# CHAPTER I.

### THE DISTRICT.

### SECTION A.-DESCRIPTIVE.

The Ambála district is the northern-most of the six districts in the plains, which with the small district of Simla in the hills make up the Delhi division. It lies between north latitude 29°49' and 30°46' and east longitude 76°26' and 77°39'. It was up to 1886 the head quarters of a separate division containing the Ludhiána, Ambála and Simla districts. In 1886 the Ambála division was abolished, and the district was then incorporated with the Delhi division. It comprises two detached blocks of country lying between the Jamna and the Sutlej, and it is divided into six tahsils, of which four (Ambála, Naráingarh, Jagádhri and Pípli) are included in the larger block covering the southern and eastern portions of the district, while the remaining two (Kharar and Rúpar) cover a very much smaller tract running up to the Sutlej in the extreme north-west. Roughly these two blocks are divided by the Ghaggar stream, and by a large tract of Native State territory. The boundary on the east is the Jamna, separating the Jagadhri and Pipli tahsils from the Saharanpur district of the North-Western Provinces. On the south the Pipli tahsil adjoins the Karnál and Kaithal tahsils of Karnál. On the west the border is throughout Native State territory, principally belonging to Patiala, except in the extreme north-west, where the district just touches Ludhiána. From that point running still further north the Sutlej divides the Rúpar tahsíl along a frontage of 26 miles from the Garhshankar and Una tahsils of Hoshiárpur, and the remaining north-eastern border line of 80 miles from the Sutlej to the Jamna is again all Native State territory owned by Nalagarh, Patiála, Kalsia and Nahan. In addition there are small scattered blocks of Patiála or Kalsia villages within the limits of the Ambála and Jagádhri tahsíls, while in many places Native territory cuts in between sections of the district in a very inconvenient way. For a Punjab district it is unwieldy in size and not well arranged for administrative purposes, having taken its present form more from the force of circumstances than from any attempt to construct a district suitable in itself. Its greatest length from north-west to south-east is 92 miles, and its breadth at the widest part 67 miles, and being intersected or bounded by Native States in all directions it can never be an easily administered charge.

As originally constituted in 1847 Ambála contained five tahsíls. The sixth (Pípli) was added in 1862 on the breaking up of the old Thanesar district. A further change was made

Chapter I, A. Descriptive.

#### CHAP. I.-THE DISTRICT.

Chapter I, A. Descriptive. in 1888 when 89 villages covering 214 square miles with a population of 34,519 were transferred from the Pipli tahsil to the Kaithal tahsil of the Karnál district. The *tahsils* are further subdivided into *parganahs* as follows :- Ambála, into Ambála and Mulána; Jagádhri, into Jagádhri, Mustafábád, and Khizrábád; Rúpar, into Rúpar and Morinda; Kharar, into Kharar and Mubárikpur; Naráingarh, into Naráingarh, Sadhaura, and Kotáha; and Pípli, into Thanesar, Shahábad, and Ládwa.

Some leading statistics regarding the district and the several tahsils into which it is divided are given in Table No. I facing the first page. The district contains five towns of more than 10,000 souls, as follows :-- Ambála city, 28,278 including 1,422 residents in the Civil Lines ; Ambála Cantonment, 51,016 ; Jagádhri, 13,029 ; Shahábad, 11,473 ; Sádhaura, 10,445. The administrative head-quarters are situated at Ambála on the North-Western and Delhi-Kálka Railways, and at about the centre of the district as regards accessibility though on the extreme west of the main southern block of the district. Ambála stands 18th in order of area and 3rd in order of population among the 31 -districts of the Province, comprising 2.60 per cent. of the total

Town.			N. Lati- tude- ·	E. Longi- tude.	Feet above sea-level.
-			<ul> <li></li></ul>	1 1 1	8
Ambála	City providence		30°21′	76°52′	902
Kharar.	bet		30°45'	76°41′	920*
Jagádhri			30°10′	77°21′	924
Naráingarh			30°29/	77°10′	1,000*
Rúpar ?			30°58'	76°34' '	900*
Thanesar			29°59'	76°52′	800*.
Shahábad	***		30°10′	76°55′	850*

Physical features.

\*Approximate.

area, 4.95 per cent. of the total population, and 5.79 per cent. of the urban population of British territory. The latitude, longitude, and height in feet above the sea of the principal places in the district are shown in the margin.

The district is usually described as submontane, and the description is correct enough as regards the Rúpar, Kharar, Naráingarh and Jagádhri tahsíls, which are all bounded by the Siwalik range and in parts include a considerable area of hilly country. The soil in these tahsils is generally speaking good alluvial loam, similar in character to, though not nearly so rich as, the soil in the corresponding tahsils of the Hoshiárpur district across the Sutlej on the north, while as in Hoshiárpur much damage is done to these richer tracts by the sand torrents which pour down from the hills at intervals of a few miles throughout the 80 miles course of the Siwálik range from the Sutlej to the Jamna. The southern portion of the district, however, including the greater part of the Pipli tahsil, a large part of Ambála, and some scattered blocks of villages in Naraingarh and Jagadhri, is much poorer in quality. Stiff clay soil is there the rule, and in Pipli especially the face of the country is broken with huge tracts of dhak jungle. The hilly tracts are generally devoid of vegetation other than rough scrub, and the low bleak hills are little used except as grazing grounds for the Gujar population by whom they are occupied. There are however two more valuable tracts of mountainous and forest country at Kale-

### CHAP, L-THE DISTRICT.

sar and Morni. The Kalesar area of 19 square miles in the eastern corner of the Jagádhri tahsíl is separately demarcated as Government land under the Forest Department, growing sal timber well, and a fuller description of this small forest is given in Chapter IV. The Morni iláka of the Kotaha pargana in the Naráingarh tahsíl covers 93 square miles, in which forest rights were granted to the jágírdár, known as the Mír of Kotaha. by a sanad issued from the Governor-General in 1816 on the conclusion of the Gurkha war. This Morni tract includes about 25 square miles of low hills closely resembling the Siwálik range in their general features, and forming the connecting link between the Himalayas and the plains. The remaining area is made up of two main ridges of much higher hills running throughout the tract from north-west to south-east, with numerous spurs branching out in all directions. These higher hills are known as the Morni and Tipra ranges, and in conformation and character they are much more similar to the outer ranges of the true Himalayas. The highest point in the tract is the Karoh peak of 4.919 feet on the Nahan border, and the whole iláka differs completely from the rest of the district both in its physical features, its history and the races of its inhabitants.

Immediately below the hills there is a strip of undulating or broken ground varying greatly in extent in different tahsils. scenery, &c. and the rest of the district is an almost level plain sloping very slightly to the south-west, broken at short intervals by the beds of the mountain torrents, which form the most characteristic feature in the physical aspect of the country. It is to the rich alluvial silt brought down by these streams that the district owes much of its fertility, and broadly speaking there is no well recognised distinction of the plains portions otherwise than in accordance with the greater or less proportion of good alluvial soil and hard unworkable clay land. In the richer parts covering the north and centre of the district the aspect of the country is pleasing. For a highly cultivated district it is wellwooded, with fine mango groves in all the large villages, while in clear weather the Himalayan background makes a refreshing break in the monotony of the scene. Towards the south however. there is a wild, desolate looking tract of much poorer country, comparatively thinly populated and with great stretches of jungle which form a perfect paradise for cattle thieves. The depth to water below the surface of the soil is very great, often 100 feet or more, just below the hills. Elsewhere it varies generally from 6 to 20 feet in the parts of the district in which irrigation is little needed, and from 30 to 60 feet in the few small tracts where wells are really required. As a whole the district is essentially dependent on rain for its crops, and the total area irrigated from all sources is comparatively insignificant. In Pipli 13 per cent. of the cultivated area is classed as irrigated, in Jagadhri 6 per cent., in Ambála barely 11, in Kharar about 7, in Rúpar 10 and in Naráingarh about 21. Good wells are common and highly profitable in many parts of Pipli,

Chapter I, A. Descriptive. Physical features.

Nature of soil.

### OHAP. I.-THE DISTRICT.

Chapter I. A. Descriptive.

Nature of soil, scenery, &c.

in the western Dhaia tract of the Rúpar tahsil and in a small corresponding tract in Kharar known as the Charsa circle. Elsewhere the well irrigation such as it is, is mostly from very small masonry or temporary kacha wells and is used for the small plots of garden cultivation in the hands of Malis or Sainis, usually occupancy tenants. The remaining irrigation includes a little from the Western Jamna Canal in Jagádhri and Pipli, some occasional irrigation from kacha tanks, about 8,000 acres. irrigated by kuls or ducts from the Ghaggar in the Neli circle of the Kharar tahsil, with about 1,500 acres similarly irrigated by kuls in the plains portion and 700 acres in the Morni hill portion of the Naraingarh tahsil. The crops obtained from the irrigated lands are very valuable, especially the opium and tobacco crops raised by the Málís and Sainís on homestead lands, but the high cultivation required for these crops makes it impossible to largely extend the area on which they can be grown, and in general the country is not adapted for irrigating wells owing to the uncertainty of the subsoil water-supply. The kul irrigation of Kharar and Naráingarh is valuable, especially for rice and sugarcane crops, but the effect of the irrigation is almost always to make the villages of the tract very unhealthy. This is more particularly the case where the water-supply is taken from the Ghaggar whether in the plains as in Kharar or in the hills as in Naráingarh.

Hill streams.

The general character of the hill streams, which have already been alluded to as a prominent feature of the district, is that of broad sandy courses, scarcely below the surface of the country, and varying in breadth from a hundred yards to upwards of a mile, dry during the great part of the year, but pouring down a formidable body of water in rainy weather. This character they maintain for a distance, on the average, of 30 miles below the hills. They then gradually tame down into sluggish docile streams, with well-defined clay banks, and a volume which is much diminished by absorption in the sand. Eventually all, or almost all, the streams that leave the hills between the Sutlej and the Jamna unite in the Ghaggar. This from the commencement is the most important of them all, and is the only one which contains a flow of water throughout the year. Passing the confines of the district, it flows on through Patiála and Sirsa, and finally loses itself in the sands of Rájputana. The other streams are generally dry for the greater part of the year, and are difficult to cross only for a short time after heavy rain in the hills. Many of them may however then for a time turn into formidable torrents causing some loss of life and much loss of property. The tendency of all these streams is to gradually silt up the centre of the bed causing the flood water to spill on one side or the other till the stream widens its course by cutting away the banks, or cuts for itself an entirely new channel through rich alluvial land. The construction of the railway embankment across the drainage line of the country has much increased the risk of serious floods in the rainy season,

### CHAP. I.-TRE DISTRICT.

and in some years the damage done is very considerable. In 1885 and 1886 a systematic survey was made of the principal streams passing through the Jagádhri, Pípli and Ambála tahsíls with the object of developing a scheme for more efficient control of the flood waters so as to diminish the injury done by floods and make the water-supply more easily available for irrigation. The investigation showed conclusively that no such general scheme was practicable, and no definite results followed. In the last two years however much good has been done by getting the villagers to plant out the sandy wastes along the present or former beds of the streams with trees and grass, with the double object of reclaiming waste land and protecting cultivated areas from erosion. Sarkána grass (Saccharum sara or ciriale) and káhi (Saccharum spontaneum) are invaluable for this purpose, and the Deputy Commissioner writes that many thousands of acres have been already reclaimed in this way. The grasses are valuable in themselves for thatching, rope making and other numerous village purposes, but their principal use is that they bind the soil and prevent the extension of damage by sand, while they require little to encourage their growth beyond combined efforts on the part of the villagers and simple measures for protection of the plantations from the inroads of cattle. Omitting minor streams, the most important of the hill torrents are the Sirsa, Budki and Sugh in Rúpar; the Siswán, Jainta Devi, Patiála naddi, Sukhna and Ghaggar in Kharar; the Tangri, Run, Begna and Markanda in Rúpar, Ambila and Pipli; and the Chautang, Sarusti, Som and Rakshi in the east and south of the district. Some account is given below of a few principal streams to show how much importance (for both good and evil) the natural drainage system of the country has in Ambála.

The Ghaggar rises in the territory of Náhan and, passing through the Kotáha perganah, leaves the hills a few miles above the town of Máni Májra. It skirts the border of the Kharar tahsil for a few miles, and then crosses the district at its narrowest point. Thence it passes on into Patiála territory, but again touches the border of the district a short distance to the west of the city of Ambála. Near Máni Májra it is largely used for irrigation, the water being drawn off by means of artificial cuts or kuls. The bed is covered with large boulders for a few miles below the hills, but soon becomes a wide tract of sand. The upper portion of the course contains water throughout the year. a foot deep in summer, but reaching six feet or more in the rains, and when in flood, the current is very dangerous to cross. The Ambála and Simla road crosses it by a ford about half-way between Kálka and Ambála, and the mails were, during the rains. carried over on elephants, till a fine railway bridge was constructed for the Delhí-Kálka Railway. Near Ambála again large bridges have been constructed for the Grand Trunk Road and the North-Western Railway, and shortly below these the stream branches off into Patiala territory on the west.

Chapter I. A. Descriptive. Hill streams.

5

The Ghaggar.

# [Punjab Gazetteer,

### CHAP. I.-THE DISTRICT.

Chapter I, A. Descriptive. The Márkanda. The Márkanda, rising in the Siwáliks near Náhan, is the second largest stream in the district. In the first twenty miles of its course in the plains it is joined by two other torrents. The first which rises in the hills to the north of Sadhaura, bears the significant name of "Sadadeni" or "the constant plague." The second, which unites with the Márkanda lower down, is called the Begna. The Márkanda enters the Pípli tahsíl near Shahábad, and, where the Grand Trunk Road crosses it, is spanned by a fine masonry bridge of 27 arches built since last settlement. The bridge is 1,400 feet long, and the estimated cost of it was above 34 lakhs.

Before its construction, carts were often kept two days on the banks waiting for the waters to subside. The present course of the stream owing probably to the raising of the levels of the country by deposits of silt during a long series of years is higher than the land to the east of it, and if unchecked, the Márkanda would probably find for itself a new channel further east. At last settlement it threatened to desert its old bed, and to pour its floods down the Betan, and protective works had to be made for three miles above the bridge to keep the river in its old course. From Shahabad it flows south-west through a rich bet formed by the deposits of silt which its floods leave behind them. At Kalsana an important channel running west to the Umla at Thal has been formed, and much spill water now finds its way down the bed. A little above Jhansa the Markanda divides into two channels. The western one has been the real bed of the river since the construction of the Shahabad embankment. But the river is now steadily setting to the east, and is excavating a new bed which carries much silt to the large Rájpút estate of Lukhi, in the neighbourhood of which it is gradually changing clay land of the worst type into rich alluvial soil. In the rainy season floods come down the Márkanda with extraordinary suddenness and violence, and men and cattle are sometimes caught and carried away when crossing the bed. The waters pour down numerous minor channels and spread over the face of the country far and wide, leaving, where the flow is slow, silt, and, where it is swift, sand. The floods subside very rapidly. It must not be supposed that they are uniformly beneficial. Cases are not unknown in which the people of a village have lost in a single night all their stores of grain and been left without roofs to cover them. A late autumn flood at times carries away or rots great quantities of maize which has been cut, but not garnered. The fortunes of villages, especially of those along the lower part of the river, are very fluctuating. Much sand is often deposited and the strong west winds of March blow it over the land which has escaped. But the good done by the Márkanda in its lower courses far outweighs the losses it occasions.

The Tangri is a large and very destructive stream rising in the Morni hills. It runs close to Ambála Cantonment, and has at different times caused much trouble from its tendency to

### CHAP. I.-THE DISTRICT.

work out new channels, necessitating expensive protection works at Khera Ghanni in Naráingarh and again a few miles north of Cantonments. A large branch used to flow between the city and Cantonments, but the drainage is now confined to the eastern channel, and the water-supply for Cantonments is derived from a series of wells constructed on its banks. Below Ambála it is crossed by a large railway bridge, and then joins a fresh channel known as the Umla, which is often a cause of disastrous flood after passing beyond the limits of the Ambála district.

The Sarusti, the ancient Saraswati, is famous in the annals of early Brahminical history, as the most sacred river in India after the Ganges. It does not rise in the hills, but begins in a large depression in the north of the Mustafábad pargana of For the first 20: miles of its course it is utterly Jagádhri. insignificant, its channel being frequently only marked by a shallow depression on the surface of the ground, and being often lost entirely. Like the Brahmans who trade on its sanctity, it lives on the contributions of its neighbours. It is only after the Chautang joins it at Bhaini that it acquires a continuous channel and is worthy of being called a stream. Above Bhaini its course is south-west, but below this point it takes a much more westerly direction, and crosses the Grand Trunk Road a few miles to the north of Piplis It flows past Thanesar and floods the rice lands in the neighbourhood of that holy, but very decayed, town. The Choya, the Betan, and the Linda, which are probably old channels of the Márkanda, join, and the united stream, known as the Linda, falls into the Sarusti near the border of the Pehowa pargana. A few miles lower down at Urnái the Márkanda pours its waters into the Sarusti. Its channel cannot contain the heavy Márkanda floods, and in the rains the country to the east of Pehowa is converted into a great lake. At Pehowa the channel again becomes well defined and it enters the Kaithal tahsil a few miles further to the west. Crossing Karnál, the united river, bearing still the name of Sarusti, enters Patiála territory and ultimately joins the Ghaggar. In ancient times the Ghaggar, below this junction, appears to have borne the name of its tributary, the Sarusti, and, undiminished in those days by irrigation near the hills, poured down a considerable volume of water across the Rájputána plains, and debouched into the Indus below the junction of the Punjab rivers. Its bed can be still traced as far as Mírgarh in Baháwalpur, but its water penetrates no further than Bhatner in Rájpútána.

Much has been written as to the desiccation of the Sarusti, which is thus represented in ancient times to have been an important river. The phenomenon, however, seems amply explained by the supposition made above, that anciently the Ghaggar was considered an affluent of the Sarusti, instead of the Sarusti of the Ghaggar, and that when ancient writers speak of the Sarusti, they include under that name the united

Chapter I, A. Descriptive. The Tangri.

The Sarusti.

### CHAP, I.-THE DISTRICT.

Chapter I. A. Descriptive. The Sarusti.

Ghaggar and Sarusti. If the possibility of this be granted, the failure in the water supply is easily accounted for by the greater volume of water now drawn off for irrigation, and by the silting up of the river beds caused by the dams employed to divert the water over the fields. It is impossible to suppose that the supply of water in the sources has permanently decreased. This varies from year to year with the rainfall, and there is no reason for supposing that the rainfall is less now than it used to be. There is no mystery about the matter. The Ghaggar, it must be remembered, would, if it and its tributaries were left to themselves, receive the whole drainage of the lower Himalayas between the Jamna and the Sutlej, and this is quite sufficient to provide water during the rains for a considerable river. At the present time, in parts of the courses of the various streams, every village has dams, which, however small individually, carry off in the aggregate an enormous volume of water, quite sufficient to affect the lower parts of the stream. Nor is this the only result of the system of damming back the water for purposes of irrigation. Not only is water drawn off, but the flow of the water which escapes is impeded. This leads to increased absorption in the soil, and increased deposit of silt. And thus, year by year, the power of the streams to sweep away obstacles becomes less, while the obstacles themselves become less formidable. In the Ambála district the bed of the Sarusti is for the most part well defined, but expands, here and there, into a broad belt of sand. It never contains more than two feet of water, and is dry for eight months in the year, water remaining only in occasional parts or in spots where it is dammed up to provide bathing places for pilgrims. General Cunningham, in his Archæological Report for 1863-64, gives the following account of the river :--

"'The Sarasuti, in Sanskrit Saraswati, is too well known to require more than a more notice. Its name is derived from Saras, a 'lake or pool,' and vati, 'like,' meaning the 'river of lakes or pools,' a character which it still bears, as it partially dries up early in the year, and becomes a more succession of pools without any visible stream. The Brahmans have cleverly taken advantage of these pools, to each of which they have attached a legend with its accompanying shrine. Thus, along the bank of the Sarasuti to the north of Thanesar, from Ratan Jaksh on the east to Aujas Ghât on the west, a distance of only five miles, there are no less than 34 shrines, or seven shrines in one mile, or a shrine at every 250 yards. Of these the most celebrated is the Kula Práchín, or Gangatirath, in which the Ganges herself is said to have bathed to get rid of the load of sin with which the people had defiled her waters. Another famous place is the Sthánutirath. where Vena Rája dedicated a shrine to Siva, under the name of Sthánu. According to the legend, the leprous Rája Ben, whose name I have found as widely diffused as those of the Pandus themselves, while travelling in a doli was set down by the bearers on the bank of the Saraswati. A dog crossed the river and stopped near the doli to shake himself, when some water was sprinkled on the Rája, who was astonished on seeing that each spot thus wetted immediately became whole. He at once plunged into the stream and came out entirely cleansed from his leprosy. These two legends are alone sufficient to account for the deeply-rooted belief of the people in the the purifying quality the waters of the Saraswati. Some places refer to the destruction of the Kshatriyas by Parasu-Ráma, and other spots are dedicated to the story of the Pandus, such as Kshirihi-vása and Asthipur. In the first of these places the water of the river was changed to milk (kshira) for the use of the wearied Pándus, and in the other their bones (asthi) were collected together in a heap. In A.D. 624 these bones were shown to the Chinese pilgrim, Hwen Thsang, who records

1

### CHAP. I.-THE DISCRICT.

that they were of very large size. All my enquiries for them were fruitless, but the site of *Asthlpur* is still pointed out in the plain to the west of the city towards Aujas Ghat."

The Hindu tradition attached to the disappearance of the river in the sand is as follows: — Sarassuti was the daughter of Mahádeo; but her father one day, in a fit of drunkenness, approaching with intent to violate her modesty, she fled, and in her flight, whenever she saw her pursuer gaining, she dived under ground, re-emerging a few miles further on. The river sprang up in her track, and where she disappeared in order to commemorate her exploit there the river also to this day dives under ground.

The two great rivers of the district, the Sutlej on the north and the Jamna on the east are utilized for the Sirhind and Western Jamna Canal systems, the head works of the former being . at Rúpar and of the latter at Tajawála in the Jagádhri tahsíl. The Sutlej is the border of the district for 26 miles, starting from Kiráthpur, where it leaves the Una valley of the Hoshiárpur-District. From Kiráthpur to Rúpar, some 14 miles, it is a broad strong stream from 8 to 10 feet deep in the winter. At Rúpar the water is to a great extent diverted during the cold season into the Sirhind Canal channel, and below Rúpar the stream is now quite insignificant for some six months in the With the melting of the snows in the hills the water year. rises in May and June, and during the rains the river is again formidable. Its action is capricious, the deep stream running sometimes on the east, sometimes on the west of a huge, dreary waste of sand and river jungle land. At Rúpar there is a small timber depôt for the storing of deodar logs floated down from the hills, but the greater part of the timber passes on to the Phillour depôt lower down,

The Sirhind Canal system commands an area of over 8,000 square miles in British and Native territory. There is practically no irrigation from the Canal in the Ambála district, but the large works involved in the construction of so much of the Canal as runs through the Rúpar tahsíl require some notice. The head works are about a mile from Rúpar, and consist of a weir 2,400 feet long with a crest 6 feet above the normal bed of the river and an arrangement of movable shutters which when erect command the whole mass of water in the river. Over the last 330 feet of the weir on the Rúpar side a large masonry bridge has been constructed with under-sluices consisting of 12 openings, each 20 feet in width, fitted with double gates each 5 feet in height. The draw caused by these openings ensures the deep channel being in front of the canal regulator, and the regulation of the supply in the canal is assisted by raising or lowering these sluice gates. Adjoining and at right angles to the under-sluices is the regulating bridge. Its function is by the opening or closing of its gates so to regulate the amount of water that the quantity actually required and no more shall at any moment be passed into the canal. A lock channel is placed 550 feet up-stream of the regulator, forming

Chapter I, A. Descriptive. The Sarusti.

The Sutlej.

The Sirhind Canal.

### CHAP. I.-THE DISTRICT.

Chapter I, A.

10

Descriptive. The Sirhind Canal.

the navigation entrance from the river. After leaving the river the next work of importance is the Budki super-passage, which earries the combined streams of the Sugh and Budki torrents across the canal. The aggregate catchment area of these two torrents is 86 square miles, and their combined discharge, when in flood, 30,000 cubic feet a second. The super-passage is 400 feet wide between the parapets, which are 12 feet high. The water in flood is about 9 feet deep on the floor of the aqueduct, the cost of which was Rs. 12½ lakhs. A long diversion cut leads the Sugh into the Budki above the super-passage, and a short cut on the down-stream side conducts the floods to the river.

In the 7th mile another super-passage carries the Siswán torrent over the canal. It is a similar but smaller work than that above described; its cost (with training works), was nine lakhs. It is designed to pass 20,000 cubic feet per second, and is 250 feet wide between parapets, which are 10 feet high. Unusual difficulties were met with in laying the foundations of this work, and its construction was laborious and expensive. In the 11th mile a large syphon passes a drainage under the canal,and in the 12th mile there is a regulating bridge and escape head. Any water in the canal which is in excess of requirements can here be returned to the Sutlej. Shortly after passing the 13th mile stone, the last of the cross drainages is met with, and the waters of a comparatively small nallah are passed under the canal by a syphon. The remaining drainages from the high land are ponded by the canal spoil, and arrangements have been made by which surplus water from these reservoirs can be passed into the canal. From this point onwards, the works presented no particular difficulties in construction, as the bed of the canal is above the spring level.

The works on the main line are constructed of sandstone obtained from a quarry near Nalágarh, and the mortar was manufactured of bricks from the ruins of Sirhind and lime from *kunkur* quarries at Patarheri a village a few miles from Rúpar. A railway line 54 miles long was constructed from Dauráha to the Nalágarh quarries to carry material, but the line was taken up shortly after completion of the canal in 1884-85.

For the repairs of the engines and machinery in use on the canal, a workshop and foundry was erected near the regulator at Rúpar. The whole of the lock and regulator gates, with their fittings and gear, have been built in these shops, and work has also been done for other canals in the Punjab.

At Rúpar, too, the experiment of employing convict labor on public works was made on a large scale. At intervals of one mile, three jails were built capable of holding in all 2,500 men. The prisoners rarely reached this number, but there were usually from 1,400 to 1,800 on the works. Their services were of great value, as their presence ensured the placing of a large body of men on any urgent work, and it also tended to steady the rates of free labor. The jails indeed proved a most valu-

### CHAP. I .- THE DISTRICT.

able institution, and contributed materially to the completion of the canal. The whole cost of the canal up to its opening in November 1882 was about 407 lakhs of rupees. The canal was opened with great ceremony by the Viceroy (Lord Ripon) in the presence of the Native "Chiefs who had largely contributed to the cost of the undertaking.

The Jamna emerges from the hills at Kalesar, where the channel is covered with boulders and the current is swift and strong, But the head works of the Eastern and Western Jamna Canals at Khara and Tájawála soon divert the greater part of the water, and, below Tájawála, the bed is only full in the rains. In that season the local drainages are often more than enough to fill the canal, and it sometimes becomes necessary to shut off the river entirely. To the south of Tájawála the main stream runs on the border of the Saháranpur and Ambála districts as far as Nawázpur below which and just above the junction of the Som and the Jamaa there are two or three Saháranpur villages on this side of the river. The Som joins the Jamna at Kunalsi. The Khádir to the north of the Som is cut up by several old river-beds. One of these, the Tufanan, has been much enlarged since last settlement, and has done a great deal of mischief. Fortunately all these channels are caught in the Som, and prevented from injuring the southern Khádir. Below the point where the Som joins it the Jamna has a sandy bed. It is steadily cutting to the west and is carrying away year by year some of the finest land in the Khádir. Just above the railway bridge at Lapra, the river is joined by the Buddhi Jamna, and a few miles lower down it leaves the tahsil at Naharpur. Its floods often do serious damage, and the dry lands of the Khádir are much superior to those which the river overflows. The drainage channels of the southern Khádir are petty, and form a striking contrast to the wide sandy boulderstrewn river-beds to the north of the Som.

The head works of the canal are situated at Tájawála, where a very strong masonry dam has been built across the Jamna. Jamna Canal. Between Tájawála and Dádupur the canal follows for the most part an old river-bed, the slope is great, and the current very strong. Near Dádupur it is joined by the Pathrála and Som torrents, which sometimes bring down an enormous volume of water in the rains. The control of these streams was the most difficult problem which the engineers of the canal in the early days of its history had to face. The water they discharged was worse than useless, and had to be got rid of at any cost. Elaborate works have been constructed to regulate the supply of the canal below Dádupur, and to conduct the floods of the twotorrents into a wide sandy bed, which finally meets the Jamna at Kunalsi. From Dádupur the canal flows south in an artificial channel to Buria, below which a remarkable spur of the Bangar highlands forces it to make a great curve to the east. During the rest of its course in Jagadhri it hugs the Bangar bank pretty closely, and flowing south-west passes below the-

Chapter I, A. Descriptive. The Sirhind Canal

The Jamna.

The Western

#### CHAP. I .- THE DISTRICT.

Chapter I, A. Descriptive. The Western Jamna Canal.

Rainfall.

railway bridge at Abdullapur and finally leaves the tahsil at Daurang. The channel below Buria is an old river-bed. The Jamna flowed below Buria as late as 1760 A.D., when Ahmad Shah forced the passage of the stream at this point in the teeth of a Mahratta army. The banks are very low and some damage is done by water-logging. But the neighbourhood of the canal does more good than harm, for below Buria a strip of land on both banks is kept always moist, and yields valuable crops without artificial irrigation. The use of canal water is practically confined to ten estates of the Khizrabad parganah situated to the north of Dádupur, and to a few villages in the Pipli tahsil.

A more detailed description of the canals of the Ambála district has been furnished by the Canal Department and is published at length in the Provincial volume of the Gazetteer.

Table No. III. shows in tenths of an inch the total rainfall registered at each of the rain-gauge stations in the district for each year from 1872-73 to 1891-92. The distribution of the rainfall throughout the year is shown in Tables Nos. III A. and III B. The normal rainfall may be taken at 32 inches for the year in Ambála, 30 in Khárar, 28 in Rúpar, 38 in Naráingarh, 40 in Jagádhri and 28 in Pípli. The district is in this respect well situated and there are comparatively few years in which the rains fail altogether. The rainfall is, however, very irregular and the variations from year to year are excessive, the crops in the south of the district especially being liable to almost as much damage from excessive moisture and floods as from drought. The amount of rain required for the spring crops, when once the ground has been saturated sufficiently to admit of sowing, is comparatively small, but the outturn depends largely on the timely fall of the winter rains. Unfortunately these rains are very capricious, and the rabi crop is in consequence often light. In the district, as a whole, the kháríf harvest is decidedly the more important of the two. Here again the principal revenue paying crops maize, sugarcane, cotton and rice are constantly liable to damage either from the rain not coming soon enough to enable the people to sow at the proper time, or from untimely breaks alternating with excessive floods. The variability of the rains is well shown by the table on page 344 of Mr. Blandford's work on the Climates and Weather of . India, published in 1889. In July, for instance, the mean rainfall is 11 inches, but the actuals have varied between 3 inches and 30. In August again they have varied from nothing to 26 inches as against an average of 8, and there are great vicissitudes in almost every month.

Climate.

The climate of Ambála is fairly good, but the changes of temperature are severe. From the middle of April to the end of June hot winds blow strongly from the west and there are frequent heavy dust storms. During the rains the country becomes saturated and fever is common everywhere, the mortality from this cause in years of excessive flood such as 1884

12

#### CHAP. I.-THE DISTRICT.

being very high indeed. The cold weather comes on suddenly in November or December before the people have recovered their strength after, an epidemic of fever, and the result is much further loss of life from pneumonia. The two northern tahsils of Khárar and Rúpar are the only parts of the district in which the people are of really robust physique, and there has been little or no increase of population in the district as a whole for the last twenty years. The southern half of the Pipli tabsil is a specially unhealthy tract as much land there remains under water for a long time in years of excessive rainfall, owing to the formation of the country and the way in which it is traversed by petty channels which cannot carry off the drainage poured into them. Unfortunately also these years of excessive rainfall generally follow close after years of drought such as 1860-61, 1877-78 and 1883-84, and find the people already weakened by more or less widely spread failure of crops when they are ill-prepared to withstand the effects of disease.

Tables Nos. XI., XIA. and XIB. give the annual and monthly statistics of births and deaths for the district for the past nine years, and table No. XLIV. the corresponding figures for the principal towns for the last five years. Table No. XII. shows the number of insane, blind, deaf-mutes and lepers as ascertained at the Census of 1881 and 1891, while table No. XXXVIII. shows the working of the dispensaries since 1887. Blindness is extremely prevalent, the rate of about one in two hundred of the total population being higher in this district than any other of the Province. Chapter I, A. Descriptive. Climate.

Disease.

### CHAP. I .- THE DISTRICT.

### SECTION B .- GEOLOGY, FAUNA AND FLORA.

Our knowledge of Indian geology is as yet so general in its nature, and so little has been done in the Punjab in the way of detailed geological investigation, that it is impossible to discuss the local geology of separate districts. But a sketch of the geology of the Province as a whole has been most kindly furnished by Mr. Medlicott, Superintendent of the Geological Survey of India, and is published *in extenso* in the Provincial volume of the *Gazetteer* series, and also as a separate pamphlet.

Gold is found in minute quantities among the sand washed down by many of the hill streams, especially those of the Khárar tahsíl. The only mineral products of any importance are the kunkur block quaries of the Patharheri and Patharmáira villages near Rúpar, and the limestone in the Morni hills. The kunkur quarries are a peculiar formation found in one small cluster of villages only. The houses and wells in these villages are built from the large blocks of conglomerate dug up a little below the surface of the soil, and the quarries werelargely resorted to while the Sirhind Canal was under construction, though they have not been much used in later years. The limestone of Morni is found in considerable quantities in the beds of hill streams, and in some years the lime kilns have brought in a large revenue to the proprietor of the Morni tract. The kilns are erected in the lower hills, where wood and stone are abundant. They are made of a cylindrical shape like a well, about 10 or 12 feet in diameter and the same in height : and there are two openings or valves to each furnace. The kiln is then charged with fuel consisting of green wood, the stone to be calcined is heaped on the top, and the whole is: ignited and burns for 36 hours. The stone is thrown on to the kiln little by little. In four days the whole cools, and the stone is found to be calcined and of a white colour. It is then slaked by throwing water on it, and the result is lime in powder. In some places the kiln consists merely of a hole dug in the ground ..

The profits from these kilns varied between 1881 and 1887 from Rs. 500 to nearly Rs. 3,000 a year. Since 1887 the kilns have been discouraged as it was found that the petty contractors by whom they were worked were doing much harm to the forest growth of the hill sides by reckless timber cutting to supply the fuel to work the kilns. The only other mineral industry of the district is in and about Mani Májra of the Kharar tahsíl, where a few stonemasons earn a petty livelihood by the manufacture of millstones for small hand or water mills from the boulders found in the bed of the Ghaggar stream.

Wild animals, sport.

The district has the reputation for being among the best of the Punjab for sport of various kinds. This is however not saying much, and most of the favourite spots for game have been so much shot over that a good bag can no longer be easily made anywhere within the limits of the district. Tigers and panthers have been frequently shot by the Forest Officer in

14

Geology, Fauna and Flora

Chapter I. B.

Geology.

Minerals.

the Kalesar Government forest reserve, and are occasionally to be had in the Morni hills by officers who can afford the time and money to beat through a large area of hill jungle. It is however little use attempting big game in Morni unless the party is able to stay several days in the tract and organise oper-sport. ations on a somewhat large scale, and even then the beat fails much more often than not, though panthers are occasionally to be found anywhere in the low hills, and a few years ago one even made his way down to the Cantonment of Ambála, falling a victim eventually in the Commissariat yard. Of other animals dangerous to life or property there are a few bears in and about Morni, and a number of hyaenas and wolves in the hills or broken ground just below the Siwáliks. Wild pigs also do . much damage to crops under the hills and in the l'ipli tahsil, but the nature of the ground is against hunting them on horseback. Of the deer tribe the district contains no fewer than seven different kind. Sámbar, chítal and kákar are fairly plentiful in the wilder hilly tracts, especially in Morni. Chikára or ravine deer are occasionally shot in Rupar, and nilgai and parha are common enough in the thick dhák jungles of Pípli while herds of the Indian antelope (black buck) are to be found in all parts of the district, especially in the Ambála and Jagádhri tahsils and in the western half of Rúpar. The small game shooting is generally poor, but black partridges are pleutiful in the Pipli jungles, and grey partridges and hares may be picked up in any of the wilder parts of the district. A good day's snipe shooting can sometimes be got near Mubárikpur on the Ghaggar stream, about a mile from the railway bridge, or on the jhils along the Western Jamna Canal, both up and down stream from Jagádhri, or again in a small tract of marshy land between the Sirhind Canal and the Sutlej in the Rúpar tahsil about the 12th to the 15th mile of the canal. For wild duck and geese the best known places are a large jhil about 8 miles from Thánesar in the Pípli tahsíl, on the way from that town to Pehowa, where the birds are numerous enough but difficult to get at without boats and a number of guns, and the smaller jhils of the Jagadhri tahsil, while fair duck shooting is to be had along the Sutlej also with an occasional chance at a kúlan. Lastly some mention may be made of the pheasant, jungle fowl and green pigeon shooting to be had in Morni by those who know where to go for it and are not too much tied down to time.

There is excellent máhásir fishing at Dádupur and Tájawála in Jagádhri and in the Sutlej below the canal bridge at Rúpar. A great variety of fish are caught by the natives with nets both in the rivers and hill streams, and are brought to market in Ambála Cantonment. The best for eating are the rohu, sewal and chilwa, the last being a tiny little fish caught in great quantities with small meshed nets after a freshet in the Ghaggar. They are very good eating when about the size of white bait or only a little larger, but like nearly all the

Chapter I, B.

Geology, Fauna and Flora. Wild animals,

Fish.

### CHAP. I .- THE DISTRICT.

Chapter I, B.

Geology, Fauna and Flora.

sport.

common fish of the rivers they have a strong muddy flavour when full grown. .

A complete list of the birds, beasts and fish of this part Wild animals, of the country is given in the Ludhiana Gazetteer, with the scientific names and a short account of the habitat, &c., of each. Nearly all those mentioned in the Ludhiána list are found in Ambála and reference may be made to that list by any one requiring a fuller account of the game of the country. It is still possible to get a fair day's all-round shooting in Ambála by going well out of the ordinary range of soldiers from Canton-. ments, but the sportsman cannot expect to make a large bag without working hard and giving up a good deal of time to it. A few of the larger Sardárs preserve game in a small way in their tracts of grazing jungle known as birs, the largest bir being at Shahzádpur in the Naráingarh tahsíl.

> Among deadly snakes the cobra aud karait are by no means uncommon even in Ambála itself, and travellers during the rains would do well to look rather carefully round the small outlying bungalows of the district when taking up their abode there. The large black scorpion is likely enough to be found under the darri, even if there is nothing worse to be seen. The Russell's Viper (Daboia Russellií) is or was very common about Thanesar, and on one occasion only a few years back as many as eight were killed in a single day in the compound of the Thánesar bungalow. There are plenty of small crocodiles in the Sutlej. They are nearly always harmless and are taken no account of by the inhabitants of villages along the banks. It is often easy to get a shot at a crocodile lying basking in the sun just out of the water, but it takes a very good shot to secure the animal from slipping back into the river even when hit.

> Rewards are given for killing wild animals as follows : For a tiger Rs. 15; for leopard or panther, Rs. 8; for a wolf, Rs. 5 ; for tiger, panther or wolf cubs, half these sums. The only deadly snakes for which rewards are now given are for cobras at 8 annas a head and karaits at 4 annas. During the five years ending 31st March 1892, Rs. 678 have been given in rewards for the destruction of wild animals, including rewards for eight tigers.

Trees can be grown well in all parts of the district, the commonest being the mango (mangifera indica), mulberry, kikar (acacia arabica), ber (zizyphus jujuba), farásh (tamarix orientalis), shisham (dalbergia sissu) and dhak (butea frondosa). Good mango groves are common in all tahsils, especially in Kharar, and in many villages they are a considerable source of income to the landowner. The kikar is the most generally useful timber tree throughout the district, the wood being in creat demand for household and agricultural implements. The more pro--vident among the villages keep up regular preserves of kikar trees in their waste lands and sell the trees every 15 or 20 years The amount realised is often several to charcoal contractors.

Reptiles.

Trees.

16

### CHAP. I.-THE DISTRICT.

hundred rupees, and if the village is poor the money is divided among the proprietors according to land revenue shares, but the commoner practice is for the village to combine together and spend the money on repairs to the village well, rest-house or mosque, as the case may be. Where the soil is poor or the proprietors are not good cultivators kikar trees are allowed to grow also all over the cultivated lands notwithstanding the well known fact that the shade of this tree blights the crops beneath it almost more than any other. In the Ambála tahsíl especially the kikar is almost the only tree which will grow at all in the hard clay lands and its black stems and nearly leafless boughs add to the cheerless appearance of these barren looking tracts. The ber is found principally in groves round Ambála city, where it is grown for the sake of the fruit, and in the Rúpar tahsíl where it supplies the material for the thorn hedges round the sugarcane fields. The dhak jungles of Pipli cover an area of upwards of 150 square miles. The trees constitute a valuable property in this otherwise poor tract. The flowers yield a yellow dye and the gum exuding from the bark is sold as a drug, while the leaves afford good fodder for buffaloes, and the outer fibres of the root are used to cover well ropes to protect them from friction. The timber of the dhak stands long exposure to water without rotting and is therefore specially used for the wooden foundation (nimchak) of wells. The principal value of the tree is however as fuel. It makes excellent firewood for which there is a large demand in Ambála Cantonments. The jungle can be sold every eight or nine years, and the supply and carriage of this fuel is a large source of income to the Pipli villages along the Grand Trunk Road. Large patches of dhak jungle are found also in parts of the Ambála, Jagádhri and Naráingarh tahsíls and most of the leading Sardárs have a small area under dhak, which they own as bir in some one of the villages of their jágír.

Besides these more important trees there are a great variety of others grown primarily for shade along the roadsides or from religious motives in the vicinity of shrines and village sites. These need not be separately mentioned as a sufficiently full account of both trees, shrubs and grasses, has been given in the Karnál and Ludhiána Gazetteers. The forests proper of the district in Kalesar and Morni are described in Chapter IV (Section A). There is also a large tract of densely wooded jungle in the Neli circle of the Kharar tahsil with a small forest of date palms (khajur) which are a special feature of that curious tract. The existing trees are of little value either for their timber or fruit, but an attempt has been recently made to introduce a better variety of palm into the tract, which appears to be better suited by nature for the growth of palms than any other part of the district, though the trees are found here and there all over the district and are common enough in the riverain tracts.

17