

BENGAL DISTRICT GAZETTEERS

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BIHAR AND ORISSA DISTRICT GAZETTEERS

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BENGAL DISTRICT GAZETTEERS

PURNEA

BY
L.S.S. O'MALLEY
Indian Civil Service

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PREFACE

I desire to acknowledge the great assistance I have derived from the Final Report on the Survey and Settlements Operations in Purnea (1901-1908) by **Mr. J. Byrne, I.C.S.**, from which much of the information contained in this volume has been reproduced.

L.S.S. O'MALLEY.

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GAZETTEER

OF THE

PURNEA DISTRICT.

CHAPTER I.

PHYSICAL ASPECTS.

The district of Purnea, which forms the north-eastern portion of the Bhāgalpur Division, is situated between 25° 15' and 26° 35' north latitude, and between 87° 0' and 88° 32' east longitude. It extends over 4,994 square miles, and has a population of 1,874,794 persons, as ascertained at the census of 1901, its area being nearly as great as that of Norfolk, Suffolk and Essex combined, while it has 400,000 more inhabitants than the whole of Wales. The head-quarters are at the town of Purnea, the name of which was extended to the territory now included in the district. Purnea is an English corruption of the vernacular name Puraniā, and this or Puraniyā is the designation of the district in old records. Local tradition states that it is derived from the word *purain*, the local name for the lotus, which is said to have grown thickly in the neighbourhood of the town, when the Kosi river flowed past it. Another derivation which has been suggested is *pura-aranya*, meaning 'absolute forest', for tradition asserts that the district was once covered by dense forest.

GENERAL
DESCRIP-
TION.

The district forms part of the alluvial tract known as North Bihār, but its eastern portion more properly belongs to Bengal. It formed in fact, the northernmost *Sarkār* of that Province under Mughal rule, the river Kosi, which used to flow through the centre of Purnea, being the boundary between it and the sub-province of Bihār. The population in the east and west is, moreover, ethnically and linguistically different. The Rajbansis, a characteristic caste of Northern Bengal, predominate east of the river Mahānandā, while to the west they give place to the common castes of Bihār. The Mahānandā river also forms a linguistic boundary, Hindi

being spoken to the west and a corrupt form of Bengali to the east of its course.

Bound-
aries.

The district is bounded on the north by the Morang Zilā of Nepāl and by the Darjeeling district; on the east by the districts of Jalpaiguri, Dinājpur and Mālda; on the south by the river Ganges, which separates it from South Bhāgalpur and the Santāl Parganas; and on the west by North Bhāgalpur.

Configura-
tion.

Lying towards the eastern extremity of the Gangetic plain, and hemmed in by the Ganges on the south and the Nepāl hills on the north, the district has most of the features characteristic of a submontane alluvial tract. The surface is almost a dead level, with the exception of a few tracts of undulating country on the borders of Nepāl, and a small hill of nodular limestone, called Chofāpahār, near Manihāri in the south. It is traversed by a number of rivers and streams, and is intersected to the west by numerous old beds of the Kosi river, while in the east there is a network of stagnant swamps and dried-up channels, which mark the former courses of tributaries of the Ganges.

Natural
divisions.

Though these are the most striking natural features common to the whole district, conditions vary considerably to the east and west. For practical purposes the district may be divided into two portions by a line drawn diagonally from the north-west to the south-east corner, the country to the east being drained by the Mahānandā and that to the west by the Kosi. In the east there is a fertile, loamy soil of alluvial deposit, which is rich in crops, chiefly rice and jute. This tract contains a number of large marshes which are never completely dry, and it is intersected by numerous rivers and natural drainage channels, by means of which nearly every part of it is accessible during the rainy season. Many of the waterways, however, have deteriorated, and are now dead or half-dead streams, which contain little or no water for the greater part of the year. The country is destitute of anything that can be called forest, but scrub jungle, in which the wild-rose tree predominates, is found in the neighbourhood of the more swampy tracts.

The western division is a sandy grass country seamed by old channels of the Kosi river, which is constantly changing its bed. It bursts down from the hills some 40 miles north of British territory, and spreading out over the plains reaches the Ganges by numerous broad, shallow, and ever shifting channels. This river does not bring down a fertilizing deposit like the Ganges, but covers the land with a thick deposit of sand during its annual inundations, and wherever it goes, it leaves behind sandy beds,

which do not admit of cultivation. The consequence is that there are few flourishing villages or substantial markets along its course, for they would be liable to be swept away or buried in sand. Another noticeable feature of this part of the district is the extent of uncultivated land, which spreads out from the vicinity of the town of Purnea, chiefly to the north and west, in the form of radiating stretches of land, opening out occasionally into fine, grassy, prairie-like plains called *rāmūās*. These afford sustenance to great herds of cattle, and towards the south, to numerous flocks of sheep. Along the Ganges there is little vegetation; but the newly-formed *chars* or alluvial islands of the Kosi are covered with a dense high jungle of coarse grass, forming the best covert in the district for wild animals. The banks of the latter river are, however, extensively cultivated in cereals, and wheat of fair quality is produced in *parwana* Dharampur, which occupies the south-west of the district. Villages are much rarer than in the east of the district, the village sites being usually in the open, and trees are less plentiful.

The river system of the district consists of three distinct parts. RIVER
SYSTEM. To the extreme west, and forming the boundary of the district on that side, runs the river Kosi, which, with its many branches, may be called the first part. The Panār or Parwan, which has its rise in the north-west corner of the district not more than 12 or 15 miles distant from the present main channel of the Kosi, and which has a south-easterly course dividing the district into two equal portions, may be said to constitute the second part. The third and last part of the river system consists of the Mahānandā, sometimes called the Mahānadi, and its tributaries.

By far the most important of all the rivers of Purnea is the Kosi. Kosi, which is, indeed, one of the principal rivers in Bengal. It is formed by the confluence of seven streams in the east of Nepāl, in a tract called the Sapt Kosiki from its containing within its limits and having the whole of its drainage carried off by the seven branches of the Kosi. The principal branch is the San Kosi running from west to east, which is joined by the other six rivers. These are, proceeding from west to east:—(1) Bhotiā Kosi, (2) Tamba Kosi, (3) Likkhu, (4) Dūdh Kosi, (5) Arun, and (6) Tambar. At Vārahā Kshetra or Bārah Chatrā, the river leaves the mountains in a series of cataracts and rapids, and from this point it is known as the Kosi. It first touches on British territory in the extreme north-east of the Bhāgalpur district, and after a course of few miles along the boundary between it and Purnea, enters this district a few miles north

of Anohrá Ghát. On debouching into Purnea, it is a large river nearly a mile wide, and for the remainder of its course it exhibits all the features of a deltaic stream, running south with many bifurcations and interlacings, till it falls into the Ganges, after a course within Bengal of about 84 miles.

The general characteristics of the Kosi river in Purnea have been described by Mr. J. Inglis ("Maori") as follows:—"The main stream runs with a swift milky flood, dividing the two great indigo and rice districts of Bhāgalpur and Purnea. When swollen by the melting of the snows or by the annual rains, the river overflows its banks, and at such times presents the appearance of a broad swiftly flowing sea, for its breadth from bank to bank is often ten and in some places nearly twenty miles across. In the dry season, the waters—always of the same milky hue—are confined to innumerable channels, some so shallow that the stilted plover can wade across, and others running deep and strong with a ceaseless gurgling swish that would sweep the stateliest elephant off its feet, and carry its ponderous bulk far down the stream. These streams seem to run at random over this deltaic plain, diverging here, reuniting there, forming a wide bend in one place, and cutting direct through the sandy soil in another. The face of the country is split up into an infinitude of islands, and recti-angled everywhere by a network of dry channels and shifting sandbanks; and over all, wherever there is an inch of soil, the stately elephant grass spreads its feathery mantle."*

The catchment area of the Kosi is estimated at about 23,992 square miles,† and is greater than that of any Himalayan river except the Indus and Brahmaputra. Not only is the tract it drains exceptionally large, it is also subject to a very heavy rainfall, so that the Kosi, when it debouches in the plains, delivers an enormous volume of water. In this latter portion of its course the fall of the country is comparatively small, surveys carried out for the construction of the railway to the north showing that from Anohrá Ghát to Forbesganj, a distance of 14 miles, the fall is only 29 feet, and from Khanwā Ghát to Nirmali, a distance of 32 miles, 46 feet. The river, therefore, debouching in a sandy, almost level, plain, finds its way southward through a number of channels. In each of these channels the bed is gradually raised by the masses of silt and sand it

* *Tent Life in Tigerland*, 1892.

† Burrard and Hayden, *Geography and Geology of the Himalaya Mountains and Tibet*, III, 181.

brings down, and when the river is swollen by heavy rain, it cuts through the friable banks and seeks a new channel for itself, thus forming in the low-lying country a fan-shaped delta. Moreover, it receives, a few miles before its junction with the Ganges, the Gogrī river, which comes down from North Monghyr and has two large tributaries, the Tiljūgā and Bāghmati, from North Bhāgalpur. The Kosi, therefore, has to discharge not only the water it brings down from Nepāl and Purnea, but also the drainage of North Monghyr and North Bhāgalpur. The outlet for the combined volume of water is narrow, and the result is that in the rains the Kosi inundates the country near its mouth.

The last scene in the life of this great river has been picturesquely described by Sir Joseph Hooker:—"Nearly opposite, the Kosi river enters the Ganges, bearing (considering its short course) an enormous volume of water, comprising the drainage of the whole Himālaya between the two giant peaks of Kinohinjunga in Sikkim and Gosainthān in Nepāl. Even at this season the enormous expanses of sand, the numerous shifting islets, and the long spits of mud betray the proximity of some very restless and resistless power. During the rains, the scene must indeed be extraordinary, when the Kosi lays many miles of land under water, and pours so vast a quantity of detritus into the Ganges that long islets are heaped up and swept away in a few hours; and the latter river becomes all but unnavigable. Boats are caught in whirlpools, formed without a moment's warning, and sunk ere they have spun round thrice in the eddies; and no part of the inland navigation of India is so dreaded or dangerous as the Ganges at its junction with the Kosi." Even further up the course of the river, navigation is at all times of the year a matter of much difficulty, as the channels are constantly changing, new ones being yearly opened up and old ones choked by sandbanks, while the bed is full of sunken trees or snags. Moreover, owing to the great velocity of the current, boats have frequently to wait several days for a favourable wind to drive them up some of the reaches, and they require a pilot to precede them and select the channel to be followed.

The Kosi has recently been spanned by a fine railway bridge near Katihār, and is also crossed higher up by a ferry between Anohrá Ghát and Khanwā Ghát, both of which connect the Bengal and North-Western Railway with the Bihār section of the Eastern Bengal State Railway.

The Kosi has long had a reputation as a river of ill omen among the Mahārājas of Darbhanga, so much so that they

considered it unlucky to cross it. It is said that the founder of the Rāj received a grant of all the territory stretching from the Ganges to the hills and from the Gandak to the Kosi (*Ay Gang tu Sang, Ay Kos ta Ghos*). "For a long time", writes Mr. Byrne, "the Darbhanga Mahārājās considered it unlucky to cross the Kosi owing to this limitation, and owing to a text in one of the Purānas (*Bhaisji 4th Adhyaya*), which says—"In Kali Yuga the famine-stricken Brāhmans will take their children in their arms and cross the Kosi". The present Mahārājā, Sir Rameshwar Singh, has given me the following instance of the operation of this old belief. 'Rājā Bijay Gobind Singh of Pharkiyā had an only daughter, who was offered to my youngest uncle with the whole of the very considerable properties of the Rājā. My grandfather, Mahārājā Rudra Singh, refused to cross the Kosi and insisted on the bride being sent across. This resulted in the match being broken off'.* The strength of the belief may be realized from the fact that the property of Rājā Bijay Govind Singh extended over 2,000 square miles.

The Kosi is notorious, even among Bengal rivers, for its vagaries, and is remarkable for the rapidity of its stream, the dangerous and uncertain nature of its bed, and the desolation caused by its floods. Sweeping down through the hills, it brings with it volumes of sand, which it heaps over the surface of the country, destroying the productive power of the land, choking the wells, and driving the villagers from their homesteads. It takes, it is said, half a century before this sand is fit for cultivation. As an instance of the violence and destructive power of the stream, it may be mentioned that in 1875 the town of Nāthpur in the extreme north-east of Bhāgalpur close to the boundary of Purnea was completely swept away. Its site was left many miles east of the Kosi, whereas in 1850 it lay some miles west of it. In the interval of 25 years the river cut into and over-spread some 20 miles of country, turning fertile fields into arid wastes of sand, sweeping away factories, farms and villages, and changing the whole face of the country from a fruitful landscape to a wilderness of sand and swamp.† An idea of the depth of its deposits may be gathered from the fact (mentioned in the *Statistical Account of Bengal*) that an indigo factory at Tripaniyā—it should be Nipaniyā—was covered with sand up to the tops of the chimneys within four years.‡ More

* *Purnea Settlement Report (1908)*.

† The account of an eye-witness will be found in *Sport and Work on the Nepal Frontier*, by J. Inglis.

‡ *Statistical Account of Bengal*, vol. XV, p. 333.

recently the same fate has befallen the Rupauli factory; it is now buried, and only its chimneys stand above the waste of sand.

The river is also subject to sudden freshets, sometimes rising over thirty feet in twenty-four hours. It soon makes a raging torrent level from bank to bank, where only a few hours before a horse could have forded the stream without wetting the girths of the saddle. Generally, however, there is a premonitory symptom of such freshets, the water becoming of a turbid, reddish colour. This colour is distinctive of the Kosi, so much so that when the water in any channel assumes it, it may be known that the Kosi water has made its way in. Another curious feature connected with the river is that, in time of flood, moisture percolates through the sandy soil as far as 5 or 6 miles from its course, so that even at that distance the cultivator known the river is in flood by the presence of unusual moisture in the soil. It is also said that if there is a west wind for three days—a rare occurrence—the river will be sure to come down in high flood.

The river is, however, not entirely destructive. It is actively building up land, and, in fact, the whole of the western half of Purnea owes its physical characteristics to its agency. It operates in a series of beds and gradually raises the level of the whole area over which they extend, partly by heightening the beds which it occupies in succession, and partly by the action of the spill water which deposits the sediment it holds in suspension. The area in which silt is deposited is probably on an average at least 20 miles wide, while the quantity of silt deposited is estimated at 37 million tons per annum. "The Kosi", writes Captain Hirst, "has no feeders of any importance outside its catchment area, which is roughly 24,000 square miles; the river, therefore, if it is the counterpart of the Ganges and Irrawaddy, carries approximately 55 millions of tons of sediment per annum; of this amount probably not more than one-half is used in building operations. I assume, to be on the safe side, that two-thirds, or about 37 millions of tons, are deposited annually on the lands to the sides of the river; 37 millions of tons of sediment are the equivalent of 691 millions of cubic feet".*

Within late historic times, *i.e.*, from the beginning of the 18th century, we have evidence that the main stream of the Kosi passed below the town of Purnea and thence due south to the Ganges. Rennell's Map of 1779 shows that the main stream flowed through the centre of the Damdahā thāna; but he states in his letters, and also in a memoir in the *Philosophical Transactions* (Vol. LXXI, p. 87), that the Kosi had at no distant date flowed

Changes
in the
course of
the Kosi.

* *The Kosi River*, J. A. S. U., September 1908.

past the station of Purnea and joined the Ganges 45 miles below its present junction. It has since worked steadily westward across some 30 miles of country, and the west of the district is full of its deserted channels. About 20 years ago it appeared to be trending eastward, and fears were expressed that it might suddenly swing back and devastate the district. The local authorities, the planters and the railway officials, severally and in combination, carried out surveys and had the river explored. A scheme was proposed for controlling it, and the whole question was considered in 1896-97 by a conference presided over by the Secretary to the Government of India in the Public Works Department. The scheme proposed was pronounced to be of doubtful efficacy, while its cost was enormous. It was decided that no steps were feasible for controlling this great river, with its numerous channels and their wide and elevated beds, beyond building short lengths of embankments to protect isolated tracts exposed to its floods. Protective works were accordingly built near the Nepal frontier with the object of retaining the bulk of its water in the existing channels. Since then, however, its oscillations to the north have compelled the Eastern Bengal State Railway to abandon the line between Forbesganj and Anchrā Ghāt. Of late years the river has again been showing a tendency to swing back to the east, and at present a large volume of water flows down the Damdahā Kosi; while to the west, on the border between Purnea and Bhāgalpur, the main stream winds about in a dismal swamp. Its waters are now divided between this western channel and that further east, which practically separates Damdahā thāna from thānas Korhā and Purnea.

It should be added that the name Kosi is applied to any river that contains the bulk of the Kosi water for the time being, but the channel which it adopts for its course still retains its original name, such as Hiran, Loran, etc.

There are numerous old beds of the Kosi of which a few need be noticed here, as they will be dealt with in greater detail in the appendix to this chapter. One very old bed is clearly traceable from a point a little east of Purnea railway station to Forbesganj. It runs parallel to the railway line the whole way, and the fort of Jalāgarh was built on an island in its bed. The old banks and bed of this channel are now covered with short grass, but near Kusiargāon, and a little to the north of Rāniganj, are long bare dunes formed by sand drifts. Another large river bed, some 20 miles west of Purnea, is known as the Damdahā Kosi, and another channel is the Loran about 30 miles to the west in the Bhāgalpur district.

Old beds
of the
Kosi.

The appearance of the old and new channels of the Kosi is described as follows by the late Mr. F. A. Shillingford:—"On approaching the banks of a newly adopted channel of the Kosi, when it has been established for a few years, its vicinity can at once be suspected by seeing forests of large trees, which had formerly been growing on the highest class of lands, their stems silted up to their forking branches, gradually dying off, and the whole country covered with sand or clay deposits as the current has been swift or slack, and most of the higher arable lands converted into jungles of tall saccharum grasses and tamarisk (*Tamarix indica*). On the other hand, a broad belt on either side of a recently deserted channel is rendered conspicuous by the absence of large trees except occurring as an oasis, spared here and there, dotting the prairie of waving grasses. When Buchanan Hamilton visited Purnea in 1807, Damdahā thāna was the most populous and prosperous division of the district to the west of, and almost untouched by, the Kosi, whilst Gondwārā thāna to the east, recently overrun by its ravages, had wild elephants roaming in its jungles. At the present time the former is just recovering from the state of being more or less a treeless tiger jungle, and the latter is the most cultivated and wooded of the three *parganas* of the Maharājā of Darbhanga's zamindari of Dharampur, the exploiting ground of the Kosi in Purnea for the past century.*

The most clearly defined of the old channels is that known as Kālā Kosi. the Kālā Kosi or Karā Kosi, which still preserves, to some extent, the appearance of a river. At the same time, it is so much broken by diverging, reuniting, and interlacing channels, that it is almost impossible to determine where it begins or what is its course. It may, however, be considered to have its rise, under the name of the Kamlā, near Rāniganj in the Arāriā subdivision, whence it flows southward passing four miles to the west of the town of Purnea. The Kālā Kosi then continues its course southward near the Kolāsi and Manshai indigo factories, and falls into the Ganges one mile south of Manihāri factory nearly opposite the Sāhibganj railway station of the East Indian Railway.

The principal tributary of the Kālā Kosi is the Saurā, which rises in some low lands to the north-west of Jalāgarh and joins it near the Pirganj indigo factory. The town of Purnea is situated on the east bank of this river.

The Mahānandā or Mahānadi rises below the Mahaldiram hill in the Darjeeling district, and, flowing southward, forms the boundary between Purnea and Jalpāiguri for a distance of 8 miles from Phānsidewā to Titalyā. It enters the district at

* Changes in the course of the Kosi river, J. A. S. B., 1895.

Titalyā and flows south-west through the Kishanganj subdivision as far as Dulālganj. Near the latter place it receives the Kankai, and its waters are deflected to the south-east. It then flows through the south-east of the Purnea subdivision and enters the Mālda district a few miles south of Bārsoi. This river, like the Kosi, is liable to shift its course. Between 1880 and 1890 a new branch struck out from Nawābganj, 3 miles south of Dingra ghāt, through the villages of Bhekaupur, Kahuākol, Himatpur and Bāgdobe to Karampur, where it rejoined the main stream. Again, from Bārsoi it broke eastwards by Pichorā, Chandpurā, Kajun, Bānsgūon and Satuan to join the Nāgar at Lagwān. The old or western stream has silted up in many places, but is navigable by boats as far up as Kālīganj. In the dry season, however, it is fordable above Kishanganj. Above Kālīganj, the rapidity with which the river rises and falls, and the velocity of the current, combine to render navigation almost impossible. The most important markets on or near its banks are Kālīganj, Kharkhari, Dulālganj and Bārsoi. At the place last named it is spanned by a railway bridge.

Tributa-
ries of
the Ma-
hānandā.

The Mahānandā receives on its left bank the following tributaries. (1) The Dānk rises in the district of Jalpāiguri and flows close to, and parallel with, the Mahānandā, down to its junction with that river near Kharkhari. (2) The Pitānu rises in the south of *pargana* Sūrjyapur, and flowing south, unites at Rāniganj with the Rāmjan. The united stream joins the Mahānandā near Sudhani. (3) The Nāgar, which forms the boundary between the districts of Purnea and Dinājpur, rises in the extreme north-east of *pargana* Sūrjyapur. It is liable to sudden floods and has a rapid current.

On its right bank the Mahānandā receives the following tributaries. (1) The Bālasan, a hill stream of about the same size as itself, which rises in the Singalilā range to the west of the Darjeeling district. (2) Eight miles lower down it receives the Chenga, another hill stream with clear limpid water and a pebbly bed. (3) Near Kālīganj it is joined by the Burigangi from Nepāl. (4) A little west of Kharkhari it is joined by the Mechī, a large affluent, which for some miles forms the boundary between Purnea and Nepāl. (5) About 2 miles north of Dingra Ghāt, near Dalkhola station, it is joined by the Kankai.

Kankai.

The Kankai is the most important of all its tributaries, bringing down from Nepāl a volume of water greater than the Mahānandā itself. In this district it gives off on its east bank an old channel called the Marā Kankai, which presently rejoins the parent stream; and on its west bank below Kuti it receives a hill

stream called the Ratuā, which has itself two tributaries, the Lunaswarī and Kamal. The Kankai is an erratic stream, which is continually shifting its course. Twenty years ago the branches passing Danti and places to the east of that village having silted up very much, a new channel opened out from four miles west of Bahādurganj into the Kanel, both joining the Ratuā just north of Majkuri, and forming one large stream, which followed the course of the Ratuā and reunited with the main Kankai at Sīaubāri or Baisāghāt. Of late years the Kankai has shifted its course from a point just above Bahādurganj and followed a new direction to the east of its old bed. In 1905, in the course of its wandering, it swept away the Sontha bazar and deposited silt and sand over 20 more villages.

The shifting of this river is, in a great measure, due to the great body of sand brought by its floods and deposited in its channel, by which the bed is raised and the flood water made to overflow the banks and scour out new channels. From Majkuri northwards the banks are very low, being scarcely 4 or 5 feet above the bed. In a heavy flood the neighbouring country is inundated, and much sand is spread over the adjoining lands to the serious injury of their fertility.

There are several streams between the Kosi and Kankai ^{Panār.} called Panār, but the main stream is that which has its origin in the Forbesganj thāna. It is formed by the confluence of a number of hill streams rising in Nepāl, and its course is first south-east, passing by Arāriā and about 10 miles to the east of the headquarters town, and then eastwards till it joins the Mahānandā a short distance beyond the district boundary. The main stream formerly flowed south through Kadwā and Hatandā to the Ganges. Everywhere along its banks luxuriant crops of hemp (*gorsan*) are raised.

The Panār is called the Parwan or Parmau in its higher reaches. It acquires the name of Panār by the time it passes to the east of the subdivisional headquarters of Arāriā, and is still called the Panār, when it crosses the Ganges-Darjeeling road on the 40th mile from Kārāgolā. It has, however, many affluents in its downward course, several of which are indiscriminately known by the same name of Parwan. After crossing the Ganges-Darjeeling road the Panār becomes the Rājā, and it is called the Kankar when it crosses the railway. Lower down it is called the Gangajuri; and finally its old channel before joining the Ganges at Hayātpur is called the Burnadi.

Two other rivers in the west of the district call for notice, ^{Livari and} viz., the Nagar and Livari. The former is a branch channel of ^{Nagar.}

the Kosi and depends on it for its supply of water. The Livari, which is also known as the Barandi, is a river of considerable size, rising to the west of Purnea and falling into the Ganges near Kārgola.

LAKES
AND
MARSHES.

There are no lakes, properly so called, in Purnea, but there are numerous marshes, especially towards the south-east. These never become entirely dry, but are reduced towards the end of the dry season to much narrower limits. The most remarkable form a long chain extending, though not continuously, from Gondwāra to Malda. They resemble a line of broken narrow channels winding among low land, and in all probability mark the former bed of some great river.

GEOLOGY.

The district is composed of alluvium, partly old alluvium and partly new Gangetic alluvium. Of the latter there is a wide belt some 30 miles broad north of the Ganges, while the sandy beds north of Purnea town appear to belong to the old group. Though very flat and low near Purnea, they rise and undulate considerably to the north, and include pebbles, which gradually increase in size as one proceeds towards the hills. The gradient of the ground, too, after passing Purnea, is at once doubled, while that of the thirty miles between Purnea and the Ganges is uniform. The junction between the old and new alluvium is, it is true, confessedly obscure, but this is the result of the sandy nature of the surface beds of the older group, which readily commingle and fuse with the newer deposits. The important fact of the gradient doubling along this line cannot be discerned by the eye, but where the *kankar* clay of the older group is in juxtaposition to the sands and silts of the newer alluvium the case is different and there is little doubt about it.*

BOTANY.

In the east of the district, where the ground is not occupied by crops, it is covered by an abundant natural vegetation. Old river beds, ponds and marshes, and streams with a sluggish current have a copious vegetation of *Vallisneria* and other aquatic plants. Land subject to inundation has usually a covering of *Tamarix* and reedy grasses, and, in some parts where the ground is marshy, *Rosa involucreta* is plentiful. Few trees occur on these inundated lands, the largest and the most plentiful being *Barringtonia acutangula*. Though the district contains no forests, this part of it is well timbered, but the sandy western prairies are nearly treeless. Elsewhere, however, the villages are generally imbedded in thickets or shrubberies of semi-spontaneous and more or less useful trees. Mango groves are a common feature of

* Rec. Geol. Surv. Ind., III, 18.

the district, and varieties of the *Ficus* are also numerous. A century ago the north of the district bordering on the Tarai was described as being covered with immense woods of *sāl* and other timber, which during the rains were floated down the rivers to the ship-building yards in Calcutta.*

FAUNA.

The district was formerly well stocked with big game. Buchanan Hamilton, writing a century ago, stated that towards the northern frontier herds of wild elephants, each numbering forty or fifty in number, made raids from Nepāl, while a few had for some years past frequented the woods in the south. A rhinoceros had lately made his appearance in the southern marshy tract, but had been shot by an indigo planter into whose promises he had "fortunately thrust himself." In the same tract there were some wild buffaloes, which were exceedingly destructive, and in the north wolves used to carry off a number of children, but had disappeared since the country was cleared. Tigers and leopards were not common, but we find that in 1788 the Collector gave an account of the ravages committed by the former in *pargana* Kadwā and reported that rewards were paid for 600 tigers per annum, though he suspected that many of the heads were brought in from the Nepāl Tarai. A clearer idea, however, of the number of wild animals found in the district may perhaps be gathered from Buchanan Hamilton's remark:—"The population seems in some places to be diminishing, for the extreme timidity and listlessness of the people has in some parts prevented them from being able to repel the encroachments of wild beasts."

Even as late as 25 or 30 years ago, Purnea had the reputation of being, if not the best, one of the best shooting districts in Bengal.† Tigers, leopards, buffaloes, hog-deer, antelope, *nilgāi* and wild pigs, as well as game birds, were common; while rhinoceros and bear could be shot in the north of the district. 'Maori', indeed, says—"Purnea and North Bhāgalpur bordering on the Terai is admittedly even in India a very sportsman's paradise, and is probably, or was at all events, the best tiger-shooting ground in the world."‡ Owing, however, to the opening up of the country, the shifting of the Kosi river, and the bringing of jungle lands under cultivation, wild animals are getting scarcer every year and are now confined to small tracts of country in different parts. Tiger, leopard, jackal, fox, three kinds of cat, hog-deer (*Cervus axis*), *nilgāi*, pig, buffalo, porcupine, hare, and

* W. Hamilton, *Description of Hindostan* (1820), I, 233.

† This account of the Fauna of Purnea has been prepared mainly from a note kindly contributed by Mr. C. D. Pyne of the Korah Factory.

‡ J. Inglis ("Maori"), *Tent Life in Tigerland*, 1892.

an occasional hyaena and wolf may, however, still be met with.

The few tigers still to be found in the district haunt the tree jungle called *katahal*, the grass jungles to the east bordering on the Málđa district near the Kaliganj indigo factory, and the tract just along the Nepál frontier to the north. They stray a good deal and are occasionally heard of to the south-west on the Kosi *diaras*, to which they come from the Bhágalpur district, and also in the *katahals* along the Ganges to the south between the Manshai and Bahorá indigo factories. During the last 15 years a dozen or so have been shot, and quite half this number were shot in the interior, miles away from their regular haunts. Two years ago a stray tiger was shot within 7 miles of Purnea station far away from any jungle fit for cover. Regular man-eaters are unheard of.

The contrivance by which tigers in the Tarai are killed by *shiháris* is simple but effective. At two or three points near which it is probable that the tiger will pass, a split bamboo, with all the knots cut out, is placed on a rest about a foot and a half from the ground. To the end directed towards the tiger's path a strong bow is attached, the string of which, when bent, is fastened in a notch near the other end. In the hollow of the bamboo an arrow lies, which is made from some hard wood or old bamboo, well sharpened and poisoned with the juice of a plant, believed to be aconite. A long piece of firm cord is tied to the bow-string near the notch, and stretched forward across the tiger's path. As he comes along, he usually trips over the cord, thereby discharging the arrow, which generally hits him just behind the shoulder. The wound is often so severe as to be of itself fatal, but if not the poison soon causes death. For the protection of wayfarers there is a guard-string called *dharmsut*, i.e., a cord stretched obliquely across the path at some distance from the bow. It is about 4 feet from the ground, so that the tiger can pass under it, but a cow or a man would strike against it.

Leopards are still fairly plentiful, and, owing to their prowling habits, are heard of from time to time in practically all parts of the district. They are much more destructive than tigers, and attack and kill cattle, ponies, dogs, young buffaloes and goats. Their principal haunts are parts of the Kishanganj and Aráriá subdivisions, along the frontier to the north, and also in the jungles to the south. Hyaenas are very rarely met with, the last heard of being seen in the north of the Kishanganj subdivision towards Titalyá. Wolves are also scarce, but there are a few in Rániganj thána to the north. Jackals and foxes are numerous everywhere,

and as the district is an excellent riding country, good hunting with bobbery packs is enjoyed in the cold weather. Hog-deer are the only deer now left in Purnea. They are still found in fair numbers in the grass jungles, where these still exist, along the Kosi river banks from the northern frontier as far as the Ganges in the south, and near Forbesganj in the Aráriá subdivision. A few are also scattered about the Korhá and Damdahá, Katibár and Manihári thánas. The *nilgái* has no fixed habitat in the district, and is very scarce, only half a dozen or so being heard of within the past 4 or 5 years. Pigs are still fairly plentiful. They frequent practically the same jungles as deer, viz those adjoining *katahals* and jungly *nullahs*, and are also found in the Kishanganj subdivision. They damage crops of all kinds in the neighbourhood of the jungles and are very partial to oats. Of recent years even pigs have thinned out considerably. They are shot from pits at night by cultivators guarding their crops, and are killed off in numbers by Dhángars and Santáls, who put up nets across regular pig runs, and forming lines drive the beasts into the nets. As soon as they are well entangled, the crowd come up and finish them off with spears and heavy sticks.

Buffaloes still exist in small numbers, the total for the district being probably under 250. They are to be found in Bhawa in Rupaui thána and, in small stray herds of five or six, in the *katahals* along the Ganges and to the east towards Málđa. Good heads are rare, and, like the antelope, this animal will probably be extinct in the district before long, judging from the regular decrease in its numbers during the past 10 years. Porcupines are met with, but less frequently than other animals, as they burrow in inaccessible places, generally on the banks formed by the excavation of tanks covered by heavy jungle. They are particularly fond of potatoes and a few other kinds of vegetables, and are a nuisance when living near a garden. They are seldom killed, as they scarcely ever leave their burrows in the day time. Hares are found in moderate numbers on high lands near cultivation, and fair bags are obtainable by beating through crops and adjoining bushes and grasses.

The game birds that breed in the district are pea-fowl, Game
bittern, both lesser and greater florican, partridge (black, ^{birds.}
and marsh), cotton teal, whistling teal, pink-headed duck, button
quail, black ibis, goggle and golden plover, green pigeons, blue
fowl and some waders. Peafowl are found in fair numbers in the
eastern tracts bordering on Málđa, and a few in the *katahals* near
the Ganges *diaras*, while bittern frequent the banks of marshes