GAZETTEER OF THE MONGHYR DISTRICT.

CHAPTER I—GENERAL.

PHYSICAL FEATURES AND NATURAL RESOURCES.

1. Boundaries, Area and Subdivisions.

The district is bounded on the north by the districts of Saharsa and Darbhanga, on the east by Bhagalpur, on the south by the Santhal Parganas and Hazaribagh, and on the west by Gaya, Patna and Darbhanga. In some places the beds of different rivers and streams form natural boundaries, but for the most part the boundaries are artificial.

2. Physical Aspects.

The district of Monghyr, the most westerly district of the Bhagalpur Division, is situated between 24°-22′ and 25°-49′ north latitude and between 85°-36′ and 86°-51′ east longitude. It extends over an area of 3,922 square miles, and has a population according to the census of 1951, 2,849,127 persons. For administrative purposes it is divided into four subdivisions—Monghyr, Jamui, Begusarai and Khagaria, the headquarters being at Monghyr on the southern bank of the river Ganga. Monghyr is a misnomer of the vernacular name Munger, the derivation of which is the subject of several theories discussed in a separate chapter.

3. Configuration.

The Ganga flows through the district from west to east dividing it into two portions of unequal size and of very different character. The northern and smaller portion is flat alluvial plain traversed by the Burhi Gandak river, which flows through it from north-west to south-east. The country to the west of that river is a continuation of the level, well cultivated plains of Tirhut and grows rich spring (*rabi*) and autumn (*bhadai*) crops. The country to the east is intersected by the Tiljuga and Baghmati rivers, is seamed by deserted channels, and is low-lying swampy and liable to inundation during the rains. The south of the district is also to a great extent alluvial, but the general level is higher, the surface is more undulating and a large area is composed of hills and valleys covered with forest or scrub jungle. The wide difference in the characteristics of the country to the north and south of the Ganga has been graphically

described as follows by a former Collector of Monghyr, Mr. E. Lockwood, in "Natural History, Sport and Travel":—

> "The northern part is an extensive plain formed by the rich alluvial soil brought down by the ever-changing river, while the southern portion consists of vast rice tracts and forests, which cover the metamorphic hills extending far away into Central India from the town of Monghyr. Lovers of natural history, who visit Monghyr, find that this division of the district separates also, in a very marked manner, the most conspicuous species of the animal and vegetable kingdoms; and the sportsman who to-day may find tigers, bears, baboons, tupaias, peacocks, jungle-fowl and grey partridges in the undulating country to the south, will look in vain for such things if tomorrow he crosses the river northward.
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> "The river separates also the most conspicuous trees and plants. In the forest of the south are found the ebony tree (*Diospyros melanoxylon*), the *sal* (*Shorea robusta*), the most useful of all Indian timber trees, and the *mahua* (*Bassia latifolia*), which supplies not only food to the lower classes, but also spirit to the drinking portion of the population. The south also yields vast quantities of rice, and a hundred and fifty tons of opium, grown on twenty-five thousand acres of land, whilst, after crossing the Ganges, little rice and not a single poppy will be seen*. In the north nine-tenths of the trees are cultivated mangoes, whilst wheat, Indian corn, various kinds of millet, peas, *masur* (*Cicer lens*), *rahar* (*Sytisus cajar*), oats, indigo, mustard, linseed and castor oil, are the principal crops which the landholders find profitable to grow. The northern portion of the district also, during the cold weather, forms a vast feeding ground for swimming and wading birds. On some of the marshes a hundred thousand ducks may be seen, so close together that they almost hide the water; and as flock after flock pass overhead on being disturbed, the sound of their wings resembles waves breaking on a troubled shore.".

There are some minor natural divisions in each of the main divisions. In the northern alluvial plain the western portion is an old formation, the general level of which is higher than the eastern portion. The latter, which is included in the Pharkiya pargana or Gogri thana, has an extensive block of high land in the north, and a low riverain strip to the south; but it is mainly a saucer-shaped depression, the centre of which is inundated during the rains by the

* The area under poppy cultivation decreased in 1907-8 to 15,000 acres yielding 54 tons of opium. The cultivation has now been abandoned.

overflow of the rivers and for the rest of the year is full of marshy hollows. In the rains this tract, which extends over some 200 square miles, is a vast swamp so deeply flooded, that not more than half the land is cultivated. In the dry season it is a wide prairie covered with an undergrowth of more succulent grasses, which afford abundant pasture for great herds of cattle.

The western portion is included in the Begusarai subdivision and is fringed on the north by a level upland tract, and on the south by the Gangetic riverain, where land is constantly being formed or washed away by the swift silt-laden current. To the north of the Begusarai subdivision is a large but shallow lake called the 'Kabar Tal' and east of the latter are large areas of grass jungle intersected by rivers and swamps. To the south of the Gandak there is a strip, about 3 miles broad, which is liable to flood and is inundated every year. Further south the country is densely populated and well cultivated.

In the country south of the Ganga there is an alluvial strip of land stretching along the bank of the river and bearing heavy *rabi* crops. Immediately south of this alluvial belt the Kharagpur hills form a distinct watershed, the country to the west being drained by the Kiul and that to the east by the Man and other streams. To the north-west, in the angle between the South Bihar (Kiul-Gaya line) and the Eastern Railway from Lakhisarai to Barhiya, there is a wide level expanse of rice-fields; part of this tract consists of flood area of Halahar or Harhohor river, and is characterised by a heavy soil. To the south of the South Bihar Railway line is a wide, almost treeless plain, comprised in the Sikandra thana; and this is separated from the Kiul valley to the south by a block of hills known as the Gidheswar hills.

South of the Kharagpur hills there is a stretch of undulating country extending to the borders of Chakai and Hazaribagh, which comprise parganas Parbatpara and Chakai, and a part of pargana Gidhour made up of three large taluks, viz., Mahapur Kalan, Dumri and Mahesri. Pargana Chakai in the extreme south is an upland plateau encircled by hills and still largely covered with jungle. It is separated from the undulating tract to the north by a range of hills called the Batia hills, stretching in a long curve from Barwe, north of Simultala, to the Hazaribagh and Gaya border.

4. Hills.

The hills of Monghyr comprise a number of low ranges and isolated peaks, outliers of the Vindhyan series, which enter the district from the south and gradually converge towards Monghyr town, where they dip under the Ganga. The most extensive range is known as Kharagpur hills, which form an irregular triangular block extending from near Jamalpur to the Jamui railway station. They consist of a number of steep ridges rising from the low ground

on all sides, with scarped faces of massive quartzite in places; they are of irregular formation and do not run in any uniform direction. Generally speaking the range is a bold and striking mass of rocks covered for the most part with jungle; but it contains valleys with patches of cultivation and several hot springs, of which the finest are those at Bhimbandh, though those at Sitakund and Rishikund are better known. Near the south-western fringe of these hills is Sringrikhi, a peak said to have been hermitage of the Rishi Sringa and a noted place of pilgrimage. There are several peaks rising to a height of about 1,500 feet and the highest point is Maruk (1,628 feet above sea-level), a table topped hill, covered with forest and crowned with a deep layer of laterite. To the north of this range are low jungle-covered approaching within a short distance of Monghyr.

To the south-west is another block of hills, which are known locally as the Gidheswar Hills from a peak of that name, but are referred to in geological works as the Gidhour Hills. These hills are a continuation of the hills in the Nawada subdivision of the Gaya district and cover an area of about 80 square miles, forming a compact cluster between Khaira and the western boundary of Monghyr. They rise sharply from the plain, but in most places there is a belt of jungle along their northern face before the actual ascent begins. To the east there is a fine cliff overlooking Khaira and the Kiul river, and the range falls away to the south into the rocky valley of the Kiul. On the south in the village of Sakdari, there is a spring called Panchbhur, which is surrounded by precipitous walls of rock. The highest point of the range is at Ekgora (1,813 feet).

To the south a broken semi-circular range extends from near Bishunpur, on the west to Simultala on the east, separating the Chakai plateau from the rest of the Jamui subdivision. On the extreme west of this range is a high hill, named Satpahari, scarped on its northern face, beyond which the Kiul river breaks through the range by a narrow gorge. The hill is 1,806 feet above sea-level and 1,200 feet above the country at its base. There is also a small range of hills in the level alluvial plain near Sheikhpura, which are practically bare of vegetation. They rise somewhat abruptly on the south, while on the north, where they overlook Sheikhpura, the crags are almost precipitous. The range is intersected by several miniature passes, over which the roads are carried. There are also small, isolated, stony hills south of Sheikhpura and some hills of fair size on both sides of the Lakhisarai-Jamui road south of Titar Hat in the plain to the west of the Kiul river.

The Kharagpur hills contain several hot springs, situated near Kachu, at Sringrikhi, Bhimbandh, Rishikund at Barde and Baunsa hill. They are probably due to deep-seated thermodynamic action, and it is interesting to find historic testimony to the former existence

in this region of an active volcano, for the Chinese pilgrim, Hieun Tsiang, who visited the neighbourhood of Monghyr in the first half of the seventh century A. D. records that " by the side of the capital and bordering on the Ganges river is the I-lan-no mountain, from which are belched forth masses of smoke and vapour, which obscure the light of the sun and moon ". Most of the hot springs are held in considerable repute by the local inhabitants in the neighbourhood as potent remedies, especially for itch, ulcers and other skin affections. A most essential part of the process of cure consists in the preliminary worship of the presiding deity of the spring.

" Nearly all these springs ", writes Colonel Waddell, " are worshipped by the Hindu and semi-aboriginal villagers in the vicinity for these strange outbursts of heated water, boiling up cauldron-like and wreathed in clouds of vapour, are regarded by them as supernatural phenomena and the especial expression of the presence of a deity. The deity usually worshipped at the springs by the semi-aboriginals is Mata or Mai, the mother goddess, one of the forms of Kali, and large *melas* are held in her honour. She is especially worshipped by those suffering from itch and other skin diseases; also by the barren, both male and female, who bathe in the water and drink some of it. Goats, etc., are sacrificed to her, and rocks are daubed with vermilion (*sindur*) and pieces of coloured rags are tied to the nearest bush or tree in her worship.

" The more Hinduized, however, believe that their favourite god Mahadeva is specially present at all those hot springs, and to him they there offer worship, except at Sitakund, the thermal springs of relatively low temperature which might perhaps be termed warm rather than hot springs, are believed by the villagers to be hotter in the very early morning and to become cooler as the day advances. This opinion is evidently founded on the loose subjective sensation of the villagers, who in the cool of the morning remark that the spring, being hotter than the atmosphere, gives a sensation of decided heat; which contrast becomes less marked during the day when the sun has heated the earth and air, causing these to approach the temperature of the spring.

" The temperature of some of the springs, however, does seem occasionally to undergo actual fluctuation according to season and other conditions not yet well ascertained. This, indeed, might to a certain extent be expected, seeing that hot springs derive their heat, more or less, directly from volcanic action, which is essentially subject to alternative periods of activity and relative rest."

5. River System.

The rivers of the district consist of the Ganga, its tributaries and sub-tributaries. To the north its principal affluents are the Burhi Gandak, the Baghmati and the Tiljuga or Kamala, which enter the district from Darbhanga. They have comparatively narrow

channels, and after a heavy fall in the Sub-Himalayan tracts from which they debouch, frequently overflow their banks and lay a considerable area under water. To the south the principal rivers are the Kiul, the tributaries of the Kiul and the Man; but there are also a number of hill streams which come down in freshets during the rains, but subside as rapidly as they rise. For the greater part of the year they are sandy water-courses with little or no current, and are exhausted by the demand for irrigation before they reach the Ganga. The following is a brief account of the principal rivers.

Ganga.

The Ganga has a course of about 70 miles within the district. It first touches the district a few miles to the west of the Bachhwara railway station nearly opposite Barh in the Patna district from which point it flows to the south-east in a long reach of 30 miles as far as Surajgarha, where it is joined by the Kiul. Leaving Surajgarha, it flows to the north-east describing a sharp bend on reaching the high land near Monghyr. It then turns almost due south for 12 miles, and next to the eastward for 5 miles till it reaches the boundary of Bhagalpur. In its course through the district the river is both wide and deep at all times of the year, and in the rains it spreads over the low-lying lands of pargana Pharkiya to the north for a distance of 20 miles from its ordinary bed. To the west, it is said to have had formerly a course of 10 miles to the north of its present channel. To the east, the river has several times shifted both to the east and to the west of the rock on which the Monghyr fort stands alternatively forming and washing away large areas of *diara* lands; but since the earliest times of which any record exists, it has washed the base of the rock immediately to the north of the fort. The largest areas of alluvial deposit formed by changes in the main channel are comprised in the Government estates of Kutlupur to the west and Binda *diara* to the east of Monghyr town. The *diaras* on the southern bank are very extensive, so much so that the breadth of the river some miles above Monghyr, when in flood, averages from 6 to 8 miles.

Burhi Gandak.

The Burhi (literally old) Gandak, or Little Gandak, runs due south along the north-western boundary of the Begusarai subdivision for a distance of about 8 miles from near Rusera in the Darbhanga district. It then turns to the east, entering the district at a village called Arkaha, and flows a winding course through the Begusarai subdivision until it flows into the Ganga by the town of Khagaria, a few miles below Monghyr. It is navigable all the year round, for large boats during the rains and for small boats at other times. Steamers also ply along it as far as Khagaria, a short distance above its confluence with the Ganga, but recently the channels at the entrance have been silting up and have become unnavigable during the dry season.

Balan.

The main tributary of the Burhi Gandak is the Balan, which flows from the Darbhanga district and then takes a south-easterly course, joining the Burhi Gandak at Umedpur near the Chiria Bariarpur police out-post. It has one small tributary, the Bainti, a stream debouching from Darbhanga, which falls into it near its junction with the Burhi Gandak. The Balan has a considerable volume in the rains, and is navigable by small boats throughout the year.

Baghmati.

The Baghmati enters the district a little east of Garhpura in the north-east corner of the Begusarai subdivision and then flows east into the northern portion of the Khagaria subdivision near Bhagalpur. It traverses that subdivision pursuing a winding but generally easterly direction, till it flows into the Tiljuga near Chautham. It has one tributary, the Chandan, which is fed mainly by the Kabar Tal.

Tiljuga.

The Tiljuga, also called the Kamla and in its lower reaches the Ghagri, enters the Gogri thana from Darbhanga a few miles north of Mohraghat. It flows south-east to Chautham, where it receives the waters of the Baghmati; and the united stream then continues to the boundary of Bhagalpur under the name of the Ghagri. Near Ramnagar it is joined by the Katni, which enters the district about 10 miles to the north near Kasnagar and is itself a combination of three streams called the Telawe or Talaba, Parwan and Loran. The Tiljuga is navigable all the year round by boats of considerable size.

Kiul.

The principal river to the south of the Ganga is the Kiul. It rises in the Kharagdiha thana of Hazaribagh, and after forming the boundary of that district for a short distance, enters Monghyr through a narrow gorge near the Satpahari hill. It runs at first eastward close to the southern face of the Gidheswar hills, but turns northward at their eastern extremity and passes one mile east of the town of Jamui. Two miles south of Jamui it is joined by Barnar, which rises on the borders of Chakai and Hazaribagh and two miles below this point it receives the Alai, a hill stream, which like other hill streams in the south, dries up in the hot weather. Opposite the Jamui railway station it is joined by the Anjan, which drains the northern portion of the Jamui subdivision. It then flows north-east up to Lakhisarai, and is joined a few miles north of that place by the Halahar (or Harhohar), a continuation of the Sakri river. After this it turns due east and finally falls into the Ganga near Surajgarha. Until it meets the Halahar, the Kiul has a broad bed, and in some places is as much as half a mile wide, though it contains very little water in the hot

weather. It is spanned by a large railway bridge between Kiul and Lakhisarai and a road bridge on Monghyr-Patna road near Lakhisarai.

Anjan.

The Anjan rises in the Anjan hill to the north of the village of Barhat in the Mallepur *taluk* and after passing through that *taluk* falls into the Kiul near Bariarpur. It has been dammed up in Barhat, and its water is diverted into an irrigation channel known as the Belia Nali, which irrigates several villages. The river receives several tributary streams, viz., the Jamkhar, the Bajan and the Chhuria, which has a sub-tributary, the Kairwar. Popular tradition is that Anjani gave birth to Hanuman on the hill in which the river has its source.

Ajai.

The Ajai, one of the larger tributaries of the Bhagirathi, has its source in the extreme south. It owes its origin to the confluence of a number of small streams, but before it leaves the district is a fairly large river. It eventually debouches into the Bhagirathi near Katwa in the Burdwan district.

Man.

The Man river rises in the Kharagpur hills, not far off the Bhimbandh springs, and pursues a winding north-easterly course to the east of those hills till it debouches in the Ganga near Ghorghat. The lower reaches, however, contain but little water, for a great dam has been built about 2 miles south of Kharagpur, where the Man runs through the narrow gorge. To the south the gorge widens out into a valley, hemmed in by low but abrupt hills, which the dam has converted into a larger reservoir from which water is drained off to irrigate the adjoining country.

6. GEOLOGY.

No proper geological survey of Monghyr district has been carried out and as such very little is known about the mineral resources of this district. In 1947 Sir Cyril S. Fox, late Director, Geological Survey of India, made a hurried survey of Gidhour estate and his report throws some light on the mineral wealth of this district. Whatever minerals are known to exist are found in the south of Monghyr district. The chief minerals are—

(1) *Slate Quarries.*

In the transitional rock of the Kharagpur hills there is a band of slates, from 6 to 12 feet thick, which is traceable for many miles on the northern margin of the hills between Rishikund on the east and the Gaura and Amarsani koals on the west. Being for the most part vertical, it can only be worked on steps on the sides of the hills or by actual mines.

There are at present six slate quarries and two stone quarries working in the district of Monghyr and Sitakobar, Garia, Amrasani, Tikoi, Sikholi, and Bijolia. On reference to the last *Monghyr Gazetteer* it appears that the quarries have been worked since 1864 by M/s. Ambler and Company who purchased the Basauni Indigo Factory from the late Mr. Dear and converted it into a slate factory. Now these quarries are worked by different persons.

The two stone quarries are at Kharsar Pahar and Ghitko Hills under Shri Narendra Nath Bose of Jhajha.

The chief building stones are quartzite and slab slate. There are old slate quarries near Shivkund two miles south-east of Dudham in the Morie valley (four miles south-east of Kajra railway station). There are several places in the western end of Kharagpur Hills and Gidhour range where quartzite is available for use as road and building stones and as ballast. South of Jhajha the rocks are more Schistose and Geneissie and basic rocks such as hornblend schit may be met with in certain places. Crystalline limestone ore marble is reported to occur two to three miles west of Simultala railway station on the border of Kewal estate, but very little work has been done on these limestones. Kankar is found on the surface in many places and collected in the area near Jhajha for lime burning and cement manufacture.

(2) *Mica Mines.*

The Bihar Mica Belt extends eastwards from the Hazaribagh and Gaya districts into south-western Monghyr and the Muscovite Mica Mines of Maheshwari Gaddi and the other estates round Chakai to near Jhajha have been known and worked during the past half century or so. The mica mines appear to be situated in different belt of the metamorphic schistose rocks which trend in a general easterly strike into Monghyr from the west. Here there are 12 mines at work: (1) at Badarchhila, Barsauni, Upperchhala for mica and prospecting of minerals other than mica such as galena kaolia, beryl, under M/s. S. K. Sahana and Sons, Ltd. of Chakai, (2) at Upperchhala for mica under M/s. S. K. Sahana and Sons, Ltd. of Chakai, (3) at Bishunpur for mica under Shri Palakdhari Lal Modi of Maheshri, (4) at Konjhi Turkatola and Digarbhai for columbite, mica and berrylum under M/s. Rare Mineral and Mines Company, Ltd., (5) at Dahua Hill for mica under Mr. N. C. Adhikari, (6) at Bahara and Guruhlia for mica under Mr. B. N. Sahana of Giridih, (7) at Panari Hill for mica under Mr. Bodi Singh of Maheshwarikhurd, (8) at Telwa for mica under Giridhari Bhattacharji, (9) at Pumra Hill for mica under Mr. Chunchun Pd. Singh of Maheshri, (10) at Raghunathpur for mica under M/s. Mahabir Mica Company through Kandhailal Chaudhary of Giridih, (11) at Sorhi for mica under M/s. Khaira Mining Corporation, Ltd., no. 4, China Bazar Street, Calcutta, and (12) at Bichhwe under M/s. Shivshankar Mica Supply Company, Ltd.

(3) *Limestone.*

There was a lime burning establishment at Jhajha railway station which also prepared the Roman cement and was known as Jhajha Industrial Cement Company. The cement was manufactured out of the *kankar* collected locally from the surface ground. About 36 tons of *kankar* yield 24 tons of *kankar* lime.

(4) *Clays.*

Fuller's earth is to be found in the valley five miles or so east of Mananpur railway station in the Mahajanwa *nala.* Just within the hills less than two miles south of Panari, 14 or 15 miles south-south-west of Jhajha and west of the Barnar river, there are China clay mines in a decomposed pegmatite. The exact locality is in the valley about 1½ miles east, north-east of Tangrijot hill, 1,664 feet of the great ridge facing the Maheshri Gaddi from the south. The mines are known as Bhukhli Kaolin Mines. The perfectly white clay is washed in the valley and carted to the Jhajha China Clay Works by cart *via* Batia and Nawadih. This material is of excellent character both as regards its white colour and its plasticity.

(5) *Fuller's Earth.*

From the report of Sir Cyril S. Fox it appears that Fuller's earth is to be found in the valley five miles or so east of Mananpur railway station in the Mahajanwa *nala* about two miles east-north-east of Baskund. The quantity of this greenish coloured material which turns a light biscuit colour on kneding has not been established. It occurs exposed in the bank of the *nala* but northwards it will have to be worked under 8 to 10 feet of flat-lying, recent conglomerate. The slates strike east to west with 70 degree dips to the north. At present the material seems to be used only as a colour-wash, but it is probably an edible clay as well as Fuller's earth. It is not a bed in itself but the decomposed out-crop of steep dipping slates so that its downward extension is uncertain as well as its superficial spread.

(6) *Columbite.*

Sir Cyril S. Fox while conducting a geological survey of Gidhaur Estate in 1947 was informed by Mr. H. K. Roy Chaudhary, Chief Geologist to Gorg Brothers, Ltd., that 2½ tons of columbite and tantalite was procured and despatched by this Firm from Jhajha railway station during the war (1939—1945) at a price of about Rs. 3,500 per ton. According to the information supplied by Mr. Roy Chaudhary the occurrence is about six miles southwards from Jhajha railway station in a pegmatite on a hill, and that beryl was also found in the same pegmatite with muscovite mica. This was evidently in the Pananoa Hill occurrence as the hamlets near the hill are known as Pananwa and Parsawa. This agrees with the record as given by T. H. D. La Touche in "A Bibliography of Indian

Geology and Physical Geography", Part II, 1918, page 430, which reads "Monghyr-Pananoa Hill, 4 miles south of Jhajha. An occurrence of columbite and tantalite, discovered by Mr. H. H. French, was examined by Holland in 1894. The mineral was found in lumps imbedded in the quartz of a very coarse pegmatite dyke, intrusive in mica schist crowded with tourmaline crystals. Specimens subsequently received in the Geological office were found to have specific gravities of 6.75 and 6.92 and contain 37 and 52 per cent of tantalic acid respectively."

(7) *Corundum.*

About 1877 Mr. W. W. Hunter reported the occurrence in the hills north-east of Jamui. But according to Sir Cyril S. Fox no corundum has since been found in the area round about Jamui or anywhere in Monghyr district. The probability is that another mineral was mistaken for corundum or that another place is referred to.

(8) *Manganese Ore.*

Both Sir Lewis Fermor and Dr. Dunn show, on their mineral maps, a deposit of manganese ore near the railway between Gidhaur and Jamui stations. One locality, the Katnowa hills, is recognised as the Hog's back ridge immediately north of Katauna, where the material is concretionary, and of lateritic origin, showing nearly 30 per cent of manganese with some barytes. No serious prospecting has been carried out, and according to Sir Cyril S. Fox, the deposit is presumably small.

(9) *Beryl.*

Crystals of Beryl in hexagonal prisms up to 3 to 8 inches across and an inch or so to 2 feet or more occur with the muscotive mica in the coarse pegmatites which occur in the metamorphic rocks of the Bihar Mica Belt. The crystals are found when mining the mica; sometimes these crystals appear to be absent and they are always relatively rare. Sir Cyril S. Fox saw beryl from the Bichhwe mine south-east of Sikandra in 1947 and he was informed that more than a ton of such beryl crystals were obtained from the pegmatite of Pananoa Hill, where the columbite and tantalite were obtained a few miles from Jhajha railway station.

(10) *Mineral Water.*

Monghyr district has long been famous for its mineral waters and hot water springs. There is a belt of thermal springs along a zone from the Kharagpur Hills to the Rajgir Hills of the Patna district. There are many springs known in the Gidhaur estate in various places, but the only spring which appears to be recognised as a mineral spring is that of Baskund valley five miles east of Mananpur railway station and known as "Punchbhur" (five holes).

From the report of the mineral resources of the Gidhaur estate by Sir Cyril S. Fox, D.SC., F.G.S., late Director of Geological Survey of India and past President, Mining Geological and Metallurgical Institute of India and the Royal Asiatic Society of Bengal, it appears that the water below the spring is warmer than the water of normal spring but it is not hot and it has the distinctive test of an iron water. He found it a very unattractive drink in temperature and in taste on a very hot day. Among the mineral waters the following hot springs are noteworthy and famous :—

(1) *Sitakund.*—About five miles east of Monghyr town. This is the hottest water spring of the district. Dr. P. K. Ghosh described that it would be very difficult to find a better mineral water, as table water particularly, than that from Sitakund.

(2) *Rameshwar Kund.*—About two miles from Kharagpur lake. The water of the spring is sufficiently warm.

(3) *Sringhirishi Kund.*—About four miles from Kajra railway station.

7. Soils.

A more detailed discussion on soils will be found elsewhere. Briefly, the district extends over both sides on the Ganga and has two different kinds of soils. North of the river, the soils are sandy alluvium and three-fourth of Begusarai subdivision lies between the rivers Gandak and the Ganga and is well raised and free from inundation. Autumn and winter crops are grown here. But north of Begusarai and almost the whole of Khagaria is a low-lying tract subject to destructive floods. To the north-west there is a 7 square miles lake known as ' Kabar Tal ' and the areas near the lake grow rice. North Khagaria has some uplands which grow excellent *bhadai* and *rabi* crops, while to the south between the railway lines and the Ganga, there are *diara* lands which are good for maize, pulses, wheat and gram. South of the Ganga there is a variety of lands in the district. The quasi-*diara* lands along the river grow good *rabi* crops. Between the Ganga and railway line, there are rich paddy lands and the land in Sheikhpura thana has two kinds of soils, (*i*) eastern portion, which has inundated heavy soils and (*ii*) the western portion, which is irrigated soil in the east, hills and jungles of Kharagpur in the centre and wide flat plains in the west. South of Kharagpur hills is undulating country, the greater portion of which cannot be irrigated and beds of streamlets are terraced to grow rice. In the extreme south of the district are found hard stone sides of the hillocks and harder mounds of '*kankar*' and the flat laterites of Chakai. The soils are merely scratched with a plough and a small crop of *kulthi, kodo, til,* mustard and *rahar* is taken.

Soils met with in different parts of the district consist of sandy, *diara* (silly), loamy, clayey and *usar* (alkali) soils. Various kinds of

clay soils are found ranging from light coloured to jet black, brick red and sticky clays.

Chemically, the soils of Monghyr district, on the average have 0.045 per cent nitrogen, 0.003 per cent phosphoric acid, 0.002 per cent potash and a PH of 7.6.

Salinity of alkalinity occupies an important phase in soil types, and soils in the area of Bakhari and Khodawandpur are alkaline (*usar*).

8. Vegetation.

There are few districts in Bihar so favourably situated for the study of botany as Monghyr. The alluvial and thickly populated plains north of the Ganga contain most of the trees and plants useful to man that are suited to the soil and climate, while in the hilly country to the south there are numerous forest trees and shrubs. Here Sal, Kend, Simul and other trees grow side by side, protecting from the Sun's rays the ferns and humble creepers which grow below. Any one who takes his stand on the table topped Maruk, or indeed on any point in the hills, may count a hundred different species growing round him. But the most casual observer will at once detect the ravages made by the agency of man. Not only is the woodman's axe busy and the underwood periodically consumed as firewood, but cows, sheep and goats are let loose in the woods, and pasturage quickly destroys vegetation. Indeed, in the Sikandra Thana for some hundred square miles not a grove can be seen, and there are few trees except those planted along the roads or a line of palm trees along some tank or the boundary of field. Notwithstanding, however, the denudation which goes on, Monghyr is still a well wooded district, for round the villages many trees are allowed to survive for the sake of their fruit, while a botanical excursion in the hills will disclose a great variety of trees and plants, although few of the trees are of any large size.

The Sal being the most useful species have suffered from indiscriminate felling. Directly they attain a size sufficient to form a *gol* or prop for a native house, they are chopped down, carried off, and sold in the distant villages. The consequence is that other kinds of trees, whose wood is in less demand for fuel or for timber have obtained the upper hand. The fibre yielding Malvaceae are perhaps now the most conspicuous; their wood making indifferent fuel, it is hardly worthwhile to strip them of their bark, as the fibre of the cultivated members of the family is sold cheap in every bazar. The red cotton tree, the Karaunji (*Sterculia urens*), and the Ainthia Dhamin (*Helicteres isora*) with its twisted pods are common; while the wild cotton and many other species of Hibiscus appear as annuals or under shrubs. The leguminosae are also common, including the tamarind, the Amaltas (*Cassia fistula*), the Palas (*Butea frondosa*), the Kachnar (*Bauhinia variegata*) and many acacias and mimosas.

The Karjani (*Abrus precatorius*) is another noticeable member of this family, its vermilion seeds being conspicuous in the jungle during the cold season. The Saleh (*Boswellia Serrata*), belonging to the Meliaceae family, is found throughout the hills, and is less molested than almost any other tree because its wood is of no value for timber, and as fuel it gives out such dense clouds of smoke that no one cares to burn it. It is a great ornament, however, to the forest, and in the distance resembles the English mountain ash. In the recent years Saleh has also found a market for packing case planks.

Next in numerical order come the Apocynaceae, such as the Dudh Koraiya (*Wrightia tomentosa*) and Dudhi (*Holarrhena antidysenterica*) which appear everywhere in the hills and are always conspicuous in the cold weather with their long follicles or pods winged with a tuft of silken hairs. These, when ripe burst open and are borne by the wind to any ground which may be unoccupied The Rubiaceae are also well represented in these woods. The Nepali lilac (*Hamiltonia suaveolens*) is one of the few common plants with fragrant flowers which adorn the hills during the cold season. When this tree and the Holmskioldia sanguinea grow side by side, as they often do, they stand out, the one with blue or white-scented flowers and the other with red blossoms, in beautiful reliefs against the background of dark green trees. The same family includes the Bhorkhorn (*Hymenodictyon excelsum*), which may always be recognised during the cold season by its brown capsules, containing winged seeds hanging in clusters on the leafless branches. An account of the trees which are found in the Monghyr hills would be incomplete without mention of the **Terminalias**, which, if only given, fair play, would grow into large trees and supply timber little inferior to Sal. The Asan (*Terminalia tomentosa*) is common, but the Harra or black myrobalan trees (*Terminalia chebula*) are becoming very scarce in consequence of the activity of the woodman's axe. There is also the Kahua (*Terminalia arjuna*); and an allied species, the Dhaw (*Anogneissus latifolia*), is very common, commanding as fuel by far and best price in the Monghyr market.

On the banks of the hill streams, particularly near the waterfalls among the Kharagpur hills, in the course of the river Man, many beautiful flowers will be found during the cold season. Among these may be mentioned the Holmskioldia sanguinea with a blaze of red flowers setting off the blue Barlerias which grow below, and the *Porana paniculata* (called by Europeans the silver creeper or the bridal creeper, but by local people the *burhi* or old woman), which covers the trees and rocks where it grows.

Of the trees found north of the Ganga, the great majority are mango trees (*Mangifera indica*) which are grown in tops of orchards in every village not subject to prolonged inundation. In good years the mango forms no inconsiderable portion of the poor man's food

and in times of dearth it is an important item in the food supply of the district. But the crop is uncertain, and the trees are troubled with parasites, which must do them much injury, though the scarlet flowers add considerably to the beauty of the landscape. Besides supplying fruit and fuel, the mango groves are useful as pasturage grounds, giving shade to cattle in the hot weather and shelter during the winter. The next most abundant tree is the oak murtle (*Barringtonia acutangula*), which abounds in the marshes of pargana Pharkiya. It is known here as the Ijar, and although belonging to the natural order of myrtles, has the appearance of a stunted oak. It grows well in several feet of water, and is consequently a favourite roosting place for birds. The branches, which during the rains droop into the water, are also the resting place of fresh water sponges known to the natives as *phen* or foam. The red cotton tree is one of the most conspicuous trees, particularly in the cold weather when it is covered with large crimson flowers.

Some members of the great fig family are found in every village. The Pipal (*Ficus religiosa*) is most common, and then the banyan (*Ficus bengalensis*), though in this district the large trees with several trunks may be counted on the fingers. The Gular (*Ficus glomerata*), with its fruit packed full of flies, and the Pakur (*Ficus infectoria*) are also frequent. The well-known Babul (*Acacia arabica*) with its sweet scented ally the Guhiya Babul (*Acacia farnesiana*), is common in hedges and waste places, and is a favourite nesting place of the turtle dove. Then there is the Sohora (*Streblus aspher*), the twigs of which provide the Hindus with tooth brushes, but it is looked on with abhorrence by Muslims, because, according to tradition, it was the only wood which would take fire when the unbelievers wished to burn their saint Ibrahim Khalil Ullah. The Nim (*Melia azadirachta*), Siris (*Albizzia lebbek*) and tamarind are fairly common; and the Jiyal (*Odina wodier*), with its cat-o'-nine-tail panicles of flowers, attracts attention in every well-wooded village. Sissoo (*Dalbergia sissoo*) is planted freely, usually in row on the borders of the field, where their crooked trunks lopped of all the lower branches present a fantastic appearance. Willows (*Salix tetrasperma*) many be seen on most bank overhanging water-courses and *jhils*. They are known locally by the name of bes, and baskets are occasionally made from their twigs in Monghyr as in England. Palm-trees, including both the palmyra (*Phonix flabellifer*) and the date-palm (*Phoenix sylvestris*) are found in plantations round the village; but they are not so common as they are in the southern part of the district, where during the hot months thousands of gallons of toddy (*tari*) are consumed by a thirsty public and yield revenue to the State. Among other fruit trees may be noted the Jaman (*Eugenia Jambolana*), the jack or Kathal (*Artocarpus integrifolia*), and last but not least the Bel (*Angle mermelos*). To enumerate all types of vegetation would require much space; those which have been mentioned are merely the most common and conspicuous.

The hedges which exist in the vicinity of the villages contain a large variety of plants among which may be mentioned the Bagnai (*Capparis horrida*), the Madar (*Calotropis gigantea*), the Samalu (*Vitex negundo*), the Jasmine (*Chameli*), Ipomea amara, the wild castor-oil plant and many others. In the uncultivated parts of pargana Pharkiya by far the most conspicuous plant is the Koa or wild rose of Bengal (*Rosa involucrata*) covered with flowers, which for sweet scent are surpassed by few flowers, in the world. The fields, when under *rabi* crops, have a wide variety of weeds, prominent among which is the Mexican poppy (*Argemone Mexicana*), collected by the very poor for sake of the oil extracted from the seeds.

Not the least valuable product of the Pharkiya pargana is thatching grass. It is grown on low land subject to inundation which retains water too long to enable the villagers to sow a cold-weather crop upon it. So extensive are these grass fields that they may be called prairies and they could, if necessary, supply all the houses in Monghyr with thatch. The supply thus exceeds the demand; but large herds of cattle, chiefly buffaloes, which during the hot season are brought from all parts of the district, pick up a scanty living from the young shoots and undergrowth of dub grass and weeds. Very few flowers are found on the prairies, but the asparagus creeper is occasionally met with, and the lantana or wild sage is not uncommon. A creeping fig, with some of its leaves vinelike, frequents moist banks, and a parasitic orchid, which though not at first sight attractive, forms a beautiful study under the microscope.

9. Forests.

Prior to 1946 the forests of this district have been privately owned, the principal owners being the Maharaja of Darbhanga, Banaili Raj and Gidhaur and Khaira estates. With the vesting of these estates in the State of Bihar under the Land Reforms Act, Government have become the proprietor of these forests. The total demarcated area of the forest in the district is 500 square miles out of the total area of 3,927 square miles of the district. The forests, therefore, occupy only 12.87 per cent of the total area.

The principal species is Sal or Sakhua (*Shorea robusta*) but owing to the absence of any system of forest conservancy in the past the giants of the forest have long since disappeared. Another conspicuous tree in the forest is the Kend (*Diospyros melanoxylon*), the fruit of which is a delicacy for the local poor people in the forest. The leaves of the younger plants have a great commercial value. The young leaves are used for manufacturing *biri*. It yields an average annual revenue of Rs. 31,375. The Salga (*Boswellia servata*) is found on the higher slope and on the top of the hills and because it has no use for the local population, the species have formed pure patches all throughout the forests. Recently its timber has found

market for cheap packing cases. The gorgeous flowering Palas (*Butea frondosa*) abounds in the lower slopes and also on the plains. When it blossoms in February and March the trees are full of scarlet flowers, which have earned for it the picturesque name of the "Flame of the Forests". The allied companion called Chihunt (*Butea superba*) which is a climber, is also abundant and its flowers are equally splendid. Kachnar (*Bauhinia purpurea* and *Bauhinia veriegata*) are numerous. The gigantic creeping Chihor (*Bauhinia vahlii*) is a great menace to the useful trees because it does great damage by climbing and killing some of them; but at the same time it is economically useful as ropes are made from its bark and the leaves are used for making indigenous waterproofs for the local people. Among other important trees several species of Terminalia are worth mentioning. Harre (*Terminalia chebula*) and Bahera (*Terminalia belerica*) are useful because the fruits of these trees combined with fruit of Amla (*Emblica officialines*) make the famous indigenous purgative, the *triphala* or the myrobalans of commerce. Malvaceae and Sterculiacea are also numerous. The former species includes the Simul or red cotton tree (*Salmalia malabaricum*), various kinds of Hibiscus all yielding strong fibres and the Van Kapas (*Gossypium*) or wild cotton. The latter family is represented by Karaunji (*Sterculia urens*), the fibrous bark of which is almost unbreakable. In December it is conspicuous for its white trunk and leafless branches, which have earned for it the description of a spectre like tree. Special mention has to be made of the Sabai (*Ischaemum angustifolium*) a species of grass found on the higher slope and top of the hills. This grass gives an annual revenue of Rs. 7,981. Hundreds of persons gain their livelihood by collecting and twisting it into string and at least three-fourth of the strings used in the district is made from it. This grass has got a very good market in the paper mills as better quality papers are made from this grass. There are also several species of fig trees, conspicuous among which is Gular (*Ficus glomerata*), fruit of which the people residing in forests share with the birds and animals such as bears and deer.

Useful as most of the trees undoubtedly are, there is no tree which can be compared to the Mahua (*Madhuca latifolia*), which yields food, wine, oil and timber. From its flowers the common country spirit is distilled and whether fresh or dried the flowers furnish the poor classes with wholesome food; from the fruit pressed an oil largely used by the people in the forest and at the same time it has got great demand in urban areas for using as an adulteration of *ghee*; and the tough timber is used in construction of buildings. The value of the Mahua depends on the succulent petals of flowers which cover the trees from year to year, apparently favourable or unfavourable seasons, so pregnant with weal or woe to other plants. The flowering season in March is a great season for the villagers inside and round about the forests. If one passes through the forests in early morning he will find men, women and children

sweeping up *mahua* flowers. Nor does the feasting end with the day; bears, pigs and deer have their turn during the night and many of them fall a victim to their fondness for the sweet scented flowers being shot by the bullets of the *shikaris* lying concealed either in bushes or on *machans*.

The other most important associate of the forest is the bamboo (*Dendrocalamus strictus*). Bamboos are very greatly used in construction of houses. The classes known as *doms* and *turis* earn their livelihood by making baskets, brooms, mats and various other articles. After meeting the local demand it finds its way to the paper mills.

10. FAUNA.

Tigers are now no longer found in the forests of this district although in the beginning of the century tigers, though scarce, were found in hills of Kharagpur and Gidheshwar. Many of them had turned into man-eaters and were responsible for 176 deaths in the three years 1900 to 1902. Sometime one or two cross the forests of Gaya and Kodarma (Hazaribagh). Recently (1958) one tiger was killed in Sikandra police-station which was said to have come from Kawakol (Gaya).

Leopards are much in evidence, and numerous cases are reported of their killing dogs, goats and cattle even within 15 miles of Monghyr. Black or sloth bears (*Ursus melursus*) are found on all the larger hills and in the jungle surrounding them, where they can feed on white-ants, plum and other fruits and drink from the hill streams. Even here, however, they are not so plentiful because they are easily shot down by the Santals, when they come to feed on the fallen flowers of the *mahua* tree. They will dispute the possession of these with the peasants who try to gather them often with fatal results to the latter. Hyaenas are found in the hills and wild cats are common. The civet family is represented by the large Indian civet (*Viverricula malaccensis*). The dog family include wolves, the familiar jackal and Indian fox; the last two are as common, and the first as rare as in other districts. The wild dog is met with in the hills, and in the vicinity of Bhimbandh, Chormara, Gaighat and Gurmaha. There is one species of badger not uncommon in the same tract—the Indian ratel (*Mellivora indica*). Among insectivorous mammals the tupias or tree shrews call for a special notice. They are arboreal animals looking like a cross between a squirrel and a rat, but are easily distinguished from the former by their ears and teeth. Somewhat rare animals elsewhere, they are still found in the Kharagpur hills.

There are several species of Chiroptera, including frugivorous bats, the long-armed bat and long-tailed bat and other insectivorous bats, known by the generic name of *chamgudri*. Rodents include porcupines, hares and the palm squirrel (*Scieurus palmarum*), a misleading title as it is far more frequently seen in fruit gardens

than on palm trees. Two species of monkey are found in the district, the long-tailed *langur* (*Semnopithecus entellus*) and the shorter tailed Bengal monkey or *bandar* (*Macacus rhesus*). The former is found to the south of the Ganga and the latter affects certain localities from which apparently they never migrate. At Monkey Island, on the Kabar lake, they are particularly numerous being venerated by the priests of Hindu temple. In the year 1703 a yearly grant was made by Government for the express purpose of feeding the monkeys and lighting the temple on the island, but in 1802 the grant was discontinued, owing to its being misappropriated by the priests. The ungulata are not numerous in Monghyr. There are, however, several species of deer, including the noble sambhar (*Cervus unicolor*), chital or spotted deer, ravine deer and barking deer, which are found in the south, though not in any great number. *Nilgais* (*Boselaphus tragocamalus*) are also occasionally met with. Wild pigs are numerous in the jungle at the foot of the Gidheshwar hills and are often trapped in pits by *shikaris*. Last among mammals may be mentioned porpoises, which are found in the Ganga.

11. Birds.

Game birds are comparatively rare in this district owing to a variety of causes. In the south, where there is sample cover in the jungle-clad hills, the Santals and others are constantly shooting them down for the pot. Cats, foxes and other vermin are even more destructive and there is certain scarcity of suitable food, for edible berries and nectar-bearing flowers are rare in the forests. The birds consequently prefer the cultivated fields and gardens; and the silence of the woods is proverbial among those who visit them. Still there is a fair variety of species, though their actual numbers are small. Pea-fowls have become rare but are still often to be seen in different parts of the Kharagpur hills. The jungle-fowl (*Gallus ferrugineus*) is met with in the same jungles, and the red spur-fowl is occasionally seen. Grey patridges are abundant in scurb jungle south of the Ganga; the black patridge or francolin affects the grass prairies in the north of the district; and the *kyah* or marsh patridge is found in the low lands of pargana Pharkiya. The black-breasted quail breeds in this district, but is not nearly so abundant as the common quail, which migrates in the spring to breed beyond the Himalayas. It consequently has a better chance in the struggle for existence than it would have here, where so many enemies, in the shape of cats, foxes, hawks and snakes are ready to devour it and its eggs. Bustards are rarely seen.

The courier plover is found chiefly on the alluvial *diara* lands bordering the Ganga, and flocks of swallow plover may be seen hawking for insects on the banks of rivers. Other species of plover are common; the golden plover during the cold weather and the spur-winged plover at all seasons; while the Norfolk plover is frequently seen among the rocks. Cranes are cold-weather visitors.

Snipes are not so numerous in Monghyr. The common and pintail species appear to be nearly equally distributed, but painted snipe and jack snipe are rare. Godwits appear on the marshes in pargana Pharkiya during the cold season, as well as curlews and whimbrels; and the graceful avocet may be occasionally seen along the banks of the Ganga. Among the stints and sand-pipers met with in the district may be mentioned the ruff, the little stint, the spotted, green and common sand-pipers, which appear in large numbers during the cold season, while the green-shank and red-shank are found on every marsh. The black-winged red-legged stilt (*Himantopus candidus*) is another winter visitor. Nearly all the wading family are migrants retiring beyond the Himalaya to breed.

Both the Indian jacanas, the bronze-winged and pheasant-tailed remain all the year round in the marshes to the north of the Ganga. They are marsh birds with long toes and claws, which enable them to run over the floating leaves of water lilies and other plants. The coots are also well represented in the marshes, conspicuous among them being the purple species. Several kinds of rail also frequent the same localities, but not in such numbers as coots and water hen. Storks are found throughout the district. The adjutant is rarely seen; but the white-necked stork is very common during the winter months. Herons are plentiful in the ready swamps towards the north, and during the rainy season the small pond herons, or paddy birds, as they are familiarly called. Bitterns do not appear to be so common here, but the night heron (*Nycticorax griseus*) abounds, and its familiar call may be heard on still evenings as it passes to its feeding grounds. The spoonbill is occasionally seen in the Pharkiya marshes, and there are several species of ibis.

The marshes in the north of the district form the home of myriads of geese and ducks during the cold season. The following species are noticed but some of them are becoming rare :—

> Grey goose, barred-headed goose, white-headed goose-rail, the whistling teal, sheldrake, ruddy sheldrake, shoveller pink-headed duck, gadwall, pin-tail duck, widgeon teal, gargany, red-crested pochard, red-headed pochard, ferruginous duck and tufted duck.

The crested grebe is found on most of the marshes where its diving powers excite the wonder of all who witness them, for it can travel under water almost as fast as it can fly in the air, a few seconds sufficing for it to dive and reappear at a distance of several hundred feet. The local name for the bird (*narghey*) is probably derived from the goitre-like appearance of its neck. Terns also abound, especially the whiskered tern and gull-billed tern. The curious Indian skimmer, with its razor-like lower mandible much longer than the upper, may be seen skimming over the Ganga everywhere. Pelicans, or river sheep, as the local people call them are also seen occasionally swimming in the rivers and marshes or soaring far

overhead. Cormorants are common in congenial localities, and the nearly allied Indian snake-bird (*Plotus melanogaster*) pays dearly for the beauty of its scapular feathers, for during the breeding season the *shikaris* pursue it as eagerly as they do the egrets. They are becoming rarer.

Birds of prey are fairly common including three kinds of vulture, viz., the common vulture, the black vulture and the Egyptian or scavenger vulture. Of the falcons there may be mentioned the peregrine, a cold weather visitor and the sakar (*Falco cherrug*). The common sparrow-hawk is also found. Monghyr is rich in fishing eagles. The osprey frequents the Ganga and the large marshes north of that river. The white-tailed eagle is common, breeding in the district. Harriers are plentiful during the cold season, hawking over every field in search of small birds and lizards, ortolan and quail being especially marked out as their quarry. Owls are not very numerous but the rock owl is found.

Swallows, martins and swifts are numerous. The European swallow abounds during the cold season, while the wire-tailed common swallow may be seen occasionally in the Kharagpur hills. Night-jars are also found throughout the hilly tracts. The common bee-eaters are numerous at certain seasons, and the beautiful Indian roller, commonly called the 'blue jay' is one of the most familiar birds in this part of the country. Kingfishers are not so common, but during the cold weather may be seen hovering over tanks in search of fish. Hornbills, also wrongly called toucans, are not uncommon, the Malabar pied hornbill has been met with in the Kharagpur hills. Paroquets are common and do a certain amount of damage to the crops. There is no great variety of woodpeckers, by far the most common species being the golden-backed woodpecker (*Brahchyptermus aurantius*). Barbets are met with everywhere, especially the 'little coppersmith', so called from its monosyllabic metallic call resembling the noise made by smiths in hammering copper vessels.

Of the cuckoo family there are not many species. The European cuckoo comes during the cold weather but returns to the hills during the breeding season, when its familiar call is never heard. The pied cuckoo is heard everywhere during the rains, and the hawk cuckoo and *koel* abound at all seasons. One species of the hawk cuckoo is known as the 'brain-fever bird' from the monotonous repetition of its call note in the hot weather. Coucals or crow-pheasants are plentiful, and sirkir (*Taccocua*) are met with in the Kharagpur hills. Honey-suckers, or humming-birds, as they are generally called, are common and so are nut-hatches during the cold weather. The hoopoo is found in every garden, and is not molested by Muhammadans, as it is supposed to have been a great favourite with Solomon. Three species of cuckoo shrikes are found and one or two species of shrike, the species known as Lanius cristatus being the first migrant to appear at the commencement of the cold season.

The beautiful minivets are cold-weather visitors, and may be seen in flocks searching for insects in almost every grove. The drongo shrike or king crow is also seen everywhere, while the paradise fly-catcher is not uncommon in well-wooded country.

Thrushes are poorly represented, but the orange-headed ground thrush and the blue-rock thrush may occasionally be seen during the cold weather. Babbling thrushes, on the other hand, are fairly represented; about seven are usually seen together, hence the name *satbhai*, i.e., 'seven brothers'. *Bulbuls* are not so numerous; they are caught by the *shikaris* for the sake of their plumage and their value as fighting birds. Orioles abound in every grove, where their beautiful plumage is a striking feature during the spring. The Indian redstart and blue-throat are common during the cold weather, when the ruby-throat is also occasionally seen in the *rabi* fields. Indian tailor-birds are plentiful and so are reed-warblers, which were once numerous on the Kabar lake. Tree-warblers are frequently seen in the cold weather, as well as wag-tails, which are all migrants, leaving before their pairing season in the spring, and returning at the first approach of cold weather.

The field wagtails are amongst the most numerous of the cold-weather birds and the same may be said of their cousins the pipits. The grey titmouse (*Parus cinereus*) also occasionally appears during the cold season. There are several species of the family Corvidae including the corby and the ubiquitous common crow. The Indian magpie is another of the most familiar birds. The starlings are well represented by the *mainas*, several species of which remain all the year round. The European starling is common during the cold season, coming in large flocks, and being nearly always joined by the *mainas*. The bank *mainas* are also abundant along the Ganga, breeding on its banks. The Fringillidae or finch family are not so well represented as one would expect, considering the abundance of food suitable to them, but the weaver-bird is common and its curious nests may be seen in many villages. The *munias*, known locally as *lals*, are favourite cage-birds, thousands being captured every year. The Indian house-sparrow is ubiquitous. The rosefinch or *tuti* (*Pyrrhulauda grisea*) is common in the fields as well as the skylark, which is particularly plentiful in pargana Pharkiya. The green pigeon used to be frequently met with as also the blue-rock pigeon, which occasionally enters *verandahs* to build its nest on the cornices. They are on the decline owing to indiscriminate shooting. Turtle-doves are found in almost every grove; and the beautiful ground-dove is sometimes seen.

12. Fish.

Fish are abundant in Monghyr, being found in large numbers in the Ganga and its affluents and in the *jhils* or marshes to the north, which are replenished yearly from the river floods. The principal species are members of the great carp family, including

the well known *rohu* (*Labeo rohita*), *kalbaus* (*Labeo calbasu*), *mirgal* (*Cirrhina mrigla*), *katla* (*Catla buchanani*) and many others. They grow with extraordinary rapidity notwithstanding their number. The siluriods, or scaleless fish are also well represented by the huge *gunch* (*Bagarius yarellii*), the *silan* (*Silundia gangetica*), the *tengra* (*Macrones tengra*), the *boali* (*Wallago attu*), the *bachua* (*Eutropiichthys vacha*) and the *pangas* (*Pangasia buchanani*), all of which afford excellent sport for the angler. Then there is the curious hunch back or moh (*Notopterus kapirat*), which attains enormous dimensions and others too numerous to mention. Among small fish found in the Pharkiya *jhils* may be mentioned the curious *koi* or climbing perch (*Annabas scandens*), the beautiful prickle sides (*Trichogaster fasciatus*), and several kinds of tetrodon or baloon fish which has the power of inflating itself like a baloon and erecting its spines as a means of defence. *Hilsa* (*Clupea ilisha*) pass up the Ganga in the rains, that being the season when they go up the rivers to spawn; and the river Man contains *mahseer* (*Barbus tor*) locally known as the Kajur. There is a big trade in fish from this district.

The pools below the waterfalls along the latter river are tenanted by a little fish which the woodmen declare to be the young *tengra*. When the flood comes this little fish finds it very difficult to hold its own against the stream; but nature has provided it with a sucker which enables it to fasten itself to the rock and wait securely until the flood has passed. Another fish found in the pools is the little emerald streaked Barilius rerio which remains a pigmy all its life, hiding itself under the rocks when the floods come down. The woodmen delight in fishing in the mountain streams. They use a fresh water shrimp for bait, and besides fish, they catch the little Indian crab, which is plentiful wherever there is water.

13. Reptiles.

Crocodiles used to abound in the north of the district. The common fresh water crocodiles Palustris which are known as *magar* or *bochboch* are found in the Tiljuga river and during the rains in the neighbouring inundated marshes. The long snouted fish eating *gharial* (*Gavialis gengeticus*) chiefly affects the Ganga. Small specimens are not infrequently caught in the fisherman's nets. Fresh water turtles abound.

The most remarkable lizards in the district are the varandae or *gohsamps*, the iguanas of European three species are found—Hydrosaura Salvator, the Momitor which may be distinguished by the position of the nostrils half way between the lip and the eye, is supposed without reason, to be very venomous. There are also many species of small tree lizards among which the dreaded though perfectful harmless "blood sucker" and the chameleon is not uncommon. Among the other thick tongued lizards may be mentioned the wall gecko which is a familiar sight in the houses.

Snakes are numerous in Monghyr district. The cobra is by far the most common snake and next to it the *karait* (*Bangarus coeruleus*). The rock snake (*Python molurus*), the boa-constrictor of Europeans, is found on the hills. The *rajsamp* (*Banga rus fasciatus*) and Russell's viper are found though rarely, vipers are occasionally found. The *sankra* (*Lycodon auluaria*) a pretty little harmless snake declared by the local people to be very deadly, frequents, as its scientific name implies, dwelling-houses and other buildings. Another snake rare in museums is not uncommon here, viz., Ferrania sibboldio. The little snake which resembles the earthworm is known as the *thalia samp* the meaning of which is said to be that the poisonous effects of its bite can only be removed by the speedy application of an earthen vessel (*thalia*) full of oil.

14. CLIMATE.

The climate of Monghyr may be described as mean between the parching heat of the west and the moist of the east. The seasons are the same as in other parts of Bihar. The hot weather starts in the beginning of March and lasts till the middle of June. During this period the westerly wind blows through the arid sun-baked plains of Central India and causes high temperature and low percentage of humidity. This is the time when there are stray cases of *loo* and a few fall victim to this every year. With the advent of evening the temperature falls down and the night is not so oppressive provided the draft is there. The monotony is broken when there is strong gale and storm, which is locally known as 'baisakhi' or 'chhota barsat'. The mercury drops down considerably only to rise again after a few days.

The monsoon usually breaks up in the third week of June and lingers till September and sometimes till early October. Though the temperature falls down the heat is oppressive in day while it is stuffy and sultry during the night.

The cold season starts from November when the mornings and evenings are very cool and pleasant. In December and January the temperature goes down and the nights are very cold. There is mild shower during this period and one experiences biting cold during the night and early morning.

The spring is very short. It usually starts in February and lasts till early March. Nights are refreshing but the days are warmer and sometimes uncomfortable.

The average rainfall in inches of Monghyr from 1924-25 to 1956-57 is given below :—

(1)	1924-25	64.91
(2)	1925-26	44.05

(3)	1926-27	45.02
(4)	1927-28	39.88
(5)	1928-29	52.43
(6)	1929-30	54.76
(7)	1930-31	41.57
(8)	1931-32	46.55
(9)	1932-33	33.14
(10)	1933-34	53.68
(11)	1934-35	46.33
(12)	1935-36	42.94
(13)	1936-37	62.17
(14)	1937-38	52.27
(15)	1938-39	57.54
(16)	1939-40	47.78
(17)	1940-41	34.75
(18)	1941-42	52.54
(19)	1942-43	46.40
(20)	1943-44	46.85
(21)	1944-45	56.32
(22)	1945-46	36.56
(23)	1946-47	36.03
(24)	1947-48	43.11
(25)	1948-49	45.78
(26)	1949-50	67.41
(27)	1950-51	43.50
(28)	1951-52	42.04
(29)	1952-53	29.22
(30)	1953-54	40.07
(31)	1954-55	38.03
(32)	1955-56	47.65
(33)	1956-57	56.12

According to the rainfall report as recorded at the Government Agricultural Farm, Monghyr the average rainfall from 1943 to 1957 is 40.22 ". Statements regarding the rainfall report at the Government Agricultural Farm from 1943 to 1957 and of the rainy days from 1948 to 1957 are as follows :—

Rainfall Report as recorded at the Government Agricultural Farm, Monghyr.

(Average Rainfall of the years—40.22 inches.)

Serial no.	Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Rainfall in inches.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1943 ..	0.77	0.38	0.00	0.90	1.91	3.52	17.41	8.78	10.09	1.43	0.00	0.00	45.19
2	1944 ..	1.62	0.95	0.24	1.64	1.44	3.90	9.34	27.53	7.18	1.82	0.00	0.00	55.66
3	1945 ..	1.52	2.15	0.00	2.96	2.09	1.54	8.22	10.68	5.71	4.52	0.00	0.00	39.39
4	1946 ..	0.99	0.74	0.00	1.15	1.30	1.89	8.77	11.62	4.88	5.20	0.78	0.00	36.33
5	1947 ..	0.02	0.22	0.00	0.00	1.08	1.95	9.53	7.32	10.35	1.65	0.00	0.00	32.12
6	1948 ..	0.99	0.16	0.13	0.00	0.44	3.38	7.57	8.04	7.28	5.76	0.82	0.00	34.48
7	1949 ..	0.19	1.61	0.00	1.25	3.52	8.09	10.12	12.41	8.92	3.43	0.00	0.00	49.55
8	1950 ..	0.10	0.83	0.36	0.08	0.13	16.14	4.58	9.34	2.55	0.00	0.00	0.00	34.11
9	1951 ..	0.15	0.00	0.04	0.17	0.03	4.83	11.60	5.61	4.92	1.43	0.20	0.00	28.98
10	1952 ..	0.00	0.59	0.24	0.91	1.55	11.12	4.39	2.29	7.44	0.03	0.20	0.00	28.76
11	1953 ..	0.92	0.37	0.00	0.70	2.45	4.70	11.52	7.72	11.80	0.05	0.00	0.00	40.23
12	1954 ..	0.96	0.17	0.00	0.00	0.27	8.73	12.50	9.38	5.22	0.14	0.00	0.46	37.83
13	1955 ..	0.70	0.15	0.12	0.35	1.30	6.91	20.22	13.55	2.37	0.14	0.00	0.00	45.81
14	1956 ..	1.25	0.00	0.01	0.32	1.07	12.69	7.25	10.27	10.85	10.01	2.40	0.00	56.12
15	1957 ..	3.74	0.00	0.19	0.00	0.00	3.59	7.93	6.93	2.89	0.00	0.00	..	..

Rainy Days.

(1) 1948—

January—5th and 22nd	2 days.
February—18th	1 day.
March—18th	1 day.
May—7th	1 day.
June—9th, 11th, 17th, 19th, 26th, 27th and 28th ..	7 days.
July—1st, 2nd, 3rd, 5th, 6th, 7th, 8th, 18th, 19th, 20th, 21st, 22nd, 24th, 25th, 26th, 29th, 30th and 31st	18 days.
August—1st, 2nd, 3rd, 5th, 6th, 7th, 13th, 14th, 15th, 19th, 20th and 21st	12 days.
September—6th, 7th, 9th, 10th, 11th, 12th, 13th, 14th, 20th, 24th and 27th	11 days.
October—2nd, 3rd, 10th, 13th, 14th, 15th, 20th and 21st	8 days.
November—23rd, 26th, 27th and 28th ..	4 days.

(2) 1949—

January—27th	1 day.
February—4th, 5th and 6th	3 days.
April—11th, 14th, 19th, 20th and 21st	5 days.
May—2nd, 6th, 11th, 12th, 24th, 27th and 29th ..	7 days.
June—3rd, 10th, 11th, 18th, 29th and 30th ..	7 days.
July—1st, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 29th and 30th	19 days.
August—3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 29th and 30th ..	21 days.
September—1st, 3rd, 6th, 9th, 12th, 14th, 15th, 16th, 17th, 28th and 29th	11 days.
October—18th and 30th	2 days.

(3) 1950—

January—26th	1 day.
February—9th, 20th and 22nd	3 days.
March—7th, 8th, 22nd and 25th	4 days.
April—12th	1 day.
May—19th	1 day.
June—5th, 10th, 11th, 12th, 13th, 14th, 15th, 17th, 18th, 22nd, 23rd, 24th, 25th, 26th, 28th and 29th	16 days.
July—1st, 2nd, 5th, 8th, 11th, 12th, 13th, 14th, 15th, 16th, 18th, 21st, 22nd, 23rd, 27th and 29th ..	16 days.
August—1st, 2nd, 3rd, 4th, 5th, 6th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 18th, 19th, 20th, 21st, 23rd, 24th, 27th, 28th, 29th, 30th and 31st ..	24 days.

September—1st, 6th, 7th, 12th, 13th, 14th, 15th, 18th and 23rd	9 days.
(4) 1951—	
January—20th	1 day.
March—25th	1 day.
April—18th and 20th	2 days.
May—27th	1 day.
June—10th, 11th, 12th, 13th, 14th, 15th, 17th, 18th, 22nd, 23rd, 24th, 25th, 26th, 28th, 29th and 30th	16 days.
July—1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 11th, 14th, 15th, 16th, 17th and 29th	13 days.
August—1st, 3rd, 4th, 5th, 12th, 13th, 14th, 15th, 17th, 22nd, 23rd, 25th and 31st	13 days.
September—1st, 5th, 6th, 9th, 10th, 11th, 12th, 13th, 15th, 20th and 30th	11 days.
October—10th, 15th, 16th and 29th	4 days.
November—2nd, 25th and 17th	3 days.
(5) 1952—	
February—21st and 22nd	2 days.
March—8th and 23rd	2 days.
April—16th, 21st and 26th	3 days.
May—11th, 19th and 29th	3 days.
June—2nd, 14th, 17th, 18th, 19th, 20th, 22nd, 24th, 25th, 26th, 27th, 28th, 29th and 30th ..	14 days.
July—3rd, 5th, 10th, 13th, 16th, 17th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th and 28th ..	14 days.
August—1st, 3rd, 4th, 5th, 8th, 12th, 13th, 14th, 15th, 17th, 22nd, 23rd, 25th and 31st ..	14 days.
September—1st, 4th, 10th, 11th, 16th, 17th, 20th, 21st, 22nd, 23rd and 24th	11 days.
October—8th	1 day.
November—3rd	1 day.
(6) 1953—	
January—15th, 16th and 23rd	3 days.
February—5th, 19th and 20th	3 days.
April—29th	1 day.
May—11th, 19th and 28th	3 days.
June—14th, 16th, 18th, 22nd, 23rd, 25th, 26th, 27th and 28th	9 days.
July—3rd, 4th, 5th, 6th, 9th, 10th, 11th, 12th, 16th, 18th, 20th, 21st, 25th, 28th and 30th ..	17 days.
August—4th, 7th, 19th, 20th, 21st, 22nd, 23rd and 27th	8 days.
September—1st, 6th, 8th, 9th, 10th, 11th, 12th, 13th, 25th, 26th, 27th, 28th, 29th and 30th ..	14 days.

(7) 1954—

January—9th, 18th and 20th	3 days.
February—20th and 24th	2 days.
May—2nd	1 day.
June—1st, 13th, 14th, 21st, 22nd, 23rd, 25th, 26th, 28th and 30th	10 days.
July—3rd, 8th, 10th, 11th, 12th, 13th, 15th, 17th, 19th, 20th, 23rd, 24th, 25th and 26th	14 days.
August—8th, 9th, 10th, 12th, 13th, 14th, 15th, 18th, 20th and 21st	10 days.
September—1st, 6th, 7th, 8th, 9th, 10th, 12th, 13th, 14th, 15th, 16th, 17th, 22nd and 29th	14 days.
October—25th and 26th	2 days.
December—29th	1 day.

(8) 1955—

January—17th, 22nd and 23rd	3 days.
February—4th and 10th	2 days.
March—26th	1 day.
April—10th and 29th	2 days.
May—2nd and 22nd	2 days.
June—12th, 18th, 19th, 20th, 23rd and 30th	6 days.
July—2nd, 3rd, 5th, 10th, 14th, 15th, 16th, 18th, 20th, 21st, 24th, 25th, 26th, 28th and 31st	15 days.
August—7th, 8th, 9th, 10th, 11th, 14th, 15th, 16th, 18th, 19th, 27th and 28th	12 days.
September—1st, 3rd, 9th, 10th, 11th, 13th, 16th, 17th and 30th	9 days.
October—1st, 2nd and 3rd	3 days.

(9) 1956—

January—27th and 28th	2 days.
March—12th	1 day.
April—3rd	1 day.
May—8th, 13th and 27th	3 days.
June—3rd, 4th, 6th, 7th, 8th, 9th, 10th, 11th, 14th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th and 30th	19 days.
July—3rd, 11th, 12th, 15th, 20th, 23rd, 25th, 27th and 28th	9 days.
August—1st, 7th, 8th, 14th, 19th, 20th, 21st, 22nd, 23rd, 24th and 27th	11 days.
September—4th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 26th and 27th	11 days.
October—4th, 5th, 6th, 12th, 13th, 14th, 18th and 30th	8 days.
November—1st	1 day.
December—*Nil.*	

(10) 1957—

January—8th, 9th and 14th	3 days.
March—5th and 11th	2 days.
June—1st, 10th, 21st, 24th, 25th, 27th and 29th ..	7 days.
July—1st, 2nd, 3rd, 11th, 12th, 17th, 19th, 20th, 21st, 22nd, 23rd, 24th and 28th ..	13 days.
August—4th, 5th, 6th, 7th, 9th, 10th, 11th, 12th, 14th, 27th and 31st	11 days.
September—1st, 2nd, 3rd, 10th, 11th, 12th, 24th and 25th	8 days.