CHAPTER I

GENERAL

Origin of the Name of the District

The district derives its name from its headquarters town Rohtak which is said to be a corruption of Rohtasgarh, a name still applied to the ruined sites (also called Khokra Kot) of two older cities, one lying immediately north of the present town and the other about 3 miles to the east. Traditionally it is named after Raja Rohtas in whose day the city is said to have been built.[1] It is also claimed that the town derives its name from the *roherra* (*Tecoma undulate*) tree called *rohitak* in Sanskrit. It is said that before the town came into existence, it was the site of a forest of *rohitak* trees and hence its name Rohtak. Another version connects Rohtak with Rohitaka, which is mentioned in the *Mahabharata*[2] in connection with the campaign of Nakula, the Pandava warrior.

Location, Boundaries, Area and Population

Location and boundaries.—The district lies in the south-east of Haryana State between 28° 19′ and 29° 18′ north latitude and 76° 13′ and 77° 13′ east longitude and is compact in shape. It is bounded by the Jind and Karnal districts on the north, the Gurgaon and Mahendragarh districts on the south, the Union Territory of Delhi and the Meerut district (Uttar Pradesh) on the east and the districts of Jind, Hissar and Mahendragarh on the west. The Yamuna flows along the eastern boundary of the district and separates it from Uttar Pradesh.

Area.—The district occupies an area of 2,332.2 sq. miles.[3] It ranks fourth in size among the seven districts of the State. Jhajjar is the largest tahsil in the district with an area of 813.5 sq. miles, followed by Gohana (553.2 sq. miles), Rohtak (517.1 sq. miles) and Sonepat, the smallest tahsil with an area of 448.4 sq. miles.

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1. *Rohtak District Gazetteer*, 1910, p. 1.

2. (*Sabhaparva* 32,4) and in the Buddhist text '*Mahamayuri*' (of S. Levi, *Journal Asiatique*, 1915).

3. This figure is based on information received from the Director of Land Records. The Surveyor General of India, however, puts the area of the district at 2,330 sq. miles.

Population.—According to 1961 Census, the district had 14,20,391 persons, 7,51,225 males and 6,69,166 females. It ranked third in the Haryana State.

History of the District as an Administrative Unit

The areas comprising the Rohtak district underwent many changes, extending over hundreds of years before the administrative unit in its present form emerged.[1] Under the Mughal Emperor Akbar, when his minister Todar Mal divided North India into administrative circles, the areas of Rohtak (as a part of the subah of Delhi) fell within the *sarkars* of Delhi and Hissar Firuza. Lying close to the imperial city of Delhi, the tract which now comprises the Rohtak district, was often granted in military jagir by the Sultans and Mughal emperors to the nobles of the court. For this reason Rajput, Brahman, Afghan and Baluch chiefs have at different times enjoyed its revenues. On the death of Bahadur Shah I (1707—12), the successor of Aurangzeb, the Mughal empire began to decline rapidly. The area in which Rohtak lay frequently experienced a change of masters. The claims of the imperial grantees were contested sometimes by the Rajputs, Jats and Sikhs and often by the Marathas. George Thomas, the protege of a Maratha leader, Appa Kandi Rao, established his authority at Hansi and extended it to Maham in the Rohtak area for a number of years until Sindhia and various other regional forces combined to drive him away. Sindhia was however not destined to hold for long his conquests to the west of the Yamuna.

By the treaty of Surji Arjungaon, signed on December 30, 1803, the Rohtak area, along with the other possessions of Sindhia situated to the west of the Yamuna, passed to the British and came under the administration of the North-Western Provinces. The British had no intention at that time to hold large territories beyond the Yamuna. Accordingly a number of chiefs and leaders who had done good military service against the Marathas or had at least remained neutral, were settled in this tract to form a barrier of independent outposts between the British border and the Cis-Satluj Sikh estates as well as the trans-Satluj rising kindgdom of Ranjit Singh. Accordingly, the Jhajjar territory was given to Nawab Nijabat Ali Khan and the old Baluch possessions at Bahadurgarh to his brother, Nawab Ismael

1. These changes are described in detail in Chapter on 'History'.

Khan. Gohana and Kharkhauda-Mandothi tahsils were given to Raja Bhag Singh of Jind and Bhai Lal Singh of Kaithal as life jagirs. The villages of Lohari, Patauda and Kheri in the south-east corner of Jhajjar tahsil were given as a separate jagir to Faiz Muhammad Khan, son of Nawab Nijabat Ali Khan. The estates of Hassangarh, Kirhauli, Pyladgarh (Pahladpur) and Khurampur in Sampla area were also granted to him for life. The Rohtak-Beri and Maham tahsils forming the west of the present district were given to the Nawab of Dujana, who resigned the major portion of the gift in A.D. 1809 because it was beyond his power to manage it.

The formation of the present Rohtak district began when the gift was abandoned by the Dujana chief. The Gohana and Kharkhauda-Mandothi estates lapsed to the British Government on the deaths of Lal Singh in A.D. 1818 and Bhag Singh in 1820. When the Hissar district was created in the latter year, the Beri and Maham-Bhiwani tahsils were included in it, and the other portions of the present northern tahsils in Panipat. In 1824, the Rohtak district was formed as a separate unit consisting of Gohana, Kharkhauda-Mandothi, Rohtak-Beri and Maham-Bhiwani tahsils. The Bahadurgarh territory formed its eastern and Jhajjar its southern boundary. Until A.D. 1832, the whole area, including Rohtak, was under the Resident at Delhi, but when in that year it was brought under the same Regulations as the rest of North India, the Resident became Commissioner. The district was abolished in A.D. 1841 ; Gohana going to Panipat, and the rest of the tahsils to Delhi, but in the very next year it was created again. The two districts of Rohtak and Jhajjar together with the rest of the Delhi and Hissar divisions were detached from North-Western Provinces after 1857 and passed to the Punjab by the Government of India Notification No. 606 of the 13th April, 1858. The Rohtak district remained a part of the Hissar division until 1884.

After its transfer to the Punjab, the Rohtak district experienced several changes before assuming its final form. The Bahadurgarh estates were added to the Sampla tahsil, five detached villages to the east, going to Delhi. Jhajjar, including some areas of Narnaul, Kanaundh and Dadri was at first created as a new district but was abolished shortly afterwards in 1860 when large parts of it were assigned to the Phulkian chiefs as a reward for their loyal services. While the Jhajjar tahsil itself was added to Rohtak, several Badli villages were transferred either to Delhi or Gurgaon, and two detached

Jhajjar estates were given to the Raja of Jind. In the following year, the Maham tahsil was abolished and after making necessary territorial adjustments in favour of Hissar and Delhi the rest of the area was added to the Rohtak tahsil. All these changes were completed by the 1st July, 1861.[1]

On the abolition of the Hissar division in 1884 the Rohtak district was transferred to the Delhi division. It consisted of four tahsils, Rohtak, Gohana, Jhajjar and Sampla but in April 1910, the last-named tahsil was abolished for reasons of administrative economy, and its area was divided between the Rohtak and Jhajjar tahsils. The Sonepat tahsil, which had remained attached to the Delhi district since the year 1861, was added to the Rohtak district in September 1912, on the separation of Delhi territory from the Punjab.[2] The district was then attached to the Ambala division.

In 1948, Dujana State was merged in Jhajjar tahsil and a new sub-tahsil of Nahar was created.

Sub-Divisions, Tahsils and *Thanas*

At present the district is sub-divided into four tahsils namely Rohtak, Sonepat, Jhajjar and Gohana and a sub-tahsil of Nahar. To decentralise authority and ensure better supervision over public affairs, sub-divisions have been created at Rohtak, Sonepat, Jhajjar and Gohana. There are 14 *thanas* or police circles for the maintenance of law and order.[3]

TOPOGRAPHY

Broadly speaking, the entire district is a part of the Punjab plain, but the area is not level. To one interested in micro-regional geography there appear marked variations in its surface configuration, making it possible to divide the district into several distinct localities. Over most of the district, the soil is fine loam of rich colour. The plain, much of which has a gradual slope to the south and east, is traversed by three broken lines of sandhills running roughly north-south. The easternmost of these sandhills is within a few miles of the Delhi territory, the central passes besides Rohtak, whereas the westernmost is along the border of Bhiwani tahsil of the

1. *Report on the Revised Land Revenue Settlement of the Rohtak District*, 1880, p. 44
2. *Rohtak District Gazetteer*, Vol. II, Pt. B, *Statistical Tables*, 1936, p.2.
3. The list of *thanas* may be seen in Chapter on 'General Administration', p. 174.

Hissar district. In addition, there are some rocky hills also running north-south. The district may be roughly divided into three regions as under :

The *Khadar*.—The *Khadar* lies along the Yamuna and is a narrow flood plain ranging from 2 to 4 miles in width formed by the river along its course. There are very few settlements in it. Excepting long ridges of sand along the river, the *Khadar* is a fairly flat lowlying area. It is about 20 to 30 feet lower than the adjoining upland plain, and in its southern parts it is about 700 feet above sea-level. Its fine clayey loam left by the receding floods in the river is particularly suited to rice and sugarcane cultivation.

The upland plain.—It consists of the Sonepat and Rohtak tahsils west of the *Khadar*, the whole of the Gohana tahsil and north-eastern part of the Jhajjar tahsil. It is the most extensive of the three regions. As a whole, the region slopes towards the south as far as Jhajjar from an elevation of about 760 feet above sea-level in the northern part to 710 feet at Jhajjar. A closer examination of the spot levels indicates that within a local area of about 6 to 7 miles' radius, the town of Rohtak with an altitude of 720 feet is situated in the centre of a saucer at the lowest spot. Within this short distance to east and west the altitude increases to 731-32 feet. It is no wonder, therefore, that during heavy rains large quantities of water accumulate in and around Rohtak, create a serious drainage problem and cause heavy damage.

Apart from these minor variations in the surface of the upland plain, the long but low ridges lying north to south in the central parts form a distinctive feature of the Rohtak and Gohana tahsils. A few miles south-south-west of Rohtak there stands a low ridge nearly 3 miles in length, stretching in a north-south direction. It is broken in parts and dissected by short and seasonal streams. These ridges/hills 30 to 40 feet in height are remnants of the Aravallis. The ridges in Gohana tahsil represent perhaps the northernmost extension of the Aravallis in the Indian Union.

The upland plain, as a whole, is covered with old alluvium which, if properly irrigated, is highly productive.

The sandy region.—The southern and south-western part of the Jhajjar tahsil forms the third distinct region. Covered with many sand-dunes, it is different from the other two regions in that the land slopes from the south (with an elevation of about 800 feet) to Jhajjar

town in the north (with about 710 feet above sea-level). Of all the areas of the Rohtak district, this region is infested with permanent sand-dunes to the largest extent in addition to a few small rocky hills in the south-west.

RIVER SYSTEM AND WATER RESOURCES

Main Rivers and Tributaries

Except for the Yamuna, which borders the district on the east, there is no perennial river in the district. To express any definite opinion relating to the past courses of the Yamuna and the subsequent changes in those courses, intensive investigation would be required. However, it has been suggested that the Yamuna used to flow in the course of the old Sarasvati and was a tributary of the Ghaggar which was itself a mighty independent river system with its trunk stream occupying the bed of the Hakra (the ancient Sarasvati). In the remote past this river system is said to have emptied into the Rann of Kutch. For reasons yet to be explained the Yamuna-Satluj divide received an uplift which caused the dismemberment of this river system, the Yamuna diverting to the east and the Satluj, which was also a tributary of the Ghaggar river system according to this view, to the west.[1]

The only stream entering the district is the Sahibi which flows from the south and enters the district in the south-eastern part of the Jhajjar tahsil only to lose itself and disappear within a few miles of the boundary.[2] The Sahibi has its origin in the Mewat hills which are the remnants of the Aravalli mountain system. A number of smaller streams, among which the Indori is well known, rising from the same hills, flow into the Sahibi contributing a little to its meagre current of water. Flowing initially along the western side of the hills in a north-easterly direction the Sahibi runs for about seventy miles before taking a northerly turn a few miles north of Kot Qasim and entering the Rewari tahsil (Gurgaon district) about 8 miles south-east of the town. Having traversed some 16 miles it then enters the south-eastern corner of the Jhajjar tahsil near Lohari village. Maintaining its northward flow it crosses through this corner

1. Gurdev Singh, *The Desiccation Problem of the Jamuna-Sutlej Divide*, (The *Geographer*, Aligarh, May 1952).

2. Of the two streams rising in the Mewat hills, viz. the Sahibi and the Indori, an excellent account is given by H. C. Fanshawe in his *Report on the Revised Land Revenue Settlement of Rohtak District, 1880*.

of the Jhajjar tahsil, re-enters the north-western part of the Gurgaon district and finally re-enters the Jhajjar tahsil near Kutani. The following lines from Fanshawe's account of about one hundred years ago show clearly how the dams, extended cultivation and reduced rainfall have affected the water resources and drainage of this area :—

> "On reaching Kutani, the stream (Sahibi Nadi) divides into two branches. One passes due north and joins the depression between Yakubpur and Fattehpur, the other turns west, and in Naglah again divides, the one branch passing up to the lowlands above Dadri, and the other continuing west to Zahidpur. After throwing an arm into the Batherah jhil, the latter turns north to Aurangpur, and flows through a lake there along the foot of the sand-hills to Silanah and the two Silanis. At this point it changes its course abruptly to the east, and passes through a gap in the sand-hills to the lake between Kote Kalal and Surah, and thence working south to the lakes of Kiloi and Dadri, (where it is joined by the branch going north from Naglah) falls into the expanse between Sondhi, Yakubpur and Fattehpur, to which the branch from Kutani flows direct. From here the re-united stream turns sharply to the north again, and passing through a second sand ridge, between Fattehpur and Niwanah, enters Badli through the masonry sluices of the often threatened but still existing band of Nawab Feiz Muhammad Khan. Thence it passes into the Delhi district by two arms, the best defined going through Dewarkhanah and Lohat to Dhindasa, and the other by a huge shallow sweep up the west side of Badli and under the town. When the floods come down in full volume, all the depressions along their course fill from side to side; the water generally rises in a few days and passes off in two or three weeks. The lakes above Aurangpur and below Kote Kalal and Surah never dry, and even the others usually retain some water in the lowest parts of their beds all the year round. The Najafgarh jhil lies five miles distant from the Jhajjar border, and throws out from the centre and northern and two shallow depressions, fourteen miles and eight miles long, back to Bupaniah and Bahadurgarh; while the lowlying lands of Jhajjar are thus irrigated by the streams as they come down to the jhil, those of Sampla are affected by floods passing up from the over-filled jhil itself. The view of the lakes with

their waters rendered intensely blue by the surrounding sand-hills, fringed with luxuriant crops of wheat and sugarcane, and covered with flocks of ducks, geese and snow-white pelicans, is very beautiful in the spring."[1]

Experience shows that due to its long passage through a dry and sandy country, the Sahibi can only be in spate in years of exceptionally heavy rainfall. Ordinarily, water flows along the bed of the Sahibi only in the rainy season, it being dry for the rest of the year.[2]

Natural Drainage

Till about the year 1878, the obstructions caused by the Old Rohtak Canal in the natural drainage of the country produced water logging and consequently malaria. The re-alignment of the canal greatly improved the natural drainage of the area.[3] During rains the water, instead of flowing into some river, follows a course directed towards inland depressions in eastern and southern parts of the district and these areas get flooded.

Lakes and Ponds

While the landscape of the upland plain is throughout dotted with ponds, each village having at least one, there is only one big lake, near Surah (Jhajjar tahsil), which can boast of being seldom dry.

Underground Water Resources

The depth of water table is the lowest in the *Khadar* area along the Yamuna where it is below 10 feet. It increases to 40—60 feet or even more in the Jhajjar tahsil and in the western and south-western parts of the Rohtak tahsil. The ground water conditions indicate that the district faces the problems of occurrence of brackish water, water-logging in eastern parts, and deep water levels in south-western parts.[4]

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1. *Rohtak District Gazetteer*, 1910, p. 3.

2. The Sahibi stream spills over its banks when the rainfall is heavy and the floods cause damage to standing *kharif* crops in Jhajjar tahsil and delays the sowing of *rabi*. The stream sweetens and replenishes the water of wells along its course generally within one mile on either side of it. The stream, therefore, plays a vital role in the maintenance of sub-soil water table and sweetening water.

3. *Rohtak District Gazetteer*, 1910, p. 5.

GEOLOGY

With the exception of a few small exposures of Alwar quartzite belonging to the Delhi system, the district is almost entirely covered by alluvial deposits.

Mineral Wealth

Salt.—There are several villages south-west of Delhi situated partly in the Gurgaon and partly in the Rohtak district, where the manufacture of salt by the solar evaporation of brine raised from wells, has been carried out for a long time. The production of salt was stopped in 1923-24 due to levy of punitive tax and inferior quality of salt as compared to Sambhar salt. The saline area, which is over 52 sq. kms. lies in the Sultanpur *mahal*, a cluster of villages on Rohtak-Gurgaon border. The brine in this area seems inexhaustible, as some of the works have apparently been in operation for the last 200 years and no depletion has been observed. The quality of brine varies considerably in different wells and in the same well in different seasons. During the rainy season, and for a month or so thereafter, the water is largely brackish in wells which in warm weather yield excellent brine. The proportion of salt in the water varies from about 0.16 per cent, the lowest workable rate, to as high, in the hot weather, as 3 per cent. The average depth of water below the surface, in March, varies from 2.13 metres to 5.80 metres.

Saltpetre.—Rohtak is an important saltpetre producing district. The saltpetre appears as efflorescence on the surface during the summer season. Most of it is manufactured in the villages of the Gohana and Sonepat tahsils.

Kankar.—*Kankar* (lime) occurs at a number of places, the important ones being Kaliawas and Birohar in the Jhajjar tahsil.

Seismicity

General.—The history of past earthquakes experienced in and around the Rohtak district shows that Rohtak is situated in a region liable to earthquakes of moderate intensity. Some of the important earthquakes which affected the region occurred on July 15, 1720, September 18, 1903 and April 4, 1905.[1] No major earthquake which had its epicentre near about Rohtak, has been located in the

1. The Kangra earthquake of April 4, 1905, affected the Rohtak district. The affected areas were Beri, Gohana, Jhajjar and Kalanaur.

recent past. The place has, however, been affected by earthquakes having their epicentres in and around the Himalayan Boundary Fault Zone and by deep focus earthquakes occurring in the Hindu Kush region. Epicentres of minor earthquakes have, at times, been located within 100 miles of Delhi, some of which, it is believed, have been experienced in Rohtak also.

Ground acceleration.—It is inferred from the available data that the maximum intensity at Rohtak due to any earthquake never exceeded VII on Modified Mercalli Scale. The intensity VII on MM Scale corresponds to a horizontal ground acceleration range of 18-140 cms/sec. in any one direction. The wide range of acceleration figures is due to the fact that the ground acceleration at a place is largely dependent on the nature of foundation existing at the site, the acceleration being greater where the foundation is of loose boulders, alluvium or filled up ground and much less where there is granite or hard rock foundation. In the Rohtak district, the former is the case.[1]

FLORA

There has been no systematic survey and there is nothing particular about the flora of the district. Various kinds of trees and shrubs grow in different localities. The scope of growing different trees, especially those requiring much watering, has been restricted due to shortage of canal water, brackishness of well water, and water-logging. However, efforts to improve irrigation facilities and to provide encouragement to horticulturists have led to useful results. Three garden colonies at Panchi Gujran in the Sonepat tahsil, Kharkhauda and Lahli in the Rohtak tahsil have been established to grow more fruit. The garden colonies at Panchi Gujran and Lahli, though deficient in water, are still doing well; not so the one at Kharkhauda which suffers from water-logging.

In common with the neighbouring districts of the plains, Rohtak also possesses rich alluvial soil, the surface soil being loamy and slightly on the alkaline side. Sandy tracts occur in some parts, particularly in the Jhajjar tahsil. On account of the pressure of population and extensive cultivation, very little has been left of the natural forests. These, where present, are of the open evergreen scrub or

1. According to information received from the Head of Geology Department, Panjab University, Chandigarh.

thorn type, consisting mostly of the following trees and shrubs[1] :— *Salvadora oleoides* (*Pilu, Jal*), *Prosopis cineraria* (*Jand, Janti, Chonkra*), *Capparis decidua* (*Karil, Kair, Karir, Dela*), *Balanites aegyptiaca* (*Hingo, Tingota*), *Capparis sepiaria* (*Hins, Heens*), etc. These trees and shrubs are widely spaced, and the larger shrubs associate themselves in close clumps which offer shelter and support to climbers and twiners.

The common climbers seen here are : *Coccinea cordifolia* (*Kutra, Kundru, Kanduri*), *Maerua arenaris*, *Pergularia daemia* (*Aaksan*), *Rhynchosia minima* and others.

During the rainy season, a number of herbs appear on the ground giving it a green appearance. Among these herbs may be recognised species of *Cleome viscosa* (*Hulhul*), *Commelina* (*Kanteri, Kankawwa, Kana*), *Corchorus* (*Khurand, Bohphali, Kowwa-torai, Kag-roti, Chonch, Kharenti*), *Digera arvensis* (*Kundra, Tandla*), *Portulaca* (*Kulfa*), *Tephrosia* (*Jhojhru, Pawad*), *Trianthema* (*Santhi*), *Tribulus alutus* (*Bhankdi*), *Triumfetta tomentosa* (*Kasni*), etc. *Adhatoda vasica* (*Basuti*) often forms gregarious patches and may also be found in association with *Capparis decidua* in some places.

In waste lands, *Xanthium strumarium* (*Bangra, Bichhu, Kutra, Bhurat*) is commonly seen. This is an introduced plant which is rapidly spreading and is troublesome on account of its fruits which have hooked bristles. Other plants found in waste lands are *Calotropis procera* (*Ak, Madar*), the exotic weeds, *Croton bonplandianum* (*Kala Bhangra*) and *Argemone mexicana* (*Satyanasi, Kateli, Kandiari*) and a thistle, *Cnicus arvensis* (*Katchi, Rissa, Katala, Rassa*).

Some of the characteristic plants of the sandy tracts and dune hillocks are, *Aerva pseudotomentosa* (*Dholi mundi, Dholphulio, Kamheda*), *Alhagi camelorum* (*Jawasa, Bharbharra*), *Arnebia hispidissima* (*Rattanjot*), *Chrozophora prostrata*, *Crotalaria burhia* (*Meini*), *Farsetia hamiltonii* (*Farid-buti*), *Leptadenia spartium* (*Khimp, Khip*), *Peganum harmala* (*Harmal*), *Sericostoma pauciflorum*, *Zizyphus nummularia* (*Kokanber, Malha, Jhad, Beri*), and others. Many of these are used medicinally.

Of the most characteristic trees of the drier parts of the district is *Tamarix articulata*, locally known as *Farash*. This tree grows readily from cuttings, does not need much water, and is, therefore, planted

1. Local names have been given wherever possible along with botanical names.

along roadsides, canal banks and around cultivated fields. Near villages and along avenues, several other species of trees are found. The commonest avenue tree is *Dalbergia sissoo* (*Shisham*) which is well-known for its timber. Other trees planted along roadsides and canal banks and elsewhere in the district are *Acacia nilotica* (*Babul, Kikar*), *A. leucophloea* (*Reru*), *A. senegal* (which yields gum-arabic) *Albizzia lebbeck* (*Siris*), *Azadirachta indica* (*Nim*), *Butea monosperma* (*Dhak*), *Cassia fistula* (*Amaltas*), *Cordia dichotoma* (*Lasura*), *Ficus religiosa* (*Peepal*) and *Ficus bengalensis* (Banyan or *Bar*), *Morus alba* (Mulberry or *Sahtoot*), *Terminalia arjuna* (*Jumela*) and others.

Other trees occasionally met with are *Bauhinia variegata* (*Kachnar*), *Crateva nurvala* (Barna), *Moringa oleifera* (*Sohanjna*), *Mitrogyna parvifolia* (*Kaim*), *Salmalia malabarica* (*Semul* or *Symbal*), *Tecomella undulata* (*Lahura*), etc. *Opuntia dillenii* (*Chhittar Thohar* or *Nagphani*), the common prickly cactus, may be seen in waste lands and along hedges.

Among the fruit trees, *Mangifera indica* (Mango or *Aam*) and *Syzygium cumini* (*Jamun*) are the most important.

In villages and around the village ponds, people have planted trees like banyan or *bar* (*Ficus bengalensis*), *peepal*, *nim* and *kaindu* (*Gymnosporia royleana*) to provide shade for the cattle. Fortunately, the villagers, particularly in dry areas, plant such trees near villages on religious ground. The person who plants a *tirbaini* (trees comprising *peepal*, banyan and *nim* at the same place) hopes to achieve salvation. This motivation for planting shady trees is responsible for their existence even in sandy and dry tracts. Besides shade, these trees provide food for cattle in the shape of fodder during emergencies, and fruits to the birds.

Located in an important agricultural division, the district has extensive areas under cultivation. The important crops are sugarcane, wheat, millets, gram, cotton, oil-seeds and pulses. Paddy, maize and barley are also grown to a small extent. Among the weeds of these cultivated fields, some of which are seasonal may be mentioned : *Aeschynomene indica* (*Dadain*), *Artemisia scoparia* (*Dona Jhan*), *Asphodelus tenuifolius* (*Bokat, Piyazi*), *Celosia argentea* (*Sarwali*), *Cleome viscosa* (*Hulhul*), *Convolvulus arvensis* (*Hiranpaddi*), *Corchorus* Spp., *Crotalaria medicaginea* (*Gulabi*), *Digera muricata* (*Kundla, Tartara*), *Euphorbia dracunculoides* (*Kangi*), *E. Hirta* (*Dudhi*), *Leucas cephalotes*

(*Maldoda*), *Stellaria media* (*Safed phul-kee*, *Buch bucha*) and various other species.

The aquatic flora of the district includes such flowering plants as *Aponogeton ceratophyllum* and species of *Hydrilla*, *Nymphaea* (*Chhota Kamal*), *Potamageton*, *Trapa bispinosa* (*Singhara*), *Utricularia* and others, and also species of *Marsilea* and *Azolla* of the *Pteridophyta* group.

Many of the herbs and shrubs found in the district are known to possess medicinal properties. Some of the more important ones widely used for medicinal properties are *Boerhaavia diffusa* (*Punarnava*), *Argemone mexiana* (*Satyanasi*), *Peganum harmala* (*Harmal*), *Solanum surattense* (*Kandiari*), *Vitex negundo* (*Nirgundi*), *Withania somnifera* (*Asgand*) and *Zizyphus* Spp.

There are many grasses in the district. The biggest and the most conspicuous is *Saccharum Munja* (*Munj*, *Sarkana*). This grass is put to various uses and yields fibre from which strong ropes are made. A very good fodder grass is *Cynodon dactylon* (*Dub*). Other grasses commonly seen in the district are *Eragrostis*, *Vetiveria zizanoides* (*Khas-Khas*), *Dactyloctenium aegyptium* (*Makhra*, *Madana*), *Cenchrus ciliaris*, *Echinochloa colona*, *Heteropogon contortus*, *Polypogon* Sp., etc.

The following description of the grasses of the district with their relevance to human existence is worth reading :—

> "The grasses of the district are numerous. Most conspicuous of all is the *sar* (saccharum munja) whose uses are too well known to need mention. This is abundant on the sand-hills and also grows on the river sand thrown out by excavation of the canal channels. *Dub* (cynodon dactylon) luxuriates on the well runnels and canal banks and in seasons of good rainfall covers every field. '*Aur ghas jal jawegi dub rahegi khub*; though all other grass be burned up, the *dub* will remain fresh.' It is a great pity the people do not stack it for their cattle. The *mota* or *motiya* (*cyperus rotundas*) is a troublesome weed especially in irrigated land, but its bulbous root is edible and *chamars* may be seen pulverising the ground so as to extract it whole. The *dab* (eragrostis cynosuroides) is often a troublesome weed, but when young it is readily grazed and when times are bad it is stored and chopped up for fodder: The proverb '*Marega, kya dab charega*, though an animal should die,

will he eat *dab* ?'—is too pessimistic; brushes and bed rope are also made from it ..... *Kans* (saccharum spontaneum) is less of a nuisance than it is painted, and is chopped up for fodder. Occasionally its decrease is even made cause for complaint. There is a proverb too, '*ghore ko kans, admi ko bans*; kans for a horse, and a staff for man'.

"The *gandra, pani* or *jhund* (anatherum muricatum), which is found in ponds and depressions, is very valuable for thatching and for brooms, while the *makrah* (quaere ?) with a blossom like a wood louse and the *deila* (quaere?) both give good grazing. The *sanwak* or *samak* (Panicum colonum) bears a small *bajra*-like grain and is collected by the poorer classes in times of famine while the *Bhurat* (cenchrum echinatum), which gives a poor grain for man as well as fodder for cattle, will be identified by every tent-dweller by the persistence with which its burrs cling to his shirt and towel."[1]

Adhatoda vasica (*Bansa*) and *Vitex negunda* (*Sambhalu*) are used as roofing material for mud houses. The grasses like *Dub* and *Kans* are used to feed cattle. Other grasses and herbs like *Sanwak*, *Dub*, *Deila* and *Bathu* (*Chenopodium album*) are harmful for crops but provide good fodder for cattle.

FAUNA

Animals

Early in the 20th century, the district was well known for its large herds of antelope (black buck-*hiran*) and gazelle (*chinkara*), the latter being found chiefly in the southern part and the former in the northern. As no Hindu in Rohtak would kill them and gun licenses were rare, the herds in some parts were very numerous, and fine heads were procurable. The Jat's instinctive attitude to them was that God had made them too; when He gave good crops, there was enough for all and when famine came they too had to go hungry. Nevertheless, so destructive were they to the crops that he was often glad to see them shot, and never interfered with the sportsman. The position has changed since then and antelopes are almost on the verge of extinction. *Chinkara* is occasionally found

1. *Rohtak District Gazetteer*, 1910, p. 7.

in the areas of Sunarian Ki Thali, Kakrana, Pilana, Nigana and Bhainsru in the Rohtak tahsil; Salhawas, Delina and Jahangirpur in the Jhajjar tahsil; Kakana, Sargthal, Bir Gohana and Baroda in the Gohana tahsil, and Murthal, Dobeta as well as along the Yamuna in the Sonepat tahsil.

Fox, jackal and squirrel are commonly met with throughout the district. Wild cat is also not rare. Wolf, hyena and wild pig are now becoming rare. *Nilgai* (blue bull) was common, especially in the Chhuchhakwas Bir and Matanhel jungle, but in the famine of 1900 it almost disappeared; however, a good many are now met with in almost every tahsil. In spite of their being very harmful to the crops, the Jats do not kill them.

Monkeys are also found in the district. They ravage the sugarcane fields whenever they get a chance, prevent young trees from growing, and often threaten women and children carrying food to the fields. The people are unwilling, on religious grounds, to kill them.

Scorpions are not very common but snakes are. Even the poisonous varieties of snakes, such as the cobra, and karait are found. Besides, the common lizards, big and small, chameleons are plentiful and the varanus or biscobra is also found.

Birds

E. Joseph, Deputy Commissioner and Settlement Officer, Rohtak, wrote in 1910 :

> "Of game birds, the black partridge, snipe, jack snipe, duck, geese, teal, and cranes are common in suitable localities. The grey partridge, common sand grouse and quail may be found all over the district, though quail are nowhere plentiful. The imperial sand grouse is not uncommon and bustard are said to be occasionally found.[1] Peafowl run wild everywhere, but the people, even the Muhammadan Rajputs, object to their being shot. The people believe that when the peacock dancing in his pride catches sight of his ungainly legs he sheds tears of mortification. The sympathetic hen comes to drink his tears, and from this draught come the eggs she lays. Birds of all kinds are extraordinarily common in the district and many of them are of singularly brilliant plumage. The Jat hardly knows one from another, but he often hangs a pot of water

1. A houbara was shot near Rohtak in December 1910.

outside his house for them and he will fill the scoop at the rim of the well with water before he ceases work for the night in case any animal should come to quench its thirst and find no water there."

Ducks and geese.—Generally, three kinds of ducks are met with in the district, viz. divers, dabblers and mergansers with saw-like bills. Besides, there are other types which visit the jhils and ponds in winter from distant lands beyond the Himalayas. Of these, mention may be made of Brahmany Duck or Ruddy Sheldrake (*Chakwa*), common teal, gargeny teal (vegetarian), pintail, gadwall, widgeon, shoveller, pochard, mallard, etc.

The geese found in the district are also of three types, viz. grey lag, bar-headed and large white-fronted. Ducks and geese are found in the jhils and ponds at Kiloi, Dhamar, Ladhod and Naya Bas in the Rohtak tahsil; Raiya Dawla, Bakra and Dhurana in the Jhajjar tahsil; Kheri Sargthal, Rana Kheri, Bhainswan, Mundlana and Bali in the Gohana tahsil and Dobeta, Sersa, Khubru, Barwasni and Murthal in the Sonepat tahsil.

Snipes, cranes and coots.—These are also found near lakes and ponds along with ducks and geese.

Partridges.—Black and grey partridges are generally found throughout the district.

Green pigeons.—These are greenish-yellow, olive-green and ashy-green with black patches on the shoulders and yellow bars on the blackish wings. They are found throughout the district, on banyan, *peepal*, *beri* or fig trees.

Blue rock pigeon.—This bird is commonly found all over the district.

Pea fowl.—This beautiful bird is also found all over the district.

Common sand-grouse.—This is found in open, barren plains, stubble fields and land away from water. It comes to drink water regularly in the morning and at sunset. It is found at Kalanaur, Chamari, Tatoli, Makroli, Bhainsru and Sunari in the Rohtak tahsil; Kosli, Salhawas and Nahar in the Jhajjar tahsil; Kohla, Banwasa and Bir Gohana in the Gohana tahsil, and Ganaur in the Sonepat tahsil.

Other birds.—Apart from the game birds described above, there are numerous other common birds in the district such as the sparrow,

crow, kite, vulture, babbler, parrot, kingfisher, hornbill, egret, heron, stork, tit, bulbul, cuckoo, *baya* and the dove.

Due to reclamation of jungles and *banjar* lands, wild animals which used to abound in the district are fast disappearing. At present, there is no wild life sanctuary in the district. Thus, finding no refuge and shelter, animals and birds have migrated and are still migrating to other places.

CLIMATE

The climate of the district is dry with an intensely hot summer and a cold winter. Only during the three monsoon months of July, August and September does moist air of oceanic origin penetrate into this district to make the weather comparatively milder.

The year may be divided into four seasons. The cold season starts by late November and extends till about the middle of March. This is followed by the hot season which continues till about the end of June when the south-west monsoon arrives. July to September is the south-west monsoon season. The post-monsoon months, October and November, constitute a transition period from the monsoon to winter conditions.

Temperature and Humidity

Temperature.—There is no meteorological observatory in the district. The description that follows is based on the records of observatories located in the neighbouring districts. The cold season starts towards the later half of November when both day and night temperatures fall rapidly with the advance of the season. January is the coldest month when the mean daily maximum temperature is about 21° C (69.8°F) and the mean daily minimum about 7° C (44.6° F). In the winter months, during cold waves which affect the district in the wake of western disturbances passing across North India, minimum temperature may sometimes go down to the freezing point of water and frosts may occur. From about the middle of March, temperatures begin to rise rapidly. May and June are the hottest months. From April, the hot westerly winds locally known as *luh* blow and the heat is intense. In May and June, the maximum temperature may sometimes reach about 47° C (116.6° F). With the advance of the south-west monsoon into the district towards the end of June, day temperatures drop appreciably while night temperatures continue to be as high as

in the summer. Even during the brief south-west monsoon, the weather is close, damp and uncomfortable in between the spells of rain on account of the increased moisture in the air. In October, the day temperatures are as high as during the monsoon months but the nights are cooler.

Humidity.—The air is dry during the greater part of the year. In the monsoon months, the humidity is high. April and May are usually the driest months, humidity in the afternoons being less than 20 per cent.

Rainfall

The records of rainfall in the district are available for seven stations for periods ranging from 53 to 97 years. The details of the rainfall at these stations and for the district as a whole are given in Tables I and II of Appendix. The average annual rainfall in the district is 457.6 mm. (18.01"). The rainfall generally increases from the south-west to the north-east. The rainfall in the south-west monsoon season which reaches its peak in the month of July constitutes about 74 per cent of the annual rainfall. The annual rainfall in the district varies considerably. In the fifty-year period from 1901 to 1950, the highest annual rainfall was in 1933 when it amounted to 199 per cent of the normal. In the two consecutive years, 1938 and 1939, the annual rainfall in the district was the lowest in the fifty-year period and was only 38 per cent of the normal in each of the two years. In the same fifty-year period, the rainfall was less than 80 per cent of the normal in 16 years. Considering the district as a whole, there were two periods of such low rainfall 1938—41 and 1943-44. At some stations in the district consecutive two, three, four and five years with rainfall less than 80 per cent of the normal occurred. Even eight consecutive years of such low rainfall occurred at Beri during the period 1937—44. It will be seen from Table I of Appendix that the annual rainfall was between 300 and 600 mm. (11.81" and 23.62") in 33 years out of fifty.

On an average there are 24 rainy days (i.e. days with rainfall of 2.5 mm. or more) in a year in the district. This number varies from 16 at Salhawas to 29 at Rohtak and Sonepat.

The heaviest rainfall recorded in 24 hours at any station in the district was 484.1 mm. (19.06") at Rohtak on September 19, 1933, when streets were traversable only by boats.

Cloudiness.—During the monsoon season, particularly in July and August, the skies are heavily clouded. During the rest of the year, the skies are generally clear or lightly clouded. In January, February and early March, the skies are sometimes overcast with the passage of western disturbances.

Winds.—Winds are generally light during the post-monsoon and winter months. They strengthen a little during the summer and monsoon months. Winds are predominantly easterly or south-easterly in the monsoon season and mostly westerly or north-westerly in the other seasons.

Special weather phenomena.—April to June is the period with the highest incidence of thunderstorms and duststorms. Violent squalls (*andhis*) often accompany such storms. While some of the thunderstorms are dry, others are accompanied by heavy rain and occasionally hail. Rain during the monsoon months is often accompanied by thunder. Fogs, sometimes dense, appear in the winter months and thunderstorms also occur in association with western disturbances.