

PART – I
CHAPTER – II
A – THE FORESTS

COMPOSITION AND CONDITION OF THE CROP

1.2.1 The forests of Saranda division are in the main tropophilous, neither too dry nor too moist. Sal is the principal species with its overwhelming preponderance over other species. With a few minor exceptions to be mentioned hereafter, the vegetation represents the present climatic climax. The conditions for germination, establishment and development of sal are so favourable here that this division may perhaps be considered to be the locality in which the optimum conditions for the growth of sal obtain. The sal forests of Saranda admittedly the best in India and truly be called the home of Sal regeneration which is a problem in Uttar Pradesh and other parts of India with varying complexities, comes up effortlessly almost with the persistence of weed (except in the narrow valley belt of semi-evergreens). All the major hindrance to the satisfactory management of this tree seem to be absent. Frost is very rare. Drought is not a factor to be generally contended with and completion with evergreens except in very moist valley bottoms due to high humidity, is of no consequence. The favourable climatic conditions are held to be mainly responsible for the excellent natural regeneration of sal in this Division. Another important factor is due to the climate the comparatively rare serious fires occur though unfortunately recent experiences show that this advantage may be lost, unless an all out war is waged against it.

1.2.2 Edaphic condition also do their but they are subordinate to that of climate in their effect on the vegetation of this division as a whole. Thus although by far the greater part of the area is sasl forest in which sal forms over 80% or more of the crop, other plant association such as dry mixed forests, moist mixed or semi evergreen or bamboo forests are to be met with local edaphic climaxes.

1.2.3 It must not however be inferred that the bulk of the division consists of 1 & II quality sal. This is from being the case. In fact considerable area, specially on the shales carry a very poor crop or Quality V Sal with sabai (*Eulaliopsis binata*) as typical ground vegetation. The change from one type to another is often so abrupt that one can pass from quality II-III into Quality V within a distance 100 metres or less. The very poor hill sal hrdly represents a true climax vegetation. It appears, however, to be a in state of permanent equilibrium. It may perhaps be regarded as an edaphic sub-climax, poor soil and lack of

moisture, being the limiting factors. But again it must be told that QV sal is not by any means typical of this division. As will appear from the statement in paragraph 1.1.27 of Chapter I, QIV sal is the commonest.

1.2.4 The bambioo (*Dendrocalamus strictus*) is confined to the north of the division in Ankua, Samta and Tirilposi blocks. Elsewhere it is entirely absent. The quality was fairly good in certain parts, for example, in Tirilposi 9, but wild elephant have destroyed almost the entire clump formations. *Cephalostachyum pergracil* occurs on the shale along ravines but rarely attains an appreciable size. Bamboo (*B arundinacea*) occurs in very little quantity in Ankua 1 & 3 along the Koina river and in Tp. 9 by the Kalian ala as recorded in the preceding plan.

1.2.5 Forest types – The sal forests of Saranda Division confirm broadly to Champion and Seth type C2e “Moist Peninsular Sal” (Champion’s old B III). The forest mainly are trophophilous neither very damp nor very dry. Philips divided it into ten broad types and Mooney made it into twelve. They are :-

- (i) The open grassy, very poor stunted sal forests.
- (ii) The open grassy, very poor, stunted sal wwith dry mixed forests.
- (iii) The very dry type mixed forests.
- (iv) The rather dry type mixed forests.
- (v) The open grass III/IV quality sal forests.
- (vi) The moderately to well stocked IV/III quality sal forests.
- (vii) The open grassy III/II quality sal forests.
- (viii) The well stocked (pure) II quality sal forests.
- (ix) The moister type of II/I sal forests.
- (x) The moist type of mixed forests.
- (xi) Evergreen or semi-evergreen forests.
- (xii) Small muddy swamps generally associated with shales having very exclusive dense brakes of *Licuala peltata* with *Calamus viminalis*, *Musa sapientum* and ornate, *Fugenia operculate*, etc.

1.2.6 A special type i.e. a Sevanah type of forests occurs on top of high plateau of Ankua and Karampada, in both cases above 610 metre contour on the iron ores.

1.2.7 The above twelve sub-types of Mooney were reclassified by Sinha into five broad sub-types i.e. old type B-III.

- (i) Sub-type A – Evergreen or semi-evergreen forests.
- (ii) Sub-type B- Moist mixed forests – No sal
- (iii) Sub-type C – The better forests QIV to Q1. This sub-type has been sub-divided into three categories according to elevation. They are :-
 - a) In valleys usually at the lower elevations below 427 metres.
 - b) On lower slopes of well watered valleys.
 - c) On upper slopes of moderate gradient and sheltered, usually northerly aspects. Also on high ridges and plateau of iron ores.
- (iv) Sub-type D-dry mixed forests, sal absent on southern slopes and in minority on the northern. This is further sub-divided into two categories:-
 - a) Rather dry mixed forests, on valley slopes with varying aspects.
 - b) Very dry mixed forests on steep slopes and southern aspects.
- (v) Sub-type E-open grassy with or without misc. Sabai as characteristic ground vegetation. This is further sub-divided into three categories :-
 - a) On gentle lower slopes or undulations of open villages, almost pure sal of QIII/II.
 - b) On the middle or lower slopes or in more sheltered positions. Aspect generally northerly. Sal QIII/IV, the dominant species.
 - c) On exposed upper hill slopes and ridges with varying aspects, very poor stunted trees, misshapen and hollow sal, QV.

1.2.8 The twelve sub-types formulated by Mooney in his Working Plan are being retained for floristic and botanical details. The five-types enumerated by Sinha are quite useful for the practical forester in the field. Since the forest types of India have been revised by Seth and Champion (1955-61), it is felt necessary to confirm the forests of Saranda Division to these forest types, thus bringing them to the international standard. For the purpose of this plan therefore, forests of Saranda Division are described on the basis of the following broad types of Seth and Champion.

- i. Northern dry mixed deciduous forests 5B/C₂
(In Saranda Division sub-types C₂ (vi) and C₂ (vii))
- ii. Dry Peninsular Sal forests – 5B/C_{1e}
(In Saranda Division sub-types C_{1e} (i) and C_{1e}(i)2)
- iii. Moist Pennisular Sal forests – 3C/C_{2e}

- (In Saranda Division sub-types
3/C_{2e}(i), 3C_{3e} (ii) 3/C_{2e})
- iv. Moist Mixed Deciduous Forests – 3C/C_{3a}
(In Saranda Division sub-types C_{3a} (iii))
 - v. Northern tropical West Evergreen or Semi-evergreen forests iB/2B

1.2.9 Champion and Seth, while studying different forest types, approved three types to be best and on them fitted the sal forests of Singhbhum, thus bringing them to international standard. The notes read as quoted :-

“Mooney (1938) has studied in detail the sal forests of Singhbhum (Bihar) and Upper Orissa and distinguished various floristic associations. He divided the Singhbhum Moist Sal forests into the following ‘types’ and noted that best sal occurs on highly ferruginous soils.

- (1) High level plateau sal (Shorea-Bauhinia Themeda) on flat topped hills over 800 metres, Bauhinia retusa most characteristic. Sub-type C_{2e} (i).
- (2) Moist hills sal (shoriea-Wendlandia Indigofera), Common on good soils except on ultra basic rocks sub-type C_{2e} (ii)
- (3) Valley sal (shorea-Moghania-Imperata) on ferruginous loams and loamy clays except on basic rocks sub-type C_{2e} (iii)
- (4) Damp valley sal (shorea –Polyalthia –Croton) local, Croton oblongifolius and Imperata typical sub-type C2d (ii).

The various forest types as mentioned earlier are described as below :-

1.2.10 The general description for the sub-group applies particularly to this type. Some species form consociations, notably Anogeissus latifolia, Boswallia serrata and Cleistathus collinus. Anogeissus often monopolises in the southern aspects on the hills. Cochlospermum is often gregarious on very dry rocky ground.

Further sub-division of this type found in Saranda are :

- (a) C2 (vi) and (b) C2 (vii). These occur on hill slopes and ridges with varying aspects but are generally associated with hematitic-quartzites or quartzites also basic igneous rock, basic phyllites and schists. Sal is almost absent except on the northern slopes where it occurs just in sprinkling. They have the following associates:-

- (b) C2 (vi) (Cochlospermum-Euphorbia association-Mooney). Other associates are *Lanea coromandelica*, *Gardenia latifolia*, *Sterculia urens*, *Chloroxylon swietenia*, *Buchanania lanzan*, *Aegle marmelos*, *Anogeissus latifolia*, *Morinda tinctoria*, *Canthium dicoccum*, *Emblica officinalis*, *Euphorbia nivalis*, *Lagerstromia parviflora*, *Erythrina suberose*, *Stereospermum suaveolens*, *Woodfordia fruticosa*, *Nyctanthes arbortristis*, *Murraya paniculata*, *Sarcostemma acidum*, *Arundinella acidum*, *Themeda trinandra*, *Butea superba*, *Olex scandens*.
- (c) C2 (vii) (*Anogeissus Mitragyna*, *Dendrocalamus-Daedelocanthus* association-Money). Other associates are :- *Adina cordifolia*, *Hymenodictyon excelsum*, *Aegle marmelos*, *Chloroxylon swietenia*, *Schleichera oleosa*, *Lanea coromandelica*, *Lagerstromia parviflora*, *Bridelia retusa* and occasionally *Shorea*, *Cochlospermum*, *Sterculia*, *Boswellia*, *Buchanania*, *Ougeinia*, *Erythrina*, *Bauhinia malabarica*, *Madhuca indica*, *Diospyros Montana*, *Stereospermum*, *Vitex peduncularis*, *Helecteres isora*, *Strobilanthus auriculatus*, *Eulalia trispicata*, *Eulaliopsis binnata*.

1.2.11 (ii) Dry Peninsular Sal Forest 5C_{1e}

The sub-type occurs on shallow soil derived usually from crystalline and metamorphic rocks wherever the soil moisture conditions are unfavourable for the development of moist sal, even in areas with much higher rainfall. The soil often rests directly on hard impervious laterite and is sometimes calcareous. Typical site quality III/IV; sal regeneration fair but slow. Characteristic associates are :- *Anogeissus latifolia*, *Boswellia serrata*, *Gardenia* spp., *Wendlandia tinctoria*, *Phoenix aculis*, *Eulaliopsis binnata*. Further sub-divisions of this sub-type found in Saranda are namely (a) C_{1e} (i) 1 and (b) C_{1e} (i) 2. These sub-types are generally met with on exposed sites, upper hill slopes and ridges with varying aspects where the soil is 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 almost invariably misshapen and hollow mainly quality V. They have the following associates :-

(a) C_{1e} (i) 1 :- (*Shorea Anogeissus Woodfordia* association – Mooney). Other associates are *Boswellia serrata*, *Cochlospermum religiosum*, *Dillenia aurea*, *Zizyphus*, *Gardenia gummifera*, *Grewia hirsute*, *Phoenix acaulis*, *Blumea flava*, *Vicoa indica*, *Arundinella sertosa*, *Eulaliopsis binnata*.

(b) C_{1e} (i) 2 :- (Shorea –Gardenia-Euliopsis association – Mooney). Other associates are Buchania lanzan, Eugenia caryophyllifolia, Gardenia gummifera, Madhuca indica, Diospyros tomentosa, Emblica officinalis, Cephalostachyus pergracile, Wendlandia tinctoria, Phoenix aculis, Blumea flova, Vicoa indica, Arundinella sertosa, Pseudopogonatherum contortum, Thysanella maxima.

1.2.12 (iii) THE MOIST PENINSULAR SAL

Forest – C_{2e}

This type is characterized by significant differences, largely floristic, from its northern counterparts, due to a greater proportion of southern elements. It occurs on crystalline rocks with yellow soils, which are largely in Situ except in the valleys. As soils and topography vary together, it is helpful to differentiate three sub-types on topography, for hill tops and plateau lower hill slopes, and valley bottoms respectively. Frost may be common on higher hill tops as well as in deep valleys. The sal is of quality III-II with adequate natural regeneration. There is light weed growth. The typical associates are :- (i) Pterocarpus marsupium, (ii) indigofera pulchella, (iii) Phonenix aculis, (iv) Themeda quadrivaly. This particular type is further sub-divided into three sub-types.

(a) Moist Peninsular high level sal – C_{2e} (i) (Shorea-Bauhinia-Themeda association – Mooney).

The type occurs on trop where it is poor. It also occurs on laterite and attains its best development on loam. The sal extends up over hiklls on laterite trop and crystalline rocks. It is of quality IV. Regeneration may farm adequate to absence besides being patchy. Undergrowth is scanty. Typical associates are – *Syzygium cuminii*, *Dendrocalamus strictus*, *Phoenix acaulis*, *Themeda quadrivalvis*. The floristic constituents in general are *Shorea robusta*, *Syzygium cuminii*, *Bauhinia* spp., *Albizzia chinensis*, *Terminalia tomentosa*, *Anogeissus latifolia*, *Cedrela toona*, *Xylia xylocarpa*, *Emblica officinalis*, *Callicarpa arborea*, *Careya*, *Dillenia*, *Clerodendron*, *Colebrookia*, *Grewia latifolia*, *pterocarpus marsupium*, *Madhuca indica*, *Lagerstromia parviflora*, *Kydia calycina*, *Ougeinia cojeines*, *Bridelia retusa*, *Terminalia chebula*, *Diospyros tomentosa*, *Buchanania lanzan*, *Bauhini malabarica*, *Caseria graveolens*, *Eriolaena hookeriana*, *Wendlandia exerta*, *Zizyphus xylopyrus*, *Butea monosperma*, *Randia dumatorum*, *Aegle marmelos*, *Phoenix acaulis*, *Moghania semialata*, *Desmodium pulchellum*, *Woodfordia floribunda*, *Grewia hirsute*, *Embelia*, *Helicteres isora*,

Imperata cylindrical, *Heteropogon contortus*, *Butea superb*, *Bauhinia vahlii* *Smilax macrophylla*, *Zizyphus ramosa*.

(b) Moist Peninsular low level sal C_{2e} (ii)
(Shorea-Wendlandia-Indigofera association – Mooney)

There is slight shrub growth under the sal and an moderate cover of grass. The sub-type occurs on crystalline rocks with yellow loam or lateritic loam soil. Sal is quality III and sometimes IV with variable regeneration or patchy regeneration. Typical associates are – *Pterocarpus marsupium*, *Terminalia tomentosa*. The floristic composition is *Shorea robusta*, *Terminalia tomentosa*, *Adina cordifolia*, *Madhuca indica*, *Pterocarpus marsupium*, *Mitragyna parviflora*, *Lagerstromia parviflora*, *Bridelia retusa*, *Albizia procera*, *Hymenodictyon excelsum*, *Salamalia malabarica*, *Gmelina arborea*, *Cleistanhus collinus*, *Dalbergia latifolia*. *Dalbergia paniculata*, *Xyzygium cumini*, *Dillenia pentagyna*, *Careya arborea*, *Cleistanhus collinus*, *Dalbergia latifolia*. *Dalbergia paniculata*, *Syzygium cumini*, *Dillenia pentagyna*, *Careya arborea*, *Diospyros* spp., *Mallotus philippinensis*, *Emblia officinalis*, *Buchnanan lanzan*, *Diospyros melanoxylon*, *Terminalia chebula*, *Kydia calycina* *Ougenia obovata*, *Woodfordia fruticosa*, *Clerodendron viscosum*, *Indigofera pulchella*, *Moghania semialata*, *Phoenix acaulis*, *Gerardia* spp., *Embelia arborea*, *Ixora Themmede quadrivalvis*, *Imperata cylindrical*, *Thysanolaena*, *Bauhinia vahlii*, *Butea superb*, *Smilax zeylanica*, *Combretum decandrum*, *B. parviflora*.

(c) Moist Peninsular Valley Sal C_{2e} (iii)
(Shorea-Moghani-Imperata association-Mooney)

The sub-type occurs on down-wash from crystalline rocks giving a deep loam soil which carries a moderate shrub growth. Sal is QII and the regeneration is excellent.

The Characteristic associates are *Terminalia tomentosa*, *Moghania chappera*, *Indigofera pulchella*, *Imperata cylindrical*, *Themmeda triandra*.

The floristic composition is – *Shorea robusta* – *Terminalia tomentosa*, *Terminalia belerica*, *Adina cordifolia*, *Pterocarpus marsupium*, *Schleichera oleosa*, *Madhuca indica*, *Syzygium cumini*, *Alstonia scholaris*, *Dillenia pentagyna*, *Diospyros peregrina*, *Lagerstromia parviflora*, *Cedrela toona*, *Aphanamixis polystachya*, *Protium serratum*, *Mallotus philippinensis*, *Milliusa velutina*, *Ficus* spp., *Callicarpa arborea*, *Glochidion lanceolarium*, *Canthium diococcum*, *Grewia asiatica*, *Heteropanax fragrans*, *Vitex*

peduncularis, *Litsea nitida*, *Bridelia retusa*, *Ougenia oegeninensis*, *Clerodendron viscosum*, *Moghania chappar*, *Indigofera pulchella*, *Ardisia solanacea*, *Desmodium* spp., *Thysanella maxima*, *Imperata cylindrica*, *Themeda triandra*, *Bahuhinia vahlii*, *Millettia auriculata*, *Butea superba*, *Combretum decandrum*, *Spatholobus roxburghii*, *Smilax macrophylla*, *Uvaria hamiltoni*, *Acacia instisia*, *Dioscorea* spp.

1.2.13 (iv) MOIST MIXED DECIDUOUS FORESTS 3C/C_{3A}

A general description of this type is as follows :-

Closed forests of medium to good height including a number of dominant species intimately mixed and a good many second storey trees including some evergreens. Climbers are heavy and the undergrowth is usually shrubby with little or no grass, except during the monsoon when a luxuriant herbaceous growth appears scattered freely through the hilly tracts. The further sub-division of this sub-type commonly found in Saranda is C3 (iii) :- Terminalia –Mallotus-Combretum association-Mooney). The chief associates are – *Diospyros peregrina*, *Mangifera indica*, *Anogeissus acuminata*, *Salimalia malabarica*, *Adina cordifolia*, *Bridelia retusa*, *Dillenia pentagyna*, *Hymenadictyon excelsum*, *Kydia calycina*, *Mallotus philippinensis*, *Polyathia cerasoides*, *Aphanamixis polystachya*, *Anthocephalus cadamba*, *Litsea nitida*, *Micromelum pubescens*, *Alangium lamrcii*, *Moghania* spp., *Cipadessa fruticosa*, *Petalidium barleriodes*, *Colebrookia oppositifolia*, *Daedalacanthus nervosus*, *Barleria strigosa*, *Pogostemon plectrathoides*. Common climbers are *Combretum decandrum*, *Nerelia zeylanica*, *Uvaria hamiltonii*, *Mucuna prurita*, *Smilax macrophylla*, *Spatholobus roxburghii*, *Entada phaseoloides*. About this type viz. 'Moist Mixed Forests' of Saranda division Mr. Sinha in the preceding plan has described as follows :-

In valley flats consisting of low lying badly drained ground, with deep moist alluvial soil, occurring commonly at the bends of many of the larger streams. The area covered by this sub-type is limited and ends once the bend of the valley is left. The soil is derived very largely from basic phyllite and schists and the influence of the iron ore is probably very slight.

Sal is entirely or almost entirely absent. A semi-evergreen vegetation with certain dominant deciduous species takes the place of deciduous forests. The sub-type occurs below 375 metres contour and is to be seen in many of the larger valleys in the north of Ankua, Samta and Tririlposi blocks".

Almost the entire parts of this area had already been planted up with Semal and to bigger extent with teak.

1.2.14 (v) NORTHERN TROPICAL WET EVERGREEN OR SEMI-EVERGREEN FOREST

The forest under the type exists only as narrow belt along the perennial streams. This is exclusively an edaphic type in which the moisture factor is predominant. Neither rock nor soil variation exert any far reaching influence. The soil is commonly very dump. It varies generally from light, almost sandy loam on the quartzites to loamy clay, the latter being the more prevalent type. Common species are – *Litsea nitida*, *Aphanamixis polystachya*, *Leca robusta*, *Michelia champaca*, *Actinodaphne angustifolia*, *Macaranga peltata*, *Polyalthia cerasioides*, *Liculapeltata*, *Entade phaseoloides* and the ferns- *Nephrodium* spp., and more rarely *Angiopteris eveate*.

1.2.15 A concordance table showing various forest types formulated by Mooney, in his book “ A synecological study of forests of Western Singhbhum with special reference to their geology, and his working Plan of Saranda Division), Sinha (in his Plan of Saranda Division), Champion (in his preliminary survey) and Champion and Seth 9 in their revised survey of the Forest types of India), broadly, constituting the forests of Singhbhum district in general and Saranda Division in particular is given below:-

FOREST TYPE CONCORDANCE TABLE SARANDA DIVISION

Sl. No.	Mooney's forests types as per his Working Plan of Saranda Division (Year 1936-37)	Mooney's forest types as per his BOOK "a synecological study of the forests of Western Singhbhum (Year 1937-38)
1	2	3
1.	The very dry type Mixed Forest.	Type 1 :-Driest type mixed forest. Cochlospermum-Sterculia-Euphoribia
2.	The rather dry Mixed Forest.	Type II :- Dry Mixed with bamboo Anogeissus-Mitragyna (Dendrocalamus) – Daedalacanthus
3.	The open grassy very poor stunted sal with dry mixed forest	Type III-dry sal with mixed forest. (Shorea-Anogeissus-Woodfordia)

4.	The open grassy very poor stunted sal forest	Type IV :- Open grassy dry sal forest. Shorea-Gardenia-Pelliaum
5.	The open grassy III/IV Quality sal Forest	Type V :- High level plateau sal (Shorea Bauhinia-themeda)
6.	The moderately to well stocked IV/III quality sal forest.	Type VI :- Moist hill sal (Shorea Wendlandia-Indigofera)
7.	The open grassy III/IV quality sal forest	Type VI :- Moist hill sal (Shorea Wendlandia-Indigofera)
8.	The well stocked (pure) QII sal forest	Type VII :- Valley sal (Shorea 1 lemingialmperata)
9.	The moister type of II/I quality sal forest	Type VIII :- Damp Valley sal (Shorea-Polyalthia Croton)
10.	The moist type of Mixed forests	Type IX :- Moist mixed forest (Terminalia-Mallotus-Combretum)
11.	Evergreed or semievergreen forest	Type X :- Low level Evergreen Forest (Mangifera-amoor-Uvaria)
12.	Evergreed or semievergreen forest	Type XI :- High level Evergreen forest (Michelia-Meliosma-Anodendron)
13.	Small muddy swamps generally associated with the shales, have a very exclusive flora.	Type XII :- Damp Ravine or Swamp type.

1.2.16 As regards regeneration of sal much has been said in the earlier paragraphs. Sinha has also been lavish in describing inflow of natural regeneration. But Mooney has been very cautious on this point. To quote him – “Apart from the barren shale ridges where nothing can be expected the most troublesome areas to regenerated are undoubtedly the moist valley. Sal regeneration probably presents fewer problems in Saranda than in most divisions and as seldom difficult to obtain. In all the moderately dry types it is normally abundant, particularly so in QIXI sal forest on middle slopes with a northerly aspect. Moderately dry, preferably sheltered localities seem to be most favourable to reproduction although in some of the moister valleys very fine results have been obtained.

1.2.17 Regeneration shall be the main hinge for the management proposals to be formulated. This aspect of the problem shall be examined in greater extent and discussed further in the paragraphs for Conversion Working Circle.

1.2.18 Some small muddy swamps found here and there (for example Ligirda in Tholkabad 16) are not of much significance so as to classify them in a particular sub-type. Of course they are of botanical interest since they have an exclusive flora. The common

species are : dense brakes of *Lieuala peltata*, with *Calamus Viminalis*, *Musa sapientum*, *Musa ornata* and *Eugenia operculata*; the aroids, *Alocasia fornicate* and *Lasia heterophylla*. Various species of *Amaryllidaceae*s and *Zingiberaceae*s such as *Amonium dealbatu*, *Zingibera roseum*, *Paryiumpar-viflorum* and *Curculigo recurvata*. *Carex phacota* is a very common sedge and *Lycopodium cernum* together with the fern *Gaeichenfa linearis* are not uncommon.

1.2.19 A savannah type of forest occurs on top of the high plateau of Ankua and Karampada blocks in both cases above the 610 metres contour on the iron ores. This is really a sub-climax of sub-type $C_{2e(ii)}$ produced by cultivation of shallow laterite soils. The areas are very open and grassy. In Karampada 24 the grassy blank is gradually colonising itself with sal. Grassy unsticked blanks also occur on the site of old paddy fields but their extent is very limited.

1.2.20 Among cultivation appears to have been widely prescribed in these forests approximately between 1880 and 1882. Old sites marked by : Sasangdiri (burial stones) are numerous. Where true jumping (purunga) has been carried out (Generally on upper and middle slopes) the result in most cases has been the production of well stocked even aged crop of poles, quite common all over the division. On the other hand where the cultivation was of a semi-permanent nature (gora) usually on the lower slopes and deeper soils, the forest has been degraded, the soil impoverished and the present crop generally is of rather open nature.

1.2.21 Apart from the barren shale ridges where nothing can be expected the most trouble some areas to regeneration are moist valleys specially in the narrow belts along the perennial streams of evergreen and semi-evergreen types, the soil being richer, the sal seedlings get smothered by the overwhelming profusion of faster growing miscellaneous species and masses of weeds and climbers. Where miscellaneous species are not in abundance in the overwood, sal regeneration is generally abundant in the suppressed stage under the close canopy. With the opening of the canopy by removal of the overhead the sal goes ahead. But there is severe competition with species such as *Croton*, *Jamun*, the grasses and climbers and twiners like *Dioscorea*, *Ipomea*, *Smilax* and *Atulosia* spp. They grow very fast and suppress the sal so badly that they ultimately get killed. Unless cleanings are frequently carried out, considerable damage is done to the young crop and it becomes much retarded. Where the overwood consists mostly of miscellaneous species, sal does not even loose this opportunity to struggle. Formerly these moist miscellaneous patches were matter of concern but large scale plantation of teak and semal after cutting these areas has

admirably solved the regeneration problem of these evergreen and semi-evergreen belts. Semal plantations have by a large failed and restocking of these by planting teak took serious attention. Such moist and evergreen miscellaneous patches have now almost exhausted in this division after being restocked by teak and semal plantations and any such small area left should be preserved.

1.2.22 The following note recorded by Mooney in the preceding plan is mainly of botanical interest and is reproduced here.

“*Xylia xylocarpa*, which has hitherto not been recorded from this Division, occurs over a very small area at the source of the Koina river (2000ft.) *Alpina malaceanesis* also a new species for the division was found near the head of the Regangera with *Amomum dealbatum*. *Garcinia cowa* shows a very strong affinity to quartzite and gritstone and is on these rocks and among perennial streams in Tholkabad and Tirilposi together with *Symplocos spicata*. *Litsea nitida* and *Melastoma labathricum*, *Gnetum scandens* is also commonly associated with it and the only occurrence of *Calamus gurnba* in the division was on quartzite with the above two species in Tholkabad. Satin wood (*Chloroxylon swietenia*) is found only on epidiorite and slate in Karampada block at 1600 ft. Where it attains 18” diameter. *Zanthoxylon budrunga* is rare but was never seen otherwise than on basic igneous rocks a striking preference also displayed by *Murraya exotica*. *Saraca indica* was only seen in three localities in this division-along the Pitiir Nala in the west of Tirilposi where it is fairly abundant; in the Murmurgara at Boraiburu where there are a few trees and a solitary specimen near Roam.

For this appears to be that in the first place the leaves of *Ruta* are browsed by Sambhar and Bisen secondly fire is of fairly frequent occurrence in these areas and since *Ruta* is a slow grower, it gets out back again and again, before it reaches the stage when it is immune from fire. Excessive shade may also be an adverse factor. Fire may have something to do with the presence of the seedlings and it would be interesting to determine if this valuable species could be got to perform a large proportion of our crop on dry hill sides than it does at present.

INJURIES TO WHICH THE CROOP IS LIABLE

1.2.23 (a) Fire :- Previously fire was not a problem in Saranda Division. These used to be rare occurrence of fire in these forests. The reason was less population and less entrance of people inside the forest. But since last thirty years the occurrence of fire is

increasing. By the manifold extension of mines and various forestry operations, the movement of people inside the forest has much increased. The labourer engaged in these operations make their camping ground and prepare hutments where they burn fire for their cooking etc. Mining labourers while returning from their duties in the night through the forests, make temporary torches by burning jute soaked in diesel fastened to small wooden handle. A small bit out of this flame when falls on the forests floor causes big fire. The extension of broadgauge line (Karampada 24, 25, 26 Compartments) for the loading of iron ore of Kiriburu Project and the construction of roads, railway sidings, huttings etc. for Maghatuburu Projects, have exposed the forests much more to the damage by of this division has, within recent years been annually visited by fire. Though since last three years, a major portion of this division, which used to get burnt previously, has been saved from fire, due to excessive labour and efforts made by the staff.

It is needless to say that fire has been doing a considerable damage to the forest of this division. A burnt area gives a very ghastly look. The gruesome site of black sticks of what once were fine sal poles, is heart-rendering apparition to a silviculturist. Elsewhere the summer fire leaves behind charred vegetation, scorched earth and patches of white ash producing a look of cremation ground. The advance growth is cutback by fire, seedlings are burnt, poles are killed or charred and large trees receive a shock that affects their healthy growth and leads to unsoundness. However, the following rains wash away the blackness and the ashes. Regeneration quickly comes back and soon the entire look is changed showing as if nothing much had happened and no severe damage to the forest has been done. But regular burning away of the humus and forest litter, year after year, definitely reduces the capacity of the forest floor to conserve rain water and check soil erosion. Repeated forest fire lead to serious soil erosion and desiccation and in course of time the forests of Saranda will, if fire is not recognized as the deadly enemy, lose its significance of being called the "Natural Home of Sal" forest. There is no doubt that the present Saranda forests are not those forests of thirty/forty years back when they enjoyed total immunity from forests fires.

1.2.24 Even the limited forests fire in the past made the authors of the previous plans – Mr. Mooney and Shri Sinha & Sri Rajhans – to sound a note of warning. They have very much emphasized the necessity of effective fire-protection. To quote Shri Sinha.

"Unfortunately the organization to prevent or extinguish forests fire has not kept pace with the increase in its extent or frequency. In 1930-32 a large number of the then existing fire lines were abandoned upon the calculation that certain forests roads had taken

their places. But this was an unfortunate step for results have amply demonstrated that roads, specially those not in constant use, do not fill the role of effective fire lines. Those fire lines are still needed and many more.”

For effective protection of forests against fire, an extensive schemes with its proper implementation is required, but unfortunately this is not being done. Perhaps lack of sufficient fund comes in the way. The recent arrangements of maintaining some fire-watchers, burning some road sides and boundary lines and making fire traces around plantations and regeneration areas, are not adequate fire-protection measures. The field staff are still seen helpless in getting the timely information of the occurrence of fire and in reaching the spot immediately after collecting the people. The mobility of the forest staff inside the forest, specially in fire season when it is more required, is most inadequate. Due to political reasons now a days the villagers do not come forward for extinguishing the fire. This is high time that the seriousness of forest fire should be realised. Latest fire-protection measures should be adopted to prevent forest fires. All the important points in the forests should be linked with either telephones or wireless. Apart from that there should be adequate arrangement of vehicles to keep the forest staff on patrol of the forest and reach a particular spot very quickly when required. The local people should be educated to realise the importance of life protection by organizing regular meetings, showing films, arranging suitable rewards to the Mundas of a particular locality where there was no occurrence of fire etc.

1.2.25 (b) CLIMBERS :- Climbers is next to fire which causes injuries to the forests. The climbers suppress regeneration and hinder development of young crop. The large climbers such as Spatholobus, Bauhinia and Millettia cause much deformity and in cases even mortality to middle-aged crop. In moister valleys Dioscorea, Smilax, Vitex, etc are more common. They cause much injury to the tree vegetation together with more stout Combretum, Millettia, Mezoneuron etc. They climb overtop, and muffle the young plants giving sometimes the spectre look. Climber cutting during rains is regularly done in the young regenerated crop up to five years but in younger to middle-aged crop it is more frequently required to be done. In P.B.V. and VI areas it is done at an interval of 10 years at the time of thinning marking only. In hill areas it is once done in twenty years only at the time of marking. It is required, apart from the young regenerated crop, that climber cutting should be done in all the forests either in Conversion or Selection Working Circle at least at an interval of ten years.

1.2.26 The commonest climber in this Division is *Bauhinia vahlii*. It is extremely abundant in type C_{2e(ii)} on iron ores and laterite on the higher elevation. *Milletia auriculata* also occurs in this type but is most abundant on sheltered slopes and a in valleys in the best quality crop. *Spatholobus roxburghii* is common in the moister valleys. *Combretum decandrum* is also found in damp valleys more particularly in association with the species growing in moist type. *Dioscorea* spp. *Atylosia crassa*, *Narvelia zeylancia*, *Smilax* and *Ipomea* are abundant in all the moister type of forests. *Zyzyphus rugosa* is common on the laterite and in quality C_{2e(ii)} *Entanda phaseolodes* is rather rare but *Gnetum scandens* is not uncommon in ravines containing perennial streams, where *Uvaria hamiltonii* is also found. *Mezoneuron cucullatum* is typical of the moist and semi-evergreen types of mixed forest where it is sometimes abundant. *Butea superb* is found mainly in dry mixed forest.

10.2.27 (c) *Loranthus* is not conspicuous except in some of the pole crops and in the protected forests fringing the northern parts of the Division.

1.2.28 (d) Animals :- On the whole no appreciable damage is caused by animals in these forests except by the elephants whose number has swalloen much. The main damage by elephant is that of bamboos. What ever little bamboo forests existed in past now appears to have been finished by the elephants. The principal centres of such damage are Phulbari, Digha and Kolbonga. Apart from the damage of bamboo forests, the elephants also descent, sometimes in number on ripening crops in the village and ravage them but with little success as the villagers know the tactics of driving them away.

Sometimes the villagers chase the elephants and force them to leave that locality. But even then the elephants do not resist the temptation and visit the area agan and again. The elephants live more near the labourers camps with an intention to quietly enter into their leaf huts, when the labourers are out on work and eat away their ration etc. It seems that the people living in the villages and the wild elephants have accepted the existence of each other and struggle for that is not severe. Of course occasional killing of man by the elephant in not uncommon, but mostly this is accidental. Capturing of elephants as suggested by Shri Sinha in his plan is not very much needed.

1.2.29 (e) Grazing : - Grazing has not been a source of damage in the past but recent increase in population near these forests and there by increase in the number of domestic animals like, cows, buffaloes, goats, need draw attention to the fact these animals may not be allowed to enter into all the forests specially in regenerated and plantation areas. The grazing should be properly restricted specially in the regenerated areas.

1.2.30 (f) Insects :- *Hoplocerambyx spinicornis* the only pest of importance but there has been no attack of any severe nature. Felled and un-barked logs and sickly trees are bored but healthy trees are seldom damaged. But mortality on appreciable scale among good sound trees was noticed in 1946-47 in Kodalibad 15 and Samta 40 and a fairly large number of good healthy trees dies through the attack of this sal borer.

1.2.31 Defoliation takes place in May-June as the result of the attack by larvae of a geometer and a noctuid moth.

1.2.32 (g) Fungus : - *Polyporus shorea* and *Fomes tricolorare* responsible for mortality on a small scale throughout the Division. The areas affected are very local and the worst damage appears to occur in otherwise healthy looking and well-grown middle aged crops. Some of the worst examples are reported to have been seen in Tholkabad block.

1.2.33 The incidence of theft was negligible in the past but in recent years it has increased considerably. It has been found to occur mostly on the boundary of Bihar and Orissa close to the villages namely, Raibera, Digha, Keruakocha. It also occurs enar the mining areas and in the forests which are close to the civil villages like, Patherbasa, Gendung, Sagjuri etc.

1.2.34 (h) Draught :- Drought is not a common source of injury. The Division is exceptionally well watered. Even in the years of scanty rainfall, for example in 1934 and 1954 no damage from draught was reported. Only in the summer of 1939 a certain number of trees are reported to have dried up in the forest.

1.2.35 (i) Wind:- Wind of cyclonic nature often pass through the forests in May-June. Many trees, mostly defective or dry are uprooted. Where the canopy is more open the uprooting is of severe nature. In the Year 1972 and 1973 damage by uprooting of the trees by cyclone was of appreciable extent in Tirilposi and Tholkabad blocks.

1.2.36 (j) Frost :- Frost in this division is of exceptional nature. Only on Sansangda plateau and particularly in the saucer shaped grassy depressions of Karampada 34 the traces of frost are sometimes seen. Year after year the young sal regeneration trying to colonise the grassy blanks gets killed, but despite this the colonization has slowly been progressing. Elsewhere no damage has been noticed. The Kumdih valley is commonly believed to be susceptible to frost, but no appreciable damage has been noticed in the recent years. In the winter of 1949 slight damage was caused.

PART – I
CHAPTER – 2

1.2.37 GENERAL DESCRIPTION :- The forest tract in this division owing to its extent and hilly nature sometimes gives an impression that animals are quite scarce here. This is more so, some animals are quite frequently seen due to poor visibility inside the dense forest cover. But it is not a fact. It is certainly much more abundant than the neighbouring Kolhan and Porahat Divisions. Nevertheless, it is definitely not as abundant as one might expect.

There is no doubt that the Ho with bow and arrow, his traps and his sporting proclivities has been responsible for not allowing the numbers of animals to increase adequately. The adequate forest cover and the abundant water supply available throughout the year in the shape of perennial streams, rivers etc. also provide natural abode for various animals, birds, reptiles, rodents, fishes, etc. The following paragraphs give the occurrence, distribution and status of the main species of wild life found in this division.

- I- ANIMALS (Mammals)
 - A-Game animals
 - (i) Carnivora
 - (ii) Herbivora
 - (a) Bovine and Antelope Group
 - (b) Deer Group
 - (iii) Others (Herbivora & Omnivora)
 - B- Non game animals

- II- BIRDS
 - A- Games birds
 - (i) Land Birds
 - (a) Pheasents and fowls group
 - (b) Partridges and quails group
 - (c) Doves and pigeons group
 - (ii) Aquatic birds
 - B- Non games birds
 - (iii) Reptiles
 - (iv) Fishes

1.2.38 The Tiger (*Panthera tigris* Linnaeus)

Tiger had been moderately numerous in this division about 50 years back, but its number has unexpectedly fallen during the last four decades. Census made in the last few years indicates that only 4 to 5 tigers are available at present in this division.

1.2.39 The Panther or Leopard (*Panthera pardus* Linnaeus)

This is locally known as bagh or huring kula. In the forest it preys on cattle, deer, monkey, langur, porcupine and sometimes even on birds and reptiles. This has always been very scarce in this division and presently it continues to be so.

1.2.40 The Hyaena (*Hyaena* Linnaeus)

This is commonly known as Lakar-bagha. It is dog-like in built and has a massive head and forebody, weak hind quarters and a heavy dorsal crest of long hairs sharply defined from rest of the coat.

1.2.41 The WOLF (*Canis lupus* Linnaeus)

It is commonly known as Bheria. The wolves avoid dense forests and are commonly found on the fringe of it and in the bare and open region. It preys mainly on sheep, goat and rodents. Occasionally it carries off children, when driven by hunger it may charge the human being also. Along the fringe of the forests it hunts generally hares, foxes and in fact may eat any animal or bird that it can capture.

1.2.42 The WILD DOG (*cuon alpines* Hodgson)

This is locally known as Junglee Kutta or Ban Kutta. It is very much like domestic dog in appearance except that it has a wolf like long lanky body but relatively shorter leg and muzzle. It has a red coat which varies in tone with season and locality. The number of wild dogs in this division has become less.

1.2.43 The COMMON OTTER (*Lutra lutra* Linnaeus)

It is generally known as ud-bilao. It is found generally near streams particularly around natural pools. Fish is their main food. They also feed on Crabs, frogs, water fowls and even leaves and other vegetable matters. Mating may take place in water.

1.2.44 The GAUR (*Bos gaurus*)

This is commonly known as Gabar (Gaur) or Ban Bhainsa. The magnificent gaur has a massive body supported on white feet. The number of gaur in Saranda was fairly good in the forests of Karampada and Tholkabad blocks. Now they are not available.

1.2.45 The FOUR-HORNED ANTELOPE (*Tetracerus quadricornis* Blainville)

It is locally known as chau-singha. The height of the male is about 60 cm. The horns of this antelope are not ringed as in this animal is almost now extinct in this region. Mooney in 1936-37 records the occurrence of Orek throughout this division.

(B) Deer Group.

1.2.46 The SPOTTED DEER (*Axis axis* Erxleben)

It is commonly known as Cheetal and is the most beautiful among the deer of these forests. A Cheetal is not very common in this division. One or two herds were usually seen in karampada 1, 2, 4 and Ghatkuri 29 Compartments of Gua Range. But now it is difficult to meet with.

1.2.47 The SAMBHAR (*Cervus unicolor* Kerr)

It is the largest Indian deer carrying the majestic antlers. Old stags become very dark almost black. It feeds on usually grass, leaves and various kinds of wild fruits. The stags clean their antlers by rubbing against bark of small poles. Sambhar was found throughout the division. Now they are not seen.

1.2.48 The BARKING DEER (*Muntiacus muntjak* Zimmermann)

It is locally known as kotra. The food consists of various leaves, grasses and wild fruits. The horns are shed during May and June. The Barking deer is fairly good in number and is well distributed over the entire division.

1.2.49 The MOUSE DEER (*Tragulus memmiana*)

It is locally known as mirgi. This is a tiny little creature, hardly a foot in height. It is very shy and promptly conceals itself amongst rocks or any other covering on seeing a human being. In fact it is not a true member of the deer family. The deer have four compartments in their stomach but Mouse deer have only three. The number of mouse deer is greatly reduced in this region. Mooned records in 1936-37 in his plan about this wild animal occurring throughout the area.

(ii) OTHERS (*Herbivora* and *Omnivora*)

1.2.50 The INDIAN ELEPHANT (*Elephas maximus* Linnaeus)

The elephants in this division are fairly good in number and are breeding quite well. They are well scattered throughout this division and very often met with by the forest staff and the labourers. They are also found in herds consisting of females and calves with a tusker as leader roaming in converted crop, where sufficient succulent leaves stems are available to feed on, and dense cover to hid from the scorching heat. During the summer they concentrate along the perennial streams. They have also been found moving around the labour camps in the hope of stealing their ration.

1.2.51 The INDIAN HARE (*Lepus nigricollis* F. Cuvier)

It is locally known as Khargosh. It is found generally in large tracts of bushes and jungle alternating with cultivated plains. It is nocturnal in habit. Foxes, Mongooses, wild cats etc. prey upon them.

1.2.52 The PORCUPINE (*Hystrix indica* Kerr)

It is locally known as sahil. The porcupine generally lives in grass burrows and caves. They move about in dark and have keen sense of smell. They feed mainly on vegetables of all kinds, grains, fruits and roots. They are very fond of young semal roots. When irritated or alarmed porcupine erect their spine, grunt and puff and rattle their tails quills. These are fairly abundant in Saranda.

1.2.53 The SLOTH BEAR (*Melursus ursinus* shaw)

The sloth bear is locally known as Bhalu. The sloth bear is found all over the division.

1.2.54 The JACKAL (*Canis aureus* Hodgson)

It is locally known as gidar or siar. It eats carcasses, offal, poultry, lamb kids, sickly goats and sheep. The jackals are found throughout the forests particularly on their outskirts.

1.2.55 The INDIAN FOX (*Vulpes bengalensis* show)

It is locally known as lomri and is pretty slender limbed animal distinctive in the black tip to its tail. Its general colour is grey. It lives in open country adjoining forest area and sometimes in burrows dug by itself. The fox eats small mammals, birds, reptiles, insects including termites and white ants, melon, ber fruits and pods of gram in the season. It is very active and exceedingly swift footed. The fox is found all over this division.

1.2.56 The WILD BOAR (*Sus scrofa* Minnaeus)

It is known as suar. A well grown male has height of 90 cm at the shoulder. Its weight may exceed even 200 kg. The colour of the animal is black mixed with grey rusty brown and white hairs. New born wild pigs are brown with light black stripes. It generally lives in grassy or scanty bursh jungle and sometimes in the forests, it is omnivorous, living on crops, tubers, insects, snakes and carrions. It has got poor eye sight and moderate hearing with an acute sense of smell. The wild boar occurs almost all over the division.

(B) Non game animals

1.2.57 The common Langur or HANUMAN MONKEY (*Presbytis entellus* Defresne)

It is commonly known as Langur. It is found in the forests as well as in the vicinity of villages and towns. The proximity of water is essential to their habitat. Langurs are pure vegetarians and they eat wild fruits, flowers buds, shoots and leaves. The troop of langurs will return to the same roosting place every night. Panther is an enemy of langurs. They produce an alarm note as soon as they see panther or tiger or any other animal that raises suspicion. The alarm alerts the whole troop. Langurs are found all over this division.

1.2.58 The REHESUS MONKEY (*Macaca mulatta* – Zimmermann)

It is locally known as Bandar. In forests they are found both on the outskirts as well as deep inside. They feed mainly on ground and eat ground plants, insects, spiders, etc. they swim well under water. They breed at anytime of the year and most of the young are born between March-May. It is common throughout the division.

1.2.59 The JUNGLEE CAT (*Felis chaus* Guldenstaedt)

The Junglee cat is commonly known as Junglee billi or Ban-bilar. It is about 90 cm long and weighs about 5 to 6 kg. The colour of its fur varies from sandy grey to yellowish and the tail is ringed with black towards the end and has a black tip. The ears are reddish ending in a small pencil of black hairs. The underside of the body is paler with vestiges of stripes. It is generally found in the drier and more open regions of the tract, keeping more to grass land, shrubs, jungle, the banks of rivers and marshes. It preys on small mammals, birds and when near villages on poultry. It is very swift and exceedingly strong for its size. It is believed that it produces two litters in a year. It has been seen in the forests of Samta and Ankua Blocks of the division.

1.2.60 The COMMON MONGOOSE (*Herpestes edwardis* Geoffroy).

It is locally known as Newla. It lives in open lands, scrub, jungle and cultivation. It is also found in thickets, among groves of trees, take shelter under rocks and bushes, lying up in a hollow in the base of a tree trunk or digging a hole for itself in the ground. It preys on rats, snakes, lizards, frogs, insects, scorpions, Centipedes etc. It also eats eggs of birds and to some extent fruits and roots. It can kill snake. These abundantly found.

(II) BIRD

(A) Game Birds

(i) Land birds

(a) Pheasants and Fowls Group

1.2.61 The COMMON PEA FOWL (*Pavo cristatus* Linnaeus)

It is commonly known as mor. It is generally found in dense, scrubby and open miscellaneous forests preferably in the neighbourhood of rivers and streams. It usually lives in parties of one cock with four or five hens and emerges into forest clearings, firelines and roads in the morning and evening to scratch the ground for food. It is excessively shy and alert. It eats grains, vegetables, shoots, insects, lizards, snake etc. It nests from January to October. The nest is a shallow scraped depression in the ground in a dense thicket lined with sticks and leaves. Eggs are three to five, glossy pale, cream or white coffee coloured. Mor is found in fairly good number in this division.

1.2.62 The RED JUNGLEE FOWL (*Gallus gallus* Linnaeus)

It is locally known as Junglee murgi. Hen differs from cock in being plain striped brown with rufous brown underpart. It is found in all forests interspersed with patches of scrub jungle fringing cultivation and clearings. They generally move on roads, firelines etc. to feed on the droppings of animals. Its main food is grains, shoots and tubers, berries, termites and other insects. The nesting season is February-May. It lays 4 to 5 eggs and hatching takes in about three weeks. It is fairly common in this division.

(b) Partridges and Quails Group

1.2.63 The COMMON GREY PATRIDGES (*Prancolinus pundicerianus* Gmelin)

It is locally known as safed titar. It is found usually in dry open grassy and thorny scrub country and avoids thick forests and humid tracts. It feeds on cattle dung, grains, seeds, termites, beetles, larvae etc. It is largely terrestrial but roosts on trees also. The nesting season is almost throughout the year. Eggs are 4-8, cream or mild coffee coloured. It is found all over this division.

1.2.64 The COMMON OR GREY QUAIL (*Centurnix coturnix* Linnaeus)

It is commonly known as betar. It is tailless partridge like bird. It lives in open grassy land. Its flight is swift and direct attained by rapid vibrating wing strokes. It feeds on grains, grass seeds, termites, etc. The nesting season is mainly March-May. Eggs are 5-14 reddish or yellowish buff, speckled with dark brown. It is found in this division in fairly good number.

(c) Doves and Pigeons Group

1.2.65 The COMMON GREEN PIGEON (*Treron phoenicopetra* Latham)

It is commonly known as harial. It is stocky yellow-olive green a shy grey pigeon with a lilac patch on shoulders. It lives in well wooded forests and feeds on fruits and berries. They collect in large number on banyan or papal trees and feed on its eggs. Nesting season is mainly March-June. The nest is a sketchy twin platform concealed in foliage. Eggs are two white and glossy. The other pigeon is Blue Rock Pigeon (*Columba live Grmlin*) commonly known as Junglee kabutar. They generally make their nests above in the caves of acute cliffs and water-falls.

1.2.66 The COMMON GREY HORN BILL (*Tokus birostris scopoli*)

It is locally known as dhanesh. It is a clumsy brownish grey bird with an enormous black and white curved bill surmounted by a peculiar protuberance and long graduated tail. Its food consists of mainly fruits but also large insects, lizards, young mice, etc. It is commonly found on banyan tree with greed pigeons, etc. The nesting season is principally March-June. It gives 2-3 eggs dull white in colour.

Aquatic birds : The aquatic birds are not found in this division.

Non game birds

The important non-game birds found in this divisions are mentioned in the following paragraphs.

1.2.67 Crow, king Crow (*Corvus macrohynhos* Wagler) is omnivorous. It is found in this division along with common house crow (*Corvus splendens vieillot*). Besides, the bhujang (*Dickrurus adsimilis* Hodgson) and the blue Jay or the Neel-Kantha (*Coracias benghalensis*) are also commonly met with.

1.2.68 Vultures, Eagles, Kites and Falcons

The King vulture or Raj gidh (*Torgos calkvus scopoli*), the griffon vulture or safed gidh (*Neophron percnopterus* Linnaeus), the Crested hawk eagle or shah baz (*Spizaetus cirrhatu* Gmelin), the tawny and the crested goose khawk or Baaz (*Accipiter badius* Gmeelin) are the common birds of this group met with in this division.

1.2.69 The owls and night Jars

The common among these are the night Jar or chhipak (*Ciprimulgus asiaticus* latham), the jungle owlet (*Glaucidium radiatum* Linnaeus) and the brown wood owl (*Strix ocellata* Hodgson).

1.2.70 The Babblers :- The important ones are the jungle babblers or Satbhai (*Turdoides striatus* Dumont), the common babbler or dumri (*Turdoides caudatus* Dumont).

1.2.71 The other important birds worth the mention are the large Indian parakeet or total (*Psittacula eupatria* Linnaeus), the red breasted parakeet (*Psittacula fasciata* P>L>S> Miller), the koel (*Eudynamys scolopacea* Linnaeus), rufous wood pecker (*Micropternus brachyurus* Vieillot) and the finns have (*Ploceus magarhynchus* Hume).

III. REPTILES

1.2.72 The MARSH CROCODILE

It is locally known as mugger. It is a broad snouted crocodile. The crocodile is almost extinct in this division. It used to be found in Koina river about two decades back.

1.2.73 The LIZARD

The important species of lizard is Monitor lizard (*Varanus monitor*), commonly known as goh. They generally live in the hollow of tree trunk and are good runners. The specialty of goh is that it gets a firm grip. It is difficult to dislodge them once they have got a firm hold. It lays eggs 25 to 35 in number which are deposited in a hole or ant—heap or mound.

1.2.74 The PYTHON (*Python molurus* – Gray) :- Python is commonly known as Ajar. It grows to a length of 8 to 9 metres and weights about 100 kg. The main food consists of small animals, mostly mammals, birds reptiles, and even large frogs. The female python lays eggs numbering 8 to 100 which are stacked into a heap. It incubates the eggs by coiling itself around with the help of the heat of its own body. The period of incubation is about 12 weeks.

Python is found in this division but it is not very common. A big size python was killed in the year 1968 under the wheel of a truck the skin of which has been preserved and kept in the museum of the Bihar Foresters Training School , Chaibasa. The length of the skin is 4.40 metres and width of the skin in the middle is 0.40 metres.

1.2.75 The Rat Snake (*Ptyas mucosus*, Cope):-

It is locally known as Dhaman. It grows to about 2.20 metre. It chiefly feeds on rats, lizards, frogs and birds.

1.2.76 The COBRA (*Naja naja*) Synonym (*Naja tripundian* Schleg):-

It is found in almost all types of the country. The most prominent characteristic of cobra is its well marked hood, when it assumes a defensive posture. It is a poisonous Snake. It feeds chiefly on rats, mice, frogs, toads and less frequently on birds and their eggs.

1.2.77 The COMMON KRAIT (*Bungarus coeruleus* Daud):-

The common krait grows to about 1.5 metre. It is usually glistening black or steel black in colour and has white linear arches across the back. It is a very timid snake and usually offensive when encountered by day. It has a seemingly stupid habit of coiling up with its head beneath its coil. All kraits are highly poisonous. It is commonly met with in this division.

1.2.78 The RUSSELL'S VIPER (*Vipera russelli* Russell):-

The viper has a broad flat head usually covered with small scales a narrow neck, a vertical pupil and a short tail. The head is some what triangular with sharp angles. It has very potent venom and is a most dreaded snake.

III. FISHES

1.2.79 Fishes were fairly plentiful in this division. In the rivers Koina and Karo varieties of good size fishes were in abundances. Besides, the main stream like Tungongara, Kali nala etc. contained fairly good size fishes. Machhidan was an important point on Kalian ala in Tirilposi Compartment 23 and 24 in which big size fishes are available.

But this is now a thing of the past. The fishes of Koina are almost finished due to the contamination of water caused by allowing the dirty water obtained after washing the iron ore to flow in that river.

However, small fishes like garai, magur, putia, ssinghi, tengra etc. are available in perennial streams.

PART – I
CHAPTER – III

UTILIZATION OF PRODUCE

The agricultural customs and wants of the populatins :-

1.3.1 The population of the villages situated inside the limits Saranda Division and also on the borders has increased much during last twenty years. The villagers residing in the civil villages or in the forest villages obtain their little requirements from the forests. In fact they little need big size timber for house building or for agricultural and doemtic purposes. The people are generally poor and their houses are small seldom superior to huts. They require poles for building machans from which they scare away wild animals which come to damage the crop in their fields. Poles largely suffice their needs for construction and repair of their houses and sometimes big timber is required for making ploughs, chaukaths, etc. Bamboos are in demand by Turies living near Jaraikela and Manoharpur and that too are very little available in the forests due to the damage done by elephants. The Turies mostly depend on village bamboos. Firewood of course, is the main requirement, specially in winter to keep them warm and it is available in plenty in the forests from dead wood and left materials. No special arrangement is required to be made for its availability. Unscrupulous elements enter the forest and lure the simple tribals for petty money to cut trees and sell it in sleeper form.

1.3.2 A few terraced paddy fields are made in valley bottoms but more commonly upland cultivation is in vogue. The important means of livelihood is by earning wages in forest exploitation and silvicultural operations. The mining areas in Gua, Chiria, Kiriburu and newly established Methatuburu also provide employment to the local people. Agriculture may be considered to be the second support to their livelihood. Large scale employment in mines and forest operations, has definitely raised their standard of living from what it was about twenty years back. The Hos are most contented people in general. They are not much worried about their food. If there is nothing to eat at home or employment to earn money, there is the endless stock of edible fruits in the forest.

1.3.3 Market and marketable produce – There is no big local market. The entire produce goes by rail to distant parts of India. A small demand of second class timber from Rourkela Iron & Steel Factory and its township is met from Jaraikela and Manoharpur Depots. Formerly the Saranda timber was mainly utilized as railway sleeper. Now the market

has expanded tremendously and every bit of timber even its waste, has got its market. Places as far distant as Amritsar, Chandigarh, Delhi in the north and many places in Gujrat and Maharastra in the south draw supplies from Saranda forests. Calcutta, Kolaghat, Ultadanga, Burdwan and the coal fields consume substantial amount of the total output of forest produce. Patna, Mokamah, Dehri-on-sona) and other places in Bihar also depend in part upon these forests. Supply of logs to Defence Department and demand of poles for Coal and electricity Board were there. Supply of railway sleepers increased much during 1980s.

1.3.4 As regards the classes of forest produce marketed they range from logs (chiefly of Sal, Bija, Asan, Karam, Gamhar) and sawn timber to poles, bakals, firewood and saw-dust. Bakals now a days, are mostly consumed by Titagarh Paper Mills and some of the Mica Mines of Kodarma and Giridih, Sialdah, Kolaghat, Koshiapur and Baghbazar in west Bengal, have the biggest market of firewood. It pays to transport firewood all the way by rail. Poles down to 3" dia at butt and are in demand and pieces from 2'-6" girth upwards are reckoned as logs.

PART – I
CHAPTER – IV

STAFF AND LABOUR SUPPLY

1.4.1 Staff :- A Deputy Conservator of Forests of the Indian Forest Service cadre holds the charge of Saranda Division. The Bihar Foresters Training School at Chaibasa is also under the control of the Divisional Forest Officer of this Division, who is the Director of the training school. There is a separate set of teaching and other staffs the school with an instructor of the rank of Assistant Conservator of Forests. Another Assistant Conservator of Forest is also posted from time to time as attached officer in this Division. The following statement shows the strength of the permanent and temporary executive staff :-

Range	As on 1 st April 1955			On 1 st April 1977		Remarks
	Rank	No.	Scale of Pay	No.	Scale of Pay	
Samta	Forest Ranger	1	100-7-170-EB-8-250	1	400-13-465-15-540-EB-15-660	Selection Grade
	Deputy Ranger	1	50-2-70-EB-2-90	...		
	Foresters	3	50-2-70-EB-2-90	4	230-5-280-EB-6-340	There are 4 Beats and one is posted as thinning forester.
	Forest Guards	14	25-1/2-35	19	165-2-195-3-204	
Koina	Forest Ranger	1	100-7-170-EB-8-250	1	400-13-465-15-540-EB 15-660	
	Foresters	3	50-2-70-EB-2-90	3	230-5-280-EB-6-340	There are 3 Beats and one is posted as thinning forester.
	Forest Guards	12	25-1/2-35	15	165-2-195-3-204	
Gua	Forest Ranger	1	100-7-170-EB-8-250	1	355-10-395-EB-10-435-12-495-EB-12-555	
	Foresters	3	50-2-70-EB-2-90	3	230-5-280-EB-6-340	
	Forest Guards	13	25-1/2-35	22	165-2-195-3-204	
Marking	Forest Ranger	1	100-7-170-EB-8-250	1	335-10-395-EB-10-435-12-495-EB-12-555	
H.Q. Chaibasa	Court Forester	1	100-7-170-EB-8-250	1	335-10-395-EB-10-435-12-495-EB-12-555	

Temporary Establishment (Others)

Post			(1 st April, 1977) For full year		Remarks
	No. of Post	Scale of Pay	No. of Post	Scale of Pay	
1	2	3	4	5	6
Thinning Forester	3	50-2-70-ED-2-90	3	230-5-280-EB-6-340	Incumbents are now entertained for the whole year.
Special Foresters for Mines	...	...	5	230-5-280-EB-6-340	
Felling	31	30-50	35	Coupe Overseers 180-2-190-3-238-4-242	
Check Naka Muharrirs	5	30-50	...	...
Export Naka Muharrirs	7	30-50	4	Naka Muharrir 205-3-226-EB-4-254-5-284	
Mines Muharrirs	4	30-50	5	Naka Muharrir 205-3-226-EB-4-254-5-284	
Naka Guard	11	25-35	12	165-2-195-3-204	
Bamboo Guards	2	25-35	...	...
Mines Guard	2	25-35	...	...
Bungalow Chowkidar	6	17 ½ - 22 ½	12	155-1-160-2-190	
Office Chowkidar	1	17 ½ - 22 ½	1	155-1-160-2-190	
Sweeper	1	17 ½ - 22 ½		155-1-160-2-190	
Dak runners		17 ½ - 22 ½			
Punkha pullers		17 ½ - 22 ½			
Malis		17 ½ - 22 ½			
1	2	3	4	5	6
Heac Clerk	1	80-1209@80-4-100-EB-4-120)	1	340-10-400-EB-10-490	
Accountant	1	50-2-70-EB-2.90	4	UDC(@2884-6-308-8-324-EB-8373)	