

CHAPTER I

GENERAL

1. Introducing the District

In human history Mayurbhanj presents a panorama of many millenia. 4,022 square miles of Mayurbhanj is a tiny spot on the surface of the earth. Yet man has lived on this spot for over fifty thousand years. Early man has left his footprints in the shape of crude tools hewn out of stone. Man is still roaming the forests in search of food as he has done for countless years. Modern man is blowing up hill tops and delving under the surface for minerals which go into gigantic furnaces to produce the materials for man to make tools with, for his existence in peace and in war. His forefathers scratched the surface and cooked the earth in their hearths in leaf huts to produce iron for their ploughshares and their arrow-heads. Mayurbhanj is peopled largely by Santals who are closely knit and are proud of their heritage, though not loathing new learning.

The Similipal hills still untrodden in many parts, have a charm of their own. Rich in resources waiting to be exploited, they stand in their virgin glory with captivating scenery, with animals and plants flourishing in their natural habitat still unscratched by the cruelty of man*. Mayurbhanj had the distinction of being administered by a ruling family in unbroken continuity for over a thousand years, until it merged with the State of Orissa in 1949.

2. Origin of the name of the district

The district is called Mayurbhanj after the name of the ex-State which on its merger with Orissa in January, 1949 constituted the entire district.

* The name Mayurbhanj indicates that the State was named after the two medieval ruling families Mayuras and Bhanjas. The Mayuras as known from their records were ruling over Bonai Mandala contemporaneous with the Bhanjas of Khijinga Mandala. There were close social and cultural relation between these two ruling families. An inscription at Khiching (Old Khijinga Kotta) reveals that one Dharani Baraha, a prince of Mayura family together with his wife Kirtti installed an image of Avalokiteswara at Khijinga Kotta during the rule of Raya Bhanja, a Bhanja King. The headquarters Khijinga Kotta was

* Except catching of elephants which has happened in the 20th century

destroyed by Sultan Firoz Shah Toghluk in 1361 A. D. and the capital was transferred from Khijjinga Kotta to Haripur about 1400 A. D. By that time the Bhanjas appear to have been culturally influenced by the Mayuras. They had substituted their own royal emblem, the Bull by the Peacock which was the royal insignia of the Mayuras. After shifting of the capital to Haripur it was probably not found proper to name the Kingdom after the deserted capital. So the name of the Kingdom was changed to Mayurbhanj in commemoration of the traditional relation of the two ruling families.

3. Location, General boundaries, total area and population

The district lies between 21°17' and 22°34' north latitude and between 85°40' and 87°10' east longitude. It is bounded on the north by the Singhbhum district of Bihar and Midnapore district of West Bengal, on the south by the districts of Balasore and Keonjhar, on the east by the Midnapore and Balasore districts and on the west by the districts of Keonjhar and Singhbhum. The district covers an area of 4,021·8 square miles according to the Surveyor-General of India, with a population of 1,204,043 according to the 1961 Census. In order of size and population the district holds the eighth and seventh places respectively among the thirteen districts of Orissa.

Baripada, the headquarters of the district has a population of 20,301 according to the Census of 1961.

4. History of the district as an Administrative Unit

The district of Mayurbhanj was formed in 1949 out of the ex-State of Mayurbhanj. The rulers of the Bhanja dynasty continued to rule over this State in unbroken succession since about the 9th century A. D. The name of the State under the early Bhanja rulers was Khijjinga Mandala named after the capital Khijjinga Kotta. The copper plate inscriptions issued by those rulers indicate that Khijjinga Mandala was an extensive territory comprising the present Mayurbhanj and Keonjhar districts as well as parts of Singhbhum district in Bihar and Midnapore district in West Bengal. During the Moghul Period, the territory of Bhanja rulers extended as far as the sea. By that time, the capital had shifted from Khijjinga Kotta to Haripur.

According to R. D. Banerji the status of the Raja of Mayurbhanj in 1592 was the same as that of the Gajapati Raja of Kluurda and he ruled over a wider area beginning with Singhbhum and ending with Talmunda, Jamirapal and Jamakunda at the north of Subarnarekha river*. During the fratricidal war among the sons of Shah Jahan, Krushna Chandra Bhanja, the Raja of Mayurbhanj assumed much power and plundered the tract from Bhaḍrak to Midnapore. But subsequently in 1660 A. D. Khan-i-Dauran, the general of Aurangzeb, suppressed

*R. D. Banerji, Orissa, Vol. II, Page 24

Krushna Chandra Bhanja and put him to death. By that time the State of Keonjhar had already been constituted as a separate territory and Khan-i-Dauran subdued those two States separately. In 1742, the Raja of Mayurbhanj supported the cause of Mirza Baquir who revolted against Alivardi Khan, the latter having had undertaken the subjugation of Mayurbhanj; but till 1751 Mayurbhanj continued to enjoy a semi-independent status as Alivardi Khan was too busy with the Maratha invaders during those nine years. In 1751, Mayurbhanj came under the Marathas and it was during the Maratha rule over Mayurbhanj that the State was deprived of many taluks in the east. Regarding the dismemberment of Mayurbhanj territory Mr. T. Motte remarks as follows :

“The first considerable avulsion from the Mohur Bunge Zamindary was the fouzduary of Pibley, the next that of Balasore; since which so many talooks have been taken from it, that the Rajah has now no land to the eastward of the road I came”

It is known from Rennell's map of 1779 that the road Mr. Motte referred to passed from Rajghat on the Subarnarekha towards Ranisarei and Basta through Kanhupur (Kanpur). It may thus be said on the authority of Mr. Motte that the territory to the east of this road had been taken away by the Marathas from the Mayurbhanj Raja. In 1728, the Zamindary of Nilgiri was separated from Mayurbhanj and was made a separate State. Towards the end of the 18th century the headquarters of Mayurbhanj shifted from Haripur to Baripada when Maharani Sumitra Devi was ruling over the State. In 1800, Sumitra Devi acquired the permanently settled Pargana of Nayabasan.

Mayurbhanj came under British occupation in 1803 and it is known from Mr. Earnst's letter of the 25th November 1803 that by that time “Morebunge proper comprises a space of about 30 ‘Coss’ from east to west and of about 25 miles from north to south with a public revenue amounted altogether to Sicca Rupees 16,000”. During the period from 1830 to 1834, the Kols of Bamanghaty rose in rebellion against the State and Jadunath Bhanja, the then Raja of Mayurbhanj handed over four large Kol Pirs of Bamanghaty to the British Government. These Pirs were named as Thai, Bharbharia, Anla and Lalgah and they are now parts of Kolhan in the Singhbhum district of Bihar. Two other Pirs named Khuchung and Haldipokhari which formed parts of Bamanghaty were also lost to the State about that time. No other territorial loss occurred till the merger of Mayurbhanj with Orissa on the 1st January 1949.

With the transfer of power from the hands of the British on the 15th August 1947, their paramountcy in respect of the former Indian States lapsed and the State of Mayurbhanj became an independent unit. Soon

after that, a State Legislative Assembly was formed by a proclamation of the Maharaja on the 9th December 1947 who formally transferred most of his powers to this body. When on the 14th December 1947, Sardar Patel, the then Home Minister, met the Rulers of the eleven 'A' class States of Orissa with his proposal for merger, the Maharaja of Mayurbhanj said that he had already granted responsible Government in his State and that a Ministry was functioning there. Hence he could not make any commitment without consulting his Ministers. In view of this he was left out of the discussions. But the popular Ministers of Mayurbhanj could not properly manage the State and they almost exhausted the savings in the Treasury. The administration was becoming chaotic and there was great resentment among the people. The Maharaja, who came to know about the affairs, realised his mistake and intimated the Government of India that if something was not done immediately the State would go bankrupt. Accordingly on the 17th October 1948 the Maharaja signed an Instrument of Merger and the administration of State was taken over by the Government of India with effect from the 9th November 1948 and a Chief Commissioner was appointed to administer the State. It was, however, subsequently decided that since Mayurbhanj linguistically and culturally had close links with Orissa it should merge with that Province. On the 1st January 1949, Mayurbhanj merged with Orissa.

Olamara which was an enclave of Balasore district was made a part of that district for administrative convenience.

5. Subdivisions, Tahsils and Thanas

For the convenience of general and revenue administration, the district of Mayurbhanj has been divided into four separate subdivisions, namely, Baripada, Bamanghaty, Panchpir and Kaptipada. At present the district has 21 Police-stations covering its old 17 Parganas, and 96 Pirs.

Of the four subdivisions in the district, Bamanghaty is the most thickly populated with a density of 400 per square mile (in 1961) and next comes Kaptipada subdivision with 375. The Baripada subdivision has a density of 314 and the Panchpir subdivision has 186 persons per square mile.

There are five tahsils, namely, Baripada, Betnoti, Rairangpur, Karanjia and Udala. The tahsil boundaries of Rairangpur, Karanjia and Udala, are the same as the subdivision boundaries of Bamanghaty, Panchpir and Kaptipada respectively. The Baripada subdivision is divided into two tahsils, namely, Baripada and Betnoti.

The following table shows the number of subdivisions, tahsils and thanas with their area and population (according to 1961 Census).

| Subdivision, its area (sq. miles) and population | Tahsil and its headquarters | Police-station | | | |
|--|--------------------------------------|-------------------------------|------------------------|------------------------|--------|
| | | Headquarters | Area (in square miles) | Population 1961 Census | |
| (1) | (2) | (3) | (4) | (5) | |
| Baripada A. 1,618·4 P. 508,353 | 1. Baripada (Baripada) | 1. Baripada .. | 343·9 | 63,105 | |
| | | 2. Badasahi .. | 126·3 | 73,242 | |
| | | 3. Suliapada .. | 136·3 | 49,274 | |
| | | 4. Kuliāna .. | 151·1 | 53,580 | |
| | | 5. Bangiriposi .. | 473·4 | 97,901 | |
| | 2. Betnoti (Betnoti) | 1. Betnoti .. | 102·6 | 38,421 | |
| | | 2. Baisinga .. | 122·6 | 60,254 | |
| | | 3. Muruda .. | 162·2 | 72,576 | |
| | Famanghaty A. 736·8 P. 294,974 | 1. Rairangpur (Rairangpur) | 1. Rairangpur .. | 130·7 | 66,829 |
| | | | 2. Badampahar .. | 85·1 | 41,168 |
| 3. Bisai .. | | | 194·6 | 48,715 | |
| 4. Gurumahisani .. | | | 69·3 | 25,490 | |
| 5. Bahalda .. | | | 134·8 | 58,989 | |
| 6. Tiring .. | | | 122·3 | 53,783 | |
| Funchpir A. 1,188·1 P. 221,044 | 1. Karanjia (Karanjia) | 1. Karanjia .. | 317·6 | 56,483 | |
| | | 2. Jashipur .. | 341·6 | 64,218 | |
| | | 3. Raruan .. | 138·9 | 61,169 | |
| | | 4. Thakurmunda .. | 390·0 | 39,174 | |
| Kaptipada A. 478·5 P. 179,672 | 1. Udala (Udala) | 1. Udala .. | 254·3 | 87,699 | |
| | | 2. Sarat .. | 119·2 | 22,643 | |
| | | 3. Khunta .. | 105·0 | 69,330 | |

6. Topography

Natural divisions, Elevation, Configuration, etc.

The district of Mayurbhanj may be divided into three distinct natural divisions. The hill ranges serve as the dividing line running due north and south from the central group. There are two ranges of hills of lesser elevation dividing the plains of the district into two halves—(1) the eastern, and (2) the western. The western part is further subdivided into two portions by another hill range running in a westerly direction from the northern portion of the north-south line.

The eastern division slopes gently from the foot of the hills towards the sea and served by a number of hill streams, forms an ideal country for irrigation. It has two subdivisions, namely, Kaptipada and Baripada.

The western portion is mainly a plain rising and falling in gentle slopes studded with many rocky mounds and hills. The soil of northern portion particularly is very fertile and lends itself to extensive cultivation. It has Bamanghaty subdivision in the north, and Panchpir subdivision in the south.

A brief description of soil classification in the district may be of interest at this stage. A detailed account is given in Chapter IV. The inferior kind of wet land locally known in the district as *Jal-Soyem* (third class wet land) is found along the newly reclaimed hill side jungle lands or on uplands which have been ridged round or cut with a view to holding the water at the proper level which is so essential to wet cultivation. Lands of this kind also lie along the outskirts of more fertile (*Badi* or *Khamar*) land met with in abundance in flat villages scattered all over the plains. Such portions as are satisfactorily watered by natural or artificial means of irrigation are called *Jal-awal*, or first class wet land, while the remaining portions which have less irrigation go under the name of *Jal-dyoem* or second class wet land. The soil of the third class *Jal* land may be described as generally rocky and gravelly, while that of the flat valleys as sandy loam of varying quality. Besides these, alluvial (*pal* or *gadi*) lands can be traced along the banks of the principal rivers. Narrow strips of long stretched lowlands known as *Beda* or *Sul* lands, which are treated as first class *Jal* lands, are also commonly seen in every part of the country between two ridges which in their turn are utilised either for growing *Rabi* and *Aus* crops or, after conversion, for wet cultivation. The cultivation of such *Beda* or *Sul* lands together with their ridges similarly treated to wet cultivation is done by what is usually known as terracing. Embankments of no mean size often become necessary to bring such kind of low lands under proper cultivation.

The area of uplands (*Asu*, *Gora*, and *Dahi*) in this district is almost equal to that of the wet lands. In the majority of cases the soil of such lands is generally rocky or gravelly.

The elevation of important places in different centres of the district are:

| | Feet* |
|-------------------|----------|
| Bidubhandar Ghati | .. 1,601 |
| Jashipur | .. 1,331 |
| Raruan | .. 1,218 |
| Karanja | .. 1,217 |
| Khiching | .. 1,190 |

* 1 foot=0.3048 Metre

| | | Feet* |
|--------------|----|-------|
| Rairangpur | .. | 861 |
| Bangiriposi | .. | 403 |
| Udala | .. | 173 |
| Baripada | .. | 160 |
| Betnoti | .. | 144 |
| Haripur Garh | .. | 71 |
| Muruda | .. | 64 |
| Amarda | .. | 60 |

7. Hill System

The central portion of the district is covered by a group of hills known as the Similipal hills. The Meghasani hill (literally the 'Seat of Clouds') which rises to a height of 3,824 feet is situated in the southern extremity of this group. Sir William Hunter describes them in 1872 as "the hitherto almost unexplored mountains of Morbhanj heaped upon each other in noble masses of rock from 3,300 feet to nearly 4,000 feet high, sending countless tributaries to the Baitarani on the south, and pouring down the Burhabalanga with the feeders of the Subarnarekha on the north. The peaks are densely wooded to the summit, and except at the regular passes, are inaccessible to the beasts of burden. The intermediate villages yield rich crops in return for negligent cultivation. The mountainous regions of Mayurbhanj are, however, becoming more and more accessible as their forest wealth being progressively subjected to exploitation".

The other important hills are the Dhudruchampa (3,310 ft.), Gorumahisani (2,964 ft.), Badampahar (2,730 ft.), Chahala (2,541 ft.) and Balidiha (2,044 ft.).

The whole of central group of hill ranges and the plains sloping to the east and west of those hills are covered by Sal belt and dense forests.

8. River System

The district is mainly watered by the Burhabalanga, the Kharkai, the Salandi and numerous other tributaries rising from the Similipal

*1 foot = 0.3048 Metre

hills which fall into the Baitarani and the Subarnarekha. The geography of the main rivers has been described by poet Radhanath Ray in 1888 in the following words:

ଶାଲୁଳୀ ଶରଦ୍ଧୁଁ ଛକ ସ୍ଥାନେ ଛକ ତଟିନୀ ସ୍ତରେ
ଲଂବି ନାନା ବନ ଜନପଦ ମିଶ୍ରେ ବଜ୍ରସାଗରେ ।

ଉତ୍ତରେ ବଳାଙ୍ଗୀ ମଧ୍ୟେ ଗଙ୍ଗାହାର ଶୋଣ କର୍ଣ୍ଣିଣେ ।
ତଳ ବେଣୀ ବର୍ଣ୍ଣେ କୁରଙ୍ଗୀନୟନ ନୀଳମା ଜଣେ । *

(i) **Burhabalanga**

The river is also called Balanga. The poet Radhanath Ray, as quoted above, calls it Balangi. It is not known definitely why this river is called Burhabalanga meaning 'old Balanga'. This river rises from the Similipal hills in double falls at Barehipani (21° 24' north and 86° 36' east) and runs in northerly direction up to the village Karanjapaj in Bangiriposi police-station. It then turns to the north-east and passes almost parallel to the metre gauge Rupsa-Talbandh Railway line up to the village Jhankapahadi. Then it changes its course to the south and meets the Katra nala which flows from the north-west. The other important tributaries are the Palpala and the Chipat both of which are hill streams rising from the Similipal hills. The river then passes through the town of Baripada, where it has been recently bridged. The ruins of Haripur, the old capital of Mayurbhanj are found on its right bank close to which there are early Stone Age and Neolithic sites lying in the valley of the river. The banks of this river are steep. After crossing the Mayurbhanj district border it passes through Balasore district. The town of Balasore is located on its right bank. It ultimately falls into the Bay of Bengal.

(ii) **Gangahara**

It rises from the Similipal hills and flows in south-easterly direction forming for some distance the boundary between Baripada and Kaptipada subdivisions. Its important tributary is the Nalua which also rises from the Similipal hills and joins this river near the village Kasibani. The Gangahara passes beyond the border of Mayurbhanj district and joins the Burhabalanga near Phullarighat in Balasore district.

(iii) **Sone**

This river rises from the Similipal hills in the southern part of the district. It passes through Sarat and flows to the south up to the vicinity

*Three rivers spring from three different spots of the Salmali (Similipal) hills. They flow through wooded and inhabited regions and fall into the Bay of Bengal. In the north flows the Balangi (Burhabalanga), in the middle the Gangahar, while the Sone drains in the south. The streams are like the braided hair of a maiden, in colour bluer than the eyes of a doe.

of the Jaymali hill after which it turns towards the east and flows in north-easterly direction. The Kala nala flowing from the Similipal hills joins this river near the village Patpur to the north of the village Kaptipada. Its other tributaries are the Deo and the Sanja, both of which rise from the Similipal hills and join each other near the village Hatisahi after which their united stream falls into the Sone near Kainsari.

(iv) **Jamira**

This river is also called Jambhira. It rises from a spring called Sonaposi in Baripada subdivision and drains the north-eastern part of the district. Its important tributaries are Baura nala, Mahanti nala and Gulpha nala. The Mahanti and the Gulpha meet each other before joining with Jamira. This river passes beyond the border of the district of Mayurbhanj and after passing through Balasore district falls into the Bay of Bengal.

(v) **Kharkai**

It takes its origin from the Similipal hills and flows in north-westerly direction. The town of Rairangpur is located on the right bank of this river. It passes through the border of Rairangpur and the Bahalda police-stations up to some distance after which it enters the Bahalda police-station. It also flows on the borders of Bahalda and Tiring police-stations and after the end of Bahalda police-station at Dhoba Dhobani, it forms the boundary between the Singhbhum and Mayurbhanj districts for some distance. It finally falls into the Subarnarekha river.

(vi) **Salandi**

It rises from the southern slope of the Meghasani peak and flows to the south for some distance, after which it takes an easterly direction till its confluence with the Boula nala. From there it changes its course to the south-east and leaving the border of Mayurbhanj enters into the district of Balasore where it flows in a tortuous course. The town of Bhadrak is located on the left bank of the river. It meets the Dhamra river near its mouth.

(vii) **Deo**

It takes its origin from the Similipal hills and flows towards the west in Panchpir subdivision. Its important tributary is Budhi nala. It flows beyond the borders of Mayurbhanj and joins the river Baitarani in Keonjhar district.

(viii) **Khairabhandan**

Two rivers, named Khaira and Bhandan rising from the Similipal hills flow to the west in Panchpir subdivision and meet together near Jashipur. Their combined stream is named as Khairabhandan which

flows to the west and passes through Raruan. Near Khiching it meets the river Kanta Khair and finally falls into the river Baitarani which flows on the border of the district.

All the rivers of the district are charged with large quantities of water during the monsoons and at times give rise to floods. The rivers are not navigable in any season. Except a few villages lying to the right of the Subarnarekha near Amarda there is no other tract belonging to the district ordinarily liable to floods, as it is situated on a high level and as the rivers mentioned above are all hill streams which rapidly discharge their water elsewhere. Floods however, though rare, occur at long intervals.

9. Lakes and Tanks

There is no lake in the district. There are hundreds of tanks which are mainly used for drinking and bathing purposes excepting the big one at Amarda, the water of which is used for irrigational purposes. Besides, there are 1,324 Government Bundhs and 1,745 private Bundhs which irrigate 63,780 acres of land. The Balidiha and Haladia Bundhs which irrigate about 13,000 acres of land are the biggest irrigation projects of the district.

10. Geology and Mineral Resources

The earliest known geological survey in Mayurbhanj dates back to 1903, when P. N. Bose brought to light the extensive iron-ore deposits of high quantity on the Gorumahisani and Sulaipat hills in Bamanghaty subdivision. His report is given in Appendix II. These deposits were considered to be almost inexhaustible and were pronounced to be of excellent quality, perhaps second to none in the whole of Asi by the famous American and English experts like M/s. Perin, Weld and Colonel Staddart, who visited these deposits during 1905-06. This discovery was a momentous one as the steel plant of the Tata Iron & Steel Co. at Jamshedpur was entirely based on the exploitation of these deposits. By 1915, important discoveries of Steatite near Lulung and placer gold from the sands of Subarnarekha, Kharkhai and Barhai rivers had been made. The placer gold deposits were being worked by M/s. J. B. Bettie of Calcutta, Mr. V. G. Piggot of Ghatsila and the Mayurbhanj Prospecting Concession Syndicate.

No further discovery had been made till about 1936 although the search was on. The Tata Iron & Steel Co. had been employing about 7,900 labourers in their mines daily around the year 1926-27.

During 1936, a regular Department of Mining & Geology was started in Mayurbhanj. By 1940-41, the Mayurbhanj

Mines Order and the Mayurbhanj Workmen's Compensation Order had come into force and this regularised and controlled the procedure for granting certificates of approval, prospecting licences, mining leases, mining operations, inspection of mines, safeguard against accidents, etc. Several deposits of Vanadiferous and Titaniferous Magnetite, Kyanite, China Clay, Asbestos, Red Oxide, Quartzite, and other minerals were brought to light and several mining leases granted. By 1945-46, occurrence of Galena, an ore of lead, was discovered between Pithabata and Bangiriposi, in a belt extending over 30 Kms. Prospecting operations had been taken up in this belt as well as in the Uperbhag area, the latter for exploring the possibility of striking workable lodes of copper ore. During this period, the railway track between Tatanagar and Goru mahisani was extended up to Badampahar.

During this period, considerable progress was recorded in the establishment of mineral-based industries. The industries that were started included the vanadium factory near Rairangpur, glass works near Bahalda and potteries near Kuldiha. Plans were finalised for the setting up of a mica industry and asbestos cement factory. None of these industries is working now. Mica and asbestos cement never started. The others got into financial and managerial difficulties and had to close down.

(i) Geological formations and sequence

The district chiefly contains formations belonging to the Archaean Tertiary and Recent geological periods whose rough sequence will be as follows (in order of increasing antiquity):

- | | |
|--|---|
| 5. Recent | .. Alluvium and Laterite |
| 4. Tertiary | .. Clays, Ferruginous grits, Limestones, Gravel and Burhabalanga sediments. |
| 3. Newer Dolerite and Singhbhum Granite. | |
| 2. Intrusives into Archaean (post Dhanjori). | Sodagranite, Granophyre and Gabbro-Anorthosite. |
| 1. Archaean | { Dhanjori Stage .. Dalma volcanics & Quartzite with Basal Conglomerate. |
| | { Iron-ore Stage .. Carbonaceous phyllites, Micaschists, Quartzite with B. H. Q., Amphibolites, |

(ii) Description of Geological formations**(a) AMPHIBOLITES**

In the Similipal Reserved Forest area, amphibolites belonging to the Iron-ore Stage are seen associated with the banded quartzites. Good exposures are seen near Barajori ($22^{\circ}6' 30'' : 86^{\circ}13'$). These also occur near Hatichar ($22^{\circ}13' : 86^{\circ}26'$) and Pirhakata Pahar ($22^{\circ}12' 30'' : 86^{\circ}20' 30''$). Some garnetiferous variety are seen exposed in the Subarnarekha river section near Jamsole ($22^{\circ}13' : 86^{\circ}43'$).

(b) QUARTZITE AND B. H. Q.

Banded hematite quartzite and associated quartzites belonging to the Iron-ore Stage are prominently developed in the Sulaipat hill range and extend eastwards across Kharkhai river. Good exposures are seen near Jarusahi ($22^{\circ}9'45'' : 86^{\circ}14'30''$), Karkachia ($22^{\circ}11' : 86^{\circ}14' 45''$) and Dhusra pahar ($22^{\circ}09' : 86^{\circ}15''$). West of Badra, these have been altered to magnetite quartzite by intrusion. Three other similar bands of quartzite can be traced across Dhenkia pahar ($22^{\circ}13' : 86^{\circ}19' 45''$).

(c) SHALES, PHYLLITES AND MICA-SCHISTS

These are prominently developed in the Talbandh valley, Sulaipat range, northern cliff face of Meghasani ($\Delta 3,823$) and Ganapat pahar ($\Delta 3,654$), Deokunda range, area north of Bangiriposi and several other places. These rock types range from carbonaceous phyllites to typical staurolite-kyanite-schist, sericite-schist, quartz sericite-schist. These constitute an important horizon below the basal Dhanjori quartzites.

Near Ghatiabera, where these phyllite rocks come in contact with the granite, they have been converted into kyanite-sericite-schists.

Mica-schists associated with hornblende-schists and epidiorites are seen in Patinja-Bhatuabera, Kochilaghati, Pithabata areas where galena is found in the quartz veins intruding the schists.

Mica-schists are also exposed in the Subarnarekha section near Jamsole.

(d) BASAL CONGLOMERATE

On top of the Dhusra pahar, east of Sulaipat, an outcrop of sedimentary conglomerate with a sandy base in which fragments of jaspery quartz, B. H. Q. and fuschite quartzites are strewn, is seen, which suggest that this band is post-Iron-ore Stage in age. This is also seen in the Asansikhar ridge north of Dhusra pahar. Conglomerates of the Dhanjori stage are also seen near Panijia ($22^{\circ}03' : 86^{\circ}40'45''$). It has been definitely established that they are sedimentary and overlie a phyllitic horizon.

(e) QUARTZITE AND INTERCALATED PHYLLITES

Quartzites belonging to the Dhanjori stage form the nose of the heart shaped Similipal basin. Some of these exhibit excellent current bedding which can be seen in the Burhabalanga section, valley of Palpala river and the eastern cliff face of Ghusuria pahar. Vitreous massive quartzite are exposed on the lower southern slopes of Mehghasani and extend as far as Deokunda ($21^{\circ}42'30'' : 86^{\circ}27'$). These are rather impersistent and are often covered by shales. At places, they contain intercalations of phyllites. Conglomeratic quartzite belonging to the Dhanjori stage are seen in the Kanialucha pahar ($21^{\circ}59' : 86^{\circ}34'$) and Bardihi village. Thin pebbles of quartz are seen elongated in the direction of dip. Such quartzites are also seen near Haldia ($22^{\circ}02'30'' : 86^{\circ}42'30''$) and Rajaluka ($22^{\circ}09'30'' : 86^{\circ}37'30''$). To the north and middle part of Similipal plateau, micaceous quartzites are seen. Feldspathic quartzites lying at the contact of granite are seen west of Bhanjabasa ($21^{\circ}36' : 86^{\circ}23'$). Extensive quartzite occurrences are seen near Balidiha bandh ($21^{\circ}57'30'' : 86^{\circ}37'30''$).

(f) DALMA VOLCANICS (INCLUDING EPIDIORITES)

In the middle and northern part of the heart shaped Similipal plateau, three distinct flows can be seen. The flows vary in texture and appearance. Vesicular varieties are common. Typical exposures are found on the western slopes of Nachuani Buru ($21^{\circ}56' : 86^{\circ}10'30''$), Arnajori pahar Guruguria ($21^{\circ}52' : 86^{\circ}15'$), Similipalgarh ($21^{\circ}51'45'' : 86^{\circ}22'45''$), Kukuru-baka, Chandanchaturi ($21^{\circ}51' : 86^{\circ}34'30''$), etc. Epidiorites are found exposed on an extensive scale near Meghasani and Deokunda. At some places, e. g., near Karanjia and Jashipur they have been affected by kaolinisation.

(g) GABBRO-ANORTHOSITE AND SERPENTINITE

Gabbro-granophyre suite of rocks which intrude into the Dhanjori basin are seen in several parts of the Similipal plateau and also in the hill ranges around and south of Gorumahisani. They have been traced up to Bahalda in the north and Bara Sialnoi ($21^{\circ}59'45'' : 86^{\circ}10'$) near Jashipur. They have been cut across by granites. In these areas these rocks are associated with vanadiferous and titaniferous magnetite.

Outcrops of gabbro-anorthosite suite of rocks are seen on the ridge west of Ekpadai Huli ($21^{\circ}32' : 86^{\circ}17'$) where pyroxenites, gabbro and pegmatitic anorthosites constitute the gabbroic suite. Other places, of occurrence are near Notto, Bhanjikusumghati ($21^{\circ}32' : 86^{\circ}22'$) Debigarh pahar ($21^{\circ}36' : 86^{\circ}26'$), Kabi pahar ($21^{\circ}39' : 86^{\circ}27'30''$) and Patharkhani ($21^{\circ}37' : 86^{\circ}28'$).

Serpentinites are seen west of Khiching, exposed in the bed of Baitarani, associated with banded hematite jasper. They are also found in the sections of river Khairabhandan near Jashipur.

(h) GRANITE

In the southern part of the heart shaped Similipal plateau and around Thakurmunda ($21^{\circ}31' : 86^{\circ}09' 30''$), outcrops of granites and granodiorites are seen, the dominant variety being a biotite-oligoclase-granite with or without microcline. Occurrences are mainly seen near Chirupada ($21^{\circ}34' : 86^{\circ}14'$), Pendrasahi, south of Bisai, Chatra ($22^{\circ}13' : 86^{\circ}38' 30''$), etc. The sodagranites and granophyres associated with gabbro-anorthosites of the Similipal plateau and hill ranges south of Gorumahisani are all intruded into the mica-schists lying below the Dhanjori conglomerate. Near Panijia, it is feldspathic and associated with copper mineralisation.

Porphyritic granites are seen near Samakhunta ($21^{\circ}56' : 86^{\circ}41'$) and Khunta near Baripada. Huge outcrops of granites rich in feldspar are seen near Karanjia and Jashipur. These have been traversed by bands of chlorite schists, epidiorites and veins of quartz and pegmatites. Kaolin occurs as pockets in sinuous zones within the main mass of granite.

(i) NEWER DOLERITES

Newer dolerites have been developed abundantly in the Similipal basin and various other places around the plateau. Some of the localities are Bhururukala ($22^{\circ}08' : 86^{\circ}14' 30''$), Paliabanda, south of Barghati Parbat ($22^{\circ}01' : 86^{\circ}18'$), Murmurani ghati section ($22^{\circ}0'30'' : 86^{\circ}28'$) Karkachia ($22^{\circ}11' : 86^{\circ}14' 54''$), Thakerbanda, Pantha, Sirsa ($22^{\circ} 14' : 86^{\circ} 39' 30''$), Panijia, etc. They are seen intruding quartz, phyllites and Dalma-volcanics.

(j) TERTIARY CLAYS, FERRUGINOUS GRITS AND GRAVELS

Clay bands probably of tertiary age are found mostly in the plain country north of Baripada. The typical exposures are seen along the Burhabalanga river. These along with ferruginous grits are seen in several nala sections.

Tertiary shales and limestones have been reported from (i) near Sutapautia ($21^{\circ}52' : 86^{\circ}43'$), in the Burhabalanga river section down stream, (ii) Mukurmatia ($21^{\circ}50'45'' : 86^{\circ}43'30''$) and further down-stream, (iii) Fossiliferous beds near Balidiha, (iv) Fossiliferous limestone and clay beds near Mahulia ($21^{\circ}54' : 86^{\circ}44'$) (containing *Ostrea gajensis*).

(k) LATERITES

High and low level laterites are seen throughout the district. The high level laterite, capping the Similipal plateau is up to $3/6$ metres thick. These are mostly ferruginous with occasional lenticles of bauxite. Laterite outcrops lying between Tangri pahar ($21^{\circ}37' : 86^{\circ}16'$) and Dala pahar ($21^{\circ}38'30'' : 86^{\circ}15'$) may serve as poor grade iron-ore. The laterite cover seen in the plains are probably secondary in nature. At some places, the thickness is up to 4.5 metres. These are also quarried or building stones.

The analysis of some iron rich laterite from Dhandradora pahar and Nawana village in Similipal areas shows :

| | | |
|-----------|----|-------------------------|
| (i) Iron | .. | 48.56%, TiO_2 : 0.43% |
| (ii) Iron | .. | 56.89%, TiO_2 : 0.81% |

11. Mineral deposits

Iron-ore (hematite), vanadiferous and titaniferous magnetite, china clay, galena (lead ore), Kyanite, asbestos, steatite (soap stone) and quartzite constitute the principal mineral resources of Mayurbhanj district. Of these, the iron-ore deposits of Gorumahisani, Badampahar and Sulaipat, which have been exploited for a period of about half a century, deserve special mention. Brief description of the mineral deposits are given here.

(i) Iron-ore (hematite)

(a) GORUMAHISANI (22°20' : 86°17')

Gorumahisani is connected by a broad gauge railway line with Tatanagar. The ore bodies which comprise of detrital and massive insitu hematite occur mostly on the northern foot hills and slopes of Gorumahisani (Δ 2964). The main ore bodies are mostly lenticular in shape and are believed to have been formed by secondary enrichment. The rock types that are found in this area include dolerites, granites, ferruginous shales, quartzites, laterites, B. H. Q. and B. M. Q., phyllites and altered epidiorites, all of which belong to the Iron-ore Series.

The other types of iron-ore include—

- (a) Shaly hematite with pockets of blue powdery ore
- (b) Laminated, slumped and biscuity hematite
- (c) Lateritic iron-ore
- (d) Gruneritic iron-ore

The ores of Gorumahisani show the following range in composition ; iron : 60—66 %, Phosphorous less than 0.08 %, Sulphur less than 0.03 % and Silica less than 3.5 %. The ore bodies are often found to be capped by laterites. Reserves estimated, were of the order of 35 million tons.

(b) BADAMPAHAR (22°04' : 86°07')

Badampahar is the terminus of the Tatanagar-Badampahar broad gauge railway. The formations met with in this area belong to the Iron-ore Series of Dharwarian age, the sequence of which is as follows :—

Laterite

Dolerite

Granite

Shales, Quartzite, B. H. Q. and Grunerite rocks with iron-ore.

The strike of the formations is roughly N. W.—S. E. and the dip is towards N. E. at angles varying between 30° and 33°.

Laterite usually occurs as capping over the iron-ore formation, the thickness varying between 3 to as much as 8 metres. It also occurs as irregular patches along cracks and bedding planes of the ore bodies.

Igneous intrusions, represented by granites, dolerites and even rocks of ultrabasic composition have given rise to the development of banded quartz-magnetite-grunerite and quartz-grunerite rocks. These are ascribed to dynamo thermal metamorphism. Occurrences of shales is conspicuously rare.

The iron-ore occurrences in this area are confined to two main zones, namely, the Badam hill comprising the peak and the Osirmunda hill on the east, separated by quartzites.

The types of ore that occur in Badampahar include friable ore, laminated ore, limonite and lateritic ore. Massive hard ore occurs at places in bouldery form. The average grade of iron is around 58 per cent. The reserves of Badampahar deposits, as estimated at the end of 1961 were of the order of 26 million tons according to M/s. TISCO. Ltd.

(c) SULAIPAT (22°9' : 86°14')

Sulaipat is connected with the Badampahar-Tatanagar Railway line by a narrow gauge line. The rocks that are found in this area include newer dolerite, granite, B. H. Q., B. H. J., ferruginous shales and quartzite. A large portion of the area is occupied by altered doleritic rock. The disposition of granite in Sulaipat area is of significance. The entire Iron-ore Series of rocks in Sulaipat is surrounded by granite almost on all sides, which can be traced towards S. W. up to Badampahar. The Iron-ore Series of Sulaipat is in the form of a long narrow N.E.-S.W. roof pendant over the great mass of intrusive granite. The N. E. portion of Sulaipat is bounded by a fault.

The iron-ore deposit of Sulaipat is associated with B. H. Q./B. H. J. The ore of this area is considered to be one of the richest in the country and also in the world. Considerable reserves of hematite containing 66—68 per cent iron have been mined from this deposit.

In addition to the above three important iron-ore deposits, workable deposits are located near Ghusuria (22°06' 30" : 86° 10"), Purnapanj (22° 7'30" : 86° 11'45"), Bhitaramda pahar (22°08' : 86°13'), Maharajpur (22°08' : 86°6'30"), Hatisikli (22° 8' 30" : 86° 12'), Bhururukala (22° 08' : 86° 14' 30"), Netrajharan (22° 06' : 86° 10' 30"), Kasiabera (22°04' : 86°05'30"), Asuki (22°02' 30" : 86°07'), Ekdal pahar (21° 58' 30" : 86° 06' 30"), etc.

(ii) Titaniferous and Vanadiferous Magnetite

The titaniferous and vanadiferous magnetite deposits are associated with the gabbro-anorthosite rocks of the area. Sizable deposits of these ores occur near Kumardubi ($22^{\circ}17' : 86^{\circ}19'$), Betjharan ($22^{\circ}15'20'' : 86^{\circ}19'$), Majurbeka ($22^{\circ}01' : 86^{\circ}12'$), Kaduani ($22^{\circ}17' : 86^{\circ}20'30''$), Amdabera ($22^{\circ}14' : 86^{\circ}19'30''$), Kesham ($22^{\circ}02' : 86^{\circ}13'$) Nua Pahari ($21^{\circ}54' : 86^{\circ}34'$), Hatichar ($22^{\circ}13' : 86^{\circ}26'$) Bara Sialnoi ($21^{\circ}59'45'' : 86^{\circ}10'$), Basantpur ($21^{\circ}55'30'' : 86^{\circ}07'$), Bahalda ($21^{\circ}47' : 86^{\circ}33'$), Chitrabania ($21^{\circ}35'30'' : 86^{\circ}27'30''$), Asanbani ($21^{\circ}54'30'' : 86^{\circ}07'$), Barajori ($21^{\circ}54'15'' : 86^{\circ}07'$), Bariadihi ($21^{\circ}52' : 86^{\circ}05'30'' : 86^{\circ}07'$), Kumdabari ($21^{\circ}54' : 86^{\circ}07'$), Kunjakocha ($22^{\circ}13' : 86^{\circ}23'$), Gargari ($22^{\circ}12'30'' : 86^{\circ}22'30''$), Tungru Pahar ($\Delta 2426$), Tuar Buru ($22^{\circ}06' : 86^{\circ}21'$), Andipur, etc. Besides these, there are several smaller deposits scattered in the Similipal range. The State Directorate of Mines has taken up detailed assessment of the reserves and grade of these deposits. V_2O_5 content of these magnetites vary over a wide range, the average being about 0.8 per cent. The TiO_2 contents vary between 4 and 14 per cent. The reserves so far estimated by the Directorate of Mines are of the order of 5 million tons. Results of analysis of some samples from the above areas are as follows :—

| | V_2O_5 | TiO_2 | T.Fe. |
|--------------|----------|---------|-------------------------------|
| Bariadihi .. | 1.40 | 11.3 | 47.86 |
| Asanbani .. | 0.74 | 13.81 | 58.70 |
| Betjharan .. | 1.09 | 10.01 | 55.5 |
| Bahalda .. | 1.26 | 11.10 | 56.89 |
| Majurbeka .. | 0.78(V) | 13.69 | .. |
| Andipur .. | 2.41 | 8.76 | 56.47 |
| Kumardubi .. | 0.55(V) | 13.37 | 58.81 (Average of 9 analyses) |
| Hatichar .. | 0.98 | 11.30 | .. |

(iii) China Clay

This district has the richest china clay deposits of Orissa located around Karanjia and Jashipur in Panchpir subdivision. These occur as huge pockets in decomposed granites and granite-gneisses, under a thin capping of laterite. China clay mined from these deposits are both plastic and non-plastic and have been found to be suitable for use in paper, rubber, textile and pottery industries. Important deposits are found near Kurma ($21^{\circ}46' : 86^{\circ}01'$), Jashipur ($21^{\circ}58' : 86^{\circ}5'$), Chanchani ($21^{\circ}48' : 86^{\circ}01'$), Dumuria ($21^{\circ}60' : 85^{\circ}59'$), Sorisbar. ($21^{\circ}48' : 86^{\circ}01'$)

86° 06'), and Jamkesar (22° 01' : 86° 4' 30"). A few representative samples of clay from the above areas gave the following results on analysis:—

| | Alumina | Silica | Loss | %Grit |
|------------|---------|--------|-------|-------|
| Chanchbani | 38.97 | 46.15 | 12.49 | 0.90 |
| Jashipur | 39.48 | 45.84 | 12.46 | .. |
| Jamkesar | 34.35 | 49.40 | 11.05 | 1.62 |

All these deposits are being worked by private parties.

(iv) Galena (Lead ore)

The quartz veins intruding the mica-schists in the Patinja area (22° 04' : 86° 37') carry some galena and chalcopryrite. There are several old trial pits in the locality. Galena has also been found near Kochilaghathi (21° 56' : 86° 35' 30") and Pithabata (21° 56' : 86° 34' 30"). Geophysical and geochemical prospecting have been conducted in these areas by the Geological Survey of India. These have also been followed by core drilling. No workable deposit has been encountered.

(v) Kyanite

Kyanite is often to be found associated with mica-schists near Bangiriposi (22° 09' : 86° 32' 30") and Panijia (22° 03' : 86° 4'), but only the latter occurrence has been found workable. This deposit has been worked in the past. The alumina content of this kyanite varies from 40 to 55 per cent. A minor occurrence of kyanite-quartzite has been recorded about a furlong N. W. of Karpal (21° 39' : 84° 52').

At places, Dumortierite occurs in association with kyanite. But the quality is rather poor:

(vi) Asbestos

The asbestos deposits of this district are of "tremolite" variety and are reported to be high in calcium and iron. The mineral occurs both as "Cross" and "Slip" fibres in reticulating veins cutting through the talc-schist, which is the country rock. Such deposits are found near Jashipur (21° 58' : 86° 65') and Amdiha (22° 26' 30" : 86° 12' 30"). Other occurrences are near Asurghati, Kudarsahi, Jhulan-Ruansi (22° 24' : 86° 16'), Mankargoria (22° 26' 30" : 86° 16'), Chirkubadi (22° 25' 30" : 86° 16'), etc. In Bamanghaty subdivision a promising occurrence near Batidihi along the Dhalbhum-Mayurbhanj border has been recorded.

(vii) Steatite

Deposits of steatite have been reported from Lulung (21° 57' : 86° 33' 30"), Dublabera (22° 10' : 86° 03'), Betiguda, Kendumundi (21° 41' : 86° 07'), Burudihi, Fulkan, Kesna, Dhudhua and Ambakada, etc. Some of the materials available at these places are used for ornamental purposes and for making of pots. These are called potstone and also soapstone

(viii) Quartzite

Extensive deposits of friable and almost pure quartzites occur near Souri (22° 03' : 86° 40'), Balimunduli (22° 03' 20" : 86° 39' 30"), Panijia (22° 03' : 86° 41'), Kathsirsi (22° 02' : 86° 40' 30"), Balidiha bandh (21° 57' 30" : 86° 37') and at several other localities. The quartzites available have been found to be suitable for manufacture of tinted glass and for use in metallurgical industries. Recent investigations conducted by the State Directorate of Mines in the above areas have indicated a reserve of about 6 million tons of quartzite, having Silica content of more than 95 per cent.

Other minerals that occur in this district include yellow ochre which is found near Govindchandrapur (21° 56' : 86° 35'), andalusite near Patbera (22° 07' : 86° 34'), Netraparbat (22° 08' : 86° 34'), Kaliami (27° 07' : 86° 33') and Kodalbani ; copper ore in traces near Kusumbari (22° 4' 30" : 86° 42') ; gold near Saphghera (22° 26' : 86° 14' 30") where alluvial gold was being worked since a long time. Besides, extensive quantities of building material and road metal are found at many places in this district. The granites, quartzites, dolerites constitute excellent road and building materials. Kankar occurs in moderate quantities near Ankulpur (21° 57' : 86° 05'), along the banks of nalas and gullies to the south of Manda (22° 05' : 86° 14'), Bisai (22° 09' 30" : 86° 24' 30") road and to the west of Kusumbandh (22° 06' : 86° 29' 30") and in the area lying between Balidiha (21° 58' : 86° 38') and Kuchai (22° 0' 30" : 86° 42').

12. Flora

(i) **Botanical Divisions of the district and the nature of vegetation found in it with special reference to rare types of flora.**

The following accounts regarding the nature of vegetation and flora of the district are taken from the report of the Botanical Survey of India. The survey of the district of Mayurbhanj was conducted by them in February 1958. A gist of their findings is given here.

Similipal forest of Mayurbhanj district comprising a single compact block, represents a virgin semi-evergreen forest which expresses the climatic climax type of vegetation. The central core of the forest covers the ridges and valleys of ranges of hills and mountains and is yet undisturbed by any biotic factors. The forest growth is thick and impenetrable and is dominated by gigantic growth of a large number of tree species, the chief being Sal (*Shorea robusta*).

The region explored being rather vast and the altitudes covered being varied (30 m—1,000 m.) the semi-evergreen forest referred to above represents different factors of the vegetation from dry deciduous type with many terophytic species a peculiar feature of which is stunted

growth of Sal in areas adjoining Simlipalgarh and mixed deciduous forests or semi-evergreen type over most of the areas to the east. At times it borders upon the evergreen forest type found in pockets in the deep moist valleys on the way to Bhanjabasa and Meghasani and again at the Barheipani falls and along the banks of the Palpala river near Kachudahan.

Depending upon the respective region the dominant species some times forms almost compact pure strands such as in Karanjia-Gudgudisector of the Simlipal forest. But over greater parts of this area sal is associated with several other tree species such as *Anogeissus lgtifolia*, *Terminalia tomentosa*, *Pterocarpus marsupium*, *Eugenia daloergiodes*, *Syzygium cumini*, *Michelia champaca*, *Dillenia pentagyna*, *Diospyros embryopteris*, *Adina cordifolia*, *Schleichera trijuga*, *Bauhinia* sp. etc. This type of association is conspicuous in the Barheipani-Chahala Talbandha areas. Shrubs like *Randia dumetorum*, *Boehmeria platyphyla* and herbs like *Polygonum barbatum*, *Anisochilus carnosus* are common. The creeper *Dalbergia volubilis* is also met with.

Though Sal forests are found in the Simlipalgarh area, the vegetation here is rather xeromorphic with stunted Sal trees growing on bare lateritic rocky surfaces of hills and the ground vegetation comprising thick closely set cover of *Phoenix acaulis* growing with Sal saplings and grasses. Some of the trees found in this area are *Torus indica*, *Linaciera intermedia*, *Ficus cunia*, *Bauhinia retusa*, etc., with *Dioscorea sativa* twining on them at some places. *Glochidion lanceolarium*, *Adhatoda vasica*, *Flemingia pariculata*, *Hypericum gaitii* are some of the shrubs while *Crotalaria mysorensis*, *Blumea glomerata*, *Indigofera pulchella*, etc., are some of the herbs or under shrubs growing with grasses, viz., *Saccharum spontaneum*, *Panicum montanum*, *Dichanthium caricosum*, *Phragmites karka*, *Apluda aristata*, etc. in this area.

At the lower altitudes, Sal is found among other trees such as *Diospyros melanoxyton*, *Terminalia tomentosa*, *Terminalia arjuna*, *Madhuca latifolia*, *Schleicher trijuga*, *Butea monosperma*. *Woodfordia fruticosa*, Mango and *Melia composita* are also common. *Combretum decandrum*, a climber, covers the top of many trees and shrubs up to 80m altitude.

(ii) Interesting Species

Various epiphytic orchids such as *Dendrobium*, *Vanda*, *Bulbophyllum*, *Cybidium*, etc., are common in the forest of Bhanjabasa and Jnabil whereas *Luisia* is perhaps the only surviving orchid in the dry edeciduous forests of Simlipal-Nilgirda-Dudrachampa area. *Gnetum Scandens* occurs extensively as a liana on the way to Janabil and *Salix tetras-perma* and *Nomonoia riparia* along the course of rivers. Few mosses and a small number of epiphytic ferns are also found. The

insectivorous peant *Drosera burmanni* is found from Gudgudia to Jenabil. The tree fern *Cyathea* Sp. (barely 1 foot stem) occurs by the side of the Nigirda stream.

Several other fern species, namely *Abacopteris multineata*, and *Cyclosorus interruptus* form extensive patches at Chahala area whereas *Blechnum orientale* is common along the streams. *Podostemon wallichii* grows extensively on rock boulders and pebbles in the bed of swift flowing Koroï river near Gudgudia. A few plants of *Cycas circinalis* are met with between Podadiha and Dongadiha only. Bamboos are found only in the vicinity of villages. At other places they are very uncommon.

Loranthus longiflorus and *Viscum attenuatum* are the semiparasites in this area. *Cryptomeria japonica*, *Pinus insularis* (P. Khasya) *Grevillea robusta*, *Eucalyptus* sp. at Deduchampa, *Santalum album* at Kachudahan are introduced. Whereas the Khasya pine is growing luxuriously and regenerating from seeds, *Cryptomeria japonica* is yet struggling for survival

Though *Rauwolfia serpentina* is rare and found scattered in these forests, the Forest Department are maintaining a large nursery of *Rauwolfia serpentina* at Lulong on a commercial scale. Further propagation is from seed.

13. Forests

Forest belts and area covered, character of forests and the type of vegetation, found in them. Broad effects of Government Policy on the Flora of the District Game Laws and Measures for the Preservation of Wild Life.

C. C. Hatt who was Conservator of Forests in 1896-97 gave a description of the forests of Mayurbhanj as follows:

“The plain and accessible parts have nearly all been denuded of mature Sal except in one place in the plains of south-west where there is a little which is three parts ruined by ‘Ghun’ cultivation”.

About Similipal hills he mentioned that except the accessible parts which were at that time very limited, the rest of the hill forests were preserved. Cobden-Ramsay, Political Agent, Orissa, Feudatory States wrote in 1908, “the forests contain many fine trees. There is a vast quantity of sal timbers available but at the same time it is apprehended that there will be a shortage of this variety of mercantile size over a considerable period. The forests also contain an enormous number of stagheaded, hollow and badly grown trees and dry rot is common. The younger trees which should form the crop of 10 to 15 years hence are of no value and only encumber the ground”. What we find now of these magnificent forests of the past is not very different from what Cobden Ramsay visualised.

According to the working plans outlined by C. C. Hatt forests were divided into the reserved forests, the protected forests and the private (*Lakharaj*) forests. The area of reserved forests in the hills as well as that scattered all over the plains of this district is 1,269.30 square miles. There are about 647.29 sq. miles of protected forests and 40.29 square miles of private (*Lakharaj*) forests.

The forest area under each of the territorial forest divisions is a follows:

| | In Sq miles | | |
|-----------------|---------------------|----------------------|---------------------|
| | Reserved Forests | Protected Forests | Lakharaj Forests |
| Baripada .. | 468.37 | 175.00 | 28.00 |
| Karanjia .. | 407.06 | 237.71 | 10.15 |
| Udala .. | 392.92 | 142.00 | 2.14 |
| Kaptipada .. | 0.95 | 92.58 | .. |
| Total .. | 1,269.30 | 647.29 | 40.29 |

The floristic composition in the district has been collected and classified. The following are the types:

(i) North Tropical Moist Deciduous Sal Forests

This type occurs all over Similipal hills in the height zone below 2,800 excepting in deep and moist valleys and the southern and eastern faces where other types of forests are found. The area under this type covers approximately 600 square miles. The predominant species in this type is Sal (*Shorea robusta*) which forms 50 to 90 per cent of the crop. Other trees commonly associated with Sal are, *Terminalia tomentosa* (Asan Sahaj), *Poterocarpus marsupium* (Piasal, Biji), *Anogeissus latifolia* (Dhaw, Dhaura), *Adina cordifolia* (Koim-Korum) and *Schleichera trijuga* (Kusum). Other species of trees which are not very common but are found associated with Sal are *Cedrela toona* (Toon), *Michelia champaca* (Champa), *Mangifera indica* (Am, Amba), *Bombax malabaricum* (Simul) *Careya arborea* (Kumbhi), *Dillenia pentagyna* (Rai), *Gmelina arborea* (Gambhar), *Garaga pinnata*, *Lannea grandia* (Mai), *Eugenia jambolana* (Jamun), *ougeinia dalbargoides* (Punjan, Bundhan), *Xylia xylocarpa* (Karagora), *Kydia calycina* (Ban-kapas), *Lagerstroemia parviflora* (Sidha Senha), *Bridelia retusa* (Kasi) and *Mitragyna parvifolia* (Kali-Kadami, Nitkinia). Among the smaller trees and shrubs are found *Trema orientalis* (Kakara, Rukuni) *Phyllanthus embilica*, (Aonla), *Zizyphus spp.* (Barkuli) *Cassia fistula* (Sunari) *Holictes sora* (Munmundi), *Indigofera pulchella* (Gibri, Giral, Kilberi).

Sterculia villosa (Udla), *Croton oblongifolius*, *Colebrookia oppositifolia*, *Dendrocalamus stricutus* (Salia Bamboo), *Buchanania latifolia* (chara), *Miliusa velutina*, *Flemingia chappar* (Rani Dantun), *Strobilanthes* spp. and *Wendlandia exserta* (Zilam), *Imperata arundinacea* (Joon Grass) is the most common grass. *Cymbopogon martini* (Rusa grass), *Eulaliopsis binata* (Sabai grass), *Anthi tiria gigantea* are also found. *Thysanolaenea* (Fuljhadu, Flower Broom) occurs in small quantities near water courses. Among rhizomatous plants *Curcama aromatica* (Palo, Palua) is found more commonly near nalas. In very moist places some ferns and orchids are also met with. The common climbers are *Bauhinia vahlii* (Sali climber), *Millettia auriculata* (Gora), *Smilax macrophylla* (Juchuri, Ram Dantan), *Combretum decandrum* (Atundi) on moist red soil and laterite and *Dioscra bulbifera* (Pitala). *Asparagus* spp. is found though not common.

(ii) Northern Tropical Semi-Evergreen Forests

This type is confined only to the deep and damp valleys of the numerous perennial streams and nalas of the south and east Simlipal hills and to a limited extent in the rest of it. The area it covers may be about 30 sq. miles. It is a type which is frequently met with and a few of the species characteristic of the type are found spreading into the adjoining moist sal forests already described. A few of the species of the top canopy and most of the under storey and ground flora are evergreen and occur intimately mixed with each other. On the beds of the streams will be found *Smilax tetrasperma* (Godo, Sigric, Machal), *Trewia nudiflora* (Pani-Gambhar), *Macaranga pinnata* (Menda), *Amoora rohituka* (Pitka-Kusum), *Simplocus apecitata*, *Glochidion* spp. *Bischofia Javanica* (Hinjal) *Eugenia Jambolana* (Jamu), *Pongamia glabra* (Karanja), *Diospyros embryopteris* (Makar-Kendu). *Saraca indica* (Asoka) and at places *Terminalia arjuna* (Arjuna). A little higher up, subject to considerable dampness and perhaps annual inundation, will be found *Bobmax malabaricum* (Simul), *Alstonia scholaris* (Chhatiana), *Ficus* spp. *Polyalthia* spp. *Anthocephalus cadamba* (Kadamba), *Lagerstroemia parviflora* (Sidha), *Dillenia pentagyna* (Rai) *Litsalanitida* and the evergreen wild *Citrus* spp., still higher up, in the previous damp and moist conditions, will be found *Michelia champaca*, *Artocarpas lacoocha* (Jeota), *Cedrela toono*, *Mangifera indica*, *Ailanthaus excelsa* (Mahanim), *Mesua ferrea* (Nageswai), *Ptereospermum suaveolens* (Paroli), *Xylia xylocarpa* and *Bridelia retusa*. This type is full of numerous ground flora as is usually found in semi-evergreen forests.

(iii) Mixed Deciduous Hill Forests

This type is found on the more exposed and steep south and east Simlipal hills and a few more of its steep slopes elsewhere. It is interesting to note that although this region gets the maximum rain, being first to

intercept the monsoon winds, it supports a very dry mixed type of forest with many of its species, tending to be xerophytic. It is an example of the effect of poor moisture retention power of the soil on a dry exposed aspect. The approximate area will be 100 sq. miles, scattered, stunted Sal form 25 per cent or more of the open crop. Next to it will be found *Anogeissus latifolia*, *Odina wodier* (Mal) *Petrocarpus marsupium* and *Adina cordifolia*, *Nyctanthes arbor-tristis* (Gangaseuli), *Helecteris isora*, *Cleistanthus collinus* (Karada, Palas) *Boswellia serrata* (Selai), *Sterculia urens* (Gridhini), *Cochlospermum gossypium* (Galagal), *Gardenia* spp. (Kuruda spp.) and *Dalbergia latifolia* (sisam). *Erythrina suberosa* (Pal-durra), Chaladhua, has been found to grow in very dry ridges within this type.

(iv) High Level Sal

This type occurs on the hill tops, and plateaus above 2,800' height in the Simlipal hills. The approximate area of this type will be under 100 square miles. It is characterised by an almost pure crop of sal of very poor quality and height growth having a gnarled appearance with epicromic branches. These are subject to annual fire and frost. The tree associates are *Dillenia pentagyna*, *Eugenia operculata*, *Pterocarpus marsupium* (rare). Among the shrubs and grasses found are, *Indigofera pulchella*, *Wendlandia tinctoria* (Tilau), *Imperata arundinacea*, and *Anthisteria gigantea*. Patches of *Phoenix sylvestris* (Khajrui) grow in poor shallow soil over laterite pan.

(v) Dry Deciduous Sal Forests

This type includes Satkosia, Noti, Badampahar and Gorumahisani forests. The rainfall is considerably lower than in Simlipal hills. Poorer quality sal forms 40 to 60 per cent of the crop. The usual associates are *Anogeissus latifolia* *Terminala tomentosa*. *Diospyros melanoxylon* (Kendu) *Bassia latifolia*, *Cleistanthus collinus*, *Adina cordifolia*, *Pterocarpus marsupium*, *Lannea grandis*, *Phyllanthus emblica*. *Gardenia latifolia* (Damkurudu), *Gardenia gummifera* (Bhuradu) and *Zizyphus* spp. with *Bauhinia vahlii* as the common climber.

(vi) Plains Sal Forests

The characteristic of this type is that Sal occurs in it is remarkably pure crop. It occurs mostly in very flat plains and in some places slightly undulating areas. It occurs scattered all over the district, round the central high lands, in patches varying from a fraction of an acre to quite big blocks. The underlying rock is laterite and the soil is sandy loam or red loam and rarely clay. With maltreatment e. g., indiscriminate fellings, working under very short rotation, burning for charcoal, heavy grazing, shrub cutting, daily leaf and twig collection, tassar cultivation, jhooming and annual fires, the natural

features of these parts have been completely effaced. Stray thickets of *Streblus asper* (Sora, sahdas), *Strychnos nuxvomica* (Kochila), *Strychnos potatorum* (Nirmali), *Pongamia glabra* and *Zizyhus* spp. near Amarda and Betnoti are reminiscent of the evergreen flora that existed in the past. The heavily grazed areas with repeated annual fires are characterised by an undergrowth of *Holarrhena antidysenterica* (Kurchi, Kurai) and bushy *Diospyros melanoxyton*. Commonly associated with Sal are *Terminalia tomentosa*, *Diospyros melanoxyton*, *Bassia latifolia* (Mahul), *Buchanania latifolia*, *Anogeissus latifolia*, *Phyllanthus emblica*, *Pterocarpus marsupium* and *Cassia fistula*. *Combretum decandrum* is to be seen in moist places only. *Cassia spinarum*, *Holarrhena antidysenterica* and *Croton* spp. are some of the commonest shrubs. The extreme maltreatment of many of these plains forests have reduced those to mere bushes spreading over the ground.

(vii) Grass-land and Savannahs

This type occurs on tops of hills above 3,000' dry hill slopes and higher valleys in the Similipal hills. Its origin seems to be natural though maintained at places artificially. The main natural causes are cyclones in the past, frost and fire. In suitable river banks graziers set fire to the dry grass every year and help in maintaining the grass land. *Eugenia operculata*, *Phoenix sylvestris*, *Simplocos racemosa* and *Dillenia aurea* (Kan), are a few of the species found occurring in the grasses. In quite considerable portions of these areas dense bushy Sal seedlings are found arrested in growth by the annual frosts. The common grasses found are *Imperata Arundinacea*, *Auhtiria gigantea* and *Saccharum spontaneum* (Kaushi). *Fragmites karka* are found only near water courses.

1 A. Broad effects of Government Policy on the Flora of the district

(i) Originally Mayurbhanj was found by the East India Company a 'Jungle Mahal' which meant that the area was predominantly a forest area. But it is also a fact that no revenue was being derived from the forests. The tenants were free to use jungle produce in any way they could. When, however, the State was under Court of Wards administration during the minority of Maharaja Sriram Chandra Bhanja Deo (1882-91) attention was paid to the important sources of forest revenue through its proper preservation. There was, however, no Forest Act in force nor was any separate Department established. The Revenue Officers were realising a nominal fuel cess at some flat rates. Some revenue was being realised from lac and tassar. Each rearer of tassar cocoons was paying a fee of Rs. 10 and a fee of Re. 1 was levied on each Kusum tree on which lac was cultivated. Besides the licence fee on cocoon rearers the dealers

were being charged a fee of Re. 0-5-0 each along with a duty at the rate of Re. 0-4-0 per Kahan of tassar. In the year 1895 the Forest Department was separated from Revenue Department. Before the establishment of the separate Forest Department, the forests were under the control and management of the Revenue Department and the matter of privileges and concessions granted to the ryots was settled on an annual payment of 4 annas per ryot as Kath-Kar (Fuel cess) which entitled them to remove unreserved timber for building and agricultural purposes, tree and grass for thatching and free grazing. The working plans outlined by C. C. Hatt, were given effect to in the year 1896-97. According to this, forests were divided into Reserved forests under the management of the Forest officers and protected forests under the management of the Revenue authorities. The latter were maintained chiefly for the purpose of meeting the wants of the ryots and residents of Mayurbhanj. The reserved forests were divided into six ranges with a Ranger or Sub-Ranger in charge of each.

During the next 40 years, reforms in the Forest Administration were introduced. The Indian Forest Act was introduced and a set of rules in pursuance of the Act were framed under the title "Mayurbhanj Forest Manual" to suit local conditions. The protected forests which were once under the management of the Revenue Department came under the management of the Forest Department. For better administration, Forest Beat Offices, Range Offices, Inspection Bungalows and Rest houses were built at various places. For facility of transport, extensive forest roads and bridges were constructed. Monopolies were given for collection and export of some minor forest produce like, tassar, hides, charcoal, sabai-grass, nux vomica and myrabolan. Experiments were undertaken to establish plantation of teak, sisum, mahogany, ceara rubber, eucalyputs, Indian rubber, loon, sandal, *Pinus longifolia*, tea, *Atropa becadoman*, *Digitalis purpurea*, *Dyoseyamers niger*, etc. Quarries of potstones were leased out. Ivory used to be sold and Kendu leaves were also exported. An Ascu Plant was installed for treatment of timbers with a view to increasing strength and durability and preserving timbers against destructive agents.

The reserved forests are free from any rights. Only annual permits are issued for grazing in recognised grazing grounds, mainly in Karanjia Division (Banku and Jenabil Blocks), classified under the forest type VI (Grass lands and Savannahs). In the plains forests although no definite rights have been defined, it is generally accepted by usage that practically all timber and firewood are opened for sale at concession rates to the local residents of Mayurbhanj. For that purpose the annual coupes in the plains forests are kept open for exploitation and extraction of the tenants' requirements for a complete

calendar year after which the surplus if any, is sold by auction. The tenants fell and extract the timber and firewood on payment of concession royalty. Grazing is free in the plains reserves for the tenants' cattle.

In protected forests the tenants get free of royalty unreserved species up to 4' girth. Subject to the control of the Divisional Forest Officer they may also get reserved species of 4' girth and over on payment of concession royalty. Grazing is free for the cattle of local residents.

According to rule 62 of 'Mayurbhanj Forest Manual'..
 ".....*bona fide* residents of Mayurbhanj may collect or gather without payment of royalty within the limits of the protected forests, and subject to such restrictions as the Forest Officer may impose, within the Reserved Forests, all edible roots, flowers, fruits, leaves and other minor forest produce free of charges for their own use only".

Rule 68 of the Mayurbhanj Forest-Manual provides that in lieu of the various concessions granted to the *bona fide* residents of Mayurbhanj they have to help in detection of cases and apprehension of offenders. They have to help the officials in preventing and extinguishing forest fires. Under Rule 89 Para. VI, the villagers who live adjacent to the forests and get better facilities and concessions in the forests, have to help the Forest officials in survey and demarcation and they have also to keep the permanent or temporary lines in the forest clear of bushes. Failure to comply with the above provisions may lead to the temporary withdrawal of the concessions.

In 1946 a working plan for Similipal and its surrounding hills was prepared. It was in force till 1952-53. Soon after merger a fresh working plan for all the reserved forests of Mayurbhanj has been compiled. The draft plan for the period, 1953-54 to 1972-73, has been completed and its prescription for hill forests has been applied to those forests since 1953-54. Most of what is now in the hill forests consist of hollow, diseased, drying or dead trees unnecessarily occupying the space and increasing congestion. The object of the present plan is to give these forests rest as far as possible, to relieve those or the unwanted members which should have been removed during the previous workings and to try some cultural operation to help nature in the improvement of those forests.

The aim of the present management is an all out attempt to preserve and improve these forests as far as possible with the co-operation of the general public and by strongly dealing with those who offend against forest laws.

During the *Durbar* administration the forests of Mayurbhanj were under four territorial divisions, viz., Sadar, Northern, Western and Southern divisions. After merger with Orissa the number of territorial divisions has been reduced to three, viz., Baripada, Karanjia and Udala.

(ii) Shooting Blocks and Sancturaries

During the pre-merger period only the Ruling Chief, occasionally his guests and a few other privileged persons were undertaking shooting expeditions into the forests. The restriction on shooting had protected a lot of game and plenty of deer and other game were available in the plains forests. Soon after merger the plains forests have been denuded practically of all game. To regulate shooting, all the reserved forests have been divided into a number of shooting blocks to be used by permit holders for limited shooting. The Divisional Forest Officers issue annual, monthly or even ten days' shooting permits in their respective jurisdictions prescribing the limitation for shooting. A special free permit is also issued by the District Magistrate or Divisional Forest Officer to destroy some particular dangerous animal.

(iii) Vanamohatsava

There is general apathy for tree planting as the average villager finds profuse plant growth and small forests nearby. He can hardly visualise the overall importance of planting and growing forests for the future. Besides preservation of the existing forests, the planting and rearing of more trees is one of the main tasks of administration now.

15. Fauna

The incidence of wild animals and birds is remarkable in the district. Among the animals, elephants need special mention. They are found in herds all over the Similipal hills and generally make the moister parts, with plenty of fodder, their permanent habitat. The most heavily infested area is the patch covered by Ankurbasa, Tina-diha and Barakamda.

Catching of elephants has been the favourite sport of princes for many centuries. While elephants have been caught in Mayurbhanj every few years, there is record of only a few of the operations. The Similipal hills are the home of elephants. They live mainly in the valleys and frequently come out into the plains surrounding the hills. Sometimes they go up to the hill top. The Chief editor has seen them at 4,000 ft. The operation of catching elephants is called "Kheda" which literally means driving. The elephants are driven into a circular fortified enclosure called "stockade". Kheda operations were such a

regular part of the activities of Mayurbhanj that there used to be a paragraph on it in the annual reports, even though for years together the paragraph may be blank. Old stockades can be found in different parts of Similipal and neighbourhood. Till 1932 ruins of large stockades existed at parganas Arpata Chilma and Similipal and small stockades existed at Puruna Baripada, Orachandabila and Bari in parganas Mahalbhag, Arpata Chilma, Banahari and Rasunia. These are older than a century. Maharaja Krushna Chandra caught elephants in Aharⁱ jungle in Banahari pargana and Maharaja Sriram Chandra caught a large number at Denga-amba, Jaypur, Pithabata, Chekamara and Mangarh jungles. Maharaja Purna Chandra caught elephants at Dukra. In 1932 elephants were caught at Champagarh by Maharaja Pratap Chandra. Kheda operations used to be in the nature of festivities to which V. I. Ps. were invited. After the elephants were located, the forest used to be surrounded by watchers and at the end there used to be a fortified enclosure with an entrance. The elephants were attracted into the enclosure by their favourite food—paddy and banana plants. Immediately after the herd entered a strong door with nails sticking out was dropped to close it. There used to be a double line of fortification with either a moat surrounding the stockade or a second line of fence with the intervening space filled in with logs of wood placed horizontally. The last Kheda was held in 1938. But catching of elephants as a sport continued to tempt princes. In 1943 a single elephant was caught in a trap. Strong ropes were laid and a man sat on top of a tree. As the elephant touched the trap a light went up and the man pulled the ropes. The elephant was caught. Since then there has been no catching of elephants. The operations are too expensive and there is no market for the elephants. The following is the list of Khedas of which record exists:—

- | | | |
|---------|----|--|
| 1870-71 | .. | 200 elephants caught. |
| 1910 | .. | 40 elephants caught, as witnessed by the Chief Editor (During the 40 intervening years there must have been Kheda operations, but no record exists). |
| 1931-32 | .. | Kheda operations were held at Chekamara but details are not available. The Maharaja of Bikaneer, Rajas of Nilgiri and of Puri attended the operations. |
| 1933-34 | .. | 20 elephants caught at a cost of Rs. 12,076 at Khandabuda. The Maharajas of Jaipur and Panna witnessed the Kheda operations. |
| 1937-38 | .. | 15 elephants caught at a cost of Rs. 20,561 at a place 16 miles off Baripada town. |

Tigers (*Panthera tigris*) are a nuisance in many parts of Similipal hills and its bordering forests, and take a heavy toll of cattle and occasionally human lives. Leopards (*Felis pardus*) are common both in the hill and the plains forests. The sloth bear (*Melursus ursinus*) are usually found more in the plains forests and are quite a terror to the poor dependants on the forests especially near Udala. At one time, bears infested the forest road between Baripada and Betnoti. It is in these forests that Maharaja Sriram Chandra Bhanja was mistaken for a bear and fired at by his "Sambandhi". Among other Carnivora, the striped hyaena (*Hyaena hyaena*), jackal (*Canis aureus*), wild dog (*Cuon alpinus*), Indian fox (*Vulpes bengalensis*), common grey mongoose (*Herpestes edwardsi*), small Indian civet (*Viverricula indica*), common toddy cat (*Paradoxurus hermaphroditus*) common jungle cat (*Felis chaus*), Smooth Indian otter (*Lutra perspicillata*) and Indian raeai or honey badger, etc., are usually found.

Spotted deer (*Axis axis*), sambar (*Cervus unicolor*), muntjac or barking deer (*Muntiacus muntjak*), Gayal (*Bos gaurus*), nilgai (*Boselaphus tragocamelus*), Indian wild boar (*Sus scrofa*), and Indian chevrotain or Mouse deer (*Tragulus meminna*) are quite common. Because of the heavy traffic of timber trucks, they are not usually found on or near the motorable roads, of which there is quite a net work in the Similipal hills, but they are often found in the interior.

Among the Rodentia the Rufostailed hare (*Lepus nigricollis ruficaudatus*), Indian porcupine (*Hystrix indica*), flying squirrel, various types of rat, mice, and squirrels (Striped Squirrels and giant Indian Squirrel) are quite common. This district is comparatively less troubled by monkeys. Common langurs or Hanumans (*Presbytis entellus*) are often found even in the deeper forests, but in the outer plains they are not a menace as in many parts of central and southern Orissa. The Rhesus monkey or common Bandar (*Macaca mulatta*) is rarely found in the eastern plains.

The peacock, parrots, hill myna, drongo, pigeons, doves, oriole, bulbul, skylark, dayal, robin, tree pie, chloropsis, koel and various other smaller birds contribute a lot towards entertaining the forest officers and other visitors. To the sportsman the red jungle fowl (*Gallus gallus*), red spur fowl (*Galloperdix spadicea*), partidges (*Francolinus* spp), green pigeon (*Treron phoenicoptera*) and other table birds are easily found. Killing the pea-fowl was prohibited by custom. Now it is the national bird of India.

Open billed storks (*Anastomus oscitans*), cattle egret (*Bubulcus ibis*), little egret (*Egretta gazetta*), grey heron (*Ardea cinerea*), Indian pond heron or paddy bird (*Ardeola grayii*) are quite common in the paddy fields. Night herons (*Nycticorax nycticorax*) are usually found coming out in the evening along with the nocturnal birds and flying mammals (Flying fox or ordinary bat and Indian vampire), in search of their food. The marsh birds, bronze winged jacana (*Metopidius indicus*), pheasant tailed jacana (*Hydrophasianus chirurgus*), cotton teals (*Nettapus coromandelianus*), coot (*Fulica atra*) and little grebe (*Podiceps ruficollis*), etc., are not very common except in a few big tanks surrounded with marshy vegetation. Moor-hens and water-hens are rare. Darters or Snake bird (*Anhinga rufa*) and little cormorant (*Phalacrocorax niger*) are found here and there in the tanks.

In Winter, whistling teal (*Dendrocygna javanica*), common teal (*Anas crecca*), snipes, and storks are the common migratory birds. Nuckta or comb-ducks and pochards are sometimes found in small flocks in some big tanks. But the temporary settlements of migratory birds are not so extensive and numerous as in south Orissa. Ruddy Sheldrake or Brahminy duck (*Tadorna ferruginea*) is very rarely found in river-beds.

Among reptiles, poisonous snakes like cobra, vipers and kraits are found. Indian pythons (*Python molurus*) are found in the hill. Other common snakes like Dhaman or common rat snake (*Ptyas mucosus*), common wolf snake locally known as 'kawdiya chiti' (*Lycodon aulicus*), common green whip snakes (*Dryophis nasutus*), etc., are usually found.

National Park, Similipal

The National Park is situated between 21° 36' to 22° latitude and 86° 5' to 86° 32' longitude east in the Mayurbhanj district, comprising an area of 1,100 sq. miles of Similipal forests. The Park was established in 1956 with the object of conserving the natural fauna, prevent wanton destruction of wild life and to provide recreation to tourists who are interested in the scenic beauties and wild life in their natural habitat.

The Similipal Forests have a rich abundance of wild life. There are,—

| | |
|---------|--|
| Mammals | .. Elephant, Bison, Sambar, Spotted deer, Barking deer, Wild pig, Tiger, Panther, Mouse deer, Wild dog, Rabbits, Belra mouse, Monkey and Flying squirrels. |
|---------|--|

Birds .. Peacocks, Maina, Racket-Tailed Drongo (Bhrungaraja), Parrot, Grey Hornbill (Bhalliakhai), Malabar pie (Kuchilakhai), Jungle fowl, Green pigeon, Imperial pigeon, Grey partridge, Painted partridge, Black partridge, Quail, Teal, Florican, Sandgrouse. In winter, Himalayan types of birds migrate to the National Park Forests.

Reptiles .. Cobra, Python, King-Cobra.

Crocodiles are found in the Burhabalanga Khair and Deo rivers.

Mahseer a typical variety of fish is seen in the rivers within the National Park.

Due to unauthorised shikar done in the past, the wild life of the types stated above, are fast declining. With the creation of National Park, shooting is prohibited and strict measures are being taken to protect the valuable fauna of Similipal Forests.

Within the National Park, comfortable well-furnished Rest Houses have been built at Gudgudia, Nawana, Chahala, Jamuani, Barehipani, Jashipur, Talbandh, Kanchinda and Bhanjabasa.

There are Watch towers at Rajupal, Bilapogha, Combi-goda, Jenabil, Tinadiha, Upper Barakamuda, Bhanjabasa and Dhudruchampa.

Salt licks at Rajupal, Bilapogha and Domnigoda are being regularly maintained to attract wild animals within the visible range of visitors.

The existing roads in the National Park are now being improved and new roads are under construction so that tourists can go to the interior of the forests to view wild animals.

16. The climate of the district

The climate of this district is characterised by an oppressive hot summer, high humidity nearly all the year round, and well distributed rainfall during the monsoon seasons. The year may be divided into four seasons. The summer is from March to May. The period from June to September is the south-west monsoon season. October and November constitute the post-monsoon season, and the winter is from December to February.

(i) Rainfall

Records of rainfall in the district are available for Baripada, Karanjia and Rairangpur for periods ranging from 26 to 72 years. The details of the rainfall at these stations and for the district as a whole are given in Appendix I—Tables A & B. The average annual rainfall in the district is 1,648.2 mm. (64.89"). The rainfall is fairly uniform over the district and the variation in the annual rainfall from year to year is not large. In the period from 1901 to 1949, the highest annual rainfall occurred in 1913 when it amounted to 131 per cent of the normal. 1921 was the year with the lowest rainfall which was 78 per cent of the normal. There were only three years in this 49 years period when the rainfall was less than 80 per cent of the normal. It will be seen from table 2 that the rainfall in the district was between 1,400 and 1,900 mm. (55.12" and 74.80") in 32 years out of 49.

On an average, there are 83 rainy days (i.e. days with rainfall of 2.5 mm. or more in a year). This number varies from 81 at Rairangpur to 84 at Karanjia.

The heaviest rainfall in 24 hours recorded at any station in the district was 363.32 mm. (14.30") at Karanjia on July 30, 1929.

(ii) Temperature

The only meteorological observatory in the district is at Baripada and this was started only recently. The climate of this district is somewhat similar to that of the adjoining districts where scope for meteorological observation exists. The following account of the climate is therefore mainly based on the records at the observatories in the adjoining districts supplemented by the meagre data available for Baripada. The hot season commences by about the beginning of March when temperature begins to rise rapidly. May is the hottest month when the mean daily maximum temperature is of the order of 41° C (106° F). On individual days the maximum temperature may reach 47° C (117° F) and the heat is oppressive. With the onset of the monsoon early in June, day temperature drops appreciably and throughout the south-west monsoon season the weather is more pleasant. After the withdrawal of the monsoon by the first week of October, both day and night temperature begins to drop steadily. December is usually the coldest month of the year when the mean daily maximum temperature is of the order of 12° C (53.6 F). In the cold season short spells of colder weather occur sometimes in association with the passage of western disturbances across north India and the minimum temperature may drop down to about 6° C (43° F).

Relative humidity is high generally throughout the year. But in the summer months, it is comparatively less, being about 50 to 65 per cent in the mornings and about 35 to 55 per cent in the afternoon.

[78 B. of R.—5]

So far as Karanjia rain record is concerned, it has not been affected by the existence of the 4,000 feet Similipal hills as the rainfall on the east at Baripada and west at Karanjia are almost exactly equal. It is possible that Karanjia gets additional rain from cyclones moving up the Baitarani valley. In Panchpir subdivision there are pockets of deficient rainfall, such pockets being Dhantwari Pargana, Badyanath and Sukruli-areas. They are cronicly deficit areas because they are in the rain shadow of the Similipal hills which catch storms coming from the east and get the main deposit of rain on the eastern side.

During the south-west monsoon season skies are often heavily overcast. In the summer and the post-monsoon months, there is moderate cloudiness, the afternoons being more cloudy than the mornings. In the other months skies are clear or lightly clouded.

Winds are generally light or moderate with some increase in force in the pre-monsoon months of April and May. Winds blow mostly from directions between south-west and south-east in summer and the south-west monsoon season. In the post-monsoon and winter seasons winds are mainly southerly or north-westerly in the mornings and southerly or south-easterly in the afternoons.

(iii) Special Weather Phenomena

— Storms and depressions from the Bay of Bengal in May and the post monsoon season often reach the district and its neighbourhood and cause widespread heavy rain with high winds. Depressions which originate at the head of the Bay of Bengal in the monsoon season pass over the district during their westward movement and cause heavy rains. Thunderstorms are common, mostly in the afternoons, in the hot season and in association with them heavy rain, occasional hail and severe squalls occur. Rain during the monsoon season is also often associated with thunder. Occasional fog occurs during the winter.

The climate of the Similipal hills is temperate in summer and bracing in winter. But it is full of fever. Most inspection bungalows are protected from mosquitoes by wirenetting.

APPENDIX I
TABLE A
Normal and Extremes of Rainfall

| Station | No. of years of data | January | February | March | April | May | June | July | August | September | October | November | December | Annual | Highest annual rainfall as percent of Normal a.d. year ** | Lowest annual rainfall and normal year ** | Heaviest Rainfall in 24 hours * | |
|---------------------|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---|---|---------------------------------|------------|
| | | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Amount (mm.) | Date |
| Baripada | 48 | a. 18.5 | 34.3 | 33.5 | 56.9 | 112.0 | 249.9 | 367.0 | 350.8 | 254.8 | 135.9 | 29.0 | 4.6 | 1647.2 | 143(1933) | 66(1934) | 217.2 | 1945 |
| | | b. 1.4 | 2.3 | 2.6 | 3.5 | 6.3 | 12.8 | 16.7 | 17.2 | 12.4 | 6.4 | 1.3 | 0.4 | 83.3 | | | | October 20 |
| Karanjia | 45 | a. 21.8 | 42.2 | 27.9 | 46.0 | 106.2 | 237.5 | 444.3 | 368.3 | 212.1 | 105.2 | 30.5 | 8.6 | 1650.6 | 140(1946) | 70(1916) | 363.2 | 1927 |
| | | b. 1.5 | 2.6 | 2.3 | 3.0 | 6.4 | 12.1 | 18.4 | 17.0 | 12.7 | 6.4 | 1.50 | 0.5 | 84.4 | | | | July 30 |
| Rairangpur | 26 | a. 25.4 | 30.0 | 27.9 | 39.1 | 71.9 | 218.2 | 467.9 | 407.4 | 230.1 | 99.6 | 22.6 | 6.6 | 1646.7 | 135(1943) | 65(1935) | 274.3 | 1927 |
| | | b. 1.7 | 2.3 | 2.0 | 3.0 | 5.4 | 11.4 | 18.4 | 17.8 | 11.5 | 5.7 | 1.3 | 0.6 | 81.1 | | | | July 30 |
| Mayurbhanj District | | a. 21.9 | 35.5 | 29.8 | 47.3 | 96.7 | 235.2 | 426.4 | 375.5 | 232.3 | 113.6 | 27.4 | 6.6 | 1648.2 | 131(1913) | 78(1921) | | |
| | | b. 1.5 | 2.4 | 2.3 | 3.2 | 6.0 | 12.1 | 17.8 | 17.3 | 12.2 | 6.2 | 1.4 | 0.5 | 82.9 | | | | |

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

(*) Based on all available data up to 1948. (**) Years given in brackets

TABLE B
Statement showing the monthly rainfall from 1957 to 1966 in Baripada

| Name of the month | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | Total | Average yearly rainfall during the month |
|---|-----------|---------|---------|---------|-----------|-----------|---------|---------|---------|---------|----------|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| January | No record | 04.8 | 86.4 | 01.2 | 09.4 | No record | Nil | 1.6 | 0.6 | 51.5 | 155.5 | 17.3 |
| February | Ditto | 15.7 | 00.2 | 00.0 | 10.6 | 06.6 | 9.8 | 20.2 | 35.4 | 0.4 | 98.9 | 11.0 |
| March | Ditto | 25.8 | 10.8 | 89.6 | 04.6 | 02.5 | 8.1 | 3.4 | 74.6 | 1.4 | 220.8 | 24.5 |
| April | Ditto | 51.2 | 66.9 | 17.8 | No record | 140.2 | 52.5 | 47.2 | 45.3 | 26.4 | 447.5 | 49.7 |
| May | Ditto | 81.5 | 98.4 | 139.6 | 144.2 | 34.8 | 238.2 | 60.1 | 27.0 | 72.1 | 895.9 | 99.5 |
| June | Ditto | 71.0 | 333.2 | 173.0 | 296.6 | 307.2 | 233.0 | 143.8 | 150.6 | 408.0 | 2,116.4 | 235.2 |
| July | Ditto | 463.1 | 375.9 | 224.4 | 94.2 | 206.4 | 207.4 | 365.8 | 460.1 | 260.6 | 2,657.9 | 295.3 |
| August | Ditto | 181.7 | 216.6 | 562.4 | 414.8 | 356.8 | 256.4 | 345.8 | 238.7 | 271.7 | 2,844.9 | 316.1 |
| September | 361.7 | 613.3 | 472.4 | 255.0 | 474.8 | 376.8 | 216.2 | 243.8 | 333.4 | 173.30 | 2,970.6 | 330.1 |
| October | 5.1 | 156.1 | 367.4 | 222.0 | 184.2 | 209.5 | 206.4 | 148.5 | 98.5 | .. | 1,388.2 | 154.2 |
| November | Nil | 60.2 | Nil | Nil | Nil | 0.0 | 0.6 | 1.8 | Nil | .. | 62.6 | 7.0 |
| December | Nil | Nil | 02.4 | Nil | Nil | 0.0 | 1.3 | Nil | Nil | .. | 3.7 | 0.4 |
| Total rainfall during the year | .. | 1,724.4 | 2,030.6 | 1,685.0 | 1,633.4 | 1,634.8 | 1,429.9 | 1,382.0 | 1,464.2 | 1,092.1 | 13,862.9 | 1,540.3 |
| Monthly average rainfall during the year. | .. | 143.7 | 169.2 | 140.4 | 136.1 | 148.65 | 119.2 | 115.2 | 122.0 | 136.5 | 1,155.2 | 128.4 |

TABLE C
Frequency of Annual Rainfall in the district
(Data 1901—1950) *

| Range in mm. | No. of year | Range in mm. | No. of years |
|--------------|-------------|--------------|--------------|
| 1201—1300 | 2 | 1701—1800 | 7 |
| 1301—1400 | 7 | 1801—1900 | 2 |
| 1401—1500 | 8 | 1901—2000 | 3 |
| 1501—1600 | 5 | 2001—2100 | 3 |
| 1601—1700 | 10 | 2101—2200 | 2 |

* Data available for 49 years only.

APPENDIX II

**Notes on the Geology and Mineral resources of Mayurbhanj by
Pramath Nath Bose, B. Sc., F. G. S., late Deputy Superintendent,
Geological Survey of India**

Pramath Nath Bose retired on the 15th November 1903, from the Geological Survey, Government of India. By that time Maharaja Sriram Chandra Bhanja who was keen on the development of Mayurbhanj was being helped in his endeavours by his progressive Dewan Mohini Mohan Dhar. Mohini Mohan appreciated the useful and important work of Pramath Nath Bose in the Geological Survey of the Government of India, and engaged him for making a Geological survey of the State. The State of Mayurbhanj had never been surveyed before and Pramath Nath was the first Geologist to examine it. In the course of his exploration in the winter of 1903-04, he found unusually rich iron-ore deposits at the foot and along the slopes of the Gorumahisani Hill, besides other minerals in different parts of the State. This was altogether a new discovery. Pramath Nath brought this fact to the notice of Geologists by publishing his famous paper "Notes on the Geology and Mineral resources of Mayurbhanj," in the Records of the Geological Survey, Vol. XXXI, Part III (1904). His writing is quoted below :

Area Examined

Mayurbhanj has hitherto been a blank on the geological map of India not having been previously examined by any geologist. The State is divisible into a hill-area and a plain-area. Last season (December 1903- to March 1904) my work was practically confined to the former, which comprises the Bamanghati and Panchpir subdivisions, and the western and north-western portions of Mayurbhanj proper an area of about 2,400 square miles.

Tertiary rocks near Baripada

As only a very small portion of the plain country has been surveyed I have but little to say concerning it in this report. There is, however, one matter of great interest which should receive a passing notice. At Molia, two miles south of Baripada (the capital of the State) there are exposed in the bed of the Burabalang river, yellowish and yellowish-brown limestones which are very rich in fossils referable to the genus *Ostraea*. Mr. Pilgrim of the Geological Survey of India who has

studied a few specimen which I sent him, has not succeeded in identifying them with any known species of *Ostraea*. He has, however, detected "affinities with Tertiary forms, viz., *Ostraea multicostata*, Deshayesi from the upper part of the Eocene of the Paris basin, and *O. Torresi Phillipi*, from the Magellanian beds of Patagonia which are probably Oligocene in age..... The specimen somewhat resemble an un-described species of *Ostraea* found in the upper Nari beds of Baluchistan which are probably Oligocene in age". Considering that no fossiliferous rocks later than the Gondwanas (except those of subrecent (age) have hitherto been known in eastern India in the vast area between Pondicherry and the Khasi hills, the find is of great importance in Indian geology. From what little I have seen of the contiguous district of Midnapur, there is, I think, every possibility of fossiliferous strata similar to those of Molia being found there. The Molia limestones pass above into thinly stratified horizontal, or but slightly rolling, greyish white or very pale, green clays. Similar clays are met within all the sections about Baripada under a variable thickness of laterite averaging about 15 feet.

Hill Country : Stratigraphical Summary

The hill country presents several well defined ranges, rising occasionally to peaks between three and four thousand feet above the sea-level. It is needless to say that the examination of such a vast area, a large portion of which is covered by thick, almost impenetrable jungle, was of a somewhat cursory character, especially as a good portion of the short season was devoted to the slow work of mineral exploration by digging.

Throughout the area, the sub-metamorphic series appears to be in superposition upon the metamorphic, the latter being exposed by the denudation of the former. The gneiss is at places highly granitoid, and true granite is by no means infrequent. Mica schists with pegmatite veins prevail in the area about Bangarposi in Mayurbhanj proper. The gneissic rocks are much intersected by dykes of basic and intermediate rocks. The principal constituents of the sub-metamorphic series are quartzites, phyllites, and micaceous, talcose, horn-blendic and trappean-looking schists. The quartzites are sometimes banded and not infrequently haematitic as well. Conglomerates are rare. The quartzites are occasionally blackish and dark, slaty or sub-schistose quartzites attain considerable development at places. As in the case of the gneissic rocks, trappean intrusions abound throughout the area. The prevailing strike is north-western, and the dips usually point eastward.

Iron

The chief mineral wealth of the State consists in its iron-ores, which are possibly among the richest and most extensive in India. In the Bamanghati subdivision, they occur in quantity at the following localities:—

- (1) At the foot and along the slopes of Gorumahisani hill in all directions except the eastern over and area of about eight square miles.
- (2) Near Bandgaon in Sarandapir.
- (3) At the foot and along the flanks of the Sulaipat-Badampahar range on the southern border of the Bamanghati subdivision from Kondadera to Jaidhanposi, a distance of some twelve miles.

In the Panchpir subdivision the ores occur at diverse places along the foot of the hills which fringe the Similipahar range on the western and southern side from Kamdabedi and Kantikna to Thakurmunda, a distance of twenty-five miles.

In Mayurbhanj proper, iron-ores occur at several places in the Similipahar range, as near Gurguria. They were also encountered at places in the submontane tract just adjoining the Similipahar range on the eastern side as near Kendua (close to Sorsobila) and at a place two miles west of Baldia.

Mica

Mica occurs in the following areas:—

(1) In the Bamanghati subdivision about Raibedi and about Tiring. The ground is gnessic and is much intersected by trap-dykes. Mica occurs in nests and strings in pegmatite veins. These were dug into at several places, but the plates obtained were everywhere small, not exceeding 2 or 3 square inches, and the excavations did not warrant the expectation of finding larger ones.

(2) In Mayurbhanj proper, mica occurs near Sirsa and in the vicinity of Bangarposi and Jamgodia and other places. The Jamgodia area appeared to me the most promising. It is composed of mica schists in which pegmatite veins are exposed at places for a considerable distance along the Sankrai river. Muscovite occurs in these veins in good-sized books, but the plates obtained from the surface, though some measured more than 8 square inches, were necessarily in a much weathered condition. Excavations are in progress to test the quality of the mineral at depth.

Limestone

The occurrence of limestone in the form of tufa or travertine was noted at the following localities:--

(a) Bamanghati subdivision

1. Rangom hill (near Beter Amda)
2. Asurghati
3. On the southern side of Gorumaishani hill (between Sando and Kotapiti).

(b) Similipal area: Three miles west of Gurguria

(c) Panchpir subdivision: Olkader

Yellowish fossiliferous limestone occurs in the bed of the Barabalong river at Molia, two miles south of Baripada.

Asbestos, Opal, Copper-pyrites

Near Rangom hill, in the Bamanghati subdivision, on the road leading from Beter Amda to Dublabeda, there occurs vein quartz in decomposed epidioritic rocks which affect an exfoliating nodular structure. The quartz veins do not go down deeper than about two or three feet from the surface; and in them are found opal, actinolite, asbestos and copper-pyrites. Samples sent to Mr. Vredenburg, Curator, Geological Survey of India, are described by him as "being principally opal in which are imbedded well-shaped prisms of a transparent dark-green actinolite passing along the borders of the specimen into fibrous asbestos.... The opal when seen under the microscope is found to have become largely doubly refracting, a considerable portion having been transformed into chalcedony, which is either minutely granular or else arranged into tufts approaching spherulitic structure".

Pottery clay

The clays which have already been referred to as underlying the laterite about Baripada are generally very well suited for pottery. A sample examined by Mr. Vredenburg, Curator, Geological Survey of India, is pronounced by him to "constitute an excellent material for pottery". Says Mr. Vredenburg: "It disintegrates slowly in water yielding a plastic paste. This I made into a small lump which I burnt in an ordinary Bunsen flame, heating it to a bright-red. It did not fuse, but became intensely hard, and assumed an agreeable terra-cotta colour".

Miscellaneous Minerals

Pot stones occur at various places of which the following are noteworthy. They are generally the result of the decomposition of dioritic-looking rocks. But beds of steatite sometimes occur in the transition series:—

(1) In Bamanghati subdivision near Tiring on the Dhalbhum border

(2) Three miles west of Gurguria (Simlipahar area)

(3) Nulungi, 5 miles west of Baldia in Mayurbhanj proper. Utensils of sorts are manufactured here which have a ready sale at Baripada.

Grind stones are made at Kuliana (Mayurbhanj proper) out of the quartzites of the transition series.

Agate, flint, Jasper, etc., occur in some profusion at places in the Bamanghati subdivision.

APPENDIX III

Glossary of Oriya names with corresponding Botanical names
of common species found in Mayurbhanj

| Local Oriya name | | Botanical name |
|------------------|-------------|------------------------------------|
| Amba | (ଅମ୍ବ) | .. <i>Mangifera indica</i> |
| Ambada | (ଅମ୍ବଡ଼ା) | .. <i>Spondias maniyfera</i> |
| Amla | (ଅଁଳା) | .. <i>Phyllanthus emblica</i> |
| Anantamul | (ଅନନ୍ତମୂଳ) | .. <i>Hemidesmus indicus</i> |
| Arjuna | (ଅର୍ଜୁନ) | .. <i>Terminalia arjuna</i> |
| Asan | (ଅସନ) | .. <i>Terminalia tomentosa</i> |
| Ashok | (ଅଶୋକ) | .. <i>Saraca indica</i> |
| Aswatha | (ଅଶ୍ଵତ୍ଥ) | .. <i>Ficus religiosa</i> |
| Athandi | (ଅଥଣ୍ଡି) | .. <i>Combretum decandrum</i> |
| Bahada | (ବାହାଡ଼ା) | .. <i>Terminalia belerica</i> |
| Bankapasia | (ବାଙ୍କପସିଆ) | .. <i>Kydia calycina</i> |
| Bankhira | (ବାଙ୍କିରା) | .. <i>Xylia xylocarpa</i> |
| Belo | (ବେଲ) | .. <i>Aegle marmelos</i> |
| Bhalia | (ଭାଲିଆ) | .. <i>Semecarpus anacardium</i> |
| Bhurkunda | (ଭୂରକଣ୍ଡା) | .. <i>Hymenodictyon excelsum</i> |
| Bichhuati | (ବିଚୁଆତି) | .. <i>Mucuna pruriens</i> |
| Boro | (ବର) | .. <i>Ficus bengalensis</i> |
| Borokoli | (ବରକୋଳି) | .. <i>Zizyphus jujuba</i> |
| Chhachina | (ଛଛାଚିନା) | .. <i>Alstonia scholaris</i> |
| Champa | (ଚମ୍ପା) | .. <i>Michelia champaca</i> |
| Champati | (ଚମ୍ପତି) | .. <i>Polyalthia cerasioides</i> |
| Chara | (ଚାର) | .. <i>Buchanania latifolia</i> |
| Charla | (ଚେଲ) | .. <i>Holoptelia intergrifolia</i> |

| Local Oriya name | | Botanical name |
|--------------------------------|------------------------|-----------------------------------|
| Dimuri | (ଡମ୍ପୁର) | .. <i>Ficus glomerata</i> |
| Dom-sal | (ଡମ-ଶାଳ) | .. <i>Milium velutina</i> |
| Dhaw | (ଦାଉ) | .. <i>Anogeissua latifolia</i> |
| Eksira | (ଏକଶିରା) | .. <i>Schrebera swietenoides</i> |
| Gaisira or Chatuari | (ଗାଇଶିରା ବା ଚତୁଆର) | <i>Asparagus racemosa</i> |
| Gamari | (ଗମାରୀ) | .. <i>Gmelina arborea</i> |
| Gilo | (ଗିଲ) | .. <i>Entada scandens</i> |
| Girdhini | (ଗିରଦିନି) | .. <i>Sterculia urens</i> |
| Guadhania | (ଗୁଆଧାନୀ) | .. <i>Millettia auriculata</i> |
| Gudi Koim | (ଗୁଡ଼ିକୌମ) | .. <i>Mitragyna parviflora</i> |
| Guhira | (ଗୁହୀରା) | .. <i>Acacia bucephalaea</i> |
| (Hopo yellow silk-cotton tree) | (ହୋପ) | .. <i>Cochlospermum gossypium</i> |
| Jam | (ଜାମ) | .. <i>Eugenia jambolana</i> |
| Jautha | (ଜୋଥା) | .. <i>Artocarpus lakoocha</i> |
| Jia | (ଜୀଆ) | .. <i>Lannea grandis</i> |
| Jinjal | (ଜିଞ୍ଜା) | .. <i>Barringtonia acutangula</i> |
| Jhattiko | (ଜାଟିକ) | .. <i>Woodfordia fruticosa</i> |
| Kadam | (କଦମ୍ବ) | .. <i>Anthocephalus kadamba</i> |
| Kalmeg | (କାଳୀବୋହୁ ବା ବୁଲିକମ୍ବ) | .. <i>Andrographis paniculata</i> |
| Kamalagundi | (କମଳାଗୁଣ୍ଡ) | .. <i>Mallotus philippinensis</i> |
| Karanja | (କରଞ୍ଜ) | .. <i>Pongamia glabra</i> |
| Kasaphal | (କଷାଫଳ) | .. <i>Terminalia chebula</i> |
| Kasi | (କାଶୀ) | .. <i>Bridelia retusa</i> |
| Kath-kusum | (କାଠକୂସୁମ) | .. <i>Garuga pinnata</i> |

| Local Oriya name | | Botanical name |
|------------------|-------------|--------------------------------------|
| Kendu | (କେନ୍ଦୁ) | .. <i>Diospyros melanoxylon</i> |
| Khejur | (ଖଜୁର) | .. <i>Phoenix sylvestris</i> |
| Koim, Kurum | (କଇମ, କୁରମ) | .. <i>Adina cordifolia</i> |
| Kuchila | (କୋଡ଼ିଲ) | .. <i>Strychnos nux-vomica</i> |
| Kuduchi | (କୃତୁଚି) | .. <i>Holarrhena antidysenterica</i> |
| Kultha | (କୋଳଥ) | .. <i>Grewia tilliaefolia</i> |
| Kumbhi | (କମ୍ପି) | .. <i>Careya arborea</i> |
| Kurdu | (କରଡ଼ୁ) | .. <i>Gardenia gummifera</i> |
| Kusum | (କସୁମ) | .. <i>Schleichera trijuga</i> |
| Lodha | (ଲୋଧ) | .. <i>Symplocos racemosa</i> |
| Magaki | (ମାଗାକ) | .. <i>Ailanthus excelsa</i> |
| Mahula | (ମହୁଲ) | .. <i>Madhuca latifolia</i> |
| Makarkendu | (ମକରକେନ୍ଦୁ) | .. <i>Diospyros embryopteris</i> |
| Moi | (ମଇ) | .. <i>Odina wodier</i> |
| Muturi | (ମୁତୁର) | .. <i>Flemingia spp</i> |
| Nageswar | (ନାଗେଶ୍ୱର) | .. <i>Mesua ferrea</i> |
| Nim | (ନୀମ) | .. <i>Azadiracta indica</i> |
| Noi-palasa | (ନୌପଲାଶ) | .. <i>Butea superba</i> |
| Padashi | (ପଦାଶୀ) | .. <i>Cleistanthus collinus</i> |
| Palasa | (ପଲାଶ) | .. <i>Butea frondosa</i> |
| Palo | (ପାଳୁଥ) | .. <i>Curcuma aromatica</i> |
| Pansa | (ପଣସ) | .. <i>Artocarpus integrifolia</i> |
| Panjan | (ପାଞ୍ଜଣ) | .. <i>Ougeinia dalbergioides</i> |
| Panigamari | (ପାଣିଗମାର) | .. <i>Trewia nudiflora</i> |
| Paniudun | (ପାଣିଉଦୁନ) | .. <i>Sterculia colorata</i> |

| Local Oriya name | Botanical name |
|------------------|--|
| Paruli | (ପାରୁଲ) .. <i>Stereospermum suaveolens</i> |
| Piasal | (ପିଅଶାଳ) .. <i>Pterocarpus marsupium</i> |
| Puijam | (ପୁଇକାମ) .. <i>Eugenia operculata</i> |
| Rai | (ରାଇ) .. <i>Dillenia pentagyna</i> |
| Ramdantuni | (ରାମଦାନ୍ତୁଣୀ) .. <i>Smilax macrophylla</i> |
| Rimili | (ରିମିଳି) .. <i>Bursera serrata</i> |
| Rohini | (ରୋହିଣୀ) .. <i>Soyimida febrifuga</i> |
| Sal | (ଶାଳ) .. <i>Shorea robusta</i> |
| Salai | (ଶାଳେଇ) .. <i>Boswellia serrata</i> |
| Sanchikurchi | (ଶଂଖିକୂର୍ଚ୍ଚ) .. <i>Wrightia tomentosa</i> |
| Siali | (ସିଅଳ) .. <i>Bauhinia vahlii</i> |
| Sidha | (ସିଧ) .. <i>Lagerstroemia parviflora</i> |
| Simal | (ଶିମିଳ) .. <i>Bombax malabaricum</i> |
| Sirish | (ଶିରିଷ) .. <i>Albizzia odoratissima</i> |
| Sisoo | (ଶିଶୁ) .. <i>Dalbergia latifolia</i> |
| Sujuni | (ସୁଜୁନ) .. <i>Dalbergia paniculata</i> |
| Sunari | (ସୁନାରୀ) .. <i>Cassia fistula</i> |
| Tal | (ତାଳ) .. <i>Borassus flabellifer</i> |
| Tentuli | (ଟେନ୍ତୁଳ) .. <i>Tamarindus indica</i> |
| Toon | (ତୁନ) .. <i>Cedrela toona</i> |