IV.—Statement showing increase in Cultivated Area, &c.—continued.

1	2	3	4	5	
Assessment Circle.	Name of village.	Settlement and present statistics compared.	Cultivated area.	Detail of cash rents paid by tenants-at-will and areas paid on	
				Area.	Amount.
					Rs. A. P.
Rohi—concld. 5	Maujgarh...	Settlement ...	2,158	82	0 6 8
		Annual papers, 1886-87.	3,651	1,326	0 8 0
Chak Nail. 1	Baruwáli, 1st	Settlement ...	2,464	19	0 12 10
				67	0 8 10
				416	0 8 0
				219	0 6 5
				6	0 4 0
				69	0 3 10
				9	0 3 2
		Annual papers, 1886-87.	2,893	15	0 12 10
				186	0 9 7
				629	0 8 0
				27	0 5 6
				140	0 4 3
2	Talwara Khurd.	Settlement ...	4,539	34	0 11 2
				295	0 6 5
				2,417	0 3 7
		Annual papers, 1886-87.	4,463	3	4 3 2
				(Chahi) 1,029	0 5 2

IV.—Statement showing increase in Cultivated Area, &c.—concluded.

1	2	3	4	5	
Assessment Circle.	Name of village.	Settlement and present statistics compared.	Cultivated area.	Detail of cash rents paid by tenants-at-will and areas paid on	
				Area.	Amount.
					Rs A. P.
Char Nali—concluded. 3	Jhurar ...	Settlement ...	4,623	544	0 9 7
				131	0 8 0
				8	0 6 11
		Annual papers, 1886-87.	4,957	219	0 12 10
				423	0 12 5
				74	0 12 0
				186	0 10 5
				82	0 10 0
				182	0 9 7
				624	0 8 9
				35	0 8 0
4	Fatehpur Bedwála.	Settlement ...	1,028	2	0 7 0
				6	0 4 0
		Annual papers, 1886-87.	1,157	59	0 13 0
				6	0 11 0
				6	0 4 0
5	Karewáli ...	Settlement ...	3,576	646	0 5 2
		Annual papers, 1886-87.	11,833	835	0 6 11

Hissar:
The 29th November 1887.

J. G. M. RENNIE, *District Judge,*
for *Deputy Commissioner.*

Statistics of Tahsíl Fázilka (late Sirsa District) for the agricultural year 1885-86 (*Kharíf-Rabi*).

Year.	Chak.	Soil.	Area sown in kharíf.	Area sown in rabi.	Total.	Area producing a crop in kharíf.	Area producing a crop in rabi.
1885-86.	Rohi.	Nahri Abi...	10,449	31,037	41,486	9,583	30,620
		Báráni ...	110,492	76,831	187,323	49,583	62,573
		Total...	120,941	107,868	228,809	59,166	93,193
	Utar.	Cháhi ...	11	107	118	11	107
		Nahri Abi...	3,352	468	3,820	2,683	384
		Báráni ...	17,194	11,098	28,292	995	5,396
		Total ...	20,557	11,673	32,230	3,689	5,887
	Hithar.	Cháhi ...	1,621	4,167	5,788	1,294	3,728
		Cháhi Nahri	813	...	813	358	...
		Nahri Abi...	3,522	6,386	9,908	1,941	3,488
		Sailáb ...	1,963	4,229	6,192	1,523	2,904
		Báráni ...	533	88	621	8	68
		Total ...	8,452	14,870	23,322	5,124	10,188
	Grand Total.	Cháhi ...	1,632	4,274	5,906	1,305	3,835
		Cháhi Nahri	813	...	813	358	...
		Nahri Abi...	17,323	37,891	55,214	14,207	34,492
		Sailáb ...	1,963	4,229	6,192	1,523	2,904
		Báráni ...	128,219	88,017	216,236	50,586	68,037
		Total ...	149,950	134,411	284,361	67,979	109,268

Ferozepore:
The 14th October 1887.

F. L. BAILEY, *District Judge*,
for *Deputy Commissioner*.

Statistics of Tahsíl Fázilka (late Sirsa District) for the agricultural year 1886-87 (*Kharíf-Rabi*).

Year.	Chak.	Soil.	Area sown in kharíf.	Area sown in rabi.	Total.	Area producing a crop in kharíf.	Area producing a crop in rabi.
1886-87.	Rabi.	Cháhi Nahri	...	16	16	...	13
		Nahri Abi...	12,329	52,875	65,204	11,405	47,831
		Báráni ...	216,246	23,412	239,658	52,348	9,055
		Total ...	228,575	76,303	304,878	63,753	56,899
	Utar.	Cháhi ...	18	115	133	18	110
		Cháhi Nahri	...	10	10	...	...
		Nahri Abi...	4,877	2,574	7,451	4,347	1,718
		Báráni ...	37,784	9,564	47,348	8,008	3,615
		Total ...	42,679	12,263	54,942	12,373	5,443
	Hithar.	Cháhi ...	1,126	3,189	4,315	705	2,831
		Cháhi Nahri	1,807	74	1,881	1,434	60
		Nahri Abi...	4,773	13,406	18,179	3,505	9,073
		Sailáb ...	1,065	3,699	4,764	906	2,444
		Báráni ...	1,461	151	1,612	397	121
		Total ...	10,232	20,519	30,751	6,947	14,529
	Grand Total.	Cháhi ...	1,144	3,304	4,448	723	2,941
		Cháhi Nahri	1,807	100	1,907	1,434	73
		Nahri Abi...	21,979	68,855	90,834	19,257	58,622
		Sailáb ...	1,065	3,699	4,764	906	2,444
		Báráni ...	255,491	33,127	288,618	60,753	12,791
		Total ...	281,486	109,085	390,571	83,073	76,871

Ferozepore: *The* 14*th October* 1887.

F. L. BAILEY, *District Judge*, for *Deputy Commissioner*.

Average of Prices for the different Chaks of the Fázilka Tahsíl (late Sirsa District) for the year 1885-86 *and* 1886-87.

Name of Chak.	1885-86, per Rupee.									1886-87, per Rupee.							
	Wheat.	Barley.	Gram.	Sarson.	Jowár.	Bájra.	Til.	Unhusked rice.		Wheat.	Barley.	Gram.	Sarson.	Jowár.	Bájra.	Til.	Unhusked rice.
	Srs.	Mds. Srs.	Mds. Srs.	Srs.	Srs.	Srs.	Srs.	Srs.		Srs.	Srs.	Srs.	Srs.	Srs.	Srs.	Srs.	Srs.
Rabi ...	24	1 10	1 10	...	38	34	11	...		16	25	25	...	29	27	10	24
Utar ...	25	1 8	1 7	...	36	32	11	24		16	24	26	...	30	26	9	24
Hithar...	26	1 6	1 5	...	36	32	10	26		17	26	28	...	30	26	11	25

Ferozepore:
The 14*th October* 1887.

F. L. BAILEY, *District Judge,*
for *Deputy Commissioner.*

Statement showing Cash Rents by Chaks for the Fázilka Tahsíl (late Sirsa District) for 1886-87
(Occupancy Tenants).

Name of Chak.	Paying under 5 annas.		Paying from 5 to 6½ annas.		Paying from 6½ to 8 annas.		Paying above 8 annas.		Remarks.
	No. of khatas.	Area in acres.	No. of khatas.	Area in acres.	No. of khatas.	Area in acres.	No. of khatas.	Area in acres.	
Rabi	227	2,029	166	2,517	3,638	8,789	...	...	
Utar	...	...	211	6,158	55	1,524	26	243	
Hithar	...	...	...	...	...	...	114	749	
Total ...	227	2,029	377	8,675	3,693	10,313	140	992	

Ferozepore:
The 14th October 1887.

F. L. BAILEY, *District Judge,*
for *Deputy Commissioner.*

Area cultivated at Settlement classified in detail by the Rents paid by Tenants-at-will, Fázilka Tahsíl.

Name of Chak.	Name of Village.	Paying under 5 annas.		Paying from 5 to 6½ annas.		Paying from 6½ to 8 annas.		Paying above 8 annas.	
		Number of khatas.	Area in acres.	Number of khatas.	Area in acres.	Number of khatas.	Area in acres.	Number of khatas.	Area in acres.
Rohi.	Khippanwáli	...	...	40	734	...	...	..	...
	Gobindgarh	...	...	...	...	25	626	...	...
	Dungar Khera	...	...	...	...	14	402	...	...
	Rájanwáli ...	...	...	...	...	10	380	...	...
	Gaggar ...	...	...	28	58	...	...	...	...
Uttar.	Khúí Khera	...	...	28	565	...	...	...	...
	Baganwáli ...	...	...	...	...	12	265	...	...
	Banwála *alias* Patti Puran.	...	...	12	229	...	...	...	...
	Kikarwála Rupa.	...	...	20	388	...	...	...	...
	Karni Khera *alias* Kotwála.	...	...	...	...	40	1,194	...	...
Hithar.	Muazzam ...	...	...	...	...	...	...	15	31
	Hasta ...	...	...	...	...	...	...	...	...
	Bahak ...	...	...	...	...	...	...	...	...
	Ladhuka ...	...	...	...	...	...	...	...	...
	Mehtam Nagar	...	...	...	...	...	...	...	...

FEROZEPORE:
The 14th October 1887.

F. L. BAILEY, *District Judge,*
for *Deputy Commissioner.*

Area now (1886-87) *cultivated classified by the rents paid by Tenants-at-will, Tahsíl Fázilka.*

Name of Chak.	Name of Village.	Paying under 5 annas.		Paying from 5 to 6½ annas.		Paying from 6½ to 8 annas.		Paying above 8 annas.	
		Number of khatas.	Area in acres.	Number of khatas.	Area in acres.	Number of khatas.	Area in acres.	Number of khatas.	Area in acres.
Rohl.	Khippanwáli	...	...	...	...	4	41	7	28
	Gobindgarh	...	...	...	...	20	146	1	2
	Dungar Khera	...	...	...	...	...	...	30	152
	Rájanwáli ...	...	...	...	...	19	206	...	...
	Gaggar ...	...	...	32	176	...	...	...	...
Utar.	Khúí Khera	...	...	...	...	...	...	25	494
	Beganwáli ..	...	...	...	...	36	560	...	...
	Banwála *alias* Patti Púran.	...	...	1	5	1	14	1	8
	Kíkarwála Rupa.	...	...	...	...	...	...	8	71
	Karni Khera *alias* Kotwála.	...	...	...	...	1	4	51	664
Hithar.	Muazzam ...	...	...	...	...	...	...	3	11
	Hasta ...	...	...	...	...	...	...	...	...
	Bahak ...	...	...	...	...	...	...	...	...
	Ladhuka ...	...	...	...	...	...	...	...	...
	Mehtam Nagar	...	...	...	...	...	...	...	...

Ferozepore: *The 14th October 1887.*

F. L. BAILEY, *District Judge,*
for *Deputy Commissioner.*

Statistics of Cultivation for five Villages in each Chak of the Fázilka Tahsíl (late Sirsa District) for 1886-87.

1	2	3			4			5
Name of Chak.	Name of Village.	Kharif, 1886.			Rabi, 1887.			Remarks.
		Cultivated area.	Area sown.	Area cropped.	Cultivated area.	Area sown.	Area cropped.	
Rohi.	Khippanwáli	1,494	1,494	1,422	1,467	1,467	1,279	
	Gobindgarh	1,394	1,394	360	675	675	671	
	Dungar Khera	1,747	1,747	528	918	918	878	
	Rájanwáli ...	1,580	1,580	379	...	...	...	
	Gaggar ...	555	555	39	105	105	62	
Utar.	Khúí Khera	1,218	1,218	629	575	575	318	
	Beganwáli ...	976	976	233	395	395	119	
	Bauwála *alias* Patti Púran.	499	499	241	70	70	30	
	Kíkarwála Rupa.	604	604	156	94	94	37	
	Karni Khera *alias* Kotwála.	1,409	1,409	338	87	113	87	
Hithár.	Muazzam ...	449	449	378	1,441	1,441	1,132	
	Hasta ...	552	552	408	953	953	463	
	Bahak ...	834	834	427	586	586	439	
	Ladhuka ...	437	437	410	407	407	343	
	Mehtam Nagar	266	266	222	516	516	342	

Ferozepore ; *The 14th October* 1887.

F. L. BAILEY, *District Judge*, for *Deputy Commissioner*

Panjab Government Press, Lahore.—6-1-89—350.

FINAL REPORT

ON THE

REVISION OF SETTLEMENT

OF THE

SIRSÁ DISTRICT

IN THE

PUNJÁB.

BY

J. WILSON, SETTLEMENT OFFICER.

1879-83.

Calcutta:
PRINTED BY THE CALCUTTA CENTRAL PRESS COMPANY, LD.,
5, COUNCIL HOUSE STREET.

1884.

PREFACE.

I HAVE the honour to submit for the sanction of Government the Final Report on the Revision of Settlement of the Sirsá District. The operations of the Settlement were, with the exception of the case of the Farm Villages, practically completed in September 1882, and the delay in the submission of this Report is due to my having been called away to much more urgent and important work among the distressed villages of Gurgáon and Jhajjar. I have taken advantage of the delay to incorporate the statistics which have since become available, and have given an account of the working of the Settlement up to the present date, so that the report is more complete than it would have been had it been written a year ago.

I hope that its great length will be pardoned in consideration of the exceptional character of the Sirsá District. The precarious nature of the produce made it necessary to give a very full account of the observations on which my estimates of the average produce were founded; and the recent colonisation of the District, the rapid increase of population and cultivation, the extraordinary development of rights in the land, the primitive character of the people, and the unusual diversity of their physique, dialects, and customs formed subjects of exceptional interest, which it was impossible to treat except at some length.

J. WILSON,
Settlement Officer.

LAHORE,
16*th April* 1884.

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Note.—Besides these maps which have been printed, many other maps coloured so as to show the instalments, the quality of the water in wells, the depth to the underground water-level, and other interesting particulars, have been made over to the Deputy-Commissioner.

FINAL REPORT

ON THE

REVISION OF SETTLEMENT

OF THE

SIRSA DISTRICT.

CHAPTER I.—Physical Features.

The position, boundaries and area of the district.

1. The Sirsá district lies between 29° 13′ and 30° 33′ north latitude, and between 73° 56′ and 75° 22′ east longitude. It is part of the alluvial plain which forms the watershed between the Indus and the Ganges, and slopes gradually between the Satlaj and the Jamna from the Himálayas south-westwards towards the sea. It is a long narrow strip of country running from north-west to south-east, parallel to the general direction of the Himálayas and about 160 miles from their lower ranges. On the north-west the river Satlaj forms its boundary for some 20 miles, and to the south-east it marches with the Hissár district for some 24 miles. It is bounded on the north-east by the district of Firozpur and the Sikh State of Pattiála, and on the south-west by the Muhammadan State of Bháwalpur and the Rájput State of Bíkáner. The length of the district from the Hissár boundary to the Satlaj is about 110 miles. In the middle, at Dabwálí, it is only 13 miles wide, but on either side of the middle two sharp corners run out into Bíkáner which make the breadth some 45 miles towards both ends. Its total area, according to the Revenue Survey of 1876-79, is 3,004 square miles ; and its population, according to the Census of 1881, is 253,275 ; so that the district is a little larger than Perthshire and has double the population. It is in the division of Hissár, in the province of the Panjáb, and is divided for administrative purposes into three tahsils, Sirsá, Dabwálí and Fázilká, and into 650 townships, of which 20 are uninhabited.

General aspect of the district.

2. In its physical features the district is intermediate between the cultivated plains of the Cis-Satlaj States and the sandy desert of Bíkáner, between which it lies. Its general aspect is that of a level plain or prairie, broken only here and there by the groups of trees round the

village ponds, or by the slight undulations in the surface of the ground, caused by the drifted sand, the creature and plaything of the strong hot south-west wind. In many parts of the district these sand-hills have consolidated into ridges of more or less firm soil, covered with grasses which retain the sand in its place; and, according to the people, the recent spread of cultivation has, by breaking up the surface of the soil, set free the particles of sand and greatly increased the area and number of shifting sand-hills. No doubt this is true. The most sandy portion of the district is the tract south of the Ghaggar, where cultivation first became fully developed; and the older and more fully cultivated Sikh villages along the north-east border are, as a rule, more sandy than the villages along the Bíkáner border, which have still a large proportion of waste. But there is also a great difference in the original quality of the soil. The tract south of the Ghaggar is very sandy, and in fact consists simply of a succession of sand-hills with very little admixture of hard soil. It is worthy of notice that while the sand drifted by the wind shows a tendency to gather where there is any obstruction, and is often brought up by a line of bushes along a road, so as in time to form a ridge and raise the road above the level of the neighbouring fields, it has left bare the broad clay Sotar valley across which much sand must have been blown by the dust-storms of centuries; but very little has found a resting-place there. The great dry tract stretching for some 80 miles north-westwards from the Ghaggar valley consists of an almost uniform light loam, here and there becoming sandy, but usually having some admixture of yellowish clay soil. At about 12 miles from the Satlaj the country takes a sudden dip of about 30 feet over the Danda, which is probably an old bank of that river, and the light-coloured loam is exchanged for less fertile soil with some admixture of river sand. This tract stretches across some eight miles to the bank of the present valley of the Satlaj.

General slope of the country.

3. The general slope of the country, as of the whole of this part of the Indo-Gangetic plain, is from north-east to south-west, from the Himálayas towards the sea. Following the line of the Satlaj, but keeping above its valley, the country about Ludhiána stands at 800 feet above sea-level; at Farídkot, 60 miles to the south-west, it is 700 feet above sea-level; in this district above Fázilká, 40 miles south-west of Farídkot, it is 650 feet; and above Bháwalpur, 160 miles farther south-west, it is only 450 feet above sea-level. The average height above sea-level of five Trigonometrical Survey stations in the Dry Tract north of Sirsá is 696 feet; of five stations 70 miles directly north of these between Farídkot and the Satlaj it is 736 feet—a difference of 40 feet in 70 miles. In the sandy tract south of the Ghaggar valley, it is still about 700 feet, and further south towards Ajmír, it soon begins to rise again. The top of the ruins of the old fort of Sirsá (latitude 29° 32′, longitude 75° 4′) is 738 feet above sea-level. Again towards the Ganges valley, Ambála is about 900 feet above sea-level, while Rohtak, about 100 miles to the south, is about 730 feet. The whole of the Sirsá district then, with the exception

of the valleys of the Satlaj and Ghaggar, may be taken as lying between 700 and 650 feet above sea-level, with a general slope to the south-west of about a foot and a quarter per mile.

The Satlaj.

4. The district is crossed by a number of rivers and drainage channels, all maintaining the same general direction, from north-east to south-west. The river Satlaj, the Hesudrus of the Greeks, which forms the north-west boundary of the district, is in the cold weather of considerable size and nowhere fordable, and in the rainy season, when swollen by the melted snows of the Himálaya and the drainage of the low country, its current is broad, deep, and rapid, and besides causing considerable changes in the condition of the land immediately on its banks, spreads its floods far inland over the alluvial soil which forms its present valley, extending about four or five miles on this side of the present main stream. The inundation is assisted by the numerous cuts and branches, natural and artificial, which intersect the alluvial tract. The actual bed of the present main stream is broad and sandy. From the configuration of the country it is evident that at one time the Satlaj flowed along the foot of the Danda, a clearly-marked bank some 12 miles to the east of its present channel, which is a continuation of a similar bank in the Firozpur district. It has been surmised that as the Biás formerly pursued a separate course to the Chenáb, the Satlaj must have flowed much farther east than it now does; but as there are no vestiges of a large river-channel such as would have been left by a river of a size at all approaching that of the Satlaj, it may be safely asserted that it never, within the present geological epoch, flowed farther east than the Danda, that is, never more than 12 miles to the east of its present bed. The river is hardly ever called Satlaj by the people on its banks. They know it as the Nai, or Nadí, or Daryá, all terms meaning "the river," and sometimes as the Níli, or blue river. They do not know the name Gara or Ghára.

The Ghaggar.

5. The only other valley in which water now flows is that of the Ghaggar, regarding which much has been written as it has been identified with the sacred Saraswati, "the lost river of the Indian desert," and has in later times given rise to many disputes regarding irrigation rights. The Ghaggar rises in the outer Himálayan ranges between the Jamna and the Satlaj, enters the plains as a rapid and variable mountain torrent, passes near Ambála, and after a south-westerly course of about 70 miles chiefly through the Sikh State of Pattiála, bends to the west through Hissár and Sirsá districts and the Rájput State of Bíkáner, where it is finally lost some 290 miles from its source. Before entering the Hissár district it is joined in Pattiála territory by the united streams of the Sarsuti and Márkanda, and indeed receives almost all the surplus waters of the numerous hill torrents which cross the Ambála district between the Jamna and the Satlaj. It seems, in its tortuous course across the plain, to follow sometimes

one, sometimes another, of the numerous drainage channels with which the country is intersected. But there is one channel which in size and character is altogether different from the others. This is known to the people of the Sirsá district as the Sotar (also pronounced Sotrá or Sot) Choyá, or Hakrá, the former name having special reference to the rich clay soil which is a peculiarity of this channel. Tne Sotar is a well-defined valley, varying in width from three to six miles, of no great depth and usually almost quite level from side to side, but distinctly marked off from the light-coloured loamy soil of the plain through which it passes by a clearly defined bank or sand-ridge on either side, and still more by its dark rich clay soil free from admixture of sand, and producing a vegetation of a different character from that of the surrounding country. This valley is a very remarkable feature in the physical aspect of the Sirsá district, and according to the people it extends with similar distinctive characteristics, at all events from Tohána in Hissár district past Fathábád, Sirsá, Rániá, Bhatner and Anúpgarh till it joins the Panjnad south of Bháwalpur. It enters the Sirsá district from Fathábád in Hissár at a point some 16 miles directly east of the town of Sirsá, passes to the south of that town and of Rániá, and leaves the district for Bíkáner territory at Karíwálí after a course of some 40 miles across the district from east to west. According to recent tradition the main stream of the Ghaggar flowed along the whole course of this valley so lately as within the last hundred years, but its waters were, either by man or nature, diverted from the Sotar valley at a place called Phúlad in Pattiála territory before it enters the Hissár district, into one of the other comparatively insignificant drainage channels; and now none of the water from the hills comes along the Choyá or Sotar from the Fathábád direction. The drainage-channel, which now carries all the water of the Ghaggar, is known to the people as the Nálí, or channel. It enters the district a few miles south of Rori, and passing some four miles to the north of the town of Sirsá, rejoins the Sotar valley between Sirsá and Rániá and flows along it into Bíkáner territory. Before it reaches the Sotar, the stream is confined to a comparatively narrow bed between steep banks, and during the rains sometimes reaches a depth of eight or ten feet. Here and there its banks recede and leave a broad and shallow channel, or the stream overtops the banks and floods the neighbouring land. At Chánmal, three miles north-west of the town of Sirsá, the channel expands into a shallow lake *(chhamb* or *jhíl)* about three miles long by half a mile in breadth. It then contracts for a short distance, and again at Dhanúr, just before it reaches the Sotar, it fills another depression about three miles long by half a mile broad, but seldom anywhere more than four feet deep. Again, after entering the Sotar valley and passing along two miles of narrow channel, it spreads into the Annakai Chhamb, some five miles long by two miles broad and only about three feet deep. Below this Chhamb a branch turns off southwards from the Sotar towards the town of Ellenábád, and fills a considerable depression among the sand-hills south of that

town. The main stream flows along the Sotar valley without any well-defined channel towards Hanumángarh or Bhatner in Bíkáner territory. The Ghaggar is not fed by the snows, and though there is usually enough flood in the rainy season to make the use of boats necessary at crossing places and to fill these depressions, the stream always dries up in the hot season, and indeed seldom lasts beyond October. Sometimes a freshet comes down in the cold weather and refills the lakes, but generally in the hot weather the only water to be found in the Ghaggar bed is in the Dhanúr lake which, though very shallow, is deeper than the other two; sometimes this lake also dries up. The distance to which the stream reaches along the Sotar valley, before it is finally absorbed or evaporated, depends on the heaviness of the rainfall in the hills and the submontane tract. It seldom reaches so far as Bhatner. During the 20 years from 1823 to 1842, the flood reached the Bíkáner border (then at Tíbí, 11 miles below the present border) only nine times, and during the next 15 years only six times. During the last 22 years it has reached the present Bíkáner border 15 times; but even in the years of heaviest flood, the volume of water which crosses the border into Bíkáner territory is quite insignificant. From the appearance of the Sotar valley, and the numerous remains of towns and villages which stud its banks all the way down to Bháwalpur, it is evident that at one time it conveyed a much larger volume of water than at present, and probably was the channel of a perennial stream. But although it must have been, as it is now, the largest and most important of all the drainage channels between the Satlaj and the Jamna, it can never have carried a river at all approaching in size to either of these two. The valley is too shallow and shows too few marks of violent flood-action for this to have been the case; and there is none of the river sand which would certainly have been left by such a stream. The soil is all rich alluvial clay, such as is now being annually deposited in the depressions, which are specimens of those numerous pools which are said to have given the Saraswati its name, "the River of Pools;" and there seems little doubt that the same action as now goes on has been going on for centuries, and that the numerous mountain torrents of the Indo-Ganges watershed, fed not by the snows, but by the rainfall of the sub-Himálayan ranges, wandering over the prairie in many shallow channels, joined in the Sotrá or Hakrá valley and formed a considerable stream—at first perhaps perennial, but afterwards drying up in the hot season,—at first reaching the Panjnad, but afterwards becoming absorbed after a gradually shortening course, as the rainfall decreased on the lower Himálayan slopes, and as the spread of irrigation in the submontane tract intercepted more and more of the annual floods; and the comparatively feeble stream, cutting away all prominences in its bed, deposited its silt in the depressions, and gradually filled its valley with a level layer of rich hard clay. The same process appears to be still going on, and the bed of the stream is gradually attaining one uniform slope throughout.

Old drainage channels.

6. Between the Ghaggar and the Satlaj, the plain is crossed in the same general direction, from north-east to south-west, by five old drainage channels, similar to that in which the Ghaggar now runs before it enters the Sotar. These drainage lines are too narrow and shallow to have ever carried any important volume of water, and they are evidently the channels of rainy-season torrents from the Ambála hills. The one in which the Ghaggar now flows joins the Sotar within the district, another joins it just as it leaves the district; and they all seem, like the other torrents higher up, to finally merge in the Sotar valley before it reaches the Panjnad. The same causes however which have reduced the volume of water in the Ghaggar, have cut off the supply of these channels, and at all events within the memory of man no water has come down any of them from the hills, though sometimes the rainfall from the surrounding country stands in their hollows for a time. The people call these channels Vál or Naivál or simple Niwán (hollows)—*Vál* seemingly meaning "channel" and *Nai* being a word they use for "river." The soil in these channels is not alluvial clay like that of the Sotar; it is generally more sandy than usual, owing probably to sand having drifted from the neighbouring higher ground. It seems possible that the diminution in the quantity of water passing across this tract in a south-westerly direction, which is proved to have taken place by these numerous dry channels, is due to a gradual up-raising of the whole watershed of the Indus and Ganges systems outside the Himálayas. This hypothesis is supported by the undoubted fact that the Jamna has within a recent period moved eastwards, and the Satlaj and other Panjáb rivers have moved considerably to the west.

Depth of underground water-level and quality of water.

7. In the present valley of the Satlaj and the tract which borders it water is found within 40 feet of the surface. Immediately below the Danda, the depth to water is between 40 and 80 feet. On crossing the Danda into the great Dry Tract, the level of which is about 30 feet above that of the land below the Danda, a distance of two or three miles gives an increase of 40 feet in the depth to water, which is here about 110 feet. The depth to the underground water-level increases as one goes south-eastwards away from the river. At Abohar and in the south-west corner of the Fázilká tahsíl near the old drainage-channel still visible there, the depth to water is less than 120 feet, but between Abohar and Malaut it is from 120 to 160 feet; and from Malaut to beyond Dabwálí it is generally more than 160 feet, and in some villages more than 200 feet. Going farther south-east, water begins to get nearer the surface, and a belt is found parallel to the Ghaggar in which water is within 160 feet, then another belt where it is within 120 feet, another with water within 80 feet, and at last along the Ghaggar itself water is found within 40 feet of the surface. Beyond the Ghaggar valley again it sinks to over 40 feet, and in the sandy tract to the south of that valley the depth to water from the surface is everywhere over 90 eet, and in some villages more than 120. It seems from these well-

defined belts that the direction of the underground flow is, like that of the surface drainage, from north-east to south-west across the district chiefly along the line of the rivers and drainage-channels, and that percolation from them extends to a considerable distance on either side. There is evidence that, at one time, when the surface flow crossing the district was greater than it now is, the depth of the underground water-level was less than it is now. There are numerous old wells round Sirsá and elsewhere in the Sotar valley, not nearly so deep as wells now must be to reach water in those places—enough to make it certain that there the water-level was formerly 40 feet nearer the surface than it is now. An old well too has been found in the middle of the Dry Tract, where water is now at a depth of 220 feet, which seemed to show that when it was made water was to be got at less than 150 feet. In all the villages within reach of the percolation from the Satlaj and Ghaggar, the water of the wells is sweet and drinkable. In the sandy tract south of the Ghaggar, the well-water is sweet in 31 villages, brackish in 6, and quite salt in 10. In the Dry Tract between the Ghaggar and Satlaj, it is sweet in 162 villages, brackish in 44, and quite salt in no fewer than 79. While immediately below the Danda it is for some unexplained reason especially impregnated with salts, being sweet in only 22 villages, while it is brackish in 19, and quite salt in 15. (It may here be noted that the wells in the town of Bíkáner to the south are 300 feet deep, and on the Márwár and Bíkáner border 400 feet.)

Rainfall.

8. Since the floods of the rivers are so variable, and the well water so far below the surface and of so bad a quality, the local rainfall on which so much of the cultivation and of the drinking water of the population depend, is unusually important among the physical features of the district. The following table gives the rainfall reported for the Bhuttee Territory for the years 1849-56, and the rainfall reported annually at each of the three tahsil head-quarters for the last 25 years, the year taken being the Financial Year running from 1st April to 31st March, which, so far as the rainfall is concerned, practically coincides with the agricultural year :—

Total annual rainfall in inches.

Year.	Sirsá.	Dabwáli.	Fázilká.
1849-50	8·66	.....	.....
1850-51	10·21	.....	.....
1851-52	10·86	.....	.....
1852-53	36·16	.....	.....
1853-54	7·12	.....	.....
1854-55	17·15	.....	.....
1855-56	15·34	.....	.....
Average of seven years ...	15·1	.....	.....

Year.	Sirsá.	Dabwálí	Fázilka.
1858-59	14·2	15·2	11·3
1859-60	18·0	13·0	5·8
1860-61	8·5	5·6	13·7
1861-62	14·5	9·3	11·7
1862-63	71·4	13·8	18·4
1863-64	22·0	26·2	17·1
1864-65	13·2	10·6	14·6
1865-66	18·2	20·0	16·1
1866-67	14·8	15·8	3·8
1867-68	16·2	17·8	16·5
1868-69	9·8	10·7	11·0
1869-70	13·0	13·6	17·2
1870-71	13·3	10·7	6·1
1871-72	11·0	7·5	5·4
1872-73	18·3	10·8	12·5
1873-74	15·7	12·5	10·1
1874-75	11·1	9·3	11·2
1875-76	19·4	16·8	28·1
1876-77	19·1	13·8	10·4
1877-78	12·6	14·7	14·3
1878-79	23·4	17·4	17·8
1879-80	11·5	12·5	9·3
1880-81	8·9	11·9	9·2
1881-82	26·3	20·5	20·6
1882-83	13·5	13·8	15·6
Average of 25 years ...	15·3	13·8	13·1

From this it appears that the average rainfall of the last 25 years was at Sirsá 15·3 inches, at Dabwálí 13·8, and at Fázilká 13·1. Thus the farther west the station the less is the annual rainfall. This is in accordance with the general character of the rainfall of the whole region.

The following table gives the annual rainfall of a number of stations, almost all situated in the plain between the Jamna and the Satlaj :—

Name of Station.	Distance in miles from Delhi.	Direction from last Station.	Annual rainfall in inches.						Average of six years.
			1873-74	1874-75	1875-76	1876-77	1877-78	1878-79	
Delhi ...			40·0	23·7	42·3	24·5	17·2	32·6	30·1
Sámpla ...	30	N.-W.	24·9	15·3	37·5	21·0	16·9	22·1	23·0
Rohtak ...	43	N.-W.	20·6	14·7	28·7	19·5	14·4	20·8	19·6
Hánsi ...	83	N.-W.	14·3	9·3	22·1	17·5	12·8	24·4	16·7
Hissár ...	100	N.-W.	12·5	10·9	23·3	22·4	13·7	19·8	17·4
Fathábád ...	122	N.-W.	14·4	13·0	12·9	22·8	14·4	21·0	16·4
Sirsá ...	150	W.	15·7	11·0	19·4	19·1	12·6	23·4	16·9
Dabwálí ...	180	N.-W.	12·5	9·3	16·8	13·8	14·7	17·4	14·1
Fázilká ...	234	N.-W.	10·1	11·1	28·1	10·4	14·5	17·8	15·3
Dipálpur ...	264	N.-W.	6·5	7·1	17·0	8·8	9·6	5·3	9·1
Montgomery ...	292	W.	7·5	9·3	1·4	20·8	8·8	18·7	11·1

From a comparison of these statistics it may be inferred that there is a gradual diminution in the annual rainfall as one goes from the Jamna north-westwards towards the Satlaj. These places are all about equally distant from the Himálayas; and there is also evidence that the annual rainfall rapidly decreases as one goes south-westwards away from the hills. The following figures are taken chiefly from the Famine Commission Report:—

Towards the Jamna.			Towards the Satlaj.		
Station.	Distance from Himálayas in miles.	Annual rainfall in inches.	Station.	Distance from Himálayas in miles.	Annual rainfall in inches.
Naraingarh ...	10	44	Dera ...	0	54
Ambála ...	26	35	Hoshyarpur ...	32	34
Pipli ...	56	26	Jalandhar ...	55	30
Kaithal ...	70	18	Nakodar ...	72	26
Hissár ...	135	17	Firozpur ...	112	20
			Muktsar ...	144	13
			Fázilká ...	162	13

Indeed, the Sirsá district lies near the verge of the monsoon vortex and towards the arid region to the south and south-west, which gets no rain at all. The diminution of rainfall north-westwards, in a direction parallel to the Himálayas, may be estimated as follows:—Taking the average rainfall for the last 25 years, there is a difference of 2·2 inches between Sirsá and Fázilká, a distance of 90 miles; this gives one inch to 41 miles. Again, taking the average rainfall for the six years given above, there is a difference of 4·3 inches in 191 miles between Rohtak and Fázilká; this gives one inch to 44 miles. It may be said, then, that in this tract the annual rainfall diminishes by about one inch for every 40 miles to the north-west in a direction parallel with the Himálayas. Much more important is the diminution of rainfall which varies with distance from the hills. From Pipli to Hissár the rainfall diminishes by 9 inches in 79 miles, and from Nakodar to Fázilká 13 inches in 90 miles. A difference of ten miles in distance from the Himálayas makes a difference of more than an inch in the annual rainfall. Signs of this may be observed in the narrow breadth of the Sirsá district, and there can be little doubt that in a series of years the rainfall on the Bíkáner border is appreciably less than that on the Pattiála border.

No permanent change observable in the character of the rainfall.

9. Mr. Oliver, who served in the district from 1844 to 1869, in a report made by him, stated that the rainfall was gradually diminishing in amount, that old inhabitants remembered the time when the rain was much more plentiful and seasonable, and that even within his own recollection there had been a perceptible diminution in the rainfall. It will be observed however that although the rainfall of 1852-3 was higher than any recorded of late years, the average of the seven years

1849-56 was much the same as the present average, and the average rainfall of the 12 years following 1857 is much the same as that of the last 13 years. "Old inhabitants," too, not given to depreciate the past, have told me that the rainfall now is better than it used to be, and this improvement they ascribe to the same cause to which Mr. Oliver thought the opposite phenomenon due, namely, to the breaking up of the waste. Probably the fact is that there has been no general and permanent change in the character of the rainfall during the present century.

Variableness of the rainfall.

10. The most striking feature of the rainfall is its variable and partial nature. The following table shows the greatest and least annual rainfall recorded during the last 25 years at each of the three tahsíls :—

Station.	Maximum.		Minimum.		Difference between maximum and minimum rainfall.
	Year.	Rainfall.	Year.	Rainfall.	
Sirsá ...	1881-82	26·3	1860-61	8·5	17·8
Dabwálí ...	1863-64	26·2	1860-61	5·6	20·6
Fázilká ...	1875-76	28·1	1866-67	3·8	24·3

It seems, then, that in one year the rainfall may be over 28 inches, and in another less than four. A glance at the general statement of annual rainfall shows that in some years the rainfall at one tahsíl head-quarters is more than twice as great as at another. Indeed, the amount of rainfall in any year varies considerably from village to village. The greater part of the rain that falls in the district comes in partial thunder showers, which often give good rain to a few villages while others close by get little or none, and there can be no doubt that as the people assert, one-half of the lands of a village often get good and seasonable rain while the other half of the village is drying up for want of it. On an average of years about 12 inches of rain fall in the four summer monsoon months, June to September; two inches during the four cold weather months, December to March; and one inch at odd times in the other four months; but the distribution of the rainfall over the different months of the year varies very much, and affects the character of the season even more than does the variation in the total rainfall of the year.

Temperature and climate.

11. Sirsá is near that part of India which is alternately, at the opposite seasons of the year, the seat of the highest and lowest barometric pressure at the ground surface, due allowance being made for altitude. It is almost on the isobaric line of 30·05 inches in January, and on that of 29·5 inches in August. Similarly it is near that part of India outside the hills which is coldest in winter and hottest in summer, being near the isothermal line of 55° in January and that of 95° in May. The minimum

temperature of the year is always in January and (according to a thermometer kept in the verandah of the Civil Surgeon's house at Sirsá) ranges from 30° to 41°; while the maximum temperature is in May or June and ranges from 114° to 118° in the shade. The annual range of temperature in the shade is about 80°. During the cold weather, from November to February, the climate is all that could be wished. The days are not hot and the nights not excessively cold, though often frosty. In March it begins to get hot and the temperature rises higher and higher till June with dry burning winds from the west and south-west, which spring up daily about 10 A.M. and blow fiercely through the heat of the day, but generally die down about 5 P.M., and are succeeded by an almost complete calm. Often at different times of the day and night, but most frequently towards evening, severe sandstorms with a cyclonic motion fill the air with dust and sand. They are sometimes accompanied by thunder and sometimes followed by a few drops of rain, and they always cool the air by a few degrees. Even in the hot weather the air generally cools down towards morning to about 90° and feels somewhat fresh. About the end of June or the beginning of July the rains set in from the east; the temperature is lowered some degrees, and the air, till then excessively dry, becomes saturated with moisture. Often there is a considerable break in the monsoon, when the hot dry wind from the west re-appears. Much of the rain comes from partial thunderstorms, which, like the sandstorms, are more frequent towards evening. In September the rains cease, the atmosphere gets drier and the nights begin to be cool. Clouds make their appearance about the end of the year, and a few partial showers with occasional hailstorms fall from time to time during January, February, and March, when the dry hot weather again comes in.

Natural belts of country.

12. It will be convenient to state here the belts into which the district has been divided for assessment purposes. The division has been made with reference to the physical characteristics of the different tracts, and without regard to the fiscal divisions. The five Assessment Circles are as follows:—

I. The Bágar, the sandy tract south of the Ghaggar valley, characterized by the lightness of its sandy soil, and the prevalence of shifting sandhills. It is considered by the people a part of the great Bágar tract, which includes a part of the south-west of the Hissár district, and almost the whole of the north of Bíkáner territory.

II. The Nálí, or Ghaggar valley, including the Sotar valley with its hard alluvial clay soil, and the present valley of the Ghaggar, with the villages enclosed between the two valleys, and the neighbouring high land belonging to the Ghaggar villages or enclosed between them and the boundary of the district. These high lands are exactly similar on the

one side to the sandy soil of the Bágar, and on the other to the loam of the Rohi, but are for convenience of boundary included within the Nálí belt.

III. The Rohi, or great Dry Tract, the level tract of light loam stretching from the Ghaggar valley to the Danda, or old bank of the Satlaj, and known to the people as the Rohi (dry country) or Jangal (prairie, bush, or backwoods).

IV. The Utár, or upper belt between the Danda and the present Satlaj valley, a tract of light sandy soil with an admixture of river sand now beyond the reach of the Satlaj floods.

V. The Hitár, or lower belt of alluvial soil subject to inundation from the Satlaj.

Soils.

13. Generally throughout the district high land not subject to inundation is called *Rohi*, or dry land, a term almost equivalent to Báráni. The blown sand which is charactistic of the Bágar tract and is found in many places in the Rohi and Utár, is known as *Bhúr*, *Retlí*, *Retá*, or *Tibbí*. A ridge or sandhill is called *Tibbá* or *Tibbí*. *Mair* or *Maira* is the high-lying land from which the rain runs off, while the low-lying ground is known as *Tala* or *Níwán*, or if it be the bed of an old drainage-channel is called by the Sikhs *váhal* or *vál*, and by the Bágris *johal*. *Baggi mitti* (white earth) is a light sandy loam, while a dark-coloured hard clay loam is called *káli* (black) or *karri* (hard) or *karrar*. This latter term is to be distinguished from *kallar*, which means barren soil impregnated with salts (*shor*). Patches of *kallar* are met with here and there throughout the Rohi, and a slight efflorescence of salts is to be seen at places in the other circles. The term *kallar* is also applied to the patches of barren (*autri*) land which are frequently met with in the Rohi without any sign of salts being present. They seem to be due to the presence of a bed of *kankar* just below the surface of the soil, which prevents the rain from sinking into it and stops all vegetation. Very often such a patch of perfectly barren soil is to be found near a village, the site having been chosen because of the facility with which water runs off the *kallar* patch into the village pond. The common soft reddish loam, which is characteristic of the Rohi, is called *Ratti* (red) or *Poli* (soft) soil. The hard dark clay soil of late alluvial origin, which is so distinctive of the Ghaggar valley, is called *Sot* or *Sotar*. On the Satlaj, hard clay soil is called *sikand*, loam is known as *gasrá*, the fresh alluvial deposit of the river is *nopi*, and a thin layer of alluvial soil over river sand is called *rapar*. Land inundated by the river is called *rez*, a term equivalent to *Sailába*. Land irrigated from wells is called *khurwa* on the Satlaj, elsewhere *cháhí*. The Hindustáni terms *dákar* for clay soil and *rausli* for loam were employed by the surveyors of the Regular Settlement, but are hardly ever used by the people.

Minerals.

14. The alluvial deposits, which form the Indo-Gangetic plain, are in this district nowhere broken by an outcrop of rock, and everywhere retain their original hori-

zontal position. Borings made in this district for water to the depth of over 200 feet simply show layer after layer of sand and clay, and similar borings to the depth of 431 feet at Bhiwáni and of 701 feet at Ambála in the same plain, show that alluvial deposits of this description overlie the rocks below to a great depth. Sometimes the layer of sand is so very loose that it falls in unless carefully propped up; sometimes the clay is firm enough to stand for several years the dripping of the well water against its sides; and in the Satlaj valley an impermeable stratum of whitish clay (*hán*) is found about 20 feet below the surface, and some 15 or more feet in thickness, so hard that the greatest difficulty is experienced by the peasants in piercing it. There is not a single indigenous stone within reachable distance of the surface of the ground. Kankar (*ror*) is found in the usual calcareous nodules at or near the surface in many places all over the district, and is used for road-making and burnt for lime. In some villages it brings in some small profit to the owners of the land, who charge a low rate, usually eight annas per hundred maunds, for leave to dig it. From many of the numerous mounds in the Ghaggar valley which mark the sites of former villages, saltpetre (*shorá*) is manufactured in considerable quantities. It is made from the saline earth found in such places usually by a class of men called *Shorgar*, whose special occupation it is. They dig a long narrow drain on some high ground and cover it with branches and grass. On this they sprinkle powdered earth from the old village mounds, and pour over it water which soaks through the earth into the drain carrying with it the saltpetre in solution. The dark brown liquid is drained off into a basin lined with lime, and after it has been left there to evaporate for some six days, the residue is boiled in an iron cauldron (*karhái*), and after some six hours boiling is allowed to cool. It crystallises into dirty brown crystals, which are delivered by the manufacturers to their employer the contractor, at about one rupee per maund. Each cauldron gives about a maund of crystals a day. The contractor purifies and recrystallises the saltpetre at Sirsá or some other central point, and then exports it. It does not seem to have been manufactured to any extent in this district until 1860. At present it is made in about twenty villages of the Sirsá tahsil only, almost all in the Ghaggar valley where the large village-mounds are found. The contractor, usually a Banya, pays annually to the village proprietors for permission to extract saltpetre from their land, sums varying from Rs. 22 to Rs. 260, and averaging about Rs. 100 per village.

Vegetation. Grasses.

15. Of all the natural products of the district the most important are the grasses, which formerly covered the whole country and still abound in good seasons on the land which has not yet been brought under the plough. In the dry tract perhaps the best grass is the *dháman* (pennisetum cenchroides), a tall grass with a succulent stem, much valued as food for cattle and often preserved as hay. It is common in the pasture-grounds of Bíkáner, and seems to have been formerly common in this district; but it was one of the first grasses to give way before the

plough, as it grew on the best lands which were first brought under cultivation. It is now somewhat rare. Among the commonest grasses is the *chímbar* or *kharímbar* (eleusine flagellifera), a shorter grass readily eaten by cattle; this grass is called by the Bágris *ganthíl* or *bhobriya*. Another common grass in the dry country is that called by the Panjábis *khoí* or *khaví*, and by the Bágris *búr* (cymbopogon iwarauchusa), also eaten by cattle; its red colour when ripe gives a tinge to the general landscape where it abounds. The *sain* or *sewan* is a tall coarse grass growing in high tufts with many stalks on one thick root-stem and several long narrow ears on each stalk. It is eaten by cattle even when dry; camels like it only when it is green and tender; horses are especially fond of it. Its fibrous roots, sometimes a cubit long, are dug out of the ground by the *Kuchchbahne*, a class of wandering folk who annually visit the dry country in numbers for this purpose, and manufacture from them the brushes (*kuchch*) used by weavers for sizing the warp. Small brushes are also made from the roots of the *sain*. *Garhanm* is a very tall grass with long thin stalks growing from a knotty root-stem, not often found growing by itself, but generally round a *kair* bush. Cattle eat it when dry; if they eat it green and young, they are apt to swell, sometimes with fatal result. The smoke from its root-stems is used as a disinfectant in small-pox; before entering an infected house a visitor fumigates his person over a fire made from them. *Dukháb*, a low grass, which remains green all the year and is eaten by the cattle, has long spreading roots which cover the ground in all directions and are difficult to eradicate. It is said to have grown faster where the sheep have broken up the surface with their feet and is much complained of in poor sandy soil as preventing cultivation and ruining the land. The *bhúrt* (cenchrus echinatus) is a grass which forces itself on the attention by its numerous prickly burrs or seed-vessels which seize firm hold of clothes or skin with their hooked thorns and are difficult to dislodge. Its seeds are sometimes eaten in times of famine. It is a low grass with a whitish appearance common in poor sandy soil and characteristic of the Bágar. The Bágrís tell that an emperor of Dehli was on his way with an army to attack Bíkáner when a *bhúrt* stuck in his arm; he picked it off and it stuck in his finger; he tried to bite it off and it stuck in his lip and gave him great pain. When told the country was full of these things, he did not venture farther and Bíkáner was saved from invasion. Among grasses characteristic of the hard soil of the Ghaggar valley are the *khabbal* or *dúb* (cynodon dactylum), a low jointed grass well-known for its excellent quality as a fodder for cattle and horses; the *díla* (cyperus tuberosus), a coarse grass of little use, eaten by cattle only when young, common in low-lying moist lands, and especially in deserted rice fields; the *sánwak* (panicum colonum) eaten by cattle when green, and producing a grain which is eaten by Hindús on fast-days, and sometimes made into bread or boiled with milk by the poor; and the *panni* (anatherium muricatum), a grass which grows very thickly and to the height of eight feet in the marshy land of the Ghaggar. The leaves of the *panni* are used for thatching, and its roots are the *khas* used for tatties. They are dug up by the residents of the

neighbouring villages, who sometimes pay the owner of the ground a small fee of four annas per digger for the right to dig, and sold at about a rupee per maund to Banyas who send them to Lahore and Firozpur. Sometimes wandering *Kuchchbahne* come and get *khas* which they carry away on their donkeys to sell for tatties. *Panni* is also found on the Satlaj, but the characteristic grass of that valley is the *sarkanda* or *sarr* (saccharum sara) which is used in so many ways. It grows commonly in old sandy soil near the river, and many villages derive some income from it by selling the annual produce to the highest bidder, the price often exceeding Rs. 100 for the produce of one village. All classes of the people make use of the *sarr;* but the Mahtams especially are given to working in it. The thick stalks (*kána*) are used for lining wells, for the walls of huts and grain-receptacles, and for making chairs and couches. The thin end of the stalk (*túl*) is used for making water-proof screens (*pakkha*), which are put over carts to protect their contents from the rain, and are largely used as shelters by wandering tribes, some of whom carry about large bundles of *túl* and sell winnowing baskets (*chhajj*) and sieves made of it. The sheath of the *sarr* stalk is burnt at one end and beaten with a mallet, and the fibre extracted is twisted into a rope (*múnj*), which is very commonly used for all sorts of purposes, and sometimes exported to a considerable distance for sale.

Vegetation. Shrubs.

16. The *ák* (calotropis procera) is found everywhere, generally on poor sandy soil. Its leaves are eaten by goats, and are sometimes, when dried, used as dishes for holding food. Its bark fibre is sometimes made into rope. Near the *ák* and growing on its roots is frequently seen pushing through the sand the *margoja* or *bhampkor* (earth-splitter) (phelipœa calotropidis) an orobanchaceous parasite with leafless succulent stems terminating in purple flower-spikes of peculiar appearance. It is said to grow also on the roots of the *búi* and *phog*. A solution of it is given as medicine to horses. Among the characteristic plants of the dry country is the *búi*, a low whitish plant with flower-heads like "foxtails," which gives a greyish-white appearance to the country where it abounds. It is found chiefly on sandy soil and is eaten by camels; cattle eat it only in times of scarcity. Another is the *lána*, a plant of some size, the leaves of which are eaten by camels, and the stalks used as fuel. The *sajji* plant (salsola), from which barilla is made, used to be much more common in the district than it now is; it has, like the *dhámnan* grass, given way before the plough, and is now hardly found except in the less-developed villages between Abohar and the Bíkáner border. Goats and camels and, it seems, the florican are very fond of it. No attempt has been made to propagate it, but it might be worth while to try. The manufacture of *sajji* is sometimes carried on by the proprietors of the land themselves, sometimes by contractors, generally of the inferior castes (Kumhár, Bhangí or Máchhí), who give half or one-third of the produce to the land-holders as their share, or sometimes pay them Rs. 50 or Rs. 100 a year for leave to cut the plant from the village waste. The bushes are cut when in flower about December, allowed to dry in the sun and then burnt in a pit in the ground. The numer-

ous fires in which *sajji* is being burnt form quite a feature in the landscape at times. The liquid matter which exudes from the burning plant cools into a hard mass, something like the refuse of smelting furnaces. This is the *sajji* or *khár* (barilla) of commerce, an impure carbonate of soda extensively used for washing and dyeing cloth and tanning leather. In 1864 it was reported that *sajji* was made in 40 villages, all in the Dry Tract, and their aggregate produce was estimated at about 1,400 maunds, value about Rs. 1,700. Now licenses for the manufacture of *sajji* are given only in some 23 villages, all in the dry part of tahsil Fázilká, and the annual produce is estimated at 1,000 maunds, value Rs. 1,500. Very large quantities of *sajji* are still made in the Bíkáner jungle and exported northwards. Its price seems to have risen. In 1864 the price was reported to be from 12 annas to Rs. 3 per maund according to quality; it is now from Re. 1-4 to Rs. 4-8 per maund. Another plant characteristic of the dry tract is the *tumba* (citrullus colocynthus) with its trailing stems and beautiful green and yellow orange-like fruit scattered in profusion over the sandhills. The *tumba* is eaten only by goats, for which it is sometimes gathered in quantities. A preparation from it is sometimes used as medicine. The *phog* (calligonum polygonoides), one of the most abundant and characteristic plants of the Bíkáner desert is found on the Bíkáner border in sandy soil. The *dodh* or *dúdhe* is a small milky plant eaten by sheep and goats. The *láthya*, a small plant with pink flowers, is common and is said to be a sign of bad soil. So are the *dhamáhán*, a low prickly plant with many small white flowers, and the *gandi búti* with its yellow flowers. Another plant of the dry tract is the *lamb*, with peculiar seeds having thorns attached to them. The *khip* or *khímp*, called also *saní*, the wild Indian hemp (crotolaria burhia) is also common in the Dry Tract, and is often used for making ropes. Of the smaller plants characteristic of the alluvial soil of the Ghaggar and Satlaj valleys, the most conspicuous are the weeds which infest the cultivated land and lessen its produce, sometimes very considerably. Among these is the camel-thorn called variously *jamán*, *janwása*, *jawánya*, *dhanwása*, and from its thorns, *kandá* (alhagí maurorum), a small prickly plant with red flowers; it is eaten by camels and makes good tatties; it infests the wheat-fields subject to inundation. The *katára*, *katelí* or *satyanás*, a tall thistle-like plant with a yellow flower is found on poor alluvial soil. So is the *leh*, a low prickly thistle-like plant with long spreading roots. The *bhýkla* or *piyázi*, which looks like a wild onion, infests lands irrigated from wells. Another weed is the *bakrá* or *kútí*, so called because its flower-heads resemble a caterpillar (*kúti*). The *múdphal* is a weed which infests rice-fields. In the cultivated fields on the banks of the Satlaj are found numerous leguminous plants, half-wild, half-cultivated. They are not intentionally sown, but are valued as fodder plants and collected from among the wheat to be given to the cattle. The *bhákri* or *gokrú* (tribulus terrestris) has a little woody spiked fruit which sticks into dogs' feet very readily; it is sometimes made into flour by the poor and eaten with other grain. The *surnáli*, a wild

convolvulus, is said to increase the supply of milk when eaten by cattle. The *dhatúra* or thorn-apple, so well known as a narcotic poison, is to be seen with its long white flowers growing half-wild near the Satlaj. A course of it is said to steal away the brains. "Have you been eating *dhatúra*?" I asked the garrulous old Mahtam who gave me this information. "No," retorted he, "but I am told the English are fond of it." And the grins of the surrounding villagers showed that they thought he had scored.

Vegetation. Bushes and trees.

17. The characteristic bush of the dry tract is the *jhárberi* (zizyphus nummularia), whose small red berries are largely eaten by the poorer classes, especially in times of scarcity, and to some extent sold in the towns, while its thorns make capital fences, and its leaves known as *pála* are an excellent fodder for cattle. They are stripped off in November and stored or sold. In December 1880, when there was a scarcity of fodder, *pála* sold in the Sirsá bázár at 1½ maund per rupee; and as sometimes, especially in the sandy tract south of Sirsá, more than two maunds of *pála* per acre is gathered from the fields (the average outturn of *pála* in that tract in 1880 was estimated at a maund an acre), the peasant can often, as he admits, pay his land-revenue from the proceeds of his *pála* alone. The *jhárberi* grows chiefly in cultivated fields, and seems to have spread largely since the waste was brought under the plough. It is especially abundant in the light soil of the sandy tract; in the Sikh villages its growth is discouraged, as it chokes the grain crops. When protected, as it sometimes is, it attains a height of about 12 feet, but it is usually a small bush not over four feet high. Almost the only indigenous tree of the Dry Tract is the *jand* or *jandi* or *khejrí*, (prosopis spicigera) which is sometimes found standing by itself out in the fields, but more often in clumps round the village ponds. It is generally of stunted and irregular growth, but reaches the height of 30 feet or more. Its wood is used for agricultural implements, but is not durable, being very liable to the attacks of insects. Its pods (*sangri*) are used as fodder for cattle, and in times of scarcity are eaten by the poor. Its wood is used for the sacred fire (*hom*). The *kair* and *van* are two common shrubs found scattered throughout the district, comparatively rare in the Dry Tract, common below the Danda towards the Satlaj, and especially characteristic of the hard alluvial soil of the Ghaggar valley, where they reach a considerable height and form in places with the *jand*, *kíkar* and *farásh* an imposing jungle. The *kair* called also *kari* or *karíl* (capparis aphylla) with hardly any leaves is conspicuous in the beginning of the hot weather in the general absence of bright colours by its dull red flower (*báta*), which covers the shrub abundantly and is in hard times ground and eaten mixed with flour. Its unripe green fruit (*dela* or *tet*) is boiled and eaten, and the ripe fruit (*pínjú*) is very largely eaten, especially in times of scarcity. There is a not uncommon variety of the *kari* with whitish branches and yellow flower and fruit. The *van* or *jál* Salvadora oleoides) is very often found along with the *kari*. Its

wood is valued for rafters, as it is little subject to the attack of insects. Its fruit (*píl* or *pílú*), which ripens in the hot weather, is also of great use to the poor in times of scarcity. Hence the saying, *Bágar ká mewa pílu aur pínjú.* "The fruits of the Bágar are the *pílú* and *pínjú*." In the Satlaj valley the characteristic bush is the *pilchi* or *jháo*, sometimes called *jhári* (tamarix dioica). It grows only on land subject to river floods, and is the first thing that springs up on the new alluvial soil left by the river. Its twigs are used to make the walls of huts, to line *kachcha* wells, and to make baskets, which are sold in the dry country by wandering families. Among the trees which seem to have been introduced into the district within the last century or so, the most common and most important is the *kíkar* (acacia Arabica), which is now found all over the district, but especially near the Ghaggar and Satlaj where there are some large-sized trees. Its wood is strong and durable and much valued for agricultural implements, and charcoal made from it is considered among the best. A fair-sized tree sells as it stands for about Rs. 12. The pods of the *kíkar* (*phaliyán*) are gathered as food for cattle and goats, its bark is used in tanning leather and in making spirits, its gum is eaten and is used in making ink, selling sometimes at 12 annas per ser, and its leaves and twigs are used as fodder in times of scarcity. The people say that there were hardly any *kíkar* trees in the district 50 years ago; now it is pretty common. The variety with close ascending branches, called *Kábuli kíkar* (acacia cupressiformis) is found here and there. The *babúl* (acacia Jacquemonti), which is very like the *kíkar* but does not attain the size of a tree and has generally more numerous yellow globes of sweet-scented flowers, is also found in places. The *rohera* (tecoma undulata), with its numerous large bright orange-coloured flowers, is a beautiful tree when in full bloom. The *farásh* or *pharwán* (tamarix articulata) is common in the jungle of the Ghaggar valley near Rániá. A number of *sirín* or *siris* trees (albizzia lebbek) have been planted with success, especially near Fázilká, and the *táli* or *shísham* (dalbergia sissoo), one of the most useful of trees, has been propagated near Sirsá and elsewhere on roads and village ponds. So has the *nímb* (melia Indica). The *ber* (zizyphus jujuba) was largely planted by the Customs authorities along their Line, and has spread into the neighbouring villages and fields, where it is now pretty common, as it is useful for its fruit and grows easily in dry soil, though the best fruit-trees grow in gardens on irrigated land; grafted *bers* sell in Fázilká at from one to two annas a ser and the ordinary *bers* at from ¼ to ¾ annas a ser when fresh, and from one to two annas a ser when dry; they are exported sometimes towards Bíkáner. The *sohanjna* or horse-radish tree (moringa pterygosperma) is pretty common on wells in the Satlaj valley, where with its corky bark and white flowers it is a conspicuous tree. Its fruit is eaten and it is often ruthlessly pollarded, as this makes it give better fruit. It is propagated by cuttings planted along the water-courses, the upper end of the cutting being roughly closed with cowdung. The *lesúra* (cordia myxa) is

also grown on wells near the Satlaj, partly for its fruit. The castor-oil plant, *arand* (ricinus communis) is also found planted near wells. In the Dry Tract near most villages may be seen one or two specimens of the *pípal* (ficus religiosa) and *bar* or banyan (ficus bengalensis, nourished with much care by the Hindú villagers, and near the wells of some of the older villages these trees have reached quite a respectable size and are visible a long way off. Trees are still very scarce in the district and especially in the Dry Tract; but, as the people generally assert, they are much more numerous than they were when the country was first settled some 50 or 60 years ago. In the tract below the Banda, many bushes of *van* and *kair* have been cleared away to make room for cultivation, and on the Ghaggar and Satlaj at times trees have been cut down somewhat recklessly; but throughout the Dry Tract the people have taken great pains to propagate trees of the better kinds in their fields and near their villages, often carrying water from considerable distances to keep them from withering in the hot weather. Mr. Wakefield, Deputy Commissioner, some years ago gave an impetus to this laudable tendency by rewarding those men who had most distinguished themselves in planting trees, and by calling upon every village to plant and nourish a few trees of such kinds as *pípal*, *shísham*, and *farásh*. From such small beginnings arboriculture is, notwithstanding the great difficulties with which it has to contend, gradually extending, and many villages can point to respectable little plantations, often the result of constant care on the part of some *fakír* or souless villager, who thus devotes himself to the good of posterity.

Wild animals.

18. In this district, with its dry climate and general absence of water and trees, animals are comparatively scarce. Even insects are rarer than elsewhere. The most noticeable are those whose presence could be most easily dispensed with. The house-fly abounds, especially near the towns; the white ant does great damage, not only to timber and garnered grain, but to growing trees and crops; black ants are common; and ants of smaller kinds may be seen in long lines busily engaged in transporting their stores along their well-beaten tracks. Mosquitoes and sandflies do their best to make life a burden, and in the Ghaggar valley in the rains the *danki*, a large gnat, drives men and animals wild, and the villagers have often to take away their camels and cattle into the dry country to avoid its attacks. Caterpillars and worms of sorts attack the crops, and at times seriously diminish the produce. Large flights of locusts visit the district almost every year, and sometimes devour every green thing in their path. A small woolly insect does great damage to woollen clothing. Wasps, scorpions and spiders swarm in unfrequented bungalows, and the carpenter-insect may be heard boring his way through the wood-work. Beetles, moths, butterflies, and other kinds of insects are represented here. The crickets, large and small, deserve notice for their merry song; the ground beetle for the pretty patterns he traces out on the sand; and the soldier-insect, as he would be called in England, for the beauty of

of his scarlet coat of velvet. Here he is called *bírbahotti*, the lady-insect, and is believed to fall from the sky with the first rain, in company with the earth-worm (*kainchwa*). After rain too a small snail with a narrow shell (*khoga*) is found in numbers on the ridges of earth which mark the field-boundaries. Snakes, both venomous and harmless, are rather common, especially in the moist lands of the Ghaggar valley, where they are said to swarm on the raised embankments which divide the flooded rice-fields from each other. Among the venomous snakes may be mentioned the cobra, the *karait* and the *afí*, a little viper that makes a peculiar rasping sound by rubbing his folds backwards and forwards against each other. The house-lizard catches insects on the wall; and the lively little field-lizard, disturbed from his sleep in the sun, scuttles out from under one's horse's feet. One of the most characteristic animals of the Dry Tract is the *sándá*, a large lizard with spikes in its tail, which is very common in the large tracts of uncultivated prairie-land. It is a favourite article of food with the lower tribes, who roast and eat it and say its flesh is delicious and tastes like a potato. Whole families of Báwariyas come south in the rains for a lizard-hunt, and may be seen returning laden with baskets full of their game, which live for days without food and thus supply them with a succession of fresh meat. The lizard has a soft fat body and a broad tail with spikes along each side. He lives on grass, cannot bite severely and is sluggish in his movements so that he is easily caught. He digs a hole for himself of no great depth, and the simplest way to catch him is to look for the scarcely perceptible air-hole and dig him out; but there are various ways of saving oneself this trouble. One, which I have seen, takes advantage of a habit the lizard has in the cold weather (when he never comes out of his hole) of coming to the mouth for air and warmth. The Chúhra or other sportsman puts off his shoes and steals along the prairie until he sees sign of a lizard's hole. This he approaches on tiptoe, raising over his head with both hands a mallet with a round sharp point and fixing his eyes intently on the hole. When close enough he brings down his mallet with all his might on the ground just behind the mouth of the hole, and is often successful in breaking the lizard's back before he awakens to a sense of his danger. Another plan, which I have *not* seen, is to tie a wisp of grass to a long stick and move it over the hole so as to make a rustling noise. The lizard within thinks, "Oh, here is a snake, I may as well give in," and comes to the mouth of his hole, putting out his tail first that he may not see his executioner. The sportsman seizes the tail and snatches him out before he has time to learn his mistake. The narrow-nosed crocodile, *sansár* or *náku*, is common on the Satlaj, where he may be seen basking on the sand banks. He is especially the prey of a low tribe called Mor, who live in boats on the river and make their diet off fish and crocodiles which they catch in nets and sometimes shoot. It is said that the crocodile flees before the Mors, whom he can smell a long way off: I can quite believe it. Fish of different kinds are found in the Satlaj and in the pools left by the Ghaggar. They are caught sometimes in an ordinary

draught net and sometimes in a circular net with a rope attached to the middle and weights round the side. This is thrown so as to spread out in the air and fall extended on the water, sinking to the bottom so as to enclose any fish that may happen to lie within its range. The rope is then hauled in and the weights keep the edges of the net down, and with the aid of strings attached to the rope make them close together so as to hold whatever is inside. Of birds the house-sparrow is common enough to be a nuisance. Large flocks of a small bird, the *sarágá*, visit the district in the cold weather, but do not breed here; they do great damage to the crops and are said to be yearly increasing in numbers and in their ravages. The weaver bird (*bayá*) builds his curious hanging globular nest on the *kíkar* trees in the Ghaggar valley; he is popularly supposed to build beside his nest a swing hanging from some bough in which he and his mate rock in the breeze, and when it gets dark he catches a firefly or two and sticks them with mud to the inside of his swinging bower to light it up. Some of their half-built nests with mud sticking to the sides give colour to the story, but I have not seen one so lighted-up and in full swing. The screech of the *maina* and green parrot may be heard where there are trees, the dove may be seen quarrelling with his mate, the blue pigeon is not uncommon, the crow is everywhere, and the great black raven, with his hoarse voice and handsome coat of darkest hue, appears singly or in pairs. More rarely a bird of brighter plumage or sweeter voice makes its appearance. The peacock is found half domesticated, but is not so common as elsewhere; the Hindús regard it as somewhat sacred. Hawks, kites and vultures are not uncommon, and the *sáras* and other long-legged birds are now and then seen. The white paddy-bird is pretty common in the Ghaggar valley, and great flocks of the blue coated *kunj* visit the district in the cold weather, and may be seen watchfully feeding in the fields on their favourite food the melon, or hastening back in V-shaped flight to roost near the river for the night. Other water-fowl, including wild-duck of various kinds, are common on the rivers. The grey partridge is found chiefly in the Ghaggar valley, and the black partridge on the Satlaj, where it is caught sometimes by snares on the ground, sometimes by means of decoy-birds. Quail visit the district, but rarely and in small numbers. The small sand-grouse (*Bhartíttar*) is numerous in the Dry Tract, and breeds in the district. The large sand-grouse (*Káshmíri Títtar*) and the florican (*tilaur* or *chhotí tughdár*) make their appearance in large numbers in the cold weather and disappear on the approach of heat. The great bustard (*gurain* or *bari tughdá*) sometimes wanders across from the prairies of Bíkáner and breeds about Chautála and Abohar. It is ordinarily a shy bird, but is very bold in defence of its young, sometimes allowing itself to be knocked over by a blow from a stick rather than leave them. Field-rats are common, and the ground is often honey-combed with their holes. The grey striped squirrel is seen only where trees are numerous. The mungoose, the fox and the wild cat are found in the jungle. Hares are common in the Ghaggar valley. Jackals are found only in small numbers near the towns. Wolves are often brought

in for the reward, but do little damage in the district. There used to be wild pig on the Ghaggar and Satlaj, but there are now no pig, either wild or domesticated, in the whole district. Tigers were found on the Satlaj till some 30 years ago, and the people there tell exciting tales of the prowess of Mr. Oliver in the tiger-hunts he used to organise. The wild ass (*gorkhar*) disappeared about the same time from the prairies of the Dry Tract as the country became colonised. One was caught near Abohar about 30 years ago and given to Mr. Oliver, but it was very violent and nothing could be done with it. Sometimes a stray *nílgáe* or *pára* (hog deer) finds its way into the district. I have seen one or two animals of both kinds. Large herds of black buck (*hirn* or *mirg*), sometimes hundreds in number, migrate northwards from Bíkáner in times of scarcity, and there are always a good many in the district; but the most common of all large game are the ravine deer (*chikára*,) small herds of which are constantly to be seen. They seem to avoid the irrigated land of the Ghaggar and Satlaj. They do great damage to the standing crops, and immense trouble is taken to protect the growing corn from their ravages, especially in and near the Bishnoi villages and on the Bíkáner border where, owing to the protection given them by the Bishnoi villagers and the Bíkáner authorities, they literally swarm. Usually the fields of growing spring crops are surrounded by a continuous fence of bájra stalks, with half-gaps here and there to invite the unwary antelope to try a jump, which will land him in a deep pitfall (*pharn*) on the inner side, concealed by a covering of grass. If bájra stalks are scarce, a string with feathers and bits of cloth to flutter in the wind is tied on stakes all round the field, bogies (*darná*) are made to do duty during the day, and at night a watchman keeps guard over the crops and by hideous cries attempts to frighten off the marauding herd. But long impunity has made them bold. It is only a few men who have been able to persuade the Deputy Commissioner to grant them a gun-license which allows them to sit patiently with their rude guns in ambush in a small round hole dug in the ground, and get an easy shot at the antelope which come to attack their crops. The district is considered a good one for sport, and it is not unusual for an English sportsman from Firozpur or Multán to spend a few days in the neighbourhood with his tent and gun. There are always plenty of antelope to be had, and in the cold weather sand-grouse, *kunj*, and florican are generally abundant, while a few hares, partridge and wild-duck may turn up, and if the sportsman is lucky, he may come across a great bustard.

Chapter II.—History.

Remains of former habitation.

19. Of the early history of this tract of country there is but little to record. There are still to be found scattered throughout the district the remains of old settlements, the only permanent sign of former human habitation being the mounds of earth formed by the crumbled mud walls of the deserted villages, and the pieces of red earthen

vessels or burnt bricks, the work of the potter's hand, with which they are strown. As such remains would in a country and climate such as this last practically for ever, we have here the marks of Settlements which rose, flourished, and perished at different periods for probably thousands of years. It is then certain that these *thehs* (or *thehrs* or *thehrís*), as they are called, were never all or nearly all inhabited at the same time, and the number and appearance of these remains proves clearly that the district taken as a whole was never at any time nearly so thickly inhabited as it is now. Altogether there are some 600 such *thehs* in the district. In the great Dry Tract they are mostly only very slight mounds, and their insignificant size and the small quantity of potsherds found about them show that they can never have been large villages; most probably they were inhabited only from time to time by wandering herdsmen, or for a short period by a small settled population. Almost the only exceptions are Abohar, Malaut, Síto and Búbshahr, where the high mounds mark the sites of old forts, among which Abohar was a place of considerable size and strength. There are almost no such remains in the west of the Dry Tract about Abohar, and immediately below the Danda; and as a population could not have lived there for any time or in any numbers without leaving such remains, which would still have been visible, it may be safely asserted that that part of the district was never at any time previous to the beginning of the present century anything but an almost deserted prairie. Probably the immediate neighbourhood of the Satlaj may have been thickly peopled at some former time, but the remains of any such old settlements have been washed away by the river in its changing course. To the east of the Dry Tract, where it approaches the Ghaggar, the remains are more numerous, but still of no great size or importance, and the same may be said of the sandy tract south of the Ghaggar valley; but even of these tracts it may, judging from the remains, be safely said that the population was probably never so numerous or prosperous as it now is. All the interest of the question gathers about the Sotar valley which bears and seemingly must always have borne the united waters of the Márkanda, Chittáng, Saraswati (Sursooty), Ghaggar and indeed of almost all the torrents which flow from the hills between the Jamna and the Satlaj. I have already described this wide valley with its rich clay soil and given reasons for believing that while it probably at one time was watered by a much larger stream than now flows intermittently along it, it can never have been the channel of a really large river. With sufficient irrigation the soil is rich enough to support a numerous population, and the size and number of the *thehs* which stud the valley show that at one time the population must have been important in numbers and in prosperity. Unlike the insignificant heaps which mark the sites of old hamlets in the dry country, the *thehs* here are great mounds of earth often of considerable circumference and over 50 feet in height, which rear their bare red summits high above the surrounding level country and form a conspicuous feature in the landscape. Some have supposed that they were purposely made so high in order to escape the inundations to

which the valley was subject, but they are very much higher than could ever have been necessary for this purpose. Some of them, as for instance the great mound of Sirsá, may have been raised to a height in order to increase their strength as fortifications. But I am inclined to think that much of their height was unintentional and due to the unconscious labours of generation after generation of villagers who built their houses of sun-dried mud on the crumbled walls of the houses similarly built by their ancestors. The same process may be seen going on now. Every year bricks of sun-dried mud are carried in numbers into every village to repair the damage done by the rain, and although some portion is annually washed away again yet, especially under the scanty rainfall of this tract, the quantity of mud so washed away must be much less than the quantity brought in, and so long as the village remains inhabited its site must gradually rise higher and higher above the level of the surrounding country. The advantages of height though accompanied by some discomforts would combine with the reverence for custom of the people to prevent them from leaving the old village site until finally driven from it by war and famine. The deserted mounds have, owing to the hardness and tenacity of the Sotar soil and the scantiness of the rainfall, been very little changed by the lapse of years, but here and there the furrows made in their sides by the rain or artificial excavations have shown that they consist of earth interspersed with bricks, potsherds and bones, just such *débris* as is now being accumulated under the villages of the present day. The earth washing away leaves the potsherds on the surface and these give a reddish appearance to the *thehs*. Many of the remains have the appearance of having been burnt; this may be due to conflagrations in the old times of invasion, but possibly is simply due to the fact that earth and other permanent remains, which had been exposed in the ordinary course of domestic life to the action of fire, would last longer and show signs of having been burnt. In many of these mounds good burnt bricks have been found and have been appropriated by the men who have within recent times founded villages near them, to build good comfortable houses for themselves. Only very rarely have small pieces of red sandstone or marble been found. Sometimes coins and inscribed bricks have been discovered in the larger mounds, but no certain information of much interest seems to have been derived from them. These remains however and the marks of old embankments and irrigation cuts, show that the Sotar valley must have been for generations inhabited by a numerous and prosperous population in a considerably advanced stage of civilisation. According to the present inhabitants, similar remains exist all along the Sotar valley for a long way both above and below the district, extending westwards probably as far as the Panjnad. The forts of Bhatner and Anúpgarh in Bíkáner are on mounds of this description on the banks of the valley. Most of the mounds in this district must have been deserted many generations ago, for local tradition, even that of the Ráins who claim to have lived here for 400 years, cannot tell who the men were who inhabited them.

20. Turning now to written history, the first notices of this tract of

Hindû Legends of the Saraswati.

country are connected with the river Saraswati, the waters of which must undoubtedly have flowed along the Sotar valley, as do the surplus waters of the Sarsuti now. As uniting in one stream all the torrents between the Jamna and the Satlaj and thus forming the only river in the great dry plain which is the watershed between the Ganges and the Indus river-systems, the Saraswati must always have seemed of great importance to those who dwelt in this plain or had occasion to cross it. It is mentioned in the Rigveda as "she who goes on pure from the mountains as far as the sea." This seems hardly enough ground for the hypothesis some have adopted that the Saraswati at one time had a separate course all the way to the sea, and it seems certain that its surviving waters must have joined the Panjnad along the Sotar valley. But even in very early times the volume of its stream must have been comparatively insignificant, for in the Mahábhárata we have the tale of how, at the desire of the Bráhman saint Utathya whose beautiful wife the god Varuna had carried off from his hermitage, the river obeyed his prayer, "Saraswati, disappear into the deserts and let this land deserted by thee become impure;" and the other old legend which states that Saraswati, the daughter of the god Mahádeo, fleeing from her father who pursued her in a drunken fit, dived underground whenever she saw him gaining upon her, and the river which sprang up in her track still disappears under ground at the selfsame spots, and finally by an underground passage joins the sacred Ganges and Jamna at Pryág near Allahábád. The more recent story of "the lost river of the Indian desert" may be classed along with these as a myth, for probably the only large stream which ever crossed this tract flowed along the Sotar valley and was never a river of any size. It is misleading to say that the Saraswati or Ghaggar "loses itself in the sands of the Bíkáner desert," for it hardly comes in contact with sand at all; it flows along the hard clay of the Sotar valley and dries up almost more by evaporation than absorption in its own alluvial bed. According to Manu, the Saraswati formed one of the boundaries of "the tract of land which the sages have named Brahmávartta, because it was frequented by the gods," one of the earliest seats of Aryan civilisation in India, a sacred land whose usages were prescribed as the guide of all Bráhmans.

Notices of the tract previous to the 18th century.

21. The Sarsuti as the only river of importance between the Satlaj and Delhi is repeatedly mentioned in the accounts of the invasions of India from the north-west. In A. D. 1191 Shahábuddín of Ghor after capturing Bhatinda was defeated on its banks by the Rájah of Delhi and compelled to retreat; but in the next year he inflicted a great defeat on the Hindús on the banks of the same river, and among the forts mentioned as having fallen into his hands is that of Sarsuti, which must have been the present Sirsá. The great mound at Sirsá was surrounded, so late as 1837 A. D., with strong high walls of burnt brick and bastions similar to those of Bhatinda and Bhatner, and must, like them and the similar fort of Abohar

at the other corner of the "quadrilateral," have been a fortress of great strength. The size of the present mound shows it must have at one time been inhabited by a large population. About 1341 A.D. Ibn Batuta, the traveller from Tangiers, mentions that travelling from Ajudhan (now Pákpattan in the Montgomery district) to Delhi, he had to cross a desert to Abohar, "the first city in Hindustán" and then came to Sarsutí (the present Sirsá) of which he says "it is large and abounds with rice, which they carry hence to Delhi." About A.D. 1360 Fíroz Shah Tughlak, after building Hissár and Fathábád and making the canal which afterwards developed into the present Western Jamna Canal, is said by his historians to have built Firozábád Hárni Khera and drawn a canal from the Kagar, passing by the walls of Sarsutí to this city. The village of Firozábád near Rániá is said by the people to have been named after him and to have been once a large town, and there is a village called Hárni with some old *thehs* a few miles farther down the Sotar; but there is no sign or tradition of any such canal as Farishta mentions, unless it was then that the waters of the Ghaggar were diverted at Phúlad from the Sotar valley into their present narrow channel (the Nálí) which joins the Sotar valley again just above Firozábád. In 1398 A.D., Tamerlane (Amír Taimúr) after crossing the desert from the Satlaj to Bhatner, marched eastwards along the Sotar valley, encamping at a place called Kinár-i-hauz (bank of the tank) which may refer to the Annakai Chhamb or lake below Rániá, and the next day marched by Firoza (evidently Firoz Sháh's lately founded town) to Sarsutí or Sirsá, which his historians describe as a large and populous town. Its Hindú inhabitants, "eaters of hog's flesh," fled at his approach, but were pursued and cut to pieces in considerable numbers with the loss of only one man to Taimúr. After resting one day at Sarsutí, he marched on towards Delhi by Fathábád, plundering and destroying everything on his way. Sarsutí had been placed by Firoz Sháh in the administrative division of Hissár Firoza, but in the troubled times that followed Taimur's invasion Sirsá can hardly have been under any settled Government. We next hear of it a century and a half later, about the end of Humáyun's reign about 1550 A.D. when Ráo Kalián Singh of Bíkáner, being driven out of Bíkáner itself by the Jodhpur Rájah, made Sirsá his head-quarters for a time, until the defeat of his enemy at Ajmir by Sher Sháh enabled him to return to Bíkáner. Akbar established his authority over this part of the country and included it up to a little beyond the Ghaggar valley in his Sarkár Hissár Firoza, of which one of the Dastúrs was named Sirsá. Of the Mahálsincluded in Sarkár Hissár Firoza, the following are identified as comprising tracts of country now in the Sirsá district or close to its border:—(1) Fathábád, so called from the town on the Sotar valley just before it enters the Sirsá district from Hissár, founded by Firoz Sháh Tughlak; (2) Bhattu, south of Fathábád and east of Darba may have contained some villages now in Sirsá district; (3) Bhangíwál, probably wrongly spelt for Bahniwál, the sandy tract to the south of the Ghaggar valley, more recently called pargana Darba, and inhabited now, as then, chiefly by Bágrí

Játs of the Bahniwál clan; (4) Sirsá itself, which must have comprised the Sotar valley about the town of Sirsá; (5) Bhatner, so called from the fort of Bhatner or Hanumángarh, in the Sotar valley some 45 miles west of Sirsá, now in Bíkáner territory; this mahál must have comprised part of the Sotar valley afterwards included in pargana Rániá in the Sirsá district; (6) Púniyan, called after a clan of Bágrí Játs of which there are some in this district, is now in Bikaner, but may have included a portion of the country now within the boundaries of Sirsá. Probably the great Dry Tract was then (about 1600 A.D.) almost uninhabited, and it does not seem to have been included in any administrative division. In 1599 A.D. Akbar, after the conquest of Gujarát, granted to Ráo Rai Singh of Bíkáner a *jágir* which included Bhatner and probably part of the present Sirsá district; and for some time this tract remained under Bíkáner, but after the break-up of the Delhi Empire soon after the year 1700 A.D., it was for a century under no settled government.

Condition of the tract during the 18th century.

22. From the records of Bíkáner on the one side and Pattiála on the other, and from the traditions of the people themselves, it appears that during the 18th century the Sotar valley was held by Musalmán tribes claiming a Rájput origin, of whom the chief were Joiyas about Bhatner and Bhattis about Rániá, Sirsá and Fathábád. The Bhattis were for a time the most important and powerful tribe in this neighbourhood, and the name Bhatti was then, and is still, applied not only to the Bhattis proper, but to Joiyas, Chauháns, Cháhals and other Rájput tribes quite distinct from the Bhattis, and even to Musalmán Jats; and the country came from them to be called Bhattiána, a name which it retained until 1857. These Musalmán tribes lived a pastoral and predatory life driving about their cattle in search of pasture and carrying off their neighbours' cattle when they had a chance. Their hand was against every man and every man's against them. The Bíkáner annals tell of incessant struggles of the Hindú Rájputs of that State with the Joiyas and Bhattis for the possession of Bhatner and sometimes of Sirsá; and the chronicles of Pattiála are full of raids and counter-raids between the Sikh Jats and their hereditary foes the Bhattis. In 1731 A.D., Ala Singh, the founder of the Pattiála State (still known to the Sikh Jats as Ala-ká-Ráj, or Ala's kingdom), commenced a struggle with the Bhatti chiefs of Bhatner and Fathábád which lasted for his lifetime, and in 1774 A.D. his successor Amar Singh made an expedition against the Bhatti chief Muhammad Amír Khán, took from him Fathábád, Sirsá and Rániá, and became master of almost the whole country now included in the Sirsá district. Under Ala Singh and Amar Singhthe Sikh Jats established some villages along what is now the north-east border of the district, but in 1783 A.D. the great Chálísa famine (of 1840 Sambat) drove them back and laid the whole country waste. The great herds of cattle which roamed over the prairie died of thirst and starvation, and numbers of the population must also have died of famine. The survivors fled to more favoured tracts and the

town of Sirsá was wholly deserted. Only some ten or twelve of the larger villages held out, and for a time almost the whole of the Sirsá district must have been a desert. In 1799 A.D. the adventurer George Thomas, whose head-quarters were first at Georgegarh in the Rohtak district and afterwards at Hánsi in the Hissár district, established some authority over the Ghaggar valley, and allied with the Bhattis took a fort belonging to the Mahárája of Bikáner near Bhatner. On the defeat of Thomas by Bourquin at Hánsi in 1802 A.D. the whole of this tract was held to have come under the power of the Mahrattas, and in 1803 A.D. after the battle of Laswári, Sindhia by the treaty of Sirje Anjengaom ceded Sirsá along with the Delhi territory on this side the Jamna to the British.

Condition of the tract at the beginning of the 19th century.

23. At the beginning of the present century, just before this tract came within the range of British influence, it was probably even more of a desert than it had been for many hundred years previously. The scantiness and insignificance of the remains of former habitation show that the Dry Tract stretching for 70 miles between the Satlaj and the Ghaggar, can never at any previous time have been so thickly inhabited by a settled population as it now is, and the accounts of travellers and historians prove that in the time of Alexander, of Ibn Batuta, of Taimúr and indeed ever since, this tract was worthy of the name of desert. It seems certain however that at one time, probably at least as late as the period of Taimúr's invasion, the valley of the Ghaggar was a fertile tract with a flourishing population of some density. The depopulation of the country may have been partially due, as some have supposed, to a diminution in the volume of water which found its way down from the hills, but there can be little doubt that the chief cause was the want of settled government, which left the peacefully disposed inhabitants a prey to their marauding neighbours. Sirsá was too much out of the way, too near the desert, to make it worth the while of any but a strong Government at Delhi to look after it, and whenever the central authority there was weakened, the tract became subject to the rule of the strongest of surrounding chiefs, and in the struggles between them for the supremacy, life and property became as insecure as they could possibly be, and the country became deserted except by pastoral tribes living on the produce of their cattle and on what they could get by plundering their neighbours. The famine of 1783 A.D. completed the ruin. The Sikh Jats who had settled in scanty numbers along the north of the district were driven back towards the region of better rainfall to the north; the Bágrí Játs south of the Ghaggar were driven farther south to their old home of Bahádra. No grass grew for two years and the cattle which were dependent on it were almost exterminated. The pastoral tribes who had been accustomed to live on the produce of their cattle, having no stores of grain to fall back upon, perished or were compelled to migrate, and the whole tract was left a desert. It had not recovered itself when 20 years later it was nominally brought under British rule. From an enquiry made

village by village it appears that in 1800 A.D. there were in the whole of the present district only 35 inhabited villages. In the sandy tract south of the Ghaggar valley there was not then a single village. Along the Ghaggar valley itself there were only 11 villages (the chief being Rániá) inhabited by Musalmán Bhattis, Joiyas, Tunrs and Chauháns with a few Ráins. Away on the bank of the Satlaj there were 12 small villages of Bodlas, Wattus and Chishtís, who had crossed from the other side of the river a few years before; and in the great Dry Tract between the two rivers there were only 12 inhabited villages, almost all along the extreme north-east border, held by Sikh Jats, the pioneers of the immigration which soon after set in. One could then go for 70 miles in a straight line across the prairie without coming near an inhabited village.

Tracts of country as known to the people.

24. The great divisions of the country in this neighbourhood known to the people are as follows—(for the sake of distinction I give the names of some tracts, no part of which is included within the Sirsá district):—

(1.) Hariána or the Bángar or the Des means the tract to the east of Hissár, and includes the east of the Hissár district and great part of Rohtak. Near the Jamna the word Bángar is used for the uplands in contradistinction to the Khádar or riverain tract. Hariána is called the Des (country) seemingly as being *the* country of the Játs. Those belonging to that tract are called by the Játs of Sirsá Deswáls, or "men of *the* country." No part of the Sirsá district lies within Hariána, which does not come much further west than Hissár. Sometimes the Bahniwál Játs about Darba try to make themselves out Deswáls, but they are really Bágrís.

(2.) The Nálí or the Sotar or Sot includes all the Ghaggar valley and the country immediately adjoining it. Both names refer especially to the hard alluvial soil already described, and are applied by all classes of the people to this valley, not only within the district but for a long way both above and below it.

(3.) The Bágar (quite a different word from Bángar and spelt with a different *r*) is the dry sandy country stretching south of the Nálí or Ghaggar valley to Bíkáner where it meets Márwár (the Jodhpur and Jaisalmer country). It stretches east nearly to Hissár and west nearly to Bháwalpur. The people who originally belong to it are called Bágrís and are distinguished for the broadness of their speech and the slowness of their intellect. The Sikh Jats and the Musalmáns call the Bágar the Thalí or sandy desert. It includes also the tract north of the Ghaggar valley after it leaves the district. Its boundary in this direction almost coincides with the south-west boundary

of the district. Indeed the Bágar is almost conterminous with the territory now ruled by the Bíkáner Mahárája, but is considered to include those neighbouring parts of British territory which are now inhabited chiefly by Bágrís.

(4.) The Rohí or Jangal is the great Dry Tract between the Ghaggar and Satlaj valleys, what was to the Sikhs until lately as the prairie, or backwoods, or bush was to the early colonists in America and Australia. Its boundaries south-west and north-east are almost the same as those of the district. Along the south-west it meets the Bágar or Thalí, and along the north-east it meets the Málwa or old-settled dry country of the Sikh Jats Cis-Satlaj. Sometimes the Málwa is considered to include that part of the Jangal or Rohi which is now inhabited by Sikhs of the Málwa proper. From that point of view the old Jangal or Rohi tract may be said to have been divided between the Málwa and the Bágar, which are now conterminous. The part of the Málwa bordering on the Sirsá district is sometimes spoken of by the Sikhs as Aláká from Ala Singh the founder of the Pattiála power, or Sábo from a still earlier leader of the Siddhu Barárs who held a large Tappa round Bhatinda. Beyond the Málwa to the north, the country on this side the Satlaj near the river in the Ludhiána district is called the Pawád, which is described as the country where sugarcane grows. The Musalmáns of the Satlaj call the Rohi the Utár or uplands.

(5.) The Nai or Nadí (=the river-country), or Hitár (=the low-lands) is the tract below the Danda all along the river Satlaj. These names are always in the mouths of the Musalmáns of that tract.

Border raids.

25. At the beginning of the present century the settled population was extremely scanty and there was almost no cultivation. The valley of the Ghaggar was covered with a dense growth of *kair* and *van* shrubs which also covered thickly the tract below the Danda near the Satlaj and patches of hard ground here and there throughout the Dry Tract. The land near the Satlaj itself was a thick jungle of tamarisk (pilchí) and *sar* grass, full of pig, hog-deer and tigers. And the whole of the great Dry Tract, and of the tract south of the Ghaggar valley, was a rolling prairie of long grass with hardly a tree, except a few *jands* round some hollow in which the water gathered in the rains and stood for some time. Over this prairie roamed wandering pastoral tribes, almost all Musalmán Rájputs, Bhatti, Tunr, Joiya, Chauhán, Panwár, &c., driving their large herds of cattle hither and thither in search of grass and water. The Sikh Jats of the Málwa too, were in the habit of driving their cattle southwards into the prairie for pasture, and sometimes the Bodlas, Chishtís and Wattus of the Satlaj valley drove their herds into the uplands or, according to season, the Tunrs and

Panwárs of the uplands drove their cattle into the Satlaj lowlands for pasture. The scantiness and uncertainty of the rainfall made this life extremely precarious. The greatest difficulty was to get drinking-water. There were no masonry *(pakka)* wells throughout the tract. The water collected in the natural depressions dried up in the hot weather, and the only resource left was to dig unbricked (*kachcha*) wells, a work of some labour and difficulty, for the underground water-level is more than 150 feet below the surface in a great part of the tract, and the water is generally too brackish to drink except close to the ponds where the percolation of the rain-water makes the water of the wells sweet. When the rains failed, not only did the grass dry up and the ponds became exhausted, but the water of the *kachcha* wells became brackish and undrinkable, and the cattle died in hundreds of thirst and starvation, while the herdsmen who had nothing to support them except the flesh and milk of their cattle and the berries and seeds which grew of themselves in the prairie, were reduced to great straits. In such times no wild animal could live in this tract and not even a bird was to be seen. I am assured by the people that even in ordinary hot seasons they did not give their cattle water oftener than once in three days, and that if the weather was not excessively hot and dry the cattle were often eight days without water. This Debateable Land was the scene of many border raids and forays. The Bhattis and Tunrs of the Sotar valley, the Rájput Thákurs of the Bágar (Bíkáner), the Wattus of the Nai (Satlaj) and the Sikh Jats of the Málwa (Pattiála), often made dashes into and across the prairie, carrying off as many cattle as they could lay hands on. There was a regular system on which these raids were conducted. Sometimes one or two men would steal off towards the encampment of their foes and endeavour to carry off by stealth a few of their cattle. These were called simply *chor* (thieves). Or a band of six or ten armed men would make a dash upon some grazing herd, drive off its armed herdsmen and carry away the herd by violence. Such a band was called *dhár* and the members of it *dhárvi* (robbers, words corresponding to the Hindi *dáka* and *dákú*, *i.e.*, dacoit). But sometimes a leader of note, such as the Bhatti chief of Rániá, would organise a large expedition of two or three hundred men, some of them mounted on ponies, and take them for a foray fifty miles or more into the enemy's country, carrying off their cattle and other spoils by sheer force. Such a raid was called *katak*. When those attacked raised the country and pursued the raiders, the pursuing force was called *vár*, and it was the rule for the *katak* to divide into two parties, one to drive off the spoil and the other to keep back the pursuers. The men who were most successful in these exploits were most honoured among their fellows, and many tales are told of the skill and prowess displayed in border raids by the fathers and grandfathers of the present generation. The arms carried were swords (*talwár*), matchlocks (*toredar bandúk*) and sometimes short spears (*barchhi*); but the characteristic weapon of the country was the *sela*, a heavy spear sometimes twenty feet long, with a heavy iron head (*phal*) some three feet or more in length, and a

bamboo handle. This was wielded with both hands by men on foot. (Many such spears were seized in the Mutiny, some villages contributing a cartload.) There were other dangers too. Prairie fires were common, and when the grass was luxuriant and the fire got head before the strong hot wind it was difficult to stop it, and sometimes to save themselves and their cattle the herdsmen had recourse to the expedient of starting a new fire to burn up the grass near them before the great fire should overtake them. But so rapidly did it sometimes come on that men and cattle were burnt to death. There is a tradition of a great prairie fire which about the year 1700 A.D. began at Abohar and swept across 70 miles of prairie to the Sotar valley at Fathábád; and of another still greater in 1765 A.D., which began at Láleke near the Satlaj and burnt the whole country as far as Pánípat near the Jamna, a distance of some 200 miles! Nor was the desert free from supernatural terrors. During these prairie fires and in the dead of night, the lonely herdsmen used to hear cries arising from the ground and shouts of "*már már*" (strike, strike), which were ascribed to the spirits of men who had fought and been killed in former border raids. Such supernatural sounds were heard by the early settlers within the last 50 years, and Mr. Oliver tells that when he first came to the district in 1844 A.D. people were afraid to travel from Sirsá to Fázilká without forming large parties, for fear of encountering the supernatural enemies who frequented these uninhabited tracts.

Conquest and annexation of the Sotar valley.

29. Such was the condition of the country when it came under British rule by the treaty of Sirje Anjengaom in 1803 A.D., but for some years after that date it was not directly governed by British Officers. A military outpost was maintained at Hánsi and the Sotar valley was left to the rule of the Bhatti chiefs. The first member of this family who acquired much influence was Muhammad Amír Khán, who gave his daughter in marriage to the celebrated Najíbuddaula and was appointed Názim of Hariána with the title of Nawáb towards the end of the last century. He was defeated in 1774 A.D., by Amar Singh, the chief of Pattiála, but after the famine of 1783 A.D. recovered the Sotar valley from Bhatner to Fathábád, and dying some years before the conquest of the Mahrattas by the English in 1803 left this territory to his two sons, Kamaruddín and Khán Bahádur Khán, who soon after divided it; Khán Bahádur Khán taking Fathábád, and Kamaruddín taking Sirsá and Rániá, in which he was soon after succeeded by his son Nawáb Zábta Khán. These chiefs though nominally under British rule continued their traditional life of raiding and plunder, and at last a British force in 1810 defeated Khán Bahádur Khán and expelled him from the tract about Fathábád which was then brought directly under the control of British Officers. Nawáb Zábta Khán of Rániá gave in his submission and was for the time left in possession of Rániá and Sirsá; but, as he continued to encourage raids on his neighbours, a British force was again sent against him in 1818 A.D., and his estates were confiscated.

The whole of that portion of the Sotar or Ghaggar valley now included in the Sirsá district then came for the first time directly under British management. From the most prominent section of its inhabitants it was known as Bhattiána or the Bhatti territory. It was included in the Northern District of the Delhi territory, and after 1820 A.D. formed part of the district of Hariána or Hissár, under whose Collector it remained until 1837.

Encroachments by neighbouring States.

27. The country was beginning slowly to recover from the effects of the famine of 1783, and British influence had already made itself felt by reducing the number of border raids and thus making life and property more secure. In 1820 the number of settled villages in the Sotar valley had increased to about 30, and on the Satlaj about 20 had been founded, but there was as yet no settled population in the sandy tract south of the Ghaggar, and in the whole of the great Dry Tract only 36 villages had been founded, all of them by Sikh Jats pushing forward again from the Málwa south-westwards into the Jangal or prairie from which they had been driven by the famine of 1783 and the raids of the Bhattis. That it was the want of settled Government that kept the country in its desolate state was shown by the rapidity with which it began to be colonised so soon as the Bhattis of the Sotar, who had been the principal source of disturbance, were kept in check by British power. A strong outpost was established at Tíbí between Rániá and Bhatner, and the latter fort was left to the Bíkáner Mahárája who had finally gained possession of it from the Bhatti Nawáb Zábta Khán in 1805. An attempt was made by the British Government in 1819 to establish a sort of military colony in the newly conquered tract by giving grants of waste land in the Sotar to the officers and men of nine cavalry regiments disbanded after the Pindári campaign, but the attempt was only partially successful, for these *Sukhlambars*, as they were called, were mostly Hindustánis of the districts beyond the Jamna and did not like the idea of settling in the backwoods. Few of them took up their grants at once, and the descendants of many still live beyond the Jamna and arrange for the cultivation of their lands through tenants. But the inhabitants of the surrounding tracts were not slow to take possession of the unoccupied prairie, and as boundaries were ill-defined and at first only the Sotar was directly managed by the British authorities, the chiefs of the surrounding States took every opportunity to urge forward their subjects into the No-man's Land that they might lay claim to possession of as large a portion of it as possible. Within ten years after the Ghaggar valley came into the possession of the British, the sandy tract to the south of it, until then uninhabited, had been fully occupied by Bágrí Játs chiefly of the Bahniwál clan, whose ancestors had held it in Akbar's time and had been driven back to Bahádra in Bíkáner territory. The Bíkáner Rájah claimed this tract as part of his territory, but in 1828 Mr. Edward Trevelyan who was sent to settle the dispute decided that it had not belonged to Bíkáner, but was directly under the Delhi

Government and had afterwards been held by the Bhattis. This tract consisting then of 40 villages, and known from its chief village as pargana Darba (corresponding with the present Bágar Assessment Circle) was thus finally declared to be British territory. At the same time the claim of the Bíkáner Rájah to the Tíbí villages between Rániá and Bhatner was rejected.

Boundary dispute with Pattiála and annexation of the Dry Tract.

28. The great Dry Tract (Rohi or Jangal) stretching north-west from the Ghaggar to the Danda, or old bank of the Satlaj, was not for some time brought under British management, and the Sikh Jats of Pattiála, some of whom had traditions of having inhabited villages in this tract before the famine of 1783, lost no time in re-occupying it. Among the first villages to be settled was Guda some 14 miles north of Sirsá, which was colonised by Barár Sikh Jats from the north in 1819. In 1821 the Pattiála chief, seeing his opportunity, planted an outpost of twenty soldiers in the village and set about encouraging cultivators from the interior of Pattiála territory to colonise the waste. Village after village was founded by Sikh Jats under his authority all along the north-west border of the Jangal tract. In 1827 the Sikh Jat chiefs of Pattiála, Kaithal, Jhumba, Arnauli and Shahzádpur joined to take possession of still more of the Debateable Land, and some of them established a small force at Abohar, right in the middle of the waste, which had formerly been a strong fort but had been long wholly deserted and was then inhabited only by a few Musalmán Tuur Rájputs and other herdsmen, most of whom had come only a year or two before from the neighbourhood of Fathábád in the Sotar. According to the descendants of those men, at first the three chiefs of Arnauli, Jhumba and Kaithal took possession of the country in three equal shares, and each maintained a separate fort with a separate garrison at Abohar. But quarrels arose, and the Jhumba chief made over his third of the country to the Pattiála Mahárája. They show an order from Bháí Udesingh of Kaithal dated in 1828, authorising them to settle in Abohar, and another of similar import from the Pattiála chief dated in 1831. The fort at Malaut was held by a force belonging to the Jhumba chief. The Bágrí Játs in this direction made much slower progress than the Sikhs, but they too began to push northwards, and in 1832 the village of Chautála was founded by subjects of the Bíkáner Rájah. The attention of the British Government had at times been directed to the unsettled state of the frontier, but it was not until 1835 that it was determined to put a stop to these encroachments by fixing the boundaries of the British territory. Mr. Ross Bell, Collector of Hissár, was directed to decide the question on the principle of maintaining the status of 1818, adjudging to Pattiála whatever territory it held in that year and to the British Government the remainder of the territory which was held to have been then under the Bhattis and to have become by right of conquest a part of British territory. He found that from the famine of 1783 until the year 1821, three years after the annexation of the

Bhatti country to British territory, the Sikhs had held no portion of the Dry Tract between the Ghaggar and the Satlaj south of the present Sirsá-Pattiála boundary, and adjudged the whole of it to the British Government on the principles laid down. At the time of his investigation he found in this part of the Dry Tract, which was then included in parganas Sirsá and Rániá, 133 inhabited villages, of which 91 were held by Pattiála and the remainder by Kaithal, Nábha, Jhumba, Arnauli, and Shahzádpur. The whole of these, with the exception of four, he adjudged to the British Government. Mr. Ross Bell's decision was carried out in 1837, and the Rohi or Jangal tract, some 70 miles long and from 13 to 45 miles wide, comprising an area of nearly 2,000 square miles, became a part of British territory. The question was reopened in 1840 by the Mahárája of Pattiála and was not finally decided until 1856, when 26 villages were made over to him, and the Pattiála boundary finally fixed as it now stands. The tract on the Satlaj below the Danda was almost uninhabited in 1837, and was then left to the Nawábs of Bháwalpur and Mamdot, who had extended their power over it and had established small forts at Shajrána and Saidoke respectively, their common boundary being ill-defined but approximately the same as afterwards became the boundary between parganas Wattu and Bahak.

Later extensions of the boundary of the district.

29. In 1837 the tract of country thus resumed which was then divided into two parganas, Guda and Malaut, was, with the two parganas on the Ghaggar, Sirsá and Rániá, separated from the Hariána district and formed into a separate district called Bhattiána or the Bhatti territory under an officer known as the Superintendent, with powers similar to those of a Deputy Commissioner, directly under the Political Agent and Sessions Judge at Delhi and subject to the Lieutenant-Governor of the North-Western Provinces. In 1838 the pargana of Darba, the sandy tract south of the Ghaggar, resumed ten years before from the Bíkáner Rájah, was transferred from the Hariána district to the Bhatti territory. In 1844 the Wattu pargana, so called from the principal tribe inhabiting it, comprising a strip of land at the extreme north-west end of the district running down from the Danda to the Satlaj, was ceded by the Nawáb of Bháwalpur in exchange for a similar tract given him on the Sindh frontier and attached to Bhattiána which thus was made to extend to the Satlaj. This strip was acquired partly to permit of the extension of the Customs Line to the river, and partly that a Political Officer might be stationed there to watch the surrounding foreign States of Lahore, Faridkot, Mamdot and Bháwalpur. In 1847 the small pargana of Rori, confiscated from the Rájah of Nábha for lukewarmness in the Satlaj campaign against the Lahore Sikhs, was attached to the district. In 1858 the whole district of Bhattiána was, with the rest of the Delhi territory, transferred by Act XXXVIII of 1858 from the North-Western Provinces to the Panjáb Government, and has since been known as the Sirsá District. In that year pargana Bahak on the Satlaj, lately confiscated from the Nawáb

of Mamdot, was added to it from the Firozpur District. And in 1861 42 villages of pargana Rániá, the chief of which was Tíbí, were transferred as a reward for services in the mutiny to Bíkáner, whose claim to them had been rejected in 1828 but had never been forgotten by the Rájah. Since 1861 no change except those due to the action of the river Satlaj has taken place in the boundary of the District.

Former parganas.

30. The following statement shows the different parganas into which the district was formerly divided, with the number of villages in each at last Settlement (1852-63) and the number now :—

Tahsíl.	Pargana.	No. of villages at last Settlement.	No. of villages now.	Description and Remarks.
I. Sirsá ...	(1) Darba...	44	44	South of the Ghaggar valley, round the village of Darba. Partly colonised by the Bíkáner Rája and resumed from him in 1828. Transferred from Hissár to this district in 1838. Generally known as the Paintálisa = "the 45," as it formerly contained 45 villages.
	(2) Sirsá ...	71	69	The eastern part of the Ghaggar and Sotar valleys, with some high-lying villages round Sirsá. Taken from the Bhattis in 1818. The reduction in the number of villages is due to the junction of small villages into one.
	(3) Rániá ...	128	86	The western part of the Sotar valley round Rániá, with neighbouring high-lying villages. Taken from the Bhattis in 1818. In 1861, 42 villages, annual rental Rs. 14,291, were transferred to Bíkáner, leaving 86 in the pargana.
Total of tahsíl Sirsá.	.....	243	199	

Tahsíl.	Pargana.	No. of villages at last Settlement.	No. of villages now.	Description and Remarks.
II. Dabwálí (formerly Sohuwála).	(4) Rori ...	10	8	The east corner of Dabwálí tahsíl, round the large village of Rori. Confiscated from Nábha in 1847. Two small chaks have been included in the parent village.
	(5) Guda ...	149	149	The rest of the tahsíl, so called from the large village of Guda near the south-east end, resumed from Pattiála in 1837.
Total of tahsíl Dabwálí.	.....	159	157	
III. Fázilká ...	(6) Malaut	129	129	The southern portion of the tahsíl, the chief village of which was Malaut, resumed from Sikh chiefs in 1837.
	(7) Mahájaní	45	45	The tract immediately south-east of the Danda or old bank of the Satlaj Resumed from Sikh chiefs in 1837.
	(8) Wattuán	80	80	North-west of the Danda down to the Satlaj. So called from its chief tribe the Wattus. Ceded by Bháwalpur in 1844. It was divided into the Khádar with its 45 estates and the Bángar with its 35.
	(9) Bahak...	39	40	Also between the Danda and the Satlaj, above pargana Wattuán. So called from its chief village of Bahak. Settled as part of Firozpur district and transferred to this district in 1858. Increase in number of villages due to alluvion.
Total of tahsíl Fázilká.	.....	293	294	
Total of the district.	.....	695	650	

31. The following statement shows to what extent the Assessment Circles adopted in the present Settlement, as determined by the physical features of the country, correspond with the former parganas, which were determined by political causes :—

Correspondence of Assessment Circles with parganas.

Assessment Circle.	No. of villages.	Tahsíl.	Former pargana.	No. of villages.	Remarks.
I. Bágar ...	57	Sirsá ...	Darba ...	44	
			Sirsá ...	13	
II. Nálí ...	109	Sirsá ...	Sirsá	56	
			Rániá ...	48	
		Dabwálí	Rori ...	5	
III. Rohi ...	364	Sirsá ...	Rániá ...	38	
		Dabwálí	Rori ...	3	
			Guda ...	149	The whole pargana.
		Fázilká ...	Malaut ...	129	Ditto ditto.
			Mahájaní ...	45	Ditto ditto.
IV. Utár ...	58	Fázilká ...	Wattuán ...	35	The Bágar portion.
			Bahak ...	23	Ditto ditto.
V. Hitár ...	62	Fázilká ...	Wattuán ...	45	The Khádar portion.
			Bahak ...	17	Ditto ditto.
Total of the district.	650			650	

Thus chak Bágar lies wholly within tahsíl Sirsá ; chak Nálí also, with the exception of five villages from the east corner of Dabwálí tahsíl, lies wholly within tahsíl Sirsá. Chak Rohi contains thirty-eight villages of tahsíl Sirsá, the whole of tahsíl Dabwálí with the exception of the five villages in the east corner, and the greater part of tahsíl Fázilká. Chaks Utár and Hitár are both wholly within tahsíl Fázilká.

32. In an out-of-the-way district situated as Sirsá was, the welfare of the people in the early days of colonisation depended even more than usual upon the character of the officers in charge of the district, and it is as important to chronicle their names as it is to give those of the kings in a mediæval history. The earlier Superintendents especially are spoken of by the people in a way which shows that their will was law, and that to them personally was ascribed the strong and beneficent rule of the British Government which formed such a marked contrast to the anarchy it succeeded. Omitting those officers who held charge of the district only for a short time as officiating for the permanent incumbent, the following are the Superintendents of Bhattiána and Deputy Commissioners of Sirsá :—

Officers who have held charge of the district.

Major Thoresby, the first Superintendent of Bhattiána, held charge from 1837 to 1839. He founded the present town of Sirsá, and made

in 1838 the first Summary Settlement of the Dry Tract resumed from Pattiála. As the first British Officer who held charge of that tract, he is often referred to by its inhabitants as *Tasbe* Sáhib, and great importance is attached to the Settlement leases signed by him, as being the first granted by the British Government. The older merchants of the town of Sirsá produce his certificates to show they were among the first to settle in the town.

He was succeeded in 1839 by Captain E. Robinson who held charge with intervals of leave until 1852. I may quote here what was said of him by Mr. Thomason, Lieutenant-Governor of the North-Western Provinces, on his tour through the district in the beginning of 1852. He ascribes the advantages enjoyed by the town to "the public spirit and indefatigable exertions of Captain E. Robinson the Superintendent, who has now held the office for upwards of 12 years," and says: "In the whole district as well as in the town his efforts have been great and unintermitted. The improvement during his tenure of office has been considerable. That it has not been greater is owing to accidents of season over which he could exercise no control. No small share of the praise which is most justly his due consists in the wonderful patience and perseverance with which he has steadily carried on his plans, notwithstanding disappointments and discouragements which would have borne down a less determined spirit. He is at length forced away from the appointment by broken health which will admit of no further delay. In him the people lose a firm and kind friend, the Government a most energetic and faithful servant." During Captain Robinson's absence on leave the charge of the district was held for a short time by Mr. Vans Agnew, who became the first Názim of parganna Wattúan when it was ceded by Bháwalpur in 1844, and made the first Summary Settlement of that pargana. His assassination at Multán in 1848 was the commencement of the second Sikh War. Major Mackeson, afterwards killed on the Pesháwar frontier, and Mr. Wingfield, afterwards Sir Charles Wingfield Chief Commissioner of Oudh, also held charge for a time during Captain Robinson's absence.

Captain Robinson was succeeded in 1852 by Captain R. Robertson who held charge until 1858. He commenced the first Regular Settlement of the district, and is often referred to by the peasants whose rights in the land were first clearly defined by him. He was commended by the Lieutenant-Governor for the intelligent discrimination and fairness with which he effected the Settlement, and confidence was expressed in his local knowledge, care and judgment. He was driven from the district by the outbreak of the mutiny in 1857, but returned and held charge for a few months longer. One of his assistants, Mr. Alexander Donald, now Extra Assistant Commissioner in the Panjáb, who served in the district from 1844 to 1860, was favourably noticed by the Lieutenant-Governor for the assistance he gave in drawing up the administration papers of the Settlement.

Mr. J. H. Oliver, who succeeded Captain Robertson in 1858 and was the first Deputy Commissioner of the Sirsá District, first joined the

district in the Customs Department in 1844. He became Assistant Superintendent in 1848, and for nearly ten years held charge of the Fázilká subdivision of the district. In 1858 he became Deputy Commissioner of the whole district and held charge with intervals of leave until 1869, so that altogether he served for nearly 25 years in the district. He was commended in 1852 by Mr. Thomason for the zeal with which he had exerted himself to promote the prosperity of the new pargana of Wattu. The colonisation of the prairie round Abohar was managed by him with signal success in 1852-7, and he was highly commended by the North-Western Provinces Government for the way in which he had encouraged the people to settle. During the mutiny he managed to maintain himself at Fázilká with the aid of the peasants of the pargana, and received high praise and special promotion for his conduct on that occasion. As Deputy Commissioner of the district he completed in 1863 the first Regular Settlement which had been commenced in 1852 by Captain Robertson and interrupted by the mutiny. The people of the north-west end of the district, among whom he lived so long, have a much more vivid recollection of him than of any other ruler, and often speak of what happened in Oliver's time (*Alevardlá réla*.) They tell tales of his prowess as a tiger-slayer and of his skill as a coloniser and administrator. His influence over the people must have been great, and the development of that portion of the district is chiefly due to him. Altogether he has left more mark on the district and on the minds of the people than any other officer. During his absence on furlough from 1866 to 1868 Colonel Dwyer held charge, and on Mr. Oliver's transfer in 1869, Colonel Dwyer succeeded him, but only for a short time.

Colonel Dwyer was succeeded in 1870 by Mr. Melvill, who was removed from the post in 1873, and after Mr. Mackworth Young had officiated for a short time, Mr. Wakefield, who had formerly been Assistant Commissioner in the district, assumed charge as Deputy Commissioner. Mr Wakefield held charge until 1877, and during his term of office he carried out two considerable irrigation schemes on the Satlaj and Ghaggar. The Satlaj scheme was successful in bringing inundation into the old Pádí Nála which had not run well for some time and greatly increased the irrigation near Fázilká; but the Ghaggar scheme, the principal part of which was the construction of the Sikandarpur Nála, though at first very promising, failed owing to a strict prohibition against erecting embankments in the bed of the Ghaggar. Mr. Wakefield also induced many villages in the Dry Tract to plant a few good trees near the village site.

Captain H. Lawrence held charge of the district from 1877 to 1880, and Mr. Trafford held charge from 1880 to 1883, when he was succeeded by Major Wood.

Condition of the district in 1837.

33. When Captain Thoresby in 1837 assumed charge of the Bhatti territory as a separate district, he had at first to fix his head-quarters at Fathábád within the Hissár boundary, as there was then no town within the district itself

large enough to be made his head-quarters. He was called upon to mark off the boundaries of the villages in preparation for the approaching Revenue Survey. A Summary Settlement of parganas Sirsá and Rániá had been made in 1829 by Mr. J. P. Gubbins, but the village boundaries had not yet been clearly defined. The people had not yet emerged wholly from the pastoral stage. Captain Thoresby found some villages surrounded by large tracts of waste land equal to the maintenance of several large agricultural villages, some having cultivated fields many miles off near some distant pond among other estates, some holding lands belonging to tenantless estates where they cultivated fields or herded cattle. Such lands distant from the village site were claimed on the ground of long possession or as having been taken into account when the Summary Settlement assessments were made. He proposed that in defining boundaries only the lands near the village should be assigned to it, and that large uninhabited areas should be bounded off as uninhabited estates to be settled at some future time, cultivating possession of individuals being maintained; and seems afterwards to have acted upon this proposal. He had a good deal of trouble in supplying disbanded troopers of the Rohilla Cavalry and Irregular Horse with the land which had been assigned to them in the valley of the Ghaggar in reward for their services and in compensation for dismissal. Although the grants had been made many years before, many of the grantees had not thought it worth while to present their claims until a resident British Officer assumed charge, and on his first tour in the Ghaggar valley Captain Thoresby's tent was beset for hours daily by the grantees who had come to claim their grants. Indeed, for years afterwards, such claimants were constantly turning up, until in 1849 Government decisively prohibited any further Sukhlambarí grants, those not till then applied for being held to have lapsed. The absences and neglect of these grantees and their descendants are still a constant source of trouble. One of the matters that most engrossed the attention of the Superintendent was the maintenance of a long "cordon sanitaire" to prevent the plague which was supposed to have broken out in Rájputána from making its way northwards. The alarm felt seems to have been great, as the quarantine attempted was most strict.

Severity of assessments.

31. That the summary assessments of parganas Sirsá and Rániá must have been severe may be gathered from the number of villages which had to be resettled owing to the inability of the holders to pay, and from the fact that it became necessary to remit Rs. 88,343 of balances that had accrued up to 1836, especially due to the arrears of 1833 (the scarcity of Sambat 1890), a sum which must have amounted to about a year's jama of the tract. Again, on account of the scanty rainfall and the failure of floods in the Ghaggar in 1836, Rs. 11,265 were remitted from the demand of that year in the two parganas. It was not that the revenue authorities were lax in realising the demand, for a proposal by the Superintendent to recognize the influence of the seasons upon the capabilities of the estates by fixing for them a maxi-

mum assessment to be realised in full only in favourable seasons, having called forth from the Commissioner the remark that the assessments were fixed annual assessments and that in realising the demand no allowance must be made on the score of short crops or no crops at all, the Superintendent hastened to describe what he had done to secure the dues of Government. "When the crops were cut, the whole of the grain belonging to villages in arrear was attached, and no portion of it was released until the full value of it had been paid in cash, or good security of a future payment had been given. In some instances the grain was sold on the account of Government at once, as the owners were unable to redeem it and could procure no assistance." But the Superintendent was again driven to point out that, "several estates in Rániá and Sirsá are so situated that the jamas assessed upon them are never realised except when the rabi lands have been flooded by the Ghaggar." With respect to these he thought that "provided the assessment be kept up to its actual amount nominally, the alternative of providing a systematic plan for lowering it to two-thirds, or even half, in years when through drought the productive soils must be barren, would be preferable to the course that has been hitherto pursued by which arrears accumulate and engagements are entered into and broken with a rapidity which must be hurtful to the interests of Government and prejudicial to the habits and morals of the people." The heaviest defalcations occurred in the large and valuable estates held by Bhatti grantees, regarding which the Superintendent thought some other arrangement must be made. They were afterwards gradually broken up into smaller estates. Many of them were settled and resettled for periods of five or ten years, and not a few were sold for the arrears which had accumulated.

Drought of 1837-38.

35. On this state of things came the drought of 1837-38 (1894 Sambat). The kharif harvest was almost a total failure, and owing to the failure of the Ghaggar floods, which had not come down at all, and of the winter rains, there was almost no rabi and the want of water and fodder made it difficult to keep the cattle alive and greatly depressed the people; but the Bhattis remained peaceable. Many sufferers from the scarcity found employment in the restoration of the old town of Sirsá where the digging of the town-ditch and the building of the rampart gave work to some hundreds of able-bodied labourers, who were in those hard times satisfied to earn an anna a day. Still the distress was less than elsewhere in the Delhi division, and the Superintendent declined the relief offered his district, on the ground that it was more wanted in other parts of the country. The remissions for the year however amounted to Rs. 49,974, which must have considerably exceeded half the year's demand. The newly-ceded Dry Tract did not suffer so much as the Ghaggar valley.

36. The site of the town of Sirsá, once a populous and flourishing

Restoration of the town of Sirsá.

mart, was then wholly deserted. There was no village, not even a single inhabited hut; though the brick walls of scores of houses, uninhabited since the famine of 1783, were still standing. But the traditions of its former prosperity were not forgotten, and numerous merchants residing in the neighbouring Rájputána States repeatedly urged Captain Thoresby to restore the town. Soon after assuming charge of the district he took up the scheme and applied for sanction, and the Lieutenant-Governor in according his hearty approval remarked that the recovery of the Bhatti territory from a state of waste and its conversion into a populous country was the principal object contemplated in the nomination of a separate Superintendent for that tract, and that the restoration of the old town of Sirsá was likely to greatly further this object. In January 1838 Captain Thoresby called together the merchants and others who wished to settle in the new town, and made a commencement in the uninhabited jungle to the east of the old Sirsá fort. This site was chosen because of the good quality of the water, the number of old masonry wells in the neighbourhood, the proximity of the old fort with its inexhaustible supply of good burnt bricks, and the associations and traditions connected with the old town of Sirsá. The high, thick jungle which then covered the site was cleared away, the lines of the walls and streets were marked out by bamboos and flags, and work was at once commenced by a large gang of convicts and numerous free labourers. The town was laid out as a square of 2,800 feet side, crossed by broad streets at right angles to each other, and thus presents an appearance of regularity very seldom seen in an Indian town. A ditch and rampart were made round it in order to afford the protection which the merchants thought necessary in the state of the country; building sites were allotted to the numerous applicants; and notwithstanding such difficulties as were caused by the drought of 1838 and a visitation of cholera, within a year many hundreds of buildings had been finished and the foundations of about 2,000 altogether had been laid, the total cost to Government being only about Rs. 6,000. The town continued to grow in size and importance as the surrounding country became more fully colonised. It was soon made the head-quarters of the Bhatti territory and became the great emporium for the trade of the neighbourhood, and by collecting large stores of grain made the country much safer against sudden scarcities. Its population in 1881 was 12,292.

Summary Settlement of the Dry Tract.

37. In 1837 the 108 estates in the tract of territory resumed from the Sikh chiefs, then divided into parganas Guda and Malaut and now included in the present Rohi Assessment Circle, had paid for the rabi instalment Rs. 6,413, collected according to the system in force under the Sikhs. In the cold weather of 1837-38 Captain Thoresby made a tour through the tract and effected a Summary Settlement of the two parganas for a term of three years. The population was very scanty, yet in the eastern pargana Guda it was conveniently distributed in small villages and petty hamlets; but the water was every-

where brackish, and there were not in the whole tract ten wells from which wholesome water could be got. The soil he saw to be in general light, but all, with the exception of a very small proportion, capable of cultivation. The chief crop was the kharif, which occupied four times the area of the rabi. In the western pargana of Malaut was the town of Abohar, whose size and population made it a place of some importance. It possessed large herds of cattle bred for sale and for the manufacture of *ghi*, which was exported to a considerable extent. It was surrounded on all sides by many miles of prairie wilderness which belonged to no one and everyone, and was frequented chiefly by herds of cattle and their owners and attendants, both footmen and horsemen, and by thieves and robbers of various degrees. The boundary of the district to the north-west with Bháwalpur was fixed at the Danda or old bank of the Satlaj, a stipulation being made that the cattle owners on either side should, as heretofore, be allowed to drive their herds across the boundary for pasture when necessary. Thirty-five new villages were colonised in pargana Guda and 25 in pargana Malaut, making 180 altogether. Up to that time the Sikh chiefs had taken their revenue in kind, the share varying from $\frac{1}{7}$th to $\frac{1}{10}$th of the gross produce, and all the arrangements of the villagers were founded on this system. Capt. Thoresby announced his assessments as a fixed cash demand, and found great difficulty in getting the Sikh Jats and the Musalmáns from the Satlaj to agree to the innovation. They seemed to fear failure of crops and falling of prices, and some actually refused to agree to a fixed money demand, while all strenuously held out for good terms. The land was measured or estimated, and the area usually cultivated being calculated, an estimate was made of the average value of the State's share of the produce, and the assessment thus obtained announced as the cash demand from the village for the next three years. The engagements were made with those who were the actual managers or controllers of the estate at the time of the resumption of the tract from the Sikhs. The mukaddami or headman's allowance was fixed at 7 per cent., and arrangements were made for the appointment of chaukidárs and patwáris. The Customs Line was extended along the tract, and its south-west boundary with Bíkáner was determined in that and the following years.

Condition of the District in 1839-40. Character of inhabitants.

38. The total number of estates in the four parganas—Sirsá, Ránia, Guda and Malaut—which in 1838 formed the district, was 318, all of the Zamindari tenure; pargana Darba with 44 estates was added from Haríána at the end of that year. According to the dates given by the people as those of the founding of their villages, there were in 1840 in the area comprised within the present boundary of the district altogether 331 inhabited villages, where twenty years before there had been only 94. In the sandy tract south of Sirsá the number of villages had in the twenty years increased from 3 to 47; in the Ghaggar valley from 33 to 81; on the Satlaj from 26 to 39; and in the great Dry Tract from 36 to

164, chiefly along the north-east border ; a large area round Abohar was still uninhabited. In 1839 in a report called for by the Court of Directors "on the measures adopted for the civilization of the wild tribes in the Bhatti Territory," Captain Thoresby pointed out that although a considerable portion of the population might be said to consist of people who from their gross ignorance, loose unsettled habits and aversion to an industrious and honest course of life, were in a great degree wild and untutored, yet there were no spots occupied by distinct congregations of absolutely wild tribes who had never been brought under control. Indeed, the ordinary judicial and fiscal regulations of Government had been established long before in some of the divisions of the district, and had just been extended to the remainder of the district on its resumption from the Sikh chiefs. A large majority of the Bhatti tribe, the Báwariyas and other low castes, including Labánas or Banjáras, with most of the Musalmán immigrants from the banks of the Nai or Gára river (the Satlaj) to the westward, were exceedingly untractable, unwilling to devote themselves to steady labour, and partial to the mode of supplying their wants by robbery and thieving, especially where they found means of carrying off cattle either by stealth or openly if the guardians were few in number and unprepared. But no instances of plunder on a large scale, when serious resistance might be expected, had recently been attempted ; nor had any offences been committed by gangs formidable from their numerical strength, and crimes of a heinous character had been altogether surprisingly rare. In a country so covered with high bush jungle or extensive grass plains with little cultivation pursuit was often baffled, especially as criminals could easily get across the frontier, and great trouble was experienced in obtaining redress from the surrounding Native States for crimes committed within the district by their subjects. Something had been done to enlist the sympathies of the chief men in the interests of order, or at least to put an end to their collusion with thieves. Captain Thoresby had experienced much trouble from the large overgrown estates held chiefly by Musalmáns who cultivated only a small portion of them and kept the rest in a state of nature as grazing grounds for their cattle, while they were continually in arrears in their payment of the land-revenue. He set himself to break these large estates up by degrees as the leases fell in. In urging the establishment of a school at Sirsá the Superintendent described in no measured terms the moral degradation and pitiable ignorance which prevailed among the Bhattis, even their chiefs having no education and nothing to distinguish them as superior to their poorer countrymen "except that high feeling of honour and pride, the real characteristics of ancient birth."

Revenue Survey, 1840-41.

39. In 1840 and 1841 the party which had commenced the Revenue Survey of Hariána in 1837 and worked its way westward, completed the Revenue Survey of the Bhatti territory under Captain Brown. At the time the territory comprised the five parganas—Sirsá, Darba, Rániá, Guda and Malaut. The maps and statistics of parganas Rániá and Guda and of part of Malaut were destroyed in the mutiny, but vil-