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FOREST ADMINISTRATION REPORT OF THE PROVINCE OF BOMBAY FOR THE YEAR 1939-40.

CHAPTER I.

CONSTITUTION OF STATE FORESTS.

(1) ALTERATION IN AREAS.

Afforestations and disforestmments during the year resulted in a net reduction of 3 square miles in the reserved forests in charge of the Forest Department and 14 square miles in the forests in charge of the Revenue Department. The areas at the end of the year stood at 10,566 and 1,617 square miles respectively. Similarly, the protected forests in charge of the Revenue Department decreased by 16 square miles to 594 square miles, those in charge of the Forest Department remaining unaltered at 160 square miles.

The disforestmments were chiefly in favour of cultivation in Thana, West Khandesh, Poona, Belgaum and Dharwar-Bijapur. In spite of these large areas given out for cultivation, the hunger for land for this purpose is on the increase particularly in the Panch Mahals and Khandesh Divisions and the Gokak and Gujnal ranges of the Belgaum division where much land cannot usually be given unless the areas more suitable for growing timber and fuel and for grazing are reduced considerably causing thereby other grievances.

Besides these, territorial changes occurred in the Central and Southern Circles. In the former, consequent on the formation of an independent Sub-Division in West Khandesh, the Shirpur ranges which were transferred to East Khandesh on the abolition of the North Khandesh Division were added to the West Khandesh Division and the Chalisgaon range was retransferred to the East Khandesh Division. Similarly, the Supa range, which formed part of the Kanara Northern Division, was transferred to the Belgaum Division.

(2) FOREST SETTLEMENTS.

The total area of reserved forest pending settlement at the commencement of the year was 1 square mile and 471 acres to which 1 square mile and 243 acres were added during the year. Out of this area only 239 acres were finally settled, the cost on this account being Rs. 28.

As stated in the last year's report the work of acquiring first class survey numbers within the forest demarcation line in the Satara Sub-Division has been held in abeyance, while in the Poona Division, an area of 786 acres and 15 gunthas was acquired during the year at a cost of Rs. 29,984.

(3) DEMARCATION.

One mile of new boundaries was demarcated artificially in the Southern Circle at a cost of Rs. 10 and 22,089 miles of existing boundaries (including those between British territory and Goa, Mysore and Bhor) were repaired at a cost of Rs. 4,872.

The boundary between British territory and the Baroda State was finally settled. The cleared fire line in Deomogra has been fixed as the inter-state boundary and an area of about 50 acres has been ceded to the Baroda State by way of compensation for the land included in British territory as a result of the readjustment.

(4) FOREST SURVEYS.

An area of 5.64 square miles in the Satara Sub-Division and 109.49 square miles in the Belgaum Division was resurveyed by the Survey of India Department during the year. The actual survey work done last year in the Dharwar-Bijapur Division was 141 square miles including the 2 square miles shown in the last year's report. These details were received late after the submission of the report and therefore could not be included in it.

The total expenditure on the constitution of State forests during the year was Rs. 34,866.

CHAPTER II.

MANAGEMENT OF STATE FORESTS.

1. REGULATION OF MANAGEMENT.

Preparation and Control of Working Plans.*(a) Preparation of Working Plans.*

Efficient management of forests is achieved only when exploitation, conservation and regeneration go hand in hand and to this end exploitation, regeneration and conservation are attempted by means of working plans.

The progress made in the preparation of working plans during the year is summarised below :—

- (1) The revised working plan for the Panch Mahals forests was sanctioned by Government.
- (2) The working plan for the Thana Gurcharans has been submitted to Government.

(3) As stated in the last year's report the provisions of Part II of the South Tapti Working Plan for the West Khandesh forests are being followed. The operation of Part III of the plan has however been suspended pending the result of the experiments in rotational grazing

being tried in the area. It has been decided to try three different systems of rotational grazing for a period of five years and to modify the plan in the light of the experience gained at the end of that period.

(4) The enumeration of sandal in the Belgaum Division was continued and completed over an area of about 56 square miles. Similarly the enumeration of sandal in the Sirsi-Siddapur range was continued, the area examined being a little over 75 square miles.

(5) A complete revision of the working plans for Peint in West Nasik and the Taloda forests in West Khandesh was considered unnecessary by the Chief Conservator, and orders were issued for effecting the necessary changes by means of correction slips.

(6) The revision of the working plans for the Igatpuri forests in Nasik and the Khandesh Satpuda forests is still under consideration.

(7) Little progress with the other working plans in hand in the Southern Circle could be made owing to the amalgamation of the Working Plans and Belgaum Divisions. A full time Divisional Forest Officer, Working Plans, must be appointed as soon as a suitable officer is available.

(8) The preliminary report on the revision of the working plan for the Tulshi forests, in which it is proposed to include the Vihar lake forests has been submitted by the Divisional Forest Officer, Working Plans, Northern and Central Circles, to the Conservator of Forests, Northern Circle.

(9) The reallocation of coupes of the revised working plan for the Thana forests has been entrusted to the Divisional Forest Officer, Working Plans, Northern and Central Circles. He commenced this work in March 1940 and inspected the forests of Bassein, West Vada, Mandvi (Thana) and Bhiwandi ranges of the West Thana Division.

(10) No work was done in connection with the following working plans in the Northern Circle which were stated to need revision in last year's report :—

(a) The working plan for the Mandvi forests (Surat District).

and

(b) The working plan for the Bulsar and Chikhali including Baragaon Dangs.

CONTROL.

The prescriptions of all working plans were adhered to in essential details, unavoidable deviations being regularised with the sanction of competent authorities. Several coupes, however, remained unsold owing to lack of demand, poor quality of tree-growth, inaccessibility or long lead.

In the Kolaba Division the casuarina coupe of the year was again not clear-felled due to extensive erosion. Selected trees were however sold as fishing stakes from Akshi coupes Nos. 13, 14 and 15 and Varsoli plantation. These brought in a revenue of Rs. 903.

The coupes of the North Kanara Coast Fuel Working Plan in Kanara Western Division were left unexploited in accordance with Government orders as they formed part of minor forests open to the exercise of privileges by the public.

2. COMMUNICATIONS AND BUILDINGS.

(a) Roads and Bridges.

In order to obtain good prices for timber and other forest produce by providing extraction facilities to contractors the Department has constructed and maintained a large number of roads and cart-tracks, etc. 2 Miles of road in the Southern Circle and 18 miles of cart-tracks in the Central Circle were newly constructed during the year. A bridge on the Katur-Bomanhalli road in Eastern Division, Kanara, begun last year, was completed during the year. A culvert on the Bhagwati-Potoli road in Northern Division, Kanara and another on the Kadra-Shivpur road in Western Division, Kanara, were reconstructed. The total cost on new works was Rs. 4,690 as against Rs. 2,095 of the previous year. 1,176 miles of roads and 147 miles of cart-tracks and bridle paths were repaired at a cost of Rs. 49,493, while Rs. 25,197 were paid to the M. & S. M. Railway for the maintenance of the Alnawar-Dandeli forest railway. The corresponding figures of the previous year were respectively Rs. 43,820 and Rs. 43,277.

The construction of the Ozar-Saiwan, Khardi-Parali (Tembha-Parali section) and Washala-Dolkhamb roads and repairs to Hatgad-Wani road, all in the Northern Circle, still await allotment of funds.

The Kasa-Udhwa road in the Northern Circle was transferred to the Public Works Department under Government orders as it forms part of the Bombay-Ahmedabad road.

(b) Buildings.

The total expenditure on the construction of new buildings in all the circles was Rs. 17,899 (Rs. 33,698 last year) and on repairs to existing buildings Rs. 16,460 (Rs. 15,790 in the previous year).

In the Northern Circle in order to expedite housing accommodation for subordinates cheaper types of quarters are being constructed—some with wattle and daub walls and others with "brick-nogging". The latter are dearer than the former but even so their cost is only about $\frac{1}{3}$ of the standard masonry designs. These buildings, it is expected, will last at least 50 years.

(c) Miscellaneous (other works).

Works under this head usually consist of wells and fencing of compounds, and maintenance of the telephone line in Northern Division, Kanara. The total expenditure on new works and repairs was Rs. 2,087 and Rs. 3,556 respectively. The corresponding figures for the previous year were respectively Rs. 2,595 and Rs. 3,517.

3. PROTECTION OF FORESTS.

(a) *General Protection.*

The following table compares the number of forest offences during the year with those of the previous year and the average of the past 3 years :—

| Class of offence. | 1939-40. | | | | Total for 1938-39. | Average for 1936-37 to 1938-39. |
|--|------------------|-----------------|------------------|--------|--------------------|---------------------------------|
| | Northern Circle. | Central Circle. | Southern Circle. | Total. | | |
| I. Injury to forest by fire. | 874 | 661 | 195 | 1,730 | 2,144 | 1,720 |
| II. Unauthorised felling or removal of forest produce .. | 7,384 | 6,234 | 1,534 | 15,152 | 12,334 | 12,312 |
| III. Unauthorised grazing.. | 3,232 | 2,224 | 405 | 5,911 | 4,960 | 5,250 |
| IV. Other offences .. | 1,714 | 1,207 | 400 | 3,321 | 2,647 | 2,652 |
| Total, 1939-40 .. | 13,254 | 10,326 | 2,534 | 26,114 | .. | .. |
| Total, 1938-39 .. | 10,031 | 9,745 | 2,309 | .. | 22,085 | .. |
| Average 1936-37 to 1938-39.. | 9,849 | 9,623 | 2,462 | .. | .. | 21,934 |

The foregoing statement shows that the number of offences during the year has increased as compared with that of the previous year and the average for the past three years. This increase is mainly due to the fact that the partial failure of the monsoon in 1939 compelled a large section of the local people to eke out a living from the forests.

The various causes for the increase or decrease under each class of offences are discussed below :—

INJURY BY FIRE AND PROTECTION FROM FIRE.

There has been a drop of 414 cases (2,144—1,730) and 80,647 (392,884—312,237) acres in the area burnt during the year as compared with the previous year, due mainly to the extensive and intensive precautionary measures taken, partial failure of the monsoon causing poorer growth of grass, which was eaten by cattle thus removing inflammable material, vigilant and successful attempts made by the subordinates to bring the fires under control, propaganda work carried out among the villagers, warnings issued to the people both prior to and during the fire seasons and rewards given last year for good fire protection.

About 528 acres of plantations were burnt in Eastern Division, Kanara. Similarly about 163 acres of old plantations in Northern Division, Kanara were burnt but there was practically no damage.

The system sanctioned by Government of rewarding the villagers who assist the Forest Department in fire protection was brought into force during the year, and in the Northern Circle tokens in the shape of turbans and clothing for children instead of cash were distributed in almost all the divisions. This form of reward seems to give special satisfaction and is considered most suitable as the little money spent in this manner goes a long way to make the children learn to appreciate the benefit of fire protection from their childhood and their parents also take pleasure in seeing their children receiving the gifts.

UNAUTHORISED FELLING AND REMOVAL OF FOREST PRODUCE.

There was on the whole an increase by 2,818 cases (15,152—12,334) over last year. This is contributed by all the circles, the Northern Circle alone being responsible for an increase of 2,183 cases. The reason for this large increase is attributed by the Conservator to the partial failure of the monsoon during the year which compelled a large section of the people to eke out a living from the forests by illicitly felling trees and selling fuel. The general increase in breaches of the law is attributable in some degree to the liberalisation of privileges and concessions. Larger numbers of people visit the forests and through ignorance or indifference commit acts which in law are offences.

Two boats were again hired during the year for detective patrol work in the Bassein Creek of the West Thana division and Vaitarna Creek in North Thana. This had a salutary effect in preventing to a great extent the illicit hacking and looting of the forests along the creeks.

UNAUTHORISED GRAZING AND PROTECTION FROM CATTLE.

The offences under this head show an increase of 951 cases (5,911—4,960) over last year. Of these, the Northern Circle contributed 880. The increase is chiefly due to the scarcity of fodder in the Panch Mahals, Thana and East Khandesh districts.

The areas open and closed to grazing were as follows :—

| | Sq. Miles. | Percentage. |
|---|----------------|--------------|
| Closed to all animals for the whole year | 1,018 | 7·9 |
| Closed to all animals part of the year | 253 | 1·9 |
| Open to all animals except browsers for the whole year .. | 9,323 | 72·1 |
| Open to all animals except browsers for part of the year. | 66 | 0·1 |
| Open to all animals for the whole year | 2,275 | 17·6 |
| Total .. | 12,935* | 100·0 |

*Excludes 2 sq. miles submerged in the Bhandardara lake.

The area open to grazing for horned cattle throughout the year was 89·7 per cent. The reduction in the period of closure from 10 to 5 years in the three Thana and Panch Mahals divisions was continued. Similarly more closed areas were opened to grazing in Kanara in compliance with Government orders reducing closure of all areas under regeneration including teak plantations to 5 years.

In other parts closure was relaxed where necessary for special reasons.

The total number of cattle admitted to graze was 1,833,115 as compared with 1,925,978 in the previous year and 2,084,171 the average of the past 3 years. The decrease in the number of cattle is more apparent than real. That grazing is being availed of by a larger number of cattle there can be no doubt. Free grazing has encouraged the influx of cattle from several non-forest villages which in former years abstained from visiting forest areas to avoid paying fees. Free grazing passes according to the rules in force must be obtained in respect of all cattle taken to graze in open forests, but this rule is not always observed and forest subordinates do not always check the number of cattle grazing in open areas. They content themselves in protecting plantations and newly exploited coupes against cattle trespass. Fear of being accused of harassment and the consequent ordeal of inquiry against them deters some subordinates from interrogating herdsmen with cattle encountered in open areas.

The total grazing fees collected during the year amounted to Rs. 11,478. The fees are now restricted to cattle belonging to Indian States and other Provinces only.

The total number of cattle impounded during the year was 76,662 as compared with 76,688 last year.

OTHER OFFENCES.

There was an increase on the whole of 674 (3,321—2,647) cases and all the Circles are responsible for the increase, the Northern Circle quota being 445. Majority of the cases under this head usually consist of breaches of transit rules, encroachments and illicit shikar etc. and no reasons can be ascribed for variations in such cases.

Out of 293 cases (189 new and 104 old) taken to court 188 cases were decided. Of these 164 were decided in favour of the department and 24 against, the percentage of successful cases being 87·2.

During the year 21,666 cases were disposed of. Of these 20,831 were compounded, the amount of compensation recovered therefor being Rs. 66,672 or Rs. 3·2 per case as against Rs. 3·9 in the previous year. In 835 cases the offenders were let off with a warning and 4,014 cases remained undetected.

PROTECTION AGAINST INJURIES FROM NATURAL CAUSES.

(1) *Creepers and climbers*.—Creepers and climbers were cut as usual by subordinates both in the Northern and Southern Circles, contractors' agency being used wherever possible. In the North and East Thana divisions, the damage done by climbers is extremely serious and an intensive campaign of climber cutting is considered most essential even by employing outside agency to supplement the efforts of subordinates, when funds are available.

(2) *Loranthus*.—This pest was mostly confined to the southern part of Kanara, Western Division and it was kept under control by removal or burning the affected parts of the trees.

(3) The prickly pear, which was destroyed by means of the cochineal insect, is reported to be again appearing in some parts of the Gokak range in the Belgaum Division.

ANIMAL PEST.

Rats, hares, porcupine, monkeys, *cheetal* and *sambhar* caused as usual a certain amount of damage to young teak plantations in both the Northern and Southern Circles. In addition to these, elephants, bison and wild pig in the Southern Circle did some damage.

In the Mandvi range and Bulsar round of the Surat district monkeys damaged plantation and coppice growth rather more than usual. The plantation in the Mandvi range which was destroyed wholesale last year failed to recover due to their constant raids in spite of efforts made to scare them away. In the Bulsar round porcupines entirely destroyed nursery rabs with the result that it will be difficult to find the required number of teak stumps for plantation in the current coupes.

In the Southern Circle lizard and porcupine considerably damaged the seeds and seedlings in teak nurseries in the Gund range of Kanara Northern Division as a result of which shortage of stumps for 1940 is felt. Some plantations in Kanara Western Division suffered very badly from porcupine attack and attempts to kill this pest by poisoning with potatoes treated with arsenic were not successful. The ravages of this animal were checked to some extent by night patrol by guards and Rs. 10 were also paid as reward for killing 10 porcupine.

INSECT PEST.

Defoliators did some damage in all the Circles.

About 90 per cent. of plants in about 7 acres of the Nagzari plantation in Kanara Northern Division were badly attacked by shoot borers, specimens of which have been collected and are being sent to the Forest Entomologist, Dehra Dun, for identification and advice.

The damage from Revlook cricket (*Brachytrypes achatinus*) was noticed this year also in the casuarina plantations of Karwar and Honawar ranges of Kanara Western Division. The insect disappeared with the fall of heavy rain.

As stated in the last year's report the insectary for carrying on entomological observations in respect of teak defoliators which had done considerable damage to a young plantation in 1937-38 was opened at Palghar on 1st May 1939 and was operated by Mr. B. M. Bhatia of the Research Institute, Dehra Dun, with one field assistant and other staff. Mr. Bhatia visited various forests (including Gurcharans and Malki) of the North Thana Division and collected specimens of the defoliators for rearing in the insectary. The insectary was closed on 7th October 1939. A note on the observations made has been issued by the President, Forest Research Institute. The cost incurred on this account was Rs. 1,218-8-0.

FROST AND EROSION.

There was little damage by frost during the year.

An area measuring 17 acres and 8 gunthas of casuarina coupes at Akshi in the Kolaba Division was washed away during the year under report.

CHAPTER III.

SILVICULTURE.

1. SYSTEM OF MANAGEMENT.

The area in charge of the Forest Department aggregates 10,726 square miles of which 7,563 square miles are organized under various silvicultural systems as detailed below :—

| Silvicultural system. | Area square miles. | Percentage. |
|--|--------------------|-------------|
| 1. Clear felling | 2,687 | 25·05 |
| 2. Improvement | 619 | 5·77 |
| 3. Coppice with standards | 1,053 | 9·82 |
| 4. Improvement-cum-clear felling | 412 | 3·84 |
| 5. Selection-cum-improvement | 616 | 5·74 |
| 6. Selection | 265 | 2·48 |
| 7. Uniform | 331 | 3·09 |
| 8. Simple coppice | 435 | 4·05 |
| 9. Others | 1,145 | 10·67 |
| Total under silvicultural systems | 7,563 | 70·51 |
| Protection, grazing and uncontrolled | 3,163 | 29·49 |
| Grand Total | 10,726 | 100·00 |

GENERAL PROGRESS OF REGENERATION AND AFFORESTATION.

(a) *Mainly Natural.*

The total area under natural regeneration both concentrated and not concentrated was 72,783 acres as against 55,974 acres in the preceding year.

(i) *Concentrated.*

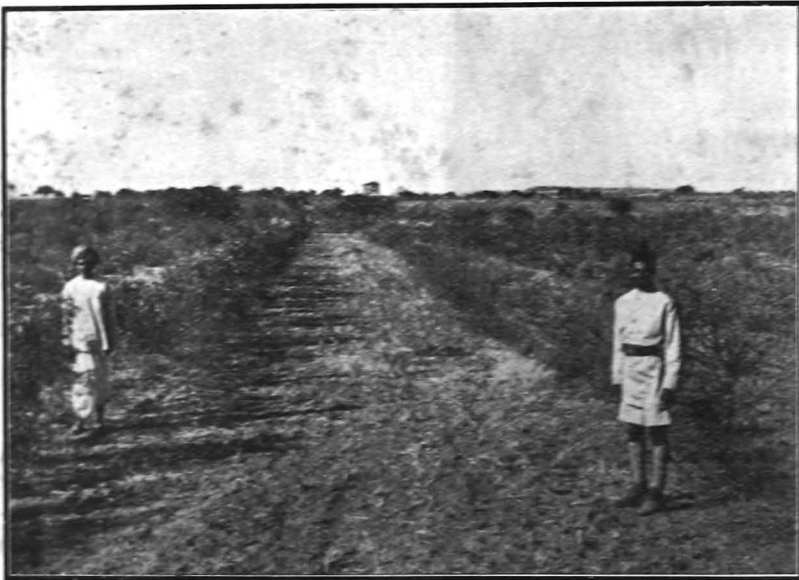
Planting of teak stumps and sowing of teak and injaili (junglewood) species such as *babul* (*Acacia arabica*), *dhawra* (*Anogeissus latifolia*), *tiwas* (*Ougeinia dalbergioides*), *bibla* (*Pterocarpus marsupium*), *ain* (*Terminalia tomentosa*), *shiwani* (*Gmelina arborea*), *khair* (*Acacia catechu*), mango (*Mangifera indica*), sandal (*Santalum album*), *kashid* (*Cassia siamea*), *nim* (*Azadirachta indica*), *anjan* (*Hardwickia binata*), *kindal* (*Terminalia paniculata*), *jamba* (*Xylia xylocarpa*), *sagadi* (*Schleichera trijuga*), etc., suitable for the locality were carried out throughout the Province on rab patches, kiln sites, etc., in exploited coupes. The results of these operations were on the whole satisfactory.

AGRI-SILVICULTURAL SYSTEM.

In addition to the planting of stumps and sowing of seed of various species, plantations were also raised by the agri-silvicultural system. In the East Nasik Division a further area of 523 acres and 28 gunthas was given out, bringing the total area under this system to 4,339 acres and 28 gunthas. The total number of plot-holders increased to 754 from 663 in the previous year. In the West Khandesh Division the results of raising plantations of *khair* (*Acacia catechu*), *nim* (*Azadirachta indica*), *babul* (*Acacia arabica*), *mohwa* (*Bassia latifolia*) and *chinch* (*Tamarindus indica*) under this system were better, while in the Mahableshwar and Dhebewadi ranges of the Satara sub-division the results were far from satisfactory due to drought in the former range and negligence on the part of the plot-holders in the latter range. As this system of raising plantations in comparatively arid areas in East Nasik and West Khandesh was found suitable, attempts were made to introduce it in other divisions, e.g., East Thana and West Nasik. In the former 10 acres at Yeur were given out after some difficulty. The results were encouraging and the villagers were agreeably surprised at the extraordinarily good crop of *nagli* (Indian millets) they got in the freshly cut area. The results of re-stocking open areas by this system in Belu forests of the West Nasik division were fairly good. The species sown in this area were *khair* (*Acacia catechu*), *kashid* (*Cassia siamea*), sandal (*Santalum album*), and *nim* (*Azadirachta indica*).

(ii) *Not concentrated.*

The results of sowing up open areas with a variety of species, according to the soil factors of the locality selected, were fairly satisfactory.



Agri-silvicultural plot at Nandgaon, East Nasik Division. Soil very poor, rainfall scanty. Regenerated in the monsoon of 1937. Left row—*moom* (*Azadirachta indica*); right row—*babul* (*Acacia arabica*); with an admixture of *khair* (*Acacia catechu*) and *anjan* (*Hardwickia binata*) on both sides.

Photo taken on 6th December 1939 when the plants were 2½ years old.

[Photo by H. W. Starte, Conservator].

(b) *Mainly Artificial.*

Natural regeneration was supplemented by artificial regeneration wherever necessary.

No artificial regeneration in coupe No. 2 of Casuarina Felling Series I and coupes 6 and 12 of Felling Series II in the Northern Circle could be undertaken because there were not sufficient seedlings for transplanting in the former case while the area of the latter was applied for by the villagers of Shirgaon for grazing their cattle. As the question of disforestation this area has been negatived and a nursery has been raised in the Vevji Depôt compound both these areas will be taken in hand in 1940-41.

In the Central Circle 12 acres of exploited coupe in the East Khandesh Division and 272 acres in the Poona Division were regenerated with *babul* (*Acacia arabica*) with satisfactory results.

The areas regenerated with teak (*Tectona grandis*) on an intensive scale in the three Kanara Divisions are as follows :—

| Working plan. | Area planted. | Spacing. | Cost. |
|--|---------------|-----------------------------------|--------|
| | Acres. | | Rs. |
| (1) Bhagwati High Forest Working Plan .. | 108 | 9' × 9' | 3,992 |
| (2) Supa High Forest Working Plan .. | 156 | 9' × 9' and 6' × 6' .. | 5,337 |
| (3) Gund Working Plan .. | 63 | 9' × 9' | 1,950 |
| (4) Revised Working Plan for the Yellapur-Mundgod Teak High Forests .. | 310 | 6' × 6' | 9,749 |
| (5) Revised Working Plan for the Nirsol Slopes .. | 61 | 12' × 6' and 6' × 6' .. | 1,628 |
| (6) Ramanguli-Ankola High Forest Working Plan .. | 150 | 15' × 9', 12' × 6' and 6' × 6' .. | 809 |
| Total .. | 848 | Total .. | 23,465 |

Eight months old casuarina (*Casuarina equisetifolia*) plants raised in wet nurseries were transplanted with an espacement of 12' × 12' in 66 acres of the revised working plan for the Casuarina plantations in Kanara Western Division. About 14 acres in the Belgaum Division and 184 acres in the Dharwar-Bijapur Division were artificially regenerated, the former with teak (*Tectona grandis*) and the latter partly with teak and partly with sandal (*Santalum album*) and suitable junglewood species.

Afforestation.

The experiments on the lines of the Italian Gradoni system referred to in the last year's report were started during the year. This system consists of making trenches along the contours on hill slopes, bunding the nullahs and heaping the earth taken out from the trenches on the outer side. The object of this experiment is two-fold ; to check further erosion and to conserve water in the sub-soil long enough to promote the growth of vegetation. Six different localities were selected for this experiment and the work of contour trenching and bunding done during the year is given below :—

| Division. | Name of the locality where the work is done. | Contour trenching R.ft. | Bunding work done R.ft. |
|------------------------|--|-------------------------|-------------------------|
| East Nasik | (1) Mohodari .. | 4,575 | 1,466 |
| | (2) Bhawada .. | 11,322 | 1,872 |
| West Khandesh | (3) Nagaon Bari .. | 33,279 | .. |
| Poona | (4) Bhamburda .. | 6,413 | .. |
| | (5) Khed .. | 12,874 | .. |
| Satara Sub-Division .. | (6) Chimangaon .. | 13,343 | .. |
| Total .. | | 81,806 | 3,338 |

These areas were all bare hill sides and receive about 20-30 inches of rainfall. The breadth and depth of the trenches vary according to the nature of the soil but usually these are respectively 2' and 1'. The areas were strictly closed to grazing and a whole-time watchman is engaged at each spot to enforce closure. The result of bunding in Mohodari, it is reported, was so successful that erosion was practically absent during the year. The chief species sown in the trenches and on the slopes of the earth taken out from trenches and heaped on their banks are *nim* (*Azadirachta indica*), *kashid* (*Cassia siamea*), *khair* (*Acacia catechu*), *babul* (*Acacia arabica*), *chinch* (*Tamarindus indica*), *sawar* (*Bombax malabaricum*), *ain* (*Terminalia tomentosa*), *anjan* (*Hardwickia binata*), etc. Owing to the exceptionally poor monsoon in the first year of the experiment, it is not possible to judge the results accurately. Germination was on the whole satisfactory and a very fair percentage of seedlings survived the hot weather. The results in improved growth of grass are definitely apparent in all the localities and the subsequent course of the experiment should prove interesting.

TREE PLANTING IN FOREST AREAS.

Wide publicity was given to Government orders regarding concessions granted to the public in the matter of the planting of fruit trees in forest areas. Very few enquiries were received. In all 11 *sandals* (agreements) (7 in Kanara Eastern Division and 4 in the Belgaum division involving respectively an area of 14 and 11 acres) were executed. In the East Nasik division of the Northern Circle, some Bhils of Rajmane village of the Malegaon range expressed a desire to do tree-planting in the forests of their village. They were asked to select a place for the purpose but later on they gave up the idea. The chief difficulty in this division is that areas devoid of tree growth in the forests are so far away from watering places that the people think it would be a waste of time and energy to go in for such a concession.

HELP RENDERED BY THE FOREST DEPARTMENT TO ASSOCIATIONS, AGRICULTURISTS AND OTHERS IN TREE-PLANTING.

As part of the propaganda for "rural reconstruction" carried on by the Range Forest Officers, advice was given to the people to plant fruit and other trees in their *malki* lands. Seedlings of various species raised by the forest subordinates in the Dharwar-Bijapur division were distributed to some villagers in Kod and Hangal ranges. The people in the Bijapur district appear to be unwilling to plant trees in their *malki* lands probably because they think that good crops cannot be raised under the shade of trees. Arrangements are being made to establish nurseries to raise seedlings of cashew nut (*Anacardium occidentale*), casuarina (*Casuarina equisetifolia*), soapnut (*Sapindus trifoliatus*) and eucalyptus at the headquarters of each range in the coastal talukas of Kanara. Similar nurseries are also being raised in several ranges of the Province. The Range Forest Officer, Manor, has prepared a nursery in the compound of his quarters and raised 50 *nim* (*Azadirachta indica*) plants for supply to villagers for planting in village gaothans.

In the East Nasik division, the manager of Rawalgaon estate was given advice on tree-planting and supplied with seeds of suitable species by the Range Forest Officer, Malegaon.

On the tree-planting day held in August, about 1 lakh of trees were planted in the West Khandesh district and the Revenue Department was supplied with 18 bags of *anjan* (*Hardwickia binata*) seed. In addition, free demonstrations were given in the matter of tree-planting. In the Satara sub-division the 19th August 1939 was observed as arbor day under the auspices of the Village Development Association and seedlings of teak (*Tectona grandis*) and other species were supplied by the Forest Department to villagers who were given demonstrations in tree-planting by the subordinates.

TENDING OF GROWING STOCK.

Equally important as the raising of plantations is the work of tending them till they are finally established. The usual cultural operations such as mulching, weeding, clearing, cleaning and cutting of climbers

were carried out by forest subordinates, wherever possible, and by paid labour in some cases.

Thinnings were either carried out by contractors who purchased the trees standing or done departmentally. The cost of departmental works was Rs. 25,663 and the total revenue realised was Rs. 2,08,812. In a few cases where the villagers did the work, they were allowed at their own request to take away the resultant material in return for their labour.

CHAPTER IV.

EXPLOITATION.

(a) SYSTEM OF MANAGEMENT.

The various systems of exploitation and the area worked thereunder are given in Chapter III under the caption "Systems of Management."

(1) MAJOR FOREST PRODUCE.

Timber, Fuel and Sandalwood.

Timber and fuel were extracted in the Northern Circle solely through the agency of purchasers and in the Central Circle the same agency was employed except that fuel for the Government depots at Mahableshwar and Panchgani was extracted departmentally. In the Southern Circle timber from valuable High Forests was brought to depots for sale either departmentally or through contractors, while wastewood left *in situ* and standing crops in less valuable High Forest compartments and pole and fuel coupes were sold standing to purchasers. Sandalwood was extracted departmentally and brought to Government depots for conversion and sale. Essentially silvicultural operations such as early thinnings were carried out departmentally.

(2) MINOR FOREST PRODUCE.

Minor forest produce was, as usual, either farmed out or sold on permits in all the Circles except in the Kanara Western Division.

Hirda (*Terminalia chebula*) fruit was collected from the Rajur range forests on the "quota" or share system as hitherto. The total collection amounted to 53 *khandis*, 11 maunds and $3\frac{3}{4}$ *payalis*. This was sold by tender at Re. 1 per bag of 20 *payalis*, the revenue realised being Rs. 643, the same as last year.

In the Kanara Western Division certain of the most important minor forest products such as *hirda* (*Terminalia chebula*) fruit, *nux-vomica* (*Strychnos nux-vomica*) and *shikekai* (*Acacia concinna*) were collected in pursuance of a scheme proposed by Mr. S. K. Kallapur, B.A., LL.B., of Honavar and approved by Government. According to this scheme, the exploitation of minor forest produce is to be entrusted to Village Panchayats. Pending the formation of such Panchayats, Mr. Kallapur arranged to collect, through the village committees and villagers, certain quantities of minor forest produce at central stations and an amount of Rs. 1,880 was paid to the villagers during the year as part payment for

collection after the produce was examined, weighed and valued in the presence of a representative of the villagers. By this time the steamer communication with Bombay having stopped with the approach of the monsoon, there was no demand for the material stored at central stations. Attempts for its disposal are now being made.

Tali (*Corypha umbraculifera*) palms are now being given free to deserving people in certain coastal talukas of Kanara. Cane is allowed free for domestic use and for cottage industries and is sold on permits only when it is required for direct sale.

Grass and grazing fetched Rs. 1,62,322 against Rs. 1,67,769 last year. This revenue now represents the sale proceeds of grass from closed areas and kurans, surplus to grazing requirements, and grazing fees levied on cattle coming from Indian States or other provinces.

(a) AGENCY OF EXPLOITATION.

(1) *Departmental Agency.*

The following is a comparative statement of major and minor forest produce extracted departmentally during the two years 1939-40 and 1938-39 :—

| Circle. | Year. | Major Forest Produce. | | | Sandal-wood value. |
|--|------------|---------------------------|-------------------------|--------------------------|--------------------|
| | | Timber Cft. in thousands. | Fuel Cft. in thousands. | Total Cft. in thousands. | |
| | | | | | Rs. |
| Northern | 1939-40 .. | 51 | 403 | 454 | 75 |
| | 1938-39 .. | 86 | 420 | 506 | 4 |
| Central | 1939-40 .. | 93 | 533 | 626 | 327 |
| | 1938-39 .. | 165 | 387 | 552 | 115 |
| Southern | 1939-40 .. | 792 | 2 | 794 | 82,619* |
| | 1938-39 .. | 669 | 1 | 670 | 96,866 |
| Total .. | 1939-40 .. | 936 | 938 | 1,874 | 83,021 |
| | 1938-39 .. | 920 | 808 | 1,728 | 96,985 |
| Difference .. | | +16 | +130 | +146 | -13,964 |
| Percentage of departmental to total outturn from all agencies .. | | 14.7 | 1.9 | 3.4 | 100 |

* Value of material extracted but not sold during the year,

| Circle. | Year. | Minor Forest Produce. | | | |
|--|------------|-----------------------|--------------------------|----------------------|--------------|
| | | Bamboos value. | Grass and grazing value. | Other produce value. | Total value. |
| | | Rs. | Rs. | Rs. | Rs. |
| Northern | 1939-40 .. | 23 | .. | 1,292 | 1,315 |
| | 1938-39 .. | 15 | .. | 643 | 658 |
| Central | 1939-40 .. | .. | .. | .. | .. |
| | 1938-39 .. | .. | .. | .. | .. |
| Southern | 1939-40 .. | 20 | .. | 2,000 | 2,020 |
| | 1938-39 .. | 54 | .. | 86 | 140 |
| Total .. | 1939-40 .. | 43 | .. | 3,292 | 3,335 |
| | 1938-39 .. | 69 | .. | 729 | 798 |
| Difference .. | | -26 | .. | +2,563 | +2,537 |
| Percentage of departmental to total outturn from all agencies .. | | .. | .. | .. | .. |

The increase under timber and fuel is contributed to by the Southern and Central Circles. In the former large quantities of saleable material was obtained from thinnings made in plantations and in the latter more fuel than usual was produced from areas handed over to the Revenue Department and from the trees uprooted on alignments for new roads. The fuel depots of Mahableshwar and Panchgani also required more fuel than last year.

The value of sandalwood sold showed a decrease as the quality of that, exploited during the year in Dharwar, Bijapur and Belgaum was inferior to that exploited last year. The increase under other minor produce is due mainly to the collection, as an experimental measure, of *hirida* (*Terminalia chebula*), *shigekai* (*Acacia concinna*), Nux vomica and such other products, through villagers in the Kanara Western Division, instead of farming them out.

TIMBER AND FUEL DEPOTS.

The following table compares the average prices obtained for timber during 1939-40 and 1938-39 in the Dandeli depot in the Southern Circle. The prices obtained during the year are, in almost all cases, higher than those of the previous year, the rise being due to the international situation :—

| Kind of timber. | Average rate per <i>khandi</i> of 12·50 cubic feet. | |
|--|---|-----------|
| | 1939-40. | 1938-39. |
| | Rs. a. p. | Rs. a. p. |
| Teak (<i>Tectona grandis</i>) | 27 2 2 | 25 11 5 |
| Matti (<i>Terminalia tomentosa</i>) | 11 12 4 | 9 15 9 |
| Nana (<i>Lagerstroemia microcarpa</i>) | 12 3 1 | 10 5 2 |
| Honne (<i>Pterocarpus marsupium</i>) | 17 15 1 | 13 15 7 |
| Karimuttal (<i>Ougeinia dalbergioides</i>) | 15 1 7 | 17 6 11 |
| Sissum (<i>Dalbergia latifolia</i>) | 12 4 3 | 10 5 8 |
| Heddi (<i>Adina cordifolia</i>) | 10 7 5 | 10 15 2 |
| Other jungle woods | 9 10 5 | 9 6 0 |
| Teak battens | 20 0 1 | 17 0 0 |
| Teak scantlings | 26 5 4 | 21 6 0 |
| Teak planks | 43 1 9 | 36 4 0 |

The average price obtained for teak (*Tectona grandis*) at the Kodibag depot was Rs. 21-15-3 per *khandi* against Rs. 23-15-2 last year.

FUEL DEPOTS.

The six fuel depots in the Kanara Western Division and the Mahableshtar and Panchgani depots in the Satara Sub-Division were worked through contractors. The only departmentally worked depot was at Matheran and there being sufficient stock on hand, no coupe was worked for supply of fuel to the depot. 6,334 maunds of fuel were sold for Rs. 3,738, the expenditure excluding establishment charges being Rs. 590. The net surplus of Rs. 3,265 after deducting the cost of permanent establishment only was paid to the Matheran Municipality.

As compared with last year, concessionists have during the year under report removed less timber and more fuel. The increase in fuel is chiefly due to the larger quantities used by the concessionists in Southern Circle for the manufacture of jaggery. Both the volume and value of free grants of timber and fuel have increased during the year.

The only recognised rights are those of way. Villagers enjoyed as usual the various privileges allowed under settlements, local rules and other Government orders. The quantity of forest produce removed varies according to the requirements of the privilege holders.

Free grants of timber were given to poor people for reconstruction of houses destroyed by fire and for construction of and repairs to temples, mosques, chawadis, etc. These include a free grant of timber to the value of Rs. 2,375 given to 88 villagers of Shivkar in the Kolaba division whose houses were destroyed by fire. About 13 *khandis* of teak (*Tectona grandis*) logs and 82 teak rejected sleepers were given free of royalty to the Lamani Training Class of Bagalkot and one *khandi* of teak and two *khandis* of jungle wood was supplied to the Borstal School, Dharwar.

Government has sanctioned a free grant of one *khandi* of timber in the round to the Manual Training Class attached to the New English School, Poona.

Orders were received from Government during the year that no free grants of timber should be made to any individual educational institution.

PRIVILEGES AND CONCESSIONS.

Additional privileges granted to the people during the year are summarised below :—

(1) The border villages from the Jawhar State which render assistance in the matter of silvicultural operations and fire protection have been permitted to graze their cattle in the forests of Thana on payment of half the usual rate of Re. 1 per head of cattle.

(2) The shrub *dhaiti* (*Woodfordia floribunda*) has been included in the Thana Privilege Code and may now be cut free for ash manure.

(3) The people of non-forest villages in Thana are allowed to remove dead leaves from reserved forests on payment of a fee of 8 annas per cartload.

(4) As a result of the representation made by the villagers of Akrani to His Excellency the Governor during his visit to Dhadgaon in January 1940, the permit rate of *bamboos* was reduced from Re. 1 to annas 12 per hundred in the case of local inhabitants of the Akrani Mahal.

(5) The royalty rate charged for bamboos in the Shirpur ranges of the West Khandesh Sub-Division has been brought to the level of those prevailing in other Satpuda ranges.

(6) *Tarwad (Cassia auriculata)* bark in the West Khandesh District instead of being sold by public auction is now allowed to be removed by *chambhars* (shoemakers) at fixed permit fees for *bona fide* tanning purposes. In the Dhulia Taluka the rate to be charged by kuran contractors for grass removed from kurans by villagers for their own use has been limited to one anna per headload.

(7) The privilege of removing wood for agricultural implements at half the market rate is extended to certain forest villages in the Belgaum District.

(8) The concession of free removal of *karvi (Strobilanthus callosus)* for agricultural purposes is granted to villages in Kanara and to certain forest villages in the Belgaum District.

(9) The existing rate per cartload of *karvi (Strobilanthus callosus)* in the Belgaum District is reduced.

(10) No fees are now levied when permission is granted for digging wells or channels in forest areas for agricultural purposes.

(11) Certain privileges mentioned in the Kanara Privilege Code were extended to some villages in the Dharwar and Belgaum Districts bordering on the Kanara District.

(12) Sandalwood carvers of Kanara are given a certain quantity of sandalwood required for their profession at a rate 75 per cent. below its market value.

(13) The present permit rate for *medar (Dendrocalamus strictus)* and *dowga (Bambusa arundinacea)* bamboos is reduced to Rs. 3 per 100 in the case of members of a Co-operative Society formed of Medars manufacturing baskets in the Bijapur, Dharwar and Belgaum Districts.

(14) *Bona fide* agriculturists in Kanara are allowed free removal of *shige (Acacia concinna)* pods for their domestic use.

Additional privileges sanctioned at the request of Forest Advisory Committees are mentioned in Chapter VIII.

(c) OUTFURN AND SOURCES OF FOREST PRODUCE.

The outturn from all sources of forest produce during the two years 1939-40 and 1938-39 compares as follows :—

| Circle. | Year. | Major Forest Produce. | | | Minor Forest Produce. | | |
|---|------------|--|--------------------------------------|---------------------------|-----------------------|-----------------------------------|----------------------------|
| | | Timber C. ft. in thou- sands. | Fuel C. ft. in thou- sands. | Sandal- wood Value. | Bamboos Value. | Grass and grazing Value. | Other produce Value. |
| | | | | Rs. | Rs. | Rs. | Rs. |
| Northern | 1939-40 .. | 2,985 | 19,240 | 76 | 91,784 | 10,22,422 | 1,65,563 |
| | 1938-39 .. | 2,962 | 19,764 | 4 | 94,390 | 10,19,787 | 1,64,138 |
| Central | 1939-40 .. | 940 | 12,297 | 327 | 10,452 | 7,34,340 | 1,82,909 |
| | 1938-39 .. | 2,457 | 12,317 | 115 | 11,021 | 8,23,767 | 1,53,699 |
| Southern | 1939-40 .. | 2,445 | 16,240 | 82,619 | 63,608 | 4,84,670 | 85,057 |
| | 1938-39 .. | 2,534 | 13,605 | 96,866 | 69,784 | 3,89,405 | 79,430 |
| Total | 1939-40 .. | 6,370 | 47,777 | 83,021 | 1,70,744 | 22,41,432 | 4,33,529 |
| | 1938-39 .. | 7,953 | 45,686 | 96,985 | 1,75,195 | 22,32,959 | 3,87,267 |
| Difference between 1939-40 and 1938-39. | | - 1,583 | + 2,091 | - 13,964 | - 4,451 | + 8,473 | + 46,262 |

(d) FOREST LABOUR AND WAGES.

The annual forest operations such as exploitation of forests, construction of and repairs to buildings, roads, etc., provide employment for a considerable number of people. The following table is an estimate

of the labour employed on forest works and remuneration paid during the year :—

| Circle. | Agency of employment. | No. of labour units. | Aggregate amount earned. |
|-------------|-----------------------|----------------------|--------------------------|
| | | | Rs. |
| Northern .. | { Departmental .. | 315,412 | 90,475 |
| | { Contractors .. | 4,542,667 | 14,54,140 |
| Central .. | { Departmental .. | 90,731 | 39,130 |
| | { Contractors .. | 1,663,110 | 5,38,000 |
| Southern .. | { Departmental .. | 263,351 | 1,36,982 |
| | { Contractors .. | 1,473,560 | 7,13,901 |
| Total .. | { Departmental .. | 669,494 | 2,66,587 |
| | { Contractors .. | 7,679,337 | 27,06,041 |

As an experimental measure minimum rates of wages were fixed in the case of labour employed by coupe contractors in the Kolaba and the three Thana Divisions. The contractors were required, under the terms of their agreements, to pay the labourers at these rates and to keep regular account of the work done and payments made. There is no doubt that the labourers were benefited by this measure, but it is reported that the contractors found the conditions difficult to carry out in practice and the accounts kept by them were at times found to be incomplete. As stated previously in this Chapter, the introduction of this condition has adversely affected the sales of coupes. In order to ensure that the labourers are paid according to the rates fixed by Government it has been suggested that a special Backward Class officer should tour Kolaba and Thana during the working season to supervise the contractors' accounts and to question the people as to the wage they are paid. The suggestion is an excellent one.

(e) UTILIZATION.

A new post of Forest Utilization Officer was created during the year with the object of stimulating the more extensive utilisation of forest products some of which remain unexploited for want of markets, or fetch inadequate prices at present, developing forest industries and providing a liaison between commercial bodies and the Forest Department. Mr. J. V. Karamchandani of the Bombay Forest Service Class I was appointed to that post. After undergoing a course of practical training in the Utilisation Branch of the Forest Research Institute, Dehra Dun, for a period of 2 months he visited a number of woodworking institutes and factories in Northern India and assumed charge of the post on

1st November 1939. Since then he has been engaged for the most part on behalf of the Supply Department of the Government of India on the inspection of timbers purchased by that Department and in attending to enquiries regarding timber stocks, etc., in connection with the war. He has, nevertheless, started a study of local conditions and is collecting statistics required for his work as Utilisation Officer, more especially with regard to the possibilities of manufacture of straw-boards, packing cases, textile requisites such as shuttles, bobbins, etc., sports requisites, stationery articles and shoe-lasts and heels, most of which are at present imported from other countries. He also replied to enquiries from several private firms and Government Departments and supplied to them samples of timber and minor forest products, with the co-operation of Conservators.

INDUSTRIES.

The conversion of forest trees into timber, charcoal and fire-wood and putting the same on the market is a major forest industry giving employment to thousands of labourers. The Department also, as usual, supplies information to enquirers about any raw material available in the forests for industries, its quantity, approximate costs of exploitation, etc., or when possible, undertakes to supply the raw products, in some cases at concession rates. Help rendered in this manner and the investigations carried out are described below :—

(1) *Match manufacture.*—*Simul (Bombax malabaricum)* coupes in the Panch Mahals Division intended for supply of wood to match factories were sold at favourable prices. The matchwood coupes in the Thana Divisions remained unsold for want of demand.

The Belgaum Match Factory is allowed to remove certain softwoods up to 12 tons a year at a nominal rate of Rs. 4 per ton for 2 years. This concession was sanctioned by Government just after the close of the year.

(2) *Destructive distillation of wood.*—The Bharat Wood distillation Factory in the Belgaum Division, referred to in the last year's report, was given during the year 2 coupes at average rates, but the factory is still not working and practically no progress was made during the year. In spite of some work done after the close of the year, it is doubtful whether this concern will ever be a commercial success.

(3) *Charcoal manufacture.*—In order to encourage this industry some coupes in Kanara Western Division were sold for the specific purpose of manufacturing charcoal. Both the methods of manufacture, viz., (1) by ordinary country type kiln and (2) by the portable "Frikiln" designed by the Forest Research Institute, Dehra Dun, were demonstrated but the industry does not appear to be popular amongst the contractors. Every contractor who sent a trial consignment to Bombay complains of loss in the transaction. Apparently charcoal from Kanara, owing to the present transport difficulties, cannot compete in the Bombay market with supplies from the Thana forests,

Manufacture of charcoal by Frikiln was demonstrated in the Belgaum division also. Charcoal of superior quality is produced by this process, but the comparatively high initial cost is a handicap for it to compete with charcoal produced by the country type kiln.

(4) *Glass bangle industry*.—The concession to this industry at Ghodgeri in the Belgaum district was continued and the Kajgar Co-operative Association was given a fresh coupe at a reduced concessional rate of Rs. 4 per acre as against Rs. 5 charged last year.

(5) *Slate manufacture*.—Shri Narsinha Saraswati Slate Works, Poona, have been granted the concession of removing certain soft-woods at Rs. 4 per ton for 2 years up to 240 tons per year.

(6) *Catechu manufacture*.—As reported last year Mr. S. K. Kallapur of Honavar was given 300 *khair* (*Acacia catechu*) trees free for the manufacture of catechu. Out of these he worked 200 trees and the quantity of catechu obtained therefrom was sold for Rs. 693 against an expenditure of Rs. 653. The working of the remaining 100 trees is being watched.

One Mr. R. M. Gokarn was also given free the natural crop of *khair* trees growing in his strip for the same purpose.

(7) *Tali palm seed for the manufacture of buttons*.—There was no demand for this seed either from the public or from the Industrial School started by Mr. S. K. Kallapur at Honavar although the reduced rate of annas 8 per maund of 80 lbs. was continued during the year.

The activities of the Department in exploring the possibilities of starting new industries are briefly stated below :—

(1) *Plywood industry*.—With a view to ascertaining the possibility of a sustained supply of wood for plywood manufacture from certain evergreen forests in the Kanara Eastern and Western divisions, sample plots are maintained at the suggestion of the Forest Botanist, Forest Research Institute, Dehra Dun. The Utilization Branch of the Institute has indicated the uses of the species found in some of these plots and as matters stand at present there is no case for basing the plywood or other sister industry on these forests.

Logs of 37 species suggested by Mr. M. Vithalrao of Dharwar were sent for testing their suitability for plywood manufacture. Results of some of these have been received. A proposal for establishing a plywood factory at Supa in the Kanara district made by Mr. M. Vithalrao was accepted by Government on certain conditions.

(2) *Shuttles*.—Sample pieces of different junglewood species were supplied to Mr. M. Vithalrao as requested by him for testing their suitability for shuttles.

(3) *Cane industry*.—The Master Craftsman, Cane Industry Demonstration, Hubli, was supplied with 82 lbs. of local canes from each of the Kanara Northern and Eastern Divisions to test the possibility of utilising the cane for certain classes of furniture and fittings.

(4) *Fibre plants*.—Samples of fibre of *kittul* (*Caryota urens*) were sent to the Director of Industries with a view to determining the possibility or otherwise of marketing it on an economic basis.

(5) A 100 pound sample of *tali chakka* (*Corypha umbraculifera*), powder was sent to the Industrial Chemist, Department of Industries, Bombay, for testing its suitability for sizing.

(6) About 40 lbs. of dried cinnamon leaves sent from Kanara were also tested by the Industrial Chemist for their oil content and he was of opinion that, if sufficient raw material was available, an industry for distillation of oil from cinnamon (*Cinnamomum zeylanicum*) leaves could be established. He is however conducting tests as to the marketability of the produce before formulating a definite proposal.

(7) Oil seeds of certain species were sent to the Director of Industries, Bombay, who is conducting investigations into the uses of non-edible oil seeds for lighting or other purposes.

(8) Investigations as to the suitability or otherwise of indigenous timbers for the manufacture of various textile and sports requirements are being carried on and specimens of some species have been sent to Dehra Dun for tests, the results of which are awaited.

(9) *Picking arms*.—Twenty-two sticks for picking arms prepared in the Kanara Eastern Division from *nandi* (*Lagerstroemia lanceolata*), *dindal* (*Anogeissus latifolia*) and *dhamani* (*Grewia tiliaefolia*) referred to in the last report were sent by the Forest Engineer to Messrs. Budge Budge Jute Mills, Calcutta, for test. Out of these 3 sticks of *dhamani* survived throughout the test carried out for 24 weeks. The rest were found either cracked or broken and were rejected.

(10) *Seasoning kiln*.—Before any research work can be undertaken with Bombay timbers for their suitability for manufacture of textile requisites, tool handles, etc., it is necessary to have these timbers seasoned properly. A seasoning kiln is therefore being erected at Dandeli at a cost of Rs. 6,100 including the requisite auxiliary machinery, etc. A forester has been deputed to Dehra Dun for training in the working of the kiln.

(11) *Charcoal gas*.—The possibility of developing the use of producer gas from charcoal mainly for traction units is still being examined by the Forest Engineer, Belgaum. The results of the tests so far carried out are satisfactory, the advantage in cost over the ordinary internal combustion engine being 5 to 1 on an average.

CHAPTER IV-A.

FOREST ENGINEERING BRANCH.

The activities of this branch are confined chiefly to surveys of roads, preparation of plans and estimates for roads and buildings and other works, organization of mechanical extraction of timber and supervision, repairs and maintenance of sawmill machinery. The work done during the year is summarised below :—

SURVEYS.

Nil

DESIGNS AND DRAWING WORK.

Plans and estimates for about 50 buildings and roads in all the circles were prepared and/or checked by the Forest Engineer in addition to the general supervision of engineering works in progress.

MECHANICAL SKIDDING.

Timber was extracted from Series XI-A Compartment 6/22 by the Fordson Log Skidder. The total outturn during the year was 733·96 tons against 936·68 tons last year. The total quantity allotted for the year was 793·66 tons but this could not be extracted as the length of haul was between 2,500 to 3,000 feet. The extraction costs exclusive of overhead charges was Rs. 9-9-5 as against Rs. 6-3-9 in the previous year. The increase was due to length of haul, difficult nature of the country consisting of precipitous rocky slopes, cross ridges, nallahs and outcrops of rocks, enhanced costs of stores, breakdown of the Land Utility tractor and a serious land-slide.

SAWMILL.

The following table compares the output of the Dandeli sawmill for 2 years :—

| Description of outturn. | 1939-40. | 1938-39. |
|--------------------------------|----------|----------|
| | C.ft. | C.ft. |
| Teak M. G. Sleepers | 90,786 | 66,867 |
| Teak sawn material | 71,837 | 92,073 |
| Junglewood sawn material | 498 | 237 |
| Total | 163,121 | 159,177 |

The increase in the total output is due to the production of larger sized material, viz. sleepers.

The financial results of working are given below :—

| Item. | 1939-40. | 1938-39. | Difference. |
|---|----------|----------|-------------|
| | Rs. | Rs. | Rs. |
| Revenue | 2,67,692 | 3,73,102 | —1,05,410 |
| Expenditure | 1,23,344 | 1,37,229 | —13,885 |
| Net profit | 1,44,348 | 2,35,873 | —91,525 |
| Capital at charge | 1,68,128 | 77,993 | +90,135 |
| Percentage of net profit on capital | 85.8 | 302 | |

The decrease in the net profit is due to the drastic reduction in its requirements in sleepers and sawn material by the M. & S. M. Railway. Against the stipulated quota of 60,000 sleepers for 1939-40, the Railway, as permitted by the terms of the agreement, took only 30,000 and consequently the large stock of sleepers on hand was, for the purpose of the profit and loss account of the mill, valued at cost of production which is below the rate payable by the railway.

DEADSTOCK AND STORES.

The deadstock of the sawmill was checked with the register. Unserviceable articles were either written off under proper authority or repaired. The total value of consumable stores including saws supplied to the mill was Rs. 6,682. No new articles of deadstock were purchased for the mill.

SAWMILL TRADING ACCOUNTS.

The trading accounts of the mill were audited by the Outside Branch of the Accountant General's office.

PRIVATE SAWMILLS IN KANARA.

Mr. Sayad Nasroddin Hasansab's mill at Katur in the Kanara Eastern Division worked for about four months and turned out 1,986 cubic feet of sawn material against 5,506 cubic feet in the previous year.

Mrs. Jankibai Sawant's sawmill at Vincholi in the Kanara Northern Division continued to work on conditions similar to those of last year, i.e., the raw material required by the mill is supplied by the Department from a departmental work in the vicinity and all the converted material is delivered at the Dandeli depôt. The outturn of this mill was 10,433

sleepers and 10,670 cubic feet of sawn material. The financial results of this transaction are as follows:—

| | |
|---|--------|
| | Rs. |
| Sale proceeds of sawn material and sleepers .. | 45,497 |
| Price of rejected sleepers recovered from Mrs. Jankibai | 2,163 |
| | 47,660 |
| Expenditure to Government on raw material at mill site and on payments to Mrs. Jankibai for delivery of the sawn material at Dandeli depot | 24,852 |
| Net profit .. | 22,808 |

CHAPTER V.

FINANCIAL RESULTS.

The revenue and expenditure of the year compare with those of the last year and the average of the past quinquennium 1934-35 to 1938-39 as follows:—

| Circle. | Year. | Revenue. | Expenditure. | | | Surplus or deficit. | Percentage of surplus to revenue. |
|--------------------|--------------|-----------|-------------------|---------------------|-----------|---------------------------|--|
| | | | Conser- vancy. | Establish- ment. | Total. | | |
| | | Rs. | Rs. | Rs. | Rs. | Rs. | |
| Northern Circle .. | { 1939-40 .. | 15,24,831 | 1,46,478 | 6,15,130 | 7,61,608 | 7,63,223 | 50.05 |
| | { 1938-39 .. | 16,23,095 | 1,35,011 | 6,18,734 | 7,53,745 | 8,69,350 | 53.6 |
| | { Average .. | 17,23,944 | 1,36,520 | 5,90,451 | 7,26,971 | 9,96,973 | 57.8 |
| Central Circle .. | { 1939-40 .. | 6,75,263 | 1,10,899 | 5,26,370 | 6,37,269 | 37,994 | 5.6 |
| | { 1938-39 .. | 6,90,523 | 76,402 | 5,69,292 | 6,45,694 | 44,829 | 6.3 |
| | { Average .. | 9,71,196 | 94,271 | 6,04,865 | 6,99,136 | 2,72,060 | 28.0 |
| Southern Circle .. | { 1939-40 .. | 16,46,224 | 3,79,760 | 5,67,900 | 9,47,660 | 6,98,564 | 42.8 |
| | { 1938-39 .. | 17,25,460 | 4,09,492 | 5,93,795 | 10,03,287 | 7,22,143 | 41.9 |
| | { Average .. | 19,30,690 | 5,17,747 | 5,75,278 | 10,93,025 | 8,37,065 | 43.4 |

| Circle. | Year. | Revenue. | Expenditure. | | | Surplus or deficit. | Percentage of surplus to revenue. |
|---|------------|-----------|-------------------|---------------------|-----------|---------------------|-----------------------------------|
| | | | Conser- vancy. | Establi- shment. | Total. | | |
| | | Rs. | Rs. | Rs. | Rs. | Rs. | |
| General Direction | 1939-40 .. | 13,937 | 33,968 | 1,91,812 | 2,25,760 | -2,11,843 | .. |
| | 1938-39 .. | 12,909 | 33,534 | 1,96,864 | 2,30,398 | -2,17,489 | .. |
| | Average .. | 7,721 | 70,920 | 1,22,716 | 1,93,636 | -1,85,915 | |
| Forest Engineer. | 1939-40 .. | 345 | 9,946 | 33,786 | 43,732 | -43,387 | .. |
| | 1938-39 .. | 8,249 | 20,585 | 33,427 | 54,012 | -45,763 | .. |
| | Average .. | 4,049 | 13,337 | 33,506 | 46,843 | -42,794 | .. |
| Utilization Division. | 1939-40 .. | .. | 70 | 4,923 | 4,998 | -4,998 | .. |
| | 1938-39 .. | .. | .. | .. | .. | .. | .. |
| | Average .. | .. | .. | .. | .. | .. | .. |
| Silvicultural Division. | 1939-40 .. | 5 | 792 | 8,027 | 8,819 | -8,814 | .. |
| | 1938-39 .. | .. | .. | .. | .. | .. | .. |
| | Average .. | .. | .. | .. | .. | .. | .. |
| Total .. | 1939-40 .. | 38,60,605 | 6,81,913 | 19,47,953 | 26,29,866 | 12,30,739 | 31.9 |
| | 1938-39 .. | 40,60,206 | 6,75,024 | 20,12,112 | 26,87,136 | 13,73,070 | 33.6 |
| | Average .. | 46,37,600 | 8,32,795 | 19,26,816 | 27,59,611 | 18,77,989 | 40.5 |
| Difference between 1939-40 and 1938-39. | | -1,99,601 | +6,889 | -64,159 | -57,270 | -1,42,831 | .. |

Comparing the figures of the year with those of the previous year, it will be noted that revenue has decreased by 1.99 lakhs of rupees and the surplus by 1.42 lakhs of rupees to 12.30 lakhs. The decrease in revenue was chiefly due to the curtailed demand for sleepers and sawn material from the M. & S. M. Railway, reservation of some material of superior quality to meet the probable demand of the Defence Department, non-realisation of the full revenue from the Alnawar-Dandeli Railway, and to lack of demand for coupes and low prices obtained for those sold as a result of the introduction of the minimum wage condition.

The expenditure under conservancy and works has increased by 6·8 thousands of rupees, while that under establishment has decreased by 64·1 thousands of rupees. The former was due to a greater amount being paid as bonus on the sale of malki teak, increase in the rates of wages paid to the labourers in departmental works in the Northern and Central Circles under Government orders and acquisition of I Class Survey Numbers within the forest demarcation line in the Poona Division. The decrease under establishment is chiefly due to the fact that in some cases dual charges were held by officers and in others junior officers were put in charge of divisions in the absence of seniors on leave.

The analysis of receipts and expenditure shows that of the receipts 83·6 per cent. came from major produce, 8·9 from minor produce and 7·6 from miscellaneous sources; while of the expenditure 25·9 per cent. was incurred on extension, constitution, improvement and exploitation and 74·1 per cent. on administrative, executive and protective charges.

The outstandings on account of revenue at the commencement and close of the year were :—

| Circle. | | | | On 1st April 1939. | On 31st March 1940. |
|----------|----|----|----|-----------------------|------------------------|
| | | | | Rs. | Rs. |
| Northern | .. | .. | .. | 47,729 | 69,095 |
| Central | .. | .. | .. | 16,815 | 10,807 |
| Southern | .. | .. | .. | 2,00,639 | 1,89,399 |
| Total .. | | | | 2,65,183 | 2,69,301 |

CHAPTER VI.

RESEARCH AND EXPERIMENTS.

The filling up of the post of Silviculturist has relieved the divisional staff and Working Plans officers of research work which had hitherto been carried out by them under the direct control of the Chief Conservator's office. Government sanctioned the post in August 1939 and Mr. J. Walker, I.F.S., was selected for appointment, but as his services were requisitioned by the Army on the outbreak of war his appointment had to be cancelled. Mr. E. S. B. Tavener, M.A., I.F.S.,

who had by then returned from leave, was therefore recommended and was appointed by Government. Mr. Tavener attended the fifth Silvicultural Conference held in the last week of October at Dehra Dun and stayed on there for training under the Central Silviculturist, Forest Research Institute. He returned to Poona on 16th January 1940. On his return from Dehra Dun, he devoted his attention to the organization of his office, and the formation of Research Centres and Experimental gardens at Poona and Haliyal.

As his report on the work done since his appointment is being published separately, the experiments ordered by the Conservators and those that were tried by the Divisional Forest Officers only are summarised below :—

(1) In the North Thana Division an experiment to propagate bamboos by " layering " was undertaken in Kasa, Sawa and Dahisar ranges. No definite conclusions could be arrived at as the rains during the year were unfavourable.

(2) Efforts were made to propagate lac on *babul* (*Acacia arabica*) in the Sanjan range of the same division from brood lac obtained from Sind. Brood lac was put on lopped *babul* trees which had produced succulent branches and it looked as if the experiment was going to be a great success, but during the following hot weather, the lac had completely disappeared for reasons not properly understood. The experiment will be tried again next season.

(3) The results of the past experiment of reboising thinly stocked grassy areas in the Tansa Catchment area in the East Thana Division are given below :—

(i) *Shivan* (*Gmelina arborea*) planted about 5 years ago is about 5' high with sturdy root shoots.

(ii) *Khair* (*Acacia catechu*) 4 years old, wispy and straggling, showing no signs of forming a close canopy early enough to be useful for keeping down grass.

(iii) *Apta* (*Bauhinia racemosa*), *jambul* (*Eugenia jambolana*), *mango* (*Mangifera indica*), *kashid* (*Cassia siamea*) and *bamboo* (*Dendrocalamus strictus*), planted 4 years ago have failed completely.

(iv) *Kashid* (*Cassia siamea*) dibbled thickly 4 years back, 3' apart and given subsequent cultural treatment is now fairly dense, though incapable of checking the growth of grass.

The results of experiments introduced in the same division during the year were as follows :—

(1) *Bamboo* layering—18 manwel bamboos (*Dendrocalamus strictus*) with rhizomes planted horizontally threw out shoots, 59 were surviving at the end of March 1940.

(2) *Bamboo* cuttings—49 cuttings, 4' to 5' long with rhizomes were planted upright 12' × 12'. Forty-four were surviving at the end of March 1940.

(3) *Jamba (Xylia xylocarpa)* seed dibbled in the Tansa area failed to establish itself after germination, mainly due to insect attack and browsing by wild animals.

(4) *Kashid (Cassia siamea)* root and shoot cuttings, which had failed in Dehra Dun, were tried out in the Tansa area, in Khardi and Nasik. The plants have successfully established themselves.

(5) Sandalwood (*Santalum album*) seed sent by an enthusiastic agriculturist of Kanara was dibbled in Igatpuri and Khardi ranges and many plants were surviving at the close of the year. Two years old sandal in Igatpuri range is now 4' to 5' high.

In the Satara Sub-Division of the Central Circle, 25 eucalyptus plants were obtained from a private nursery at Bhilar and planted in the forest nursery and in the Malcompeth depot compound. All plants except one died. The surviving plant in the Depot compound is reported to be 8' in height and vigorous.

The seedlings of *Cedrelia serrata (lal deodar)* planted in the forests of the same sub-division succumbed some to heavy rain and the rest to cold. Fifteen *Hirda (Terminalia chebula)* transplants in the hirda nursery are alive.

Four hundred treated and 100 untreated *hirda (Terminalia chebula)* seeds were sown in a nursery at Dhebewadi in the Satara Sub-Division. Of the former 225 seeds, i.e., 56 per cent. germinated and of the latter only one seed, i.e., 1 per cent. germinated.

The results of the experiments carried out in the Southern Circle are as follows :—

(1) An experiment to season *jamba (Xylia xylocarpa)* wood to prevent cracking and splitting was repeated this year, since it was considered that the work in this connection during the previous year was not carried out at the proper time. Seventy trees were felled in September 1939 and left *in situ*. They were cut into 200 sleeper pieces in January 1940 and the ends of the pieces were smeared with mud and cowdung. These pieces were sawn into 258 sleepers during January to March 1940. Thirty-five sleepers were rejected and 107 were clamped. All the passed sleepers (107 clamped and 116 unclamped) have had their faces plastered with a mixture of mud and cowdung and are kept in a shed for seasoning.

(2) "Cuprex"—*A wood protector*.—One 3' long piece each of *jamba (Xylia xylocarpa)*, *kundal (Terminalia paniculata)* and teak (*Tectona grandis*) round poles cross cut with the saw at both ends were treated with "Cuprex" (diluted with equal parts of kerosene oil) after removing the bark and drying them beforehand. The treated pieces were buried about 1 foot underground lengthwise after exposure to air for five days. The untreated pieces of each of the above species were likewise buried by the side of the treated ones for comparison of results. Both sets were excavated after one year.

Unlike the untreated pieces, the treated ones of teak (*Tectona grandis*) and *kindal* (*Terminalia paniculata*) were free from decay while there was no marked difference between the treated and untreated pieces of *jamba* (*Xylia xylocarpa*) both of which appear sound and fresh.

(3) In order to test the objections to the system of clear-felling with artificial regeneration in working circle II of the working plan for the High Forests of Kanara Northern Division, an area of 20 acres in compartment V-1-Dandeli range, was clear-felled in 1938-39 and was planted during the year with teak (*Tectona grandis*) stump: of plants raised in nurseries from High Forest seed. The stumps have grown well.

(4) The three test plots laid out to ascertain the reason for poor girth increment of sandal (*Santalum album*) in the Belgaum division were maintained by renewing the numbers and rings. The results are under observation.

(5) The experimental sandalwood (*Santalum album*) plantations raised during the years 1934 to 1936 at Nagargali in the Belgaum Division were maintained. In some parts sandal is too thick and it is probable that a thinning will have to be done. Lantana is very dense.

(6) In order to test whether the sandy soil in the coastal tracts of Kanara is suitable for the growth of *cashew* (*Anacardium occidentale*), an experimental plantation of this species was raised at Binge, in Karwar range, by dibbling seed 12' x 12' towards the end of May. On July 1st the spacing was increased to 24' x 24' and all the 360 plants have survived. They are well established and vary in height from 10" to 17".

The Provincial Silviculturist who inspected the plantation expressed his opinion that pure sandy soil is not very suitable for this species and that, for the purpose of comparison, one or more experimental plantations of similar type should be formed in the same locality but in the poorer type of forest area containing porous laterite soil. Steps are being taken to do this.

In order to see the effect on the milk yielding capacity of buffaloes by feeding them with *anajan* (*Hardwickia binata*) leaves, an experiment was started under the guidance of the Live Stock Expert to the Government of Bombay at Borvahir in the Dhulia taluka. Twelve buffaloes were taken for the purpose and they were fed with *anajan* leaves for 40 days equally divided into 5 periods of 8 days. The quantity of *anjan* leaves served to each buffalo was gradually increased as follows:—

| Period. | Quantity served to each buffalo. |
|--|----------------------------------|
| 11th January 1940 to 18th January 1940 | .. 15 lbs. |
| 19th January 1940 to 26th January 1940 | .. 20 lbs. |
| 27th January 1940 to 3rd February 1940 | .. 25 lbs. |
| 4th February 1940 to 11th February 1940 | .. 30 lbs. |
| 12th February 1940 to 19th February 1940 | .. 35 lbs. |

The accompanying statement A shows the quantity of milk given by each buffalo while statement B gives the quantities of other fodders and cotton seed served to them in addition to *anjan* leaves.

The condition of the buffaloes during the period was good and they appeared to have relished the leaves since no residue was left. The results of the milk yield indicate that the milk yield was well sustained during the first three periods. There was a rapid fall during the last two periods, which is rather difficult to account for. In the fourth period for two days and in the 5th period for three days no *anjan* leaves were received. There were other difficulties such as change of milkers late milking, allowing the calves to suckle more from the dams which could not be exactly controlled. It is, however, clear from the results of the first three periods, that the feeding of *anjan* leaves sustained the milk yield remarkably well and in some cases even increase the milk yield.

STATEMENT A.

Statement showing the quantity of milk yielded by buffaloes fed on anjan leaves at Borvihar village, Taluka Dhulia, West Khandesh.

| Serial No. | Name of the buffalo. | Breed. | Age in lactation. | Date of present calving. | Number of months advanced in lactation at commencement of experiment. |
|------------|----------------------|------------|-------------------|--------------------------|---|
| 1 | Kharki | Country | 3 | 16th August 1939 | Months. 5½ |
| 2 | Navasi | Do. | 4 | 21st August 1939 | 5½ |
| 3 | Soni | Do. | 3 | 20th October 1939 | 2½ |
| 4 | Sakawar | Do. | 3 | 25th October 1939 | 2½ |
| 5 | Paingan | Do. | 4 | 3rd November 1939 | 2½ |
| 6 | Ranjan | Do. | 3 | 13th October 1939 | 3 |
| 7 | Sundar | Do. | 4 | 14th October 1939 | 3 |
| 8 | Kousha | Do. | 4 | 9th October 1939 | 3½ |
| 9 | Dimakha | Do. | 6 | 4th October 1939 | 3½ |
| 10 | Almedabadi | Almedabadi | 4 | 12th October 1939 | 3 |
| 11 | Butwal | Country | 4 | 22nd October 1939 | 2½ |
| 12 | Buta | Do. | 6 | 24th October 1939 | 2½ |

STATEMENT A—contd.

| Serial No. | Name of the buffalo. | Milk yield in lbs. during different periods of feeding. | | | | | Remarks. |
|------------|----------------------|---|----------------|----------------|----------------|----------------|---------------------------------|
| | | Period and quantity of <i>anjana</i> leaves fed daily. | | | | | |
| | | 1st 15 lbs. | 2nd 20 lbs. | 3rd 25 lbs. | 4th 30 lbs. | 5th 35 lbs. | |
| 1 | Kharki .. | 70½ | 67½ | 63 | 37½ | 32½ | Served on 31st January 1940. |
| 2 | Navael .. | 103½ | 102½ | 100½ | 56½ | 53½ | |
| 3 | Soni .. | 71½ | 84½ | 93 | 50½ | 45½ | Calf died on 6th February 1940. |
| 4 | Sakawar .. | 108½ | 106½ | 107½ | 79 | 55½ | |
| 5 | Paingan .. | 101½ | 100½ | 102 | 69 | 57½ | |
| 6 | Ranjan .. | 102½ | 96½ | 96½ | 70½ | 63½ | Served on 20th January 1940. |
| 7 | Sundar .. | 87½ | 83½ | 86 | 63½ | 45½ | |
| 8 | Kousha .. | 78½ | 85½ | 87½ | 64½ | 47½ | |
| 9 | Dimakha .. | 80½ | 77½ | 71½ | 54 | 45 | |
| 10 | Ahmedabadi .. | 96½ | 99½ | 92 | 79 | 63½ | |
| 11 | Butwal .. | 78½ | 71 | 74½ | 65½ | 40 | Served on 21st January 1940. |
| 12 | Buta .. | 56½ | 52 | 54½ | 39½ | 23½ | Do. |

STATEMENT B.

Statement showing feeding of buffaloes at Borvihar, taluka Dhulia, fed on anjan leaves—feeding trial.

| Serial No. | Name of the buffalo. | 1st period. | | | 2nd period. | | |
|------------|----------------------|-------------|--------|--------------|-------------|--------|--------------|
| | | Kadbi. | Chaff. | Cotton seed. | Kadbi. | Chaff. | Cotton seed. |
| | | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. |
| 1 | Kharki | 12 | 8 | 6 | 10 | 8 | 6 |
| 2 | Navasi | 12 | 8 | 6 | 9 | 7 | 6 |
| 3 | Soni | 9 | 8 | 6 | 10 | 7 | 6 |
| 4 | Sakawar | 10 | 10 | 6 | 11 | 8 | 6 |
| 5 | Paingan | 8 | .. | 6 | 8 | .. | 6 |
| 6 | Ranjan | Grazing. | | 6 | Grazing. | | 6 |
| 7 | Sundar | 10 | 10 | 6 | 10 | 7 | 6 |
| 8 | Kousha | 16 | .. | 6 | 13 | .. | 6 |
| 9 | Dimakha | 12 | 10 | 6 | 11 | 9 | 6 |
| 10 | Ahmedabadi | 8 | .. | 6 | 7 | .. | 6 |
| 11 | Butwal | Grazing. | | 5 | Grazing. | | 5 |
| 12 | Buta | 4 | .. | 4 | 3 | .. | 4 |

STATEMENT B—contd.

| Serial No. | Name of the buffalo. | 3rd period. | | | 4th period. | | | 5th period. |
|------------|----------------------|-------------|--------|--------------|-------------|--------|--------------|-------------|
| | | Kadbi. | Chaff. | Cotton seed. | Kadbi. | Chaff. | Cotton seed. | |
| | | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | |
| 1 | Kharki | 8 | 9 | 6 | 10 | 6 | 9 | .. |
| 2 | Navaei | 9 | 8 | 6 | 11 | 9 | 6 | .. |
| 3 | Soni | 10 | 7 | 6 | 11 | 9 | 6 | .. |
| 4 | Sakawar | 8 | 6 | 6 | 12 | 8 | 6 | .. |
| 5 | Paingan | 6 | .. | 6 | 9 | .. | 6 | .. |
| 6 | Banjan | Gra zing. | | 5 | Gra zing. | | 6 | .. |
| 7 | Sunder | 7 | 7 | 6 | 11 | 8 | 6 | .. |
| 8 | Kousha | 12 | .. | 6 | 15 | .. | 6 | .. |
| 9 | Dimakha | 9 | 6 | 6 | 12 | 8 | 6 | .. |
| 10 | Ahmedabadi | 7 | .. | 5 | 8 | .. | 6 | .. |
| 11 | Butwal | Gra zing. | | 5 | Gra zing. | | 6 | .. |
| 12 | Buta | Gra zing | | 4 | Gra zing. | | 4 | .. |

CHAPTER VII.

ADMINISTRATION.

The post of Chief Conservator was held by Mr. A. C. Hiley, C.I.E., I.F.S., throughout the year.

The territorial Circles were held by the following officers :—

| | | |
|-----------------|----|---|
| Northern Circle | .. | Mr. H. W. Starte, from 1st April 1939 to 31st March 1940. |
| Central Circle | .. | Mr. R. P. Dalley, from 1st April 1939 to 23rd February 1940. Mr. H. P. W. Davis, from 24th February 1940 to 31st March 1940. |
| Southern Circle | .. | Mr. W. C. de C. Walsh, from 1st April 1939 to 12th February 1940. Mr. J. B. T. Brooks, from 13th February 1940 to 31st March 1940. |

According to the exigencies of administration the usual transfers of officers took place. Owing to paucity of officers it was sometimes necessary to double charges while in some cases junior officers were put in charge of divisions.

Mr. H. C. Holmes, Deputy Conservator of Forests on leave, joined up for service in the Royal Navy with effect from 1st November 1939 and Mr. J. Walker's services were placed at the disposal of the Government of India in the Military Department.

Messrs. J. Dutt, F. A. B. Coelho and V. A. N. Sausman were confirmed in Class I. Messrs. N. S. Kaikini and R. D. Joshi, on the completion of their training at Dehra Dun, joined their duties in April 1940 in the Southern and Northern Circles respectively.

The West Khandesh division as newly constituted was found, by actual experience, to be too heavy a charge for one officer satisfactorily to manage even with the help of a Sub-Divisional Forest Officer. The creation of an independent Sub-division was therefore recommended and was sanctioned by Government at the close of the year.

Subordinate and Clerical Services.

The six Bombay students nominated to Rangers' Training Class at the Agricultural College, Poona, successfully passed at the final examination and were all awarded "honours" certificates. Three of them were posted to the Northern Circle and three to the Southern Circle. The two prizes from the Bell Memorial Fund—one for Botany and the other for Silviculture—were awarded as follows :—

| | | |
|-----------------------|----|--|
| Prize in Botany | .. | Mr. S. P. Jadhav. |
| Prize in Silviculture | .. | Equally divided between Messrs. S. P. Jadhav and P. B. Bidikar as both secured the same number of marks. |

STATEMENT B—contd.

| Serial No. | Name of the buffalo. | 3rd period. | | | 4th period. | | | 5th period. |
|------------|----------------------|-------------|--------|--------------|-------------|--------|--------------|-------------|
| | | Kadbi. | Chaff. | Cotton seed. | Kadbi. | Chaff. | Cotton seed. | |
| | | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | Lbs. | |
| 1 | Kharki .. | 8 | 9 | 6 | 10 | 6 | 9 | .. |
| 2 | Navai .. | 9 | 8 | 6 | 11 | 9 | 6 | .. |
| 3 | Soni .. | 10 | 7 | 6 | 11 | 9 | 6 | .. |
| 4 | Sakawar .. | 8 | 6 | 6 | 12 | 8 | 6 | .. |
| 5 | Paingan .. | 6 | .. | 6 | 9 | .. | 6 | .. |
| 6 | Banjan .. | Gra zing. | | 5 | Gra zing. | | 6 | .. |
| 7 | Sunder .. | 7 | 7 | 6 | 11 | 8 | 6 | .. |
| 8 | Kousha .. | 12 | .. | 6 | 15 | .. | 6 | .. |
| 9 | Dimakha .. | 9 | 6 | 6 | 12 | 8 | 6 | .. |
| 10 | Ahmedabadi.. | 7 | .. | 5 | 8 | .. | 6 | .. |
| 11 | Butwal .. | Gra zing. | | 5 | Gra zing. | | 6 | .. |
| 12 | Buta .. | Gra zing | | 4 | Gra zing. | | 4 | .. |

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The six Bombay students nominated to Rangers' Training Class at the Agricultural College, Poona, successfully passed at the final examination and were all awarded "honours" certificates. Three of them were posted to the Northern Circle and three to the Southern Circle. The two prizes from the Bell Memorial Fund—one for Botany and the other for Silviculture—were awarded as follows :—

Prize in Botany .. Mr. S. P. Jadhav.

Prize in Silviculture .. Equally divided between Messrs. S. P. Jadhav and P. B. Bidikar as both secured the same number of marks.

The net cost on account of this Class to Government was Rs. 18,508 (Rs. 23,508 expenditure—Rs. 5,000 revenue on account of fees received from the students). This cost approximately equals that which would have had to be incurred by Government had the Bombay students been sent to Dehra Dun for training.

The Class at present is seriously handicapped for want of adequate accommodation. It has no class room of its own, no space for a forest herbarium or museum and hostel accommodation is limited to house only six students. A proposal to have a building costing about Rs. 9,000 for the class and a fairly cheap structure for a hostel is under consideration.

The chief advantage of the class is that, being situated at Poona, the students find it both economical and convenient.

Training of Foresters.

The Foresters' Class at Mandvi in the Northern Circle was, as usual, conducted by a Ranger. Out of the 25 students admitted (14 from the Northern Circle, 10 from the Central Circle and 1 from the Dangs) 22 passed the final examination. Arrangements were again made this year with Police Department for simple instructions in drill.

The annual course for training foresters under selected rangers in the Southern Circle was continued, and all the 12 subordinates who attended the course passed out successfully. As this system of training is not considered entirely suitable, a proposal to open a regular forest class at Haliyal was approved by Government at the close of the year and is awaiting sanction of funds for its introduction.

The work of protective and clerical establishments is reported to be satisfactory.

The depot officer, Malyan (Dahanu Road) in the Northern Circle was assaulted by a Pathan, an employee of a charcoal contractor of Jawhar State. On being prosecuted the accused was ordered to furnish security for good behaviour of six months.

The Range Forest Officer, Manor's personal orderly, who had accompanied the Range clerk to Palghar for cashing a cheque, met with a motor accident and died in the dispensary at Mahim, soon after.

A beat guard in West Thana, while returning after extinguishing a forest fire, was bitten by a Russel's Viper and died in the dispensary at Bhiwandi. His widow is being recommended for a gratuity from the compassionate fund.

A family pension of Rs. 10 per mensem was sanctioned by Government to the eldest son of the beat guard, who as reported in the last year's report, was drowned in the course of his duty while crossing a river which was in flood.

The number of casualties, penalties etc. is tabulated below :—

| Particulars. | Northern Circle. | Central Circle. | Southern Circle. | Total 1939-40. | Total 1938-39. |
|-------------------------------|------------------|-----------------|------------------|----------------|----------------|
| Retirements | 35 | 19 | 17 | 71 | 69 |
| Deaths | 7 | 7 | 18 | 32 | 34 |
| Resignations | 9 | 3 | 1 | 13 | 9 |
| Prosecutions | .. | 1 | .. | 1 | 4 |
| Degradations | 37 | 31 | 5 | 73 | 47 |
| Dismissals, removals, etc. .. | 19 | 12 | .. | 31 | 18 |
| Total .. | 107 | 73 | 41 | 221 | 181 |

Except in places noted for bad climate where ill-health is common among the subordinates, the health of the staff was reasonably good.

Measures to Suppress Corruption.

Six-monthly reports showing cases of corruption during the period were submitted to Government.

The attention of the staff was drawn from time to time to the standing orders against corruption and unfair dealings with the public. Strict control was maintained over expenditure by surprise checks of as many works as possible and by closely scrutinizing estimates with the ruling rates of wages. Payments to contractors and piece workers were made by cheque as far as practicable directly from Divisional offices. The public were given every facility to report malpractices on the part of subordinates.

INSPECTIONS AND TOURS.

His Excellency the Governor of Bombay visited Yellapur and the surrounding forests in May 1939. He also paid a visit to the Akrani Mahal in January 1940 and camped at Rohini in the West Khandesh division for some days in February 1940.

Dr. S. N. Kapur of the Forst Research Institute visited Dandeli in January 1940 in connection with the erection of a seasoning kiln.

The Chief Conservator toured in all the Circles.

The Conservators while touring inspected all the Divisional Forest Offices in their respective Circles. No serious irregularities were noticed.

CONFERENCES.

The Chief Conservator and the Utilization Officer, Bombay Province, attended the conference of the heads of Forest Departments of all the Provinces and States held at Delhi on the 28th and 29th of March 1940 to consider the question of supply of timber for war purposes.

The Chief Conservator also attended the meeting of the Forest Utilization Central Advisory Board held at Dehra Dun from 2nd to 5th April 1940.

Mr. E. S. B. Tavener, the Silviculturist, Bombay Province, attended the fifth Silvicultural Conference at Dehra Dun.

CIVIL SUITS.

The appeal filed by Mr. G. N. Mohite against the decision in the suit brought by him claiming ownership over the aftergrowth of teak in certain survey numbers in Talasari in the Thana District was dismissed.

The civil suit filed by Mr. M. G. Pethe of Umbergaon claiming ownership over aftergrowth of teak in certain survey numbers of Vase in the same district is still pending.

The fresh suit brought by Mr. P. D. Billimoria against Government and Mr. Y. R. Divekar, Divisional Forest Officer personally, for wrongful dismissal and damages was dismissed with costs.

The suit filed by Mr. S. N. Pithawala against Government and Mr. Y. R. Divekar, personally, was decided by the First Class Sub-Judge, Thana, who ordered that Government should pay the plaintiff Rs. 225 and his costs of suit on part of the claim allowed. The suit against Mr. Divekar was dismissed.

A suit filed against Government in 1932 by Mr. A. R. Yellappur is still pending re-trial in the First Class Sub-Judge's Court, Karwar.

LAND REVENUE ADMINISTRATION.

The Divisional Forest Officer, West Nasik, continued to function as Assistant Collector and Excise Superintendent of Peint Mahal.

The excise and revenue administration of the Akrani Mahal was carried on as hitherto by this Department. The Raisingpur Estate continued to be managed by this Department under the Court of Wards.

Dalhi & Kumri (Shifting cultivation).

Almost all the *kumri* villages in the Belgaum division were inspected by the Divisional Forest Officer and all reasonable complaints and grievances were redressed after thorough investigation. The request, of some villagers of Pargad to allot an area of about 400 acres for *kumri* is being enquired into.

Dalhi plots measuring 62 acres and 27 gunthas and assessed at Rs. 6-7-8 were resumed during the year leaving 27,714 acres and 22 gunthas under this form of cultivation in the Kolaba division. The assessment collected during the year including past arrears amounted to Rs. 3,225-11-4.

FOREST VILLAGE PANCHAYATS.

The four panchayats in the Kanara Northern Division continued to function as in the previous year.

Only 2 out of the 13 panchayats in the Kanara Western Division did any work of improvement by planting seedlings of useful species in their forests. In one panchayat in the Kumta Taluka much forest area is reported to have been cut for *kumri* under the guise of clearance. Such clearances are not conducive to forest conservancy. The forests in all other panchayats were maintained and protected by the managements without any internal friction.

DANGS FOREST ADMINISTRATION.

Since the transfer on 1st July 1933 of the Dangs to the control of the Government of India, the administration of the tract continues to be done by the staff lent by this Department. The question governing the loan of personnel for the purpose has recently been decided. Some subordinates have been transferred permanently to the Dangs cadre, some have been retained on foreign service terms with 20 per cent. addition to their pay and the rest re-transferred to the Bombay Province.

RELATIONS BETWEEN THE FOREST DEPARTMENT AND OTHER DEPARTMENTS.

These remained as cordial as in former years.

CHAPTER VIII.

GENERAL

A perusal of the preceding chapters will show that considerable progress was made in regenerating forests and in encouraging tree planting by private persons. The first year's results of the "Gradoni" system of reboising dry barren hill sides in the Northern and Central Circles were, in spite of scarcity of rain, promising in that there was an improved growth of grass and a fair percentage of germination of the seeds of various tree species sown. Its effect on erosion in Mohodari area in the East Nasik division, which receives more rain than elsewhere in the tract, was satisfactory. Forest policy has been liberalised and many extra concessions and privileges have been allowed to the people. Assistance to existing industries in deserving cases was continued and steps are in progress to investigate the uses of several forest products as an opening to new industries.

The outstanding event of the year was the outbreak of war. This has not so far led to any very big demand for timber for war purposes, but there were numerous enquiries for tent pins, bamboos, poles, sawn wood etc. and a great deal of work has been done in collecting information, quoting quantities, rates etc. as a preliminary to undertaking any possible supply in future. After the close of the year orders for the supply of 1,20,000 *ballies* (teak poles) and an educational order for 3,000 bamboos for tent poles were received. These supplies are being made departmentally from all the Circles. The services of the Utilization Officer, Bombay Province, have been placed practically whole time at the disposal of the Government of India Department of Supply for inspecting timber purchased by that Department from various firms and for attending to other enquiries on behalf of that Department. So far no reaction in the timber market is noticeable on account of the war, though there has been some tendency amongst certain contractors, to gamble on a rise in prices.

There was a marked drop in the business with the M. & S. M. Railway, which took only 30,000 M. G. sleepers and 94 tons of sawn wood against 84,999 sleepers and 493 tons of logs and sawn wood in the previous year. This together with the non-sale of several coupes in the Thana and Kolaba divisions affected the revenue of the department so much that in spite of the fact that expenditure was kept as low as possible, there was a decrease in the surplus.

ALNAWAR-DANDELI RAILWAY.

The recorded revenue and expenditure of the Alnawar-Dandeli Railway show a net profit of Rs. 4,208 (Rs. 29,405 receipts *minus* Rs. 25,197 expenditure) or 14.3 per cent. on gross receipts against Rs. 13,255 (Rs. 56,778 receipts *minus* Rs. 43,523 expenditure) or 23.3 per cent. of the previous year. The figures for 1939-40 do not represent the true result of the working of whole year since the receipts and expenditure for the last three months i.e., January to March 1940 were not adjusted during the year for want of account sheets from the Railway Account Office.

But even if the financial results for the complete 12 months were available, the net profits would probably not have reached the level of those of the last year since there was considerable reduction in the manganese traffic partly due to lack of shipping space and partly to restrictions on exports owing to the war.

HUNTING AND SHOOTING.

The revenue realised from this source during the year was Rs. 7,582 against Rs. 8,621 in the previous year.

The details of animals killed in Government forests are given below :—

| All India S. No. | Animal. | Northern Circle. | Central Circle. | Southern Circle. | Total. | Average of 5 years 1934-35 to 1938-39. |
|------------------|--|------------------|-----------------|------------------|--------|--|
| 1A | Tiger | 2 | 9 | 9 | 20 | 32 |
| 1B | Tigress | 2 | 3 | 1 | 6 | 8 |
| 2 | Panther | 15 | 15 | 22 | 52 | 64 |
| 3 | Wild cat | .. | .. | .. | .. | 1 |
| 6 | Hyena | .. | .. | .. | .. | 1 |
| 8 | Wild dog | .. | 2 | 2 | 4 | 1 |
| 14 | Sloth bear | .. | 4 | 4 | 8 | 10 |
| 15 | Wild elephant | .. | .. | 22 | 22 | 16 |
| 17 | Bison | .. | .. | 28 | 28 | 18 |
| 29 | Blue bull | 2 | 83 | .. | 85* | 23 |
| 30 | <i>Bhekar</i> (4 horned antelope). | .. | .. | .. | .. | 4 |
| 32 | <i>Chinkarn</i> | .. | 1 | .. | 1 | 2 |
| 33 | Barking deer | .. | .. | 1 | 1 | 2 |
| 37 | <i>Sambhar</i> | .. | 7 | 13 | 20 | 16 |
| 38 | <i>Cheetal</i> | 5 | 5 | 12 | 22 | 15 |
| 46 | Wild pig | 12 | 582 | 447 | 1,041* | 638 |
| | Total | 38 | 711 | 561 | 1,310 | 851 |

* Includes 1,004 pig and 78 blue bull killed by the various gun clubs in the Central and Southern Circles.

There was a good deal of illicit shooting particularly in areas round Nagargali and Londa in the Belgaum division where even some village buffaloes were shot at night in mistake for bison. There was no proof as to who had done the shooting and no action could therefore be taken. Since the close of the year, rules to control indiscriminate night shooting have been issued and such cases of illicit shooting will, it is hoped, be reduced.

Rewards amounting to Rs. 1,680 were granted by the Revenue Department for killing wild animals in Kanara, Belgaum and Dharwar districts as under :—

| | Rs. |
|-----------------------|-------|
| Wild elephant | 1,250 |
| Wild dog | 5 |
| Wild pig | 425 |
| Total .. | 1,680 |

INCREASE OR DECREASE IN THE NUMBER OF WILD ANIMALS AND BIRDS.

There was no noticeable increase or decrease in the animal or bird population in forest tracts except to the extent mentioned below :—

In the Panch Mahals where the Government forests are honey-combed with Talukdari and State forests considerable illicit shooting continues with the result that game is gradually being exterminated. Due to destructive poaching habits of the villagers in North Thana wild animals have considerably decreased and may become extinct. Bison in the high forests of the Kanara Northern and Eastern divisions and wild animals generally in the western portions of the Belgaum division are increasing. In the eastern parts of the Belgaum division, however, wild animals are decreasing.

GUN CLUBS.

Four new gun clubs were started in the Dharwar district. 138 pig in Kanara, 13 in Belgaum, 274 in Dharwar and 13 in the Bijapur districts were killed. It is reported that the pig hunting expeditions have relieved the cultivators to a great extent of watching their crops at night and have also helped generally to protect the crops against damage.

The gun clubs in the Satara Sub-Division and Kolaba division killed 238 and 5 pig respectively while those in the East Khandesh division killed 323 pig and 78 blue bull.

The permission granted last year to form a gun club at Kalyan was not availed of by the people. There is no likelihood of such a club being formed, unless the Government Shikar Officer can spare time to travel widely throughout the district and encourage the people to organise such a club on proper lines. The Divisional Forest Officer, West Thana, thinks that such clubs will be very useful in preventing poaching, as pig shooting appears to be the favourite sport of gun licencees of Bombay and Thana and also of the local villagers. The formation

of gun clubs might provide legitimate exercise for the guns of the license-holders and divert their activities to useful channels, reducing to a certain extent wanton killing of *cheetal* and *sambhar* which is widely prevalent.

IN-FOREST SETTLEMENTS.

No new settlements were opened during the year. The assessment revenue realised during the year amounted to Rs. 18,678 in the Northern Circle and Rs. 55,560 (including Rs. 14,848 of past arrears) in the Central Circle. The total amount outstanding against the settlers in the Central Circle at the close of the year was Rs. 1,130.

Tagai amounting to Rs. 4,600 was granted to the forest settlers in the East and West Khandesh divisions. Out of the total amount due viz. Rs. 6,571-0-0 (Rs. 4,600 plus Rs. 1,971 previous year's balance) Rs. 5,139-2-0 were recovered leaving a balance of Rs. 1,431-14-0.

The condition of the settlers was on the whole good.

There is considerable demand for land for cultivation in the Northern Circle in almost all the districts but no further grants can be made, as all available land suitable for cultivation has been given out and further grants would only mean curtailment of grazing areas and fuel and timber supply.

Two settlers from Vishnupur settlement in the East Khandesh division lost their lives while putting out forest fires. The widow of one of the deceased settlers and the son of the other have been given plots in the settlement for their maintenance. The question of granting some land to the latter is also under consideration of the Revenue Department. The revision of forest settlements in Taloda range could not be completed as no ranger could be spared for the work.

RESERVED TEAK (*Tectona grandis*) IN VARKAS LANDS IN THANA.

20 per cent. of the sale proceeds of teak (*Tectona grandis*) in *varkas* lands in the Thana district is paid as bonus to the occupants and 30 per cent. to the District Local Board for works of public utility, more especially for improvement of communications and water supply in the interior villages of the district. The total amount thus paid to the Local Board since 1932-33 is Rs. 77,733-11-0. Practically nothing was done up to last year to utilise the money for any works of public utility. In August 1939 the Collector convened a meeting of District Officers to review the situation caused by the absence of rain and various works to be financed from the 30 per cent. bonus to provide labour to the villagers were suggested. In the meetings of the Standing Committee of the Bonus Fund subsequently called a new programme of works was sanctioned for (a) construction of works of a permanent nature, (b) easing the road and cart-track gradients in certain *khinds* (passes) and (c) construction of wells. The plans and estimates for these works were prepared by the Local Board. Out of the works sanctioned,

the Kasa dispensary was completed and the construction of several roads and wells was undertaken. Thus it will be noted that during the year active steps were taken for the utilisation of the 30 per cent. bonus fund for works of public utility.

FOREST ADVISORY COMMITTEES.

The Forest Advisory Committees established in the Thana, Nasik, Khandesh, Kolaba, Kanara and Dharwar districts held their quarterly meetings and such questions as local supply of forest produce, privileges, grazing facilities, issue of passes, grant of certain reserved trees to *betta* (protected forests set apart for the exercise of privileges by garden holders) holders, system of remuneration to elephant shikaris, free removal of bamboos for cottage industries in Kanara, prohibition of motor cars at night without permit in forests, cutting of forest trees obstructing roads, water supply, etc., were discussed. In the Panch Mahals, there was only one meeting and the most important of the recommendations submitted was that no further grants of forest lands for cultivation or disforestation should be made as such grants in the past were so liberal as to bring the future of the forests and public needs into jeopardy. Questions seeking redress of genuine grievances were favourably considered and the rest were either discussed or dropped. The minutes of these meetings were submitted to Government whose orders on questions beyond the powers of local officers were obtained. The proposal of the Dharwar Committee for the grant of a contribution to the Dharwar District Local Board for the maintenance of roads was negatived by Government and rules designed to check illicit shooting were issued shortly after the close of the year.

FOREST GRIEVANCES REDRESSED.

In addition to the grant of privileges mentioned in Chapter IV, some other grievances brought before the above committees were removed. They are as under :—

(1) The short-cut cattle-paths through reserved forests are to be marked out by the Forest Department in order to facilitate fencing by villagers.

(2) The maximum period of validity of permits for minor forest produce was raised from 3 to 4 days.

(3) The concession of free removal of *karvi* (*Strobilanthes callosus*) by forest villagers for agricultural purposes has been allowed in the Northern Circle (except in the Igatpuri, Akola and Rajur ranges) by headloads only.

(4) In the case of forest villagers in the Mandvi range of the Surat Sub-division and Peint Mahal in the West Nasik Division removal of *karvi* (*Strobilanthes callosus*) by cartloads also has been permitted.

(5) The proposal that *ghator* (*Zizyphus xylopyra*) in Khandesh should be sold on permit for *bona fide* tanning purposes instead of selling it by auction was sanctioned by Government after the close of the year,

EXHIBITIONS.

The Forest Department participated in one exhibition viz., that at Satara held under the auspices of the Maharashtra Shareerik Shikshana Parishad. A forest stall was opened in this exhibition and demonstrations as regards the use of raiwal (junglewoods) and of soft woods for industrial purposes such as match making etc., and medicinal uses of various forest shrubs, etc., were given.

CATTLE BREEDING SOCIETIES.

The Gilligan Cattle Breeding Farm at Pimple in the East Khandesh division is reported to be flourishing.

The question of supplying a couple of stud bulls to the forest settlers of the East and West Khandesh divisions was decided after the close of the year. Two stud bulls were purchased at Government cost and supplied to the settlers of Lalkdya Hanuman and Ambapur settlements in the West Khandesh division.

GRASS STORAGE SCHEME.

The storage of grass at Godhra stood at $9\frac{1}{4}$ lakhs lbs. both at the beginning and close of the year. But owing to the threatened scarcity of fodder, the contractors were notified under instructions received from Government that the whole quantity would be required this year and it was accordingly made over to the Revenue Department after the close of the year. The grass contractor at Palghar is, as per terms of his contract, required to supply grass to Government at a fixed rate when a notice is given to him by a stipulated time.

SCARCITY OF RAIN AND CONSEQUENT FODDER FAMINE.

An acute fodder famine occurred in the Gujarat and Ahmednagar districts during the year. In order to ease the situation Government ordered that a contract should be entered into for the supply of 7 lakhs lbs. of grass to the famine stricken areas in the Ahmednagar district according to the Collector's request. Accordingly a contract was given for the supply of the requisite quantity of grass at Rs. 14 per 1,000 lbs. from the Sidwadi kuran in the East Nasik division. When about $1\frac{1}{2}$ lakhs lbs. were supplied, the Collector reported that no more grass was required and further consignments were stopped. But the department had to purchase the stipulated quantity viz. 7 lakhs lbs. as per agreement. The contractor, however, consented to accept the rate of Rs. 13 per 1,000 lbs. instead of Rs. 14 as he was absolved from loading the grass into waggons. The surplus grass is being disposed of now by the Sub-Divisional Forest Officer, West Khandesh. As regards Gujarat, supplies were made from the Panch Mahals division where grass was plentiful.

In the Central Circle, due to scarcity, grass *kurans* were temporarily opened in the Khandesh divisions and the period for the issue of permits for *anjan* leaves had to be extended by one month. As a measure of relief to the Bhils and Mahars of the Sakri range in the Khandesh division departmental fellings were undertaken and this resulted in their earning Rs. 468-8-0 as wages.

In the Southern Circle at the instance of the Collector of Belgaum, all the open forests of the Chandgad and Patne rounds in the Belgaum division were made available to the forest and non-forest villages of the Chandgad Mahal for cutting and removal of grass as scarcity of fodder was occasioned by floods and insect pests.

Assessment on forest lands given for temporary occupation was also remitted to the extent of Rs. 544 as relief to certain *kumri* villagers in the Belgaum district whose crop was damaged by flood and insect.

PROVINCIAL FODDER AND GRAZING COMMITTEE.

In all three meetings of the Provincial Fodder and Grazing Committee were held. As recommended in a resolution passed by the Committee in their last meeting a five year scheme prepared by the Forest Engineer, Belgaum, for the improvement of water supplies in grazing areas of the Province costing Rs. 1,18,315 has been submitted to Government for approval. Another question which concerns this department is that of framing suitable grazing rules. The draft grazing rules drafted by this department were published but owing to a large number of objections made by the public, they were not brought into force. Government have ordered that the Collectors should ask the members of the Advisory Committees of their districts to make suggestions as to the lines on which suitable grazing rules for their particular districts should be drawn up and to forward them to the Chief Conservator for further disposal.

VILLAGE IMPROVEMENT SCHEME.

Commendable work was again done by Forest Officers in all the Circles during the year in connection with rural development. They explained to the people forest privileges, the value of forests and the need for their protection, the importance of tree planting, sanitation, literacy, cottage industries, storing of green grass in "silo pits", and other matters connected with the welfare of the people. Help and advice were given on the construction and maintenance of roads—a concrete result of which is that the people of Gholwad and Bordi in the Northern Circle undertook the construction of the Gholwad-Khunavda road in the North Thana division partly by raising a popular contribution and partly with the aid of funds sanctioned by the District Local Board from the bonus fund.

A. C. HILEY,

Chief Conservator of Forests,
Province of Bombay.

PRESS NOTE ON THE FOREST ADMINISTRATION REPORT FOR THE YEAR 1939-40.

Afforestations and disafforestations during the year resulted in a reduction aggregating about 33 square miles in the forest areas in charge of both the Revenue and Forest Departments. The total forest area of the Province at the close of the year stood at 12,937 square miles or 17 per cent. of the total land area. The disforestments were chiefly in favour of cultivation. In spite of the fact that so much land has been given out for cultivation the hunger for land for this purpose is still on the increase, particularly in the Panch Mahals and Khandesh divisions, but no further grants can be made, as most of the available land suitable for cultivation has been given out and further grants would only mean curtailment of grazing areas and fuel and timber supply.

2. There was considerable decrease in forest fires during the year, but a general increase in the number of forest offences particularly under unauthorised fellings and grazing. The increase under unauthorised fellings is attributable among other causes in some degree to the liberalization of privileges and concessions, as a result of which larger number of people visit the forests and through ignorance or indifference commit acts which in law are offences. Under grazing the increase was due chiefly to scarcity of fodder in the Panch Mahals, Thana and East Khandesh.

3. During the year 72,783 acres were regenerated by natural means supplemented by plantations raised artificially. The general condition of all the plantations is on the whole satisfactory. In addition plantations were raised by the agri-silvicultural system in the East Nasik division where the total area under this system is now 4,339 acres. This system having proved successful in the East Nasik division, was extended in other divisions with a fair amount of success.

4. The experiments on the lines of the Italian Gradoni system referred to in the last year's report were started during the year. This system consists of making trenches along the contours on hill sides, bunding the nullahs and heaping the earth taken out from the trenches on the outer side. The object of the experiment is two-fold; to check further erosion and to conserve water in the sub-soil. Six different localities—2 in the Northern Circle and 4 in the Central Circle—were selected for this experiment. These areas are all bare hill sides and receive about 20-30 inches of rainfall. The breadth and depth of the trenches vary according to the nature of the soil but usually they are respectively 2' and 1'. These areas were strictly closed to grazing and a whole time watchman is engaged at each spot to enforce protection against man or beast. The result of bunding in Mohodari in the East Nasik division of the Northern Circle, it is reported, was so successful that erosion was practically absent during the year. Seeds of various species were sown in the trenches and on the slopes of the earth taken

out from the trenches and heaped on their banks. Owing to the poor monsoon in the first year of the experiment it is not possible to judge the results accurately.

5. Germination was on the whole satisfactory and a very fair percentage of the seedlings survived the hot weather. The results in improved growth of grass are clearly visible in all the localities and the subsequent course of the experiment should prove interesting.

6. Wide publicity was given to Government orders regarding concessions granted to the public in the matter of the planting of fruit trees in forest areas. Very few enquiries were received. In all 11 agreements involving an area of about 25 acres were executed. Advice and demonstrations in planting fruit and other trees in *maliki* lands were also given by forest officers, and in some cases seedlings were also supplied to the people.

7. The quantity of forest produce removed by departmental agency was 936,000 cubic feet of timber, 938,000 cubic feet of fuel and Rs. 83,021 worth of sandalwood, while that removed through contractors was 5,206,000 cubic feet of timber and 18,732,000 cubic feet of fuel valued at Rs. 21,47,253 and Rs. 2,61,535 respectively and bamboos, grass and other produce valued at Rs. 3,50,400. This extraction of forest produce, it is estimated, provided employment for 83,48,831 persons who earned Rs. 29,72,628.

8. Additional privileges were also granted to the people during the year chief among which are the following. The shrub *dhaiti* (*Woodfordia floribunda*) has been included in the Thana Privilege Code and may now be cut free for ash manure. The people of non-forest villages in Thana are allowed to remove dead leaves from reserved forests on payment of a fee of 8 annas per cartload. The permit rate for bamboos in the Akrani Mahal of the West Khandesh division has been reduced from Re. 1 to annas 12. *Tarwad* bark in the West Khandesh district instead of being sold by auction is now allowed to be removed by *chambhars* (shoe-makers) at fixed permit fees for *bona-fide* tanning purposes. In the Dhulia taluka the rate to be charged by kuran contractors for grass removed from *kurans* by villagers for their own use has been limited to one anna per headload. The privilege of removing wood for agricultural implements at half the market rate is extended to certain forest villages in the Belgaum district. Certain privileges forming part of the Kanara Privilege Code were extended to certain villages in the Dharwar and Belgaum districts bordering on the Kanara district. *Bona fide* agriculturists in Kanara are allowed free removal of *shige* pods for their domestic use.

9. 116,000 cubic feet of timber valued at Rs. 19,601 and 28,002,000 cubic feet of firewood valued at Rs. 4,78,622 and minor forest produce worth Rs. 21,48,585 were removed by right and privilege holders, while free grants of 112,000 cubic feet of timber worth Rs. 39,923, 105,000 cubic feet of fuel valued at Rs. 3,070 and minor forest produce valued at Rs. 43,385 were given in deserving cases.

10. Substantial help was given to various existing industries as follows :—

(1) The Belgaum Match Factory was allowed to remove certain softwoods up to 12 tons a year at a nominal rate of Rs. 4 per ton for 2 years.

(2) The Bharat Wood Distillation Factory in the Belgaum division, referred to in the last year's report, was given during the year 2 coupes at average rates but the factory is still not working and practically no progress was made during the year.

(3) In order to encourage charcoal manufacture, some coupes in Kanara W. D. were sold for the specific purpose of manufacturing charcoal. But the methods of manufacture viz. (1) by ordinary country type kiln and (2) by the portable "Frikiln" designed by the Forest Research Institute, Dehra Dun, were demonstrated, but the industry does not appear to be popular amongst the contractors. Every contractor who sent a trial consignment to Bombay complains of loss in the transaction. Apparently charcoal from Kanara owing to the present transport difficulties cannot compete in the Bombay market with supplies from the Thana forests.

The "Frikiln" method of manufacturing charcoal was also demonstrated in the Belgaum division. Charcoal of superior quality is produced by this process, but the comparatively high initial cost of the kiln is a handicap for it to compete with the charcoal produced by the country type of kiln.

(4) The concession to the glass bangle industry was also continued and the Kajgar Co-operative Association of Ghodgeri in the Belgaum district was given a fresh coupe at a reduced rate of Rs. 4 per acre as against Rs. 5 charged last year.

(5) Shri Narsinha Saraswati Slate Works, Poona, have been granted the concession of removing certain softwoods up to 240 tons per year for 2 years for the manufacture of slate frames at Rs. 4 per ton.

(6) Out of 300 *khair* trees given to Mr. S. K. Kallapur of Honavar for the manufacture of catechu, 200 trees were worked by him. The quantity of catechu obtained from these trees was sold for Rs. 693 against an expenditure of Rs. 653. The working of the remaining 100 trees is being watched.

(7) With a view to ascertaining the possibilities of a sustained supply of wood for plywood manufacture from certain evergreen forests of the Kanara Eastern and Western divisions, sample plots are maintained at the suggestion of the Forest Botanist, Forest Research Institute, Dehra Dun. The Utilization Branch of the Institute has indicated, the uses of the species found in some of these plots and as matters stand at present there is no case for basing the plywood or other sister industry on these forests.

11. Logs of 37 species suggested by Mr. M. Vithalrao of Dharwar were sent to Dehra Dun for testing their suitability for plywood

manufacture. Results of some of these have been received. A proposal for establishing a plywood factory at Supa in the Kanara district made by Mr. Vithalrao was accepted by Government on certain conditions.

12. In addition to these industries the department has been carrying out investigations into the possibilities of starting new industries such as the manufacture of shuttles, picking arms, charcoal gas, etc.

13. The financial results of the year as compared with those of previous year show that the revenue dropped from Rs. 40·60 lakhs to 38·61 lakhs and the surplus from Rs. 13·73 lakhs to 12·30 lakhs. Similarly the expenditure also decreased by about Rs. 58,000. The decrease in revenue is chiefly due to the curtailed demand for sleepers and sawn material from the M. & S. M. Railway, reservation of some material of superior quality to meet a probable demand from the Defence Department, non-adjustment of the full revenue of the Alnavar-Dandeli Railway in the year's accounts of the department and lack of demand for coupes and low prices obtained for those sold as a result of the introduction of the minimum wage conditions in contractors' agreements.

14. The long felt need for a Silviculturist and a Utilization Officer was met by the creation of these two posts during the year. The former's duty is to carry out research in the several problems confronting Silviculture and regeneration with a view to increasing the potential value of the forests and placing their working on a more scientific and economic basis. The object of having a Utilization Officer is to stimulate the more extensive utilization of forest products some of which remain unexploited for want of markets or fetch inadequate prices at present, to develop forest industries and provide a liaison between commercial bodies and the Forest Department. Messrs. E. S. B. Tavener of the Indian Forest Service and J. V. Karamchandani of the Bombay Forest Service, Class I, were selected for these two posts. Both the officers after undergoing a course of practical training at the Forest Research Institute, Dehra Dun, took charge of their respective duties on 16th January 1940 and 1st November 1939. Mr. E. S. B. Tavener, immediately on return from Dehra Dun, devoted his attention to the organization of his office and formation of research centres and experimental gardens at Poona and Haliyal. Mr. Karamchandani visited a number of woodworking institutes and factories in Northern India before taking charge of his duties. Since joining his appointment, he has been engaged for the most part on behalf of the Supply Department of the Government of India on the inspection of timbers purchased by that department and in attending to enquiries regarding timber stocks etc., in connection with the war. He has, nevertheless, started a study of local conditions and is collecting statistics required for his work as Utilization Officer.

15. The outstanding event of the year was the outbreak of war. This has not so far led to any very big demand for timber from this Province for war purposes but there were numerous enquiries for tent pins, bamboos, poles, sawn wood etc., and a great deal of work has been done in collecting information, quoting quantities, rates etc., as a preliminary to undertaking any possible supply in future. After the close of the year orders for the supply of 1,20,000 ballies (teak poles) and an educational order for 3,000 bamboos for tent poles were received. Further orders for ballies and bamboos are also expected. These supplies are being made departmentally from all the Circles. So far no reaction in the timber market is noticeable on account of the war, though there has been some tendency amongst certain contractors to gamble on a rise in prices.