

GAZETTEER OF THE MUZAFFARPUR DISTRICT

CHAPTER I.

PHYSICAL ASPECTS.

GENERAL DESCRIPTION.

The district of Muzaffarpur lies between $25^{\circ}29'$ and $26^{\circ}53'$ north latitude and between $84^{\circ}53'$ and $85^{\circ}50'$ east longitude. It has a total area of 3,035 square miles, i.e., 19,31,520 acres of land. It is 96 miles in length from north to south and 48 miles in breadth from east to west. Muzaffarpur town is the principal civil station of the district. It is situated in $26^{\circ}7'$ north latitude and $85^{\circ}24'$ east longitude.

BOUNDARY.

On the north the district is bounded by Nepal, on the east by the district of Darbhanga, on the south by the river Ganga, on the south-west by the district of Saran where the Great Gandak serves as a natural boundary and on the north-west it is bounded by the district of Champaran. The northern frontier between Indian territory and Nepal is demarcated by ditches and streams, besides masonry and wooden pillars.

ORIGIN OF NAME.

At first Muzaffarpur constituted a part of the district of Tirhut. Later on, in 1875, it was divided into two districts, the eastern portion formed into the district of Darbhanga and the western portion formed into a separate district of Muzaffarpur after the name of its chief town founded by Muzaffar Khan, a general of Akbar.

GENERAL CONFIGURATION.

Muzaffarpur district is a vast alluvial plain intersected by a number of streams which flow mostly in south-easterly direction. The ground is not marked by any high contour and at many places there are chains of shallow marshes which serve the purpose of drainage for excessive water due to rainfall and overflow of the streams. The rivers flow through raised beds formed out of the silt brought down by rivers from the mountains of Nepal. The alluvial plain is a tract of great fertility.

NATURAL DIVISIONS.

The district is divided into three distinct tracts by the Baghmati and the Burhi Gandak rivers. The first tract which lies on the south of the Little or Burhi Gandak is bounded on the west and the south by the Great Gandak and the Ganga and covers the whole of Hajipur subdivision and a large part of the headquarters subdivision. This is the richest, most fertile and productive tract of the district consisting of a large block of upland with slight depressions here and there, especially towards the south-east, where there are small *chaurs* (water-logged low areas) the largest of which is Tal Baraila. The second tract lies between the Burhi Gandak and the Baghmati and consists of low lying lands which frequently get inundated. The famous Turki embankment has been constructed here to protect the area from inundation. This tract is the lowest tract in the district and due to the shifting courses of the rivers there are long semi-circular *chaurs* in all directions. The third tract lying north of the Baghmati and extending up to the border of Nepal covers nearly half of the district, including the whole of the Sitamarhi subdivision and stretches in a great marshy plain, traversed at intervals by ridges of upland from the Baghmati to the Nepal frontier.

RIVER SYSTEM.

Roughly speaking the slope of the country north of an imaginary line drawn from Belsand to Pupri in the Sitamarhi subdivision is from the north to the south and below that south-eastward. On the south the great stream of the Ganga rolls on to the sea, on the south-west the Great Gandak forms a natural boundary and on the north the district is intersected by a series of streams running diagonally across it from the north-west to the south-east and connecting with the great boundary rivers. The most important of these are the Baghmati, the Burhi Gandak, its tributary the Lakhandai and the Baya. The most marked characteristic of the river system is that the rivers flow on ridges elevated above the surrounding country, and each pair of rivers thus encloses a shallow depression, leading into one another. These low lands are first filled by the local rainfall, when the excess water passes off from one into another until its flow is checked by some high ground. Having no other course to take, it breaks into one of the nearest rivers at a point where the banks are low, after the level of the stream has somewhat subsided; and in this way the rivers, although running upon comparatively high ground, become ultimately the receptacles of the drainage of the country.

The Ganga.

The Ganga forms the southern boundary of the district for about 20 miles from Siknaripur, near Hajipur, where the main stream is joined by the Great Gandak to a point almost due north of the Bakhtiarpur station on the Eastern Railway. Its channel, when

clear of sand-banks, is generally about a mile wide. In the rains, however, the river swells up and its breadth is much greater, and larger expanses of sand, which lie on either side of the bank at other seasons are then covered with water. The sand-banks are regularly changing, forming and re-forming in apparently a most capricious manner. The Ganga receives the Great Gandak a little below Hajipur but the confluence of the two rivers is according to local belief supposed to take place just opposite that place. When the Ganga rises in flood, it not only spills over the country near its banks but also presses back the water of the Great Gandak and floods the land between the Gandak embankment for miles above.

The Great Gandak.

The Great Gandak, which joins the main stream of the Ganga, opposite Patna, is also locally known as the Narayani and Saligrami*; it has been identified with the Kondochates of the ancient Greek geographers, and according to Lassen, it is Sadanira of the Epics. Rising in the central mountain basin of Nepal, where its sources are known as the Sapt Gandaki, it first touches the district near Karnaul in the headquarters subdivision, and then pursues a winding course in a south-easterly direction, as far as Hajipur, where it falls into the Ganga, after a course of 192 miles. Beginning as a snow-fed torrent, the Gandak, soon after its entry into Indian territory, acquires the character of a deltaic river. It has no tributaries in this portion of its course; in fact, the drainage sets not towards it but away from it. Its banks are appreciably higher than the surrounding country. In order to safeguard against inundation, two series of embankments have been constructed—one, which is the more effective, on the Saran side, the other along the Muzaffarpur bank, as far as Hajipur. The latter has been repeatedly overtopped and breached by floods, and enormous tracts of land have been submerged. In addition to the dangers caused by the rapid current, numerous snags are found; and near Harauli, midway between Hajipur and Lalgañj, there is a large bed of *Kankar*, which extends across the river, and so narrows the channel that boats can only proceed with the utmost caution. The lowest discharge of water into the Ganga towards the end of March is 10,391 cusecs and the highest recorded flood volume is 2,66,000 cusecs.

The Baghmati.

The Baghmati, rising in Nepal, near Kathmandu, enters Muzaffarpur district two miles north of Dheng station on the North-Eastern Railway and 17 miles north-west of Sitamarhi. After its junction with the Lal Bakayā, it forms the western boundary of the

**Shaligrams* are small stones used for worship by the Hindus. They are sometimes found in rivers Pachnad and Sonā which fall in the Gandak near Tribeni Ghat.

district flowing in a more or less irregular southerly course for some 30 miles, and then strikes off near Narwa in a south-easterly direction across the district. After the river has turned to the south-east, it flows almost parallel to the Burhi Gandak, crossing the Darbhanga-Muzaffarpur road at Gaighat, and leaves the district near Hathwa, 20 miles east of Muzaffarpur: it ultimately joins the Burhi Gandak above Rusera in the Darbhanga district. The Baghmata, being a hill-stream, rises so quickly after heavy rain that its banks are unable to contain the water; and as it runs upon a ridge, it sometimes causes great damage when the bank is overtopped. A portion of the country north of Muzaffarpur is, however, protected by the Turki embankment. Both this river and the Burhi Gandak are apt to change their courses. In the dry season the Baghmata is fordable and at places is not more than knee-deep. In the rains, however, the current is very swift, sometimes running seven miles an hour in the upper reaches and there are many snags which render navigation dangerous. A former bed, known as the old Baghmata, is still pointed out, extending from Mallai, on the frontier, to Belanpurghat, about $3\frac{1}{2}$ miles north-east of Kalyaghat, where it joins the present deep stream. This bed has steep banks and is about 50 yards wide. It carries a good deal of water in the rains when it occasionally overflows. But in the cold weather it is only about two feet deep.

Tributaries of the Baghmata.

The Baghmata has a number of tributaries, of which the most important are the Lal Bakaya, the Bhurengi, the Lakhandai, and the Adhwara or Little Baghmata. The first tributary is the Lal Bakaya, which flows in a southern direction and joins the main stream near Adaury. The next affluent is the Bhurengi, which leaves the main stream near Maniari and rejoins it near Belanpur. Another tributary is the Lakhandai which rises in Nepal. Lakhandai enters Muzaffarpur district at Itharwa, eighteen miles north of Sitamarhi. It is at first a small stream, but after being joined by the Sauran and Basiad, it becomes a large navigable river. Flowing south, it passes through Sitamarhi, where it is spanned by a fine bridge. Continuing in a south-easterly direction it skirts the old now defunct indigo factories of Dumra, Runi Saiyadpur, Ourai and Tehwara and joins the Baghmata seven or eight miles south of the Darbhanga-Muzaffarpur road. The river rises and falls quickly. Its current is rapid especially in the higher reaches which renders it dangerous for navigation. The next tributary is the Adhwara or the Little Baghmata, which flows southwards from Nepal some eight miles east from Sitamarhi. With the Puranagar Baghmata, the old bed of the Baghmata mentioned above, which flows eight miles to the west of Sitamarhi, it is invaluable for irrigation in years of drought. During such periods numerous dams are thrown across each stream. Like its parent river, it has several tributary streams. The main stream of the Kamala joins it near Kamtaul; above that place, near

Pali, a branch goes off towards the west, losing itself in a *chaur* near Rasulpur; and above Pali, the Dhaus joins it from the east and the Jhim from the west. The Dhaus again is formed by the union of the Bigi and the Bilaunti; the former flowing from the west, the latter from the east. The Little Baghmatai, after receiving these tributaries, falls into the Baghmatai at Haia Ghat, about eight miles south of Darbhanga.

The Little Gandak.

The Little Gandak, which is also known as the Harha, Sikrahna or Burhi Gandak rises in Champaran in a *chaur* in P.-S. Bagaha. It enters the district near the village of Ghosewat in the headquarters subdivision, and flows along a very tortuous course towards Muzaffarpur, twenty miles to the south-east. Muzaffarpur stands on its southern bank. After leaving it, the river still pursues a winding course to the south-east almost parallel to the Baghmatai, and passing into the Darbhanga district near Pusa, twenty miles south-east of Muzaffarpur, it ultimately falls into the Ganga opposite Monghyr. In the hot weather it is fordable at several places, and its banks are high or low according to the sweep of the current. For purposes of navigation, the Burhi Gandak is an extremely valuable river. During the rains boats of 1,000 maunds burden can easily reach Muzaffarpur. The opening of the North-Eastern Railway, which crosses it at Nagarbasti, has considerably diminished its importance as a trade route. The Burhi Gandak, like the Baghmatai, is very liable to shift its course and old beds which the stream has now deserted are extremely common, especially from near Muzaffarpur to Motipur.

The Baya.

The Baya is a spill channel of the Great Gandak. It issues near Sahibganj, thirty-four miles north-west of Muzaffarpur. It enters this district near Karnaul and flowing in a south-easterly direction through it, becomes an important drainage channel with a catchment basin of 800 square miles. In Muzaffarpur district it passes Deoria, Karnaul, Sariya, Bhatulia, Karhari and Chitwara, and leaving the district at Bajitpur, thirty miles south of Muzaffarpur, ultimately empties itself into the Ganga. The head of the stream is apt to silt up. The Baya is largely fed by drainage from *chaurs*, and attains its greatest flood height when the Gandak and the Ganga are both in flood.

GEOLOGY.

The district is a vast alluvial country wherein two types of alluvium are to be found, the older alluvium and the newer alluvium. The older alluvium, which is yellow and often rich in *kankar*, is met with in the north of the district. In the south newer alluvium, darker in colour, consisting of sands, salts and clay, devoid of *kankar* occurs. During the flood season, the rivers that flow southwards

and south-eastwards tend to re-distribute the alluvium, while spreading far beyond their banks with their load of sediment brought from the submontane tracts in the north. The great thickness of alluvium conceals all the ancient crystalline rocks below.

In the north of the district *kankar* may be used for burning lime and also as road metal.

Sodium sulphate is extracted from the *reh*, a saline efflorescence on the surface of the soil, and during the period between 1908 and 1923 the production of *khawi* (sodium sulphate) amounted to 1,29,203 tons.

Saltpetre or potassium nitrate is also extracted from the efflorescences in the district.

EARTHQUAKE.

During the earthquake of 1934, Sitamarhi town lay in the epicentral tract which extended east-south-eastwards through Madhubani in the Darbhanga district. Within this area there was a general subsidence of the ground, giving rise to widespread fissuring and to destruction of buildings by tilting and break up of the foundations. A very large number of houses were completely damaged. The emission of sand through fissures was maximum in this area. In the lowlands, sand and water vents and crater-like depressions appeared at a large number of places.

The area to the south lay in the influence of the isoseismal IX of the Mercalli Scale of intensities of earthquake shock. Muzaffarpur town was included in this zone and the effects of the earthquake were disastrous. There was complete or nearly complete ruin of many houses and serious cracks in many others, rendering them uninhabitable. Extensive fissuring and sanding were also observed in the area.

Further south in the district, the earthquake led to the partial ruin of some houses and frequent and considerable cracks in others. Fissures occurred in the alluvium; and there was moderate degree of sanding.

This earthquake was explained by a tendency for elevation of the country north of a line passing through Sitamarhi east-south-eastwards and a tendency south of it for depression; and the relief sought from the strains set up along this line due to the contrasted movement.*

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VEGETATION.

For the purpose of describing the vegetation, the district may be divided into several zones, namely,—

- (1) The rivers and their old channels.
- (2) The Raghapur Diara in the Ganga.
- (3) The area south of Burhi Gandak, and the *chaurs*.
- (4) Tal Baraila.
- (5) The Doab between the Burhi Gandak and the Baghmati; the "Mans".
- (6) The area north of Baghmati river.
- (7) The lands along the roads and railways; the waste lands in the towns.
- (8) The ponds and ditches in the towns and villages.

(1) *The Ganga, Gandak, Baghmati and Lakhandai.*

They are all perennial streams, the first three being fast-flowing rivers, hold very little vegetation in them. The Ganga has some sheltered pools here and there in winter, especially on the southern edge of the Raghapur Diara, in which are seen some algae, particularly *Chara* and *Nitella*, *Vallisneria spiralis*, *Potamogeton pectinatus* and other angiosperms. The Lakhandai in its lower course has much of its water distributed into irrigation channels and becomes very narrow and slow-flowing; there it contains some aquatic plants.

The Burhi Gandak is shallow and slow-flowing but does not hold much vegetation except some *spirogyra* in deep pools here and there.

(2) *The Raghapur Diara.*

This is a huge island in the Ganga. Its banks are low and sloping towards the south and high and steep towards the north due to the cutting action of the water. The lower portions are covered with deep layers of sand and are either left uncultivated, or where the sand is not very deep, cultivated with various cucurbits. The higher portions having less of sand on the top, are fertile, and sown with wheat and barley in winter and maize, pigeon-pea, sugarcane, etc., in the rainy season; maize, of course, being planted on such lands that get inundated in August, before which period that crop has to be harvested. The undulating portions of the banks are planted with mustard and gram. Some portions of the land are under tobacco turmeric, chillies, etc.

Weeds are many particularly such as are brought every year by the Ganga from the west, such as *Eragrostis* spp., *Digitaria marginata*, *Eleusine aegyptica*, *Heleochoa schoenoides*, *Phalaris minor*,

Cyperus rotundus, *Kyllingia cylindrica*, *Vandellia brachiata*, *Oldenlandia corymbosa*, *Euphorbia hirta*, *E. thymifolia*, and occasional *Tamarix ericoides*, and *Equisetum* spp. Of these a few are useful species such as *Saccharum spontaneum* and *S. Munja* growing in moist places. They not only serve to harden the soil but also supply the much-needed thatching material.

(3) *The area south of the Burhi Gandak.*

In spite of the general level being high, due to ineffective drainage by the rivers and streams, many ditches and pools are formed during the rains and the soil becomes alkaline. There being great pressure of population on land, even the ditches are cultivated, with a variety of coarse paddy, the plants of which do not die on being submerged, but elongate as the water rises. Only areas too deep to be cultivable are left unutilized for cultivation. In them there grows up, particularly towards the end of the rains, a natural vegetation consisting of *Panicum proliferum*, *Leersia hexandra*, *Asteracantha longifolia*, *Azella*, etc. Some *spirogyras* are seen here and there especially nearer the banks.

The small bits of raised lands enclosed by the ditches are kept under grasses useful for thatching, the very alkaline lands under moonj (*Saccharum munja*) and others under kans (*S. spontaneum*).

All high lands are under cultivation. Those nearer Hajipur town have fruit-trees particularly mango, banana, litchi and guava. *Sissoo* (*Dalbergia sissoo*) and *sunri* (*Hymenodiction excelsum*) are commonly planted on the boundary walls of the orchards. Lands to the north and east of Hajipur are under cultivation of the usual crops consisting of paddy on the low lands and sugarcane, pigeon-pea, maize, tobacco, castor, turmeric, chilli, *suthni* (*Vigna vexillata*), *misrikand* (*Pachyrrhizus angulatus*) and *sakarkand* (*Ipomea batatas*) on the higher lands. Some of the paddy lands and all the fields under maize have a rotation of winter crops like mustard, wheat and peas.

Lands to the south-west are generally alkaline and, therefore, the crops are poor. A few raised spots like the Jandaha township have good soil and bear good crops.

Lands strictly in the villages and around the houses where irrigation from wells and protection from cattle and goats are possible are given over to vegetables. Betel leaf plantations are frequently seen nearer towns. Weeds of cultivation include *Cannabis sativa*, *Anagallis arvensis*, *Androsace saxifragifolia*, *Hydrocotyl asitica* and others.

With the opening of the Baraila Tal canal in 1955 the drainage of this portion of the district is bound to improve: the *chaurs* will disappear and the alkaline lands will lose the excess salts so that the fertility of the soil will improve.

(4) *Tal Baraila.*

This is a big *chaur* several square miles in area, according to the local legend, 24 miles by 26 miles during the rainy season. Baraila village is located on the south-west of this on an elevated tract of land. The marginal parts of this *chaur* that are under shallow waters in the rains are planted with coarse paddy. This is followed in winter by wheat, mustard and gram. Where it is left uncultivated, there grow up *Hygrophila polysperma*, *Alternanthera sessilis*, *Ipomea reptans*, and other amphibious plants in winter.

The deeper portions of this *chaur* are full of aquatic plants, mostly the rooted submerged types like *Chara* spp., *Hydrilla verticillata*, *Potamogeton crispum*, *P. indica*, *P. pectinata*, *Najas graminea*, *Lagarosiphon alternifolia*, and others. *Limnanthemum cristatum* and *Nelumbium* spp. are two of the aquatic plants with immersed leaves. There are also a few floating grasses. The aquatic vegetation serves to feed the ducks and fowl which live here or migrate to this *chaur* in winter, as also to feed the fish.

(5) *The Doab between the Burhi Gandak and the Baghmati rivers.*

This area is very low lying, so much so that the Muzaffarpur-Sitamarhi road runs all along on an embankment. All cultivated land is given over to rice cultivation during the rains, coarse paddy in the low and partly submerged areas and finer varieties on higher lands. The paddy crop is followed in the winter by *ankari* (*Vicia sativa*), mustard, *bakula* (*Vicia faba*), linseed, pea, tobacco, and in the villages by vegetables.

On the wet banks is seen *Lippia geminata* and some amphibious grasses. On the low banks of rivers may be seen *Xanthium strumarium*, *Rumex* spp., *Solanum migrum*, *Nicotiana plumbaginifolia*, *Amarantus spinosus*, and a few babool plants.

(6) *The lands to the north of the Baghmati river and extending up to the Nepal border.*

The depressed portions of land grow a coarse variety of paddy during the rains, followed by the usual winter crops. The higher lands grow either the better variety of paddy or maize. The still higher lands are given over to growing of pigeon-pea and sugarcane. On the embankments of the river is grown *parwal* (*Trichosanthes dioica*). The paddy and maize crops are followed by *bakula*, *masur* (*Lens esculentum*), pea, wheat, tobacco, mustard and linseed. Nearer the houses where protection and some irrigation are possible, are grown vegetables. The vegetable fields are fenced off by hedges of *jayant* (*Sesbania aegyptica*), *arand* (*Ricinus communis*) and sometimes *Opuntia*. There are innumerable weeds of cultivation noticed, the chief being *Nepeta hindustana*, *Angallis arvensis*, *Cannabis sativa* and *Chenopodium murale*.

There are a few varieties of mango and bamboos which predominate. *Babool* grows spontaneously along the roadsides.

(7) *The lands along the roads, railways, in the railway yards and all waste lands in the towns.*

All such lands are full of weeds, particularly, the introduced ones. The bigger a town and the greater the means of communication with it, the larger the type and number of weeds in it. The weeds have spread even to the interior along the roads and railways. Some of the commonest ones are *Lantana camara*, *Chrozophora rottleri*, *Xanthium strumarium*, *Sida* spp., *Clerodendron infortunatum*, *Glycosmis pentaphylla*, *Cassia tora*, *Coccidentalis*, and *Csophera* and *Croton sparsiflorus*. *Hyptis suaveolens*, *Argemone mexicana*, *Zizyphus*, *babool*, date, *kans*, etc., also are seen along the roads.

(8) *The ponds and ditches in the towns and in villages.*

Those nearer houses receive a lot of organic refuse; therefore, they grow lots of *Azolla*, *Asteracantha*, *Ipomea reptans*, etc. Others that are clean are cultivated with *singhara* (*Trapa bishpinosa*). Ditches where the water is deep but are frequently visited by buffaloes contain only a growth of *Ottelia alismoides*. Blue lotus and other kinds of lotus are common.

THE INTERESTING PLANTS OF THE DISTRICT.

Two important parasites, *Loranthus longiflorus* on mango and *sheesham*, and *Cuscuta reflexa* growing on various hedges, *babool*, etc., are very common in the district. The root parasite, *Orobanche* is plentiful on mustard and vegetable crops. Rusts on wheat and linseed are also common. They cause a great economic loss although they can be eradicated.

Land orchids, particularly *Zeuxine sulcate*, is very common in grass lands, mainly on the bunds of rice fields. *Scirpus grossus* (*kaseru*) is a cultivated sedge very common on Samastipur side. The three root crops, *misrikand*, *sakarkand* and *suthni* as also rhizome crops like turmeric and ginger are very common here due to the sandy soil.* Bamboos of various types are common.

FAUNA.

Tirhut was formerly famous for the number and variety of its fauna in the days when forests covered large stretches of land which

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are now under the plough. "The buffaloes", wrote the author of the *Ain-i-Akbari*, "are so savage that they will attack a tiger. There are many lakes, and in one of them the water never decreases, and the depth is unfathomable. Groves of mango trees extend to a distance of 20 kos, delighting the eye. In the rainy season gazelle, deer and tiger frequent the cultivated spots, and are hunted by the inhabitants. The deer they surround with an enclosure, and take when they please." Even towards the close of 18th century wild animals were plentiful. A few years before the Permanent Settlement, rewards are on record for the slaughter of 51 tigers in a single year. There was much waste land to the north inhabited by the beasts of prey that cultivation had driven out of the more southern tracts. The depredations of herds of wild elephants were a serious danger. The advance of cultivation, the growth of the population, and the extension of means of communication have now driven the wild animals, which formerly infested the district, back to the jungles of Nepal. There is no jungle left in the district sufficiently large and dense to afford shelter to the larger beasts of prey. Leopards are occasionally found in patches of jungle towards the north of the Sitamarhi subdivision, but they are only stray visitors from Nepal. The only other predatory animals met with are the fox and the jackal found in all parts of the district.

The only representatives of the Ungulata are the *nilgai* or blue-bull (*Boselaphus tragocamelus*) and wild pig (*Sis cristatus*), both of which are fairly common in the *dias* and in the patches of grass and jungle still left. The wild pig is much scarcer than formerly. But whenever found, he is hunted; and though his kind has decreased in number, he retains the same qualities of cunning hardihood and courage which made pig-sticking once a fine sport among the European planters in North Bihar.

AVIFAUNA.

The common birds of Muzaffarpur are also the common birds of the other plains districts of Bihar. Muzaffarpur is the most central of the plains districts of Bihar.

As is common knowledge, there are two kinds of crows, namely the bigger and blacker jungle crow (*Corvus macrorhynchos*) and the smaller house crow (*Corvus splendens*) with much shiny grey on its necks. Both are intelligent birds and partial to human habitations. The house crow is the more intelligent of the two and more numerous in towns and villages, but there is hardly any place where the jungle crow is not found.

Closely related to the crows is the treepie (*Crypsirina vagabunda*). Its colouring is like the yolk of an egg, with white patches on the sides, and a long graduated black tail. The tail is edged with white and almost double the length of the main body. That gives the treepie the appearance of a large bird, though it is no bigger than a

myna. Few untrained observers can see any resemblance between the treepie and the crows to place them together in the same family, but a close look at the strong black bill and the shape of the black head does bring out the affinities. There is a remarkable similarity between the treepie and the house crow.

The common babbler (*Turdoides caudata*) is an earthy-brown bird, nine inches long, which chatters about noisily in flocks around villages and garden fences. Equally common as the babbler but more prominent because of its slight black crest, red-vent and white rump is the red-vented Bulbul (*Pycnonotus cafer*). No bird is, however, as striking as the *jhujenga* or black drongo (*Dicrurus macrocercus*) with its glossy black body and a deeply forked tail, sitting on telegraph posts and wires or sweeping about the country in rapid flights. It is the boldest bird of the plains and chases eagles thrice its size without any fear.

The white-bellied minivet (*Pericocotus erythropygeus*) should have been equally prominent if it were not so shy. It is a brightly coloured bird, probably the most beautiful bird of the district, the male scarlet and the female brown. The head, neck, back and tail are black and the belly is white. The male's crimson breast shows off well against the white belly and black head, but the bird is generally seen only in villages where there are big mango orchards.

The common *myna* (*Strunus tristis*) is as ubiquitous as the house crow or the black drongo and is a noisy snuff-brown bird with white tips to its tail. The sexes are alike. One more variety is found generally in the *diara* areas and along rivers. It is grey and more often seen on the ground than elsewhere and is known as the bank *myna* (*Acridotheres gingianus*). The house sparrow (*Passer domesticus*), of course, is found everywhere.

The *papiha* (*Cuculus varius*) in whose shrill cry some hear a sound of the words 'brain fever' is a hawk-like cuckoo, brown and barred with black, but rarely seen. Less known is the Indian cuckoo (*Cuculus micropterus*). The cuckoos are more easily identified by their calls than by their looks.

Among the persistent noises of the countryside, that of the crimson-breasted barbet (*Megalaima haemocephala*) must be ranked along with the *papiha*'s. The barbet is a beautiful small green bird with a crimson breast, yellow throat and crimson forehead. It goes on monotonously repeating "tonk, tonk, tonk" throughout the day, hunting for insects on trees or hammering with its strong beak holes through a branch.

Noisy, flashy and impressive is the roller or *nilkant* (*Coracias benghalensis*) flaunting its blue wing in acrobatics in the sky. Sitting on the ground, a telegraph wire or a tree the bird is hardly noticeable with its buff back which folds over the blue wings completely.

Darting about the sky and hawking insects on the wings are the bee-eaters, small green birds. The common green bee-eater (*Merops orientalis*) often spreads out its wings like a Japanese fan. The other blue-tailed bee-eater (*Merops philippinus*) is slightly bigger and more blue in the tail. Both have protuberances from their tails and nest in holes in the ground.

The grass owl (*Tyto capensis*) is a largish (about 18 inches) bird, with a rich dark brown upper plumage, each feather tipped with a white spot, giving it a very mottled appearance over a white belly. The facial discs are pure white. Its call is similar to the screech of the barn owl.

The little brown dove (*Streptopelia senegallensis*) is the smallest of our doves and has a wide range of distribution, from the banks of the Kosi westward right up to Africa. It has slaty grey wings over an earthy brown body and has two bright chess-boards of red and black tiny squares on each side of the neck.

The peewit (*Venellus venellus*) is a winter visitor from northern countries and is a lapwing with a prominent narrow long crest curving backwards from its head.

The ducks.

The avifauna of Muzaffarpur and all other districts of the northern plains of Bihar is remarkable for the large number of winter visitors. In Muzaffarpur with its large *chaurs* and marshes like the Tal Baraila, the winter visiting ducks are important. An attempt will be made here to supply an easy key for the identification of ducks.

The ducks include all teal, goose, swans and mergansers. They have all webbed feet and straight flat bills with rows of teeth at either edge of the bill. The swans are the biggest of the ducks and have exceedingly long necks, geese come next in size and are distinguished by having the front edge of the nostrils about the middle of the beak. Their plumage is plain grey or brown with lighter edges, giving them a barred appearance and distinguishing them from the rather extravagantly coloured teals, true ducks and mergansers. The mergansers have narrow tapering bills and pied plumage. The true ducks do not have exceedingly long necks nor prominently tapering beaks. Teals are the smallest of the ducks.

No swans have been recorded from Muzaffarpur or any other district of Bihar. Among the geese the bar-headed (*Anser indicus*) is at once distinguished by its pale clear grey colour, almost a French grey and has two dark bars across its head, one from eye to eye and the other a little backwards on the nape. The grey-lag goose (*Anser anser*) is the commonest of our geese and has a bill over two and half

inches, without any black on it. The white-fronted goose (*Anser albifrons*) has a two-inch bill; also without any black. Sushkin's goose (*Anser neglectus*) is the biggest of our geese, 40 inches long, but is exceedingly rare and has been so far reported only from Darbhanga district. The dwarf or lesser white-fronted goose (*Anser erythropus*), 23 inches, is the darkest of all our geese and has a white patch on the forehead in the form of a longitudinal blaze or broad streak, running up from the bill to the level of a line drawn between the eyes.

The beaks of the mergansers are twice as broad at the root as at the tip. The birds are about the size of or smaller than a tame duck and are pied. Two mergansers are found in Bihar—the goosander (*Mergus merganser*) and the smew (*Mergus albellus*). The goosander is pied while the smew is strikingly all white. It has a short mane-like crest too.

True ducks can be subdivided into diving ducks, goose-like ducks and surface-feeding ducks. The diving ducks are at once marked off by their large feet, which have the outer toe as long as or even longer than the middle, and the hind toe with a deep lobe or flap, so as to be leaf-like in outline. The goose-like, or walking and perching, ducks have either a short bill or long shanks, or both, the bill being about the length of the shanks. The ordinary surface-feeding ducks have rather short shanks and moderate sized feet, with the outer toe shorter than the middle, and the bill longer than the shank.

The diving ducks are the red-crested pochard (*Netta rufina*), the dunbird (*Aythya ferina*), the white-eyed pochard (*Aythya nyroca*), the tufted pochard (*Aythya fuligula*) and the golden-eye (*Bucephala clangula*). The golden-eye is marked off at once by its forwardly placed nostrils, these being actually nearer to the tip of the bill than to the root. The male is mostly white, but the head is dark glossy green, with a white patch on each side at the base of the beak. The beak and the edge of the wings are black. The female is a dark grey where the male is black and has a dark brown head with no white on the face.

The red-crested pochard is the biggest of all pochards (about 20 inches), and has red or orange colouring on the bill and the feet. The male has a full soft bushy crest of a yellow-buff colour, the rest of the head being of a beautiful pinkishchestnut. The upper plumage is plain light brown with two white patches in front of the wings; the lower plumage is black. The female has less of a crest and is light brown above and dirty white below.

The tufted pochard has a pig tail-like tuft hanging down from its head. The white-eye has no crest. The dunbird is a very ungainly looking duck and has no white bar on the wing. It has a conspicuous tri-coloured plumage, the head being rich chestnut red, the breast, rump and stern black, and the body pale clear grey.

The goose-like or walking and perching ducks are the comb duck (*Sarkidiornia melanotus*), the cotton teal (*Nettapus coromandelianus*), the lesser whistling teal (*Dendrocygna javanica*), the large whistling teal (*Dendrocygna bicolor*), the sheldrake (*Tadorna tadorna*), the Brahminy duck (*Tadorna ferruginea*) and the wigeon (*Anas penelope*).

The sheldrake is distinguishable by its brilliant pied plumage of white, black and chestnut. The Brahminy duck has chestnut or buff plumage and black-and-white wings. The comb-duck has long dark wings and white belly and a knob on the beak of the male. The cotton teal is very small, smaller than a pigeon, and gives the effect of white-cotton floating on water.

The surface-feeding ducks are the white-winged wood duck (*Cairina scutulata*), the pink-headed duck (*Rhodonessa caryophyllacea*), the spotbill or grey duck (*Anas peecilorhyncha*), the mallard (*Anas platyrhyncha*), the gadwal (*Anas strepera*), the baikal or clucking teal (*Anas formosae*), the pintail (*Anas acuta*), the garganey or blue-winged teal (*Anas querquedula*), the shoveller (*Anas clypeata*), the marbled teal (*Anas angustirostris*) and the common teal (*Anas crecca*).

The wood duck is large and dark with black-and-white wings with French grey bars. The pink-headed duck has a milk and chocolate appearance. The marbled teal is pale with a washed-out plumage. The pintail has a long sharp tail. The shoveller has a huge misshapen bill, very long and twice as broad at tip as at the root. The mallard has a steel-blue or green wing-bar edged with white. The gadwal has a white wing-bar. The garganey's wing-bar is dull green, often absent. The common teal has the wing-bar black and brilliant green or bronze.

Out of the ducks, seven are, or were, resident species, viz., the white-winged wood duck, the pink-headed duck, the lesser whistling teal, the large whistling teal, spotbill or grey duck, the comb duck and cotton teal. Of the resident ducks the white-winged wood duck and the pink-headed duck are believed to have become extinct on jungle near marshes. The pink-headed duck was last shot in the Muzaffarpur district at Dumra in 1898 by J. A. Wilson. The smew, a migrant, has been observed in Bihar only once and that at Hazaribagh.

The following birds are rare: the golden-eye, the lesser whistling teal, the spotbill or grey duck, the baikal teal, the marbled teal and the falcated teal.

The comb duck and the large whistling teal are becoming rare and may be considered as threatened with extinction. Protection measures are needed, like the creation of a sanctuary to include a *jheel* and extensive marshy land and some nearby woodland for breeding. This woodland may have to be planted. The district of Muzaffarpur is one of the

most suitable areas for constituting a sanctuary for the protection of the resident ducks.*

FISH.

The names of the fish commonly found in Muzaffarpur market are given below with their Hindi names within bracket :—

Gadusia Chapra (*Suiya*), Hilsa Ilisa (*Hilsa*), Notopterus notopterus (*Phalia*), Chela bacaila (*Chelwa*), Barilius barna (*Potiah*), Danio dangila (*Durhwa*), Barbus chagunio (*Potiah*), Barbus conchoniis (*Potiah*), Barbus phutunio (*Potiah*), Barbus stigma (*Potiah*), Cirrihina mrigala (*Mirgal*), Cirrihina reba (*Rewa*), Labeo calbasu (*Kalbasu*), Labeo rohita (*Rohu*), Clarias batrachus (*Mangur*), Heteropneustes fossilis (*Singhi*), Eutropiichthys vacha (*Bachwa*), Mystus cavasius (*Tengra*), Mystus seenghala (*Tengra*), Mystus vittatus (*Tengra*), Bagarius bagarius (*Gaunch*), Xenentodon cancila (*Kawa*), Ambassis nama (*Chanawa*), Anabas testudineus (*Kewai*), Mastacembelus armatus (*Barni*).

REPTILES.

The names of the snakes and other members of the reptile group have been given in Hindi. P denotes poisonous. Np denotes non-poisonous.

Lizards.—Wall lizard, Common lizard.

Snakes.—*Gehuan* (P), *Karait* (P), *Lohiar* (P), *Amaitar* (P), *Awaria* (Np), *Dhorha* (Np), *Dhamin* (It does not bite but the tail portion is very poisonous), *Patar* (P), *Katkatar* (P), *Khirrich gehuan* (P).

Chelonia.—Tortoises of small sizes have been seen in the market occasionally.

Crocodile.—*Gavialis gangaticus* commonly called as *Gharial* has been occasionally seen in Gandak and Ganga.

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