

CHAPTER I

GENERAL

ORIGIN OF NAME OF THE DISTRICT

The district of Patna is named after its principal city, Patna. Various legends exist regarding its origin. The most popular ascribes it to a Prince Putraka, who created it with a stroke of his magic staff and named it in honour of his wife, the Princess Patali. This story is found in the *Katha Sarit Sagar* and in Hiuen Tsiang's *Travels*.* In early times the city was also known as Kusumpur or Pushpapur, both meaning a 'city of flowers'. It is also said that originally Pataliputra was a village known as Pataligram and later came to be known as Srinagar. However, Pataliputra appears to have been derived from 'Patali' or 'trumpet flower' (*Bignonia Suaveolens*). It was called Pali-bhotra by Megasthenes. In 1704, the city was called Azimabad after its Governor Prince Azim-us-Shan.** It is generally accepted that Patna stands on the site of the ancient metropolis of Patna or 'Pataliputra'.†

LOCATION, BOUNDARIES, AREA AND POPULATION

Location and Boundaries.—The district extends from 84°42' to 86°4' east longitude and 24°57' to 25°44' north latitude. It is bounded on the north by the river Ganga which separates it from the districts of Saran, Muzaffarpur and Darbhanga, on the south by the district of Gaya, on the east by the district of Monghyr and on the west by the Son which separates it from Shahabad. The district boundaries were changed every few years in the period from 1881 to 1931. There has been no transference of territory from, or to, the district since then.†† The district is eighty-two miles in length from east to west, and from twenty-eight to forty-two miles in breadth.‡

Area and Population.—The district has an area of 5,594 sq. km.££ with a population of 2,949,746 @ (males 1,522,687, females 1,427,059) according to 1961 census.

* *Imperial Gazetteer of India*, Vol. XX, New Edition 1908, pp. 66-67.

** L. S. S. O' Malley: *Patna District Gazetteer*, 1907, p. 204.

† *Ibid.*

†† *District Census Handbook, Patna* (1954), p. 1.

‡ *Patna District Gazetteer* (1924), p. 1.

££ Central Statistical Organisation Circular no. Cs0/1/11/66, dated the 25th October, 1966

@ *Census of India*, 1961, Vol. IV, Bihar, Part II-A, General Population Tables (1963), p. 21.

ADMINISTRATIVE UNIT

Patna was constituted a separate district in 1865 by carving out a portion of the old district of Bihar. 19 estates were transferred from Patna to Tirhut in 1869, thus constituting the district as it now stands.*

It is one of the districts of the Patna Division and has five subdivisions, namely, Patna Sadar, Patna City, Danapur, Barh and Bihar. The following table gives details of the administrative subdivisions of this district:—

ADMINISTRATIVE SUBDIVISIONS†

Subdivisions.	Revenue thanas.	Police-stations.	Towns.	Villages.	Area.	Total population.
					(Revenue thana.)	(Revenue thana.)
					Sq. miles.	
Patna City	.. Patna City (Part)	1. Sultanganj 2. Alamganj 3. Khajekalan 4. Chowk-Kalan 5. Malsalami	.. Partly Patna Municipal Corporation and partly rural.	40	31.33	188,499
Patna Sadar	.. 1. Patna City (Part)	1. Kadamkuan 2. Pirbahore	.. Ditto	9	4.49	99,048
	2. Phulwari	1. Kotwali 2. Gardanibagh 3. Digha 4. Phulwari	.. Ditto	141	88.27	244,321
	3. Masaurhi Buzurg	1. Masaurhi (Part) 2. Punpun	..	311	198.44	217,266

	4. Hilsa	..	Masaurhi (Part)	..	..	1	1.08	1,306
Danapur	1. Maner	..	1. Maner	..	..	111	118.40	154,681
		..	2. Bihta (Part)	..	..			
	2. Danapur	..	1. Danapur-Khagaul	3	..	57	52.09	132,566
	3. Bikram	..	1. Bihta	..	..	393	278.90	327,834
			2. Bikram	..				
			3. Paliganj	..				
			4. Naubatpur	..				
Barh	1. Fatwa	..	1. Fatwa	..	1	160	97.32	124,582
	2. Barh	..	1. Barh	..	1	319	296.93	326,117
	3. Mokameh	..	1. Mokameh	..	1	95	182.65	155,421
			2. Sarmara	..				
Bihar	1. Bihar	..	1. Bihar	..	1	510	445.29	575,086
			2. Asthawan	..				
			3. Giriak	..				
			4. Silao	..				
	2. Hilsa (Part)	..	1. Chandi	..	..	313	230.78	281,522
			2. Hilsa	..				
			3. Ekangarsarai (Part)	..				
	3. Islampur	..	1. Ekangarsarai	..	(Part)	144	116.83	121,537
			2. Islampur	..				

TOWNS

This district has ten towns, namely :—(1) Patna including Patna City, (2) Danapur Cant, (3) Khagaul, (4) Danapur Nizamat, (5) Bihar, (6) Rajgir, (7) Barh, (8) Mokameh, (9) Fatwa and (10) Bakhtiarpur.

* *Imperial Gazetteer of India*, Vol. XX, p. 57.

† *District Census Handbook, Patna* (1966), pp. 11—12.

TOPOGRAPHY

The only hills in the district are the Rajgir hills which form part of a long range extending from near Bodh Gaya and terminating abruptly near Giriak. Two parallel ranges enclosing a narrow ravine start near Giriak. They broaden out to the south of the present town of Rajgir where they enclose a valley in which the ancient city of Rajgir was built. The southern range passes on in its south-westerly course without interruption; the northern range turns abruptly north up to the Vipulagiri peak from where it turns south-west again and meets the southern range beyond Baibhargiri and Sonagiri. The hills are of no great height; they seldom attain an altitude of more than a thousand feet. Near Harnia hills on the boundary of the district, however, they reach a height of 1,472 ft.*

Besides these hills there is a small isolated hill, called Pirpahari, rising abruptly from the plain on the north-west of Bihar town. The southern slope is gradual, covered with boulders, which form a natural staircase; but the northern side consists of a precipitous cliff with numerous rocks scattered along it.**

NATURAL DIVISIONS

With the exception of a small area of hills and jungles in the south-east near the junction of the districts of Patna, Gaya and Monghyr, the whole district is a rich alluvial plain sloping gently northwards. It can be divided into three separate natural divisions: (1) a narrow strip of somewhat high ground about 4 to 5 miles in width running along the northern boundary on the bank of the Ganga, consisting of a peculiarly fertile soil producing magnificent crops; (2) an elevated country on the south-east containing the Rajgir hills; and (3) the remainder, a wide alluvial plain of fine natural fertility devoid of any natural eminences. Although the slope is towards the north, none of the rivers except Punpun meet the Ganga within the district. They are deflected eastwards or north-eastwards by the narrow strip of comparatively high land along the southern bank of the Ganga.†

With the exception of the Rajgir hills and a solitary hill rising from the open plain near Bihar town, the general aspect of the district is that of an unbroken level, diversified only by groves of mango and palm trees. The greater part of this tract is singularly fertile, being watered by the streams which descend from the Hazaribagh plateau to

* *District Census Handbook, Patna* (1954), p. 1.

** *Patna District Gazetteer* (1924), p. 3.

† *District Census Handbook, Patna* (1954), p. 1.

join the Ganga; and no jungle is left except in the Rajgir hills. The north and west of the district, with its shady roads and mango groves is a pleasant country, though it contains no striking scenery. On the east of the district is the great plain, bare of trees, which is known as the *tal*.

RIVER SYSTEM

The district of Patna stretches eastwards from the confluence of the Son and the Ganga. The river Son washes nearly the whole of its width on the west separating it from the district of Shahabad; the Ganga runs along the whole of the length on the north separating the district from the Tirhut Division. The only other rivers of any importance are the Punpun, Morhar, Mohane, Panchane and the Sakri. Almost all of these are utilised for irrigation of the lands through which they pass. Indeed, some of them are in this way almost entirely lost in the district. They remain nearly dry for the most part of the year. Several dams are constructed across them. The Punpun when it falls in the Ganga near Fatwa consists of a mere treacle.*

The Ganga forms the northern boundary of the district, while the Son forms its boundary on the west. The other rivers intersect the district from south-west to north-east. They all flow northwards from the Gaya district and take a sharp turn towards the east soon after crossing the boundary; with the exception of the Punpun, none of them join the Ganga within this district, being driven eastwards by the high land on its southern bank. None of them are of any great size, and the greater part of the water brought down is diverted into irrigation channels and reservoirs, and distributed among the fields so that their main channels are mere dried up beds for the greater part of the year: in fact, only the Punpun, Morhar and Panchane contain any volume of water. This is particularly the case in the south-east of the district, where the streams and rivers are used up in a network of *pains* or artificial channels, expending themselves before reaching the Ganga or mingling in the *tal* in the Barh subdivision. The whole of the country to the south of Barh is very low, but the strip of high land along the Ganga prevents any of these streams from entering the main river. They meander about in a confusing manner, known by different names till the necessities of irrigation and the dryness of the season leave nothing but tortuous sandy beds to mark the direction of their courses. Their beds are sandy and the banks in general low and sloping, so that when they come down in flood during the rainy season, the adjacent country is inundated, but part of the water finds an exit by the Maithun or Kuluhar river.

* District Census Handbook (Supra).

Ganga.—The Ganga most sacred of rivers to the Hindu, forms the northern boundary of the district from the confluence of its waters with the Son on the west up to the village of Dumra on the east, its total length in Patna being ninety-three miles. The river at Patna is about six hundred yards wide in the dry season, and the stream is then sluggish until it is joined by the Gandak; but from June to September under the combined effect of the melting Himalayan snows and the monsoon rains it becomes a mighty stream several miles wide. It is at this season that changes occur in the course of the river. The main stream comes down with great violence; and if it takes a course which impinges upon high land on either side, that land is in danger of being cut away. There has sometimes been ground for uneasiness in Bankipur and Patna City, though the southern bank is here generally protected by revetments; and a journey past Patna by boat will show many broken columns which have collapsed under the pressure of the flooded river. While the main stream is impinging upon one bank, the stream on the other side is comparatively gentle, so that before the flood subsides it ordinarily deposits a certain amount of the detritum with which the water is heavily loaded. The heaviest portion of the detritum is deposited first; but much of the sand has already been deposited before the river reaches Patna district, so that the *chars* and *diaras* thus created in this district quickly become covered with the highly fertile silt which is brought down by the river. When silt is deposited, these formations produce magnificent crops; and many of the *diaras* are very valuable estates. They are unfortunately the cause of many disputes, with frequent riotous struggles for possession, owing to the fact that land marks are apt to be washed away in the annual flood. In extensive *diara* areas there is usually a part which is covered with a deposit consisting chiefly of sand, on which, a low scrub jungle appears which gives shelter to wild pig.

The confluence of the Ganga with the Son is near the village of Hardi Chapra, whence the river flows in a single stream to Digha. Here a side channel of the Son, the last remnant of its ancient easterly course, enters the Ganga. The Patna-Gaya canal joins the Ganga by this side stream; but in some years there is not enough water to render it navigable and the double lock of the canal is liable to be left high and dry after the monsoon flood subsides. The river flows past Bankipur and Patna City from where branches of the Gandak join it from the north, swelling its stream and forming great *chars*, for many miles. The Punpun joins the Ganga at Mohsingpur Kurtha. At Barh the river turns to the north in a horseshoe curve.

Son.—The Son rises in the Maikal range near Amarkantak in Madhya Pradesh and washes the western portion of this district. It forms natural boundary between Patna and Shahabad. After traversing about 300 miles from Amarkantak it enters Patna district at Mahabalipur

from where it flows in northerly direction for 41 miles till it joins the Ganga. It has a long rail-cum-road bridge at Koilwar. Since the anicut was built at Dehri, there has ordinarily been little water in the river except during the rains*; but however low the water may be, it is dangerous to cross except at the known fords, since its bed abounds in quicksands. The Son drains a very large hill area; and after heavy rain in Madhya Pradesh it is apt to come down in sudden and violent flood; but its floods are of short duration.

The name "Erannoboas", given to this river by the ancient Greek writers on India is apparently a corruption of the Sanskrit Hiranyabahu, or golden-armed, derived, like the name Son, from the golden colour of the sand which it brings down in flood. It formerly flowed far to the east; and the Punpun now flows in its ancient bed. After being joined by the Morhar, it pursued a north-easterly direction as far as Chibil, thence turned east, running south of the present site of Patna City, finally joining the Ganga at Fatwa. There is a long tract of low ground in this last direction, destitute of trees, which is known as the dead Son, clearly marking the ancient bed of the river. The courses of the Ganga and the Son were thus nearly parallel for many miles; and in the narrow tract lying between the two rivers was situated the famous city of Pataliputra. The Son gradually worked westward, until its lower course closely approximated to the present alignment of the Patna-Gaya canal as far as Phulwari; and it is probable† that the Son burst across the narrow neck of land which divided it from the Ganga at that place before the year 750 A. D. The confluence with the Ganga was afterwards at Sherpur; and even in 1772 it was at Maner. At the beginning of the nineteenth century Maner was three miles south of the union of the two rivers; and now the Son joins the Ganga six miles north of Maner.

Punpun.—The Punpun enters Patna district near Shahzadpur and flows in a north-easterly direction until it approaches Naubatpur. Here it turns sharply to the east and joins the Ganga at Fatwa, after flowing for fifty-four miles in the district. The Punpun is joined by the Morhar and Dardha, about nine miles from its junction with the Ganga; but shortly before its confluence with that river some of its waters diverge along a channel, called the Dhoa, which runs nearly parallel to the Ganga. This river retains water throughout the year, but except in the rains is useless for purposes of navigation owing to the number of irrigation channels which it supplies with water in this district as well as in Gaya, where a large dam intercepts the stream. So much of the water is thus diverted that, except in times of high flood, only a small portion reaches the Ganga. At the point of junction

* Now the Son barrage at Indrapuri about 7 miles up further diverse of water to Western
Gaya.

† *Reports of the Archaeological Survey of India*, Vol. VIII.

the river attains a width of about a hundred yards enclosed within high steep banks. The Punpun is a sacred river and it is the duty of every pilgrim to Gaya to shave his head on its banks and bathe in its waters on his way to the holy city.

Morhar and Dardha.—To the east of the Punpun are the Morhar and Dardha, two branches of the same river, which bifurcates in the Gaya district. Both streams follow a north-easterly direction and join the Punpun near the same spot; and both are nearly dry during the greater portion of the year, as the cultivators build dams across them, and the water is dispersed among the fields or stored in artificial reservoirs.

Phalgu.—The Phalgu enters the district a short distance to the south of Telarha, but soon loses its identity, as its waters are almost entirely expended in irrigation channels. Near Telarha it bifurcates, one branch, known as the Sona, striking due north and the other, the Kattar, taking north-easterly direction. Both branches eventually fall into the Maithun river, but are practically dry after the end of the rainy season.

Maithun.—The Maithun or Mithwain, which is formed by the confluence of the Dhoa and Sona, flows parallel to the Ganga throughout the entire length of the Barh subdivision. Near Chero it is joined by the Jamuna river and at Tirmohani by the Dhanain; and thence the united stream flows, under the name of the Kuluhar, into the Monghyr district.

Panchane.—In the Bihar subdivision the Panchane is formed by the confluence of five streams debouching from the Gaya district, which unite near Giriak and thence flow northwards to Bihar town. Here five small streams branch off to the west, intersecting the town in different places, but all have long since dried up. A great sand bank has formed in the bed of the river below Bihar, which forces its water into the irrigation channels on the east; and the result is that, except in times of flood, only a feeble stream trickles along its sandy bed. After leaving Bihar, it pursues a north-easterly direction and then deflects to the east, eventually joining the Sakri or Mohana.

Sakri.—The last river of any importance is the Sakri, which enters the district to the south-east of Bihar town. This river flows to the north through the Bihar subdivision and then takes a sharp turn to the east through the south-east of the Barh subdivision, from which it enters the Monghyr district. Like the Panchane, it fails to attain any great volume, owing to the demands made upon it for the purpose of irrigation, nearly all its water being carried away by two large channels constructed on its left bank twelve miles south-east of Bihar. These two *pains* have widened and become large streams, with the result that greater part of the supply of this river, which extends as far as Lakhisarai in the Monghyr district, has now been diverted. The

lower portion of the Sakri below the offtake of these channels is also silting up rapidly as a continually decreasing supply of water passes down it.

GEOLOGY*

The greater part of the district is composed of Gangetic alluvium, i.e., of silt brought down for ages past by the Ganga. During the rainy season, the Ganga and its tributaries increase enormously in volume, carrying down vast quantities of silt or mud, with the result that they overflow into the adjacent country. When the water subsides, the rivers in their retreat leave some of the silt, which they have brought with them, spread over the once flooded land as a thin soil deposit. This process has been repeated during thousands of years, and the land has thus been gradually growing and the surface of the land gradually raised. The excavations of 1920 at Patna indicate that there has been a deposit of about twenty feet in the course of a thousand years.

In the south-east of the district the Rajgir hills present an entirely different geological formation. These hills, which are more or less isolated in the alluvial plain, belong probably to the Purana group of metamorphic schists and slates with a layer of massive quartzite. The beds strike ENE—WSW., corresponding to the general trend of the hill ranges; they have been much folded by earth movements, and lie at high angles dipping NNW and SSE. To the north-west of the main range the more thinly-bedded rocks are interbanded with several trap-dykes and still further in that direction, near Ghunsura, there are a few isolated little knolls of archæan crystalline granitic rock presenting an intrusive habit among the schists. It is probable that the Purana group of schists and quartzite is of Bijawar age.

EARTHQUAKE

On the 15th January, 1934, there was a severe earthquake in North Bihar with epicentre somewhere in the sub-Himalayan region. It also affected some parts of Patna district. A number of old houses fell in Patna City and many more were damaged. Tanks and wells were silted up and numerous fissures and crevices appeared on land in rural areas, throwing up sand on adjoining fields.

MINERAL SPRINGS

The thermal springs of Rajgir group which occur in Patna and Gaya districts emerge out on archæan quartzites. They occur in three distinct series : (i) the Rajgir springs in Patna district, (ii) the Tapoban springs, and (iii) the Agnikund springs in Gaya district. There are more

* *Patna District Gazetteer* (1924), PP. 8-9.

than a dozen springs on both sides of Baitarni river at a distance of about a mile from the Rajgir Bus Stand. The Tapoban springs are about 12 miles WSW of Rajgir in Gaya district. There are four springs: (i) Sanat, (ii) Sanatan, (iii) Sanatanandan and (iv) Sanat Kumar (Brahma Kund) all lying along the foot of the quartzite hill. Agnikund hill springs lie along the end of quartzite hill situated about 8 miles ESE of Rajgir.*

Rajgir Springs.—There are seven hot springs at the foot of Baibhar hill and six at the foot of Vipulagiri hill at Rajgir. The names of the former group are Ganga-Jamuna, Anant Rikhi, Sapta Rakhi, Vyas Kund, Markanday Kund, Brahma Kund and Langat Kund. These are surrounded by sacred buildings. The six springs at the foot of Vipulagiri hill are called Sita Kund, Suraj Kund, Ganesh Kund, Chandrama Kund, Ram Kund and Sringi Rikhi Kund. Sringi Rikhi Kund is situated about a quarter of mile east of the remaining five of these Kunds and has been appropriated by the Muhammadans and is called Makhdum Kund, after the saint Makhdum Shah Sheikh Sharfuddin Ahmad.

The temperature of the Baibhar springs has been observed since 1909 to be 108.3° and that of the Vipulagiri springs is 106°. But these springs are hottest near about November and December when the out-flow is at its maximum. The water of the springs is remarkably pure and has been found by Dr. K. N. Bagechi to contain not more than 6.8 parts of total solids in 1,00,000.†

Radioactivity measurements of the Rajgir group of hot springs show that they are radioactive due to the dissolved radon in them. Radon is one of the decay products in the cycle of disintegration of Uranium and Thorium. Radon measurements carried in respect of the hot springs of Rajgir are as follows:—

(1) Brahma Kund	..	..	5.84×10^{-12} curies/C. C.
(2) Sapta Dhara (outlet)	..	..	2.5×10^{-12} curies/C. C.
(3) Sapta Dhara (source)	..	..	3.99×10^{-12} curies/C. C.
(4) Suraj Kund	..	..	4.06×10^{-12} curies/C. C.
(5) Makhdum Kund	..	..	3.62×10^{-12} curies/C. C.
(6) Ganga-Jamuna	..	..	4.81×10^{-12} curies/C. C.

The water of Ganga-Jamuna hot spring was also found to contain traces of dissolved radium.**

MINERALS

The only commercial minerals found in this district are sand of the river Son and stone-chips of Rajgir hills.

* See, *Bihar Through the Ages*, 1958, p. 21.

† *Patna District Gazetteer* (1924), p. 231.

**SOURCE.—Letter no. ADM/12(19)/62-Gest, dated the 18th March, 1964, from the Superintending Geologist, Department of Atomic Energy (Atomic Minerals Division), Government of India, New Delhi, addressed to the Secretary, Tourist Services (Emporium and Stores), Government Tourist Market, Rajgir.

CLIMATE*

The climate of this district is characterised by a pleasant cold season, a hot and somewhat dry summer and the monsoon season with its moist heat and oppressive nights. The cold season starts early in November and lasts till about the middle of March. The hot season follows and continues till mid-June when the south-west monsoon season commences. The monsoon season is generally over by the end of September; October is a transition month.

TEMPERATURE

The only meteorological observatory in the district is at Patna. The temperature and other meteorological conditions as indicated by the data at this station may be taken as a representative of the district in general. The cold weather commences early in November when both day and night temperatures decrease fairly rapidly with the advance of the season. January is the coldest month with the mean daily maximum temperature at 22.9°C (73.2°F) and the mean daily minimum at 10.7°C (51.2°F). When cold waves affect the district in association with the passage of western disturbances across north India in this season the minimum temperatures may go down to 2°C or 3°C above the freezing point of water. The days become warmer in March while the nights continue to be cool. Both day and night temperatures begin to increase rapidly after the middle of March till May which is the hottest month. The mean daily maximum temperatures in that month is 38.1°C (100.5°F). The maximum temperature in May and the early part of June may sometimes be above 45°C (113°F). With the onset of the monsoon towards the third week of June there is a drop in the day temperatures. But there is little relief as the weather is oppressive on account of increased moisture in the air and the continuing high night temperatures during the monsoon season. In October while the day temperature continues as in the monsoon months the nights are cooler. The highest maximum temperature recorded at Patna was 46.1°C (115.0°F) on 1931 June 12 and the lowest minimum temperature was 2.2°C (36.0°F) on 1905 February 2.

HUMIDITY

The driest part of the year is the summer months when the relative humidities specially in the afternoons are between 30 and 40 per cent. The humidity is high in the monsoon period when it is between 75 and 85 per cent. In the rest of the year the relative humidities generally vary between 50 and 70 per cent.

CLOUDINESS

In the winter and summer seasons skies are generally clear or lightly clouded, but towards later summer, the cloudiness increases in the afternoons. In the monsoon months skies are heavily clouded to overcast.

* This and the following allied to pies are based on the information supplied by the Deputy Director General of Observatories (Climatology and Geo-physics), Poona

Normals of Temperature and Relative Humidity.

Patna.

PATNA

Month.		Mean Daily Maximum Temperature.	Mean Daily Minimum Temperature.	Highest Maximum ever recorded.		Lowest Minimum ever recorded.		Relative Humidity.	
		C.	C.	C.	Date.	C.	Date.	0830	1730*
January	..	22.9	10.7	28.9	1939 January 22	2.8	1933 January 15	72	53
February	..	25.5	12.7	34.4	1896 February 28	2.2	1905 February 2	63	45
March	..	32.2	18.1	40.6	1941 March 29 ..	7.8	1906 March 1 ..	47	30
April	..	37.1	23.1	43.3	1956 April 21 ..	14.4	1905 April 6 ..	45	28
May	..	38.1	25.7	45.6	1941 May 28 ..	17.2	1932 May 6 ..	59	40
June	..	35.8	26.7	46.1	1931 June 12 ..	20.0	1912 June 9 ..	72	58
July	..	32.7	26.6	41.7	1903 July 10 ..	21.1	1931 July 5 ..	81	76
August	..	31.8	26.5	38.3	1903 August 2 ..	21.7	1923 August 29 ..	82	79
September	..	32.1	26.1	37.8	1928 September 16	20.0	1890 September 28	79	75
October	..	31.4	22.7	36.1	1932 October 8 ..	15.0	1954 October 30 ..	69	62
November	..	27.9	16.1	33.9	1952 November 2 ..	8.3	1934 November 30	65	52
December	..	23.8	11.3	30.6	1951 December 7 ..	6.1	1902 December 29 ..	69	53
Annual	..	30.9	20.5	..	..	..	..	67	54

*Hours I.S.T.

WINDS.

Light westerly or south-westerly winds prevail in the winter and early summer seasons. In May the easterlies and less frequently north-easterlies begin and these predominate in the monsoon months. In October winds are light and variable.

Mean Wind Speed in Km/hr.

Patna.

January.	February.	March.	April.	May.	June.	July.
3.7	4.7	5.8	7.2	8.4	8.1	7.2
August.	September.	October.	November.	December.	Annual.	
6.6	5.5	3.4	2.6	2.9	5.5	

RAINFALL.

Records of rainfall are available for 17 stations in the district for periods ranging from 46 to 90 years. The statement of the rainfall at these stations and for the district as a whole are given below in tables 1 and 2. The average annual rainfall in the district is 992.0 mm. (39.05"). The rainfall during the south-west monsoon season constitutes about 87 per cent of the annual rainfall. August is the month with the highest rainfall. The variation from year to year of the annual rainfall is not large. In the fifty-year period, 1901 to 1950, the highest annual rainfall occurred in 1913 and it amounted to 168 per cent of the normal. 1908 was the year with the lowest rainfall and it was 60 per cent of the normal. In the same fifty-year period the rainfall was less than 80 per cent of the normal in eight years. Considering the district as a whole the rainfall was less than 80 per cent of the normal in the four consecutive years 1925 to 1928. However at some stations even five or six consecutive years with rainfall less than 80 per cent of the normal have occurred. It will be seen from table 2 that in 39 years out of 50 the annual rainfall in the district was between 700 and 1,200 mm. (27.56" and 47.24").

On an average there are 47 rainy days (i.e., days with rainfall of 2.5 mm—10 cents—or more) in a year in the district. This number varies from 42 at Ekāngarsarai to 56 at Patna.

Normals and extremes

TABLE

Station.	No. of years of data.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.		
										(a)	(b)
Danapur	50	14.5	20.3	9.1	7.9	24.4	140.2	259.1	326.9	13.4	12.3
Bihar ..	50	14.2	20.6	9.1	10.2	27.7	138.2	283.0	305.8	13.7	12.8
Barh ..	50	12.6	20.3	9.1	8.1	26.9	140.2	238.8	265.4	12.8	12.0
Bikram	49	16.8	21.6	7.6	7.6	21.6	119.1	289.3	315.2	13.9	13.6
Hilsa ..	49	13.7	19.1	8.4	7.1	20.8	120.1	248.4	310.6	12.3	11.6
Istarapur	48	14.0	20.6	10.4	8.6	19.3	128.0	285.2	293.6	12.4	12.1
Asthanwan	48	15.2	19.8	9.4	6.3	26.2	129.3	249.2	286.8	13.5	12.3
Ekangarsara	35	9.4	16.3	4.6	5.1	12.7	85.1	221.2	314.5	11.4	11.0
Bakhtiarpur	36	19.1	27.2	13.2	10.4	32.5	125.7	294.6	351.8	11.6	11.2
Naubazpur	37	14.5	20.3	4.3	5.8	16.5	102.1	226.6	262.4	11.9	11.6
Sarmara	38	15.0	20.1	12.2	11.9	22.6	135.9	289.6	319.3	12.2	12.1
	(b)	1.0	1.2	0.7	0.6	1.5	5.8	12.1	12.2		

(a) Normal rainfall in mm.
(b) Average number of rainy days (days with rain of 2.5 mm. or more).

GENERAL

Highest annual rainfall as percent of age of normal and years†.	Lowest annual rainfall as percent of age of normal and years†.	Annual.	Dec.	Nov.	Oct.	Sep.	Heaviest rainfall in 24 hours.*	Date.	Amount (mm.).	Age of normal and years†.	Amount (mm.).	Age of normal and years†.
211.8	9.1	12.9	51.3	2.7	0.6	0.3	51.1	(1918)	175	58	498.9	1897 Jun. 25.
185.7	42.9	10.4	3.6	1,051.4	170	60	308.1	1919 Jul. 22.	(1918)	170	60	(1903)
8.9	2.8	0.5	0.2	52.0	168	50	195.6	1918 Aug. 25.	(1905)	168	50	(1923)
185.4	43.9	8.6	3.3	962.5	157	56	284.5	1897 Jun. 25.	(1936)	157	56	(1914)
213.1	51.8	9.1	3.6	1,076.4	174	38	177.8	1942 Aug. 9.	(1911)	174	38	(1932)
8.2	2.1	0.5	0.2	46.0	142	51	193.0	1942 Aug. 10.	(1909)	142	51	(1908)
193.8	32.3	11.9	2.5	1,020.2	150	56	203.2	1941 Aug. 27.	(1933)	150	56	(1940)
179.8	43.7	9.9	5.1	980.7	175	49	155.5	1951 Jan. 30.	(1938)	175	49	(1927)
7.3	1.7	0.5	0.3	41.8	173	39	207.5	1922 Sep. 20.	(1929)	173	39	(1920)
244.3	49.3	9.9	2.0	1,160.0	172	45	259.1	1942 Sep. 20.	(1942)	172	45	(1934)
173.0	51.3	7.9	2.3	887.0	220	44	269.2	1914 Aug. 27.	(1941)	220	44	(1923)
7.5	2.3	0.4	0.4	45.7	204.5	60.5	10.4	5.6	1,107.6	44.5	0.2	44.5
7.5	2.1	0.4	0.2	43.1	887.0	44.5	0.2	44.5	1,107.6	44.5	0.2	44.5
204.5	60.5	10.4	5.6	1,107.6	220	44	269.2	1914 Aug. 27.	(1941)	220	44	(1923)

*Based on all available data up to 1958.
†Years given in brackets.

TABLE
Normals and extremes

Station.	No. of years of data.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.		
Pailganj	36 (a)	16.3	16.0	4.8	5.1	18.6	97.0	251.2	298.6		
	(b)	1.1	1.2	0.6	0.6	1.1	6.2	11.2	13.0		
Badampur	37 (a)	11.2	15.6	2.8	2.8	16.6	76.7	206.8	249.4		
	(b)	1.3	1.3	0.4	0.3	1.0	6.3	11.6	12.1		
Silao ..	37 (a)	12.6	18.3	6.6	6.1	15.6	108.2	268.6	266.2		
	(b)	1.0	1.4	0.6	0.4	0.9	6.7	12.3	12.8		
Chandi ..	37 (a)	16.0	19.8	7.6	16.3	26.4	122.7	306.1	302.0		
	(b)	1.1	1.6	0.6	0.9	1.6	6.3	12.6	11.8		
Phulwari	33 (a)	12.2	17.3	2.3	6.9	20.6	96.6	224.6	256.6		
	(b)	1.0	1.1	0.3	0.4	0.9	6.6	11.0	11.8		
Patna	50 (a)	15.6	22.1	9.4	8.4	30.0	158.0	276.1	340.4		
	(b)	1.4	1.9	1.0	0.8	1.9	7.7	13.2	14.1		
Patna (District).	(a)	14.3	19.7	7.6	7.9	22.2	118.9	259.8	292.0		
	(b)	1.2	1.6	0.7	0.6	1.4	6.0	12.0	12.6		

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of rainfall—conold.

Highest annual rainfall as percent of normal and years.	Lowest annual rainfall as percent of normal and years.	Amount (mm.)	Date.	Heavyest rainfall in 24 hours.				
				Sep.	Oct.	Nov.	Dec.	Annual.
200.7	7.8	38.6	6.3	2.0	44.2	0.3	149	39
160.0	31.6	4.6	3.8	779.6	159	(1942)	39	217.2
7.6	2.9	0.4	0.4	43.6	199	(1928)	67	304.8
167.6	38.9	10.4	2.0	919.8	199	(1918)	67	304.8
6.9	1.9	0.6	0.2	44.7	164	(1940)	56	338.3
204.0	44.5	10.9	3.8	1,078.1	164	(1918)	56	338.3
7.1	2.1	0.5	0.4	47.0	186	(1926)	44	310.1
178.3	47.6	7.4	6.3	876.3	186	(1926)	44	310.1
7.8	2.4	0.5	0.3	43.0	168	(1918)	55	336.0
237.7	64.6	8.9	5.3	1,166.4	168	(1903)	55	336.0
9.7	2.9	0.6	0.4	55.5	168	(1913)	60	—
192.1	44.2	9.7	3.6	992.0	168	(1908)	60	—
8.1	2.2	0.5	0.3	47.1	168	(1913)	60	—

TABLE 2

Frequency of Annual Rainfall in the District.

Data: 1901—1950.

Range in mm.	Number of years.	Range in mm.	Number of years.
501—600	1	1101—1200	10
601—700	2	1201—1300	3
701—800	5	1301—1400	2
801—900	8	1401—1500	2
901—1000	8	1501—1600	0
1001—1100	8	1601—1700	1

SPECIAL WEATHER PHENOMENA

In association with some of the storms or depressions which move inland from the Bay of Bengal in the monsoon and in October, heavy rain and strong winds are experienced in the district. Thunderstorms occur in the summer months and in October. Even during the monsoon season the rainfall is on many occasions associated with thunder. Dust-storms occur occasionally in the summer months.

Special Weather Phenomena.

(Patna.)

Mean no. of days with—	January.	February.	March.	April.	May.	June.
Thunder ..	0.3	1.3	1.8	2.1	1.6	5.7
Hail ..	0.0	0.0	0.0	0.0	0.0	0.0
Dust-storm ..	0.0	0.2	0.6	1.4	2.7	0.9
Squall ..	0.0	0.0	0.1	0.0	0.0	0.0
Fog ..	1.4	0.6	0.0	0.8	0.0	0.0

Special Weather Phenomena.

(Patna.)

Mean no. of days with—	July.	August.	September.	October.	November.	December.	Annual.
Thunder ..	3.7	5.2	4.7	5.6	0.0	0.3	32.3
Hail ..	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dust-storm	0.0	0.0	0.0	0.0	0.0	0.0	5.8
Squall ..	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Fog ..	0.0	0.0	0.0	0.0	0.1	0.5	3.4

FLORA

In the alluvial country which forms the greater portion of the Patna district, rice, wheat, pulses, sugarcane and a great variety of other crops are extensively grown and the area not under cultivation is bare or dotted over with clumps of bamboos and mango orchards. In the level fields near the Ganga the usual weeds of such localities, such as *ammannia*, *utricularia*, *hygrophila* and *sesbania* are found. Near the villages in this tract of country there are considerable groves of palmyra (*borassus flabellifer*) and date palm (*phoenix sylvestris*), mango orchards and numerous more isolated examples of *tamaridus*, *odina*, *sapindus* and *moringa*. Associated with these, one frequently finds in village shrubberies *glycosmis*, *clerodendron*, *solanum*, *jatropha*, *trema*, *streblus* and similar semi-spontaneous and more or less useful species. Farther from the river the country is more diversified, and sometimes a dry scrub jungle is met with, of which the principal species are *glochidion* and other *euphorbiaceous* shrubs, *butea* and other leguminous trees, besides various examples of *ficus*, *schleichera*, *wendlandia*, *gmelina*, *wrightia*, *adina* and *stephegyne*. The grasses clothing the drier parts are generally of a coarse character, such as *andropogon contortus*, *aciculatus*, *annulatus*, *foveolatus* and *pertusus*, *aristida adscensionis*, *tragus racemosus* and *iseilema laxum*. Other species typical of the district are various *anthistriae* and *penniseta*, *eragrostis cynosuroides*, *saccharum spontaneum*, *arundinella brasiliensis* and subai grass (*ischoemum angustifolium*). Throughout this tract the mango (*mangifera indica*), pipal (*ficus religiosa*) and banyan (*ficus indica*) are common, the other principal trees being the bel (*aegle marmelos*), nim (*melia azadirachta*), siris (*mimosa sirissa*), sisu (*dalbergia sissoo*), jack fruit-tree (*artocarpus integrifolia*) and red cotton tree (*bambax malabaricum*)*.

*Patna District Gazetteer (1924), p. 9.

During the winter weeds, viz., *sonchus arvensis* Linn; *Sonchus asper*, (Linn) Hill; *Chenopodium album* Linn; *Amaranthus Viridas* Linn; *Portulaca Obracea* Linn, and rarely *Asphodlus tenuifolias* Cavan are seen in the cultivated fields.

The fallow fields, lands along the roads, railways (also protected lands in the railway yards) and canals are dry meadows usually covered over with grasses like *Heteropogon Contortus* (Linn) P. Beauv; *Iseilema laxum* Hack; *Bothriochloa intermedia* (R.Br) A. Camus; *Saccharum spontaneum* Linn; and *Erianthus benghalensis* (Retz) Hubbard; mixed up with these grow just after the rains, *Sonchus Spp.*, *Launea nudicanlis* Les; *Cassia tora* Linn; *Cassia sophora* Linn; *Andrographis paniculate* Nees and *Ruellia tuberosa* Linn; *Hyptis suaveolens* (Linn) Poit, and *Anisomeles indica* (Linn). O. ktz. are abundant in localities away from human habitations, as along the Patna-Digha railway line. *Lantna Camera* Linn. Var *aculeata* is fast encroaching upon all such lands.

On lands protected from grazing, there grow perennial grasses as listed above and also *Rottboellia exaltata* Linn. f., *Cymbopogon Jwarancusa* (Jones) Schultz and *Cymbopogon nardus* (Linn) Rendle, together with *Desmodium gangeticum* D. C., *Crotalaria mysorensis* Roth and other tall, erect dicotyledonous herbs.

The lawns and the parks.—The lawns like the Gandhi Maidan which are protected against grazing, but much frequented by man, are most of the time closely cropped, and here only such species grow as can stand the heavy trampling under the feet, e.g., *Cynodon dactylon* (Linn.) Pers., *Dactyloctenium aegyptium* (Linn.) Beauv., and *Eleusine indica* (Linn.) Gaertn., or coarse grasses like *Crysopogon aciculatus* (Retz.) Trin., which are not browsed upon. Along with these grow various prostrate species of dicots like *Alysicarpus monilifer* DC., *Indigofera linifolia* Retz., *I enneaphylla* Linn., *Desmodium triflorum* Linn, *Hybanthus enneaspermus* Muell., *Polygala spp.*, *Convolvulus pluricaulis* Choisy, *C. microphyllus*, Sieb., *Evolvulus nummularius* Linn., and *Boerhaavia diffusa* Linn. rarely *Polygonum pleacium* R. Br. Here and there, especially in sheltered spots, as under the benches and near the railings grow *Vernonia cinerea* (Linn) Les., *Achyranthes aspera* Linn., *Amaranthus spinosus* Linn., *A Viridis* Linn. and other erect plants. During and after the rains, are also seen many hedges such as *Cyperus rotundus* Linn., *Bulbostylis Barbata* kunth., *B. capillaris* kunth., *Fimbristylis iuncifoemis* (Retz.) kunth., *F. diphylla* (Retz.) Vahl and others. Thus the wet-meadow and dry-meadow plants succeed each other.

Rajgir Hills and the Valley.—The tops of the hills and the rugged precipitous side are covered with a scrub-jungle interspersed with small trees like *Boswellia serrate* Roxb., *Cleistanthus collinus* (Roxb) Benth., *Sterculia urens* Roxb., *Cassia fistula* Linn., *Lannea coromandelina*

(Houst) Merr., *Diospyros melanoxydon* Roxb., *Cochlospermum religiosum* (Linn) Alston, *Bridelia tomentosa* BI., *Cordia dichotoma* Forst. f., and *Mitragyna parvifolia* (Roxb) korth; and shrubs like *Hamiltonia suaveolans* Roxb., *Securinaga virosa* (Roxb., Ex. Willd.) Pax and Hoffma, *Gardenia latifolia* Ait., *Ficus lacor* Buch-Ham., *F. glabella* BI., *F. tomentosa* Roxb., *Carissa paucinerva* A. DC., and *Murraya paniculate* (Linn) Jack; with climbers like *Bridelia stipularis* (Linn) BI., *Acacia canescens* Grahm, *A. torta* (Roxb) Graib, *Zuzyphus oenophia* (Linn) Mill., *Olae scandens* Roxb. and *Ichnocarpus frutescens* R. Br. In the crevices of the rocks in the lower regions of the hills grow shrubby specimens of *Murraya paniculata* (Linn) Jack *Dendrocalamus strictus* Nees, *Acacia canescens* Grahm, *A. Torta* (Roxb.) Graib, *Nyctanthes arbortristis* Linn., *Pavetta indica* Linn., *Indigofera elliptica* Roxb., *Holarrhena antidysenterica* (Linn) Wall., *Heliceeres isora* Linn., *Diospyros montana* Roxb., *Carissa opaca* staff and others, with scramblers like *Combretum decandrum* Roxb. and *Acacia* spp. and herbs like *Desmodium gangeticum* (Linn) D. C. *Anisochilus carnosus* wall., *Acrua Sanguino lenta* (Linn) BI., *Waltheria indica* Linn., *Hibiscus Micranthus* Linn., f., *Celosia argentea* Linn., and a few grasses.

The vegetation of the valley is predominantly of the thorn-scrub forest type with *Dendrocalamus strictus* Nees predominating. With it are associated *Capparis zavlantica* Linn., *Zizyphus mauritiana* Lamk. var *fruticosa* (Haines) Srivastava, *zoelopulai* Mill., *Gymnosporia spinosa* (Forsk) Fiori and *Streblus asper* Lour. These shrubs grow in clumps separated from each other by coarse grasses, *Helicteres isora* Linn., *Sida* spp., and the irregular pathways*.

FOREST

Except for some jungles in the Rajgir hills the district is devoid of forest wealth of any consequence. The total area under forest in the district was 17.91 square miles in 1960-61. The forests constitute only 0.83† per cent of the total area of the district. Of late, some afforestation work has been taken up in the Rajgir hills.

FAUNA**

The carnivora of the district comprise leopard, hyaena and some smaller animals, such as jackal, fox and wild cat. Wolves were formerly common and in 1870, 229 deaths from wolf-bite were reported, but they have now practically disappeared. The ungulata are represented by nilgai (*bose'aphus tragocamelus*), black buck (*antelope cervicapra*) and wild pig.

*J. G. Srivastava : Monograph.

†District Census Handbook, Patna (1966), pp. VIII-IX.

**Patna District Gazetteer (1924), pp. 10-11.

Leopards are occasionally found in the southern hills extending south-westwards from Giriak, and they confine their depredations to cattle, sheep, goats, dogs and small ponies. Hyaenas are common in the same range. The black bear (*ursus labiatus*) is also occasionally found in the Rajgir hills. He subsists mainly on jungle fruits; but he comes out into the level country at night to raid the maize and sugarcane crops, and to climb the toddy palms to drink *tari*, fermenting in the pasis' pots, or in the early hot weather, when the *mahua* flowers are falling, to feast on the freshly fallen flowers under the trees. Wild pig is seen in this neighbourhood, and also on the *chars* and *diaras* of the Son and the Ganga. *Nilgais* are common in the large *chars* and *diaras*; and in the country near the Son they are found in the mango groves and among the high crops. The *nilgai* is not generally sought after by sportsmen, and many Hindus have scruples regarding its slaughter. No such scruples protect the black buck (*antilope cervicapra*), which was formerly common, but is now very rare and found in the extreme west of the district, north of the railway line. Hares are numerous in the drier parts; jackals are common throughout the district; and porcupines and foxes are occasionally seen.

GAME BIRDS

The game birds in the hills consist of pea-fowl, jungle fowl, grey partridge, black partridge and bush quail. In the plains grey quail, rain quail and button quail make their appearance every year. Green pigeons are common and rock pigeons also visit the plains during harvest time. Red and yellow billed geese, red-headed pochard and white-eyed pochard, pintail and gadwall are found on the Son and Ganga, and on the larger *jhils*, by the middle of November. Besides these, the shoveller and Brahmani duck and different varieties of teal and combduck visit the district. With them come the white and the black ibis, curlew, whimbrel, jack snipe, smaller snipe of six varieties, locally known as *batara*, *ghotra*, *bagodhia*, *surma*, *sarghai* and *bhurka*; golden plovers, and waders. Other cold-weather birds are the cranes known locally as *kurkura* (*anthropædus virgo*), and *kulung* (*grus communis*), and various storks, the most noteworthy among them being a gigantic stork called *lohaserang* (*xenophynochus asiaticus*).

FISH

The Ganga and Son contain a great number of edible fish, such as *buari*, *tengra*, *naini*, *bachwa* and *rohu*; *hilsa* (*culpea ilisha*) are also found in the former and *mansir* in the latter river. Fishing practically begins in October with the subsidence of the floods, and the busy season is from November to March, the largest hauls being made in December, January and February. Fish of all kinds and all sizes are caught, but the most valuable belong to the carp family, such as *rohu* and

katla; *rohu* are caught up to the weight of forty pounds. *Hilsa* are caught as far up the river as Patna, as they ascend from the sea, and the hauls, though not so great as lower down the river, are occasionally very good. Crustaceous fish are common, and prawns (*jhingra*) are caught in large numbers*.

REPTILES

Propoises abound in the Ganga and tortoises are also common. Both the snubnosed crocodile or *magar* and the fish-eating alligator called *gharial* are found in the same river. Squirrels are common. Various species of snakes are found all over the district, cobra and *karait* being poisonous ones. Among the non-poisonous *dhamin*, *donr* and *hurhura* may be mentioned†.

*Patna District Gazetteer, 1924. p. 11.

†Ibid.