exercise a general supervision over Mr. Talbot's proceedings, in order that the best means might be taken to secure the ends proposed by the present survey, so that there should be no more gaps left, and this he has very effectually done.

180. This small party proceeded, therefore to Moradabad, and took the Field early in November 1863. But it being then too early to enter the Terai Forests, which are deadly so early in the season, and the civil demarcation work in the Thakoordwara and Kasheepoor Pergunnahs not having been sufficiently advanced, to admit of professional operations commencing there, other work had to be provided, in defining the new boundary lines between the Jageer of the Nawab of Rampoor and the Districts of Bareilly and Moradabad to the west and east of it respectively.

181. The necessity for re-surveying these boundaries arose from the transfer, since carried out and confirmed, of certain villages appertaining to those Districts, to the Rampoor Estate, on account of good services performed by His Highness the Nawab, to Government, during the great mutinies in 1857-58, instead of the Pergunnah of Kasheepoor, as originally intended.

182. Some further delay was occasioned in this work also, owing to the want of proper boundary pillars to mark and define the new limits; it was not therefore until the 1st December 1862, that the parties of Native Surveyors were able to get fairly to work.

183. Owing to the necessary orders for the entire Pergunnahs of Thakoordwara and Kasheepoor being surveyed not having been received by the local Civil Authorities, only a portion was demarcated in time for the Assistant Surveyor to take up, and he was consequently obliged to retire for the Recess, leaving 102 villages of the former, and 161 villages of the latter, unsurveyed, all of which might have been effected, had proper arrangements been made, when he first took the Field in November 1862.

181. As far, therefore, as the competency of the Assistant Surveyor went, he performed all that he was deputed to do, of which a full report

OUT-TURN.

No. 21 M, dated 14th July 1863.

was made from this Office to the North-West Government, in the letter cited in the margin.

185. The actual out-turn for the season amounted to 142 square miles, and 163 villages of detail Revenue Survey, on the four-inch=1 mile scale, besides 60 miles of boundary or linear definition survey only, on the same scale. This for the small Party employed was very little, but no more work having been prepared, more could not be accomplished.

186. The total cost, including all contingencies, at which it was performed, was Rs. 8,170-1-7. This expenditure, if thrown on the mere

COST AND RATES.

area surveyed, would yield very high rates. But the time occupied in the Linear Boundary Survey has not been recorded, and a proportion of the expense cannot therefore be properly thrown on it, and a mileage average rate cannot be fairly calculated: on the conclusion of the whole of the work, perhaps approximate rates may be determined.

187. No Stations of the Great Trigonometrical Survey came within the scope of this year's operations, but many of the masonry pillars erected

MASONRY PILLARS.

at the time of Captain Vanrenen's survey were met with, and carefully incorporated with the present survey, and supplied a good connection with former measurements in these localities; the work is therefore susceptible of incorporation with the maps of the former survey.

188. The records and maps connected with the above operations, and received by this

**RECORDS AND MAPS, AND
INSPECTION OF PARTY.**

- 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 10 sheets.
- 8 Sheets of Boundary Survey, scale 4 inches to the mile.
- 1 Volume of Main Circuit Traverse Calculations.
- 1 Volume of Village Traverses and Statistical Headings.

Office, are enumerated in the margin; they are all executed in the usual style, and are complete with every information required by departmental rules. Mr. Talbot's Office was inspected by myself at Landour, in the month of June 1863. The object and requirements of this special and desultory survey were carefully considered, and the mode of dealing with it decided on and approved. Mr. Talbot is an Officer of energy and good departmental experience; he has shown a strong desire to work his small Establishment to the greatest advantage, and he only requires a fair scope given

him to turn his means to the best account. Although the quantity of work turned out is small, owing to the above causes, the Assistant Surveyor's endeavors have met with my entire approval.

189. When small patch-work surveys of this description are once set on foot, additional work is sure to be found, on which to employ a

ADDITIONAL WORK.

Surveyor. During the present season, this small Party will complete the remaining portions of the two Pergunnahs of Kasheepoor and Thakoordwara, all that was prepared. This has in fact been already accomplished at the present date; and, in order to prevent the Establishment from remaining idle, they are now engaged on a new survey, on a large scale, of the Town and Cantonments of Moradabad, pending the decision of Government, as to further employment.

190. The Jageer of Rampoor, lying in the centre of Rohilcund, remaining a total blank

RAMPOOR JAGEER.

on the map of India, has long been an eye-sore, and the filling up of Sheet No. 67 of the Atlas was therefore prominently brought to the notice of the North-West Government, as a legitimate object for the Party now employed in that vicinity. The survey of all the Native States of Rajpootana, Bundelcund, Rewah, and Hyderabad having been determined on by the Supreme Government, the time appeared to me to have fully come for providing for this small area, estimated at about 900 square miles, in a suitable way.

191. The question then suggested itself to His Honor the Lieutenant Governor of the North-Western Provinces, as to who was to pay for a general Topographical Survey, and on reference to the Supreme Government, it was declared not to be contemplated to throw the

expense on the Native Chiefs, where the information is required for imperial purposes, rather than for any absolute necessity or object on the part of the Native State itself.

192. On a representation being made to the Nawab as to his wishes, he expressed his willingness to have a survey, and to defray a portion of the expenses of the survey, provided it was made on the usual detailed revenue system, and not a mere topographical delineation of the features of the country; the latter not being of any use, whereas the former, he declared,

From Secretary, North-West Government, No. 80A, dated 13th February 1864, to Home Department.

would prove of the utmost advantage to him. The subject, therefore, was again referred to Government of India, by letter marginally cited, as to whether a topographical or a Village Survey should be carried out, and what portion of the expense the Nawab ought to pay.

193. There can be no doubt whatever of the superiority of the Village Survey, and the preference for it on the part of the Nawab is a rare instance of enlightened native views on such a subject. The topographical or general survey only was proposed, merely to suit the supposed wishes of a Native Chief. By the demarcation of the village boundaries, and the survey on the large scale of the whole face of the country, of course the most advantageous results may be expected to ensue in the management of an estate, whilst the reduced map will be the more valuable for topographical purposes.

194. By the recent orders of the Government of India, it has been ruled,* that the Nawab is to pay the entire expense of the survey, if he wishes to make it a detailed revenue one, in default of which a Topographical Survey only will be executed at the cost of Government. The Nawab's alternative has not reached me yet, but, under either circumstance, the small Survey Party will proceed to take up the work in the ensuing cold weather, and as this is likely to be extended, it has been proposed to the North-West Government, to place Mr. Talbot on the usual footing of an Assistant in executive charge, with a small increase of Establishment sufficient for the duty in question, the expense of which has been duly provided for in the Departmental Budget.

DELHI AND HISSAR DIVISION, PUNJAB.

195. The operations of this Establishment in the trans-Indus Districts, or Derahjat of the Punjab, Derah Gaze Khan, Derah Ishmael Khan, and Bunnoo, having been brought to a conclusion, the Party was transferred, by the orders as per margin*, to make a Revenue Survey of certain confiscated estates retained by Government in the Delhi and Hissar Division, and a Topographical Survey of those Jageers of

DISTRICTS DELHI, GOORGON, ROHTUCK, &c.

Major H. C. Johnstone, Revenue Surveyor, in charge.

Assistants.

Lieut. W. Barron, R. A., joined 4th July 1862.

Mr. G. Housden, 1st Class.

„ E. Foy, 3rd Class.

Sub-Assistants.

Mr. Hurree Sing, 3rd Class.

„ W. H. Reynolds, Junior Sub-Assistant.

„ H. Walsh, „ transferred to 3rd Oudh, 1st October 1862.

„ A. Gibson, „ „ „ „

„ G. B. Scott, „ joined 1st May 1863. „

24 Native Surveyors.

* Financial Dept. No. 4833, dated 16th October 1860.
Punjab Govt. No. 1193, dated 25th July 1861.

the old Territories of Jhujjer, Bahadoorgurb, &c., transferred to the Native Seikh States of Putteala, Jheend, and Naba, on account of good services performed by the Rajahs of those States in 1857, as detailed in paragraphs 244 and 261 of last Report.

196. The revision of the Districts and Tehseel boundaries of the Rawul Pindee Division, in which only a general Topographical Survey had been made, at a time when these local sub-divisions had not been formed, also entailed the necessity of a new Revenue Survey of this information only, and this was also directed to be simultaneously effected, as work remaining to be done under the Punjab Government.

RAWUL PINDEE DIVISION.

197. Operations so widely removed from one another necessitated a division of Establishment, and accordingly,

DIVISION OF ESTABLISHMENT.

• Mr. Housden, Assistant Revenue Surveyor.
 " Reynolds, Sub-Assistant " "
 " Walsh, " "
 3 Native Surveyors.

District	AREAS.		Square Miles.
	Pergunnahs.		
Delhi	{	Dulubgurh	195.30
	{	Mulrowlee	60.08
	{	Aleepoor	3.30
	{	River Jumna	12.55
Goorgaon	{	Jharsah	71.23
	{	Pulwal	25.77
	{	Rewarce	27.58
Rohtuck	{	Bahadoorgurh	53.47
	{	Budlee	124.12
	{	Jhujjer	354.96
	{	Berec	37.40
	{	Mumdhowlee	19.03
Jagheer	{	Patondee	52.69
	{	Jheend	3.54
	{	Doojuna (Nalur)	89.23
	{	Naba	4.88
			1,135.13

leaving a portion,* under the Head Uncovenanted Assistant, to carry out the Boundary Survey required in the Jhelum and Rawul Pindee Districts, the Revenue Surveyor, Major Johnstone, marched the remainder from Recess Quarters at Murree, down to and broke ground in the Delhi, Goorgaon, and Rohtuck Districts, on 1st November 1861. The details of areas which were accomplished in these Districts, during the season 1861-62 are as given in the margin, amounting to 1,135 square miles.

198. The above area was for the most part surveyed in the usual Revenue style, on the scale of 20 chains, or 4 inches to the mile, showing village boundaries. 971 square miles of it was effected in this way,

NATURE OF SURVEY. and the balance of 164 square miles formed merely the overlapping of the old survey, which was necessarily taken up topographically only, for purposes of good connection and identification, the Jageers lying intimately intermixed with the adjoining British villages embraced in the old survey. The object in making the survey of all these Pergunnahs being to ascertain the precise value of the estates in a Revenue point of view, previous to distribution to the several Sikh Chieftains, the whole of the specification detail areas of cultivation, waste, fallow, &c., were laid down, and the maps rendered as complete as if for settlement purposes.

199. The survey executed in the Rawul Pindee Division cannot be included in the above area, consisting, as it did, of purely linear measurements for plain boundary definition only, to be interpolated on the maps of the Topographical Survey. No area can properly be returned for it, though the work was both difficult and tedious, the whole of the Tehseels in both Districts being laid down, which occupied the detached Party, the entire season.

200. The following season of 1862-63, the Establishment was again necessarily widely divided; a part moved into and brought the survey of the Delhi and Hissar Division to a conclusion, whilst the remainder, again under Mr. Housden, Assistant Revenue Surveyor, was detached for a complete Revenue Village Survey of the lapsed Jageer of Mumdot, which had only been laid down topographically before, in the Ferozepoor District, together with Pergunnah Fazilka of the Sirsah District, including such portions of the Sutlej River as adjoined them.

201. On the completion of the regular Field operations in the two Divisions in the Plains, as above noted, measures had to be adopted for surveys on a large scale of the Hill Sanataria of Murree and Dalhousie, and of the Bukloh Hill adjoining the latter Station, on which it had been proposed to erect Barracks for a Convalescent Depôt for British Troops. All estates within the limits of these Sanataria were at the same time surveyed and mapped on a larger scale still, viz., 40 inches=1 mile, copies of which were furnished to the several land and house-holders, as well as to the local Civil Authorities.

202. The results of these several operations for the season are given in detail in the

OUT-TURN.		Square Miles.	Square Miles.
District.	Pergunnabs.		
Rohtuck	Mehim	7.41	
Hissar	Bhewanee	52.08	
Ferozepoor	Mokutsur	289.55	
	Ferozepoor	56.70	
	River Sutlej	37.58	
Sirsih	Fazilka	81.13	
	River Sutlej	4.09	
Lahore	Choonian	1.62	
Jageer Jheend	Dadree	571.80	530.16
" Loharoo	Loharoo	226.44	
" Naba	Bawul	275.83	
" Pattenla	Kanound	300.21	
	Narnoul	275.13	
			1,649.41
Hissar	Bhewanee	0.39	
	Toshan... ..	0.47	
Goorgoon... ..	Rewaree	20.97	
Jeypoor	Bawul	10.27	
Ulwur ... ..	... ..	83.45	
3 Sanataria .. ..	... ..		115.55
			18.71
	Total	2,313.83	

margin, and show another good out-turn, amounting to 2,314 square miles, of which area 530 square miles was pure Revenue Survey of villages retained by the British Government, on the scale of 4 inches=1 mile; 1,649 square miles consisted of the four Jageers, comprising portions of confiscated territory transferred to the Rajahs before mentioned, or restored to the original holders; 115 square miles of overlapping British villages required for professional connection of the old and new maps, all of which was taken up topographically only, but on the scale of 2 miles to the inch,

sufficient to show all the details of the specification of the land, and of which areas have been duly recorded, and the maps made as complete in every respect as the Revenue Maps generally are, but without the village boundaries.

203. The survey of the Hill Stations, which was made during the Recess months, was projected on the large scale of 20 and 10 inches to the mile. That of Murree forms a difficult and tedious undertaking. The allotment or separate holding Plans, showing each proprietor's estate, is on the still larger scale of 40 inches to the mile. These Plans have not yet been finished, and are consequently not rendered to this Office.

204. The portions of the old Jhujjer and Bahadoorgurh Territories transferred in Jageer to the Maharajah of Putteala comprise an area of 575.34 square miles, and consist of the Pergunnabs of Kanound and Narnoul. The population is estimated at 1,63,176 souls, and the revenue at Rs. 2,37,887 annually.

205. The Maharajah of Jheend received in transfer the Jageers of Dadree, with an area of 571.80 square miles, a population of 87,549, and a yearly revenue of Rs. 2,18,000.

206. The Rajah of Naba was presented with the Pergunnabs of Bawul and Kanti, having an area of 275.83 square miles, a population of 32,071, and a rent roll of Rs. 55,641.

207. The Jageer of Loharoo, with an area of 226.44 square miles, 10,211 inhabitants, and Rs. 11,211 of revenue, was restored to the former proprietor.

208. The remaining area of the country now brought under survey in the Delhi and Hissar Division, 1,799 square miles, has been retained by the British Government.

209. The total results of the two seasons' survey exhibits, therefore, an area of 3,449 square miles, besides the large amount of intricate work included in the Boundary Survey of the Rawul Pindee Division, and for which, as already stated, no area can be shown, as it consisted of continuous linear measurement only.

COST AND RATES.

		Rs.	A.	P.
1861-62	{ Permanent Establishment ...	35,876	6	11
	{ Contingencies ...	3,563	7	10
1862-63	{ Permanent Establishment ...	36,343	12	0
	{ Contingencies ...	4,507	5	9
Total ...		80,291	0	6
		Rs.	A.	P.
* Delhi and Hissar Division	{ Village or Revenue Survey, scale 4 inches=1 mile, or greater ...	41,310	11	0
	{ Topographical Survey, scale 2 inches=1 mile ...	22,353	3	9
Jhelum and Rawul Pindiee Division...	{ Linear measurement of Boundary Survey only ...	16,627	1	9
	Total ...	80,291	0	6

210. The cost of the above operations amounted, including all contingencies, to Rs. 80,291-0-6, distributed over the two years as per margin. This has been apportioned to the different kinds of survey as detailed,* and yields the following general average rates, viz., of Revenue Survey per square mile Rs. 27-3, and per village circuit Rs. 48-0-7, and of Topographical Survey per square mile Rs. 11-9-4. This cost is very moderate, in comparison with other surveys.

211. Throughout these operations, care was taken to fix all Great Trigonometrical Stations, of which no less than 18 principal and 16 secondary were met with, as well as all places of note, or conspicuous objects. The origin of the survey in the Hissar Division is the Great Trigonometrical Survey Station of Bakurgurh, situated between the Pergunnahs of Bahadoorgurh and Badlee, in the Rohtuck District, and the well-known old Fort of Tooqhlquabad formed the point of departure for the Bullubgurh Work. The Rahoon Meridional Series of Principal Triangles passes directly through Jhujjer. This renders the task of incorporating the new with the old materials comparatively easy.

212. The following Table of comparison of the direct distances, deduced from the Village Traverses in this Office, affords highly satisfactory results, the average error per mile being 3.26 and 2.41 feet only, on the quantities in excess and defect respectively:—

Names of Great Trigonometrical Stations.				From Revenue Survey.	From Great Trigonometrical Survey.	Error of Revenue Survey.	Error per Mile.
				Feet.	Feet.	Feet.	Feet.
Chang	to	Deosar	...	58,996.1	58,871.2	+ 24.9	2.23
"	to	Sankror	...	52,039.8	52,043.9	- 4.1	0.42
Deosar	to	"	...	66,154.2	66,095.3	+ 58.9	4.70
"	to	Gopi	...	91,625.6	91,520.2	+105.4	6.07
"	to	Kaliana	...	83,769.8	83,696.7	+ 73.1	4.61
Sankror	to	"	...	72,102.5	72,057.0	+ 45.5	3.33
Gopi	to	"	...	78,487.1	78,386.0	+101.1	6.80
"	to	Shampura	...	48,127.2	48,129.4	- 2.2	0.24
"	to	Khudana	...	71,950.7	71,875.5	+ 75.2	5.52
Kaliana	to	"	...	67,877.8	67,874.4	+ 3.4	0.26
"	to	Baoah	...	72,920.3	72,908.0	+ 12.3	0.89
Shampura	to	Khudana	...	57,887.4	57,866.5	+ 20.9	1.91
Baoah	to	"	...	73,539.8	73,513.2	+ 26.6	1.91
Shampura	to	Dhadeod	...	65,513.4	65,461.1	+ 52.3	4.22
Khudana	to	"	...	54,914.6	54,887.9	+ 26.7	2.57
"	to	Nangal	...	61,535.3	61,466.9	+ 68.4	5.87
Baoah	to	"	...	53,091.4	53,122.2	- 30.8	3.06
Dhadeod	to	"	...	68,525.3	68,499.4	+ 25.9	2.00
"	to	Khatra	...	75,486.4	75,516.8	- 30.4	2.13
Nangal	to	"	...	94,220.8	94,218.0	+ 2.8	0.16
"	to	Khudrot	...	72,996.2	73,055.6	- 59.4	4.30
Khatra	to	"	...	84,185.4	84,185.2	+ 0.2	0.01
"	to	Tasing	...	76,549.7	76,471.0	+ 78.7	5.43
Khudrot	to	"	...	88,995.5	89,047.0	- 51.5	3.06
RATIO OF ERROR. } Average where the error is +				1,300,655.8	1,299,853.5	+802.3	+ 3.26
" " " -				390,736.5	390,914.9	-178.4	- 2.41

213. The marginal list of records, maps, and plans furnished bears ample testimony

to the large amount of work undertaken, and completed by this Establishment. The detail survey generally has been fairly performed, and the Recess work rendered as usual, with promptness, in time to admit of the Establishment taking the Field annually, at an early date. The General or Pergunnah maps are good, and executed with sufficient neatness and precision. The large scale Village Plans have not been prepared so well as they might have been.

MAPS AND RECORDS.

SEASON 1861-62.

- 2 Index Maps of seasons' operations, scale 4 miles=1 inch.
- 5 General Maps of Main Circuits, 1 to 8, scale 1 mile=1 inch.
- 6 Maps of lines of Boundary District, Rawul Pindee, scale 1 mile = 1 inch.
- 4 Volumes of Congregated Village Plans, 44 sheets, of Main Circuits, 1 to 8.
- 2 Volumes of Main Circuit Traverse Calculations.
- 1 Volume of Village Traverse Calculations, Main Circuits, 1 to 8.
- 1 Ditto ditto Registers Main Circuits, 1 to 8.

SEASON 1862-63.

- 2 Index Maps of seasons' operations.
- 10 General Maps, scale 1 mile=1 inch.
- 2 Volumes of Congregated Village Plans, 40 sheets.
- 1 Plan of Dadree and Kanound Cities, scale 8 inches= 1 mile.
- 1 Volume of Main Circuit Traverse Calculations.
- 2 Volumes of Village Traverse Calculations.
- 1 Volume of Village Register Headings.

214. Some portion of the work in Bullubgurb, containing the Tooqhluaqabad Fort, &c., to the south, presenting a particularly unfavorable appearance,

and differing materially from the former survey undertaken for special objects by the late Captain Burgess, I directed to be re-done. This has been carried out, and the revised maps have been lodged, an examination of which amply proves the necessity of the measures taken.

215. Some few extracts taken from the Surveyor's Reports, describing the general character of the tracts, and the nature of the estates surveyed, will be found in the Appendix.

216. The whole of the remaining assigned work, under the Punjab Government, having been thus brought to a close, the disposal of the services of the Establishment became a question for disposal. It was stated in my last Report, that it was originally intended to employ Major Johnstone's Party in Oudh, but when the offer of their services was made, the Chief Commissioner declined the extra aid, for the same reasons as alluded to in my remarks on the Fyzabad Division Survey. It was then consequently proposed, to transfer the Punjab Party to the Central Provinces, for employment in the southern section of the enormous unsurveyed tract comprising the Chanda

* To Government No. 1437, dated 14th April 1863.

Foreign Department No. 119, dated 30th May 1863.

and Upper Godavery Districts and rich cotton fields, which the Chief Commissioner of the Central Provinces expressed himself* most anxious to have developed by a regular survey. This plan was accordingly approved by the Government of India, in the letter noted in the margin, with effect from the 1st October last, the nominal commencement of the Professional or Survey year.

217. On communicating the above orders to the Punjab Government, however, the serious question of the actual withdrawal of the only Survey Party remaining in the Punjab, came forward for decision. It was then found, from a special report made by the Financial

To Punjab Government No. 362, dated 11th June 1863.

Commissioner of the Punjab, that the requirements of the Revenue Department urgently demanded a complete Revenue Survey of the Euzofsaie country and the Peshawar Valley trans-Indus, with a view to the revision of the assessment. A similar operation was declared necessary in Huzara, of which District only a Topographical Survey, on a very small scale, had previously been made. The definition of village boundaries all along the Districts of the Derahjat, which were purposely omitted in the survey lately concluded by Major Johnstone, was also declared by the Financial Commissioner to be now a great desideratum, in which all the local Authorities concurred.

218. For the above reasons, the Government of India acquiesced in the views of the

Punjab Government to Surveyor General, No. 590, dated 25th June 1863.

Foreign Department No. 179, dated the 31st July 1863.

Punjab Government, and sanctioned the retention of the Survey Party for this and any other work which might be found hereafter in the Punjab, by the orders quoted in the margin.

219. In consequence of this change in the destination of the Party, and the varied requirements specified in the Financial Commissioner's communications, opening out a very wide field of further employment in the Punjab, I found it necessary to proceed to Lahore and Murree, in September last, with the view of discussing the subject with the Punjab Government, and obtaining a clear insight into the nature and extent of the Revenue detail work now to be done, as well as to inspect the Surveyor's Office at the latter place.

220. During a short stay at Lahore, I had full opportunities of ascertaining the views of the Financial Commissioner, and arranging with that gentleman for the future conduct of the operations trans-Indus and in Huzara. A similar description of detail survey was declared necessary in the Murree Tehseel of the Rawul Pindee District, and from what was urged, it appears very probable that the whole of that, as well as the Jhelum District, which have only come under the Topographical operations, will have eventually to be dealt with in a similar manner, thus cutting out a very extensive field for the employment of such a Party for many years to come.

221. On the 23rd September 1863 I reached Murree, and between that date and the 28th idem, having learnt the wishes of His Honor the Lieutenant Governor, as to future wants, I inspected the Revenue Survey Party going through the maps and returns of the past season's work. The state of Major Johnstone's Office I found creditable. The Assistants European and Native, were well located, due regularity and system prevailing, and the whole of the maps and computations well brought up, without any arrears to affect proper Field progress. Major Johnstone's management has always been characterised by tact and zeal in the performance of his duties.

222. The European Assistants I found highly intelligent, zealous, and well up to their work; they have had several years' experience in Frontier operations, and have invariably distinguished themselves by their good judgment and forbearance in their relations with the inhabitants and border Tribes, as well as by their excellent conduct in quarters, and devotion to their public duties. Messrs. Housden and Foy, Assistant Surveyors, have done excellent service, and have obtained for themselves a high character in the Department. They were each promoted, as shown in the margin; Sub-Assistant Hurree Sing I also found a superior man and highly deserving; his qualifications both in Field and Office being very respectable.

Mr. G. Housden to Rs.	350	} G. O. G. G.	selves a high character in the Department.	
Mr. E. Foy	250			} No. 6, dated 21st
Baboo Hurree Sing	125				February 1863.

223. The Junior Sub-Assistants, as per margin, have each received a step in promotion, during the past year, the three latter are from that excellent Institution the Lawrence Asylum at Sunawur, and I am glad to seize the opportunity to express the high opinion which both Major Johnstone and myself entertain of the character and qualifications of the youths educated there; they have turned out very well, and given us complete satisfaction. It will be my pleasing duty, therefore, to offer appointments in this Department annually to such boys of the Lawrence Asylum, who come up to the required standard of qualifications. This I have notified to the Principal of the Asylum at Sunawur.

Mr. Gibson to	Rs. 125	} Lawrence Asylum Youths.
Mr. Reynolds ..	125	
Mr. Walsh do., and transferred to 3rd Division, Oudh, from 1st October 1862.		

Mr. Scott appointed by G. O. G. G. No. 305, dated 9th July 1864.

224. At the commencement of the current season, the preliminary arrangements were duly made, in the month of October last, to take up the village by village survey of Euzofsaic by the Head Quarters of the Establishment, whilst a second detachment, under the

EMPLOYMENT DURING CURRENT SEASON.

Senior Assistant, Mr. Housden, was deputed, on the special requisition of the Financial Commissioner, to re-survey the villages and Illaquis in the Sind—Saugor Doab, between Shahpoor and the old Leah District, for the proper adjustment of the District boundary of Shahpoor, which, owing to the peculiar nature of the Thull in that Doab, and the mode in which the country was demarcated by the Civil Authorities, on the occasion of the former survey, had caused serious delay and confusion in the settlement of the question.

225. Before, however, Major Johnstone could break ground in Euzofsaie, he received orders to accompany the Military Expedition, under Brigadier Sir N. Chamberlaine, K. C. B., into the hills across the British Frontier, with the object of obtaining as much geographical information of those parts as possible, and to survey the route taken by the Force. The Revenue Surveyor, accompanied by his Military Assistant and Subordinate Staff, as per margin, joined the Force at Hoti Murdan, on the 6th October last, and returned with it on the 10th of January following.

DETACHED MILITARY EMPLOYMENT.

- Lieutenant Barron.
- Mr. E. Foy.
- ” H. Reynolds.
- 2 Native Surveyors.

226. Major Johnstone and his Assistants managed, notwithstanding, under all the serious difficulties of their position, to effect a tolerable survey of the British positions at the head of the Umbeyla Pass, and the communications between it and the plains of Euzofsaie, as well as of the route taken by the British Troops, in their subsequent advance through the Chumla Valley, to destroy the village of Milha, under the Mahabun Mountain, the Head Quarters of the Mussulman rebels and fanatics, for whose extirpation chiefly the Force had been organized.

SKETCH OF ROUTE AND SURROUNDING COUNTRY.

227. As much of the surrounding country, hills, streams, villages, &c., were also sketched in as possible, as actual survey could not be attempted beyond the British picquets. The information thus gained, although only of small extent, is important, and will be duly incorporated on the maps of the Frontier.

228. Shortly after the advance of the British Troops, Lieutenant Barron, whilst reconnoitring, I regret much to record, received a severe musket shot wound in the arm, and was thus incapacitated from taking any further share in the operations. He was sent to the rear for treatment. Since then his wound has, I am happy to say, progressed very favorably, and though still unable to take an active part in the Field duties of the survey, he is able to perform his Office duties, and superintend one of the Survey Camps as usual. Lieutenant Barron is a most promising Officer, and has performed all his duties with great ability and zeal.

LIEUT. BARRON SEVERELY WOUNDED.

229. At the close of the Military operations in the Chumla Valley, Major General Garvoek, then in Command of the Field Force, made honorable mention of the services performed by Major Johnstone. An extract from the Despatch, dated 22nd December 1863, to His Excellency the Commander-in-Chief, is subjoined in the margin.

Para. 20. * * * * *. “An excellent sketch by Major Johnstone of the Revenue Survey Department is likewise enclosed.”

Para. 22. * * * * *. “Major Johnstone, of the Revenue Survey Department, has been of the greatest utility.”

230. Major Johnstone then resumed his ordinary duties as Revenue Surveyor, and made every exertion to get his Establishment into full work. He reports favorably of the manner in which, during his temporary absence, the duties of the several camps had been conducted by those Assistants who had been left behind. The time occupied by this Military duty must, of course, tell somewhat against the out-turn of the current season in Euzofsaie, but good experience has been gained of the Frontier immediately to the north of it.

1ST DIVISION, OR RIGHT BANK INDUS, SINDH.

231. In my last Report on the Revenue Surveys of India, I mentioned that this Establishment under Captain J. Macdonald had taken up, during the 1st of the seasons now under review (1861-62), the Mehur District, (the last remaining of the Shikarpoor Collectorate), consisting of two* Talooquas, and also the extensive tract of hilly country, outlying to the west of the Mehur and Larkhana Districts, and of which the Kherotur range forms the present Frontier boundary between the British possessions and those of Kilat to the west. The whole of this has now been satisfactorily completed, and a good season's out-turn effected in very nearly equal proportions of Revenue, Mouzawar, and Topographical work.

DISTRICT MEHUR.

* 1 Talooqua Mehur.
2 „ Kukkur.

232. In the following season 1862-63, the operations were extended southwards, again entering the Kurrachee Collectorate, part of which had been previously surveyed in 1855-56. Four Talooquas of the Sehwan District, and a large portion of the Kohistan or Hilly Territory under charge of the Kardar of Bola Khan-ka Tanda, were completed; thus, with the exception of the Talooqua of Kotree, filled up the gap that previously existed in the survey on the right bank of the Indus River, between the Districts of Mehur and Kurrachee. A complete survey of the River Indus, forming the eastern limits of the tract surveyed in 1861-63, was also executed, and a careful plan on the scale of 8 inches=1 mile made of the Town and Suburbs of Mehur.

233. The sum total of the areas thus accomplished in the two seasons amounted to square miles 5,269, or to an average of 2,634½ square miles each season.

Seasons.	District.	Number of Villages or Circuits.	Area in Square Miles.	TOTAL.
1861-62	District Mehur	301	1,243	2,504
	Indus River	2	30	
	Hilly Country ... ..	.....	1,231	
1862-63	District Sehwan	176	1,559	2,765
	„ Kohistan ... ..	.....	1,072	
	Indus River	4	134	
	Villages	477	}	5,269
	River Circuits	6		

234. Of this area, square miles 2,966 consisted of the usual Revenue Delineation Survey, on the scale of 4 inches=1 mile, showing cultivation, waste, and fallow, &c., in minute detail, for settlement and general purposes. In a few cases, where the Dehs or Villages bordered on the desert, or contained very extensive tracts of waste, the scale was reduced one-half, or to 2 inches to the mile, as it was unnecessary to represent such large areas, containing no details of importance, on the full scale. The remainder in the hills and arid Plains at their foot, consisted of square miles 2,303 of merely Topographical Survey, for geographical purposes only, on the smaller scale of 1 mile=1 inch. Without this latter survey, the map of the Province would not have been complete or satisfactory.

235. The above tract of country forms the central portion of the Province, on the west bank of the river, being bounded on the north by the Lar-khana District; on the east by the Indus River, separating it from the Districts of Nowsherah, Halla, and Hyderabad of the Hyderabad Collectorate; on the south by the Talooqua of Kotree, the only unsurveyed and southern portion of the Sehwan District; and on the west by the State of Kilat, and a portion of the Kohistan or Hilly Country of the Kurrachee Collectorate.

236. In executing the above area, the sum of Rs. 89,431-2-0 was expended, including all charges as per margin, of which sum Rs. 71,568-15-9 represent the cost of the large scale or village by village survey, and Rs. 17,862-2-3 of the topographical, yielding general averages on the two seasons, as follows:—On the first class of survey Rs. 24-2-0 per square mile, and Rs. 150-0-8 per Village or Deh, and on the second class, Rs. 7-12-1 per square mile, or on the whole area, the mean average rate is Rs. 16-15-6 per square mile.

237. A further sum of Rs. 12,270-14-11 for Establishment, and of Rs. 1,172-5-7 for contingencies, aggregating Rs. 13,443-4-6 in all, was made over by this Party out of the annual maximum grant of 1861-62, to meet the expenses of the newly raised second division of Sindh, from the 1st October 1861 to the 30th April 1862, after which date due provision was made for the new Party in a separate Budget Estimate. This sum will therefore be found duly accounted for under that Survey.

238. These results are highly favorable, and add to the many successful seasons over which these important operations have been conducted, under the able superintendence of Captain Macdonald, whose zeal and energy is always conspicuous and well directed. I have great satisfaction in noticing this Surveyor's continued good services. In all his work, he affords me great satisfaction.

239. The Indus Meridional Series of the Trigonometrical Survey again afforded numerous points for connection with, and verification of, the Revenue Survey measurements, and the point of departure for the past season's work was the Great Trigonometrical Survey Station of Sukker, from which all the co-ordinates have been calculated and projected. The

		Rs. A. P.	
1861-62	... { Establishment	35,712	4 9
	... { Contingencies	5,635	7 4
1862-63	... { Establishment	40,871	14 8
	... { Contingencies	7,211	7 3
	Total	89,431	2 0

RESULTS CREDITABLE TO EXECUTIVE SURVEYORS.

CONNECTION WITH G. T. SURVEY.

comparisons of the results obtained in season 1861-62, between the Great Trigonometrical and Revenue Survey values, are as follows:—

Captain Macdonald's Revenue Survey Operations during Season 1861-62, compared with the Great Trigonometrical Survey.

Names of Great Trigonometrical Stations.	From Revenue Survey.	From Great Trigonometrical Survey.	Error of Revenue Survey.	Error per Mile.
	Feet.	Feet.	Feet.	Feet.
Maru Pir to Mojahir ...	64,197·4	64,104·9	+ 92·5	7·61
„ to Sabar Khan ...	64,798·7	64,709·8	+ 88·9	7·10
Sabar Khan to Mojahir ...	57,150·0	57,002·4	+ 147·6	13·64
„ to Khurbi ...	81,861·6	81,942·0	— 80·4	5·19
„ to Mirka Kuba ...	57,414·9	57,384·9	+ 30·0	2·76
Mojahir to Khurbi ...	77,654·0	77,735·5	— 81·5	5·54
Khurbi to Mirka Kuba ...	60,193·3	60,241·1	— 47·8	4·19
Mojahir to „ ...	95,211·5	95,096·7	+ 114·8	6·37
Average where the error is... +	3,38,772·5	3,38,298·7	+ 473·8	7·38
„ where the error is... —	2,19,708·9	2,19,918·6	— 209·7	5·04

240. The demarcation or boundary maps of the Shikarpoor Collectorate, as prepared by the Settlement Officer, Captain Wallace, are reported to have been very good and most carefully prepared. In the 20th para. of his Report for 1861-62, Captain Macdonald bears ample testimony to the excellence of the work in Upper Sindh as far as the boundaries of Villages and Talooquas are concerned. But from the same Officer's Report for 1862-63, para. 15, it will be observed that the demarcations in the Sehwan District of the Kurrachee Collectorate have entailed serious trouble and delay in the professional operations. The Hudbust maps are pronounced "the worst that could possibly be conceived," which necessitated the employment by the Surveyor of his own Professional Parties, for several months, to rectify the omissions in the Field, and to endeavour to complete all the villages which had been surveyed that season, but without success, 20 villages having remained over the rainy season, which kept back the maps, and caused vexatious delay.

241. Several references have taken place with the Commissioner of Sindh and the Bombay Government, on the subject of preparing the country, and adjusting the disputed cases a-head of the Survey. This great and leading principle cannot be neglected or set aside, without causing serious delay and extra expense to the Professional Survey, and I had hoped, after so many years' experience in Sindh, that such difficulties would not have arisen.

242. The value of the comparison of the Khusrah or field by field measurement results with the interior detail survey of the Professional Establishment, hitherto considered by the best Authorities so essential a preliminary to all settlement operations, for ensuring equally the rights of Government, and the fair profits and interests of the landholders, does not appear to have met in Sindh with that appreciation which it deserves, and was intended undoubtedly to secure, and which led to such admirable results in the Punjab

from which Province the Survey Establishment was moved down into Sindh for the express purpose of following a similar system.

243. In the 37 para. of Captain Macdonald's Report for 1861-62, given in the Appendix, that Officer prominently alludes to the entire neglect, which seems to have characterized the settlement proceedings in Sindh in this respect. This is much to be regretted, as the previous training in the Punjab admirably fitted this Establishment for carrying out the same duties in Sindh, in conjunction with the Settlement Officers. The Revenue Surveyor did in fact perform all that was required of him, but little response appears to have been made by the Civil Branch, and the mutual check that the one Establishment might and should have afforded the other was almost entirely unavailed of, very few khusrah map measurements, so far as the Revenue Surveyor is aware, having been compared with those of the Professional Survey.

244. In the Punjab, where this mutual check was absolutely insisted on, by the Government of that Province, the Revenue Survey Establishments were bound to prepare and furnish to the Settlement Officers a certain number of village detailed areas monthly. These were at once compared with the khusrah or Field measurements conducted under the Settlement Officer's superintendence, and all discrepancies, beyond a certain allowed percentage of difference, were immediately recorded, enquired into, and rectified, thus securing the greatest possible truth in the areas finally recorded in the Registers, as well as the most accurate delineation of the various details of fallow, waste, cultivation, rivers, tanks, lakes, &c., for entry on the several maps, whether Village or Pergunnah.

245. This course also enabled the Settlement Officers to draw their conclusions with the greatest certainty, and to justly apportion the Government demands to the fair profits of the landholders, and at the same time to avoid the disputes and heart-burnings that must naturally have arisen, if the power of passing off incorrect returns had rested, in a measure unchecked, in the hands of the subordinate measurers of the Survey Department.

246. Amongst the extracts from the Revenue Surveyor's Report for 1862-63, is a Table showing "comparison of the areas under cultivation," in certain Talooquas of the Sehwan District, as tabulated from the Tuppehdars' measurements and Professional Survey results. In this Table, the excess of assessable lands according to the Professional Survey measurements, after deduction of Jageer lands, is shown to amount to no less than 82,970 beegahs, which, at an average rate of Rs. 1-3-4 per beegah, represents an annual loss, prior to survey, of the large sum of Rs. 1,00,284, or more than double the cost of the professional operations, which are thus shown to more than repay their cost the first year, without calculating the otherwise great value of the work for all local engineering, or other great undertakings for the future benefit of the country.

247. This important subject has frequently been noticed by this Department,* and the Revenue Surveyor has been in constant communication with the Revenue Authorities on the spot; nothing in short has been left undone, as far as the competency of this Department extends, to secure those advantages and benefits which the Surveyor in his Annual Report has justly described and forcibly commented on.

* Vide printed Annual Report for 1856-57, No. 9, dated the 25th November 1862, pages 51 and 52.

Ditto printed Annual Report for 1857-58, No. 34, dated the 27th August 1859, pages 80 and 81, paras. 232 and 233.

248. The maps executed and furnished by this Establishment are, as usual, of high order

MAPS AND RECORDS.

Season 1861-62.

- 1 Index Map of season's operations, scale 4 miles = 1 inch.
- 7 Main Circuit Maps, scale 1 mile = 1 inch.
- 1 Map of Shikarpoor Collectorate, scale 4 miles to the inch.
- 2 Hill Circuit Maps, scale 1 mile = 1 inch.
- Atlas Volumes of Congregated Village Plans in 80 sheets, scale 4 and 2 inches to the mile.
- 1 Volume of Main Circuit Traverse Calculations, Nos. 1 to 6.
- 2 " of Village Traverse Calculations and Registers, Nos. 1 to 6.
- 1 " of Triangulation Calculations.

Season 1862-63.

- 1 Index Map of season's operations, scale 4 miles = 1 inch.

and merit, and have been made as comprehensive, in detailing the general features of the country, as the several scales on which they are projected would allow. Lists of all such as have been lodged in this Office, together with the various other records in connection with them, are entered in the margin.

249. The maps executed by Lieutenant Tanner and Mr. Bolton, Assistant Surveyors, are very creditable indeed; both these Assistants are highly spoken of, and the latter received promotion to the grade of 1st Class Assistant in the orders specified in the margin.

G. O. G. No. 305, dated the 9th February 1864.

Mr. W. H. Bolton, 300 to 350.

„ E. C. Barrett, 100 to 125.

Mr. Barrett, Sub-Assistant, 3rd Class, has also received a step by the same order. The qualifications of the two Sapper Serjeants,* recently appointed to this Party from the Bombay Army, are very promising.

* Serjeant J. Parker.

„ J. Guilford.

Meer Fuzul Hossein, draftsman, is likewise deserving of notice, and has been strongly recommended for his general usefulness and merit, for which he has received suitable promotion.

250. Excellent descriptions of the country and its resources are given by the Revenue Surveyor, in his Annual Reports, extracts of which will be found in the Appendix. The statistics of the traffic on the River Indus, from May 1855 to April 1861, are interesting and valuable.

DESCRIPTION OF COUNTRY, &c.

251. The Establishment is at present employed in completing the Talooqua of Kootree of the Sehwan District, and the Kohistan District (or hilly portion) of the Kurrachee Collectorate, and have also commenced the survey of the Jerruk District of the same Collectorate, which extends from Sehwan and Kurrachee Districts to the sea, and with the survey of which the professional operations of the British Districts, on the right or western bank of the Indus and its low lying delta lands, will be complete, and the Survey Establishment be available for employment elsewhere.

CURRENT SEASON'S WORK.

252. The Shah Bunder District belonging to the Kurrachee Collectorate, lying on the left or eastern bank of the Indus, remains for survey, no part of which is yet demarcated. This comprises an area of about 5,000 square miles, of which 4,000 is low swampy or waste lands. This I propose shall be effected in due course by the second Party under Mr. Lane, who is working steadily down on that side of the river.

253. The services of Captain Macdonald's Party are much required in our own Provinces, where there is a vast amount of work to be done, and a great want of experienced Officers. One efficient and full-sized Party is, in my opinion, quite sufficient to leave in Sindh, to complete whatever may remain to be done there, and having consulted the Commissioner of Sindh, on the subject, that Officer is of opinion that there is no further work ready for this Establishment, which, he thinks, may therefore be removed. A proposition to this effect has accordingly been submitted for the orders of Government.

REMOVAL OF PARTY FROM SINDH.

To Foreign Department No. 14, dated the 18th May 1864.

2ND DIVISION OR LEFT BANK INDUS, SINDH.

254. As previously reported, this Establishment was organised and formed out of the 1st Division [on the return of Captain Macdonald, Revenue Surveyor, from Furlough to Europe], with a view to attaining greater progress with the survey of Sindh, and was placed under the executive charge of Mr. W. Lane, who had officiated in the 1st Division.

DISTRICT NOWSHERA.

255. The Party took the Field with the small Establishment which could at first be provided, to the extent as per margin, and broke ground in the District of Nowshera of the Hyderabad Collectorate, and in continuation of the preceding season's work of the parent Establishment, from which the nucleus of the new Party had been formed, and which had been directed to confine its operations to the Divisions or Collectorates, on the right bank of the Indus River, Mr. Lane with the second Party having those of the left bank allotted to him.

Mr. W. Lane, Revenue Surveyor in charge.

Mr. G. W. Johnson, Sub-Assistant, 3rd Class.

12 Native Surveyors.

9 Apprentices.

Mr. E. Lofie, Assistant Surveyor, 3rd Class, joined on the 1st June 1862.

256. During the first season, the Talooquas of the Nowshera District marginally noted, were either wholly or partially completed, with an area of square miles 1,722, and 173 Villages or Dehs, besides 50 square miles of the River Indus, which formed the western limits of the District, giving square miles 1,772, as the gross out-turn of the year.

SEASON 1861-62.

Talooqua Sahilee.
 " Mora.
 " Sukkurrund (partially.)

257. In the following season 1862-63, the Establishment, further increased by the additional staff as per margin, working on still to the south of the completed area of Nowshera and Khyrpoor, effected the remaining 764 square miles and 95 villages of the Talooqua of Sukkurrund; with this the survey of the Nowshera District was brought to a close. The Talooqua of Shadadpoor

DISTRICT HALLAH.

SEASON 1862-63.

Mr. H. Dowman, Junior Sub-Assistant Revenue Surveyor.
 9 Native Surveyors, &c.

was then taken up, comprising an area of square miles 725 and 167 villages of the adjoining District of Hallah, and the Talooqua of Sangur, containing 708 square miles and 100 villages, appertaining to the Thur Parkur Political Superintendency, which lying contiguous to, and bordering the Hyderabad Collectorate, on the south and east, separates it from the Runn of Cutch. 56 square miles were further effected of the River Indus, giving a total of square miles 2,253 and villages 362 for the season, and a grand total of square miles 4,025, and 535 Villages or Dehs, as the result of two years' operations.

258. Of the above area, square miles 3,106 were executed on the large scale of 4 inches = 1 mile, and square miles 919 on the smaller scale of 2 inches = 1 mile, this latter being confined to the large blocks of country interspersed with sands, marshes, and dense jungle, of which the Talooqua of Sangur of Thur Parkur District was chiefly composed; similar tracts existed, and were so dealt with in Talooquas Sukkurrund and Mora of the first season's operations.

259. The above out-turn is a very good one, and reflects great credit on the Revenue Surveyor and his small Establishment. It was effected at a total cost of Rs. 56,078-13-6, as marginally detailed.

		COST.		
		Rs.	A.	P.
1861-62	{ Establishment	21,857	12	3
	{ Contingencies	1,877	7	5
1862-63	{ Establishment	29,355	11	4
	{ Contingencies	2,987	14	6
Grand Total		56,078	13	6

RATES.

260. The average therefore was Rs. 13-14-11 per square mile, and for each Village Circuit or Deh Rs. 9-4-5-7; this latter rate is of course in proportion to the size of the Dehs or Village Circuits, which are exceedingly large.

261. The large areas accomplished in Sindh, in comparison with what the other Survey Parties are generally shown to execute annually, the small cost per square mile, and the high rates for each village circuit, are caused alike by the small numbers and immense size of the villages, which average in this Survey 5½ square miles, or 3,583 acres each, these naturally entailing a very much smaller amount of boundary survey, and many of them being composed of interspersed sand, marshes, and jungles, at present uncultivated and waste, and consequently presenting little or no interior details to occupy the Surveyor's time, when once the boundary survey has been completed. For such tracts, the 2 inches = 1 mile scale has been deemed ample for revenue and general purposes.

262. There are also large tracts of barren and unproductive wastes of land, and rough and rugged hills, which do not demand a larger scale at present than the small one of 1 inch = 1 mile.

263. Besides the above work, surveys on the scale of 10 inches = 1 mile were executed, of the Civil Station of "Tharoosha," the town of "Nowshera," and the large and important villages of "Guchero" and "Dowlutpoor."

SURVEY OF PRINCIPAL TOWNS,
 &c.

264. The operations of the Trigonometrical Survey not having extended over the portions of country, that came under survey during these two GREAT TRIGONOMETRICAL SURVEY NOT EXTENDED TO HYDRABAD DISTRICT. seasons, the Revenue Surveyor erected a circular masonry platform, with a small pillar in the centre, on each of his main circuit triple junction Stations, to admit of connection hereafter, should the Great Trigonometrical Surveyors ever visit this part of the country.

265. All permanent conspicuous objects, such as domes of mosques, remarkable buildings, have also been carefully connected with the village measurements, and their data and description of the exact part of building so fixed, recorded for the same purpose. These will also serve for purposes of identification for laying out roads, canals, or other general scientific undertakings, that may subsequently become necessary, and admit of their being plotted and incorporated on the maps now prepared.

266. A careful connection along the line of the Indus River has also been effected between the two Sindh Survey operations, the Stations of the one having been invariably adopted by the other, and the original angular and linear measurements made common to both surveys. In this way the left bank survey is in connection with the principal triangulation on the right bank, or the Indus Meridional Series of the Great Trigonometrical Survey.

267. The comparison of the Professional Survey boundaries with those of the Settlement Officer's demarcation maps, is pronounced to have been, on the whole, very satisfactory. During the course of survey, the omission of certain Jageers in the Shahdadpoor Talooqua was discovered. This was duly brought to the notice of the Settlement Officer, and will be duly rectified, during the current season, and the boundaries measured and defined on our maps as all others have been.

268. The boundary marks on village trijunction points are all reported to have been erected of masonry, with due regard to permanence, and in demarcating the boundaries of Dehs or Villages in the Sangur Talooqua of the Thur Parkur Political Superintendency, stone pillars have been adopted, in view to making the demarcations and survey of that wild tract as permanent as possible.

269. Unfortunately, the Khusrah or Native detail measurements, on this side the Indus, have not been conducted simultaneously with those of the Revenue Survey Professional Establishment; on the contrary, according to the report of the Officer in charge of this Party, it is not likely that the Khusrah Survey will be undertaken, in this part of Sindh, for some years to come. And thus, as already remarked in my comments on the work of the other Division, on the right bank of the Indus, the labor on the part of the Professional Survey of separating cultivation, fallow, waste, &c., and recording their several areas, can never

Extract of Annual Report of 1861-62.

PARA. 18.—“No Khusrahs have yet been commenced in the Districts, but the Settlement Officer purposes entering on Kundiara, the most northerly Talooqua, shortly, and carrying out the Bombay system of Field Survey.

It is much to be regretted, that the Khusrah has nowhere in Sindh been carried out simultaneously with the Professional Survey. Thereby, the professional details, as far as their acting as a check in bringing to light any large errors in the Khusrah measurements, has never been brought to its legitimate use.”

Extract of Annual Report of 1862-63.

PARA. 21.—“As the ‘Khusrah’ or Field Survey is not likely to visit the localities we are now going over for many years to come, much of our labor of separating fallow from cultivation, &c., can never be utilized. I am, however, happy to be able to record the useful purpose to which Captain Taverner, Settlement Officer of Hyderabad, has brought the boundaries of our Survey. By enlarging the Plans to double our scale, he obtains boundary maps of a suitable size, for entering his Field Survey therein, and of greater accuracy than the means at his own disposal would admit of, whilst a saving of cost is effected. The statute acre is likely to supplant the Napierian Beggah, in the new settlement, for the change has been suggested by the Settlement Officer, and, I believe, received the approval of the Commissioner in Sindh.

be utilized as it should undoubtedly have been.

270. The only practical use, to which the Settlement Officer can now apparently turn the professional measurements, apart from the fact of having thereby obtained true areas of villages, is that of making large scale maps, from the Revenue Survey Field measurements, of a suitable size for filling in his Field Survey hereafter, and thus at any rate confining the errors of the Ameens employed within fixed limits. This no doubt is most useful and proper.

271. All former experience has shown the necessity that exists for closely checking the returns of area given in by Native Ameens employed prior to re-settlement, and who must of necessity be far better checked by a Professional Survey carried on simultaneously, than they possibly can by any other means. It is greatly to be regretted, therefore, that this important point has been so entirely neglected in Sindh; the means for doing so existed in a special degree, and exist still, but they have not been used.

272. Brief but interesting accounts of the country, that came under survey, will be found in the Appendix, extracted from Mr. Lane's two Annual Reports. These notices on geographical and statistical points are merely intended as passing remarks in the Professional Annual Reports, until the Division or District Survey is brought to a close, when a separate Report is drawn up with a view to publication.

273. In the margin, is given a list of all documents and maps of various scales furnished by this Establishment. I have before had the satisfaction of commending the great care and minuteness displayed by this Surveyor, in the preparation of all records connected with his operations. The maps of the past two seasons no less merit my approval. Mr. Lane's style of finishing his general or one inch maps is excellent, and their appearance altogether reflects great credit on him and his Assistants. The services of Mr. Lane are highly appreciated in every way.

274. Some of the past season's maps have been particularly well prepared expressly for Photography, and are the best specimens of their kind yet received in this Office. The adoption of pen and ink work in the place of coloring, while it favors Photography, adds considerably to the amount of labor in finishing a map. Great pains have been bestowed on the maps in question, and the features have been well delineated. Messrs. Downman and Johnson, Sub-Assistants, and Agha Mahomed, draftsman, contributed well towards the preparation of these maps.

275. During the present Field season, this Party will, in continuation of the work above reported upon, take up the Illaquas of Hallah Tundra, Allah-yar, and Meerpoor of District Hallah, in the Hyderabad Collectorate. The whole tract of country, down to the parallel of Hyderabad nearly, will be accomplished this season, and the probable out-turn will be about 2,300 square miles.

276. After the current season, there will be about 18,000 square miles left for survey on the left bank of the Indus, belonging to the Hyderabad and Kurrachee Collectorates, and Thur Parkur Political Superintendency. Of this area, about 11,000 square miles will be regular Revenue Village Survey, and about 7,000 square miles of Topographical work, which, at present rate of progress, may occupy about seven more seasons. On the withdrawal of the Party on the right bank Indus, at the close of the present year, as proposed, the strength of Mr. Lane's Establishment will be increased up to full complement, and I hope be well able to cope with the task before it.

CHECK OF PROFESSIONAL SURVEY USEFUL.

DESCRIPTION OF COUNTRY.

MAPS AND RECORDS FURNISHED.

SEASON 1861-62.

- 1 Index Map, scale 4 miles=1 inch.
- 7 Main Circuit Maps, scale 1 mile=1 inch.
- 3 Atlas Volumes of Congregated Village Plans, scale 4 and 2 inches to the mile.
- 1 Volume of Main Circuit Traverse Calculations.
- 3 Do. of Village Traverses and Register headings.

SEASON 1862-63.

- 1 Index Map of season's operations.
- 10 Main Circuit Maps.
- 1 Volume of Main Circuit Traverses.

CURRENT SEASON'S OPERATIONS.

REMAINING FOR SURVEY IN SINDH.

277. Mr. Ford was appointed as a Sub-Assistant, on this survey, by the orders of Government cited in the margin. Great difficulties have been experienced in filling up vacancies on this distant survey, and my endeavours to procure suitable candidates from Bombay have been fruitless.

278. The account of the Revenue Surveys in the Upper Provinces, or in those jurisdictions beyond the limits of the Lieutenant Governorship of Bengal, here ends. For the details of the surveys in the Lower Provinces, the separate reports made to the Bengal Government* must be consulted. The necessity of making

CONCLUSION.

* Herewith annexed.

disjointed reports to different Authorities on the survey of India is very embarrassing, detracting from the completeness and perspicuity of the whole, whilst it adds materially to the labors of this Office. The reports are also demanded at early periods of the year, before it has been possible to weigh and properly consider such accumulations of geographical materials, which adds to the difficulties of doing justice to such subjects.

SURVEYOR GENERAL'S OFFICE;
REVENUE BRANCH,
Calcutta, 13th June 1864. }

H. L. THULLIER, *Lieut. Col.*,
Surveyor General of India.



Table A.
GENERAL RETURN of Professional Work for the two Seasons 1861-62 and 1862-63, exhibiting area, total cost, and average rate per Square Mile and per Village Circuit, of the Central Provinces, Oudh, N. W. Provinces, Punjab, and Sindh Surveys.

DIVISIONS AND SUPERINTENDING OFFICERS.	Seasons.	Number of Villages.	Average Size of Village Circuits.	AREA SURVEYED.		Cost of Professional charges, including Contingencies.	Average rate per Square Mile.	Average rate per Village Circuit.
				Acres.	Square Miles.			
1st Division, CENTRAL PROVINCES. Captain J. Sconce, Offg. Revenue Surveyor	1861-62	498	898	M. 447374	699-02	34506	40	65
	1862-63	926	1077	T. 119587	186-86	3074	6	10
					M. 997069	1558-86	35552	7	3
2nd Division, CENTRAL PROVINCES. Captain J. H. Grant, Officiating Revenue Surveyor Lieutenant J. W. Taylor, Assistant Revenue Surveyor in charge	1861-62	462	1470	M. 658273	1030-11	48037	7	39
	1862-63	276	1600	M. 445581	696-22	40705	7	5
		738	1497	M. 1104854	1726-33	83732	9	113
3rd Division, CENTRAL PROVINCES. Captain A. D. Vanrenen, Revenue Surveyor	1861-62	412	1537	M. 657841	1027-87	26386	12	64
	1862-63	447	1141	T. 292387	456-55	8739	14	10
		859	1362	M. 511841	739-59	81381	16	33
1st or BAWARAH DIVISION, OUDH. Captain F. C. Anderson, Revenue Surveyor	1861-62	1378	548	M. 815594	1274-36	40230	31	9
	1862-63	1339	686	M. 1004618	1569-71	40420	7	25
		2717	669	M. 1820212	2344-07	80651	5	28
2nd or LOCKNOW DIVISION, OUDH. Lieutenant Colonel D. C. Vanrenen, Revenue Surveyor	1861-62	1068	681	M. 746621	1166-50	38179	8	32
	1862-63	1518	516	M. 783309	1233-92	38254	4	31
		2586	592	M. 1529930	2390-51	76483	13	31
3rd or FYZABAD DIVISION, OUDH. Lieutenant P. Thompson, Revenue Surveyor	1861-62	1103	402	M. 406687	729-22	34002	4	47
	1862-63	1103	402	M. 406687	729-22	34002	4	47
		1103	402	M. 406687	729-22	34002	4	47

NOTE.—In the recess of season 1861-62 Lieutenant Fenton Thompson was organising his Party and assisting Captain Anderson in completing the mapping and other records of his survey. The cost of Lieutenant Thompson's survey up to 30th September 1862 was ... 402 ... 406687 ... 729-22 ...

N. W. PROVINCES, ROHILCUND DIVISION.		DEHLY AND HISSAR DIVISION.		SINDH.		LEFT BANK INDUS.							
H. B. Talbot, Esq., Assistant Revenue Surveyor ...		Major H. C. Johnstone Revenue Surveyor ...		Captain J. Macdonald, Revenue Surveyor ...		W. Lane, Esq., Revenue Surveyor ...							
1602-63	163	559	91187	142-49	8170	1	7	57	5	5	50	2	0
1861-62	432	1438	621269	970-73	20908	1	7	21	8	7	48	6	4
1862-63	428	821	103216	164-40	1894	11	5	11	9	4	0	0	0
Mouzarar Topographical and Linear Survey	860	1181	972549	548-87	20402	9	5	37	2	9	47	10	8
1861-62	301	2643	815030	1761-95	20446	8	4	11	5	4	0	0	0
1862-63	176	6156	10883501	1510-80	41310	11	0	27	3	0	48	0	7
Mouzarar Topographical	477	3380	1898531	1929-36	38980	5	6	20	3	3	0	0	0
1861-62	173	3702	672285	3446-96	80291	0	6	23	4	6	0	0	0
1862-63	362	8536	1315715	1273-48	32731	9	10	25	11	3	108	11	10
Mouzarar Topographical	535	3716	1988000	1230-68	8616	2	3	7	0	0	0	0	0
Total Mouzarar	11462	1089	12486594	1652-97	39837	5	11	22	15	0	222	10	8
" Topographical	.....	.....	.....	1072-42	9246	0	0	8	10	0	0	0	0
.....	.....	.....	.....	2966-45	71568	15	9	24	2	0	150	0	8
.....	.....	.....	.....	2303-08	17862	2	3	7	12	1	0	0	0
.....	.....	.....	.....	5289-58	88431	2	0	16	15	6	0	0	0
.....	.....	.....	.....	1050-97	19043	12	8	18	2	1	110	1	8
.....	.....	.....	.....	721-76	1621	6	6	6	6	0	0	0	0
.....	.....	.....	.....	2081-86	31433	0	4	13	8	8	86	13	4
.....	.....	.....	.....	137-80	910	0	4	4	9	10	0	0	0
.....	.....	.....	.....	3106-23	50477	6	2	16	4	0	91	5	7
.....	.....	.....	.....	919-06	5601	7	4	6	1	6	0	0	0
.....	.....	.....	.....	4025-29	56078	13	6	13	14	11	0	0	0
.....	.....	.....	.....	19510-40	579294	7	2	29	11	0	50	8	7
.....	.....	.....	.....	5950-70	76327	2	9	12	13	3	0	0	0
.....	.....	.....	.....	25461-10	655621	9	11	25	12	0	0	0	0
Grand Total													

ABSTRACT OF THE ABOVE.

Number of Partes.	Jurisdiction.	Area surveyed in Square Miles.	Total Cost.	Average rate per Square Mile.	Remarks.
3	Central Provinces	6811	22868	36	0
1	North West Provinces	5904	19198	32	3
1	Punjab	3448	8090	23	4
2	Sindh (Bombay)	9296	145310	15	10
10	Total for two seasons	25461	655672	25	12

H. L. THULLIER,
Surveyor General of India.

SURVEYOR GENERAL'S OFFICE;
REVENUE BRANCH,
The 13th June 1864.

Table E.

GENERAL STATEMENT of Sums actually drawn, inclusive of Guards, for the Central and N. W. Provinces, Oudh, Punjab, and Sindh Revenue Surveys, during Seasons 1861-62 and 1862-63, exhibiting amount drawn in each Class.

MONTHS.	Superintending Officers & Contract Allowance.			European Assistants.			Native Establishment.			Guards.			Total Cost without Contingencies.		
October 1861 to 1863	12,604	0	0	14,291	1	11	28,859	13	7	1,334	7	6	57,089	7	0
November	12,004	0	0	14,184	4	8	20,040	0	8	1,464	7	8	57,302	6	0
December	12,004	0	0	14,370	5	4	28,461	14	2	1,374	9	5	56,810	11	11
January	12,639	0	9	14,000	2	8	27,070	6	0	1,317	3	3	55,933	6	5
February	12,742	0	0	14,831	8	5	27,170	11	3	1,816	4	0	56,660	7	8
March	12,742	0	0	15,247	14	8	26,184	12	4	1,618	6	11	55,709	1	11
April	12,216	0	0	15,470	5	4	20,237	7	10	1,217	10	4	49,141	7	6
May	12,720	8	8	14,760	8	1	14,247	3	11	843	13	5	42,587	2	1
June	12,495	12	0	15,285	2	9	12,618	7	7	705	2	8	41,197	9	9
July	12,933	15	5	15,384	13	5	11,245	2	9	751	6	3	40,370	5	10
August	13,192	0	0	15,155	5	4	10,913	10	9	893	4	6	40,154	4	7
September	13,102	0	0	15,634	7	10	11,271	4	7	715	0	0	41,012	13	5
Total drawn for each Class	1,52,749	14	7	1,78,825	0	5	2,48,245	9	2	14,141	10	11	5,93,062	3	1
.. Contingencies .. .. .	...	...	...	...	...	...	...	...	...	...	...	...	61,050	8	10
Total Cost with Contingencies													6,55,621	9	11

Of the above Statement, the following Table exhibits the expense under each Class of the Revenue Surveys respectively .

SURVEY.	Surveyors and Contract Allowance.		Assistants.		Guards.		Native Surveyors.		Tindals, Khassees or Measurers.		Total expense without contingencies.		Total expense with contingencies.								
1st Division	16,185	5	11	23,391	6	2	2,195	8	1	13,004	14	0	14,700	4	2	69,657	6	4	79,681	8	5
2nd Ditto	16,330	8	8	27,749	15	11	1,790	9	6	12,416	11	11	15,418	2	1	73,706	0	1	83,742	9	10
3rd Ditto	17,424	0	0	20,901	15	8	1,752	7	7	11,637	13	0	12,357	3	0	64,103	7	3	67,238	15	10
1st Division	17,424	0	0	22,082	2	6	1,943	11	10	16,645	5	6	17,105	10	0	74,205	14	7	80,651	8	1
2nd Ditto	17,424	0	0	21,574	14	6	1,673	6	0	17,784	5	10	16,115	2	7	74,473	13	8	76,493	13	1
* 3rd Ditto	10,890	0	0	8,197	9	2	645	0	0	3,757	6	11	5,497	8	0	29,987	8	1	34,902	4	1
Rohilkund, * North-Western Provinces... ..	4,800	0	0	0	0	0	199	14	2	1,355	11	4	1,454	9	8	7,610	3	2	8,170	1	7
Delhi and Hissar, Punjab	17,424	0	0	27,000	12	11	1,031	8	0	10,376	0	0	15,789	14	0	72,220	2	11	80,291	6	6
Right Bank Indus	17,424	0	0	18,840	9	10	1,557	0	0	19,073	11	6	16,677	8	1	76,584	3	6	80,431	2	0
Left Ditto Ditto	17,424	0	0	8,070	9	9	845	3	0	11,484	9	2	13,363	1	8	51,213	7	7	56,078	13	6
Total	1,52,749	14	7	1,78,825	0	5	14,141	10	11	1,16,657	9	2	1,31,598	0	0	5,93,062	3	1	6,55,621	9	11

* For 1862-63 only.

SURVEYOR GENERAL'S OFFICE ;
REVENUE BRANCH,
Calcutta, 13th June 1864. }

H. L. THUILLIER,
Surveyor General of India.

Table H.

STATEMENT showing the Area, Cost, Rate per Square Mile, &c., of the Districts of the Central, N. W. 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. Season	When finished. Season	By whom Surveyed.	AREA IN		Cost inclusive of Contingent expenses.	Rate per Square Mile.
				Acres.	Square Miles.		
Nagpore	1857-58 ...	1859-60 ...	Captain D. C. Vaarenen Lieutenant B. E. Oakes Captain J. H. Grant ... Captain D. C. Vaarenen ... Lieutenant R. E. Oakes ... Lieutenant J. Sconce ...	3,910,841	6,111	2,25,713	36 15 0
Jubbulpore	1854-55 ...	1861-62 ...	Captain A. D. Vaarenen ... Captain R. E. Oakes ... Captain J. Sconce ...	2,334,436	3,648	1,66,316	45 9 6
Lallupore	1860-61 ...	1861-62 ...	Captain A. D. Vaarenen ...	1,246,130	1,947	48,392	24 13 8
Nursingpore	1861-62 ...	1862-63 ...	Captain R. E. Oakes ... Captain J. Sconce ...	1,226,333	1,916	66,961	29 11 8
Pertabgarh	1859-60 ...	1861-62 ...	Captain F. C. Anderson ...	1,182,582	1,848	82,556	44 10 9
Oonao	1860-61 ...	1861-62 ...	Lieutenant Colonel D. C. Vaarenen ...	876,102	1,369	59,220	43 4 1
Roy Daruilly	1861-62 ...	1862-63 ...	Captain F. C. Anderson ...	884,105	1,381	40,822	29 3 2
Lucknow	1861-62 ...	1862-63 ...	Lieutenant Colonel D. C. Vaarenen ...	906,692	1,417	45,345	32 0 0
Sikharpoor Collectorate, comprising the Districts of Rohree, Shikharpoor, Jacobabad, Larkhana, and Mchur	1856-57 ...	1861-62 ...	Captain J. Macdonald ... Mr. W. Lane ...	7,630,874	11,923	2,29,347	19 3 9
Khytpoor (Native State) Sindh	1860-61 ...	1860-61 ...	Mr. W. Lane ...	3,910,032	16,109	45,990	7 8 5

* This includes 32 square miles of River Indus.
† Fully topographical, with large tract of desert.

SURVEYOR GENERAL'S OFFICE ;
REVENUE BRANCH,
Calcutta, 13th June 1864.

H. L. THULLIER,

Surveyor General of India.

APPENDIX.

Extract from Annual Report of the Operations of the 1st or Jubbulpoor Division, Central Provinces, Revenue Survey, dated 27th December 1862.

BY LIEUT. J. SCONCE.

Season 1861-62.

31. " *Koombhec*, the north-eastern Pergunnah of the Jubbulpoor District, lies between the parallels 23° 18' and 23° 47' North Latitude and Meridians 80° 12' and 80° 42' East Longitude. It is bounded on the north by the District Jubbulpoor. Description of Pergunnah *Bijchraghohur* State; on the east by the *Rewah* State; on the south by Pergunnahs *Gosulpoor* and *Soonpoor*; and on the west by Pergunnahs *Sehora* and *Belharee Sleemanabad*. About 180 square miles in the south and west is the most valuable portion of the Pergunnah; here the country is flat and open, and is generally well cultivated; a strip of cultivated land lies along the valley of the *Mahanuddee* River, and the northern portion, surveyed in season 1856-57, is likewise open country. The remaining central portion of the Pergunnah is very wild and rugged, and covered with a dense jungle. Of the total area surveyed, 463 square miles, there are under cultivation and open culturable land 214 square miles, and 249 square miles of waste and jungle. The *Bhitree* range, which traverses the Pergunnah in a north-easterly direction, is a bold and marked feature in the district; it is joined near its centre by a broken range, a northerly off-shoot from the higher *Gondwara* hills of the *Mundlak* District. In the rugged and precipitous rocks of *Koosaira* and *Bhitree* hills, there is much wild and picturesque scenery, and I may be permitted to quote the following scientific and graphic description believed to be extracted from Mr. Oldham's Geological Report."

"The *Bhitree* hills form a semi-circle, running in a north-easterly direction. These hills are nearly all schistose, gneiss forming the lower, while mica schist the upper strata. Those who delight in the picturesque of hill and dale scenery, and would look for it amongst the hills of this basin of the *Nerbudda* valley, must find it amongst the abrupt declivities, deep fissures, transverse gorges, and thickly wooded glens of this range. It is amongst the gneiss and mica schist formations that much of the wild and abrupt in nature occurs. Hills rise in every direction, thrown together in groups, or rising one above another; they resemble the tiers in a tertiary formation. The granite in this locality varies from a highly crystalline to a loosely aggregated silicious rock of quartz and felspar."

"*Khoombhee Khas*, from which the Pergunnah takes its name, is a large village situated on the right bank of the *Herun* River. It is second in importance, however, to *Oomuria*, a well-known village, about four miles to the north. The other large villages are *Moorwaree*, *Dusrone*, *Unturbaid*, and *Siloudee*. The Fort of *Bhitreegurk* is of no importance, and is now in a dilapidated condition; it is entirely commanded by the adjoining higher hill to the eastward. This Pergunnah is singularly devoid of roads; the routes of communication are mere village paths. The *Mahanuddee* River, which forms the eastern boundary of the Pergunnah, is little more than a mountain torrent, large and rapid during the rains, but almost dry during other seasons. The *Herun* and *Silpooree* Nuddes in the plains are streams of less importance. Pergunnah *Koombhec* has a considerable amount of valuable timber *Sagoun* (the dwarf teak) existing in the largest quantities."

32. " *Nursinghpoor*, the central Pergunnah of the district of the same name, is bounded on the north by the River *Nerbudda*; on the east by Pergunnah *Sreenuggur*; on the south-east it is bounded and interlaced by Pergunnah *Buchaie*; south by the *Chindwara* District, and on the west by Pergunnah *Garurwara*; the country from the base of the *Gondwarra* hills to the River *Nerbudda* is an extensive plain, with hardly the slightest elevation to break the aspect. Near the large streams, however, the land is very much broken and cut into ravines, the feeders of which extend into the neighbouring country, and greatly reduce the area of culturable land. In many places, on the banks of the rivers, patches of a thick bush jungle exist, but the general extent of the country may be said to be fully cultivated; a fertile soil and ready market encouraging the exertions of the villagers. *Wheat* and *gram* are the staple products, the coarser grain, *jowar*, *kodo*, and *kootkee*, the various kinds of *dal* and *oil seeds*, being also common. In the immediate vicinity of the hills, a considerable extent of valuable land lies waste, the labor of protecting the fields from the nocturnal depredations of animals being so great as to render

cultivation unprofitable. The station of *Nursingpooor* is situated in the open plain between the *Sher* and *Buraorewah* Rivers. It consists of the present Civil Station, with its Jail, Police lines, and Cutcherries, and a Military Cantonment now abandoned, where a Wing of a Native Infantry Regiment was formerly stationed; within its limits, is likewise situated the village of *Kundelce*; separated from the station by the *Singree* Nuddee is the Town of *Nursingpooor*, a place of considerable importance, and prosperous, as the centre of district trade, importing southward sugar, salt, clothes, and articles of brass and iron, and exporting to the wilder country to the west and south its surplus productions of the various grains. Since the rise in the price of cotton, a small trade in this has likewise commenced. Next to *Nursingpooor* the following are the most important villages:—*Singhpoor*, *Oomuria*, *Bharetta*, *Sankul*, and *Kurelee*. In each of these is a large *Gurhee*, the residence of an influential zemindar. At *Sankul*, on the *Nerbudda*, an annual fair is held in the month of November, which is worthy of mention. The high road from *Jubbulpooor* to *Hoshungabad* passes through the centre of the Pergunnah; it is not raised or metalled, and the smaller streams only are bridged. During the rains it is hardly passable for carts; on this road the great obstruction to traffic are the Rivers *Sher* and *Buraorewah*; there are ferries for foot passengers, but during the rains these rivers are impracticable for carts. There are encamping grounds at *Berkheree*, *Nursingpooor*, and *Kurelee*, where supplies are always obtainable. The road to *Saugor* crossing the *Nerbudda* at the *Kerpanee* Ghât is unbridged, but it receives an annual repair, and is a good deal frequented during the dry months. Cart roads are very general through the district, but necessarily are very circuitous on account of the spread of the ravines; carts, however, are little used, but for agriculturable purposes, the traffic of the district being carried on by laden buffaloes and bullocks. The *Nerbudda* River varies greatly according to the season of the year, large and rapid during the rains; it falls quickly when they cease. The banks are high, but much cut into ravines, and in many places covered with a thick bush jungle; the average breadth is about 450 yards. The *Sher*, which receives the drainage of a large portion of the elevated plateau of the *Seonee* District, is likewise an important river; it has a very deep bed, and its bordering ravines are of wide extent. The *Buraorewah* and *Oomur* Nuddees are of the same character, though of less importance. The Grand Indian Peninsula Railway from *Bombay* to *Jubbulpooor* traverses the centre of the *Pergunnah* to obtain favorable sites for the bridges over the difficult streams; it follows a less direct line than Railways generally do. The manufactures of the district are very unimportant, nothing can be mentioned beyond the coarse cloths and other simple requirements for village use. The chief attention of a full but not excessive population seems to be devoted to agriculture, on which they can depend for a certain livelihood.”

Extract from Annual Report of the Operations of the 1st or Jubbulpooor Division, Central Provinces, Revenue Survey, dated 1st December 1863.

BY CAPTAIN J. SCONCE.

Season 1862-63.

25. “Pergunnah *Sreenugur*, the most eastern of the district, is bounded to the north of District *Nursingpooor*. the River *Nerbudda* by Pergunnah *Patunmatunpoor*; and to the east Description of Pergunnah by Pergunnah *Burgee*, both of District *Jubbulpooor*, to the south-east *Sreenugur*. and south by the *Seonee* District; to the south-west by Pergunnah *Burhail*, and to the west by Pergunnah *Nursingpooor*. The northern portion of this Pergunnah in the *Nerbudda* valley is open and well cultivated, and contains some of the best land in the district; the culturable area is considerably reduced, however, by the extensive ravines of the *Nerbudda* and *Soonai* Rivers. The southern portion of the Pergunnah extends over several low ranges of hills, northerly off-shoots from the *Salpoora* Range; with the exception of those immediately connected with the range itself, these hills attain no great elevation; they generally rocky, sometimes undulating, and all covered with a thick jungle.”

“The valley of the *Oomur* River which traverses the centre of this hilly portion of the Pergunnah and those of its branches are open and well cultivated, and contain several flourishing villages.”

“*Sreenugur*, the town from which the *Pergunnah* takes its name, is an old Military post of the *Mahrattas*; it still has surrounding it a low masonry wall in fair preservation. *Chindwari*, *Bugaspooor*, *Oomurreea*, and *Lalpoor* are the next villages of importance. The *Thakoor* of *Oomurreea* has considerable influence, and is the owner of several villages in the south of the Pergunnah.”

"The high road from *Hoshungabad* to *Jubbulpoor* is quite impassable for carts during the rainy season, not being raised or metalled, the black soil soon becomes nothing but a muddy track. A cross road towards *Seonee* branches from the high road at *Jumlea*, being practicable for all traffic during the dry months. Along this road the North-West Customs line runs."

"The *Nerbudda* bridge, now being constructed for the 'Great Indian Peninsula' Railway, will, on completion, be the most extensive work as yet undertaken in this part of India. The design shows five girder spans of 135 feet each, with three 40 feet land arches on either side, the piers being about 80 feet in height; it is anticipated by the contractors that the bridge may be completed during the year 1866."

26. "The southern portion of Pergunnah *Buchaie*, which bounds to the south with the Pergunnah *Buchaie*. *Chindwara* District, is very similar in character to the hilly portion of Pergunnah *Sreenugur*; the features of the hills being rather more rocky and precipitous. Like the *Oomur* in *Sreenugur* Pergunnah *Buchaie* has the *Macharewa* River; its valleys and those of its feeders are more confused and narrow, but generally under cultivation."

"*Buchaie* has likewise the traces of being an old *Mahratta* post, but now is of little importance: the other villages in the Pergunnah are inhabited chiefly by Gonds, the houses or huts are badly built, and they have an untidy appearance. Two of larger size are *Gorukhpoor* and *Moogwane*, where there are weekly markets. The district road from *Nursingpoor* to *Chindwara* passing through *Buchaie* and *Gorukhpoor* is practicable for carts, but has no extensive traffic. The *Sher*, the boundary with Pergunnah *Sreenugur*, is an important river, receiving the drainage of a large area of the *Seonee* plateau; it has here a rocky bed with high overhanging banks; its tributary, the *Macharewa*, is much of the same character."

27. "Pergunnah *Garurwara*, the largest in area of the district, is bounded to the north Pergunnah *Garurwara*. of the *Nerbudda* by Pergunnah *Chawurpattun* and the *Bhopal* State; to the west by the *Hoshungabad* District; to the south-west and south by the *Chindwara* District; and to the east by Pergunnah *Nursingpoor*. The more valuable portions of this Pergunnah are its eastern and northern divisions: the centre of the Pergunnah in the course of the *Sukur* and *Seetarewa* Rivers is considerably broken into by ravines, and in the southern portion the land itself changes its character from the rich black soil to a lighter sand; in the west along the *Doodhee* River the land varies, the black soil and the sand both being met together; the country falling in level towards this river seems to account for the variety of soil."

"The Pergunnah includes a large area, 131 square miles, of the high land above the *Satpoora* range, a wild inhospitable tract almost uninhabited, and consisting of little but rocky ravines; the scrub jungle is quite valueless, and the shallow soil seems incapable of further production. Near the village of *Chindkhera*, also above the valley of the *Seetarewa*, on either side near the villages of *Buragaon* and *Soorgapancee*, there is some open level land. The plain portion of this Pergunnah may be said to be under full cultivation; to the south as far as the sandy soil extends, the fields are dotted with *Mohwa* trees, giving the country a wooded appearance, but not interfering with the cultivation of the coarser grains: in the richer lands the general crop, it being the most remunerative, is wheat, gram, and the various kinds of *dal* being generally given to a second class soil; the rain crops are *jawar*, and the several oil seeds; sugar-cane is grown, but not extensively, in the lower lands where water is near the surface, and irrigation is easy; cotton is as yet only grown on the poorer lands, generally in the undulations near the *Nerbudda* and the larger rivers; the rise in price in this product has but slightly increased its growth."

"*Garurwara*, the second town of the district, is but little inferior in importance to the capital, *Nursingpoor*; its *Mahajuns* are wealthy, and are noted as enterprising traders; the chief trade is in the raw products of the district, grain, cotton, oil seeds, and hemp. A curious trade-shed, if it might be so called, existed here during the cold season of 1862-1863: cotton was collected in large quantities and despatched both westwards to Bombay and eastwards to Calcutta; the Bombay trade being new commenced since the Railway has been pushed forward, it was remarked that the cotton sent to Bombay was better packed and of a better cleaner quality than that intended for the Calcutta market. There are several well built streets in *Garurwara*, and it is altogether a thriving place; it has a small *Gurhee*, in which is the *Tukseelee* and Police Station. When these provinces were annexed, a Military Cantonment was first fixed at *Garurwara*, which was afterwards removed to the Civil Station of *Nursingpoor*."

"*Shahpoor* is an old town, which formerly gave the name to the present Pergunnah of *Garurwara*."

"*Gangai*, itself, an ordinary sized village, is the residence of a Rajah, an extensive proprietor and of considerable influence in the Pergunnah. The Rajah of *Cheechlee* likewise owns a number of villages, and is locally influential. *Cheechlee* itself is a prosperous village, locally famed for its brass manufactures."

"*Barha* is a large village owned by a family of wealthy zemindars; through this village a considerable trade in wood for Railway sleepers from the adjacent jungles in the Chindwara District is being carried on."

"*Saenkhhera* is owned by a race of some local influence."

"*Puloha*, a large trading village, has a name in the district for a red dye manufactured there."

"*Howreea* on the high road has a weekly market much frequented."

"*Khooluree* and *Kuruggaon* are large well known villages. Among the few southern villages of Pergunnah *Nursinghpoor* surveyed with Pergunnahs *Garurwara*, *Dilheree*, and *Henthnapoor* are worthy of mention; each is the hereditary residence of two descendants of the family of *Gond* Rajahs; the *Dilheree* branch being recognised as the head of the family by the other houses in two districts."

"The old Fort of *Chowragurk*, situated near the village of *Chongan* on the first range of hills overlooking the valley, deserves mention. This was one of the strongholds from which the Gonds held sway over the Nerbudda valley, and must be of very ancient date; the present remains, a few bastions and walls, are modern erected by the *Mahrattas*. From the north the position is a formidable one, from the south it is slightly commanded by the adjoining hills."

"The 'Nerbudda Coal and Iron' Company have established a colliery named 'Chotta Jubbulpoor' at the debouchment of the *Seetarewa* from the hills, near the village of *Mook-panee*; two galleries have been run into the hill on the east bank of the river, and the coal is now being excavated; little business can be done, however, until the completion of the Great Indian Peninsula Railway and the branch line to the pits which it is proposed to run."

"The seam at 'Chotta Jubbulpoor' averages 12 feet in thickness, the coal itself, though it burns brightly, is said to be unsuited for the manufacture of coke."

"The *Nerbudda* in this portion of the district considerably changes its character; in the east of Pergunnah *Gururwara* its ravines are very extensive, but proceeding westward, the level of the country gradually falling, the ravines disappear and cultivation often extends to the edge of the banks."

"The *Sukur* and *Seeterewa* are large rivers draining extensive areas of the wild banks of the *Chindwara* District; these banks are high and generally much broken into ravines. The *Sukur* before emerging from the hills receives an important tributary, the *Houra* River. The *Doodhee* after entering the valley is different in character; it has a broad sandy bed and low banks without ravines."

"The high road from *Hoshungabad* to *Jubbulpoor* being neither metalled nor bridged is impassable for carts during the rains; an old road to *Saugor* branching off at *Howreea* and crossing the Nerbudda at *Burmhan Ghat* receives an annual repair and has a little traffic."

"The bridge of the Great Indian Peninsula Railway now being constructed over the *Sukur* near *Gururwara* will be an extensive work, proposed to be of 6 girder spans, each 75 feet. The *Doodhee* bridge will be of the same design, but lower and smaller. The annual fair at *Burmhan* deserves notice, held generally during the month of November. Being of religious origin, as is usual with Indian fairs, large numbers assemble from the adjoining districts to bathe in the Nerbudda; it likewise receives great encouragement with the view to the extension of trade. In 1862 there was a small attendance, but merchants are usually attracted from *Mirzapoor*, *Nagpoor*, *Indore*, and all the intermediate cities."

28. "The *Vindhya* range receding north from the *Nerbudda* leaves on the general level of Pergunnah *Chawurpatha*. of the valley Pergunnah *Chawurpatha*; it is divided from the *Bhopal* State on the west by the *Senthor* River; the Nerbudda bounds it on the south with Pergunnahs *Nursinghpoor* and *Garurwara*, and the eastern and northern boundary with the *Saugor* District generally follows the crest of the *Vindhya* plateau."

"The Pergunnah is generally flat and open, with the exception of the eastern division, where an off-shoot from the *Vindhya* strikes in a south-western direction along the course of the *Nerbudda*."

"The ravines of the *Nerbudda* run extensively into the easily friable black soil, and the cultivation of the Pergunnah is also considerably reduced by the rolling undulations near the course of the larger streams. At the base of the hills the soil is poorer, and a good deal of land lies waste. The products are much the same as those of Pergunnah *Garurwara*."

"*Chawurpatha* is an old town, but now of little importance. The next is *Tendookhera*, famed for its superior iron and iron manufactures. The one is obtained about two miles south-west of the town near the small village of *Oomurpane*; the pits are irregularly dug, and vary in depth from 10 to 25 feet; they only stand for one season, and new are opened yearly after the rains."

"Tendookhera has considerably decreased in size of late years, there being not half the number of iron furnaces as formerly."

"Bunnee is a well known village, the property of an old family of Thakoors originally from Bundelkund."

"Imjhurra and Dohee are prosperous villages, likewise Heerapoor and Belthane on the Nerbudda."

"The only road to the plateau of the Saugor District is by the Jhurrur Ghat, in fair repair, and not very difficult of ascent; there is no great traffic by this road either from Hoshungabad by Burmhan, or from Nursinghpoor via Kerpane Ghat."

29. "The eastern division of Pergunnah Rajwara of the Hoshungabad District differs little from Pergunnah Garurwara of Nursinghpoor; with the exception of a few villages to the south, the land is fully cultivated; the soil, as in Garurwara along the Doodhee River, being the light sand, and changing westward to the usual black of the valley."

"Futtehpoor, though a poor looking village in no way prosperous, is the residence of an old family of Gould Rajahs, which for 70 or 80 years has been divided into three branches, each owning his own village a portion of Futtehpoor itself, and each his share of the 120 villages comprising the Futtehpoor Talookah. Comurdha and Chandon are two large villages."

"From Bunkhera, where will be a station on the Great Indian Peninsula Railway, it is intended that a road should be made through Futtehpoor along the course of the Augin River towards the proposed Puchmurree Sanatarium; the distance from Bunkhera to Puchmurree is about 30 or 35 miles."

*Extract from Annual Report of the Operations of the 2nd or Nagpoor Division,
Central Provinces, Revenue Survey, dated 4th February 1863.*

BY CAPTAIN J. H. GRANT.

Season 1861-62.

53. "Pergunnah Huttah is well cultivated, except to the north, where the high table-land commences. The hills are covered with very dense bamboo jungle. Leela Hill Station, one of the old series, is 1,300 feet above the plain."
- District Bhundara.
Statistics.
54. "The northern portion of Pergunnah Kimptah is well cultivated, but parts are very jungly. In this Pergunnah there are large tracts of Mohwa jungle."
55. "The principal stream is the Bâg Nuddee, which falls into the Wein Gunga."
56. "About the middle of the Pergunnah Kimptah the ground is high, and the drainage falls on either side into the large nullahs, the Bâg and Chellund."
57. "The country abounds with tanks, some of them of large size; the one at Jhayam, called the Lewnibund, covering an area of 1,329 acres."
58. "The Raepoor Road runs across the Pergunnah of Sahungurree. It has fallen into disrepair, but is now being re-made. It was formerly used as the mail line to Nagpoor, and during the mutinies, the post was carried along it, the other line being unsafe."
59. "At Sukhole on the road is a dâk bungalow; this village is one of the regular halting places for troops marching."
- Sukhole halting place.
Rice cultivation.
60. "Rice is largely cultivated, likewise mussoor and lukhori."
61. "Large quantities of the cocoons of the tusser moth are brought into Nagpoor from the Sahungurree jungles. The average price is 4 Rupees a thousand."
- Cocoons of tusser moth brought into Nagpoor for sale.
- Lac produce.
62. "Lac is much produced in the same jungles."
63. "Sugar-cane is grown to a great extent in Sahungurree. The cane is good, but the goor is generally of an inferior quality, and good sugar is not made from it. Good goor is occasionally procurable. The price of the former, which is coarse and black, is 16 seers for the Rupee, while the latter sells for 8 or 9 for the Rupee."
- Sugar-cane grown to a great extent.

64. "The usual common cereals are cultivated, and also 'ulsee' for 'oil.'"
65. "The goor is manufactured by the Koheris, a caste who alone manufacture it. There are numbers of them in Sahungurree and Chandpoor. The caste is similar to the Kachis of Hindoostan and Morais of Bengal."
66. "Lac, wheat, and ghee are sold by the maund of 12½ Government seers."
67. "Other articles of produce, by the following measures",—
 1¼ Seers = 1 Pailie
 3 Pailies = 1 Kahnta.
 20 Kahntas (1 maund 35 Seers) = Kundi.
68. "Ghee is made in Sahungurree and Kimptah, and sent for sale to Nagpoor."
69. "Very good oil is extracted from the Mohua (*Bassia Latifolia*). It burns with a clear light, emits little smoke, and from its clearness is often used to adulterate ghee."
70. "Buffaloes and cows are bred in great numbers in this district. As they are very cheap, they are bought by the butchers for the Nagpoor market."
71. "A good pair of bullocks for a bullock coach can be procured at Pohra in Sahungurree for about 35 Rupees, which can be sold for double the price in Kamptee."

*Extract from Annual Report of the Operations of the 2nd or Nagpoor Division,
 Central Provinces, Revenue Survey, No. 32, dated 18th December 1863.*

BY LIEUT. J. W. TAYLOR.

Season 1862-63.

19. "The eastern and southern portion of Rampaltee, bordering on the Wein Gunga River, is open country, with occasional low jungle: towards the west it is more hilly and jungly. Its principal villages, where bazars are held, are Rampaltee Khas, Baine, Arumbha, Mohgaon, Kaydee, Khyree, Mhundeewara, Deenee, Lingmarra, Maindkee, Jhargaon, and Gurra. There is a Thannah at Rampaltee with an outpost at Baine. The Pergunnah is bisected by the Chundun or Chunnie Nuddee. This, like most streams of the country during the hot weather, has very little water, but in the rains contributes a very considerable amount to the Wein Gunga. To the north-east of the Pergunnah is one of our principal hill stations—Mungajharree."

20. "Pergunnah Chandpoor is altogether much more hilly and jungly than Rampaltee. A high range runs along the south-western boundary as far as the village of Cheechlee, where the hills take a more north-easterly direction, extending to within a mile or two of Rampaltee. At the village of Ambagar is one of our principal hill stations, overlooking what at one time must have been a strong fort, not capable, however, of offering much resistance to Artillery. At the western extremity of this range of hills is the large and important village of Ramteak, where, about the beginning of December, there is held a large annual fair. To the east of Ramteak is one of the Great Trigonometrical Survey secondary stations—Bunderboree. The Bhawunthuree Nuddee runs from west to east across this Pergunnah, and falls into the Wein Gunga River between the villages of Mohara and Buppera. It is rather larger than the Chundun in Rampaltee, but like that stream has very little water in the hot weather. There are no other streams of any consequence. The principal villages of Chandpoor are Sehora,* Choolchar,* Bhowurghur,* Mahkaipar, Ajinheree, Doongree, Boozoorg, Eerlee, Ashtee, Bamhnee,* Chakaheetee, Mahkaipar, Chandpoor Khas,* Kuttoree,* Ghoraghat,* Bunderboree,* Purruswara,* Kodbee.* The hills abound in iron, and the ore is worked in the following villages:—Agree, Ambajhuree, Pathree, Sonaigaon. There is no Police Thannah in this Pergunnah, but there are two outposts at Sehora and Chakaheetee. There is a fort on the hill overlooking the village of Chandpoor Khas; the village itself was mostly burnt down last hot season. This is a very common occurrence in this part of the country, but the houses being all built of mud with a straw thatch are soon erected again."

21. "The jungles abound in game, sambur, neilgye, spotted deer, four-horned deer, ravine deer, pig, &c. In the open country there are large herds of antelope. Great damage is done to the crops by these animals. In Chandpoor and the hilly parts of Rampaltee there are a great number of tigers, which annually destroy

* Bazars are held in those villages marked thus*.

a great many human beings, as well as cattle. The tanks during the cold season are covered with a great variety of wild fowl. The following are the trees mostly found in these jungles, viz., Mowha, (*bassia latifolia*) Cherownjee, (*cheronjea sapida*), dhak (*butea frondosa*), Bael (*ægle marmelos*), small specimens of teak (*tectona grandis*), and sal (*shorea robusta*), and numbers of thorny shrubs and creepers. Numbers of tamarind trees (*tamarindus Indica*) grow in and about every village with mangoe (*mangifera Indica*) and a few peepul trees (*ficus religiosa*) intermixed. These afford a most agreeable shade. The bunds of tanks are very favorite places for planting mangoe trees. Recently by the orders of the Chief Commissioner, numbers of young trees of sorts have been planted all throughout the Central Provinces."

22. "The Mowha and Cherownjee trees are greatly prized by the villagers, and in cutting the lines every endeavour was made to save these as much as possible. From the former is extracted the common country spirit in great quantities. A very pure oil is also got from it, which is used in lieu of ghee and also to adulterate ghee. The fruit of the latter when ripe is black, and grows in bunches. It is about the size of a large currant. The kernel is sold in the bazar at the rate of 6 annas per seer, and is very generally used as an ingredient for curry."

23. "The bamboo jungle in many places is very dense. Often when cutting down only two or three bamboos would be sufficient, it becomes necessary, from their being interlaced one with another, to cut away the whole clump. A line cutting party has often been engaged for several days at one village. The bamboo is most useful, I may say, necessary to the villagers, but its uses are so well known all over India that I need not enumerate them. From the female bamboo is made an extract called "tabasheer," used medicinally by the Natives in paralytic cases. The best sorts sell in the bazar at the rate of one tolah per Rupee, that of an inferior description of course at a lower rate."

24. "These jungles possess many valuable products, bees' wax, honey, lac, cocoons of tussler moth, gum of sorts. Numbers of hides and horns are also brought into Kamptee and Nagpore from these parts (there are numbers of cattle in Chandpore). These hides are what are called in commerce "dead hides." The honey is good, but the bees' wax is generally brought in very dirty and requires much refining. There is a class of men in Nagpore who gain their livelihood by weaving exclusively from tussler silk."

25. "The principal crops are wheat, rice, gram, dal of sorts (moong, oorud, mussoor, and thoor or urhur), the last of these sorts is grown in great quantities, and exported into the adjacent Pergunnahs and Nagpore. Besides the above, poput beans, lakhorie peas, (which form the principal food of the poorer people), tobacco awl (from which a red dye is extracted), cotton in small quantities, saim, brinjalls, sukkurkund, and zaminkund are also grown. Sugar is produced, but the sugar-cane is not so extensively cultivated in these two Pergunnahs as in Sahangurhee, nor is the sugar of so good a description. In Sahangurhee more labor is bestowed on it, and it is better irrigated."

Extract from Annual Report of the Operations of the Bundelkund (now transferred to 3rd Saugor) Division, Central Provinces, Revenue Survey, dated 29th November 1862.

BY CAPTAIN A. D. VANRENEN.

Season 1861-62.

28. "During the season under review, the Survey has met with nothing to impede its operations; few or no disputed boundaries had to be taken up. The settlement work of the Lullutpore District was carried on by Captain T. A. Corbett, Acting Deputy Commissioner, and who, since the return of Captain Tyler, the incumbent, has been appointed Settlement Officer. We were fortunate in having an Officer like Captain Corbett to work with from first to last; he afforded me every assistance in his power, and without the aid thus freely extended to me at all times, I do not think it would have been possible to have completed so difficult a district to survey as Lullutpore in two seasons. He had under him a very able Settlement Deputy Collector, Davee Persaud, well up to his work, and who deserves the greatest credit for the way he turned out the different vernacular documents, which we have to receive. I have seldom seen them excelled in any other district."

District Lullutpore.
Survey met with no interruption.
Aid received.

29. "On the arrival of the Survey in the Field, all the Moojmullee sketches and the Hudbust papers were ready to be delivered over to it. The comparison made between our boundaries and those of the latter showed few discrepancies, but on the other hand brought to light how carefully these papers had been prepared: where discrepancies did occur, the boundary was taken up by both parties again, I had no opportunity of testing the merits of the Shujreh's. As the Khusreh was carried on after the scientific Survey, the details of cultivation, &c., for comparison could not have been furnished me in time to be of any use; but if one can judge from the Hudbust papers, I should say that it will be found to have been most carefully done, particularly as it was projected by scale and compass."

Thakbusts and Settlement records.

35. "The features of the country are much of the same type as described in my previous reports of Bundelkund, the country being an undulating one; here and there in the open plain isolated hills and ranges are met with, of no great height or extent; they are mostly well wooded, and greatly add to the beauty which a wild country like Bundelkund possesses: besides, the Betwa and Dussan Rivers, which form the west and east boundary of the tract surveyed, numerous streams flow through it; they have water in them throughout the year, and in the rainy season become so swollen, that travelling in a country so intersected by them becomes difficult. To the south, the Bindachal range rises out of the ground like a wall of rock; and when it is ascended a table-land is met with, on which is situated some of the southern villages of the district. On and along this range, the country is thickly wooded and wild beyond description. The cultivation is scanty and limited in extent, owing to the natural poorness of the soil, except around the villages; few fields are met with; the ground where not cultivated is soon covered with a scrubby jungle, of such rapid growth as to efface in a few years all traces where the plough has been. Beyond the grain required for internal consumption, little is raised in the country for export."

Features of country surveyed.

36. "The greater part of the Balabehut Pergunnah is situated on the table-land of the Bindachal range, the wildness of which I have described in the foregoing paragraph; the jungle here is so thick and impenetrable that it has afforded good places of concealment for the out-law Thakoors, and where they have been in comparative security from capture by our Police. There is a strip of villages to the north-east situated in the plain, and which are the best cultivated in the Pergunnah."

Balabehut Pergunnah.

37. "The Pergunnah of Mehrownee is a fair one; about the centre of it (to the north of Koomehree), there is some good soil, which is done justice to: the eastern part about 'Sajna' is rather jungly."

Mehrownee Pergunnah.

38. "Murowra Narhut is a Pergunnah newly formed by joining the Talookah of "Narhut," transferred from Saugor to Murowra, which was part of the confiscated State of "Shahgurh." About Murowra and Sarhoomul some of the best soil in the district is to be met with, and in the spring a vast expanse of grain in ear is seen here; towards the south and south-east there is a good deal of jungle, and numerous ferruginous tracts abound, from which ore is easily smelted, the fuel being so near at hand. Some of the pits from which it is excavated I have shown on the maps; the manufacture of it admits of expansion, but Government is, I believe, adverse to taking it in hand, and would prefer it being left to private enterprise, which may be done when the country is more opened out and civilized. The village of Deoran being the ancestral one of that noted rebel 'Duriaow Singh,' who was killed, whilst we were surveying it, by our Police, this Pergunnah has suffered more than any of the others from his marauding exploits, and from which it may recover now that he has been killed."

Murowra Narhut Pergunnah.

39. "The Betwa, and Dussan Rivers are much of the same character; they rise very suddenly in the rainy season, and become such an expanse of water that all intercommunication then almost ceases, excepting here and there, where small ferry boats or canoes hollowed out of large trees ply. The fords on them I have given in the maps. As the beds of these rivers are covered with enormous boulders, the passage of wheeled carriage over them is always a difficult operation. In the cold weather they dwindle down to insignificant streams, with little or no current, and the water running over boulders clear as crystal. Nothing exceeds the wildness of the places where these rivers debouch into the plain from the table-land of the Bindachal; their banks in those places rise to 50 or 60 feet, and the enormous rocks which are strewn about show what the force of the stream must be when the rivers are at their height."

Betwa and Dussan Rivers.

40. "The Narain and Jumni Rivers, the Sujad, Sujnam, and other nullahs, partake of the character of their parent streams; they have all rocky beds of boulders, are subject to sudden rises, and in the rainy seasons are often unfordable for days and weeks."

Narain and Jumni Rivers.

41. "The water of these streams is hardly used for irrigation purposes; here and there where a few patches of sand have accumulated, and before the rainy season commences, a few beds of melons are made by the 'Demurs' or bearer caste of these parts."

Water not used for irrigation.

42. "With the exception of the tank of Buldeogurh, in the Tehree State, which is a fine one, the others in small villages need hardly be noticed. They are all of artificial construction, and judiciously made by masonry weirs being thrown across gaps in the ridges of hills, and the drainage thus dammed up. I cannot say that the water in them is used as much as it might be for irrigation, which may be attributable to the poorness of the soil, or the scanty population. The special establishment which was kept up for the Bundelkund tanks having been broken up, proves that they are not considered worth the cost of their annual repairs as special work of irrigation. The Singara, or water nut, is grown by the Demur caste in nearly every one of them, and gives a fair return. The objection to its growth is, that it makes the tank silt up; also as the water recedes in the dry months, advantage is taken of it to sow crops on the rich alluvial deposits which it leaves, and some small tanks are often times let run dry for the same reason to cultivate their beds."

43. "The high road on the map is part of the 3rd class Imperial one, leading from Saugor to Calpee. It is an important work, and when finished will greatly help to open out the riches of parts of Central India. It is the intention to bridge and metal it throughout; and this has been commenced upon: the few bridges and causeways on it have been made by the Local Committee of the district. The Goona Pass, in the Bindhachal range, is the one it will be carried through, and the blasting works there were commenced last season. The roads leading through the Balabehut Pergunnah are, for Military purposes, to facilitate the progress of our troops when in pursuit after rebels; they are merely open lanes through the jungle, all trees and shrubs for about one hundred yards having been removed. The road leading through Sindwaha on to Murowra is a fair village one; the branch from Saidpoor towards Dhamonee is often used as a shorter road by travellers on their way to 'Saugor.' The other roads shown in my maps are mere paths, where they have some traffic on them; they receive some slight annual repairs, such as having a few loose stones removed from the surface, and a few deep ruts filled up by the villagers themselves."

44. "The hills to the south are, as I have before said, part of the 'Bindhachal range,' which run from 'Seunda' of 'Duttiah' on the Sindh River; taking a circuitous course, and approach the Ganges at Rajmehal, they form a steppe, or the elevated table-land, which is such a marked feature of the scenery in Central India, and on which some of our Cantonments like 'Saugor' and 'Indore' are situated. The southern part of the district is quite enclosed by this Mountain barrier. The Great Trigonometrical Survey principal Station of 'Patna' is situated on an isolated hill, rising from the plateau; it is 1,820 feet above the sea level, and there are some hills like Lakhanjir and others, I should say, even higher than this; but I cannot speak of any certainty on this subject, as I have no means of determining the altitudes correctly. The jungle on these hills is very thick and difficult to get through; the undergrowth being generally thorny shrubs adds to its unpenetrability. The trees composing it are mostly of a stunted growth, and no girth of timber: the teak (dwarf species) and other Indian forest trees are found in it, but all seem checked in growth, caused by the rocky substrata within a few feet of the surface. I have also met with the ebony, but of no size or value. These forests abound with large game, the varied species of deer, such as the Neelgae, Sambhur, spotted deer, Gazelle, antelope, leopards, wolves, bears, and occasionally a tiger, are all found in them as they are seldom visited; a sportsman could gratify his pleasures to the utmost extent here."

45. "Mehrownee is one of the principal towns in the map. Here one of the two Teh-seeles of the district is placed, and which is composed of the Banpoor, Mehrownee, and Murowra-Narhut Pergunnahs. The Teh-seel is placed in an old mud Ghurree to the south of the town; and a new building for it was being erected whilst the Survey was at work. A fair mart in grain is carried on here, and it has a number of Bunneahs. The town is little more than a village, and possesses few substantial buildings."

46. "Balabehut must have been a fair village before the rebellion; but as it has been looted several times by outlaw Thakoors, it is now in great decay; the traders who resided here having fled to other places where they had great security. The pukka built Fort to the north of the town and situated on some rising grounds is still in good preservation, but the buildings inside are all in ruins. It is the scene of that ill fated attempt which was made at the commencement of the mutiny to blow up the inner gateway. One Officer, Lieutenant Spens, of the 31st Native Infantry, was killed on the spot, and his companion, Lieutenant Willoughby, a distinguished member of our Department, was so terribly injured that he eventually succumbed to the wounds he received. Hardly any traces of the explosion are visible."

47. "Doodhai is situated in the midst of the jungle, and has the character of being very salubrious and cool during the hot months; the ruins about it cover a good space, and show that it must have been a large place at one time; there are also some finely carved Jain temples about it still in fair preservation and which look very ancient. The valley to the north must at one time have been a large

tank, as the ruins of the bund which dammed up the stream, which flows through it, are still visible, and if requisite could be repaired at a small outlay."

48. "At Deogurh of Balabehut, near the Betwa, there are a great many ruins, and numerous temples (Jain ones I believe); now it is almost deserted and uninhabited."
Deogurh.
49. "Palee is a large village; the old pukka fort was built by the Mahrattas when they held the country, but is now in ruins. The largest and almost only Paun gardens in the district are here, and the produce of which is largely exported to the neighbouring places."
Palee.
50. "The town of Jacklone is situated under the lee of a spur of the Bindhachal range; it is little more than a village, and deserves only to be noted as being the residence of the Bundela Thakoors of the same name, who own a great many of the villages about it, and some in Scindiah's territory across the Betwa. They are very influential, and can bring together a great many armed followers. A Military road connects this place direct with Lullutpoor. The secondary Great Trigonometrical Station of Ero is situated on an isolated hill in the plain a couple of miles eastward of it."
Jacklone.
51. "Khejooria, Musoorah, and Bumouree Kulan of Lullutpoor are all fair villages for these parts. Khejooria has a large tope of Mohwur trees near it, and is prettily situated on the banks of the 'Sujnam,' Nullah."
Khejooria and other villages.
52. "Sindwaha of Banpoor is situated on the road from Lullutpoor to the south-east; it is of no great extent; a Thakoor lives in it to the south-east of the town; there is a walled garden, in which are some Christian graves, of this century, of members of the 'Skinner' family, who appear to have resided here in the Mahratta time; and the descendants still own the rent-free village of 'Juria' of Banpoor, contiguous to 'Sindwaha' on the north-east."
Sindwaha.
53. "Narhut of "Murowra Narhut" is situated at the mouth of the "Goonah" Pass, on the sides of the hills; its position so near a highway makes it of some importance, as traders proceeding towards Tehree, after leaving the pass, halt at it. A family of Thakoors, who possess a great part of the Narhut Talookah, now joined with Murowra, reside here and are very influential in consequence."
Narhut.
54. "Mudunpoor is at the entrance of the pass of the same name, through which Sir Hugh Rose's Central India Force in 1858 came when proceeding towards Jhansie; it is of no extent, and although the pass is a good easy one, yet it does not appear to be much travelled over; near the village to the west there are some very ancient ruins of a city called 'Patun;' they are of some extent. Some iron ore is excavated from pits near the village."
Mudunpoor.
55. "Murowra, the Head Quarter Town of the Pergunnah, is little more than a village; the fort was formerly an important post of the rebel 'Shahgurh' Chief; its defences are still in fair preservation, but the buildings inside are all in ruins; the tank to the south of it is dry in the hot months."
Murowra.
56. "At Deoree Saugor, pleasantly situated in the midst of hills well wooded, there is a fine large tank of some extent, and which almost proves that this part of the country must have been well inhabited in former times, but which is now not the case, as there are few houses in the villages, and the country round it is one large forest of stunted trees."
Deoree Saugor.
57. "The other villages, Sarhoomul, Saidpoor, Parole, and Soonrai, are largish ones, at the latter there is a pukka Ghurree, and some iron ore is worked in the village."
Sarhoomul.
58. "The new Police system was only introduced into this district in February, and as the location of the Stations (Thannahs) is not quite decided upon, I have not alluded to them in this report, but I have shown on the maps where the 'first class posts' were stationed when the country was surveyed."
Police Stations.
59. "The villages may be described in a few words—where rising ground has been available, it has been used for the site; the huts are generally built of stone and mud, and roofed with a small and very indifferent tile; in a few there may be found some pukka built houses, and which are generally owned by Bunniahhs. The most commanding spot has been generally chosen by the Thakoor for his abode, and his house is generally the best in the village, as they were erected in lawless times; they are almost all walled loop-holed enclosures, substantially built. The less said of the interior of these villages the better; they are filthy beyond description, and each hut has generally its dung heap at its door. To this is no doubt attributable the sickness which prevails amongst them; in the hot weather months small-pox at the beginning and fever and ague at the end."
Villages.
60. "In the majority of cases these villages suffered greatly in the mutiny; wherever the haldar or Lumbardar had not obtained the title by hereditary descent, or was not a Thakoor, he was most cruelly murdered by the

descendants of those families who formerly owned the village, and who thus resumed their hereditary rights, which perhaps had been lost to the family, by one of the ancestors having been sold up for debt, or dispossessed for some crime committed."

61. "The maps of Tehree sent you complete the survey of that State, and as far as my information goes, the whole of it has been taken up. The tract delineated in our maps is at the most southern part of the State; towards the west of it, bordering on the Lullutpoor District, the country is an open one and well cultivated. The south part and along the Dussan is very jungly; about the centre of it a number of tanks are met with, and some extent of cultivation."

62. "The hills nowhere attain any elevation; they are generally small ranges, rising abruptly out of the plain to the height of 2 to 300 feet; their sides are wooded and precipitous, and the ridges sharp. On one of them is situated the principal Great Trigonometrical Survey Station of Dargawa, 1,452 feet above the sea level."

63. "Buldeogurh is one of the most important posts of the Tehree State. The fort and citadel here is of some extent, and kept in good preservation; it is regularly garrisoned, and built on a small range of hills, running to the west of the town; part of it is over the pukka bund of the tank. The town is of no size. The tank is one of the finest I have seen in Tehree; it is formed by several nullahs running into it. Some small hamlets are situated along the sides, also some Paun gardens, but they are of no size."

Khegapoor. 64. "Khegapoor is a flourishing town, and a large one for these parts; a good deal of traffic goes through it towards the north."

65. "At Burragaon there is a small pukka Ghurree, built on a hill over the tank; the town situated to the north of it, and underneath the range of hills, is of no extent. The fort is held by a Tesheeddar, who has under him a small detachment of armed men."

66. "The Island of Hulmow in the Dussan River is disputed by the three States of Tehree, Bijawur, and Punnah and we experienced in consequence some trouble in surveying it. It is covered with jungle, and as the greater part of it in the rainy season must be submerged, it cannot be of any value as a possession."

*Extract from Annual Report of the Operations of the 3rd or Saugor Division,
Central Provinces, Revenue Survey, dated 26th October 1863.*

BY CAPTAIN A. D. VANRENNEN.

Season 1862-63.

33. "The tract surveyed consists of two pieces, the Kunjiah Pergunnah, with the piece of the Koorwae State, lies to the north of the Saugor District, and the other Pergunnahs to the south. Its features may be described in a few words: Kunjiah is bounded by the Narain and Betwa Rivers on three sides, and it is likewise intersected by the Parasree Nuddee; it is undulating, and rather flat to the south, where the soil appears to be very fertile and well cultivated; to the south of Agasode there is a little rising ground, with a scarped face towards the village. To the north, in a line from Kunjiah drawn eastwards, there is a good deal of jungle, with little cultivation, the reasons for which must be attributable to the unsettled state this part has been in: so many of the villages have been plundered by the rebels concealed in the neighbouring fastnesses in the Balachut jungles."

"The Vindhya run to the north, south, and through the southern Pergunnahs, the valley of Gourjhamur is very prettily situated between the two ranges; and from whichever side you approach it, when descending down to it from the table-land, the eye is struck with its green and picturesque appearance."

"The country along and between the Sonar and Kopra streams is undulating and well cultivated, and in the spring of the year is one vast field of grain in ear."

"This can also be said of the villages at the foot of the hills; their smallness compared to the villages in the hills and jungles at once show where the soil is valuable. The peculiar feature of the table-land, which the hills form in these parts, I have repeatedly described. The soil on these heights is very poor, and not much cultivation is met with, the greater part

being covered with a dense dwarf jungle, difficult of penetration. To the south and south-east along the Dumoh boundary a great many of the villages consist of only a few huts, inhabited by the Gond tribe; and in the dry season numbers of them having no wells or tanks (which might easily be formed by throwing weirs across the numerous rivulets which intersect this tract) the villages are entirely deserted, the cattle having been taken elsewhere where water can be had."

34. "Pergunnah Kunjiah was ceded to us in 1860 in perpetuity, in virtue of certain territorial arrangements concluded with Maharajah Sindhia; it having been so lately under a Native Government, no road is to be met with. Its proximity to the lawless and influential Bundela Thakoors, residing at Jacklone and other places in the Lullutpoor District, has been a source of great misfortune to many of the villages here, particularly to the northern ones, and I was informed that Kunjiah, which, previous to the rebellion, was a flourishing place, had been plundered by one or the other no less than three times, once by its near neighbour the Piprasur Thakoor, who again was plundered in turn, and is now in great poverty, preventing him from doing any thing to improve the ruined state of his Talookah situated at the junction of the Narain and Betwa Rivers."

35. "Nahurmow is a small Pergunnah, and is intersected by a range of the Vindhias running south-west and north-east, on which there is the Great Trigonometrical Survey Station of Narmao, 2,242 feet above the sea level. The villages in the centre and at the foot of the range are well cultivated, but to the south there is a great deal of jungle, and not much cultivation."

36. "Gourjhamur Pergunnah is also a small one; the ranges of the Vindhias run to the north and south of it, and thus make it a valley, through which the Sonar runs; in the open ground the soil appears to be fertile and well cultivated, but the villages on the hills are mostly surrounded by jungle, and only a few fields round the site are tilled."

37. "Nearly the whole of the Rehlee Pergunnah was taken up; the hills to the north-west and south are a continuation of the Vindhias, the villages between the Sonar and Kopra streams are well cultivated, and the ground flat, and not very undulating. Those situated on the table-land, in the hills, particularly to the north-west of the Pergunnah, such as Rangir, are covered with the densest jungle and in the wildest part of India I have visited."

38. "Gurhakotah is a fine Pergunnah for these parts, and the villages in the open between the Kopra and the Sonar Streams are well cultivated, and the soil fair for these parts; a good deal of cotton is grown about here, and a number of Seths who trade in this staple reside at the Head Quarter Town of the Pergunnah and consequently give it some importance."

39. "High roads. The only one to be noticed is part of the one leading from Saugor to Nursingpore; it is raised, and a few of the small streams bridged over in places: here and there small avenues of trees, planted many years ago, are met with, affording a welcome shade to the traveller on foot passing along it; the large streams requiring expensive masonry works are unbridged. The road from Saugor to Rehlee (the Tehseel Town) is a fair district one and is bridged, and raised in places, and during the rainy season remains, I am informed, in fair order. Within the last year along most of the roads leading from one large town to another trees have been planted in immense numbers, and if they should thrive and come to maturity, they will be a welcome addition to a country where large trees are seldom seen, owing to all, of any value, having been cut down, and add to the many picturesque features of scenery with which this part of Central India abounds."

40. "The Betwa River having been surveyed by me in different districts has often been described, so I must only notice that along this part of it single Ferry Boats in the rainy season are placed at the Dewala Ghat, near Kunjiah, and the Mullaghur Ghat, called so after a Town of Gwalior on the west bank. The Sonar River, Kopra and Duhar Nuddees have water in them throughout the year, but in the dry season dwindle down to sluggish streams with large pools in places as they pass through a country of varied height; small falls are here and there seen. In the rainy season they are often unfordable for days; small Ferry Boats then ply in places where the communication is important, and the passage of the dawk bags is effected, in the usual Indian manner, by being pulled over a rope tied to two large trees, or poles fixed on either bank. The beds of these streams are rocky, covered with boulders, and the water in them clear as crystal, and abounding with fish of all kinds, particularly the Marseer and Soor."

41. "The hills in the maps are the famed Vindhias, and have been thus described:—
Hills, Forests, &c. "They run parallel to one another, each successively, supporting a table-land, one above the other, and hence they are called Ghats."

Again, Mr. Temple, in his comprehensive and exhaustive report of these provinces, writes of them as 'the table-land supported or flanked by hills, which with their scarped faces, their rugged bastions, their elongated horizontal summits, appear like the fortresses of Nature.' Their sides and the table-land are covered with a dense dwarf jungle, in which the following forest trees are found :—The teak, (generally the dwarf species) the Sag; the Brijee Sal; and the Eynnee, also a variety of minor trees; these forests have been much neglected; most of the timber having been cut down to supply the wants of near towns and stations. But as now a special Department for the conservation of them has been formed, their further exhaustion will, it is to be hoped, be prevented, and means for replanting them adopted; as now that the Railways are intersecting this part of the country, the demand for timber will be yearly increasing."

42. "Kunjiah was once a town of some importance; but having been so often looted within the last few years, is now in great decay, all its wealthy inhabitants having emigrated elsewhere: a great many of its houses have fallen into ruins, and so much is now deserted that in the past season supplies were with difficulty procured there. Agasode and Dehree are the other large villages of this Pergunnah."

Town Kunjiah.

43. "Gohurjhamur, owing to its position on the high road leading to the districts south of the Nerbudda, seems a flourishing place; there is a small Ghurree to the south of the village, now in a ruined state, and said to have been the scene of many a fight in past days. A small Bungalow has been built here for the Assistant Patrol; the Customs line passing along the high road."

Gohurjhamur.

44. "Replee is a largish town for these parts. The Tehseeldar resides at it, and he has charge of these Pergunnabs, Nahurmow, Gohurjhamur, Gurhakotah, Rehlee, and Beoree: he occupies an old Native huvailee; but it is intended that a Tehseelee should be built for him hereafter. A few other Government buildings have been lately built. The town is well kept owing to the Government Establishment residing at it. During the dry season the inhabitants are put to inconvenience for water, owing to the paucity of wells, which, I believe, it is intended to remedy by building a dam across the Sonar River. The fort on the banks of the river is a strong and large one, and during the rebellion was held for some time by one of our Officers against a large number of Bundela rebels; it is now in a ruined state, and will be demolished when a Tehseelee is built for the reception of the treasure which is placed in the fort, no other building being available for it. A large Bungalow was built here near the town many years ago, and is still in fair preservation."

Town of Replee.

45. "Buleh is one of the most important villages of the Putehra Rajah, who resides on the Nerbudda. It is rather large, and prettily situated on a height; there are a number of Paun gardens here, the produce of which is sold in the neighbouring country."

Buleh—Town of.

46. "Gurhakotah is one of the largest towns about here. The fort to the north of it, and situated at the confluence of two streams, is naturally strong, and has been the scene of many a fight in lawless days; it is now completely dismantled, many of its faces and towers having been blown up."

Gurhakotah.

47. "The Rumna or forest to the north is one of the few places where arrangements for conservation have been made; there were a large number of trees in it, principally teak, but these have been greatly diminished in number to supply the timber for the new Barracks at Saugor. A small Bungalow has been built in the forest, and is often occupied by sick Officers from Saugor, who require change of air. Near it a large spire has been built, which can be seen from a long distance; it is said to have been erected by Rajah Murdun Singh, in imitation of the minarets at Benares, on his return from a pilgrimage to that sacred city of the Hindoo Religion."

Gurhakotah Forest.

48. "The other large villages about here are Chandpoor, Burkhera, Secundra, Chhiraree, Goonjari, and Chhoollah."

Other large villages.

Extract from Annual Report of the Operations of the 1st or Baiswarrah Division, Oudh Revenue Survey, dated 29th October 1863.

BY CAPTAIN F. C. ANDERSON.

Season 1862-63.

11. "The instructions of the Surveyor General to take up the Sarda Survey under the sanction of the Supreme Government were received by me on the 22nd September 1862, when I was directed to detach a suitable party from my establishment for this purpose; but as the nature of the work imperatively de-

manded European supervision, and I was unable to spare even one of my European Assistants, I determined upon proceeding on this duty myself. I also felt this to be more expedient, for having personally demarcated and surveyed the Nepal boundary line up to the River Sarda in 1859-60 I was well acquainted with the locality and better able to find my own points, upon which a satisfactory connection was so necessary."

12. "On the 12th of January I left the Roy Bareilly District, and dāking up to the Frontier, viā Lucknow and Seetapoor, commenced work at the Great Trigonometrical Station of Sultanpore. Here I observed an Azimuth, and cutting through the forest in a north-westerly direction, I crossed the River Sarda, and closed upon one of my Theodolite Stations of 1859-60 situated on the right bank of the Pearee Nullah, on which I found a pucka pillar had been built. I then re-traced my steps, and starting afresh from the point at which I had crossed the river, I surveyed up to Khujoorea, where I again effected a satisfactory connection with two of my old points, marked in the Nepal boundary map Station V9, and Station h Pucka Pillar No. 211. Proceeding northwards I connected the whole of the work with the Mochin Hill Station, situated on the summit of the high range immediately above Burmdeo, and laid down with a 7-inch Theodolite a series of stations along the left bank of the Sarda, on which the interior survey of the river was completed."

13. "I was accompanied by one of my Native Surveyors Kour Sein, who, with his Kirka, surveyed sometimes with his Plane Table and sometimes with his Theodolite both banks of the river, as well as the numerous streams into which it is divided. A connection was also made with the old Rohilkund maps at the following points:—Pucka Pillars Nos. 85 and 86, situated on the north-east and south-east corners of allotment No. 21, also Pucka Pillars Nos. 92 and 93 situated on the north-east confines of allotment No. 14, shown on the map of the Government Forest tracts in Pergunnah Poorunpore Subna, Zillah Shahjehanpore, surveyed by Lieutenant Vaurenen in 1848-49 and 1850. The sites of the ruins of the forts of Ramkot and Bunbursa have also been taken up by means of the Theodolite. I further made an effort to take up Pucka Pillars Nos. 87, 88, and 89 and d4 and r4, but was unable to do so, as they had been washed away."

14. "I have been obliged to bring to the notice of the Local Government, North-Western Provinces, that north of Moondea Ghat I found neither boundary pillars, nor land marks of any kind to indicate the limits of Nepalese and British Territory. Very few of the pillars erected by Mr. Buller are to be traced, and the point at which his boundary line struck the River Sarda cannot now be clearly distinguished. Mr. Probyn's very rough sketch was little or no guide to me; and the Kanoongo, Lukput Rai, who accompanied me by direction of the Shahjehanpore Civil Authorities, could not always distinctly state which of the many banks caused by the receding of the river had been fixed upon to define the boundary between the two States."

15. "With the map of the Sarda before me, and the local knowledge possessed by Civil Officers whose districts border upon the line, I hoped to have been able to identify the particular bank which had been selected for the boundary; but nothing satisfactory having resulted from a representation of the difficulty which I made personally to the Commissioner of the Rohilkund Division, I felt it to be my duty to lay the matter before the Government, North-West Provinces, and my letter No. 19 on the subject is herewith appended."

Copy of letter, No. 19, dated 8th October 1863, from the Revenue Surveyor, 1st or Baiswarrah Division of Oudh Survey, to the Secretary to Government, North-West Provinces.

"The representation of the Surveyor General of India having shown to the Supreme Government the necessity of extending the professional Survey of the Nepal boundary along the River Sarda from Khujooria Ghat up to Burmdeo, I was directed by Colonel Thuillier to make arrangements to proceed to the Frontier at any time during the past field season, that my personal supervision could be best spared from my own Survey Party in Oudh. With this view, I accordingly proceeded to Poorunpore in January last, and surveyed the whole of the River Sarda, including both banks."

2. "While thus employed, I observed that the boundary pillars between Rohilkund and Nepal had not been erected, and that there were no land marks whatever to define the limits of the British and Nepalese Territories."

3. "For the knowledge I obtained of the boundary line that had been adopted by Mr. Probyn I was altogether dependent upon what I could gather from the people of the country, and upon the Poorunpore Kanoongo who accompanied me by order of the then Officiating Magistrate of Shahjehanpore, and on the information thus obtained, I accepted, surveyed, and laid down most carefully upon my maps one of the numerous banks caused by the receding of the Sarda, which was pointed out to me as the one that had been fixed upon by Mr. Probyn as the divisional line between Nepal and Rohilkund."

4. "It is quite needless to observe that the natural features of a country, without the aid of permanent artificial land marks, can never safely be adopted as the boundary between two rival States. Substantial masonry pillars could not be removed or shifted, and if removed their original position could at once be determined by their co-ordinates and bearings furnished from our professional Survey Records."
5. "I would suggest that for the sake of uniformity, the masonry pillars between Rohilkund and Nepal be built upon the same plan and after the same design as those that have already been erected to mark the boundary between Nepal and Oudh, and in case His Honor the Lieutenant Governor should be of the same opinion, I append a copy of my letter, No. 49, dated 24th September 1860, to the Secretary, Chief Commissioner of Oudh, on the subject of pillars above referred to."
6. "The boundary pillars put up by Mr. Buller in 1833 along the bank of the old Sarda have nearly all fallen to pieces, and I doubt whether even three could be now found in any sort of preservation northwards of the point where the Oudh and Nepal boundary strikes the Rohilkund Frontier."
16. "The northern boundary of the Bilhree Pergunnah has also been shifted about six miles north of the position it held on Lieutenant Vaurenen's maps. My maps of the Sarda are consequently incomplete; but I have despatched them for the inspection of the Surveyor General, and the required corrections can either be made in the Head Office in Calcutta, or the maps returned to me."
17. "On the 9th of March, after having made every arrangement for the continuation and completion of the projected field work in Sooltanpore, I again left my party for the survey of the Oudh Forests east of the Kowriali; and marching up *via* Fyzabad and Gonda, I arrived at Nanpara on the 19th of the same month. One Native Surveyor, Hurgoolal, who has been annually employed on the survey of the forests, preceded me with his Firka, and the names of all members of the establishment so employed were struck off my Rolls from the 15th February to the 1st May."
18. "Fifty-eight Bojhees, Tapurs, and Forest tracts have been surveyed between the Kowriali and Bhugra Tal, and connected with my Theodolite stations along the Nepal Frontier line laid down by me in 1859-60, which served as the basis of our operations. Each Hulka has been put up and traversed; and the areas, calculated by universal theorem and shown on the seven Sheets of congregated Hulkas projected on the scale of $\frac{1}{2}$ a mile = 1 inch, are as follows:—

	Number of			Total Traversed Hulkas.	Area in	
	Tapurs.	Bojhees.	Jungles.		Acres.	Square miles.
Sheet No. 1	1	0	2	3	8130.7	= 12.7
Sheet No. 2	1	0	10	11	28852.7	= 45.1
Sheet No. 3	0	1	2	3	21352.1	= 32.6
Sheet No. 4	2	6	4	12	44603.0	= 69.7
Sheet No. 5	1	2	2	5	12854.7	= 20.1
Sheet No. 6	1	7	4	12	10173.5	= 15.9
Sheet No. 7	3	4	5	12	28742.4	= 44.9
Totals	9	20	29	58	154709.1	= 241.0

19. "The Forest Survey Bills for the past year have amounted to Rs. 1,795-5, which gives the rates per square mile at Rs. 7-7-2, and per traversed Hulka Rs. 30-15-3
* * * * *

20. * * * * * "All that was required of this survey when it was set on foot was to give a correct idea of the extent of the sal tracts and of the timber forests left to the British Government after ceding the old Goorkha possessions to Nepal, and to define the geographical positions of the tracts demarcated by the Superintendent of Oudh Forests. This has been done,

and the area of each Hulka has been noted on the maps; but while the correctness of the work performed can be thoroughly depended upon, there has been no pretension to the minuteness of our professional survey; nor was it possible to convert our operations into a regular Mouzawar or topographical survey of the country without greatly weakening my party working in the south of Oudh and seriously affecting its out-turn."

21. "My reason for thus pointedly bringing these facts forward now is, that I have received a copy of extracted paragraphs 84 to 102 from the Conservator of Forests, to the Secretary, Chief Commissioner of Oudh, in which last para. Dr. Brandis recommends that more detail be given in the survey maps, and the Secretary to the Chief Commissioner, Department Public Works, has requested me, if possible, to comply with the above suggestion. This, with my small available Establishment and limited time, cannot now be accomplished. Such roads, nullahs, and villages, with other topographical items as could be conveniently laid down, have not been omitted; but at some later date, when the conservancy arrangements have been completed, a thorough Mouzawar survey of the forests would be very desirable, and could easily be effected when the Regular Revenue Survey enters the District of Mohumdee, Gonda, and Baraitch, on the northern confines of which the forests are situated, and can annually take up a portion of forest land, with the district on which it adjoins."

Extract from Annual Report of the Operations of the 2nd or Lucknow Division, Oudh Revenue Survey, dated 24th November 1862.

BY LIEUT. COL. D. C. VANRENEN.

Season 1861-62.

13. "The country here is undulating, fairly cultivated, and the soil sandy; it abounds in fine mango groves, more particularly those at Suffeepoor and Baugermen. The Ganges separates this district from Cawnpoor; its right bank is well defined, but its left bank on the Oonao side is not clearly marked, consequently the villages on this side are subject to heavy floodings during the rainy season."

DISTRICT OONAO.
Pergunnahs.

1. Parrier.
2. Suffeepoor.
3. Futtehpoor.
4. Baugermen.

"There is no imperial road, and the principal district road is that leading from Oonao, *via* Suffeepoor and Baugermen, to the adjoining District of Hurdui; this is in fair order, and partially bridged, but with very little traffic on it. A few unimportant roads, none of which are metalled, lead, 1st, from Baugermen to Jugutnugur; 2nd, from Suffeepoor Khas to Meangunge; 3rd, from Suffeepoor Khas, *via* Russoolabad and Mohun, to Lucknow; 4th, from Pureur Khas to Mohun."

30. "The Register Heading Forms, so far as we can complete them, are ready, and are retained only till we receive the statistics entire with reference to the population, number of houses, wells, &c., and these the Settlement Officers are supplying us with. The professional has got ahead of the Kishtwar and Khusreh, but a large Establishment is employed on the latter, with a view of keeping up with us. Happily, between all parties, the greatest harmony and good will prevail."

Register Heading Forms completed within the competency of this Department, but detained until the Census Returns, with number of houses, wells, &c., have been furnished by the Settlement Officers.

Giving detailed area of Oonao District with classification of soil.

31. "For the Oonao District, of which a detailed survey has been made, the ratio of cultivation, fit for cultivation, barren waste, &c., is as follows:—

Cultivation, including fallow.	Fit for cultivation.	Jungle.	Roads and paths.	Jheels.	Barren waste.	TOTAL AREA.
						Acres.
4,56,984	1,28,996	36,893	7,702	42,594	1,66,119	8,39,288

"showing that the 'cultivation,' including fallow, with 'fit for cultivation,' gives an area of acres 5,85,980 out of a total area of acres 8,39,288, or nearly three-fourths of the whole; whilst the 'barren waste' yields acres 1,66,119, or about one-fifth."

XXXII. "As far as the Khusreh has gone, I find that we agree well as regards total area for each village; and fairly with respect to cultivation, including fallow, but with regard to 'fit for cultivation' and barren waste, we differ largely. Generally the professional shows more land 'fit for cultivation' and less barren waste than the Native survey. Barren waste sometimes is difficult to come to a correct decision on, two Officers riding out to examine the same ground would probably arrive at different conclusions, as to what is culturable and barren; hence it is not surprising that with work under these classifications, Native Ameens should occasionally differ."

Extract from Annual Report of the Operations of the 2nd or Lucknow Division, Oudh, Revenue Survey, dated 15th December 1863.

BY 'LIEUTENANT COLONEL D. C. VANRANEN.

Season 1862-63.

XIII. "After the survey had been made and the maps were in course of completion, this Tahseel was divided into convenient compact Divisions, and now comprises three Pergunnahs, viz., Koorsee, Dewa, and Muhonuh."

District Lucknow.
Pergunnah Divisions of this Tahseel (Koorsee).

XIV. "The country comprised in these two main circuits (which are drawn in one map) may be thus briefly described. It is generally flat, well wooded, and fairly cultivated, with capabilities as to the extension of cultivation. There are numerous jheels and some tanks."

Brief description of country.

XV. "The only river of note is the Goomtee, which separates it from Tahseel Mulleehabad and from the District of Hurdul. The Kullianee and Reth Nuddees are affluents of the Goomtee. The ordinary roads leading from village to village are very defective."

Its river and streams and ordinary roads.

XVI. "The imperial roads are one from Lucknow to Seetapoor, which traverses Pergunnah Muhonuh in a north-westerly direction, passing two miles west of the large town of Mahonuh. It was being metalled. The other leading from Lucknow on to Fyzabad passes in a direction from west to east; it is in capital order, is metalled and bridged, and has considerable traffic on it."

Its imperial roads.

XVII. "District roads. The first is the continuation of the road from Seetapoor to Nawabgunge (Bara Bunkee), and passes through the important towns of Mahonuh, Koorsee, and Dewa. The second leads from Lucknow, through Koorsee, on to Muhmoodabad. The third from Lucknow leads to Dewa. All the district roads are unmetalled and only partially bridged."

And district roads.

XXIV. "This Tahseel (Mulleehabad), like the other Tahseels of the district, had many outlying villages, as well as some villages within its border belonging to other Tahseels; but under the new territorial divisions, which were carried out subsequent to the survey, each Tahseel has been formed into compact groups, sub-divided into Pergunnah Divisions. Under this arrangement, Tahseel Mulleehabad has two convenient sized Pergunnahs, viz., Mulleehabad and Mohan Ouras."

Tahseel Mulleehabad and its division into two compact Pergunnahs.

XXV. "The general aspect of this portion of the district is open champaign. It is partially cultivated and well wooded."

XXVI. "The only river is the Goomtee, which divides Pergunnah Mulleehabad from Pergunnah Muhonuh. The Sye and Behta Nuddees, which are both tortuous streams, flow through Pergunnahs Mohan and Mulleehabad in a direction south-east, with an average width of 35 yards each. Nawab Nusseerooddeen Hyder's canal passes through Pergunnah Mohan, and on to Lucknow, where it falls into the Goomtee. It was originally designed for an Irrigation Canal, but it is a failure."

Its river, and two nuddees and canal.

XXVII. "There are no imperial roads. But the district roads are 1st., that from Lucknow to Sundeluh, which passes through the large town of Mulleehabad Khas. It is in fair order and partially bridged; 2nd., that leading from Mohan through Mulleehabad Khas, thence nearly due north to Etounjah; 3rd., the continuation of the road from Mohan to Ouras Khas; 4th., that from Russoolabad, which joins the Lucknow Sundeluh road a little north of Ruheemabad; and 5th., that from Mirjangunj to Mohan, which skirts the southern boundary of Pergunnah Mohan. All the district roads are (kutchas) unmetalled, and only partially bridged."

Its roads.

XXXVII. "Lucknow which is the capital of Oudh is a vast city of considerable extent and thickly peopled; it possesses very many attractions, and is remarkable for the grotesque intermixture of its buildings, some in the English style, others of half English and half eastern architecture, and the rest entirely eastern. When viewed from a height it presents a curious spectacle of gilded cupolas, minarets, tombs, and arches. It is thickly interspersed with large gardens, which are well wooded. There are very few sights so well worth seeing in India as Lucknow, with the Goomtee meandering through its northern portion. As the capital, it is comparatively of modern date, the seat of Government having been transferred from Fyzabad by Asophoodowlah in 1775, but it will always possess considerable historical interest when taken in connection with the occurrences of 1857-58."

XXXVIII. "Demolitions, chiefly in the vicinity of the Emambarah, Muchee Bhawun, and Residency, have been carried on to an enormous extent, and numberless houses, once densely inhabited, have been razed and levelled. Fine broad roads have been driven through the heart of the city in every direction. It is still nevertheless a vast thickly peopled city, containing many spacious buildings of considerable architectural skill. The most prominent among them being the Martiniere, the great Emambarah where the Magazine is now located, the Chuttur Munzil, the Kaisur-bagh and Kaisur Pussund, the Hoosainabad, the Moosa-bagh, the Dilkoosha. These and many others I could name attest what Lucknow still is and has been."

XXXIX. "We have the Residency too, now a heap of demolitions, but of surpassing interest, on account of its memorable defence in 1857, by a small British force, against the rebels in Oudh, led on by our late infatuated Native Soldiery, and he who has read the accounts of that memorable siege, so thrillingly described in Sir John Inglis' despatch, must recall to mind the honored names of Henry Lawrence, Henry Havelock, and James Outram, all of whom have passed away."

XL. "The Residency, Banqueting Hall, and adjacent buildings (or rather what little remains of them) occupy a commanding position north of the city. They are situated about midway between the Chuttur Munzil and Muchee Bhawun, and not far from the river. The site for the Residency was exceedingly well chosen."

XLI. "And then, in connection with the relief of Lucknow, have we not the Alumbagh, the Jellalabad Fort, the Canal, the Secundurbagh, the Shah Nujjuf, Kuddom Russool, Moti Muhul, the mess house, and Para Kothee, all of which were held by the rebels in 1857, and seized by us after heavy fighting."

XLII. "The details of all this, however, do not properly belong to a professional Report of the season's operations, though the stirring scenes which eventuated in the re-occupancy of Oudh will necessarily be alluded to when my Statistical Report of the Lucknow Division is submitted, after the survey shall have been finished."

LII. "This is a well cultivated, well wooded country, possessing a rich fertile soil. The Goomtee separates it from the Roy Bareilly District, and from portions of the Lucknow and Sooltanpoor Districts."

LIII. "The imperial road leading from Lucknow to Fyzabad traverses this portion of the district, passing through the principal towns of Nawabgunj Khas and Pertabgunj Khas. It is metalled, bridge in good order, with considerable traffic on it. The telegraph posts have been extended on this line."

LIV. "From Nawabgunj Khas another important road, which is being metalled leads to Byram Ghat, a considerable timber mart on the banks of the Ghogra. Nawabgunj is the Head Quarter Station of the district, where the European Civil and Police Officers reside. The Police Corps is located here, and it possesses a Jail."

LV. "The only district road is that from Dewa *via* Nawabgunj Khas, Zaidpoor, and Sidhour Khas on to Duriabad. It is kept in fair order, but is unmetalled, and only partially bridged."

LXI. "This portion of the district possesses a good soil; it is well wooded and very fairly cultivated. The numbers of jheels and tanks which abound attest that irrigation is extensively practised."

LXII. "There are no rivers, but the old (forsaken) bank of the Ghogra is distinctly marked. Entering the northern boundary of Pergunnah Futtchepoor, Sihalee, it traverses Pergunnahs Muhumudpoor and Ramnuggur in a direction south-east, and is distance some 10 miles from the present right bank of that river."

LXIII. "There are no imperial roads here. The only completed district road passes through the centre of the Tahseel, and through the large towns of Futtehpour Khas and Umolee Kulan. It is well defined, is in fair order, and partially bridged."

LXIV. "The territorial divisions have been somewhat changed since the survey was made, but Tahseel Ramnuggur now consists of 4 Pergunnahs, viz., Ramnuggur, Futtehpour, Sihalee, Muhumudpoor, and Buddoo Surae."

Extract from Annual Report of the Operations of the Delhi and Hissar Division Revenue Survey, dated 1st October 1862.

BY MAJOR H. C. JOHNSTONE.

Season 1861-62.

15. "In the Delhi Division, Pergunnah Bullubgurh was first taken up. It was surveyed in one main circuit. It was formerly the jageer of the Bullubgurh Rajah, who was hung in 1858 for rebellion. The territory then lapsed to Government."

"The natives explained Bullubgurh as meaning Bulumgurh, or in English 'Spear Fort.' It was built about 150 years ago by Rao Bulram, the first chieftain, whose daughter was married to the Bhurtpoor Rajah. It is not unlikely that the name, originally after the founder, has degenerated into its present pronunciation. Rao Bulram died in 1750, having reigned with the title of 'Rao' only for thirty (30) years. His successors were as follow":—

"Chowdry Kishen Singh from 1750 to 1764."

"Ajeet Singh, the first 'Rajah,' reigned from 1764 to 1792. He had two sons, of whom Goolab Singh had issue Suleeman Singh, whose wife is one of the women with the present Raneer residing as a pensioner at Delhi. He was succeeded by his son Bahadoor Singh, who reigned from 1792 to 1806. Heera Singh shared the throne with Bahadoor Singh until 1804, when he was turned out by Sir D. Ochterlony for aiding the Mahrattas. Narunjun Singh, son of Bahadoor Singh, reigned for about 9 months in 1806, when he was succeeded by his son."

"Umrood Singh from 1806 to 1817. His son Sahib Singh from 1817 to 1823. Dying without issue, he was succeeded by his uncle Ram Singh, brother of Umrood Singh, from 1823 to 1828, succeeded by his son Nahur Sing, who turned Mussulman. He reigned until 1857, and, as already mentioned, was hung in 1858 for rebellion. His queen, Kishen Koor, is now a pensioner at Delhi. * * This territory is as yet only attached, not confiscated."

Population. 17. "The population of the Pergunnah must be about 65,000."

18. "The principal tribes are, Goojurs, Jats, Aheers, Gounrees, Brahmins, Mewatees, and Mussulmans. The two former are the most numerous. The Gounrees are the degenerate descendants of Rajpoots, who came into the country some three hundred years ago."

19. "The whole tract is well cultivated, and the soil good. Crops are plentiful, and the population appears contented and wealthy. Cotton is much grown, and in some parts of good quality; its culture will now probably be much extended owing to the increased demand for England; wells abound; a puckah well will irrigate from 9 to 10 beegahs, a kutcha one from 6 to 7."

20. "The sanctioned assessment under the new settlement for 1862-63 is, I am informed, about Rs. 1,30,000. The summary settlement in 1858 was Rs. 1,72,000, for 1858-59, Rs. 1,59,000; for the three succeeding years, it was still further reduced to Rs. 1,26,000. In 1855-56 the late chief raised above two lakhs. The average, however, for twenty (20) years previous to 1857, seems to have been about Rs. 1,80,000. The people have in this matter clearly benefited by British rule. The average rate of tax on land under cultivation is Re. 1-9-0 per acre; on all culturable soil Re. 1-1-0."

21. "There are two towns only of any importance in this Pergunnah, viz., Furreedabad and Bullubgurh. They are both situated on the high road from Delhi to Muttra and Agra. They are both surrounded by mud walls, now much dilapidated. Furreedabad was founded by Newab Moortuza Khan, a chieftain serving under the Emperor Jehangeer about 2½ centuries ago. It

is a considerable town, having a couple of thousand houses and 8 or 9,000 inhabitants. Bullubgurh has already been noticed as the capital. The outer mud walls of the fort have been thrown down and the ditch filled up. The inner wall faced with stone still stands. The main buildings in the interior, the palace of the late Rajah, have been reserved for a tehseel; all the others have been cleared away. As relics of the past regime some very fine gardens and mango groves still show near the fort."

22. "Towards the north of the Pergunnah are the ruins of Tooghluquabad, and very remarkable they are. The fortress is said to have been built by Tooghluquabad. Gheesooddeen Tooghlug in A. D. 550. He and his wife are buried close by in a tomb of red sandstone surmounted by a fine dome of white marble. It is connected with the city by a viaduct of some (27) twenty-seven arches spanning what must formerly have been a vast sheet of water. Surrounded by enormous stone fortifications are the remains of a once wealthy city: traces still exist of the long streets and bazars, old mosques, vast dungeons, subterranean galleries, reservoirs, and under-ground residences. Even now after rain treasure is dug for, and gold and silver coins are picked up among the rubbish. The only inhabitants are a few Goojurs."

23. "Among other objects of interest are the crystal mines. Though now not worked, yet I believe them to be really worth attention. I remarked in an old report that really valuable crystals from them were presented to Lord Auckland in 1838. I had neither time nor opportunity to try for specimens myself, but a few I saw in the Delhi Museum are valuable."

24. "After the completion of the Bullubgurh Pergunnah, Camp No. 1 proceeded to take up Pergunnah Buhadoorgurh, in District Rohtuck. This jageer lapsed to the Government after the capture of Delhi in 1857. The chief was not, I believe, guilty of active rebellion, but he did not show on the side of the British Government, and secretly encouraged its enemies. He is now a pensioner at Lahore."

25. "Next were surveyed the Pergunnah of Jhujjer and Badlee; a portion of the latter was made over to District Goorgaon after survey; the balance and all the former belong to District Rohtuck. The two formed part of the jageer of the late Newab of Jhujjer, who was hung in 1857 for rebellion. A more extended report on these will be given when the survey of the whole of the late Newab's jageer has been completed next year."

26. "Next were surveyed the jageers of Putondee and Doojana Nahur. They are small, and of no importance."

Extract from Annual Report of the Operations of the Delhi and Hissar Division Revenue Survey, dated 1st February 1864.

BY MAJOR H. C. JOHNSTONE.

Season 1862-63.

14. "The Maharajah of Puttiala received as his reward the Pergunnahs of Kanound and Narnoul, with a population of 1,03,176, an area of 575.34 square miles, and a revenue of Rs. 2,37,887. The ancestor of the present ruler of this the greatest of the protected Seikh States, emigrated from the Manja more than a century ago. His younger son, Rama, founded the present dynasty, which has reigned for five generations. From our first connection with him, Puttiala has behaved with unswerving loyalty, and his services have been on many occasions conspicuous. During the Nepal war, he materially aided the British Government with troops and supplies, and was rewarded with a large tract of hill country to the north of, and adjoining his own territory, yielding a revenue of about Rs. 35,000. In 1857 he again placed his forces at our disposal. By his conspicuous loyalty and unceasing energy, he kept the wavering in his own states true to their allegiance, and the really rebellious from breaking out. The paramount power, fully appreciating such assistance at a time that it was all but struggling for existence, conferred further lands and honors on him. The lands were the Pergunnahs lately surveyed. His whole territory comprises an area of 5,412 square miles, has a population of about one million and a half, and gives a revenue estimated at some thirty lakhs of Rupees. Maharajah Nerunder Singh was invested with the order of the Most Exalted Star of India, and was elected a Member of the Governor General's Council. He is entitled to a salute of seventeen guns. In November 1862, while the survey was under progress, this enlightened Prince died suddenly after a very short illness. According to the custom of his faith, to propitiate the deity for recovery, Brahmins were fed by the thousand and taxes

into the 'Kooddun.' This work carries much of its water above the surface of the country, and is consequently open to cause danger if not very carefully watched. I understand this work succeeded well during the past season, and is an especial pet project of Mr. Mahers, the present Deputy Collector of the district, who had it constructed at the cost of the Zemindars."

"There is a handsome bridge across the Narra at Radhun, 250 feet long, consisting of 4 arches, with a span of 30 feet and a road way 22 feet wide. Besides this, in the town of Mehur itself, the Kukol is crossed by 2 puckah bridges, and a neat bridge of 2 arches across the Youngwah on the road to Seeta is a great addition to the travellers' comfort. On the old high road the bridges are all of that singular construction common to Upper Sind, one mountainous half circle arch rising high above the road. In bridge architecture a form similar to the Norman arch is an inconvenient form of expression. Altogether there are 82 miles of bridged roads in the Mehur Districts; this does not refer to the Narra, which is bridged in only one place, *viz.*, at Radhun, * * * No bridge exists across the Narra at 'Bhumbhor' on the high road between Mehur and the important village and bundur of Seeta." * * *

"District Bungalows are situated at Rookun, Khyrpoor, Mehur, Radhun, Thuree, and Badrah. These are all comfortable little houses, each containing 2 or more rooms, with servants' out-houses attached."

"Excellent roomy Dhurrumsallahs have been built at Mehur, Thuree, Radhun, Khyrpoor, and Kukkur. These will each afford shelter to 60 or 80 travellers, that at Mehur would receive upwards of 100. In addition to the above comfortable sheds have been built at 'Bhumbhor,' Seeta, Raja Dera, and Saedpoor, so it is easy for a District Officer to move all over the Mehur District during the hot weather without being exposed unnecessarily to the heat of the sun under a canvas covering. It is possible that I have omitted to enumerate many buildings, such as Jails, Kardarates, Police Lines, Civil Hospital, and Dispensary, all of which have been constructed and kept in repair at the public expense, but I have only thought it necessary to record works constructed to further revenue projects, or connected with the wants of a traveller."

19. * * * * "On the whole we had great facility in prosecuting our work in Mehur. The Zemindars and ryots worked cheerfully and well to assist us, and we found all the Revenue Authorities from the Deputy Collector downwards willing to oblige and help us. In no other season's work has the average cost per square mile for line cutting been so low. I have been glad to bring three* natives to the special notice of the Commissioner, who rewarded them with handsome scarfs as an acknowledgment of their loyal service"

20. "Excessively correct and drawn with wonderful accuracy I forward one as a specimen, and it proves how carefully the men, originally trained by the Revenue Survey Establishment in 1856, learned their work and did it. I have always borne my testimony to the excellence of the work the Settlement Officer in Upper Sind has furnished us with, as far as the boundary work of villages and Talookahs is concerned. It is much to be regretted that we have seen so little of their work. No Khusra work has been attempted, at all events none of its results have been compared with ours, and though speaking under correction, I believe that not one single village in the whole Collectorate has had its Khusra survey completed and settled on *that* work. In 1858 the Khusra work of a few villages in the Shikarpoor Deputy Collectorate was prepared, and these Khusra maps were compared with ours; they were excellent. I am sorry to say the effort ceased with those maps." * * *

"But this Report on the progress of a revenue survey like ours, throughout a Collectorate, with an area of 10,248 square miles, at a cost of Rs. 2,04,729, would be incomplete without some notice of co-existing settlement operations, and how far their labors have been usefully employed in connection with the results of our professional survey."

"There can be no doubt of the great value derivable from a careful comparison between the results of the detailed areas furnished by the Surveyor and the Khusra survey of the Settlement Officer. Throughout our operations all this valuable aid has been utterly thrown away, and, except as a check on the total areas of Dehs, the labors of the professional Surveyors have been useless. I have not received any official notice of that information being used, but I will suppose it has. I record the above with the greatest mortification, as I have always experienced great interest in the working of the Settlement Putwarrees, who were first trained for their knowledge of their duties in the school established at Sukkur in 1856 by the Revenue Surveyor. I have seen the work and the maps furnished by the Settlement Officer in eight districts of the Punjab, and though from practice the Punjabee Putwarrees learned to prepare their village boundary maps, as well as their Khusra maps, with some attempt at correctness, still, when in the Punjab, I never saw any settlement maps approaching in accuracy and finish to those prepared for our use by the Shikarpoor Settlement Establishment."

"But the Punjab work was really useful; side by side with the Surveyor, worked the Moonsurrims and Putwarrees. The Settlement Officer strained the efforts of his establishment to procure a comparison of work performed at the same time as the professional measurement, to

ensure its mathematical accuracy, as a test for his independent results. Much good was thus effected. And though the rough measurements of the settlement were only expected to agree within 5 per cent. of the survey areas, even this acted usefully as a beacon to the settlement and a warning to the Surveyor. More than once has a lazy Native Surveyor been detected in having omitted details which in particular instances were coarsely shown by the more painstaking Putwarrees. All this mutual advantage to settlement and survey has been lost, throughout our past proceedings in the Shikarpoor Collectorate. * * * * At the commencement of each season I have been duly furnished with the Thakbust (boundary) maps of the villages and a Moojmillee (congregated village) map of the whole district, all finished in a very superior style to any maps ever furnished by a Punjab Settlement Officer. So far it was very good. There the Sind Settlement Officer ceased his work with the Surveyor, and of the real useful results to be obtained from Survey and Settlement working together not one has been reaped."

21. "The settlement has shown us nothing which can be compared with the survey"

In my Reports on our proceedings in the seasons 1856-57 and 1857-58, the 22nd paragraph of each Report states how far the Settlement Officers who were in co-operation with me acted in this matter. I did not submit any Report on the Larkana work; and now on the completion of this our fourth district, which finished our work in the Shikarpoor Collectorate, I have come to the conclusion that there has been no consistent attempt to carry out settlement measurements, subject to check from ours. I could not have expressed myself in stronger terms than I used in the 22nd paragraph of my Report for 1856-57, on our work in the Rohree Districts. I felt more hopeful when I reported on the Khusra work then being done in the Shikarpoor District; but I now think the Khusra work compared with ours was only the commencement of some abandoned effort which was never intended to be carried out."

23. "Previous to the conquest of Sind by the British, the area included in the present

Talookahs of Mehur and Kukkur belonged to the Ameeris Meer Mahomed, Meer Sobdar, and Meer Nusseer Khan, of the Hyderabad reigning family. This district is naturally very fertile, but being subject to dangerous inundations both from the river and the Narra, it has never increased in its revenues to the same extent as the neighbouring District of Larkana. 15 years ago the revenues of the Larkana and Mehur Districts were as follows":—

					Rs.
" Larkana ...	...	...	...	...	3,80,000
Mehur ...	...	...	...	...	2,40,500"

"The Revenue Return of the different districts of the Shikarpoor Collectorate, since the year 1855-56 up to 1860-61, will show how these figures have altered, and that whereas the revenues of Larkana have been nearly doubled, Mehur has remained almost stationary, and in some years has receded in its revenues. The peril of inundation is the chief cause of the unwillingness to extend the cultivation: a glance at the map will show what vast areas are protected by dams, which are scarcely threatened, sometimes for three or four successive seasons; but the possible danger is ever before the farmer's eyes, and consequently many thousands of acres are left untilled each season, between the Rookun bund and the river; there is a good deal of splendid spring cultivation on 'Sylabee' soil and on 'Bosec,' the former requires a few waterings, and on this wheat and cotton are generally sown; the latter is sown with gram, peas, or oil seeds, and beautiful crops are often obtained at a minimum cost."

"The ground near the river is well wooded with fine timber, and the tortuous course of the 'Narra' (literally a snake) is marked by splendid trees massed in dense groves: further west towards the hills, the land is more saline in character, and large spaces are covered with the efflorescence of soda, which proclaims the ground to be utterly useless for agricultural purposes. Under the hills, the soil and scenery have quite a different value and appearance; the former is of wonderful strength and richness; on it were crops 'Surson' (mustard oil seed) which exceeded any thing of the kind I had ever before seen. The same may be said of the cotton, which struck me as being by far the finest in luxuriance of growth, number of pods, and length of

North-Western Provinces,
Punjab.

staple, of all of which has come under my notice either in other parts of the Collectorate or anywhere else in India. It is no exaggeration to state that in the area subject to floods from the hills in the 'Mehur' and 'Larkana' Districts, at least 3,00,000 acres are admirably suited to cotton cultivation, the soil being a rich loam. For the supply of water from the hills might be utilized and preserved in some of the vast natural hollows formed amongst the lower hills: at present, hundreds of thousands of millions of tons of precious water are wasted on tracts which are as bibulous as unproductive. The present scanty population prevents the possibility of much being done by the Zemindars of the district. But within the limits I have mentioned there is a fine field open to a capitalist who would wish to speculate in growing cotton. There would be one special advantage in settling on this locality; for the planters might have the advantage of living in the delightful climate of the neighbouring 'Keerthur' hills. This removes the greatest drawback attending on the European planter in Upper Sind, securing a temperate climate within

8 or 9 hours' ride of his estate in the plains. No description of the Mehur Districts would be complete, without some allusion to the rugged rocky ranges which mark their western boundary on 'Kelat.' These hills have a general direction from due north to south and from 3 parallel ridges, the whole averaging 12 miles in width." * * *

24. "The first or lower range is composed of sandstone, clay, and conglomerate. This range is called the Gharra Tukkur. In the second range numulitic limestone crops out of the sandstone at the surface, and no soft clay is visible, but the sides of the ravines show strata of marl. This range is called the 'Mole Tukku' further north the 'Peeroo' Thukur. The third or highest range is composed entirely of numulitic lime stone, and is filled with fossils belonging to that class; this range is the 'Kara Tukku' of the Keerthur range. The general character of all three ranges is to show a bold scarp towards the west or north, with gradual slopes at gradients varying from 15 to 30 degrees on the south and east."

"In the level tracts existing between the second and third ranges, conical mud heaps covered with gypsum and bearing marks of an intense action by fire exist."

"The clays approach in appearance and feeling in the hand to fuller's earth; when moistened and puddled, it is extremely tenacious, easily moulded, and stands baking in live embers without cracking. In fact a man can mould a pipe, bake it and use it for smoking out of within an hour or so. All the soil in these hills is a red marl, and evidently very rich; whenever a little plateau can be found a luxuriant crop is sure to be raised upon it, though the total amount of cultivation is trifling, as few natural facilities exist for the hill agriculturist."

"The highest range varies from 6,116 feet at the summit of the 'Kootteh jo Kubbur' to 5,014 feet: at this altitude a most delightful climate is to be met with, the temperature is most equable, and an Englishman can bear exposure to the sun from sunrise to sunset without feeling the slightest inconvenience therefrom. Even on the highest hills no shelter is required at night, unless it happens to rain, when it is always easy to find a cave or some sheltering rock."

"In 1859 a slight attempt was made to provide some shelter for any English Officer who might feel tempted to try the benefit of a change to these hills."

The Doomreea towers. Captain Ford, then Collector of Shikarpoor, roofed in two old towers built over the road on the pass to 'Harar.' These towers are on the Doomreea hill, which is a spur from the 'Keerthur' placed at an elevation of 3617.22 feet above the sea; they are above the influence of the hot winds, and in the hottest time of the year the thermometer only once rose to 97°, and in the last 15 days of June averaged 84°20'. It must be remembered that this was in a place little better than a shed, as compared with a house. The place in fact was so badly built up and roofed that the expenditure thereon was sheer waste. The best place for a sanatorium on the Keerthur range is the delightful plateau of 'Dar Yaro,' which is situated on the eastern ridge of the 'Keerthur' and on the 'Sind' watershed; yet has been decided to be 'Kelat' territory. In my map of the hills I have given a section, showing the extraordinary position of a few square miles of 'Kelat' territory perched nearly 2,000 feet above all adjacent 'Kelat,' overlooking British Sind, and actually within our own line of the watershed from the summit of the 'Keerthur.'"

"In 1854 Lieutenant Stewart, the Deputy Collector of Sehwan, was deputed by Government to settle the western boundary line between Sind and Kelat, and in fixing on the watershed of the 'Keerthur' between the summit of the hill Seyahâh* and 'Bhedoor' points 140 miles apart, he states that the watershed of the 'Keerthur' marks the line of demarcation. I transcribe his own words on the subject."

* Termed Sha-aap in the Report. "For such portion of the boundary as follows the summit of the 'Keerthur,' it did not seem to me either advisable or requisite to build masonry pillars, the expense of conveying materials to places only accessible, and that sometimes with great difficulty to coolies, would have been enormous, and in addition to this there is little difficulty in ascertaining at a glance from the direction taken by the water and other familiar objects, whether a certain locality is on the eastern or western side of the Keerthur."

Extract para. 7 of Lieutenant Stewart's Report to the Collector of Kurrachee, dated 11th August 1854. "Lieutenant Stewart's settlement received the formal acceptance of both the British and 'Kelat' Governments; * * * this settlement was rejected, and these few square miles of territory on the summit of the British side of the 'Keerthur' given to 'Kelat' by Captain Macaulay in 1861. Nature has placed an unmistakable barrier between the two countries in a magnificent mural precipice facing Kelat. This stupendous wall varies from 1,200 to 2,000 feet in height. Yet the revised boundary ignores this division, and climbing over it creeps for a length of 15 miles across the eastern watershed of the summit which crowns the 'Keerthur.'"

Remarks on the boundary between Karo and Haho peaks on the Keerthur. "I did not fail to bring this matter forward as soon as I was aware of the features of the country, * * * *"

“My opinion is that the boundary, as shown in our maps, is quite unnatural, and I cannot suppose there is the smallest political reason for placing a portion of ‘Kelat’ on the eastern side of the ‘Keerthur.’ The plateau of ‘Dar Yaro’ contains about 4,000 acres of admirable building ground; a register of the thermometer during 4 days in the first week of April gave an average of 61° in the shade, the lowest being 42° and the highest 70°. This was in the open air under the shelter of a rock. There is an abundant supply of good water. As I have before alluded to the advantage a settler in these districts possesses, in having these hills to resort to for his permanent residence, I will merely mention that the Civil Stations of Mehur and Larkana can easily be reached in 17 or 18 hours, from the summit of Dar Yaro.”

“A deficiency of firewood would be one obstacle, but that could be overcome by sowing tamarisk plentifully in all the nullah beds. In the course of 3 or 4 years, the supply would be adequate: it would, however, be always expensive and cost at least one Rupee for 150 pounds in carriage. From April to October, the traveller would have to undergo fearful heat in passing through the lower ranges; this, however, is only slightly in excess of the temperature in the plains of Upper Sind, and after 10 or 12 hours’ endurance he would be amply repaid for the trouble incurred.”

“The ‘Keerthur’ range is covered with wild olives, almond, and medlar trees, also a variety of useful trees and shrubs on of dwarf palm called Pfoesh, ‘Chameerope Ritchiana,’ this plant makes his sandals, ropes, mats, baskets, pipes, and drinking cups. Is he hungry, its heart forms a wholesome and not unpalatable meal; cutting and preparing its leaves for the mat weavers of the plains employs the greater portion of the time of all the hillmen, women, and children. Thus this plant gives the simple hillman all he wants and an occupation also. The ‘Kip’ or ‘Leptadina Jacquemontiana’ is a useful plant, its flowering buds are eaten with relish, and its twigs, after having been properly soaked in water, form a fibre especially useful in making ropes for well wheels, as it does not readily rot from the action of water.”

“The fibre of the ‘Kip’ grown in the hills is more valuable for the above purpose than that of the desert grown ‘Kip,’ being longer and tougher.”

“Another remarkable tree is the ‘Loheero,’ which has a large beautiful flower containing a great deal of honey; its timber is very hard and heavy, but I saw none of more than 7 or 8 inches scantling. Dr. Stokes states that it grows to a considerable size; where such is the case, it must be superb timber for ornamental furniture.”

“The common ‘Peepul,’ ‘Neem,’ and ‘Fig tree,’ ‘Funs carica,’ abound all over the hills up to an altitude of 3,500 feet; wherever a spring of water exists, there is sure to be a deep cluster of brilliant foliage: the ravines and water courses are filled with ‘Tamarindus Indica’ called ‘amree’ in the vernacular, ‘Tamarix diaca,’ and ‘Salvadora Indica.’”

“The shrub of the Capparis Decaisnæi commonly called ‘Punee’ is very abundant, and the collection of its buds forms an occupation and trade for the hill people. Amongst grasses the peppermint, coriander, cummin, and aniseed are plentiful in the higher hills, but all the ranges covered with a sweet highly scented bunch grass, which is exceedingly nutritious and gives an admirable flavor to the meat of the sheep which graze on it. This grass appears similar to the bunch grass described by travellers over the rocky mountains of North America and on the highlands of Arabia.”

“The sheep which graze over these ranges are called ‘Doombah,’ and of the fat tailed species. The wool is coarse, but the introduction of a few Merino rams would soon work a beneficial change in this respect. In the cool climate of the ‘Keerthur,’ Merino and Leicester rams would thrive admirably. Shepherds, however, suffer heavily from the depredations of leopards, hyenas, and wolves. One man who owned 400 sheep and 250 goats told me that he lost about 50 or 60 sheep and goats every year. From data I collected, I think there are fully three hundred thousand sheep and goats in the 1,000 miles traversed by us, during the past season, so that at the above rate, about 30,000 head must be carried off every year, assuming the value of each to be 2 Rupces will show how heavily nature taxes the hill proprietor.”

“The only manufacture that I saw in these hills was that of ‘alum,’ which is made in large quantities, and appears to be of good quality; it is produced at a cost of about 4 Rs. per maund of 80 lbs.”

“Nearly all the springs in the lower ranges are impregnated with sulphate of lime and soda; however, the supply of good sweet water is generally abundant from deep pools in the beds of hill torrents. I cannot recollect having ever walked for more than two hours without meeting water, and in this matter, as in many others, I found the difficulties of crossing these hills very much exaggerated. The distance from the Doomreea towers to the Civil Station at Mehur, is about 50 miles, of which 18 wind through the hills. Yet a lady found it quite easy to travel it in less than 13 hours, though several men bragged of it as being a feat to go there and return in 38 hours.”

"The scenery is especially grand on the "Keerthur, as it always is in hills, where the gorges and fissures have the appearance of being caused by hills split asunder. On the west face of the 'Keerthur,' a bold scarf fronts Kelat, but here and there its side has been torn open, and tall isolated rocks like gigantic needles or enormous cubes form fantastic forms piled in their barren grandeur. On these the ibex and mountain sheep may be seen gambolling, and in their dalliance with danger, flinging their beautiful forms over horrid chasms, or down sides of rock, which appear too steep for any foot to rest on. Above, the golden eagle adds his noble appearance, to render the picture perfect in its gloomy sublimity. Even in the lower ranges, the peculiar formation of these hills gives superb effects in the perpendicular heights of the ravine sides, and torrent beds are often confined in narrow limits between stupendous cliffs several hundred feet high."

25. "The soils do not differ from those previously reported on in the districts already surveyed. The whole of Sind may be considered as an alluvial plain formed by deposits from the river Indus, whose detritus spread all over the country by the agency of its silt deposited in innumerable canals, and cuttings ever form the soil for the cultivator's purposes."

Soils.

"All varieties are productive under the agency of water, with the exception of 'Kullur,' which is a hard black clay through which water can soak barely more than 1 or 2 inches. Another barren tract is a soft spongy soil through which carbonate of soda effloresces to the surface. This is also called 'Kullur,' but it is not always wholly useless, as here and there it is profitable to establish salt pans on it."

Cultivation.

26. "The records of the past 6 years show that the cultivation in the Mehur Districts has rather receded than otherwise."

"The cause being that large tracts of the district are very subject to inundation, the cultivators ascribe their failures to the partial setting up of the "Narra," which is a natural watercourse from the Indus, and ever since the opening of the Fordwah in 1855, a cutting with a great fall and rapid flow of water from the 'Narra' into the 'Ghor.' It is undubitable that the former stream has greatly fallen in volume, and from its decreased force, its deposit of silt yearly increases to the great detriment of its value as a supply channel for the cultivators in 'Mehur' and Sehwan especially. I am, however, of opinion that Mehur suffers very little in comparison with Sehwan."

"Since the opening of the 'Fordwah' in 1855 the revenue of Larkana has increased from Rs. 5,04,398-6-3 (in 1856-57) to 8,00,493-0-2 (in 1861-62). The revenue of Mehur has fallen from Rs. 2,47,970-3-10 in 1856-57 to 2,17,004-0-4 in 1860-61. The advantage of the Fordwah cutting is contestable, but I have always been of opinion that all advantages thus gained might have been obtained without causing any injury to the Narra."

27. "This might have been effected by increasing the section of the Narra from its mouth up to the Fordwah cutting. A sluice gate should have been erected at the head of the Fordwah. It should have been established as a rule that no water was to be admitted into the Fordwah until the Deputy Collector of Sehwan reported that the Narra water had reached the 'Munchur.' With such precautions all the advantages of such a work as the Fordwah might have been secured without inflicting any injury on the 'Narra.' I further believe that all the money spent on new mouths for the Narra is wasted for all useful purposes. I urge the above with the greatest deference. I stated it in 1856, and expressed my conviction that opening the Fordwah would cause the 'Narra' to silt up in the manner it has, and it will become worse, unless measures are taken to force a more rapid stream along its course. No remarks upon the cultivation of the Mehur Districts would have been complete, without some attempt to account for the falling off of the Narra stream and its decrease of volume, as well as the sacrifice of the interests appertaining to those who cultivate from the Narra in Mehur and Sehwan. There is no doubt as to the mischief which has been done, and I also firmly believe that all the advantages of the Fordwah might have been secured without decreasing the water of the 'Narra' by a single cubic foot."

Remarks on the Narra.

28. "Varies from Rs. 1-8 to Rs. 3 per beegah of 2,500 square yards, and may be considered to average Rs. 2 per beegah on land cultivated from wells, and Rs. 1-4-0 on land cultivated from canals. This appears high in comparison with the rates in the Punjab and North-Western Provinces. But they are maintained by the higher prices obtaining in Sind by the export demand for grain, especially oil seeds. Cultivation which depends upon canals is a very hazardous speculation, especially on 'Moke' lands, i. e., land which can be watered without a lift for the water; of course, when fortunate in the season, the cultivator obtains an enormous profit. As a rule the cultivators in Sind are wretchedly poor, and the risk and profit is borne by the wealthy bunnias. Let the worst luck happen the crop will always pay its expenses, though very often it can do no more."

Taxation.

"If the whole of the irrigation of the province could be made to depend upon canals with permanent heads, and a perennial flow of water, the crops would be heavier, their production would be certain, and it would not cost $\frac{1}{4}$ th the present annual outlay required to water them."

“The present system of irrigation is bad on all points. It is absurdly expensive as well as uncertain ; and, considering how close all the cultivated portions of Sind are to the river, it is unfortunate that during the last 20 years in which we have had the command of science competent to devise and carry out a permanent system of irrigation, nothing has been done to render canal cultivation certain, as well as cheap. Thus crops are worth at an average only two-thirds of what they might produce ; again, it costs two-thirds more than need be necessary to water land from canals, so that in an average district with 3 lakhs of beegahs under cultivation, with an average value of crop of 1 Re. per maund, there is a loss of 15 lakhs in the total value of the crop, and of three lakhs in the cost of producing it. With the exception of Larkana, which has a perennial supply of water, the system of cultivation and irrigation in the other districts of Upper Sind is in general deplorably bad and uncertain in its results.”

Produce of the Districts.

29. “The following are the staple productions” :—

Cereals	..	{ wheat rice millet buck wheat barley maize	|	Oil seeds ...	{ rape mustard	} Pulse, grain of several varieties, sugarcane, and great varieties of garden vegetables and fruits.
				Fibre ...			{ cotton flax

30. “There are no manufactures peculiar to the district ; the people weave their common coarse cloths and make their rude pottery ; large quantities of dye are prepared from the common privet or ‘Menhdee’ for dyeing beards black, and it is sold to the northern traders who come through the ‘Bolan ;’ it is called ‘Khezah ;’ and as I saw large fields wholly cultivated for this purpose, I conclude it is a regular article of traffic, and its preparation may be considered as a branch of the industry in the district.”

31. “There is no large town in this district. Mehur itself, the head quarters of the Deputy Collector, is nothing else but a large village. The most important place in the vicinity is Seeta, where there is a large boating community maintaining a heavy traffic up and down the river. Native merchants have agents established here to examine the boats and cargoes on their way up the river. Seeta is one of the 3 great bundars on the river between Kotree and Mooltan. The bank is permanent, and a natural bend of the river affords shelter to the boats lying under the bank. It is not unusual to see upwards of a hundred native boats lying here at a time. Seeta is an ancient place, and has always been one of the most important places in the Mehur Districts, which by the bye have been so called only since the conquest of Sind by the British ; it was formerly known as the ‘Khyrpoor Illaquah’ when under the Meers.”

32. “The population of the Mehur Districts may be estimated at 1,10,000 souls, of which 70,000 are Mossulman and 40,000 Hindoos. The area under cultivation amounts to 1,54,001.49 acres, or an average of nearly $1\frac{4}{5}$ acre for each person. The number of able-bodied cultivators is slightly in excess of 18,000, so it may be assumed that each man cultivates $8\frac{1}{2}$ acres of ground. This large average can easily be accounted for by the great area devoted to ‘rubbee’ cultivation or ‘bosee’ ground, which requires so little care and watching after the first ploughing and sowing. The vast capabilities for cotton cultivation in the rich loam lying under the hills are almost wholly neglected ; every crop which I saw on that ground, whether of cotton or rape, was wonderfully luxuriant, but in the three circuits under the hills, with an area of 3,91,524 acres, only 60,632 acres were under cultivation and fallow during the past year.”

33. “The climate does not differ from that of Upper Sind as previously reported upon, and for the European constitution it is as bad a climate as can be conceived, a long wasting hot weather is succeeded by the fever season from the latter end of September to the beginning of November ; three or four months of really pleasant weather follow. From April till the end of August the mercury rarely sinks below 95° inside a carefully closed up house, and 110° or 112° under the shade of a verandah. In the rays of a June or July sun it will rise to between 160° and 165°. It is scarcely possible that there is a hotter tract in the world than Upper Sind or its frontier desert, and it can only be from its extreme unhealthiness, even to the native’s constitution, that the population is so small ; and in a country where the facilities of producing food for local consumption and export, at the lowest possible cost, exist, its population must increase at a rapid rate, unless checked by other natural causes, and these are to be found in shaking fevers and inflammatory diseases, besides other ills of the flesh in the shape of revolting ulcers, and skin diseases of every description. The population of the Mehur Districts averages 91 to the square mile ; and considering this is in a country abundantly supplied with water, situated on a great road for traffic like the River Indus, and which has enjoyed the blessing of a strong Government for the past 20 years, it is a wonderfully small ratio as compared with a district on the banks of the Ganges or Jumna, under similar conditions.”

34. "The Indus, which is navigated by steamers of 4 to 5 hundred tons, drawing from 3 to 4 feet of water; the native boats vary in size from 50 to 2,000 maunds, and are of several sorts, according to the river each boat has been built upon. The boat-builders of the Sutlej, Ravee, Chenab, Jhelum, and the Upper Indus design a distinct class of boat for each river: the boats built on the Indus below Mithunkot are completely different both in their build and rig; during the cold weather, the Indus River boats are often sailed across the mouths of the Indus direct to Kurrachee port. The majority, however, trans-ship into native sea-going boats at 'Ketty', which is in reality the port of the Indus, and from that place the traffic is direct with Bombay."

"The average traffic up and down the river in the past six years gives the following results, that 6,555 boats with an average burden of 400 maunds convey 25,13,073 maunds of merchandize. The accompanying form* is tabulated from the records of the Deputy Superintendent of boats at 'Sukkur', and in a concise form exhibits the aggregate traffic up and down the River Indus. The columns exhibiting the weights discharged and shipped at 'Sukkur' fairly represent the grain trade of the Shikarpoor Collectorate, which may be estimated at nearly half a million of maunds. To the above may be added the steamer traffic, which amounts to nearly 10,00,000 of maunds, and European and Native passengers, as well as the passage of troops."

38. "The domestic animals are those common to India; the camel shares work with bullocks, and buffaloes, at the well wheel."

"To the list of the wild animals previously detailed in my Reports on Rohree and Shikarpoor, we must add the leopard, hyæna amongst the carnivorous animals, and the porcupine, wild sheep, and ibex, all these are to be found on the hills; wolves abound, and the hyænas are remarkably strong and large. The hill foxes grow to a great size, and have beautiful coats. The eagles and falcons are very numerous on the higher ranges."

41. "It is with the sincerest pleasure I am able to report that, during the six years we have been at work in the Shikarpoor Collectorate and Upper Sind, after completing an area of nearly 20,000 square miles, not a single complaint has been made by any of the cultivators or Zemindars against a single man of the survey, on the grounds of ill usage or extortion. One unhappy case did occur within our own ranks in May 1860, when a lascar murdered a Native Surveyor, and underwent the extreme penalty of the law in expiation for his guilt. But it is something to say, that a Government Establishment of between two and three hundred men, should have gone through a large district like the Shikarpoor Collectorate, without leaving a single unpleasant remembrance or record behind, to mark its period."

Statement of Boat Tonnage and River Traffic on the Indus from May 1855 to April 1861.

Years.	UP TRAFFIC.												DOWN TRAFFIC.						YEARLY GROWTH OR DECLINE OF TRAFFIC.						
	Boats laden with Merchandise through Traffic.			Boats discharging their Merchandise at Sukkur.			Boats leaving the Bundur with Merchandise.			Boats laden with Merchandise through Traffic.			Boats discharging their Merchandise at Sukkur.			Boats leaving the Bundur with Merchandise.			Up River.		Down River.				
	Number of Boats.	Burthen in Maunds.	Quantity of Merchandise in Maunds.	Number of Boats.	Burthen in Maunds.	Quantity of Merchandise in Maunds.	Number of Boats.	Burthen in Maunds.	Quantity of Merchandise in Maunds.	Number of Boats.	Burthen in Maunds.	Quantity of Merchandise in Maunds.	Number of Boats.	Burthen in Maunds.	Quantity of Merchandise in Maunds.	Number of Boats.	Burthen in Maunds.	Quantity of Merchandise in Maunds.	Increase of Traffic in Maunds.	Decrease.	Increase.	Decrease.			
1855-56	740	3,69,550	3,30,800	600	2,17,000	1,61,500	629	2,23,400	1,64,500	1,188	5,26,000	5,04,000	2,311	9,27,500	8,97,000	2,368	8,18,000	7,76,000	..	10,500	2,06,000	..	..
1856-57	649	3,03,200	2,34,400	851	3,39,800	2,42,000	899	3,67,250	2,49,300	1,164	5,71,500	5,17,800	2,077	10,02,300	9,40,339	3,097	9,13,760	8,48,157	..	84,500	1,87,200	..	..
1857-58	87	1,06,340	57,670	571	2,50,062	76,957	630	2,81,955	59,762	60	36,640	32,441	2,440	11,64,324	11,21,123	2,189	7,95,327	6,81,932	..	53,673	1,16,757	..	..
1858-59	345	1,84,715	20,816	1,138	4,91,216	1,59,935	1,039	5,31,300	1,56,733	37	23,050	19,340	2,014	9,76,321	8,45,096	2,430	7,04,109	6,46,843	1,88,765	..	..	..	..	3,78,254
1859-60	104	64,598	48,443	1,946	9,82,175	8,21,357	1,733	6,89,660	5,23,958	348	2,69,900	1,17,269	918	4,51,560	2,05,717	978	4,35,285	1,31,343	11,06,382	..	..	..	..	4,42,549
1860-61	85	34,710	49,080	1,716	7,41,210	5,89,870	1,699	6,63,511	5,89,193	402	3,95,918	1,73,713	940	5,09,010	1,56,902	929	4,79,390	1,82,657	..	2,49,051	..	..	..	47,907
																			9,43,443	4,58,753

Extract from Annual Report of the Operations of the Right Bank Indus, Sind Revenue Survey, dated 2nd November 1863.

BY CAPTAIN J. MACDONALD.

Season 1862-63.

15. "The worst that could possibly be conceived, in numerous instances they did not represent the boundary. Finding these maps to be very bad, and the boundary maps very deficient, I reported the matter to the Commissioner of Sind, during the field season. An excuse was made for the deficiency of marks in the Annual Floods. When the boundaries are looked after, the floods do little harm, *every jageer boundary mark stood up sound and firm*, and so did the marks in the old Shikarpoor settlement work in villages Shoree, Halijo, Shol, Jundo Dero, Pheerodero, and Saken Halijo, since made over to Sehwan. Take another instance, the village of Chinnee, there were hundreds of its boundary marks not shown on the ground; this village contains several jageers, all of which were properly demarcated and duly surveyed. It stands to reason, that this work could never have been properly done. During the months of March, April, and May, we employed 3 parties in making re-surveys and taking offsets, and since then 2 parties have been employed. We have done our best to mend the holes, but at this date the work is still unfinished, and the maps of upwards of 20 villages remain with offsets unentered. This annoyance renders it impossible for us to finish our work this season, and causes a vexatious delay, which is best appreciated in a Mapping Office. The Mouzamillee maps were so bad, that the word grotesque is the only term applicable to them as maps; so badly did they fit together, that an area of 18.92 miles was quite unaccounted for in the junction of the Johee and Sehwan Talookahs. After Captain Wallace's excellent Thakbust work, these maps contrasted strongly to the disadvantage of the work provided for us in Sehwan."

16. * * "Throughout our operations in Shikarpoor, working *pari passu* with the settlement in each district, it was urged that we worked too quickly. In Sehwan the settlement had five years start, and I anticipated results expressed in the 37th para. of my Report for last season, which would enable us to compare our detailed areas in the field, but nothing has been brought forward. I believe that now at the end of these six years, 15 villages have been settled. There are 176 villages remaining. The settlement work goes on very slowly; no statistical details of Sehwan have yet been submitted, and the Settlement Officer has reported that he is unable to collect them for us; so our register sheets will be void."

18. "According to the Kardar's Returns of the area and revenue, the taxation averages Re. 1.3-5 per beegah. As is always the case, our measurements give results far in excess of the Kardars, deduced from the Tuppehdars Field Returns. In round numbers our figures give 31 per cent. more cultivation than the amount shown by the subordinate Revenue Officers, and that more than one lakh of Rs. remains unaccounted for. I am fully persuaded of the annual loss accruing to Government from this source, which is caused by the absence of any useful check on the Tuppehdars' measurements. This is matter I have always alluded to in my Annual Reports, and shown my figures and thence deduced my statement. I am convinced that all this could be easily stopped, or detection rendered so easy that the crime of falsifying Returns, if once properly punished, would become dangerous to commit; as it is, Government is plundered and the thieves prosper. The following Table shows our comparison of areas of cultivation during the past season. I may add, that it is impossible we can make any mistake in our measurement of the cultivation, which is strictly confined to the rubbee then on the ground, the past kurreef, which is unmistakably plain, and the peshrus, which is generally standing, as sugar and cotton. Our Return has nothing to do with any fallow land, which is separately classed, measured, and depicted on our maps. In the form appended I have excluded all jageer cultivation, which is specially recorded in another column. I am not aware, if the figures submitted to me by the Kardars include measurements on jageer lands; if so, the percentage of difference compared with the mathematical results is more conspicuously against the measurements of the local Native Revenue Officers."

19. "The cultivation bears a proportion of 1 acre in 10 of all the Mouzahwar area, which is very small. The garden lands round Boobuc are well cultivated, apparently chiefly in Bhang, consumed at the filthy debauches held at the sacred shrine of Lal Shah Baz, which renders Sehwan holy and famous in the land of Sind. The Munchur lands are rich, but even here the miserable spirit of the cultivators won't help Nature, and the wheat, which is fine, would be wonderfully heavy, were it not choked and weakened by the growth of clover, which is spread all over the surface flooded by the lake. The cultivation is chiefly rubbee, which, contrary to the usual system of crops in Sind, is more than double that of the autumn or kurreef cultivation. The peshrus is so small, being only 1 in 398 beegahs, that it does not deserve notice. The large proportion of rubbee cultivation renders the certainty in favor of our measurement greater."

Comparison of the areas under cultivation in the undermentioned Talookahs of the Sehwan District, Year 1862-63, as tabulated from the Tuppehdor's measurements and professional Survey results.

Name of Talookah or Mookteer-karate.	NATURE OF CROPS.						Total by Kardar's measurement.		By Revenue Survey measurements thematically.		Error of Kardar's measurements.		Percentage of error.		REMARKS.
	Peshrus.		Kurreef.		Rubbee.										
	Beegahs.	Bis.	Beegahs.	Bis.	Beegahs.	Bis.	Beegahs.	Bis.	Beegahs.	Bis.	Beegahs.	Bis.	Beegahs.	Bis.	
Majunda ...	411	15	14,232	8	20,097	2	31,741	5	44,435	...	9,69	...	27	...	The professional measurements here given do not include the cultivation in jazeer lands, which amount to 42,430 beegahs, and have been deducted from the area given in column 7.
Johce ...	...	...	42,889	2	32,798	17	75,687	19	1,26,021	...	50,334	...	65	...
Sehwan ...	231	5	23,768	14	71,187	4	90,178	3	1,07,063	...	16,885	...	19	...	
Dadoo ...	32	11	13,907	12	33,971	7	47,811	10	53,868	...	6,057	...	14	...	
	2,48,418	17	3,31,387	...	82,970	

" Giving an average error of 31 per cent., and a total difference of 82,970 beegahs, which, at an average assessment of Re. 1-3-4 per beegah, shows a total of Rs. 1,00,284 unaccounted for. From my experience in Sind, I am certain that effective measures might be taken to render this speculation too dangerous to be profitable as a system, and I mentioned the required steps, to take in this direction, so far back as 1858, when, at the expiration of my second year's experience in Sind Revenue measurements, I had attained something like certain knowledge, regarding the deprecations of the Native Revenue Officials."

20. " This district does not produce any thing peculiar to itself. At Sehwan the potters produce enamelled tiles, which, however, are not very remarkable; at Booluc they make very excellent carpets and rugs of wool, which are fair imitations of Persian carpets, and there is plenty of industry amongst the mat weavers, on the banks of the Munchur Lake. Sehwan is also a famous place for boat-building, for which it has advantages on the banks of the Arul, the outlet of the Munchur into the Indus, which runs round the town and fills some large swamps in its vicinity."

21. " Sehwan, situated on the banks of the Indus, has a population of between three and four thousand people; it is a place of immense antiquity, built of sun-burnt bricks; the height of its appearance above the plain proves that the mass of debris from former habitations must have accumulated, through many centuries, and the vast burial grounds in its vicinity testify to many ages of occupation. Its present appearance is that of extreme filthiness and decay; once a year at the fair held at the shrine of Lal Shah Baz the place springs into life, but of the worst description; from the great fishing interest in the place, its inhabitants are chiefly of that class, and as the Mohannas are the most debauched people in the province, the town itself is a sink of filthy immorality. Boobuc, situated about nine miles from Sehwan, on the banks of the Munchur Lake, is a well built, prosperous looking place; the garden lands surrounding it deserve admiration and notice; next year, when I have finished the Sehwan Districts, I shall give a more complete account of their appearance and history."

22. " Detestable. This is the most sickly district in the province from March to October; the heat is excessive, and between September and January, nearly the whole population is prostrated with fever."

23. " The Sehwan District consists of a low plain, containing about 1,300 square miles, between the western hills and the River Indus, also of a long strip of arable land at the foot of the slopes of the Lukkee range, between Lukkee and Kotree; this tract may be considered to average six miles in width, and is but scantily populated and demarcated. The feature of the Sehwan District is the Munchur Lake, and the cultivation on its borders, after the subsidence of the flood. The area under water, at the height of the flood, may be estimated at 65,000 acres, and that which marks the surface of the Lake in January is only 23,760; the difference shows the amount of cultivation, and year after year the same ground produces splendid crops. The advantage which a district possesses of having 40,000 acres of certain harvest, without spending a Rupee on water, is a very great one."

"The Munchur Lake itself is a vast shallow basin teeming with life in weeds, fishes, and water fowl. The occupation of the fishermen and the fowlers is incessant, and day and night the hideous howling and drumming and clangor of brass proclaims that they are at work, snaring birds and fishes and frightening them into their nets."

"There is a hot spring under the Dharun hill of the Lukkee range, which should be mentioned; it issues from the eastern face of the mountain under a cliff of limestone. The hill was tapped by Lal Shah Baz, a saint who stands to the Sindees in the proportion of Moses to the Hebrews; there are pukka tanks excavated for the bathers, and a Dhurumsala is attached; hither congregate leprous, paralytic, rheumatic, and syphilitic patients, and each Sunday there is a fair held at the place. The water is similar in its composition to that at Muggur Peer, and issues from the rock at a temperature of 124° Fahrht."

"There are Staging Bungalows and Dhurumsalas at Pittara, Oonurpoor, Noorpoor, Ma-junda, Sunn, Amree, Buchul, Lukkee, Jhaugar, Shah Hussun, Sehwan, Tultee, Bhan, Dadoo, and Johee. The only public work worth mentioning is a well constructed road across the Lukkee range, partly scarped out of the rock, and partly built up. In general the roads are badly kept up, and are sadly deficient in bridges: the Suspension Bridge across the Arul near Sehwan is the only large bridge on the district."

27. "I sincerely trust the results will be considered satisfactory, and I deeply regret that the unfinished state of the settlement work, on which we depend, has prevented us from completing the work thoroughly, but we have done all in our power to replace the marks according to the settlement maps. During the monsoon, about 3,000 out of nearly 4,000 marks have been set up, and this work will be finished before the end of January 1864."

Extract from Annual Report of the Operations of the Left Bank Indus, Sind Revenue Survey, dated 1st November 1862.

BY W. LANE, ESQ.

Season 1861-62.

TALOOKAH SAHITEE.

35. "This Talookah, sometimes known under the name of Nowshera, is bounded on the north by Talookah Kundiara; to the east by the territories of His Highness Meer Ali Moorad Khan Talpoor; to the south by Talookah Mora; to the west by the River Indus, which divides it from the District of Mehur of the Shikarpoor Collectorate."

District Nowshera.
Upper Sind Talookah Sahitee.

"This Talookah is, with Kundiara, one of the most fertile in the district, and yields an annual land revenue of Rs. 108,464. Towards the west, from being well watered, it is better cultivated and populated than its eastern portion."

"In the eastern portion the Dehs are large, and extensive wastes exist where traces of the river's former course, meandering through it, would indicate its once having been in a more prosperous condition. The soil here for the most part is good, and were means found for conveying water to this tract (and which might be effected at no very considerable expense by taking advantage of the several Dhorees) much that is now waste might be again reclaimed."

"The total area of this Talookah (inclusive of 88,593·57 acres, 138·41 square miles, surveyed during season 1860-61.) is 340,170·46 acres, 531·51 square miles, of which but 61587·12 acres were under cultivation, 67,241·11 acres abandoned or fallows of the past five years, while the greater portion, or $\frac{2}{3}$ th of the whole was overrun with jungle or lying waste."

"The crops are of the usual description; for the rubbee, kurreef, and peshrus, 'wheat,' 'surson,' 'jhamba,' 'peas,' 'gram,' 'barley,' 'tobacco,' 'joar,' 'bajri,' 'rice,' 'moong,' 'til,' 'mundwa,' 'kungnee,' 'sawa,' 'Indian corn,' 'indigo,' 'sugar-cane,' 'cotton,' &c."

Crops.

Cotton and Indigo.

"Latterly some attention has been given to the cotton cultivation, which by the Kardar's account had increased to 2,288 beegahs. Indigo, the other staple crop, does not appear to be extensively cultivated, as only 442 beegahs are reported to have been cultivated, yielding of the manufactured dye 11 maunds. The Indigo crops might with advantage be extended by sowing the sloping banks of the Indus, when its waters begin to subside. European capitalists could, perhaps, best develop the resources of a district in this respect. At present, the manufacture is carried on after a very rude fashion in diminutive vats, exposed to all the inclemencies of the weather; the result is the dye is full of dust, of an inferior quality, and fetches about half the average rates of the Indigo manufactured by the European planters of Bengal."

"Nowshera, the head quarters of the Tuhseel, or Kardarate, is the principal town. It derives its name from the site having been occupied by nine ('Now') towns ('Shuhur'), which having been swept away by a heavy flood, the people combined and re-built them in one, the present town. It possesses a small Bazar, a School, a Traveller's Bungalow, a Punchayet Gur or meeting house, besides the Kardar's Office, built since it came into British possession, on the forfeiture of Meer Ali Moorad's claim to this as well as the Talookah of Kundiara."

"*Durbeelo Poorano* is about the oldest town, having been founded in the Hijra year 261; it stands on an eminence, and is to the north-west of Nowshera, distant 11½ miles by the cut road."

"*Tharooshah* is more a large village than a town, but singled out from its now being the head quarters of the Deputy Collector and Magistrates of the district. It possesses, besides the Cutchery, a Traveller's Bungalow, a Telegraph Office, a large Hospital, a Jail and Police quarters, now empty since the reductions in the Police Force were carried into effect. The site is far from healthy, being below the high water level of the canal which runs between the town and Civil Station. There are many nice gardens about the place, the best kept of which is attached to the Deputy Collector's Bungalow."

"*Bhirria*, a town to the north of Nowshera and east of Tharooshah, would, from the mounds in its neighbourhood, appear to lay claim to its foundation, being coeval with that of *Durbeelo Poorano*."

"At Mithanee there is a saltpetre refinery under European superintendence, which sends home the finest saltpetre from this side of India. To this refinery the native manufactured mineral is brought from many miles around, besides from Sukkur and other parts. In this Talookah the manufactory is carried on at the following places:—Nowshera, Jhuth, Moosa, Bhiro, Dudpoor, Bhorte, Asapoor, Palano, Munyet, Busharut, Kot Bahadur, Chuttal, Subta, Rusheed, Suhuta, Ubbjee, Dalee, Bhagoo, Mud Khyalee, Chahee, Kundur Subianee, Cheeha, Ghir, Gujoo, Thara Machee, Ubran, Mungoo, Khokhur, Tharooshah, Koolachie, *Durbeelo*, and *Samptia*."

TALOOKAH MORA.

"This Talookah, though much larger than *Sahitee*, is less fertile. It is bounded on the north by Talookah *Sahitee*, and His Highness Meer Ali Moorad's territories; to the south and east by Talookah *Sukkurund*; to the west by the River Indus, across which lies the District of *Sehwan*."

"This Talookah has a straggling shape. Of its vast area 4,504,72.92 acres, = 703.86 square miles, 33,557.78 acres, or scarcely more than an eighteenth part, was found cultivated, 2,904.59 acres cleared for cultivation, and no less than 50,164.71 acres of lately abandoned lands."

"Towards the river. the soil is fertile and well watered; as it advances eastwards, its fertility lessens till it ends in sterile wastes and sand hills. In this as in the preceding Talookah, much might be reclaimed, where the traces of the Indus' ancient course and the old neglected wahs clearly point it out to have been once in a more flourishing condition by the introduction of canals."

"The crops are the same as those of the preceding Talookah. 1,411 beegahs were sown with cotton, while only 100 beegahs were taken up with indigo."

"*Mora* is the chief town from which the Talookah derives its name. It is built on a height, which makes it visible at a distance. As usual it is surrounded by deep hollows, that send up their exhalations annually after the subsidence of the river, giving rise to fevers and dysentery, &c. To the east of the town stands the District Officers' Bungalow, with the Kardar's Office, Punchayet House, School and Surai, with gardens all about."

"*Guchero* was once the head quarters of the Talookah. Being built in a low alluvial soil, it was found necessary to surround it by an embankment to save it from the floods. The excavation or the moat around it gave rise to much sickness, and led to its being greatly deserted."

"*Deparja* is named after its founder *Depur*. It is chiefly inhabited by *Seikhs*, whose ancestors emigrated from the *Punjab*."

"*Shahpoor* founded by *Syud Hossein Shah* lies midway between *Mora* and *Dowlutpoor*, and being built on rising ground is discerned a great way off."

"*Dowlutpoor* is said to derive its name from *Dowlut* (riches) owing to its founders having been men of wealth. A Bungalow for the District Officer, available to travellers, besides a *Moosafir-khana* for native way-farers, are close to the town."

"*Durrus*, *Sudhoojah*, and *Mulluk* are large villages."

"Saltpetre is manufactured in the following villages:—*Mora*, *Bilal*, *Koorai*, *Machee*, *Guchero*, *Shahpoor*, *Durrus*, *Kulbora*, *Sebra*, *Sudhooja*, *Shekhoo*, *Doura*, *Dowlutpoor*, *Rajawah*, *Kaimkoor*, and *Furreed Derah*."

TALOOKAH SUKKURUND.

"This Talookah is bounded on the north by Talookah Mora; to the east by the desert of Talookah Sukkurund. Khyrpoor and Talookah Saugor of the Thurr and Parkur Political Superintendency; to the south by Talookahs Shadadpoor and Halla, of the Halla Deputy Collectorate; to the west by the River Indus, which divides it from the District of Sehwan of the Kurrachee Collectorate."

"Only the north-eastern portion of this Talookah, comprised within two main circuits, aggregating 400,290·08 acres, = 625·45 square miles, was surveyed. Of this vast area only 2,640·37 acres were found under cultivation, 8,483·39 acres lately thrown out of cultivation, and 160·27 acres prepared for cultivation, while 20,364·85 acres were highly suitable for cultivation, the rest being composed of arid plains and desert sand hills."

Extract from Annual Report of the Operations of the Left Bank Indus, Sind Revenue Survey, dated 14th November 1863.

BY W. LANE, Esq.

Season 1862-63.

31. "The Talookah of Sukkurund is bounded on the north by District Nowshera, Sind, Talookah Sukkurund. Talookah Mora; on the north-east by the state of Khyrpoor; to the south by Talookah Shadadpoor and Halla; to the west by the River Indus, across which lies the Collectorate of Kurrachee."

32. "This Talookah is by far the largest of the four constituting the Deputy Collectorate of Nowshera, comprising an area of 8,80,340 acres, or 1,389½ square miles, about a fourth of which to the north-east of the Talookah is covered with sand hills, at the foot of which lie extensive arid plains with stunted bush and shrubs scattered wide apart. Over these plains may be seen in the distance a few oases to relieve the general barrenness of the aspect. Between these plains and the boundary of Shadadpoor, large populous villages are to be met with, where the soil is good, and watered by canals between June and September."

33. "That these arid plains were once cultivated is sufficiently attested by the traces of old canals, and fragments of pottery, bricks, &c., still lying on the sites of former villages. According to native tradition, this tract was once watered by the Narra, which flows now many miles to the eastward."

34. "As usual, the soil towards the Indus is very fertile and well watered, and the crops consist of 'wheat', 'barley', 'oil seeds', 'pulse', 'rice', 'jooar', 'bajri', 'lawā', &c. The Kardar's reports not having reached me yet, I am unable to state to what extent cotton and indigo have latterly been grown."

35. "The river board is fringed with dense jungle, which gradually diminishes on receding inland, till the sterile plains abovementioned are met with. Numberless Dhunds and Dhorees intersect this tract."

36. "The revenue for the past official year is reported by the Kardar to have been Rs. 89,017·4·0. This shows an average of very nearly 10 acres of the gross area of the Talookah per Rupee."

37. "*Sukkurund*, though only a good sized village, bears chief importance from being the head quarters of the Talookah, whose site has been ill selected, being on the borders of a Lake or Dhund, and surrounded with jungle, which must prove pestilential every autumn. The Kardar's Office and buildings, together with the Staging Bungalow, stand to the east of the town, on the high road from Mooltan to Hyderabad. At the distance of 2 miles and 7 furlongs to the north of the town is a circular Fort (in Dulel Dero) in a tolerable state of preservation, which belonged to one of the Meers of Sind."

"*Shahpoor* to the east of the Talookah is a village of considerable size and importance, from whence may be seen a cluster of domes sparkling in the distance, which cover the remains of the former Governors of the place. To the east of the town, are still standing the ruins of an old Fort. From Shahpoor, a road has been cut direct to the 'Kooba of Jam Shahib,' a shrine known far and wide, where large numbers annually throng."

"*Kazika Got* a large village, known as the seat of the largest Zemindar in the Talookah, and from its being the stage between Dowlatpoor and Sukkurund on the high road to Mooltan. It possesses a Traveller's Bungalow, a 'Moosafirkhana' for native wayfarers, and a Police Chowkey, where two or more sowars are always stationed."

38. "Several roads intersect the Talookah, the high road from Mooltan to Hyderabad, further east, the dāk (post) line between the same, whilst a cut road runs almost parallel with the river. From Sukkurund a road proceeding in a curve through Dulel Dero, Nuwah Shah, Goopjaneec, and Shahpoor leads to Saugor, a direct road to Goopjaneec, thence turning northwards, stops at Jam Shahib. To Shadadpoor there are two routes, both slightly curved, one passing through 'Gool Mahomed Lugharn,' and the other through Syud ka got of Talookah Halla. None of these roads are much frequented, and though passable for wheeled carriage, even carts of a primitive stamp are not yet in use in the Talookah."

39. "Talookah Shadadpoor belongs to the District of Halla, and is bounded to the north by Talookah Sukkurund; to the east by Talookah Saugor; to the south by Talookahs Meerpoor and Tundra Alah Yar; to the west by Talookah Halla."

40. "This is another Talookah of considerable size, having an area of 463,785.71 acres, or 724.65 square miles, but more extensively cultivated than Sukkurund. There is no heavy jungle about it, and the general aspect is that of champaign country, covered thinly with brushwood, over which you can glance for miles around. The soil is good, but for want of perennial canals, the crops are chiefly confined to the Kurreef. As little or no trouble is taken to manure the fields which are constantly sown with the same crops, it is found necessary, in most parts, to allow them to lie fallow for 3, 4, and 5 years, hence extensive tracts of fallows are to be seen everywhere."

41. "The cultivation of cotton for which the soil appears favorable, has been very extensively increased, since the great demand arose for this staple, which has lately reached triple and quadruple the price at which it used to be sold a few years back. Oil seeds are also in much favor, and a standing demand for them at all times exists at Kurrahee."

42. "This Talookah is watered by the following canals:—Marick Wah, which takes its rise from the River Indus; Vendhree from the Marick W; from the Vendhree issue Gunj 'Buhur' and 'Lohano' (large); from Lohano (large) Muhmood Wah and Buhram Wah; from Gunj Buhar Lohano (small) and from it Jam Wah (large); from Jam Wah (large) Raj Wah, Jam Wah (small); and Bhoobur Wah. Shahoo Wah issues from the little 'Lohano,' from the Shahoo, Shahdad Wah, Landi, the Huzoor Wah; from the Shadad Wah Landi. Shahdad Wah Jhol, Bijjar Wah, Dijee Bijjar Wah, Khyroo Wah, and Mahomed Ali Wah also issue out of the Shahoo Wah. Ali Buhar, Kucheri, issuing out of the Indus, supplies the following Wahs:—Buhroon Wah, Yara Wah, Soomeir Wah, Ali Gunj Wah, Mojwah Wah, Mussoo, Guhee and Awut."

43. "This Talookah lies some miles inland of the Indus, but there are traces of this river having once flowed close to the town of Shadadpoor, marked by a wide Dhoree."

44. "No less than 128 jageers of different classes lie scattered over the Kardarate, all more or less subject to alteration of boundary, on the decease of the holders. As these jageers lapse to Government, they will add to the Revenue, which by the Kardar's report amounted to Rs. 86,557-9-6 for the past year."

45. "The chief town, as may be inferred is 'Shadadpoor,' the head quarters of the Kardarate. It is named after Meer Shahdad, whose Fort, in ruins, is a little to the east of the town. Near the Kardar's Office stand the District Bungalow and Dhurmsal. There are several large villages, such as Beranee, Jhol, &c., but none of any particular note."

46. "From Shadadpoor roads issue in all directions; to the south-west by south proceeding to Halla; to the south-east by south leading to Hyderabad *via* Adam Khan Ka Tundra; to the south-east direct to Tundra Alah Yar; to the south-east by east to the ruins of the city of Brahminabad; to the east by a few degrees north to Jhol, then to Tundra with a khun on the Narra; to the north-west by north to Mussoo, thence to Shahpoor, and a branch to Gool Mahomed Lugharee; to the north-west to Sukkurund *via* Gool Mahomed Lugharee; to the east by a few degrees south, to Syud Ka Got and thence to Sukkurund. To the west, the Talookah is intersected by the post road between Mooltan and Hyderabad, and to the east by a road from Saugor to Adam Khan Ka Tundra."

47. "Brahminabad is the site of an ancient town, and fortifications which flourished long before the Mahomedau religion had found its way into Sind. This city is supposed to have been destroyed by an earthquake. It is a strange feature in all the buildings excavated, that no traces of mortar are to be seen, but the walls appear to have been run up of puckah bricks without cement of any kind. For miles to the north of Brahminabad, lie scattered here and there traces of former towns, the bricks of which have been cleared away. At the time of riding by some of them, I observed loads of bricks being collected and carried off."

48. "Besides the buildings above described, as existing in Shadadpoor, there are other Bungalows, one at Landi on the route to Jhol, one at a little distance to the south of Shahpoor, and a small one on the ruins of Brahminabad."

Public Buildings.

49. "Water is found generally at a great depth from the surface, and often of brackish quality; but few puckah wells are to be seen, the generality being narrow kutcha ones, yielding a scant supply."

Wells.

TALOOKAH SAUGOR.

50. "This Talookah is a Sub-Kardarate of 'Khipra' of the Thurr Parkur District, and is bounded on the north by the state of Khyrpoor; to the east by Talookah Khipra; to the south and west by Talookah Meirpoor and Shadadpoor. It has an area of 453,353.50 acres, or 708.40 square miles."

District Thurr Parkur.
Talookah Saugor, situation of.

51. "Owing to the damming up of the supply channels of the Narra to the north of the Roree District, in the time of the Kulhoras, the tract of country down here was rendered a perfect desert for many years, but the super-abundant watering it has received within the past few seasons, since the Narra works at Roree were matured, has caused the growth of impenetrable jungle, and the lower basins have been converted into lakes and swamps."

Description.

52. "Engineering works are in progress in the Talookah for controlling the floods; and the Mithrow canal rising from the Mukkhee Dhund or Lake has already been carried many miles to the south of the Saugor Kardarate. The lands along this canal have been farmed out in 'Tuks' and partially cultivated."

Public Works in progress.

53. "The greater portion of the Talookah is covered with jungle swamps and sand hills. When the floods subside sufficiently, clearings are made in the jungle and sown chiefly with moong, a well paying crop, to judge by the rate it was selling at in April last. Along the canal much rice is also grown, and the valleys between the ranges of sand hills, formed into lakes at the period of the floods, drying partially in the spring, leave a rich deposit on their slantingly sloping banks, which yields a rich crop of wheat, without entailing much labor on the husbandman; numberless fields of this description were met with and mapped. The actual amount of cultivation throughout the Talookah, at the time of survey, was found to be 28,645 acres."

Extensive Wastes.

54. "The Kardar reports a revenue of but Rs. 34,703-9 for the past year, which is a very small sum for the area cultivated; and out of this sum, only Rs. 26,479-3 found its way into the Treasury, the remainder having been set off as remissions."

Revenue.

55. "Saugor is a collection of hovels, and its chief importance rests on its being the seat of the Kardar's Office, which is held in a Bungalow recently erected to the south of the village."

Towns and principal villages.

"Mitha Khan Ka Tundra is a good sized prosperous village, larger than Saugor, after which rank 'Chotyaree' and Bukar."

56. "Many of the Tuks on the Mithrow canal are cultivated by non-resident Zemindars, who flock here from the adjoining and more distant Talookahs of the Hyderabad Collectorate, at the time of sowing their crops, which being chiefly the 'rubbee', whilst in their native villages they can but command the kurreef only. A double scope is thus found for their energy, by which the Government derives a proportionate advantage in revenue."

Tuks, by whom principally cultivated.

57. "A new line has been marked, leading from Saugor to Khipra, the road at present connecting those places being nothing better than a clearance of some feet, which proceeds in a serpentine course, and round by Bukkar and Mitha Khan Ka Tundra, at each of which places there is a small Staging Bungalow, whilst Saugor possesses no accommodation for the traveller, except a small Dhurumsal, which was till very lately occupied by the Kardar's Office."

Roads.

(True Extracts,)

H. L. THUILLIER, *Lieut. Colonel,*
Surveyor General of India.

