

CHAPTER—II

Description of the Forest

Composition and Condition of the Crop:- The forests of Kolhan broadly conform to the following two main types of champion.

- I. (3) Tropical moist deciduous , and
- II. (4) Tropical dry deciduous.

The prevailing type of vegetation is sal which is remarkable for its purity over a large area and which represents the present climatic climax. Following Champion's concept of classification of sal forests the following main types are held in the tract dealt with:-

A3 — Dry Peninsular sal.

B2— Moist Peninsular sal.

Sub-types- (a) Low level sal.

(b) Singhbhum valley sal.

The general conditions obtaining in this division are favorable for obtaining natural regeneration of sal without any special effort. It comes in with practically everywhere excepting a few moist patches in valley bottoms exposed hill tops. The favorable climatic conditions are primarily responsible for this optimum condition. The rainfall is fairly well distributed throughout the Frost is almost negligible and drought is of no consequence in this area.

Edaphic factors also play a part in governing the composition of vegetation but these are subservient to climate. Although by far the greater part of the area is sal forest in which sal forms about 80 percent of the crop. Other plant associations such as dry and moist forests are also met with. It must not, however, be inferred that the crop of this division is I and II sal. As a matter of fact very considerable areas, especially on the shales, carry a miserable open of quality sal with no regeneration at all.

Phillips had divided the forests into ten broad types which with slight modifications, were retained by Mooney in his plan for this division. Although this classification was comprehensive and fairly accurate, some of the types were rather too fine to be distinguished on the ground and a few represented only the transitional phase from one type to the other. Considering the technical

efficiency of the field staff op. ,hom falls the main burden of executing the prescription of working plan in the field, Phillip's classification did not prove to be much practical help.

Derry in his revised plan for this division divided the forest into two main groups namely (I) Predominantly sal and (II) Predominantly mixed. These groups were further subdivided into different sub-types . Under the first he had distinguished the following sub-types :-

- (1) The better quality sal forest.
- (2) The intermediate quality sal forest.
- (3) The open and dry sal forest.

In the second group also three sub-types were recognised, these were (1) damp, (2) moist , and (3) dry.

From the stand point of management such a classification is not of much practical utility in formulating clear cut prescription intended to be applied in the field. Giving due importance to its practical aspect, classification of forests has necessarily to be based on broad principles so as to make the sub-types easily distinguishable on the ground and to co-relate them with the different systems of management prescribed in the working plan. For the purpose of this plan, therefore, the forests of Kolhan division on are described in the following main types:

Type I - Dry Mixed Forest.

Type II— Dry Sal Forest.

Type III- Moist Sal Forest.

Type IV — Moist Mixed Forest

TYPE — I Dry Mixed Forest:

This occurs on hill slopes and ridges with varying aspects but is generally associated with hematitic-quartzites, also basic igneous rocks, basic gneisses and schists. Sal is almost absent except on the northern slopes where it occurs just in sprinklings. *Anogeissus latifolia* is often sub gregarious in a association with *Terminalia tomentosa* ,*Lagerstroemia purviflora* ,*Madhuca cardifolia* , *Mitragyna purviflora*,*Lannea coromandallca*,*Buchnania lanzan*,*Diospyros melanoxylon*,*madhuca indica*,*Bahunia* sps. ,*Aegle marmelos*,*Schrebera swietenoides* and *oegenia confeinensis*.*Pterocarpus marsupium* and *Chioroxylon swietaenia* are rather local On steeper slopes with southernly aspects and little depth of soil the composition become more dry with *Cleistanthes collinus*,*Boswellia serrata* ,*Choclospermu m religeosu m*,*sterculia urens*,*Euphorbia Nivutia*,and *Gardenia latifolia* on bare rocks.*Emblca officinalis* is fairly common.*Nyctanthus arborstittis* and *Petalidium barlerioides* are common under shrubs and

Eranthemum(Syn.Dendacanthus) purpurascens is a typical herb.Grasses are usually scanty but among those which occur in this type the most conspicuous are Themeda quadrivalvis and Apluda muica.

TYPE —II Dry Sal Forest:

This type is generally met with on exposed sites, upper hill slopes and ridges with varying aspects where the soil is a stiff impermeable clay derived from shales in particular the white shales with or without quartz veins. The crop is generally poorly stocked and for the most part open and grassy. sal is the dominant species in the overwood but seldom exceeds 50 feet in height and is almost invariably misshapen and hollow. The common associates are Buchnanian lanzan, Eugenia carryophyllifolia, Diospyros melanoxylon, Anogeissus latifolia, Terminalia. Tomentosa, Dellenia and Emblica officinalis. Characteristic shrubs are Wendlandia tinctoria, W. excerta, Gardenia gummifera, G. turgida, and Woodfordia fruticosa. The principal grasses are Eulaliopsis binata, Heteropogon contortus, Arundinella setosa, the latter being common along the crests of the ridges and on the worst sites. In the ravines Pogoneatherum paniceum (Syn.P.sacohareideurn) is common. The regeneration of sal is practically absent throughout except on the northern aspep3ywhere it is present in small localized patches and that too is killed by fire every year. The present degraded nature of the crop may largely be attributable to the frequent forest fires that sweep the entire area every year. At places, particularly in Latua, parts of Saritara and Saitba blocks, erosion has set in and gully formation is in progress.

TYPE — III Moist Sal Forest:

This type has a fairly wide distribution and occurs in several valleys and their gentler and sheltered slopes with usually northerly aspects. The soil varies from alluvial clay, loam to a stiffish clay on the slopes but is none the less, moist, deep, fresh and well drained. It is found on a variety of rock types, perhaps most frequently on Phyllites, shales and schists. Where the soil is derived from haematites-quartzite sal is usually very pure and well stocked with trees of 120 feet and more in height. This type varies between wide limits and merges imperceptibly into the drier and moister types. The areas which have suffered from past jhuming support a rather open grassy forest with sal as the predominant species but the trees are usually unsound owing partially to over exhaustion of the soil and partially to isolation. At such places the chief associates to sal are Buchanania lanzan, Diospyros melanoxylon, Terminalia tomentosa, Lagerstroemia parviflora, Casearia graveolens, Cassia fistula and Anogeissus latifolia occurs scattered as a moderate sized tree. Very characteristic shrubs are Moghania chappar, Indigofera pulchella, Randia spinosa, Croton oblongifolius, Strobilanthes auriculatus and Glochidion lanceolarium, Phoenix acaulis is abundant. At place

Where it has not been disturbed by past cultivation the sal is usually very pure and well stocked attaining large dimensions.

In the valleys and their lower slopes the composition becomes more moist and sal which is, 9pod II quality to QI occurs mixed in a greater or lesser proportion with other species. The composition of the crop becomes rich in species: of which the following are typical:- *Syzygium cumini*, *Salmalia malabarica*, *Adinia cordifolia*, *Albizzia procera*, *Portium serratum*, *Schlechera oleosa*, *Bridelia retusa*, *Croxylum iridicum*, *Terminalia tomentosa*, *T. belerica*, *T. chebula*, *Casearia graveoleris* while *Anthocephalus cadamba*, *Mangifera k'idica* and *Cadrela toona* are not uncommon. The underwood consists of largely semi-evergreen species amongst which the following are typical besides what have been enumerated above:- *Nicromelum pubescens*, *Ardisia solanacea*, and *Polyalthia cerasioides*. In the undergrowth *Moghania stricta*, *Clerodendron viscosum* and *Coleogrookia oppositifolia* come in *Eranthemum nervosum* is typical in moist ravines in Leda, Santara and Latua Blocks. The principal climbers are *Bauhinia vahlii*, *Butea parviflora*, *Milletia auriculata*, *Combretum decandrum* and *Smilax zeylanica* (Syn. *S. macrophylla*). Two grasses are characteristic. *Oplismenus compositus* under broken canopy. Among other conspicuous grasses may be named *Bothriochloa intermedia* forma *punctata*, *Chrysopogon fulvus* (Syn. *C. montanus*), *Pseudoscleria fasciculata*, *Themada quadrivalvis* and *Capillipedium assimile*.

Type-IV Moist Mixed Forest:-

This type is rather limited in its distribution and mostly confined to well sheltered and moist stream banks and to the bottoms of valleys occupying the flat lands on the bends of larger streams. The soil is invariably deep moist loam or loamy clay with impeded drainage, and is largely derived from basic gneisses and schists. The vegetation is characterized by the absence of sal generally and the presence of host of mesophyllous species among which the most characteristic are:- *Terminalia tomentosa*, *T. arjuna* [confined to nala banks], *Anigeissus acuminata* [along nala banks]; *Mangifera indica*, *Diospyros peregrina* [Syn. *Diospyros*], *Dillenia pentagyna*, *Bridelia retusa*, *Picoua benjamina*, *F. glomerata*, *F. nervosa* [rare], *Bischofia javanica*, *Polyalthia cerasioides*, *Spondias pinnata*, *Hymenoclytus excelsus*, *Adinia cordifolia*, *Portium serratum*, *Nitragyan parviflora*, *Albizzia procera*, *A. chinensis*, *A. odoratissima*, *Salmalia malabarica*, *Schleicheria oleosa*, *Litsea nitida* [scarce], *L. glutinosa*, *Aroxylum indicum*, *Careya arborea*, *Millettia velutina*, *Syzygium cumini*, while *Salix tetraeperna* and *Barringtonia acutangula* are confined to the bank of larger perennial streams *Artocarpus lakoocha*, *Aistonia scholaris*, *Anthocephalus cadamba*, *Aphanamixis polystachya* [Syn. *Amoora rchituka*] are limited to sheltered ravines. Among the shrubs the most important are *Glochidion lanceolarium*, *Meyna laxiflora* [Syn. *Vamgueria pubescens*], *Randia dumetorum*, *R. uliginosa*, *Ardisia scianacea*, *Carithium dicoccum*. *Bambusa* bamboo occur along the perennial streams and *Gephalostachyum pergracile* in narrow ravines. *Eranthemum purpurascens* and *E. nervosum*, *Strobilanthes scaber*, *Leea crispa*, *Petalidium barlerioides*, *Barleria stngens*, *Antidesma diandrum*, *Desmodium* spp. are the typical under shrubs. Among the grasses the most important are *Imperata cylindrica*, *Accharium* spp. and *Themada villosa*, along the banks. Elsewhere *Panicum patens*, *Oplismenus compositus*, *Ottachloa malabarica* [Syn. *Centropogon lappacea*], *Capillipedium* spp. While *Pogonathrum pniceum* occurs clinging to the rocky banks of streams and *Thysanotus maxion* higher elevation. This type is prolific in climbers and the most conspicuous are *Bahunia vahlii*, *Milletia auriculata*, *Combretum decandrum*, *Acacia canescens*, *A. pannata*, *Butea parviflora* and *Smilax zeylanica* beside many species of *Dioscorea* and *Ipornea twinera*.

Although the ever green consociation is very poorly represented in this division compared to the moister and cooler forests of the Saranda division , a few species are common to the both the divisional and are of general interests. . *Aphanamixis polstachya*, *Litsea nitida*, *Bischofia javanica*, *Alstonia scholaria* ,*Ficus nervosa*, *Urena hamiltonii*, *Sulandra scandens* and *Carallia brachata* [syn. *C. intererrima*] are very rare in this division, *Saraca indica* was noticed only along the Kotamatj gara and Jue gara. A few specimen of *Amoora spectabiis* in

association with *Linociera remivora*[Syn. *L. intermedia*] were seen in the under- story on the upper reaches of the Kotamatj gara. An old specimen of *Canthium glabrum* was found in the Agruan P.F. near the Karo . The other place it occurs in singhbhum fores%..s along the Bununenli nala in the Ghatkuri of Saranda division. *Lagerstroemia speciosa* occurs in the muddy pools along the Koina in the Ambia block *Gleichenia diniaria* occurs in the Santara block near Bamiapur.

The forest, on the whole ,is predominantly sal forest except in the Saitba block. Patches of mixed forest both dry and moist ,occurs throughout the division in relation with basic and ultra basic igneous rocks and the calcareous hyalites associated with epidiorite flows.

The forests of this division represent distinctly drier type than those of Saranda . These drier conditions are no doubt the great extent attributable to orthopogenic factors if not entirely. so these forests being more accessible to the open and well populated country lying to the east and south were extensively and intensively J humed i n the past a nd become populated at a n e arlier d ate. The continuous and wide spread jhuming has resulted in the loss of top soil degradation of site quality and a general lowering of water level . These factors have led to. seral retrogression to drier type . These has not been any perceptible improvement since 1883 owing to the frequency of forest fires which• have decidedly become more frequent and severe during the past decate or so. No amount of silvicultural treatment and change in management practice in future will arrest this retrogression unless forest fires are eliminated from those areas.

The areas of main types and quality classes are reproduced below from Mooney’s plan . Saitba and the different Protected Forest blocks have not been stock mapped in detail and their areas have not been included.

SAL FORESTS					Mixed Forest	Forest Village	TOTAL
Block	Q.I & II	Q. III	Q. IV	Q. V			
1	2.	3	4	5	6	7	8
Ambia	384	1016	6541	9076	1341	----	18358

Leda	733	1654	7964	9186	4154	----	23691
Latua	293	1646	8562	29090	1461	210	41262
Santara	444	1231	8391	24023	4104	686	38879
TOTAL	1854 ..	.5547	3145 8	71375	1166 0	896	122190

Injuries to Which the Crop is Liable:-

Before the specific injuries to which the crop is liable are discussed, it may be useful to touch upon a phenomenon which has assumed very great importance for the forests of the state. This is the drying up of middle-aged and mature stems, gregariously at places and sporadically at others. Though occasional dry stems may be encountered in most of the blocks large scale drying up is noticed in Ganmore P.F. and parts of Latua block along the boundary of Chaibasa Division. Particularly in Latua 30,25 etc. The factor or factors responsible for this drying up have not yet been correctly diagnosed. The Forest Mycologist who visited most of the affected areas of the state found all the dead trees infected with a fungus *Hypoxyylon* spp. The lower part of the stems of the trees look like having been charred by fire but the hand is not soiled if the blackened stem is rubbed. *Hypoxyylon* species is of a sporadic occurrence in most of the sal areas of this country and may be noticed on occasional trees in fairly healthy and moist localities. What factors, however, encourage the large scale infection of trees by *Hypoxyloi* species is yet to be determined. Want of adequate moisture and repeated fires [the effect of grazing is not very heavy in most parts of these forests] must necessarily have a pronounced effect on forest hygiene. These certainly reduced the vitality of the trees and increase the susceptibility of fungal attacks. Hollow stems are found in large extent in Leda, Latua and Ambia block.

FiRE: Fires are undoubtedly the greatest danger in this division and it is believed that much of the unsoundness is due to fires which occurred when the trees were in the sapling stage. Fire danger had been emphasized in the successive working plans but things seem to be deteriorating. Due to the extension of mining and forests operations **many more people now visit and live** inside the forests than before. The chances of forest fires have thus proportionately increased. Formerly the local people smoked tobacco in the form of chuta or fica of green leaves, now bin is very much preferred and match boxes are carried in every pocket. The whole of Saitba block and parts of Latua and Santara are 'most susceptible', being surrounded by habitation. The whole division experiences fire during summer season, during the previous plan period there has been a diminishing trend in expenditure for fire control.

The remarkable capacity of sal to recuperate from the effects of fire and the luxuriant green growth which follows profusely and immediately after the initial showers give to the common man a feeling that nothing serious has happened. But the fires do incalculable damage. The seedling and young saplings are generally killed. Though they do come back during the rains particularly if the seedlings are cutback, the growth of the previous years is completely lost. Poles and larger trees are charred which leads to unsoundness and increased susceptibility to

attacks by insects and fungi . The burning away of the humus' and litter year after, leaves the surface soil baked; friable and nonporous. During many years forest fires may easily cause the lowering of water table, sometimes beyond the reach of many trees and thus rob the forest floor of its capacity to conserve main water and to check soil erosion. A fire —swept clean forest is ,in fact ,non-effective to conserve moisture and most of the moisture falling during the initial showers when the flora has not established itself, is lost to the' forest:

In spite of the universal recognition of the dangers of fire , concrete measures fro fighting forest fires have been lacking. Since the year 1930 a good number of fire lines were abandoned upon the calculation that newly constructed forest roads would take their place. Those roads which are not is constant use do. Always bring with them the dangers of fire at the.hands of careless carters, truck men and pedestrians.

DROUGHT: - Drought is generally of rare occurrence in this division and not much of damage should be expected on this account. Rains , however, have not been adequate in the last few years and due to fire a good lot of water does not reach its naturpplace to the ground below, and sort of physiological drought occurs. It is very likely that the large drying up of trees noticed in parts of the division may largely be caused by this factor.

CLIMBERS: - Climbers are a pest only in the moisture valleys while on the hills and in the drier forests they do little damage. Natural regeneration has not been coming up in some of the moist areas of Leda and Ambia owing to the prolific growth of Combretum decandrum and Millettia auriculata. Other climbers which do considerable damage are Butea parviflora, Bauhinia vahlii, Naravelia zevlanica. Dioscorea species, Ipomea species, Atvlosia and smilax species. Butea superba occurs chiefly in drier forest. Mesonnourori cuculatum and Uvaria hemiltonil are Loanthus is not very common and occurs rather sporadically in some pole areas.

INSECTS: - Hoplocerambyx spinicornis is the only insect of any importance but wide spread damage is not caused.

WIND:- Very little damage is caused on this account . Occasional severe storms occur during which isolated and unsound trees are sometimes broken or uprooted but such storms are generally very local.

GRAZING- :- There is very little damage by this source though on the fringe of villages there is a fair incidence of grazing. The damage by grazing is more conspicuous in forest of the Saitba Range and indeed, the whole of Saitba block is intensely over grazed by herds of catte. Grazing and fire are primarily responsible for the present degraded nature of the Saitba R.l.

FROST:- Forst is a rare occurrence and there is hardly any damage on this account.

ANIMALS: - Animal do not cause much damage. Elephants do some damage among the younger poles and bamboos.

THEFT: - Fairly serious damage is done to the forest of Saitba block on this account. Parof Latua block near Tonto and Lisamati are also affected.

A part from the above injuries ,the forest of Koihan division is badly suffering f rom the affect of illegal felling d one by the J harkhand A gitatioists, commonly known “Jharkhand Felling “ . In this mass felling standing crop was felled from time to time on the call of agitation. Sometimes girdling of green trees are also found, which dries up in due course of time, resultirig in the decutation of the dense forests of Kolhan.

PERIODIC FLOWERING: - No records are available in the division about the periodic flowering of bamboos and Strobilanthes during the period of the plan under revision. The flowering record for the Saranda Division is reproduced from Mr. Sinha’s plan:

Strobilanthes acaber flowered along the streams during 1954-55 and I 955-56. Strobilanthes auriculatus flowered during I 945-46 and 1953-54.

CHAPTER - III

Utilisation Of The Produce

Agricultulàl Customs and needs of the Population: the bulk of the linhabitants in the division is aboriginal Ho’s, belonging to the Kolarian group of They are illiterate people, superstitious and believe in spirits . They have no script of their own and even now messages are transmitted from one village to another by means of conventional signs and symbols. Though the welfare schemes of Govt. have yet to produce the full results, elementary education is Lw within the reach of all. A sprinkling of non-aboriginal population, mostly of -J origin occurs throughout the area and tillrecently constituted virtually the lonly literate element in many villages. Some colonies of non-aboriginals are ind along the Railway line at Goilkera and sonua engaged in the various including forestry based ones.

Except for a small percentage of professional black-smith [Lohar] potters[Kumhars] ,and basket-maker [Turis and Doms] the aboriginal population

r is essentially agricultural by nature . Cultivation is still in a backward condition and primitive methods continue to be employed. Terraced fields for wet cultivation of paddy has been adopted but wherever land is available in plenty the population prefers the simpler method of raising up land paddy ,maize millets and oilseeds. Where the village possesses forest growth outside the limits of Reserved and Protected Forests, the same is gradually destroyed by shifting cultivation. With the intensification of forest management and exploitation ,the local population earns a living, though definitely meager ,by working for the department or the coupe purchasers.

The aboriginals retain their traditional natural instinct and flair of the life of the jungle . They are excellent trackers and keen hunters, the axe and bow and arrow form an essential part of their everyday make-up. They love to enjoy life and during their numerous tribal festivals, enjoy mahua liquor and the rice-beer, ignoring even the primary necessities of life .During this period they are even averse to under —taking any manual labour and cannot easily be called away. The actual requirements of people are very simple and are normally obtainable from the forest within the village area. However , towards the open country to the north-east where there are generally no forests in the villages , the requirement of people are met from the adjoining Reserved and Protected Forests. The chief requirements are wood for agricultural implements poles for house building fuel, grass for thatching, ropes and numerous minor products for a variety of purposes. The requirements of the people with species and sizes [where necessary] is indicated below.

- (i) For house building:- Poles 1' to 2'9" [under bark], species in demand sal ,asan (Terminalia tomentosa) ,panjan (Ougeinia oejeinensis), karla (Cleistanthus collinus) ,bija(Pterocarpus marsupium), karam(Adina cordifolia) , jamun(Syzygium cumini) ,sidha(Lagerstroemia parviflora), and dhaura(Anogeissus latifolia). The two last named are not liked owing to their susceptibility to dry rot.
- (ii) For plough :- Poles 1'-6" to 3'-0" (under bark) .Species in demand— sal ,panjan(Ougeinia oejeinensis) ,asan(Terminalia tomentosa) ,mahua(Madhuca indica) ,kusum (Schleichera oleosa)
- (iii) For machans:- Poles 1'-0" to 2'-0" (under bark) : Species in demand sal, asan (Terminalia tomentosa),dhaura (Anogeissus latifolia),karla(Cleistanthuscollinus),jarnun(syzygium cumini),sidha(Lagerstroemia parviflora) kendu(Diospyros melanoxylon).
- (iv) For carts:- Poles 1'-6" to 2'-6"(under bark) .species in demand-sal,panjun , dhaura, asan and arjun.
- (v) For bedsteads and other crude furniture:-Poles 1'-3" to 1'-6" (under bark).Species in demand- dhaura(Anogeissus latifolia),Sal, gamhar(Gmelina arborea),karam(Adina cordifolia),bija (Pterocarpus marsupium), panjan(Ougeinia oejeinensia), asan (Terminalia tomentosa).

- (vi) For tool-handles and banghy —Poles 1'-0" to 1'-3"(under bark).Species in demand— Dhaura(*Anogeissus latifolia*),panjan (*Ougeinia ojeinerisis*), gonver(*Grewia taliaefclia*).
- (vii) For oil mills- Trees 4'-6" to 5'-6" (under bark) .Species in demand —Kusum(*Schleichera oleosa*),panjan(*Ougeinia ojeinensis*),mahua(*Madhuca indica*) and sal.
- (viii) For pil(measuring cup)- Poles 1'-3" to 1'-6"(under bark) Species in demand-Bhurkund (*Hymenodictyon excelsum*).
- (ix) For paddy pounder- Trees 3' to 4' (under bark) species required kusum (*Schleichera oleosa*), imli (*Tamarindus indica*).
- (x) Structural purposes as fencing of coUrt —**yards and fields- erecting** walls of house for roofs and machans-Species in demand —Icha (*Woodfordia fruticosa*),karla(*Cleistanthus collinus*),dhaura(*Anogeissus latifolia*), sal,asan(*Terminalia tomentosa*) amla(*Emblica officinlis*).
- (xi) Firewood for all kinds.
- (xii) Bamboo (*Dendrocalamus strictus*) for roof battons, house —walls ,fencing, fish-traps, baskets, bows and arrows.
- (xiii) Ropes and string from sabal grass and the fibre of *Bauhinia vehli* climber.
- (xiv) Thatch grass(*Heteropogon contortus*) for roofs of houses.
- (xv) Date leaves for mats.
- (xvi) Broom grass (*Thysanolaena maxima* and *Arundinella setosa*) for brooms.
- (xvii) Leaves of sal and *Bauhinia vahil* for making of temporary Plates and CU PS. etc.
- (xviii) Flowers and fruits of Mahua (*Madhuca indica*) for food liquor, cattle food and oil.
- (xix) Edible fruits and roots etc. of Species — Mango, Kend (*Diospyros melanoxylon*), piar (*Buchnanian lanzan*),jamun and the roots of many *Diosporea* creepers.

Prior to 1939 when the last war broke out, the principak marketable products of the division were sal sleepers,sal logs, sal poles and fuel. Piasal and gamhar had limited sale as furniture wood. Most of other miscellaneous timber such as asan, karam , panjan, arjun,jamun ,dhoura, were generally neglected . There was some demand & miscellaneous soft wood such as simal, karam, bhurkund, etc. TIN then the chief consumers of the produce were the Railways for the sal sleepers. Sal and Piasal logs, squares and poles were in demand in Kolkotta and around. The coal-fields pro)4ded a market for pit-props, logs, rejected sleepers and trams llne sleepers. Jamshedpur also

provided a fairly ready market for green logs, poles, rejected sleepers and fuel. With the outbreak of war the demand of all kinds of timber rose very sharply and the timbers so long considered inferior or useless were willingly accepted with, Asan came to be used as sleepers. Dhaura was found eminently suited for tool-handless and the soft woods came in demand for match industry and for packing cases. After the cessation of hostilities, the Post-war Development Schemes were taken up. There has been a great demand for various timber in the Development schemes under the First and Second Five-Year Plans. Large quantities of constructional timber are being regularly supplied to the community projects and poles of different sizes and species are being utilised for electrical transmission and distribution poles as also for telephone and telegraph posts. The establishment of a steel factory at Raourkela 'has also brought in a great demand for timber of all kinds. The small size poles of sal and miscellaneous species which were so long left to rot in the forest are at present being utilised by the Department itself as fencing posts in the different afforestation areas of the states.

Among the minor forest produce Sabai grass and kendu leaves may be considered as important. Sabai grass is exploited on a monopoly basis by the Bengal Paper Mills for manufacture of paper. Under the conditions of lease local people are allowed to remove the grass on payment of nominal royalty for being made into strings. Bamboos are of very minor importance and are sold locally on permit. A fairly steady but limited market exists for *Thysanolaena* and certain other grasses as brooms. There is a great scope for the exploitation of fodder grasses mainly *Heteropogon contortus* by the Animal Husbandary Department.

Charcoal which had a boom during the war for producer gas is once again of fairly insignificant importance.

Lines of Expo:- The bulk of the marketable produce is exported by the South Eastern Railway from the stations at Manoharpur, Posaita, Goilkera, Souna and chaibasa flanking the northern boundaries of the forest areas. Some produce from the south-eastern side is also, taken to the railway Station at Jamda. These stations are served by a net work of fair. Weather forest and district Board roads.

Though the construction of some road during next 10 years will be indicated the net work roads listed in Appendix-.. with some provisional cartracks and extraction paths provide a modestly adequate means of tapping the forests except for some parts of Ambia. At present the length of Forest department road per square mile of forest roughly works to one mile.

The Forest department road are however narrow and, due to the hilly nature of the country, tortuous in direction, kutcha in general lay out and incompletely bridged. The local cart with its narrow wheel base automatically cuts up the kutcha surface very badly on sections over which the export is heavy. These deficiencies coupled with the limitations for repair seriously affect the scope and cost of export not only because full loads cannot be taken but also because of the time taken to negotiate the loads involved particularly from March to June when the heavy worked road sections may have

inches of powdered earth on the surface. During this period a quarter inch of rain is sufficient to paralyse the entire transport system. In recent years limited efforts have been made to reduce bends to ease gradients and to provide more bridges, culverts and cause ways. The local cart is also gradually giving way to motor trucks.

The rivers are not employed for floating. But during parts of the year it should be possible to float bamboos, soft woods and poles along the Koina, Karo and Deo. This should need a proper survey of the river beds and blasting of the rocky out-crops at many places.

Method of exploitation and their cost: - All forest produce (major) is extracted as per the rules and regulation of state Trading, Jharkhand and all minor forest produce are exploited under the rules of Jharkhand State Forest development Corporation.

Trees are felled by axe and generally converted by hand sawing. A saw mill at Goilkera has been put up and some conversion is also carried out in the saw mills of Chakradharpur and Chaibasa. The produce is removed by big and small trucks and very often by buffalo and buffalo carts. The extraction paths are being constructed by the concerning territorial ranges. Minor forest produce is 1. in head-loads and behangi loads in short distances.

CHAPTER -IV

Staff and labour Supply

Staff: - The Koihan Division is under the charge of a Deputy Conservator of Forests commonalty called as Divisional Forest Officer (D.F.O.), who is assisted by one Assistant Conservator of Forests (A.C.F) in office as well as field work

The following statement shows the permanent and temporary Divisional staff employed in the division at present:-

<i>SI. No.</i>	<i>Designation</i>	<i>Sanctioned Strength</i>	<i>Working Strength.</i>
1	Deputy Conservator of Forests	1	1
2	Assitt. Conservators of Forests	3	3

3	Ministrial Staff		
	Head Clerk	1	1
	Assit. Clerk	12	11
	Amin	1	1
	Ord.Peon	8	4
	Banglow Choukidar	11	3
	Mali	2	1
	Dakwala	2	2
	Jeep Driver	2	0

Range wise Positions of Staff

Range	Designatio Forest Guard	Nos.
Saitaba	Range Officer	01
	Beat Officers ore	02
	Forest Guard	12
Santara	Range Officer	01
	Beat Officers	04
	Forest Guard	18
Koihan	Range Officer	01
	Beat Officers	03
	Forest Guard	15

General Health of the Staff and Labour: This point has already been touched in Chaper I. The main diseases which have to be faced are malaria and various forms of intestinal derangements. The local people of the arca develop fairly effective immunity but the staff from taroff suffer

repeatedly. A good health can be achieved by provision for supply of pure drinking water. They should take preventive drugs regularly and also used mosquito nets during the night. The medical facilities in these forests are naturally limited and likely to remain so because of the scattered habitation in this regard . It is suggested that a mobile dispensary s hould be available at the d isposal of the forest department which should be employed in other divisions also.

It is generally found that Forest guards and Forester are not well versed with the rules and laws and present amendments of forest laws, which is a serious impediment in effective forest protection and management. It is suggested that all the field staff should be trained in different training centers of state and time to time refreshers course should be conducted to enrich their knowledge.

Also for the betterment of physical ability of the staff, regular medical check up must be carried out and permanently disabled staff should be removed from the field jobs.