

rivers. The Ganga forms part of the southern boundary of Darbhanga and further north the Little Gandak separates the greater portion of the Samastipur subdivision from the rest of the district and this subdivision contains no other river of importance but to the north there is a net-work of rivers and streams most of which cover the extreme south-east corner of the district. In the Madhubani and headquarters subdivisions practically all rivers are liable to overflow their banks during heavy floods but they rapidly drain off into the lowlying country in the south-east of the district and ultimately into Kosi river, on which all the lines of drainage north of the Little Gandak converge. Their most marked characteristic in this portion of their course is that they flow on ridges elevated above the surrounding country and each pair of rivers thus encloses a shallow depression, consisting of a series of *chaurs* or lowland leading into one another forming the drainage channels of the country.

The Ganga

The Ganga stretches in the district on the south for 20 miles but there are no large places of trade on its bank in this portion of its course. It is no where fordable at any time of the year and is about a mile wide in dry season, when clear of sand banks. In rains, the width is much greater, all sand banks being covered with water. The sand banks are constantly changing, forming and reforming in the most capricious way. Generally speaking, the banks of Darbhanga side are sloping and ill-defined and the lowlying lands are annually flooded. By constructing a long high embankment from Shahporepatory to Sherpur in Monghyr district via Nandini, Bazidpore, the flood has been restricted to the south of this embankment. The land on the south is of course inundated by flood of the Ganga and gets rich alluvial soil every year and produces good *Rabi* crops.

The Baya River

The only stream of any importance which joins the Ganga direct and not by way of other river systems is the Baya. The river is an overflow of the Great Gandak, which forms the boundary between Muzaffarpur and Saran. After flowing through the south of Muzaffarpur, it runs through part of Mohiuddinagar thana in this district and finally joins the Ganga just below Dhauspur at the extreme south-east corner of the Samastipur subdivision. In Darbhanga district, the entire length of the Baya river is on the south of the Ganga embankment and so no lands on the north of the embankment are affected by flood of this river.

The Little or the Burhi Gandak

The Little or the Burhi Gandak, as it is also called, is an important river throughout its course in Champaran, Muzaffarpur,

Darbhanga and North Monghyr. It enters the Darbhanga district near Pusa and after flowing past Samastipur leaves it just below Rusera. Though its importance has diminished by the Railway, it is still a valuable trade highway and there are many large bazars and markets on its banks. It is navigable all the year round, for country boats of fair size. Its offshoots flowing through the south-west of the Samastipur subdivision, rejoin the parent stream in Monghyr before it flows into the Ganga at Khagaria and these offshoots get dried up except in rains. The river Burhi Gandak and its offshoots spill the banks during flood inundating the areas in Tajpur and Warisnagar thanas causing damage to crops and communications. Above Shivai-singhpore the left bank spill combines with the spill of Shanti causing inundation and the right bank spill also extends to Dakahabaha Bundh, causing damages to crops and communications.

The Baghmatai, Karai, Shanti Rivers

The Baghmatai, or better known as Muzaffar Baghmatai, rises in Nepal and after traversing through Muzaffarpur district enters Darbhanga district near Kalanjar Ghat, pursues an easterly direction parallel to Burhi Gandak. It formerly joined this river near Rusera, but within the last 70 years, it has cut a new bed for itself and now flows into Karai.

The Shanti river enters Darbhanga, a little south of Baghmatai and runs parallel to it and traversing through Warisnagar thana, joins the old course of Baghmatai and flows into Burhi Gandak near Rusera.

The Little Baghmatai or Darbhanga Baghmatai on which the town of Darbhanga stands also finds its way into Karai near Hayaghat. Its chief tributary is the Dhans, which runs through north-west of Benipatti thana. Another tributary of importance is the Mohini river which flows through and inundates in rains the Jale thana. The Little Baghmatai was formerly joined near Kamtaul by the Kamla, which is no longer a living channel.

Karai prior to its junction with Baghmatai, is an unimportant stream and after joining with Baghmatai flows south-easterly to Tilleshwar and ultimately falls into Kosi. In flood season, the spill water of the river overflows large areas.

Kamla, Jiwachh, Balan Rivers

The river Kamla rises in Nepal, enters Darbhanga district just east of Jaynagar town in the north and flowing southwards and then in a south-easterly direction to Tilleshwar falls into Tiljuga and ultimately into Kosi by various tortuous routes. This river changes its course from year to year and its old beds

are found all over the north of Madhubani subdivision. The main channel used to flow ten miles east of Madhubani, then ten miles west and now it flows 2 miles east of Madhubani town and reaching Ryam encircling it by various channels takes ultimately the bed of Gause river and then goes south eastward to Tilleshwar. It is a large river in the rains and is liable to heavy floods.

In flood season Madhubani and Jaynagar towns are threatened every year and the Ryam area becomes a vast sheet of water. A few years before, Kamla used to flow into the bed of Jiwachh, which it has abandoned now and has taken up the present course as stated above. The bed of Jiwachh has thus silted up.

In Darbhanga and Muzaffarpur, Kamla is worshipped as the younger sister of the Ganga and receives similar offerings of goats. Still further east of Kamla is the Little Balan, a deep narrow river with well defined beds, which runs south through the eastern part of Khajauli and Madhubani thanas and joins Tiljuga near Rusera. The Balan proper known as Bhali Balan is a river with wide shifting of sandy beds, also liable to heavy floods, but practically dry during a great part of the year. Its old beds are found all over the north of Phulparas thana.

Tiljuga and Kosi Rivers

Last comes Tiljuga and Kosi. Tiljuga rises in Nepal and skirts the entire eastern part of the district, though parts of it lie in Saharsa and Monghyr districts. Since Kosi has now approached the eastern boundary of the district, it has practically flowed into the bed of Tiljuga river and causes heavy floods in the whole of the eastern boundary area of the district. Kosi is a major river. It rises in Nepal and flows through Saharsa, Darbhanga, North Monghyr, Purnea districts and meets the Ganga. The tendency of Kosi is to shift more westwards and so nearly every year a number of villages in Darbhanga district are affected by floods in Kosi. In the rainy season this river creates havoc in Saharsa and in the eastern part of this district in Phulparas, Madhepur, Biraul and Singia thanas. Kosi changes its course and travels 50 or 60 miles in about 50 years. As it moves, it leaves many channels behind and large tracts are made not only unfit for cultivation but also make them highly malarious. The harnessing of Kosi has been taken up at its upper course and the multi-purpose Kosi Project will be of immense benefit to the district. This aspect has been covered elsewhere.

GEOLGY

Darbhanga is a level plain rising very gradually towards the feet of the Himalayas, and with a belt of fairly high and along

the bank of the Ganga. Between these two extremes the general elevation is lower, and considerable areas are liable to inundation. The soil consists mainly of the older alluvium or *bangar*, a yellowish clay with frequent deposits of *kankar*, but in parts this has been cut away by the river rushing down from the Himalayas, and the low land, through which the latter find an exit to the Ganga, is composed of more recent deposits of sand and silt brought down by them when in flood. The soil of the district is thus entirely alluvial. It is impregnated in parts with saltpetre and other salts, and occasionally beds of *kankar*, or nodular limestone of an inferior quality, are met with.

The district suffered very badly in 1934 from earthquake.

BOTANY

"The essential features", writes Major D. Prain, I.M.S., in *Bengal Plants*, "of the vegetation in the area to the north of the Ganges, from the Gandak on the west to the Brahmaputra on the east, as we pass from north to south, are as follows. First, a narrow, more or less sloping, gravelly submontane tract along the base of the Himalaya, covered, except along river-beds, with a dense forest, the constituent species of which are those that occur on the lower slopes of the mountains themselves. In existing river beds only a few tough-flexible bushes occur; along abandoned shingly river courses the jungle is open and park-like, and the species are those characteristic of a drier climate than obtains in the forest alongside. This submontane forest is normally succeeded by a belt of swampy land of varying width, covered with long reedy grasses. Further out into the plain the ground as a rule rises somewhat, and if so high as to be free from inundations, is in waste tracts usually covered with open jungle of a bushy character in the western parts, taller and more park-like in the central districts, and mixed with reedy grass or sometimes consisting only of tall grass as we pass to the east. Much of this tract, however, especially in the west, is under cultivation, and is then bare or diversified with bamboos, palms, and orchards of mangoes, or less often, groves of other trees; in and about the villages themselves the mangoes are often accompanied by a number of tree-weeds and semi-spontaneous, more or less useful, bushes and trees."

For botanical purposes Darbhanga forms part of Tirhut, i.e., the region lying from west to east between the Gandak and Kosi, and from north to south between the sub-Himalayan forest and the Ganga. The botanical features of this tract are in many ways different from those of Bihar, i.e., the tract extending from the Sone on the west to the old bed of the Bhagirathi on the east and lying from north to south between the Ganges and the *ghats* of Chota Nagpur. Together they form an integral portion of the Upper Gangetic plain, but, as Major Prain points out, "Tirhut is

wholly flat, whereas Bihar is much diversified by hills. Bihar, too, is appreciably drier than Tirhut, and these two circumstances, greater diversity of surface and less humidity, account for the presence in Bihar of many species that are absent from Tirhut. Another and, though an accidental, not less important factor in influencing the vegetation of Tirhut is the density of the population. So close, in consequence, is the tilth, that throughout the whole district field is conterminous with field, and the cultivated land abuts so closely on wayside and water course as to leave no foothold for those species that form the roadside hedges and fill the weedy waste places so characteristic of lower Bengal. Even the village shrubberies that constitute so marked a feature of much of our area, are in Tirhut conspicuous by their absence. The result is that, except for the water-plants in the smaller streams and sluggish rivers, the vegetation of Tirhut is chiefly limited to the crops with their concomitant field-weeds; even the latter are often conspicuous by their paucity.*

The following is an account of the different botanical species found now in Darbhanga :—

The ground is under close cultivation, and besides the crops carries only a few field-weeds, except for a few very small patches of jungle, whereof the chief constituents are the red cotton tree (*Bombax malabaricum*), *khair* (*Acacia catechu*) and *sisu* (*Dalbergia sissoo*); in these parts there is an under-growth of euphorbiaceous and urticaceous shrubs and tree-weeds, like *Breynia*, *Trema*, *Flueggia*, *Phyllanthus* and *Glochidion*. Occasionally also large stretches of grass land are found, of which the chief species are *Eragrostis cynosuroides*, *Andropogon intermedium*, *Imperata arundinacea*, *Saccharum spontaneum*. These are interspersed with smaller spots of *usar* land sparingly beset with *Andropogon aciculatus*, *Diplachne*, *Sporobolus* and similar grasses. Near villages small shrubberies may be found containing mango, *sisu*, *Eugenia jambolana*, various species of *Ficus*, an occasional tamarind and few other semi-spontaneous and more or less useful species. Both the palmyra (*Borassus flabellifer*) and the *khajur* (*Phoenix sylvestris*) occur planted and at times self-sown, but neither in great abundance. By the roadsides or round village enclosures, hedges of *Jatropha curcas*, *Caesalpinia sepiaria*, *Grewia* and similar shrubs are often covered with climbing species of *Convolvulaceae*, *Traja involucreta* and various species of vines. Hedge-row weeds are represented by *Jatropha gossypifolia*, *Martynia diandra* and similar plants. The field and roadside weeds include various grasses and sedges, chiefly species of *Panicum* and *Cyperus*; prostrate

* District Gazetteer of Darbhanga (1907), pages 5-6.

species of *Evolvulus*, *Indigofera*, *Ionidium*, *Desmodium*; and herbaceous species of *Phyllanthus*, *Euphorbia*, *Heliotropium*, and the like. In waste corners and on railway embankments thickets of *sisu*, derived both from seeds and root-suckers, very readily appear. The sluggish streams and ponds are filled with water weeds, submerged *Ceratophyllum*, *Hydrilla*, *Vallisneria*, *Ottelia* and floating *Potamogeton*, *Nelumbium*, *Nymphoea*, *Trapa*, *Jussiaea*, *Ipomoea*, the sides being often fringed by reedy grasses and bulrushes occasionally intermixed with tamarisk bushes.*

FAUNA

Tirhut a part of which is Darbhanga district was formerly famous for the variety of its fauna in the days when forests covered large stretches of land which are now under the plough. *The *Ain-i-Akbari* mentions about the savage buffaloes of this area that would attack tigers. It also mentions that deer and tigers frequented the cultivated spots and were hunted. Even towards the close of the 18th century wild animals were still very plentiful. A few years before the Permanent Settlement rewards were paid for the slaughter of 51 tigers in a single year. Beasts of prey and depredations by herds of wild elephants were a serious danger to cultivation.

Even in the last District Gazetteer published in 1907 mention has been made that leopards were occasionally found in patches of jungle towards the north and that hyaenas were met with but rarely.

The advance of cultivation, the growth of the population and the extension of means of communications have practically denuded the district of forests and from wild buffaloes, tigers, elephants and leopards. Tiger and *nilgai* are very rarely met with. Wild pigs the sticking of which was a great sport of the Europeans of the district are no longer found in herds. Jackals, fox, wild cat, and other small predatory animals are now the only remnants. Darbhanga and particularly the areas of bordering Nepal used to be an excellent *shikar* land which has now become a dream. The present generation has not heard of a wild elephant in Darbhanga district.

In the last District Gazetteer it was mentioned that the game birds of the district were not numerous. They have still become smaller in number. O'Malley had mentioned—

“The following kinds of duck and teal are known—The red-headed, white-eyed and crested pochard, pin-tail and shoveller duck, widgeon, ruddy sheldrake, blue-winged, whistling and cotton teal. The spotted bill duck, whistler and cotton teal breed here. Snipe, plover, cranes,

*This portion as well as some other portions have been taken from O'Malley's District Gazetteer of Darbhanga as there have been no major changes (PCRC).

storks, curlew and numerous sorts of waders are regular visitors."* Most of those varieties have ceased coming to the district now.

Winter does not attract most of these visitors now. The game birds now consist of a few indigenous types of snipes, partridges and ordinary ducks.

Birds

Mr. C. M. Inglis, an European planter who had lived in Darbhanga district for about forty years had made a study of the birds of Darbhanga district. He had been contacted in his retirement at Bangalore and had promised collaboration but unfortunately before the write-up came death snatched him away. He is one of the collaborators of the book on Birds of an Indian Garden (Thacker Spink and Co., Ltd. Calcutta), 1936. His article on Birds of the Madhubani subdivision of the Darbhanga district in the Journal of the Bombay Natural History Society, Vols. XV and XVI, 1901 is authoritative.

A large number of birds has been recorded by Mr. C. M. Inglis from 1897 to 1948. It is possible that due to the cultivation of the *chours* (water-logged areas), indiscriminate shooting in the past and other reasons, some of the birds have ceased coming to Darbhanga. It is true that Darbhanga is no longer the great *shikar* area for birds.

The list of birds recorded by Mr. Inglis in the district of Darbhanga is as follows :—

Jungle Crow, House Crow, Treeple, Grey Tit, Chestnut-bellied Nuthatch, Jungle Babbler, Striatea Babbler, Common Babbler, Common Lora, Red-vented Bulbul, Red-whiskered Bulbul, Stonechat, Bushchat, White-tailed Bushchat, Hodgson's Bushchat, Redstart, Red-spotted Bluethroat, Rubythroat, Dhayal, Shama, Black-throated Thrush, Orange headed Ground Thrush, Small-billed Mountain Thrush, Blue-headed Rock Thrush, Red-breasted Flycatchers, Slaty-blue Flycatcher, White-browed Blue Flycatcher, Blue-throated Flycatcher, Verditer Flycatcher, Grey-headed Flycatcher, Paradise Flycatcher, Black-naped Flycatcher, White-browed Fantail Flycatcher, Bay-backed Shrike, Black-headed Shrike, Rufous-backed Shrike, Grey-backed Shrike, Brown Shrike, Wood Shrike, Scarlet Minivet, Small Minivet, Burmese Small Minivet, Dark-Grey Cuckoo-Shrike, Large Himalyan Cuckoo-Shrike, Black Drongo, White-bellied Drongo, Hair-crested Drongo, Large Racket-tailed Drongo, Great Reed

*District Gazetteer of Darbhanga (1907), pp. 7-8

Warbler, Blyth's Reed Warbler, Tailor Bird, Streaked Fan tail Warbler, Striated Marsh Warbler, Bristled Grass Warbler, Thick-billed Warbler, Orphean Warbler, Tickell's Willow Warbler, Brown Willow Warbler, Smoky Willow Warbler, Hume's Willow Warbler, Greenish Willow Warbler, Large Crowned Willow Warbler, Blyth's Crowned Billow Warbler, Allied Flycatcher-Warbler, Indian Wren-Warbler, Indian Oriole, Black-headed Oriole, Southern Grackle, Indian Grackle, Rosy Pastor Finsch's Starling, Grey-headed Myna, Black-headed Myna, Common Myna, Bank Myna, Jungle Myna, Pied Myna, Baya, Black-throated Baya, Chestnut-bellied Munia, White-throated Munia, Spotted Munia, Red Munia, Caucasian Rose Finch, Common Rose Finch, Yellow-throated Sparrow, House Sparrow, Grey-headed Bunting, Little Bunting, Crested Bunting, Siberian Sand Martin, Indian Sand Martin, Common Swallow, Eastern Swallow, Hodgson's Striated Swallow, White Wagtail, Masked Wagtail, Hodgson's Pied Wagtail, White-faced Wagtail, Large Pied Wagtail, Blue-headed Wagtail, Grey-headed Wagtail, Yellow-headed Wagtail, Hodgson's Yellow-headed Wagtail, Forest Wagtail, Tree Pipit, Indian Tree Pipit, Brown Rock Pipit, Blyth's Pipit, Indian Pipit, Hodgson's Pipit, Skylark, Rufous Short-toed Lark, Brooks's Short-toed Lark, Ganges Sandlark, Bushlark, Franklin's Crested Lark, Ashy-crowned Finch-Lark, White-eye, Purple Sunbird, Tickell's Flower-pecker, Thick-billed Flower-pecker, Pitta, Mahratta Woodpecker, Pygmy Wood pecker, Rufous Woodpecker, Golden-backed Woodpecker, Japanese Wryneck, Green Barbet, Grimson-breasted Barbet, Asiatic Cuckoo, Indian Cuckoo, Papiha, Plaintive Cuckoo, Burmese Plaintive Cuckoo, Pied Crested Cuckoo, Red-winged Crested Cuckoo, Koel, Striker Cuckoo, Crow-Pheasant, Lesser Coucal, Large Parakeet, Roseringed Parakeet, Blossom-headed Parakeet, Roller, Bee-eater, Blue-tailed Bee-eater, Pied Kingfisher, Common Kingfisher, Stork-billed Kingfisher, White-breasted Kingfisher, Black-capped Kingfisher, Grey Hornbill, Hoopoes, Nepal House Swift, Bengal Palm Swift, Horsfield's Nightjar, Jungle Nightjar, Common Nightjar, Barn Owl, Grass Owl, Short-eared Owl, Mottled Wood Owl, Bengal Fishing Owl, Great Horned Owl, Collared Scops Owl, Northern Scops Owl, Spotted Owlet, Brown Hawk Owl, Osprey, Pondicherry Vulture, Griffon Vulture, Long-billed Vulture, White-backed Vulture, Scavenger Vulture, Peregrine Falcon, Shakin Falcon, Laggar Falcon, Hobby, Red-headed Merlink, Kestrel, Imperial Eagle, Tawny Eagle, Great Spotted Eagle, Small Spotted Eagle, Booted Eagle, Changeable Hawk-Eagle, Hodgson's Hawk-Eagle, Short-toed

Eagle, Crested Serpant Eagle, White-eyed Buzzard, Pallas's Fishing Eagle, Grey-billed Fishing Eagle, Brahminy Kite, Pariah Kite, Black-winged Kite, Pale Harrier, Monitagu's Harrier, Pied Harrier, Long-legged Buzzard, Shikra, Sparrow-Hawk, Besra Sparrow-Hawk, Crested Honey Buzzard, Green Pigeon, Southern Green Pigeon, Ashy-headed Green Pigeon, Orange-breasted Green Pigeon, Emerald Dove, Blue Rock Pigeon, Stock Pigeon, Rufous Turtle Dove, Spotted Dove, Ring Dove, Red Turtle Dove, Blue-breasted Quail, Grey Quail, Black-breasted Quail, Black Partridge, Kyah, Grey Partridge, Little Button Quail, Button Quail, Water Rail, Spotted Crake, Baillon's Crake, Ruddy Crake, White-breasted Waterhen, Moorhen, Kora, Purple Moorhen, Coot, Bronze-winged Jacana, Pheasant-tailed Jacana, Painted Snipe, Common Crane, Siberian Crane, Sarus Crane, Demoiselle Crane, Lesser Florican, Bengal Florican, Stone Plover, Great Stone Plover, Indian Courser, Large Pratincole, Small Pratincole, Great Black-headed Gull, Black-headed Gull, Brown-headed Gull, Yellow-legged Herring-Gull, Whiskered Tern, Caspian Tern, Gull-billed Tern, River Tern, Black-bellied Tern, Sooty Tern, Skimmer, Grey Plover, Kentish Plover, Little Ringed Plover, Golden Plover, Peewil, Sociable Lapwing, White-tailed Lapwing, Spur-winged Plover, Redwattled Lapwing, Yellow-wattled Lapwing, Grey-headed Lapwing, Black-winged Stilt, Avocet, Eastern Curlew, Whimbrel, Black-tailed Godwit, Green Sandpiper, Marsh Sandpiper, Wood Sandpiper, Redshank, Spotted Redshank, Greenshank, Common Sandpiper, Ruff and Reeve, Little Stint, Temminck's Stint, Curlew-Stint, Dunlin, Wood cock, Fantail Snipe, Pin-tailed Snipe, Jack Snipe, Rosy Pelican, Spotted-billed Pelican, Large Cormorant, Shag, Little Cormorant, Darter, Spoonbil, White Ibis, Black Ibis, Glossy Ibis, White Stork, Black Stork, White-necked Stork, Black-necked Stork, Adjutant, Smaller Adjutant, Painted Stork, Openbill, Purple Heron, Grey Heron, Large Egret, Smaller Egret, Little Egret, Cattle Egret, Reef Heron, Pond Heron, Little Green Heron, Night Heron, Yellow Bittern, Chestnut Bittern, Black Bittern, Bittern, Flamingo, Nukta, Pink-headed Duck, Cotton Teal, Grey Lag Goose, White-fronted Goose, Suskhin's Goose, Bar-headed Goose, Lesser Whistling Teal, Large Whistling Teal, Sheldrake, Brahminy Duck, Mallard, Spotbill, Falcated Teal, Gadwall, Widgeon, Common Teal, Baikal Teal, Pintail, Garganey, Shoveller, Marbled Teal, Red-crested Pochard, Pochard or Dunbird, White-eyed Pochard, Baer's White-eye Tufted Pochard, Eastern Goosander, Great Crested Grebe, and Little Grebe.

The late Mr. Charles M. Ingles just before his death had written to the Editor:—

“My observations reveal that 41 birds have been recorded by me from the district of Darbhanga which had not been recorded any where in the State of Bihar previously. These birds have neither been recorded subsequently from the State, and constitute the rarer birds of Darbhanga. The following are the birds that have been recorded from Darbhanga but from nowhere else in Bihar:—

Slaty Blue Flycatcher (*Muscicapa tricolor*), Striated Marsh Warbler (*Megalurus palustris*), Smoky Willow Warbler (*Phylloscopus fuliginiventer*), Allied Flycatcher Warbler (*Seicercus affinis*), Indian Grackle (*Gracula religiosa intermedia*), Chestnut-bellied Munia (*Lonchura ferrinosa atricapilla*), Grey-headed Bunting (*Emberiza fucata*), Hodgson's Pipit (*Anthus roseatus*), Shorteared Owl (*Asio flammeus*), Imperial Eagle (*Acquila heliaca*), Booted Eagle (*Hiraeetus pennatus*), Hodgson's Hawk Eagle (*Spizaetus nipalensis*), Eastern Stock Pigeon (*Columba eversmanni*), Swamp Partridge (*Francolinus gularis*), Indian Water-Rail (*Rallus aquaticus*), Spotted Crake (*Porzana porzana*), Baillon's Crake (*Porzana pusilla*), Northern Ruddy Crake (*Amaurernis fuscus*), Great White Siberian Crane (*Grus leucogeranus*), Great Stone Plover (*Esacus recurvirostris*), Large Indian Swallow Plover (*Glareola maldivarum*), Great Black-headed Gull (*Larus ichthyaetus*), Black-headed Gull (*Larus ridibundus*), Yellow-legged Herring Gull (*Larus argentatus*), Caspian Tern (*Hydroprogne caspia*), Sooty Tern (*Sterna fuscata*), Grey Plover (*Souatarola squatarola*), Sociable Lapwing (*Chettusia gregaria*), White-tailed Lapwing (*Chettusia leucura*), Black-winged stilt (*Himantous himantopus*), Eastern Curlew (*Numenius arquata*), Whimbrel (*Numenius phaeopus*), Marsh Sandpiper (*Tringa stagnatilis*), Spotted Redshank (*Tringa erythropus*), Jack snipe (*Lymnocyptes minima*), Rosy Pelican (*Pelecanus onocrotalus*), Yellow Bittern (*Ixobrychus sinensis*), Black Bittern (*Dupeper flavicollis*), White Fronted Goose (*Anser albifrens*), Large Whistling Teal (*Dendrocyna Fulva*), and Crested Grebe (*Bodiceps cristatus*).

Three hundred and fifty-eight species of birds, resident and migratory, occur in this district and neighbourhood. The common birds of Darbhanga are listed, and illustrated, in *Birds of an Indian Garden*, which is an easy book for beginning bird identification.”

Fish

Most of the rivers and lakes, and many of the tanks abound in small fish, each as *rahu*, *nuni*, *jasir*, *bachua*, *tengra*, *singhi*, *katla*, mullet, a great variety of the smaller carp, poach and dace-like fish, predatory fish known as *boari*, and a flatsided fish called *buna*, some of which grow to a large size. The *hilsa* has sometimes been found in the Little Gandak. In the latter river and in the Baghmata and other larger rivers, the Gangetic porpoise is fairly common. The common turtle is also found in the larger rivers and lakes. The *gharial* or fish-eating crocodile and the *mugger* or snub-nosed variety, locally called *boch*, are still found in most of the rivers. The former are occasionally of great size, *gharials* 20 feet and more in length having been shot. The fisheries have been dealt with in the text on Agriculture and Irrigation. It is a pity that in spite of a large quantity of fish being available in this district there is no arrangement for transport of fish in refrigerated wagons. Darbhanga is now within 7 or 8 hours run from Patna and it will not be difficult to transport Darbhanga fish to Patna markets. Now most of the fish go to Bhagalpur and Katihar.

Snakes

Several kinds of dangerous snakes abound in this district like the Karait and the Cobra. There are also particular water snakes commonly called *Donhra*.

CLIMATE

The climate of this district is characterised by a pleasant cold season, a hot, dry summer and the monsoon season with its moist heat and oppressive nights. The cold season is from about the middle of November to the end of February. The summer season from March to May is followed by the south-west monsoon season from June to September. October and the first half of November constitutes the post monsoon season.

Rainfall

Records of rainfall in the district are available for a good network of 21 stations for periods ranging from 22 to 90 years. The statement of the rainfall at these stations and for the district as a whole is given in tables 1 and 2. The average annual rainfall in the district is 1254.3 mm (49.38"). The rainfall generally increases from the south-west towards the north-east. But in the area around Samastipur the rainfall is higher than in the rest of the district. The rainfall in the south-west monsoon season from June to September constitutes about 84 per cent of the annual rainfall. In general, the rainiest month in the north-eastern half

of the district is July while in the south-western half is August. The variation in the annual rainfall from year to year is not large. During the fifty years 1901 to 1950, the highest annual rainfall amounting to 139 per cent of the normal occurred in 1905 while the lowest annual rainfall which was 50 per cent of the normal occurred in 1908. No two consecutive years had rainfall less than 80 per cent of the normal, considering the district as a whole. However, at a few of the stations rainfall less than 80 per cent of the normal in two or three consecutive years has occurred once during this fifty year period. At Rusera even four consecutive years of such low rainfall has occurred during 1940 to 1943. It will be seen from table 2 that the annual rainfall was between 1,000 and 1,500 mm (39.37" and 59.05") in 35 years out of 50.

On an average there are 51 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 44 at Laukaha and Dalsingsarai to 60 at Samastipur.

The heaviest rainfall in 24 hours recorded at any station in the district was 441.5mm (17.38") at Umgaon in 1942 September 30.

Temperature

The only meteorological observatory in the district is at Darbhanga. The temperature and other meteorological conditions as indicated by the data of this station may be taken as representative of those in the district in general. The cold weather commences by about the middle of November when temperature begins to drop fairly rapidly. January is the coldest month with the mean daily maximum temperature at 23.5°C (74.3°F) and the mean daily minimum at 9.90°C (49.8°F). During cold waves which affect the district in association with the passage, eastwards, of western disturbances, the minimum temperature may go down to a degree or two 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, when the mean daily maximum temperature is 35.8°C (96.4°F) and the mean daily minimum is 24.3°C (75.7°F). The heat in summer is intense and the maximum temperature during the latter half of summer may sometimes rise above 43°C (109.4°F). With the onset of the south-west monsoon by about the second week of June, there is a drop in the day temperature. But the night temperatures throughout the monsoon are higher than those in the summer season. The monsoon does not bring much relief from the heat as the weather is oppressive on account of the increased moisture in the air and continuing high night temperature. In October, while the day temperatures continue as in the south-west monsoon months, the nights are cooler.

The highest maximum temperature recorded at Darbhanga is 43.9°C (111.0°F) in 1922 April 28 and the lowest minimum was 1.1°C (34.0°F) in 1933 January 15, and in 1905 February 2.

Humidity

The humidity is high in the south-west monsoon season and is comparatively less in the post monsoon and winter months. The driest part of the year is the summer season when the relative humidities in the afternoons are often below 40 per cent.

Cloudiness

In the winter and summer months, skies are generally clear or lightly clouded. Cloudiness increases in May and in the monsoon season skies are heavily clouded to overcast. Cloudiness decreases thereafter.

Winds

Winds are generally light. From May to October winds are mainly easterly. Winds are variable in direction in the post-monsoon and early winter seasons, thereafter westerlies appear. From about March easterlies also appear and these predominate after May.

Special weather phenomena

Storms and depressions which originate in the Bay of Bengal, particularly those in the late monsoon and post-monsoon period sometimes move in a northerly direction and affect the district and its neighbourhood causing widespread heavy rain. Thunderstorms occur in the latter half of summer and in the monsoon season. Some of the thunderstorms in April and May are violent. Occasional fogs are experienced in the winter season, during mornings.

Tables 3, 4 and 5 give the temperature and relative humidity, mean wind, speed and frequency of special weather phenomena respectively for Darbhanga.

TABLE

Normals and extremes

Station. No. of years of date. Jan. Feb. Mar. Apr. May. June. July. August.

Station.	No. of years of date.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	August.
Samastipur	50	(a)14.5	23.6	12.2	18.3	69.2	206.6	358.4	423.4
		(b)1.1	1.5	1.0	1.2	3.0	8.1	14.4	15.3
Darbhanga	50	(a)10.7	16.0	12.5	20.1	69.9	182.4	313.7	332.7
		(b)0.9	1.6	1.1	1.4	3.8	8.5	13.4	13.5
Madhubani	50	(a)12.5	14.2	11.2	19.1	71.4	201.4	344.7	325.1
		(b)1.0	1.6	1.1	1.8	4.4	9.3	13.9	13.1
Bahera	50	(a)10.2	16.0	9.4	21.8	66.3	188.0	303.3	326.9
		(b)1.0	1.5	0.9	1.5	3.6	8.6	13.4	14.0
Husera	50	(a)12.2	19.8	9.1	16.2	51.8	177.0	297.4	340.9
		(b)1.0	1.6	0.8	1.0	2.7	7.3	12.7	13.4
Khatuana	48	(a)9.7	14.5	13.7	32.8	103.9	243.3	358.9	322.8
		(b)0.9	1.4	1.0	2.2	4.8	8.9	12.5	12.2
Ladania	47	(a)7.4	14.7	9.9	29.2	77.7	202.7	308.1	266.7
		(b)0.6	1.4	0.8	1.9	4.6	7.3	10.1	9.0
Laukahi	48	(a)6.3	10.7	17.3	40.1	83.1	227.6	334.3	311.4
		(b)0.7	1.0	0.9	1.9	4.1	7.1	10.1	10.0
Khajauli	42	(a)10.2	11.2	9.9	29.5	78.2	224.5	333.0	293.1
		(b)0.9	1.4	0.7	2.2	4.2	9.1	11.7	12.0
Hemipatti	42	(a)10.7	12.2	10.9	21.8	66.5	204.0	336.8	264.2
		(b)0.9	1.3	0.8	1.7	4.1	7.8	11.7	11.6
Madhepur	42	(a)11.9	18.3	8.6	25.9	66.0	214.4	368.5	331.5
		(b)1.0	1.5	0.8	1.7	3.7	9.3	13.8	13.1
Dalsingarai	36	(a)11.4	18.5	7.4	7.4	33.0	140.7	232.4	280.2
		(b)0.9	1.5	0.7	0.6	2.0	6.3	10.3	11.0

(a) Normal rainfall in mm.

(b) Average number of rainy days (days with rain of 2.5 mm. or more).

Highest annual rainfall in 24 hours, †

Highest annual rainfall as per cent of normal and year* year*

Lowest annual rainfall as per cent of normal and year* year*

† Heaviest rainfall in 24 hours, †

Date	Amount (mm.)	per cent of normal and year* year*
11	17	18
12	18	19

294.4	61.2	7.9	2.5	1482.1	240	(1938)	1908
11.1	2.8	0.5	0.2	60.2	..	..	..
242.3	58.7	7.9	2.8	1259.7	154	(1949)	1930
9.8	2.4	0.5	0.3	57.2	..	..	..
238.5	70.9	8.4	2.5	1319.9	136	(1921)	1908
9.8	2.7	0.6	0.2	59.5	..	..	..
229.6	53.3	9.1	2.8	1236.7	158	(1949)	1908
9.5	2.3	0.5	0.2	56.9	..	..	..
271.5	57.7	9.7	3.6	1265.9	158	(1909)	1923
10.0	2.5	0.6	0.2	53.7	..	..	..
261.6	84.3	11.2	2.5	1459.2	150	(1941)	1908
9.2	2.8	0.5	0.2	56.6	..	..	..
217.2	51.8	10.7	1.8	1197.9	155	(1924)	1908
7.0	1.9	0.4	0.2	44.9	..	..	..
231.9	72.9	8.6	2.3	1348.5	155	(1916)	1908
7.5	2.5	0.4	0.2	46.4	..	..	..
237.5	69.1	8.6	2.3	1307.1	135	(1914)	1913
8.9	2.5	0.4	0.2	54.2	..	..	..
225.0	61.2	6.6	3.3	1223.2	142	(1913)	1932
8.5	2.3	0.4	0.3	51.5	..	..	..
245.9	77.0	0.2	2.8	1381.0	157	(1916)	1923
9.4	2.7	0.5	0.3	57.8	..	..	..
241.3	54.9	0.9	3.3	1041.4	134	(1925)	1944
7.8	2.2	0.5	0.2	44.0

* Years given in brackets.

† Based on all available data up to 1958.

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DARBHANGA

TABLE

Normals and extremes

Station.	No. of years of date.	No. of years of date.															
		Jan.	Feb.	Mar.	April.	May.	June.	July.	August.								
Mohuddi-nagar.	37	(a)14.7	18.5	7.4	11.2	30.5	122.7	238.3	258.3	(b)1.2	1.6	0.6	0.7	1.9	6.1	11.6	11.6
Umgaon	17	(a)11.4	15.5	11.2	23.1	111.5	228.6	319.0	275.1	(b)1.1	1.6	0.9	1.9	4.9	8.6	11.6	11.4
Phulparas	37	(a)6.9	10.9	11.9	30.5	82.8	185.7	324.4	253.0	(b)0.5	1.0	0.4	1.6	3.7	7.1	11.5	9.5
Kashgarasthan 9	9	(a)18.3	26.2	5.6	25.1	37.1	118.6	255.0	227.1	(b)1.1	1.8	0.3	1.8	2.4	5.6	12.9	12.1
Jale	37	(a)12.2	11.4	9.7	21.1	53.1	161.8	293.4	277.9	(b)1.1	1.4	0.9	1.3	3.4	7.5	10.6	10.9
Lankaha	35	(a)8.1	9.4	9.1	30.2	83.1	208.3	334.5	265.7	(b)0.6	0.7	0.6	1.8	4.0	7.0	9.8	9.5
Jaynagar	28	(a)9.7	11.2	15.5	26.9	78.2	204.0	333.5	280.9	(b)0.6	1.0	0.8	1.5	4.0	7.9	11.7	10.3
Madhwapur	16	(a)15.2	15.5	14.7	25.9	100.6	215.1	308.1	309.1	(b)1.2	1.4	1.1	1.1	4.1	7.3	9.5	11.1
Bachauli	27	(a)8.9	18.5	4.6	11.9	61.2	185.7	340.6	339.3	(b)0.9	1.4	0.4	0.8	2.9	7.7	12.7	11.8
Darbhanga (District)	..	(a)11.1	15.6	10.6	23.2	69.4	192.4	316.1	300.3	(b)0.9	1.4	0.8	1.5	3.6	7.7	11.9	11.7

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

of rainfall.

	11	12	13	14	15	16	17	18	19
Highest annual rainfall as per cent of normal year.*	206.8	55.4	8.1	4.8	977.7	147	53	254.0	1952 June 18.
Lowest annual rainfall as per cent of normal year.*	8.5	2.5	0.5	0.3	47.1	(1918)	(1923)	..	..
Annual rainfall as per cent of normal year.*	290.8	84.3	5.8	0.0	1374.3	128	73	441.5	1942 September 30.
Annual rainfall as per cent of normal year.*	201.2	54.9	6.3	1.3	1169.8	183	63	266.7	1948 July 4.
Annual rainfall as per cent of normal year.*	7.1	2.2	0.3	0.1	45.3	(1949)	(1914)	..	..
Annual rainfall as per cent of normal year.*	221.0	55.6	9.4	0.0	999.0	135	74	184.1	1956 June 21.
Annual rainfall as per cent of normal year.*	9.1	3.5	0.7	0.0	51.3	(1941)	(1943)	..	..
Annual rainfall as per cent of normal year.*	204.7	53.3	6.3	3.3	1110.2	136	49	406.4	1917 September 24
Annual rainfall as per cent of normal year.*	8.8	2.3	0.4	0.3	48.9	(1949)	(1950)	..	..
Annual rainfall as per cent of normal year.*	233.2	54.6	6.3	2.5	1245.0	148	65	281.9	1926 September 25.
Annual rainfall as per cent of normal year.*	7.3	1.9	0.3	0.3	43.8	(1938)	(1948)	..	..
Annual rainfall as per cent of normal year.*	215.1	73.1	9.7	3.6	1261.4	168	35	274.6	1926 July 2. †
Annual rainfall as per cent of normal year.*	8.2	2.7	0.3	0.2	49.2	(1938)	(1950)	..	..
Annual rainfall as per cent of normal year.*	259.6	64.3	10.9	0.5	1339.5	154	44	290.8	1935 September 18.
Annual rainfall as per cent of normal year.*	8.1	2.4	0.1	0.1	47.5	(1946)	(1944)	..	..
Annual rainfall as per cent of normal year.*	296.7	55.6	15.0	2.8	1840.0	49	34	439.4	1925 September 4.
Annual rainfall as per cent of normal year.*	8.3	2.1	0.4	0.2	49.6	(1936)	(1923)	..	..
Annual rainfall as per cent of normal year.*	241.2	63.1	8.9	2.4	1254.3	139	50	..	..
Annual rainfall as per cent of normal year.*	8.8	2.5	0.4	0.2	51.4	(1905)	(1908)	..	..

*Years given in brackets.

†Based on all available data up to 1958.

DARBHANGA

TABLE 2.

*Frequency of Annual Rainfall in the District.**(Date 1901—1950.)*

Range in mm.	Number of years.	Range in mm.	Number of years.
601—700	.. 1	1201—1300	.. 13
701—800	.. 0	1301—1400	.. 8
801—900	.. 1	1401—1500	.. 4
901—1000	.. 2	1501—1600	.. 6
1001—1100	.. 5	1601—1700	.. 3
1101—1200	.. 5	1701—1800	.. 2

TABLE 3'

Normals of Temperature and Relative Humidity.

Month.	Mean Daily		Highest Maximum		Lowest Minimum		Relative Humidity.	
	Maximum	Minimum	ever recorded.		ever recorded.		0830	1730*
	Temperature.	Temperature.	°c	Date	°c	Date	Per cent	Per cent
1	2	3	4	5	6	7	8	9
January ..	23.5	9.9	28.9	1932 January 7 ..	1.1	1933 January 15 ..	83	63
February ..	25.6	11.6	33.3	1943 February 24 ..	1.1	1905 February 2 ..	74	53
March ..	31.7	15.9	40.6	1941 March 29 ..	7.2	1906 March 1 ..	55	38
April ..	35.9	21.1	43.9	1922 April 28 ..	11.7	1912, April 1 ..	56	37
May ..	35.8	24.3	43.8	1958 May 27 ..	17.2	1948 May 28 ..	64	53
June ..	34.0	26.8	43.3	1931 June 4 ..	20.0	1955 June 4 ..	77	69
July ..	32.2	26.3	38.3	1942 July 9 ..	21.7	1945 July 14 ..	83	77
August ..	31.8	26.1	37.2	1957 August 21 ..	21.1	1912 August 24 ..	82	80
September ..	31.9	25.8	36.7	1944 September 14	19.4	1896 September 28	78	79
October ..	31.3	22.0	36.1	1938 October 5 ..	14.4	1914 October 21 ..	72	71
November ..	28.4	15.2	33.3	1943 November 1 ..	7.2	1926 November 18	76	66
December ..	24.8	10.9	29.4	1943 December 2..	4.4	1908 December 28	84	66
Annual ..	30.6	19.6	..	..	..	..	74	63

*Hours I. S. T.

TABLE 4.
Mean Wind Speed in Km/hr.

January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
2.3	3.2	4.2	6.3	7.6	7.1	6.1	5.5	4.3	2.3	1.5	1.6	4.3

TABLE 5.
Special Weather Phenomena.

Mean number of days with	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Thunder	..	0.5	0.5	0.7	1.1	1.5	1.6	0.8	1.8	1.3	0.1	0.1	0.3	10.3
Hail	..	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Dust-storm	..	0.0	0.0	0.0	0.5	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Squall	..	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	..	2.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.9	4.5

TEMPERATURE.

(Based on Observations from 1881 to 1940.)

STATION—DARBHANGA.

Month.	Mean Daily Max.	(Of) Daily Min.	Mean Highest in the month.	(Of) Lowest in the month.	Highest recorded.	Extreme Date and year.	Lowest recorded.	Date and year.	Relative Humidity.	Rainfall Mean Monthly total inches.
	of	of	of	of	of		of			
January	74.3	49.8	78.3	43.7	84	7 1932	34	15 1933	85 I 58 II	0.44
February	77.9	52.9	84.4	45.9	92	24 1909	34	2 1905	76 I 57 II	0.53
March	88.9	60.5	98.9	52.0	104	27 1909	45	1 1906	57 I 34 II	0.51
April	97.0	69.8	103.2	62.5	111	28 1922	53	1 1912	59 I 26 II	1.3
May	96.2	75.5	104.6	68.1	110	27 1916	64	8 1907	87 I 52 II	2.51
June	92.9	78.5	100.8	72.7	110	4 1931	69	1 1936	80 I 69 II	7.58
July	89.7	79.4	95.3	75.5	101	4 1908	71	20 1919	86 I 75 II	12.12
August	89.1	79.1	93.8	75.0	98	29 1939	70	24 1912	85 I 79 II	13.51
September	89.2	78.5	93.8	73.3	98	25 1908	67	28 1896	80 I 78 II	9.24
October	88.2	71.6	92.0	64.2	97	5 1938	58	21 1914	74 I 69 II	2.30
November	82.9	59.5	86.2	52.8	92	2 1940	45	18 1926	78 I 65 II	0.27
December	76.4	51.8	79.9	45.8	85	4 days 1930	40	28 1908	86 I 66 II	0.12

I—At 0830 Hrs I. S. T.
II—At 1730 Hrs I. S. T.

GENERAL