

## CHAPTER III.

### FORESTS.

Hazaribagh is a predominantly forest district, for out of its total area of 7,016 square miles as much as 3,051 square miles is covered with demarcated forest. The distribution of the forests by Civil Subdivisions is as follows :—

Sadar Civil Subdivision—1,394 square miles.

Chatra Civil Subdivision—1,049 square miles.

Giridih Civil Subdivision—608 square miles.

There is perhaps no other district in this State in which the economy of the people is so inextricably bound up with forest. As a general rule, wherever forest exists it is situated more or less in isolation away from the bulk of human population. For example, in the Shahabad district the forest is all tucked away in the extreme south, up and behind the Rohtas Hills; in Champaran the Himalayan foothills account for whatever forest has remained over; even in Singhbhum the best forest occurs in the remotest south-west corner known as the land of seven hundred hills. But in Hazaribagh district the forest is distributed almost uniformly all over. Forest and village occur in a succession though inevitably some areas have been denuded more than the other. In this district, if the forest disappears the village disappears also, or in any case the latter will find most difficult to hold out. The quality or density of a forest is always in inverse ratio of accessibility and this should give a preview of the picture that will be presented hereafter. It may be added that such a distribution of forest and population as is met with in Hazaribagh district, is an ideal condition for the best utilisation of the forest. It is conducive both to the maximum production of revenue and to the conferment of optimum benefits on the local population.

#### FOREST MANAGEMENT.

Formerly when forest covered most of the land surface and cutting and clearance were considered laudatory nobody naturally cared what happened to it. Cutting went on without let or hindrance. As the population grew more cutting took place. The balance between forest and population continued progressively to tilt more and more on the side of population and the forest eventually reached a state of denudation that caused concern. The Government-owned forests in Kodarma and Bengabad thanas were constituted Reserved or Protected Forests and given protection and scientific management. The rest belonged

to the zamindars and nothing could be done for them. Later, a long time later, a part of the forests belonging to the then Ramgarh estate and under management by Court of Wards was constituted Reserved Forests by agreement under section 38 of the Indian Forest Act. These forests prospered under scientific management and silvicultural treatment but the rest of the zamindari forests continued to be the prey of the wanton axe. Things thus went on with gradual acceleration of cutting caused by the mounting population. But the crisis was reached during the period of Second World War. An unlimited demand for timber and poles arose from the Defence Department and these forests being the most accessible received the full brunt of the fury of cutting. Indiscriminate fellings went on everywhere and almost all the good timber was cut and removed. Efforts had earlier been made in this district, as elsewhere in Bihar, to induce private forest owners to come to an agreement with Government under the provisions of section 38 of the Indian Forest Act for scientific management of their forests on terms sufficiently advantageous to them. But the owners were not very agreeable. They accordingly held out. There is no element of compulsion in the provisions of section 38 of the Indian Forest Act which rather presupposes the first advance on the part of owner himself. Seeing that the conditions had already deteriorated to a point of almost irretrievable damage to the national property Government had to step in with a compulsive enactment. Thus in the throes of impending calamity to the forests was the Private Forests Act of 1946 born. This was a hundred per cent compulsive Act and provided for the taking over of private forests by Government for management without reference to the owner's wishes, but guaranteeing that the forest would remain the property of the owner and assuring to him total net profits from the forest, after deducting only the actual costs and not charging even commission for the management. The Act also safeguarded the rights of the people and contained provision for settlement of any leases that might be the encumbrance of any given forest at the time of the enactment. This Act was not a day too early and fortunately not too late either. The drastic Forest Act had received a wide publicity during its bill stage and people hurried in all corners to lay by what they could before, as they mistakenly understood, the doors of the forest for ever were locked against them. The owners cut and sold, the villagers cut and stocked or even in sheer spite or on instigation cut and destroyed. Provisions of the Forest Act also proved unequal to the occasion, for over an unavoidable period of formalities the forest almost hung in the air—it was taken away from the owners but not taken over by Government and nobody could effectively protect it. Things were, however, remedied as time went on and the chapter of destruction rapidly came to a close. The Forest Department

officers and men had to work against an overwhelming tide of psychological and physical opposition, both from the owners and the people in general—the owners opposed and spread disaffection against Government and the Forest Department because they did not relish the forests being taken away from their hands; the people opposed because, although they would gain in the long run by the continued existence of the forest, they were restrained from wanton cuttings and were subjected to control and regulation which of course nobody likes. Ultimately in 1950 the Bihar Land Reforms Act came into operation and all the private forests vested in the State. Now the entire forest area in Hazaribagh district is the property of the State. Scientific management has been extended to all the forests.

#### TOPOGRAPHY.

The entire district is either hilly or undulating. The highest point, namely, 4,481 feet above mean sea level occurs on the Parasnath Hill. The Gawan and Satgawan Hills form the middle-north fringe of the district. At the extreme north-west occurs the hilly or highly eroded terrain of Pratappur thana and part of Simaria and Chatra thanas. In the south occurs Chutupala Hill which divides this district from Ranchi district. In the middle south-west Barkagaon and Tandwa Hills present a special feature of sheer precipice capped by extensive softly rolling plateau. The quality and extent of forest on this plateau are particularly heartening. This has been so from the sheer difficulty of extraction from these hills. Such plateau also exists on Jhumra Pahar near Dania railway station. Here also the state of timber and bamboo crop is far superior to that found on the lower aspects or on the plain land. The Parasnath Hill stands out as a great sentinel commanding a large landscape. Forests occur on all these hills, their density and quality naturally varying with the ease or difficulty of access. On the undulations also, interspersed with villages and fields, forests occur and on the whole the district is a perfect blend of forest and agriculture.

#### DESCRIPTION OF THE FORESTS.

*Sal* (*Shorea robusta*) is by far the predominant species of trees in the forests of Hazaribagh district. This species of trees is capable of growing to giant sizes as in Saranda forests of Singhbhum district, commonly attaining 8 feet to 10 feet in girth and sometimes growing up to 14 feet. But in Hazaribagh district indiscriminate cuttings over a long period and exposure of soil to the desiccating sun have rendered conditions unfavourable to growth of the maximum potentiality. Pole size, namely,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  feet in girth, is about the commonest but over extensive areas of the more accessible terrain, chiefly the plateau and plain land, only saplings exist. Larger trees, commonly 3 feet to

4 feet in girth, occur on the plateau of Barkagaon and Tandwa. The Kodarma Reserved Forests are supposed to be in the best state of preservation and here *sal* poles of 2 to 3 feet in girth are quite common. Next in the degree of efficient protection are the ex-Reserved Forests of erstwhile Ramgarh estate. These also contain a good proportion of *sal* poles. Elsewhere chiefly firewood is available. Almost all over outside the Kodarma and Khurchutta Reserves there are high stumps with pollard shoots which unmistakably indicate wanton and destructive cuttings in the past. These forests will take time for their rehabilitation. But once they are put in shape they will form a most valuable national property vital to the population of the district. Forest is destroyed not only by the amount of cutting but also—and sometimes this is more important—by the quality and manner of cutting. Every tree in the forest grows every day and at the end of the year there is a certain quantity of accumulated increment of the entire forest. If this increment alone is taken annually it will be the interest or dividend earned by an investment and will not damage the capital of the forest property. But how to take out this annual increment calls for the science and practice of silviculture. For instance, there may be a congested group of trees, one tree competing with the other for light and nutrition. Here one or two trees can easily be cut away by which not only a certain quantity of timber will become available but also the resultant stand will benefit by the release of tension of competition. On the other hand there may be only one tree standing in the middle of a small blank space. If this tree is cut away then there will be no source of supply of seeds for the blank area to naturally fill itself up and turn into forest. Thus it will be understood that whereas no damage has been done by taking away two or three trees from a congested group, much damage has been done by taking away even one tree from a blank space. Secondly, if *sal* pole is cut close to the ground its root system sends up fresh vigorous coppice shoot which in time replaces the cut tree or even produces a better tree. But if the same pole be cut high, say at a height of 4 feet or so which villagers commonly do, straight coppice shoot will not emerge from the ground level but only thin shoots will grow from the high stump and these will never grow into good trees. Thus only by the wrong manner of cutting a good tree may be destroyed for ever. The Forest Department is engaged in the task of teaching, practising, and publicising the correct methods of silviculture and in associating the people with the work of proper forest conservation.

The *sal* tree is associated with various other species of trees whose names will be given hereafter. But one of the most important associates is bamboo (*Dendrocalamus strictus*). The bamboo areas are mostly confined to the hills and undulations in between. Bamboo is not

uniformly localities. Chatra to Dania there to road. T quality of contain b the part c in the dis bamboo b only thin available between J but these Dhaava a rence of I rehabilita not in a People in ground at The pape impetus t areas will developm

Next (Acacia c prepared catechu- chiefly or all been c From the in the loc to produc enterprise mon in tl

Anot forest is t timber in malabaric a state of for the 1

uniformly distributed throughout the district but occurs in special localities. The chief locality is the region of forests extending from Chatra to Pratappur, thence to Lawalong and Semaria; from Chatra to Dantar and beyond; the Jhumra Hill and undulating forests from there to near the Hazaribagh-Bagodar road and Hazaribagh-Ranchi road. The Kodarma Reserved Forests also contain a fairly good quality of bamboos. Part of Barkagaon and Hendgir forests also contain bamboos. On the northern slope of Parasnath, and specially the part of it known as Phulibagan, has on it perhaps the best bamboos in the district. The southern slope also has extensive occurrence of bamboo but the clumps are all reduced to a state of utter poverty and only thin shoots, often in helpless congested mass, are all that are available at present. The hills to the south of Grand Trunk Road between Barhi and Barkatha also contain a fair sprinkling of bamboos, but these are thin and poor. The forest between Chauparan and Dhanva also contain a proportion of bamboos. Elsewhere the occurrence of bamboo is not appreciable. The entire bamboo area needs rehabilitation by cultural aids. The clumps are mostly congested and not in a position to develop to their best without proper treatment. People in the past cut the bamboos at heights of 3 to 5 feet from the ground and these stumps are dead and add to the baffling congestion. The paper mills have of late been taking these stumps and from this impetus the congestion is being cleared. In course of time the bamboo areas will prove very valuable economically and help industrial development.

Next in importance, or perhaps as important as bamboo, is *khair* (*Acacia catechu*). From the chips of its heart wood a decoction is prepared which on concentration and solidification turns into 'kath' or catechu. *Khair* trees occur over much vaster area than bamboo and chiefly on the eroded expanse of the countryside. Larger trees have all been cut away and what is left is pollard shoots and thinner stems. From these also *kath* in restricted quantity is annually prepared, chiefly in the localities of Chatra. But it will take sometime for *khair* area to produce economically exploitable trees. *Kath* industry is a sizeable enterprise of employment though seasonal. *Khair* trees are very common in the Chatra subdivision.

Another tree of very common occurrence in the hilly parts of the forest is *salai* (*Boswellia serrata*). It is a soft-wood species but the timber in planks splits and is therefore much inferior to *simul* (*Salmalia malabarica*) for the packing industry. *Simul*, however, is fast reaching a state of extinction because it has been very extensively cut out both for the match factories and for packing purposes generally. *Salai*

therefore has to take its place and is already coming to the front. During the last World War a vast quantity of *salai* planks had been supplied from the Kodarma Reserved Forest. In most of the accessible areas this species occurs only in pole stage, and will take some time to develop into use for packing industry.

*Makua* (*Madhuca latifolia*, Syn. *Bessia latifolia*) is another tree that commonly occurs in this forest, particularly on the fringes. Its distribution is specially plentiful in the Huntergunj and Pratappur thanas of Chatra subdivision where *makua* flower is much prized as an item almost of staple food for the poorer class for a part of the year. Elsewhere also the people supplement their food by *makua* flower and the rest goes to the distilleries. Its seed also yields useful oil. The local population use it sometimes for cooking purposes or for lighting and the trade uses it in the soap industry. With all its usefulness, however, this tree is looked upon with disfavour by the forest conservationist from its unfortunate association with destructive forest fires. For facilitating collection of *makua* flowers the villagers set fire to the thick litter of dry leaves for prior to flowering the tree sheds all its leaves. Unless the leaves are removed the corolla will get lost in the thick layer, so it becomes necessary to clear the ground underneath the tree. Sweeping will also achieve the purpose but burning is easier. The burning has the additional advantage of turning the ground black against which the *makua* corolla shows up most prominently. So far there would be no objection, but the villager commonly after setting fire does not tarry to extinguish; he walks away unconcerned while the fire spreads in whichever direction it finds a bridge of dry leaves. Forest fires are very destructive because in addition to the damage they cause to the vegetation they destroy the potentialities of forest floor for its effective role in soil conservation and flood prevention. The Forest Department have, therefore, of late started the process of departmentally burning away under strict control the dry leaves under every *makua* tree in or on the fringe of the forest.

*Palas* (*Butea frondosa*) also occurs plentifully in restricted localities, chiefly in Chatra Subdivision. It is an important species for cultivation of lac. Lac industry has not yet been taken up seriously in Hazaribagh district but the potentialities exist.

*Kusum* (*Schleichera trijuga*) is another important lac-host but it occurs scattered about and not in groups or patches like *palas*. Kusmi lac is about the best in quality. Trees of *harra* (*Terminalia chebula*), *bahera* (*Terminalia balerica*), and *amla* (*Phyllanthus officinalis*) jointly yield the well known myrobalans of trade. These myrobalans are used chiefly for tanning industry and there is a sizable export trade in this

commodity. Myrobalans also are used in restricted quantities in Ayurvedic medicinal system for manufacture of 'triphala', a decoction used as a purgative.

*Sabai* grass (*Eulaliopsis binata*) also occurs, more plentifully in Barkagaon, Tandwa, and Semaria thanas than elsewhere. Out of it ropes and strings are manufactured and in bulk it goes to the paper mills for manufacture of paper.

*Kend* (*Diospyros melanoxylon*) is another species of almost universal occurrence. It is prized for its fruit which the local people eat with relish. It ripens in April-May when the paddy stock runs short and thus comes in handy as a supplement of food. The timber of this tree yields ebony which is much fancied in furniture trade, but only big trees yield ebony in substantial quantity for it comes out of the very core of heart wood. Big trees capable of yielding ebony are not common.

*Asan* (*Terminalia tomentosa*) is utilised for growing tassar cocoon. *Sal* is also a secondary species for cocoon rearing.

*Piar* (*Buchanania latifolia*) is also quite common and is prized for its fruit. The pulp is eaten and the kernel of the seed is used in the preparation of sweets.

*Bhelua* (*Semecarpus anacardium*) fruits when ripe and dry are also eaten, specially in the forests of Dumri area. The seed is the common *dhoi's* nut—it yields an acrid juice which indelibly marks the cloth.

Forests are quite dense in the remoter parts but on the undulations or plain land where the bulk of habitation occurs the forests inevitably are thinner. In parts, however, as in the Birni and Dhanwar thanas of Giridih Subdivision, there has been extensive denudation. In such localities forest produce is hard to come by and cow-dung which could and should have gone to the fields as a manure is diverted to the kitchen. In certain other areas, for example, in Chauparan thana, the land is still covered with vegetation but mile after mile there are only scrubs and thorns and high stumps with pollard shoots.

The names of a few of the other common species that generally occur in the forest of Hazaribagh district are—*paisar* (*Petrocarpus marsupium*) *gamhar* (*Gmelina arborescens*), *bhirkund* (*Hymenodictyon excelsum*), *semul* (*Salmelia malabaricum*), *karam* (*Adina cordifolia*), *bel* (*Aegle marmelos*), *matasur* (*Antidesma diandrum*), *siris* (*Albizia odoritissima* and *A. lebeck*), *dhaura* (*Anogeissus latifolia*), *jaba* (*Bauhinia retusa*), *kachnar* (*Bauhinia variegata*), *kasai* (*Bridelia retusa*).

*bhukusmi* (*Careya arborea*), *sonari* (*Cassia fistula*), *putri* (*Croton oblongifolius*), *makarkend* (*Diospyros embryopteris*), *biskend* (*D. montana*), *ratan gurur* (*Eleoedendron glaucum*), *jamun* (*Eugenia jambolana*), *merle* (*Flaucortia romantchi*), *papra* (*Gardenia latifolia*), *koraija* or *kurchi* (*Holarrhoena antidysenterica*), *jirhul* (*Indigofera hamiltonii*), *bankapasia* (*Kydia calycina*), *kamla* (*Mallotus philippinensis*), *doka* (*Odina wodier*), *fenfena* (*Oroxylon indicum*), *keponjha* (*Sterculia urens*), *rohin* (*Soymida febrifuja*), *roronga* (*Trema orientalis*), *dhabai* (*Woodfordia fruticosa*), *ber* (*Zizyphus jujuba*), *kathber* (*Z. xylopyra*), *khajur* (*Phoenix humilis*), *koisan* (*Antidesma ghaesembilla*), *sidha* (*Lagerstroemia parviflora*), *kahua* (*Terminalia arjuna*) *chireta* (*Swertia angustifolia*), *simjanjha* or *marukata* (*Vitex penduncularis*), *maulan* (*Bauhinia vahlii*), *parjan* (*Ougenia dalbergioides*).

#### RIGHTS AND CONCESSIONS.

Most of these forests are burdened with rights. The general rule is that the inhabitants of a village within the cadastral boundaries of which the forest is situated have the right to take for their own *bona fide* use, but not for sale or barter, whatever forest produce they may require. The management of forests is therefore so designed that the requirements of these right-holders are first implemented and the surplus is sold for use of those who have no rights or for export to other markets. Certain forests, for example, the Kodarma Reserved Forests, have no rights in them because sufficient area of forest has already been set apart for the use of right-holders.

#### UTILISATION OF FOREST PRODUCE.

The commonest demand on these forests is for firewood, fencing material, poles for house-building and timber for agricultural implements, etc. The mica mines of Kodarma area consume an appreciable quantity of *sal* poles. The coal-fields also call for a large number of pit props and tram-line sleepers. Out of the surplus left over after meeting the local demand, timber, poles, firewood, and bamboos are exported to different markets. Firewood goes to Patna, Banaras, and even to the other towns of Uttar Pradesh as far as Firozabad. There is not much timber in the forest and the bulk of the output is made up of poles. Out of the bamboo baskets, *chicks*, mats, etc., are made and sold in the local hats. The people also utilise bamboos for their domestic requirements and the surplus goes to the paper mills of Dalmianagar and Calcutta. *Katha* is manufactured chiefly in Chatra area. Out of the climbers *mahulan* (*Bauhinia vahlii*) ropes and strings are manufactured. Toys and utensils are made out of the wood of certain species, chiefly *papra* (*Gardenia latifolia*). The forests grow grass used by the cattle

and part quantities sizable to be further and *owla* in sufficient large scale of *tassar*. The forest people an crop. I *kuranda* *ban-caloo*

*Sma*  
There is  
*lodh*, but  
industry

*Kena*  
industry  
provides a  
revenue t

For  
divided i  
Division.  
territorial  
of the res  
headquart  
tion will  
a part of  
Forest D  
number o  
Division.  
Forest Rs  
Forest Rs  
charge of  
manned t  
like Coup  
Amins an

(*Croton d. (D. Eugenia tifulia), ligofera (mensa) erculia dhabai opyra), sidha Swertia nandan*

and part of which is also cut and utilised for stall-feeding in restricted quantities. *Sabai* grass is exported for paper manufacture. There is a sizable trade in myrobalans, particularly in Giridih locality, but it can be further encouraged and extended to other localities for *harra*, *bahera* and *omla* trees are quite common all over. Lac growing is not practised in efficient degree in this district but potentialities exist to sustain a large scale industry, as *palas* and *lusum* trees are plentiful. The rearing of *tassar* cocoons is done in a small measure but this too can be extended. The forests yield varieties of edible fruits and roots on which the local people subsist for part of the year, specially when there is failure of crop. The chief fruits are *kend*, *piar*, *ber*, *bhetwa*, wild *jamun*, *karaunda*, *bel*, etc., and there are several tubers which are known as *ban-caloo*.

*Simul* cotton is collected in places and is locally utilised or sold. There is also a store of medicinal produce like *chireta*, *kalmegh*, *kurchi*, *lodh*, bark of *arjun*, *salmool anantmool*, etc., but there is no organised industry for collection and utilisation of these.

*Kendu* leaf exploitation for manufacture of *biri* is a large-scale industry in the district, specially in the Chatra subdivision. This provides a large volume of employment and also brings in an appreciable revenue to Government.

#### ADMINISTRATION.

For management purposes the forests of Hazaribagh district are divided into three Forest Divisions, namely, Hazaribagh Forest Division, Chatra Forest Division, and Giridih Forest Division whose territorial jurisdictions happen at present to coincide with the jurisdiction of the respective Civil Subdivisions. A fourth Forest Division with headquarters at Kodarma is shortly going to be started whose jurisdiction will include a part of the forests in the Hazaribagh Division and a part of the area of present Chatra Division. At the head of each Forest Division is a Deputy Conservator of Forests. There are a number of Ranges under each Forest Division—8 under Hazaribagh Division, 5 under Chatra Division, and 5 under Giridih Division. Each Forest Range is manned by a Forest Ranger or experienced Forester. A Forest Range in turn is composed of several Beats each of which is in charge of a Forester. Under a Beat there are a number of sub-beats manned by Forest Guards. In addition seasonal work-charged staff like Coupe Overseers, Coupe Guards, Naka Muharrirs, Naka Guards, Amins and Inspector Amins are also employed.

rule  
es of  
in fide  
may  
at the  
arplus  
rkets.  
e no  
apart

encing  
mple-  
ciable,  
of pit  
eeting  
ed to  
o the  
much  
. Out-  
n the  
quire-  
and  
f the  
ured.  
siedly  
cattle

## SCIENTIFIC MANAGEMENT OF THE FORESTS.

All the forests are managed under a scientific silvicultural system. Working plans are compiled after a detailed examination of all aspects of the forest, namely, the quality and density of the forest, the existing species and size of trees, configuration of the ground, the potentialities of the soil, rights and concessions, demand of the market, financial considerations, etc. The forests are grouped into a number of felling series and each felling series is generally divided into 40 parts, each such part being called the annual coupe. Felling in one year is carried out only in one coupe in each felling series. The principle behind it is that the quantity of forest produce available in each coupe represents the annual increment of that felling series and being in the nature of interest or dividend can be taken out without encroachment on the capital. The coupe is demarcated on the ground and is properly delimited by means of cleared lines and coaltar rings. A number of standards, generally 8 to 10 per acre, are retained by placing on them distinctive marks with serial numbers. These standards are not cut while the rest of the trees in the coupe are clear-felled. These standards serve the dual purpose of helping by their seed to regenerate blank areas around them or to supplement the deficient regeneration; they also provide a proportion of larger timber because while the rest of the forest is cut after 40 years these standards are felled after 80 years. This 40 year period is called the rotation. In felling the produce of the coupe it is strictly enjoined that the cutting must be done within 6 inches of the ground level because then alone will sound coppice shoots emerge from the root and replace the tree that has been cut out; if high cutting is done, only thin pollard shoots will come out and the forest will gradually be impoverished or ruined. In the following year the young plants are given silvicultural operation called cleaning. In this the grass and inferior species which might be suppressing the young plant of valuable species are cut away to give the latter a better chance of development. Climbers are also cut away since they retard the growth of trees and the more sturdy ones deform the bole and damage the timber. Plants of inferior species interfering with those of superior species are also cut out. This cleaning may have to be repeated in the second and third years also. In the tenth year a thinning operation is carried out which consists of spacing the plants properly so that each may get its proper share of sunlight and nutrition.

Bamboos are cut on a four year cutting cycle. Separate and overlapping felling series are formed for the management of bamboos. This means that in a coupe of timber, bamboos will not be cut nor will timber be cut in a bamboo coupe. Similarly for the exploitation of *simul* or *salai* or *khair* special overlapping felling series are formed.

The aim is to ensure equal sustained yield of each variety of produce, this yield representing the total annual increment of the forest in the shape of interest. Actually less than the full measure of the interest is taken out, for many standards are left behind. Thus under scientific management the forest property instead of diminishing in quantity or area actually improves as time goes on.

#### FOREST ROADS.

The Forest Department has to construct its own roads for purposes of extraction of the forest produce and also for inspection. The following forest roads exist at present.

Name of road.	Length.	Type of road.	Whether motorable.	Remarks.
Jori-Pratappur Road.	11 miles	Fair-weather	Yes	Lies in Pratappur P.-S.
Pitiz-Gan g p u r Road.	7 miles	Ditto	Do.	Lies in Chatra P.-S.
Pratappur-Raniganj Road.	13½ miles	Ditto	Do.	Lies in Pratappur P.-S.
Surhad-Khapuwani Road.	3½ miles	Ditto	Do.	Lies in Chatra P.-S.
Chatra-Sail-Bajdag Road.	4½ miles	Ditto	Do.	Ditto.

In addition the Public Works Department and District Board Roads passing through or near the forest are naturally made use of.

#### FOREST REST HOUSES.

The following Forest Rest Houses exist today :—

- (1) Kodarma Forest Rest House at Kodarma.
- (2) Meghatory Forest Rest House—10 miles from Kodarma.
- (3) Bengabad Forest Rest House—10 miles north of Giridih.
- (4) Dhab Forest Rest House—10 miles from Domchanch, and 17 miles from Kodarma.
- (5) Gajbandi Forest Rest House—near Gajbandi railway station about 12 miles from Kodarma railway station.

- (6) Hendgir Forest Rest House—near Hendgir railway station.
- (7) Dania Forest Rest House—near Dania railway station.
- (8) Gomia Forest Rest House—near Gomia railway station.
- (9) Pratappur Forest Rest House—at Pratappur in Chatra subdivision.
- (10) Bermo Forest Rest House—at Bermo in Giridih subdivision.

## REVENUE.

The revenue derived from the forests in Hazaribagh district from the year 1945 to 1954 is as follows:—

Year.					Rupees.
1945-46	...	...	...	...	1,55,490
1946-47	...	...	...	...	1,08,402
1947-48	...	...	...	...	1,86,539
1948-49	...	...	...	...	2,11,711
1949-50	...	...	...	...	6,57,795
1950-51	...	...	...	...	7,05,340
1951-52	...	...	...	...	6,79,589
1952-53	...	...	...	...	6,05,599
1953-54	...	...	...	...	9,14,455

This revenue is bound to increase as years go by and as the forests improve by silvicultural treatment. There is a vast possibility for expansion of revenue from products other than wood, for example, *lac*, *tassar* cocoons, medicinal plants, etc. If cottage industries based on forest products are encouraged they will open up wide avenues of employment.

## AFFORESTATION.

As has been said in the foregoing paragraph large stretches of land which once were covered with fine forests have since decades been completely denuded of all vegetation and stand out as desolate brown wastes on which not even grasses can grow. Large parts of such wastes have been gullied and deep ravines formed therein. For reclothing such denuded land and for arresting the progress of gully formation, afforestation schemes have been taken up. Afforestation has only recently started and has been carried out at Pathaldiha, Chandrobih, Birjamo near Kodarma, Motileda near Giridih and Latakhi near Jamua. The scheme is to afforest 12,000 acres annually. The major part of the area under afforestation scheme lies in the catchment of Barakar and Konar rivers. The cost of afforestation varies from Rs. 125 to Rs. 180

per acre. The afforestation work includes anti-erosion and gully reclamation measures also. Various species of trees and bamboos, and *sabai* grass are grown on the land according to its fitness for particular species. The immediate need is to grow fuel wood by which the cow-dung may be released from the kitchen for the fields. At present two special Afforestation Divisions are functioning in the district, one having its headquarters at Hazaribagh and the other at Giridih.

#### NATIONAL PARK.

For preservation of the fauna and to enable visitors to view wild animals in their state of freedom a national park has been constituted within the Hazaribagh district. It starts from about 10 miles of Hazaribagh town on the Hazaribagh-Barhi road and extends to east and west, but mostly westward for several miles. The total area is about 150 square miles with a core of right-free forest covering 80 square miles. Shooting is strictly prohibited in the entire 150 square miles, but while the inner core of 80 square miles will be preserved in the state of nature and no cutting of tree or disturbance of the flora in any manner will be permitted, in the outer fringe of 70 square miles normal exploitation may take place. A number of watch-towers to view the forest and wild life have been constructed and a Forest Rest House built at Rajderwa, 18 miles from Hazaribagh. The National Park is a beauty spot. A number of dams have been built and more are in process of construction. The purpose is to create pools of water where the animals may drink in summer. Towers generally have been constructed above these pools so that in summer visitors may sit on these towers and easily see the animals that will come to drink water. Artificial salt-licks have also been made for the animals. Roads have been constructed and are being extended. In addition to this National Park the Kodarma Reserved Forests have also been functioning as game sanctuary where shooting is prohibited.