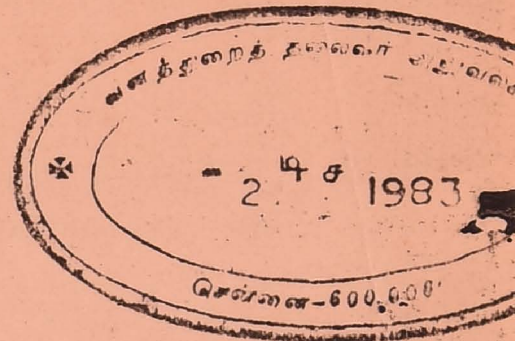


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WORKING PLAN FOR THE CHINGLEPUT FOREST DIVISION

From 1976-77 to 1985-86

BY

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Under the direction of the
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WORKING PLAN FOR THE CHINGLEPUT FOREST DIVISION FOR THE PERIOD FROM 1st APRIL 1976 to 31st MARCH 1986.

PART I.

SUMMARY OF FACTS ON WHICH PROPOSALS ARE BASED.

CHAPTER I—THE TRACT DEALT WITH.

SECTION 1—NAME AND SITUATION.

1. The working plan deals with the whole of the Chingleput Forest Division as at present constituted and is titled as THE WORKING PLAN FOR THE CHINGLEPUT FOREST DIVISION FROM 1976-77 to 1985-86.

2. The limits of the division are the same as those of the Chingleput Revenue district the area of which is 7909 square kilometres. It may not be out of place to mention here that according to the revised boundary description of Chingleput Division notified in G.O. Ms. No. 618, Agriculture, dated 1st March 1969 the city of Madras (Area — 127.68 sq. kilometres) is included in the division but this is only for the purpose of enforcing the Tamil Nadu Timber Transit Rules, 1968 in respect of Red Sanders wood, the Tamil Nadu Sandalwood Transit Rules, 1967 and the Tamil Nadu Sandalwood Possession Rules, 1970. In addition, Guindy Park Reserved Forest which is within Madras city is under the control of the Wild Life Unit, Madras. This working Plan will, therefore, deal only with the Chingleput district portion of the division unless otherwise indicated in the context.

3. The tract is situated between 12° 10' and 13° 35' North latitude and 73° 34' and 80° 2' East longitude.

4. The division is consists of five territorial ranges, namely, (1) Tiruvallur with headquarters at Tiruvallur, (2) Tambaram with headquarters at Tambaram, (3) Kelambakkam with headquarters at Chingleput, (4) Chingleput with headquarters at Chingleput and (5) Madurantakam with headquarters at Tirukalikundram. In addition, there are two Farm Forestry Ranges with head quarters in Tiruvallur and Chingleput. The former covers all Farm Forestry area in Tiruvallur and Tiruttani taluks and also the ex-Panchayat forests in Tiruttani taluk and Pallipat sub-taluk taken over by the department while the latter covers all the other taluks of the district. There is also special staff consisting of one Ranger and two Foresters sanctioned at Tiruttani since 1972 for the survey and demarcation of the ex-Panchayat forests in Tiruttani taluk and Pallipat sub-taluk taken over by the department from the Revenue Department in 1970. This staff was sanctioned under the Five-Year Plan Scheme of 'Forest Consolidation' in G.O. Ms. No. 1066, Agriculture, dated 6th April 1972.

5. *Etymology of the name.*—The name Chingleput is an anglicised distortion of the original name Sengalunirpattu (or water-lilly brook) which reveals that in bygone days the district abounded in numerous perennial streams.

SECTION 2 — CONFIGURATION OF THE GROUND.

6. This division is for the most part a flat coastal plain sloping gently from the west towards the eastern seaboard. Along the coastline there are a few said hills formed as a result of brown sand. Behind the sea coast ridge of said dues lies a net work of lagoons or backwaters connected by the Buckingham canal, which runs parallel to the coastline from the south to the north of the division and allows of navigation by country craft. The monotonously flat inland terrain is interspersed with the comparatively extensive and low ridged Allikuli hills in the north, a whole lot of scattered barren hills in the north-west and small scattered scrub forested hills in the south.

7. *Regional types.*—The forests of the division can be categorised physiographically into two regional types, viz., the Plains and the Hill forests.

8. *The Plains Forests.*—The bulk of the forest area of the division is situated in the plains which are characterised by nearly level stretches of land traversed by rivers and streams which feed many tanks under which wet cultivation is practised. Many of the reserved forests situated in the plains also contain small isolated hillocks, e.g., Thirukalikundram, Vandalur, Acharapak-kam and Pulikaradu Reserved Forests. An interesting feature of these forests is that they have mostly been converted into commercially valuable Cashew and Eucalyptus plantations during the past two decades.

9. *The Hill Forests.*—Allikuli hills in the western part of the Ponneri taluk, which form part of the Eastern Ghats, is about the only hill forest tract in this division. Most of the hill forests support little vegetation of any commercial importance. The valleys and sheltered slopes of Allikuli support vegetation consisting of species like *Albizzia amara*, *Canthium didymum* and a few scattered saplings of *Santalum album*. Some of the exposed slopes like Acharapakkam and Paranur Reserved Forests now bear poor thorny growth. Certain hill forests like Hanumanthaputheri and Valluvapakkam Reserved Forests are bouldery to rocky and support nothing much of importance or value by way of vegetation.

10. The ex-Panchayat forests in Tiruttani and Pallipat sub-taluk which comprise of scattered hills are all almost barren and badly eroded for the most part with degraded thorny species.

11. *Rivers and Streams.*—The river system is simple. As the general drainage of the land is towards the coast, all the rivers and streams drain into the Bay of Bengal. The main rivers of the division from north to south are the Araniar, Kortalaiyar and Palar. The Cooum and Adayar, though by no means large are two well known rivers of the district. The Killiyar and Kallai are two small and lesser known rivers in Madurantakam taluk. The Allikuli stream, which takes its source in and has as its catchment in Allikuli Reserved Forest, is a tributary of the Kortalaiyar.

12. The Araniar originates in Puttur Taluk of Chittoor district of Andhra Pradesh, and in Chingleput district it flows through Tiruvallur and Ponneri taluks and enters the sea through the Pulicat lake. Almost all its waters are harnessed for irrigation through a series of anicuts constructed across it.

13. The Kortalaiyar also known as the Kosathalaiyar has its source from the surplus of the Kaveripakkam tank in North Arcot district and flows through Tiruvallur and Ponneri taluks. It feeds the Poondi reservoir, Cholvaram tank and Red Hills lake all of which are used for supplying drinking water to Madras City. It also feeds the Chenbarambakkam irrigation tank through a part of the Cooum river. It empties itself into the back waters at Ennore.

14. The Palar which has its source in Kolar district of Karnataka enters the division a few kilometres west of Kancheepuram and is by far the biggest river in the division though capricious and uncertain by nature and liable to heavy freshes and long drought at intervals. It has a heavy fall and consequently a strong current. It is also known for its subsoil currents which accord water-supply even during years of drought. It is joined at Thirumuk-kudal in Kancheepuram taluk by the Cheyyar river, also flowing from North Arcot district and by the Vegavathi river in the same taluk. It then flows in a south-easterly direction for about 48.28 kilometres forming the boundary between Kancheepuram and Chingleput taluks and lower down between Madurantakam and Chingleput taluks and finally enters the Bay of Bengal near Sathurangapattinam. The river feeds a large number of irrigation tanks for which it is harnessed through a series of anicuts constructed across it. It is also tapped for supplying drinking water to Chingleput and Tambaram.

15. The Cooum flows through Tiruvallur, Sriperumbudur and Sa'dapet taluks and enters the sea at Madras.

16. The Adayar takes shape at Guduvancheri and flows between Sriperumbudur and Saidapet taluks and enters the sea at Adayar.

17. *Irrigation tanks.*—The number of irrigation tanks in the division is 4,324 with a registered ayacut of 1957.18 square kilometre and 64,391 ordinary wells and 1,072 bore wells with an irrigable area of 3,154 square kilometre. The tanks are fed by rivers and rain and some of them have nearby reserved forests as their catchment areas. In such cases the cattle which resort to the forests for grazing resort to these tanks for drinking water as no other water source is available to them. Among the large tanks are Chembaramkappam, Palur Chitteri and Palaiyeri, Theneri, Utiramerur, Madurantakam, Perumperkandigai, Pallavankolathur, Thirumalisai, Sriperumbudur, Manimangalam, Madur, Kattur, Ambattur, Menambeduthangal, Cooumeri and Chembeduperiacri.

18. A relatively small but important from the forest point of view is the 29.94 ha. Vedanthangal tank trucked away about 83 kilometres south of Madras in Madurantakam taluk. It is a Water Birds' Sanctuary under the control of the Wild Life wing of the department. It is dealt with in greater detail later.

SECTION 3—GEOLOGY, ROCK AND SOIL.

19. *Geology and Rock.*—The tract is geologically divided into three broad classifications:—

(i) Metamorphic rock consisting mainly of gneiss, hornblende, charnokite and quartzite;

(ii) the aqueous rocks, of which the most common is laterite in various stages of formation, super-imposed on the metamorphic rocks;

(iii) the alluvial deposits which occur along the river banks, deltas, and the coastal and backwater areas.

20. The Upper Goodawana system exhibited round about Sriperubudur consists of the Sriperumbudur buff coloured shales and clays containing plant remains of Gangamopteris and Glossopteris. The upper stage found near the north-western part of the division consists of purple mottled ferruginous sand-stone conglomerates which contain fragmentary plant fossils.

21. *Soils.*—Five types of soil are met with. They are :—

(i) Red loamy.

(ii) Sandy.

(iii) Lateritic.

(iv) Clayey.

(v) Kallar.

22. *Red Loamy Soil.*—This type of soil is met with largely in the inland forests where the tree growth is profuse. The depth of such soil however, varies from a few centimetres to five metres in places. It is deep in the plains and becomes superficial in hilly areas. Although poor in humus content, it has a high moisture retentive capacity. The existence of red soil in the reserved forests has given eminent results in regeneration works, especially of cashew.

23. *Sandy soil.*—This type of soil occurs in the coastal reserved forests and reserved lands, either in admixture with red soil or in admixture with silt or Kallar. The moisture retentive capacity is therefore, dependant on these associated soils. Where the mixture has been with silt as in Maiyur Reserved Forest, the growth of Cashew and Eucalypt has been satisfactory.

24. *Lateritic soil*.—This type of soil is commonly seen in Ponnèri and Tiruvallur taluks in all the stages of formation, viz., lithomarge to laterite. Though very little vegetation comes up on hard lateritic soil, the intermediate stages support vegetation as in the case of Erumaivettipalayam Reserved Forest. Some of the Cashew plantations thrive well on such intermediate soils.

25. *Clayey soil*.—This type of soil occurs in a scattered manner in some of the reserves like Thirukalikundram and Edamachi. In view of the preponderance of clay over sand the drainage conditions are poor. In such localities species like *Phoenix humilis* and *Imperata* grass are found to thrive.

26. *Kallar soil*.—This type of soil occurs in the major portions of some reserves like Kattugudalur, Perungoli, Marutham, Kolathur and Maiyur. The rich carbonates, sulphates and chlorides of sodium of Kallar soil inhibit the growth of vegetation.

27. *Depth of soil*.—The depth of soil is very largely a function of the steepness of the locality and the degree of conservation of the vegetal cover. On eroded hill slopes it is negligible but where erosion has not set in it is as much as a metre deep as is seen from soil profiles exposed at quarry sites. In the plains the depth of soil varies with the nature of the vegetal cover and the extent of erosion. Thus while the top soil may be completely eroded away in open patches or metamorphosed into laterite in some places, in other places the depth of the soil may be as much as one metre.

28. Along the sea coast the sand deposits vary upto 10.0 metres or more in depth.

29. *Drainage*.—The surface drainage is fairly good throughout though the sub-soil drainage is variable depending on the nature of the soil. Water-logging of sites containing clayey and kallar soils takes place during the monsoon.

SECTION 4—CLIMATE AND RAINFALL

30. *Climate*.—Presenting no extremes of heat and cold, the climate is typically coastal. The hottest period is between April and June. The effect of the sea breeze which tempers the extreme heat is less pronounced in the western part of the district than in the coastal areas in the east. The average maximum and the average minimum temperatures are 28.3° C and 21.4° C respectively. Generally the climate is healthy.

31. *Rainfall*.—The average rainfall for the district for the past ten years from 1966 to 1975 is 895.76 M.M. and in a normal year 1,207.8. The principal monsoon is the north-east. The south-west monsoon is of comparatively less importance. The first showers of this monsoon are usually expected about the middle of June but they are intermittent and uncertain and it is not until July that rain can usually be counted on. Showery weather continues through August and September. Then the south-west winds recede leaving the atmosphere sultry and oppressive until about the middle of October when the north-east monsoon sets in. It begins with very heavy rainfall and afterwards showers continue generally till the middle or end of December. This monsoon is of great importance from the forest point of view as plantations raised during the south-west monsoon depend on this monsoon to establish themselves and if it fails casualties are heavy.

32. The south-west monsoon is generally heavier in the south than in the north and the north-east monsoon is heavier along the coast than in the interior.

33. A statement showing the monthly rainfall in millimetres and number of rainy days recorded at the various rain gauge stations in Chingleput district between 1966 and 1975, both years inclusive, is furnished in Appendix I. The statements showing the normal monthly rainfall data in millimetres and the number of rainy days is furnished in the subjoined statement.

34. *Health.*—Fillariasis Cholera and Guinea worm infestation are among the common serious diseases endemic in the division. While the first occurs almost throughout the division, the second occurs in Madurantakam, Chingleput, Tiruttani, Kancheepuram and Saidapet taluks and the last named in Chingleput and Madurantakam taluks.

The incidence of the diseases is however, not heavy and the division on the whole can be said to be fairly healthy.

SECTION—5 WATER SUPPLY.

35. Tanks from the principal source of water-supply, every village having one or more of them. They are fed by the rivers referred to in paragraphs 11 to 16 and numerous small streams during the north-east monsoon and hold water for about six months in the year. Wells, mostly fitted with electric pump-sets, constitute another source of water-supply. As they supply water round the year they come in handy in meeting the needs of the population in periods of extreme drought. They supplement irrigation under small tanks even in ordinary years especially before and after the monsoon or in its absence. They also irrigate a considerable proportion of the dry lands. The digging of wells is encouraged by the grant of Government loans.

36. The Palar river, in particular, has undercurrents which supply water even in years of drought and this source is being tapped for augmenting the water-supply to Tambaram besides meeting the requirements of Chingleput town.

37. Good springs exist in the villages adjoining the sea coast and the Palar. There are also fairly good springs in all the other parts of the division.

38. The only important water source in reserved forests is the Allikuli stream in Allikuli Reserved Forest. There are also some small tanks in the forests which are rainfed and contain water for six months in the year for watering cattle that resort to the forests for grazing.

39. There are 17 wells in the division and a list of the same is furnished in section 3 of Chapter V of Part I.

SECTION 6—DISTRIBUTION AND AREA.

✓ 40. The area under forests in the division is 444.07 sq.km, as on 31st March 1976 and is classified as follows:—

Reserved Forests—301.13 sq. km.

Reserved Lands—142.94 sq. km.

✓ 41. The division is divided into five territorial ranges, namely: (1) Tiruvallur, (2) Tambaram, (3) Kelambakkam, (4) Chingleput and (5) Madurantakam. A peculiar feature of this division is the multitude of small forest blocks lying scattered all over the plains rendering management rather laborious. The distribution of the aforesaid categories of forest in the five ranges is as follows:—

Name of Range.				Area in square kilometres.		
				Reserved Forests.	Reserved Lands.	Total.
(1)				(2)	(3)	(4)
Tiruvallur	..	..	..	81.52	129.81	211.33
Tambaram	..	..	..	53.64	..	53.64
Kelambakkam	..	..	..	57.36	1.96	59.32
Chingleput	..	..	..	47.35	..	47.35
Madurantakam	..	..	..	61.26	11.17	72.43
Total				301.13	142.94	444.07

42. In addition there are two Ranges sanctioned to implement the Farm Forestry scheme, one with headquarters at Tiruvallur and the other at Chingleput. They were sanctioned in G.O. Ms. 3326, Food and Agriculture, dated 3rd October 1960 and have been functioning from 1st April 1961.

43. There is also one Ranger sanctioned under the scheme of Forest consolidation with headquarters at Tiruttani to survey and demarcate the Panchayat lands taken over from the Revenue Department in 1970 in Tiruttani Taluk and Pallipat Sub-Taluk.

44. A list of reserved Forests and Reserved lands in the division with details of their extent etc. and indicating the stage at which the reservation of each Reserved Land is pending is furnished in appendix II.

Section 7—State of Boundaries.

45. The boundaries of the division are natural as in the case of the sea on the eastern boundary and artificial on the southern, western and northern borders. A description of the boundary as notified in G.O. Ms. No. 618, Agriculture dated 1st March 1969 is furnished hereunder.

North.—Starting from the trijunction point of North Arcot district and Chingleput district with Andhra Pradesh, the boundary runs along the frontier boundary between Tamilnadu and Andhra Pradesh to meet the Bay of Bengal at the trijunction point of Andhra Pradesh, Chingleput district and Bay of Bengal.

East.—Thence the boundary runs west along the common district boundary between South Arcot and Chingleput till it meets the trijunction point of Chingleput, South Arcot and North Arcot Districts.

West.—Thence the boundary runs generally north along the common district boundary between Chingleput and North Arcot to the starting point.

46. All the Reserved Forests in the division are demarcated with cairns and cleared lines.

47. Except for Allikuli Reserved Forests which is a class I.R.F. that has been under the control of this department all along, the rest of the Reserved Forests were either ex-Zamin or ex-Inam forests and when they were under Panchayat control between 1923 and 1945 the maintenance of their boundaries was badly neglected. Consequently a number of discrepancies and encroachments had taken place. These were set out in appendices XX to XXI respectively of the previous working plan and it was stipulated that the rectification of the defects should be taken up in a phased manner and completed during the currency of that plan. A certain amount of work in this connection was done between 1969 and 1972 at a cost of Rs. 1,740.00. Reasons for stopping the work after 1972 are not available. The work that remains to be done is prescribed under the chapter of Miscellaneous Regulations to be executed during the period of this working plan.

48. *Inter-state boundary.*—The only stretch of inter-state forest boundary in the division that is, between Tamil Nadu and Andhra Pradesh, lies in Pullikundram R.L. and Allikuli R.F. of Tiruvallur Range. The length of the boundary is about 8.85 km. (440 chains) and its width 6.10 metres (20 feet). This boundary which came into being in April 1960 as a result of the Pataskar award was cleared for the first time and demarcated at a cost of Rs. 1000.00 in 1969-70. The expenditure was sanctioned in G.O. Ms. No. 91, Agriculture Department, dated 11th January 1969. The cairns used in the demarcation consist of loosely heaped boulders and are not as per specifications laid down in the Tamil Nadu Forest Manual. This defect will have to be rectified. The line is also now in need of clearance. The procedure to be followed in the maintenance of this line and sharing the cost of the work with the neighbouring state is laid down in Proceedings Misc. No. 230, dated 16th March 1953 of the Board of Revenue, Madras.

✓ 55. *Forest types*—The following natural forest types as per the classification of Champion and Seth, are identifiable in the division at present:

(i) *Group 5*.—Tropical Dry Deciduous Forests— Sub-group 5 A. Southern tropical dry deciduous forests — C3 Southern dry mixed deciduous forest.

(ii) *Group 6*.—Tropical Thorn Forests — Sub-group 6 A. Southern tropical thorn forests — DS1 southern thorn scrub.

(iii) *Group 6*.—Tropical Thorn Forests — Sub-group 6 A. Southern tropical thorn forests — DS2 Southern Euphorbia scrub.

(iv) *Group 7*.—Tropical Dry Evergreen Forests — DS1 Tropical dry evergreen scrub.

✓ 56. 5—5A. C3 Southern dry mixed deciduous forest.—

Description.—This is a degraded form of the climax dry mixed deciduous forest. It consists of over worked fuel coupes which have not been adequately protected from men and cattle after clearfelling. The present growth consists of coppice growth 1 m. to 2m. in height amidst thickets of thorny shrubs. The ground is covered with thin grass.

Floristics.—Trees — Albizzia amara, A. lebbek, Acacia leucophloea, A. Sundra, Azadirachta indica, Chloroxylon sweitenia, Pterocarpus Santalinus, Limonia erenulata, Diospyrus montana, etc.

Shrubs.—Randia dumetorum, Carissa congesta Zinzphus xylopyrus, Z. oenoplia, Cassia auriculata, Euphorbia spp. etc.

Climbers.—Abrus precatorius, Pterolobium indicum, etc.

Distribution.—Allikuli R.F.

✓ 57. 6-6 A. DS1 Southern thorn scrub—

Description.—This is a degraded form of the southern thorn forest as a result of maltreatment. It consists of close thorny thickets 1m. to 2m. high with a few surviving trees standing out here and there.

Floristics.—Trees — Albizzia amara, Acacia leucophloea, Azadirachta indica, Chloroxylon sweitenia, Wrightia tinctoria, Lannea coromandelica, etc.

Shrubs.—Zizyphus xylopyrus, Z. oenoplia, Dicrostachys cinerea, Caparis divaricata, Randia dumetorum Canthium dicoccum, Flacourtia indica, etc.

Climbers.—Pterolobium indicum, etc.

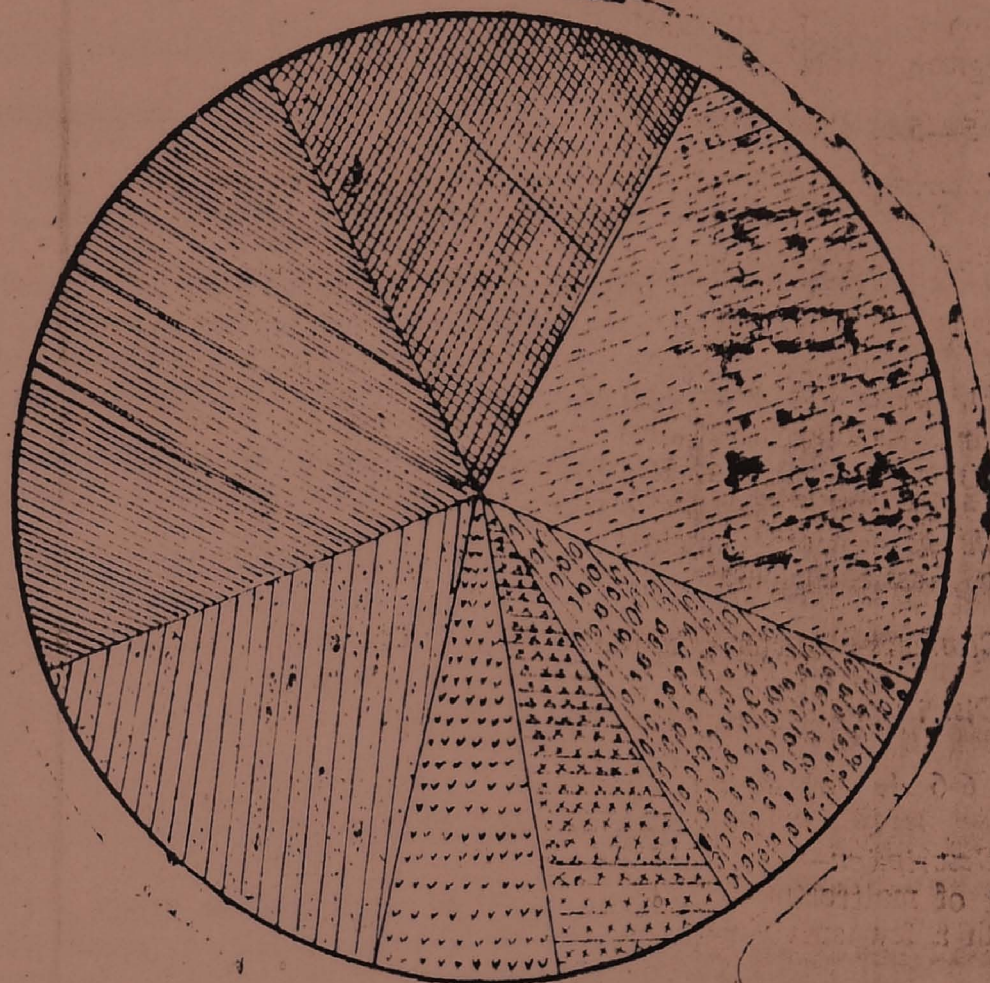
Distribution.—Marudam R.F., Kolathur R.F., Kattugudalur R.F. etc.

✓ 58. 6—6A. DS2 Southern Euphorbia scrub—

Description and floristics.—A very open formation in which fleshy Euphorbias are the most important constituent. The thorny Acacias and their associates low rounded bushes. Much of the soil is bare but there is usually a cover of wiry grasses. The type represents both extreme edaphic conditions — badly eroded, very rocky and with soil in crevices — as well as the ultimate stage in degradation.

Distribution.—Reserved lands in Tiruttani Taluk and Pallipat sub-Taluk in Tiruvallur Range, Tambaram R.F. Erumaiyur R.F., Pullarambakkam R.F. etc.

CHART SHOWING THE DISTRIBUTION OF THE VARIOUS FOREST TYPES IN THE DIVISION
WITH THE FULL CIRCLE REPRESENTING THE TOTAL FOREST AREA OF THE DIVISION



SYMBOL	DETAILS OF FOREST TYPES	AREA IN SQ KM	PERCENTAGE TOTAL FOREST
	6 AC3 SOUTHERN DRY MIXED DECIDUOUS	26.17	5.89
	6 AC DSI SOUTHERN THORN SCRUB	66.91	15.07
	6 AC DSI SOUTHERN EUPHORBIA SCRUB	105.95	23.83
	7 DSI TROPICAL DRY EVERGREEN SCRUB	71.15	16.03
	CASHW PLANTATIONS	103.67	23.34
	EUCALYPT PLANTATIONS	43.98	9.86
	OTHER PLANTATIONS	26.23	5.89
	TOTAL FOREST AREA	444.07	100.00

444.65

✓ 59. 7—DS1 Tropical dry evergreen scrub—

Description—This is a degraded form of the tropical dry evergreen type, which once abounded in the division, where the trees have mostly disappeared leaving thorny shrubs with thin grass.

Floristics—Trees — *Azadirachta indica*, *Eugenia jambolana*, *Memecylon edule*, *Maba buxifolia*, etc.

Shrubs—*Carissa spinarum*, *Dichrostachys cinerea*, *Zizyphus* species.

Climbers—*Asparagus racemosus*, *Derris scandens*, *Acacia intsia*, etc.

Distribution—Vandalur R.F., Vallam R.F., Nemmeli R.F., etc.

60. *Sandal*—Sandal was introduced in 1916 in Allikuli R.F. Details of the work done in this connection are not available at this distance of time. The present position is that about sixty seven saplings exist in Mungathamma locality of the now defunct Krishnareddikona fuel series.

61. A list of plantations in the division and the flora of the division are furnished in appendices IV and VI respectively.

62. A chart depicting the natural forest types and artificially raised plantations of Cashew, Eucalypt and other species in the division is furnished in the opposite page.

Section 2—Injuries to which the crop is liable.

63. *Climate*.—The Chief climatic factor to be viewed from the forest point of view is the failure, partial or total, of the monsoons. The south-west monsoon though of relatively less intensity heralds the growing season and commencement of regeneration operations commencement of regeneration operations besides adding to the oppressiveness of the summer heat. Failure of the north-east monsoon on the other hand results in severe drought which leaves failed plantations and near famine in its wake as happened in the year 1974-75. The late appearance of this monsoon is said to result in floods with its attendant evil of soil erosion.

64. *Wind*.—Hot desiccating gales sweep the division during summer aggravating the arid conditions that normally prevail during this period and rendering the survival of young plantations extremely precarious. The remedy lies in early planting, using large sized planting material and resorting to deeper planting by digging large sized pits.

65. The tract is prone to cyclones during the north-east monsoon but they are not known to have caused any damage to the forests. Except for some temporary dislocation that they cause in the habitation and communications, these cyclones bring with them a lot of much needed rain to replenish drinking and irrigation resources and aquifers.

66. *Fire*.—Incidence of fires in the division is low thanks to the predominance of *Memecylon edule*, *Carissa spinarum* and other evergreen shrubs and a lack of combustible materials cause of illicit collection of faggot wood and fallen Eucalypt leaves by the villagers. The position in the reserved lands in the north-western portion of the division is, however, different. Here, there is widespread and annual burning of the grassy hill slopes by graziers for the sake of the tender grass that sprouts after such fires and a few showers. A statement showing the incidence of fires in the division is furnished in the subjoined statement. The vulnerable period for fires is the summer months of March to May.

67. *Injurious plants*.—*Cymbopogon coloratus* that occurs in the hilly reserved lands around Tiruttani in Tiruvallur Range is burnt annually by graziers in summer to induce tender grass for their cattle. This repeated burning through the ages coupled with unrestricted felling of the tree growth has resulted in almost complete denudation and erosion of these hills. When mature, small quantities of this grass are exploited by the local villagers for tatching purposes. The grass is injurious not merely because of the fire hazard that it poses but also because it saps the little nutrition in the soil and physically obstructs regeneration. To its credit must, however, be ascribed the fact that despite its many drawbacks it has so far defied persistent devastation by man and his cattle and provided these hills with some verdure. The artificial reforestation of these hills which will result in a reduction of the incidence of this grass is being prescribed in this plan. Incidentally, the oil (obtained by steam distillation) of this aromatic and xerophytic grass, though inferior to lemongrass oil can be used for perfuming soaps.

68. Creepers and climbers are particularly destructive and were found predominantly in Cashew plantations. Their incidence is, however, not very high now because of the practice of periodic uprootal and ploughing carried out during the life of the plantation. The climbers most commonly found are *Cassitha filliformis*, *Hemidesmus indica* and *Acacia intsia*. The first named climber branches profusely, encircles young plants and kills them out completely in fifteen to twenty days. The others spread themselves over the entire tree retarding its growth as well as yield. The few young *Casuarina* plantations in the division are also subject to infestation and mortality by climbers. The remedy lies in always keeping plantations free of climbers instead of waiting for the sanction of the periodical tending estimate.

69. *Insects*.—The Teak defoliator *Hyblaea puera* and the Teak skeletoniser *Hapalia machaeralis* are both present in the small area of Teak plantations of the division.

70. *Casuarina* is subject to attack by some insect and fungous pests but since the attacks are only sporadic no serious anti-pest measures are called for. Grubs of the rhinoceros beetle, *Oryctes rhinoceros* bore through the stems of seedlings and cause drying up of the tips of the effected seedling. The grubs of *Coelosterna seabrata*, a longicorn, bore into the roots of the species. The uprootal and removal of the attacked trees is the best way to eradicate the pest. The borer *Phasus malabaricus* bores the stems close to the ground. Plugging the bore hole with a blob of tar kills the caterpillar in the gallery. *Trichosporium vesiculosum*, a root fungus is a dreaded pest of the species.

71. The pests of Cashew are numerous though not all of them are found to occur in the division. The more important of them are dealt with briefly below:

(i) Shoot tip and inflorescence caterpillars:

(1) *Chelaria haligramma*.—A small yellowish or greenish caterpillar which feeds on shoot tips and the inflorescence. Due to the injury the growth points get stunted and dry up.

(2) *Anarsiaepotias*.—A caterpillar that causes damage to tender shoots. The infested shoots exude resinous gummy substance and dry up.

(ii) *Apple and nut borer*.—*Thylocoptila panrosema*.—A borer that feeds on tender tissues at the junction of the apple and nut.

Control.—Endosulfan 0.05 per cent spray.

(iii) *Leaf miner*.—*Acrocercops syngamma*.—A small pale, white caterpillar that mines through tender leaves at the time of new flushes. The injury consists of tortuous making made on fresh leaves. In the mined areas the thin epidermal part swells up as blistered patches. In older leaves the damage is manifested as holes.

Control—Endosulfan 0.05 per cent spray or

Phosphamidon 0.05 per cent spray.

(iv) Thrips;

(1) *Selenothrips rubrocinctus*.

(2) *Rhipiphorothrips cruentatus*.

(3) *Retithrips syriacus*.

The thrips attack tender leaves of nursery seedlings and young plants in the field particularly during summer months.

Control—Endosulfan 0.05 per cent spray on the lower surface of leaves.

(v) Leaf and blossom webber—*Macalla moncusalis*—A caterpillar that webs the leaves shoot and inflorescence, remains inside and feeds on them.

Control—Spraying with 0.2 per cent BHC or 0.05 per cent fenitrothion at the time of new flush and blossom stages.

(vi) Tea mosquito—*Helopeltis antonii*—A reddish brown bug which sucks the sap from tender shoots, leaves, floral branches, tender apples and immature nuts. The tissues around the point of entry of the suctorial mouth parts (stylets) of the bug develop drawn necrotic lesions which coalesce finally resulting in drying of the tender shoots. When floral bunches are infested it results in inflorescence blight. The peak period of pest abundance is mid-January when the trees are in full blossom.

Control.—Endosulfan 0.05 per cent spray. First spray during September-October, second during November-December and third at the time of fruit set in January-February.

(vii) Stem borer—*Plocaederus ferrugineus*.—The adult is a medium sized dark brown longicorn beetle which lays eggs in live tissues in the crevices of loose bark in trunk and root zones. The grubs bore into the bark, feed on the sub-epidermal tissues tunnelling in irregular directions. Some of the symptoms of infestation are gummosis, extrusion of frass through holes, yellowing of leaves, shedding of leaves, drying of twigs and finally mortality of the tree.

Control.—(1) Mechanical removal of the attacked tissues with the pest in the early stages and swabbing the trunk and root zone with 0.1 per cent B.H.C.

(2) Injection of affected trees with 1 per cent carbaryl or application of 10 grams. Phorate granules or Aluminium phosphate tablets to the bore holes.

72. *Animals*.—No problem of forest conservancy is more acute in Chingleput division than that of grazing. The existence of numerous villages near the Reserved Forests and the unrestricted rights the people enjoyed during the Panchayat regime have had a positively destructive influence on the forest wealth of the tracts. The obvious evils of excessive grazing, such as the compaction of the surface soil, the consequent failure of natural regeneration and the destruction of tender seedlings by cattle are noticeable in all parts of the forests. The tract being arid, sheep and goat rearing which is a paying proposition, is practised on a considerable scale and though goat browsing is prohibited goats continue to make in-roads into the forests. Unless there is effective patrolling by the protective staff coupled with infliction of heavy penalties on the offenders the menace is likely to persist.

73. *Man*.—Situated as the forests are close to cultivation on the populous plains and Madras City the incidence of theft of forest produce is heavy. Protection is particularly difficult as the various forest blocks lie scattered and

having no other place to go to and the few scattered unreserves all being barren, the villagers have perforce to resort to the forests to meet their demands for fuel, thorns, green leaf manure and grazing.

74. *Forest offences.*—The following statement shows the number of cases reported every year and the compounding fees collected from 1966-67 to 1975-76:

STATEMENT SHOWING NUMBER OF CASES REPORTED EVERY YEAR AND COMPOUNDING FEES COLLECTED FROM 1966-67 TO 1975-76.

Year.	Grazing.	Felling.	Poaching.	Sandal-wood.	Miscellaneous.	Total	Compound- ing fees realised.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1966-67	..	450	323	Nil.	Nil.	43	816
1 67-68	..	335	252	Nil.	Nil.	42	629
1968-69	..	264	294	Nil.	Nil.	76	637
1969-70	..	286	233	Nil.	1	101	621
1970-71	..	141	211	Nil.	1	170	523
1971-72	..	341	340	Nil.	2	153	836
1972-73	..	258	340	Nil.	4	180	682
1973-74	..	190	172	Nil.	8	99	461
1974-75	..	90	282	Nil.	9	30	411
1975-76	..	202	250	Nil.	11	117	580

SECTION 3—FAUNA.

75. Wildlife other than water birds is scarce in the division but this is not surprising considering that the forest blocks are small, scattered amidst populous villages, their vegetation degraded and have no water sources during summer. In the previous plan it was stated that tigers and panthers, though comparatively rare, had receded to the relatively inaccessible reserved forests like Paranur and Vallam but to one acquainted with the present condition of these forests, these felines no longer exist in these forests.

76. It was said in paragraph 66 of the previous plan that in order to augment wildlife M.A. Badshah, when he was the District Forest Officer, released a number of black bucks, spotted deer and pea fowl in the forests of Kelambakkam and Tiruporur Ranges, but now the position appears to be that only some deer and black buck are found in Thaiyur and Kolathur R.Fs., thanks to the co-operation of the local villagers. The non survival of the introduced species in the other Reserved Forests is mainly attributable to the facts that natural forests have been converted into plantations and lack of adequate supply of drinking water and fodder in summer.

77. Among the lesser fauna of the division mention may be made of the existence of mongoose, porcupine, and jackal.

78. *Bird life.*—The division is a paradise for the ornithologist, especially during the winter months when all tanks are full attracting many avian visitors. These tanks as well as the backwaters attract not only indigenous birds but also migratory birds from the cold countries of the northern latitudes.

79. *Vedanthangal Water Birds Sanctuary* — The Vedanthangal Water Birds' Sanctuary is not situated within forest limits but considering that the Forest Department has been closely associated with its development as a sanctuary it is but appropriate that a description of it should find a place in this plan.

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80. The sanctuary is situated at a distance of about 70 km. along the Grand Southern Trunk road from Madras and then about 13 km. interior along the Uttiramerur-Valayaputhur Road. The sanctuary has been in existence for nearly two centuries; the oldest recorded evidence dating back to 1798. Mr. Place, the then Collector of Chingleput had issued a prohibitory order against shooting of birds in this sanctuary in 1798. Other places where mention has been made of the sanctuary is in "Nets and Eggs of Indian Birds" by Hume, Second Edition, Volume III, and "Bird Life in India" by Captain Bates. In 1936 the Collector of Chingleput officially recognised the place as a sanctuary and sanctioned the first governmental expense towards its upkeep. In recent years the Government have taken over the entire responsibility for the sanctuary. The tank has been declared a Reserved Land and under the Wild Birds and Animals Protection Act, 1912 the Government has prohibited the shooting of water birds within a radius of 32.19 km. (20 miles) of the sanctuary. An excellent road has been constructed right up to the sanctuary to enable visitors to reach it in comfort and a modern well furnished forest rest house with four suites and an attached canteen has been provided for the convenience of visitors to the place.

81. The sanctuary mainly consists of a 29.94 ha. rain-fed tank with a slightly off centre grove of *Barringtonia acutangula* trees and a bund running almost from its northern most point to its southern most along its western limits. The bund supports shady semi-evergreen vegetation. A 7.32 m. (24 ft.) high observation tower equipped with a pair of high-powered binoculars and commanding a panoramic view of the sanctuary has been constructed along the bund.

82. This mixed heronry is said to be the most spectacular of its kind in the country because in no other heronry can so many thousands of birds of so many different species be found breeding in such closely-packed promiscuity. The species that nest regularly at this sanctuary are the following:—

- Phalacrocorax niger*—Little cormorant.
- Phalacrocorax fuscicollis*—Shag.
- Phalacrocorax carbosinensis*—Large Cormorant.
- Anhinga roufa*—Darter or Snake-bird.
- Egretta garzetta*—Little egret.
- Egretta intermedia*—Median egret.
- Egretta alba*—Large egret.
- Bubulcus ibis*—Cattle egret.
- Ardeola grayii*—Pond Heron or Paddy-bird.
- Nycticorax nycticorax*—Night Heron.
- Ardea cinerea*—Grey Heron.
- Anastomus oscitans*—Openbilled stork.
- Platalea leucorodia*—Spoon bill.
- Theleskionismelanocephalus*—white Ibis.
- Callinula chloropus*—Indian Moorhen.
- Podiceps ruficollis*—Dabchink or Little Grebe.

83. Among the non-breeding indigenous birds to be found here are the Blackwinged stilt, (*Himantopus himantopus*) occasional Pelicans (*Pelecanus philippensis*) and Coots (*Fulica atra*). Other non-breeding birds to be found here in comparatively large numbers are the same species as the breeding birds. This is explained by the fact that not all breeding birds get into breeding condition at the same time; some do so later in the season, some earlier. For this reason many of the breeding species may be found here in non-breeding plumage, especially early in the season — this being especially true of the Egrets.

84. Among long distance migrants found at this sanctuary are the common Sandpiper (*Tringa hypoleucos*), Grey Wagtail (*Motacilla capica*) and Blue winged or Garganey Teal (*Anas querquedula*).

85. The vegetation along the bund shelters many song and brilliantly plumaged passerines such as Golden Oriole (*Oriolus oriolus*), Common Iora (*Aegithina tiphia*), Goldenbacked Wood Pecker (*Dinopium benghalense*), Weaver Birds (*Ploceus* species), Drongs (*Dicus* species), Robins (*Saxicoloides fullcalae*), Bulbus (*Pycononofus* species), Mynhas (*Acridotheres tristis*), Blue Jays (*Coracias benghalensis*), Hoopoes (*Upupa epops*), whitebreasted Kingfisher (*Halcyon smyrnensis*), Pied Kingfisher (*Ceryle rudis*), Bluetailed Bee-eater (*Merops philippinus*), Pied Crested Cuckos (*Clamator jacobinus*), Tree Pie (*Dendrocitta vagabunda*), Sun Birds (*Cinnyris* species) and Tailor Birds (*Orthomus sutorius*).

86. The commencement, extent and duration, and end of the nesting enterprise at the sanctuary are all very much dependent on rainfall. But normally November, December and January are the best months for a visit to the sanctuary. The evenings, with the sun behind one, is the best time of the day to view the birds. Moreover the big return flights are to be witnessed only in the evenings, shortly before sunset.

87. Though brief one cannot help referring in this account of the sanctuary to the foresight and sustained vigilance of the local villagers who were responsible for the development of this sanctuary through the ages. The villagers had realised, in a time when fertiliser was unknown, that the birds droppings enriched the tanks waters which were used by them for irrigation and so zealously protected the avian visitors even though they preyed on their valuable crops.

88. The grey Partridge (*Francolinus pondicerianus*) and the Jungle Bush Quail (*Ferdicula asiatica*) are the important game birds found in the forests of the division.

89. Deer Park, Guindy—The Deer Park, Guindy which is 2.41 sq. km. (595 acres) in extent and adjacent to Raj Bhavan is located in Guindy Park Reserved Forest within the limits of Madras city. The reserved forest which was in Tambaram Range was constituted into a separate unit with a superintendent in charge with effect from 20th October 1959 in G.O. Ms. No. 3291, Food and Agriculture, dated 17th September 1959. On the formation of the State Wildlife Organisation on 1st July 1960 this reserved forest was transferred to the control of the State Wildlife Officer.

90. What is unique of this deer park is that it is located in the midst of a densely populated metropolis, has good vegetation representative of the tropical dry evergreen forests characteristic of this part of the country and a high incidence of wildlife.

91. The main faunal attraction of this park is the occurrence of the Indian Antelope popularly known as the Black Buck found nowhere in the world except India. This species is afforded the strictest of protection in this park. The other animals found in the park and which enjoy equally strict protection are the Spotted Deer, White Buck, Bonnet Monkey, Small Indian Civet Cat, Jungle cat, Jackal, Common Mongoose and the Common Palm Civet Cat.

92. During September 1975, Thiru J. Mangalraj Johson, Assistant Conservator of Forests conducted a census of the Black Buck and Spotted Deer in this park adopting the directional count method. The result of the census was as follows :—

Species.	Number counted.			Remarks.
	10-9-1975	11-9-1975	11-9-1975	
	A.N.	F.N.	A.N.	
(1)	(2)	(3)	(4)	(5)
Black Buck	325	347	356	
Spotted Deer	1,450	1,554	1,587	

93. The incidence of bird life is also equally interesting. Many birds like the King Fisher, Blue Jay, Goldenbacked Woodpecker, Crow Pheasant, Wattled Lapwing, Red Wattled Lapwing, Bluefaced Malkoha, Shrikes, Koels, Doves, Munives, Munias Barks, Parakeets, Grey Partridges, Tailor Birds, Robins, Drongos, Quails, Black Paradise Flycatcher and the stone Curlew are seen here.

94. The migratory birds that frequent this are the India Pitter, the North orange headed Ground thirst and the ever vibrant Grey wagboils.

95. The park with a net work of roads, foot paths, nature trails, lakes and ponds, all situated amidst sylvan surroundings offer good opportunities for viewing wildlife. There is ample scope to improve this park, the amenities, roads, protection fence, etc., by declaring this as the National Park.

96. In June 1964 the Government declared, under the Wild Birds and Animals Protection Act, 1912 (Central Act VIII of 1912), the whole year to be a close time within a radius of 20 km. from this park in respect of Spotted Deer in G.O. Ms. No. 1989, Food and Agriculture, dated 30th June 1964 with a view to protecting such of these animals that strayed from the park.

97. An area of 8.90 ha. (22 acres) in the northern part of the park has been developed as a recreation centre for the Children the Children's park was inaugurated by Shri Jawaharlal Nehru, the late Prime Minister of the country on 14th April 1959. The park has a number of enclosures containing different kinds of animals and birds. A play-ground has been provided with merry-go-rounds, swings, parallel bars, sea-saws, slides, etc. Joy rides on elephants and ponies within park have been provided for, there is also a library containing books on wild life and nature study. An open air theater and facilities for camping are also available. A midget train for taking children around the park has been provided. Gardens with lawns, flower beds and ornamental trees have been laid out to make the park attractive.

98. *Madras Snake Park.*—In G.O. Ms. No. 3056, Agriculture Department, dated 19th November 1970 the Government sanctioned the lease of an acre of land in Guindy Park Reserved Forest to one Thiru Romulus Whitaker, a renowned herpetologist for a period of five years from 27th June 1971 on an annual rental of Rs. 120-00 for setting up a snake Park and Reptile Research Centre. The park was started on Gandhi's birthday in 1971. Its main purposes are to enthuse and educate the public in the field of reptiles and to promote and carry out studies on this little known group of valuable animals. It is a private trust formed with financial help from the World Wildlife Fund, Switzerland. The park has about 400 reptiles of 30 different species.

99. The labourers in this park are Irulas, a hilltribe, for whom Thiru Whitaker is all praise and without whose help he says the park would have a hard time existing. The Irulas are natural snake catchers having learnt the art from their parents in early childhood. Many girls even learn the art of detecting, digging out and catching cobras, vipers, kraits and the harmless snakes. They also catch the rats and frogs needed to feed the snakes in the park. Many of the scientific studies made are based on original observations made by the Irulas.

100. Reptiles are the group of scaly cold-blooded animals including crocodiles, tortoises and turtles, lizards and snakes. At the snake park can be seen the common snakes of South India like :

Venomous.

- (i) Cobra
- (ii) Krait
- (iii) Russell's viper
- (iv) Pit Viper

Non-Venomous.

- (i) Sand Boa
- (ii) Rat Snake
- (iii) Python
- (iv) Vine snake
- (v) Water snake
- (vi) Brown Toce snake.

Also to be seen at the park are the Indian Marsh Crocodile, the Gharial from U.P. the American Alligator, Tortoises, Water Turtles, Monitor lizards and Chameléons. From other parts of the country and abroad are the Banded Krait (Bengal), Water Monitor lizards (Bengal) Royal snake (Rajasthan) and Puff Adder (Africa).

101. Venom is extracted at the park weekly from the Cobra, Krait, Russells Viper and Saw-scaled Viper. It is used in the manufacture of anti-venom serum. After extraction it is dried and powdered in a vacuum desiccator and sold in this form to the Haffkine Institute, Bombay and those who want it.

102. A list of the divisions fauna is furnished in appendix VII.

CHAPTER III—UTILISATION OF THE PRODUCE.

Section 1—Agricultural Customs and wants of the Population.

103. *Agricultural customs.*—According to the 1971 census about 55.2 per cent of the total population of workers in the district are engaged in agriculture. In addition, cattle breeding, sheep and goat rearing and poultry keeping are also taken up by ryots. Thanks to the large number of tanks and wells paddy cultivation is fairly extensive. Varagu, Cholan and Dhal are some of the main dry crops raised. It may not be out of place here to mention that as a result of successive Five-Year Plans a rapid transformation has taken place in the life styles of the farming community. Mud and thatch houses are being replaced by structures of steel and cement. Water heaters, radios refrigerators and Television sets are no longer novelties. Children receive good education and there is a steady rise in the standard of living.

104. Among tree crops Casuarina is raised extensively because of the excellent market for it as fuel and scaffolding material in Madras city and the various towns in the district. Cocanut, Palmyrah and Mango are among the other tree crops raised in private lands in the district.

105. Agriculturists in the district have become increasingly aware and receptive to modern methods of agriculture and have gradually been switching over to deep ploughing with tractors chemical manuring, use of improved seed and adoption of crop protection methods.

106. The main occupation of the people living along the coast is fishing and manufacture of salt.

107. *General description of the population.* The population of the district at the latest census which was carried out in 1971 was 2,907,599 (Males — 1,492,978 and females—1,414,621) the density working out to 367 per square kilo metre as against the State average of 316 and national average of 182. The rural population is 1,896,909 scattered over 1,778 villages and the urban population 1,010,690 scattered over 74 towns. The decennial (1961-71) population rate growth was 32.38 per cent.

108. The extent of forests i.e., Reserved Forests and Reserved Lands is 444.07 sp. km. and works out to 5.65 per cent of the total land area of the district as against the national average of 23.10 per cent and state average of 16.20 per cent.

109. The capital forest area works out to 0.02 hectare as against the state average of 0.05 and national average of 0.13.

110. The gross annual revenue per hectare of forest was Rs. 42.68 during 1974-75.

111. *Hill tribes*.—There are no hill tribes in the division.

112. *Wants of the people*.—The chief forest requirements of the people are small timber for building and agricultural implements, fuel for domestic consumption and for cottage industries such as jaggery making, lime and brick kilns, pottery, etc., pasture for cattle, thatch grass and to a lesser extent green leaf manure for wet cultivation. The fishermen along the coast require timber for catamarans and country craft. Granite, if it can be termed a forest product, is very much in demand in Madras City for construction work.

113. *Agricultural implements*.—The farmer's stock in trade of implements is small; a light wooden plough for use in puddled fields, and a slightly heavier one for use when the field ploughed is in a comparatively dry state for broadcast sowing, a wooden plank for use in levelling the surface in wet fields, a manvetti or spade for light hoeing and a clod-breaker for breaking up the ploughed up soil.

114. The plough consists of the handle, ploughshare, shaft and yoke. Of these the plough-share requires frequent renewal as it is most subject to wear. It has been ascertained from enquiry among the ryots that the ploughshare has to be renewed annually for dry cultivation and biennially for wet cultivation. The remaining portions of the plough are only renewed triennially. The following table shows the species most prized for the various parts of a plough and other agricultural implements in the order of preference:—

Plough—

Share.—*Tectona grandis* and *Acacia arabica*.

Shaft.—*Tectona grandis*, *Thespesia populnea*, *Cassia fistula* *Acacia Sundra* and *Morinda tinctoria*.

Handle.—*Lagerstroemia lanceolata*, *Thespesia populnea*, *Morinda tinctoria* and *Acacia arabica*.

Yoke.—*Thespesia populnea* and *Morinda Tinctoria*. In addition, any other readily available species are used for the yoke and the handle.

115. *Bullock carts*.—The species used for the various parts are as follows :—

Wheel.—

Spokes.—*Thespesia popunea* and *Albizzia lebbek*.

Felloes.—*Inga dulce* and *Acacia arabica*.

Hub or nave.—*Albizzia lebbek*.

Axle-tree or arbor.—*Inga dulce*, *Mangifera indica* and *Ficus* species.

Shaft or thill.—*Albizzia lebbek*.

Chassis.—*Albizzia lebbek*.

116. *Houses*.—Terraced and tiled houses are the general fashion in towns and large villages and Thatched houses in small villages. With steady improvement in the economic condition of the poorer classes under the Five-Year Plans thatch is rapidly giving place to tiles as a roofing material and this naturally means the construction of more substantial Buildings i.e., with brick and mortar.

117. While the affluent class of people use timber imported from outside the state, which is costly the common man uses timbers grown locally which cost about Rs. 350.10 to 529.65 per cubic metre in the round depending on size and quality. The species ordinarily used are furnished below :—

Doors and Windows—

Frame.—*Azadirachta indica* and *Thespesia populnea*.

Shutters.—*Mangifera indica* and *Inga dulca*.

Wall plates and ridge pieces.—*Azadirachta indica* and *Thespesia populnea*.

Rafters.—*Azadirachta indica*.

Reepers.—*Azadirachta indica*, *Ingadulca* and *Ficus* species.

118. For hutting the species used are Bamboo, Palmyrah, Casuarina and *Prosopis juliflora*.

119. *Handlooms.*—The following species are used in manufacture of handlooms in the district :—

Slay, warp roller, cloth roller and back rest.—*Lagerstroemia lanceolata*.

Race board.—*Tectona grandis*.

Traddies and beams.—*Terminatia paniculata*.

Leas rod.—*Dendrocalamus strictus*.

120. *Oil presses.*—The species used is *Albizia lebbek*.

121. *Catamarans.*—The species used is *Albizia moluccana* and the timber is obtained from Kerala and Kanyakumari.

122. *Timber.*—The forests of the division do not produce any timber. Hence, almost all the timber requirements are imported from the timber producing divisions of this state and from Kerala.

123. *Small timber.*—No small timber is produced in the forest of the division and all requirements are met from private lands.

124. *Bamboos.*—Bamboo which is required by the common man for a variety of purposes does not grow in the forests of the division and while one does come across a few clumps in private lands the bulk of the requirements are obtained from the forests of Salem Circle.

125. *Fuel.*—There were two fuel series known as Krishnareddykona and Nakkalakona functioning in Allikuli R.F. of Tiruvallur Range. The series were worked upto 1973-74 and were then wound up by the Chief Conservator of Forests for a period of ten years in his ref. No. 1885/74 K4, dated 16th January 1975 as reproduction did not keep pace with removals. The annual outturn from these series was anything between 30 to 437 tonnes, yields on the higher side being the result of smuggling both from this as well as the neighbouring state of Andhra Pradesh. The supply position of fuel to the public, largely from the numerous private *Casuarina* planta-

tions in the division, is comfortable and the closure of the above two fuel series has had very little if no adverse impact on it. The retail prices per tonne ruling in local markets for firewood of different species is as follows :

(1)						(2)	(3)
Species.						Unsplit.	Split.
Cauuarina	..	..	..	..	..	210.00	240.00
Tamarind	..	..	..	..	..	200.00	220.00
Neem	..	..	..	..	..	180.00	200.00
Babul	..	..	..	..	..	180.00	200.00
Mango	..	..	..	..	..	140.00	160.00
Pungam	..	..	..	..	..	140.00	160.00
Prosopis	..	..	..	..	..	130.00	150.00
Miscellaneous	..	..	..	..	..	100.00	120.00

126. Extensive *Eucalyptus tereticornis* plantations were raised in the division for meeting the fuel needs of the public but their outturn has had to be diverted to the paper mill at Pallipalayam from 1972 because of a shortage in the supply of bamboo, the principal raw material of this mill, having depleted as a result of its flowering.

127. *Green manure leaves*.—Green manure leaves are utilised in paddy cultivation and the demand is seasonal. The demand occurs twice during the year, once during June-July and again in September-October when transplanting of paddy is done. The species commonly used for the purpose are *Dodonea viscosa*, *Albizia lebbek*, *Erythroxylon monogynum*, *Wrightia tinctoria*, *Azadirachta indica* etc. The demand is met from unreserves wherever such unreserves capable of meeting the demand exist in the vicinity. The rest of the demand is met from forest areas and from *Tephrosia purpurea* (Kolingi) raised in private fields during the dry season under the aegis of the Agriculture Department and *Glyricidia maculata* raised along the hedges and bunds of private fields. The sale of green was permitted free from forest areas upto 1958 under the Grow More Food Campaign while in certain parts of Chingleput Division it was allowed at a concessional rate of Re. 0.75 per cart load. This concession was withdrawn on 31st December 1958 and the normal rate of Re. 1.50 restored. In G.O. Ms. No. 3058, Food and Agriculture, dated 11th October 1963 the Government ordered that the rate of Rs. 2.00 per cart load Re. 0.10 per head load fixed in Government Memorandum No. 115157/D.II/60, Food and Agriculture, dated 21st December 1962 for the removal of green manure leaves from advance fuel coupes of Sathyamangalam and Thalamalai Ranges of Coimbatore North Division be extended to all the districts in the State for a period of two years from the date of order. The concession was extended biennially till in G.O. Ms. No. 2968, Agriculture, dated 11th November 1971 the Government enhanced the rates to Rs. 3.00 per cart load and Re. 0.15 per head load for a period of two years from the date of order. Now, pending renewal of this concession for a further period from 11th November 1973, removals are being permitted. Removals were permitted from advance fuel coupes and Cashew plantations. The quantity removed and revenue realised from 1966-67 to 1974-75 is furnished in the subjoined statement :

Year.						Quantity removed in cart loads.	Revenue realised.	Remarks.
(1)						(2)	(3)	(4)
1966-67	..	..	..	..	..	101	202.00	
1967-68	..	..	..	..	..	105	210.00	
1968-69	..	..	..	..	..	29	58.00	
1969-70	..	..	..	..	..	65	130.00	
1970-71	..	..	..	..	..	78	156.00	
1971-72	..	..	..	..	..	72	144.00	at Rs. 2.00 each.
						33	99.00	at Rs. 3.00 each.
1972-73	..	..	..	..	..	18	54.00	
1973-74	..	..	..	..	..	21	63.00	
1974-75	..	..	..	..	..	14	42.00	
1975-76	..	..	..	..	..	55	165.00	

128. There are a few forest based industries in the division located in the vicinity of Madras. None of them utilise the Eucalypt wood or Cashew raw nuts produced in the division. Their location in the division is because of its proximity to the port and metropolitan city of Madras. A list of these industries with details of their location, raw materials consumed, etc., are furnished in appendix VIII.

129. *Grazing.*—Cattle from towns and villages close to the forests resort to the forests for grazing daily and return to their habitation in the evenings. They are mostly scrub cattle maintained for their dung which is used as fuel and manure. Excessive and continuous grazing coupled with goat browsing on the slopes has resulted in erosion and depletion of species of high forage value. In almost all the forests the absence of adequate forage during the long critical dry periods has seriously limited their carrying capacity.

130. *Grazing incidence.*—The grazing incidence figures for the division for the years 1965-66 to 1974-75 are furnished in the subjoined statement.—

<i>Grazing year.</i>					<i>Area open to grazing in hectares.</i>	<i>Number of cow units licensed.</i>	<i>Grazing incidence as hectare per cow unit.</i>
(1)					(2)	(3)	(4)
1965-66	..	..	..	..	27,683.00	43,341	0.64
1966-67	..	..	..	..	29,004.00	43,735	0.65
1967-68	..	..	..	..	30,136.91	38,897.5	0.77
1968-69	..	..	..	..	30,262.99	34,287	0.88
1969-70	..	..	..	..	29,669.41	40,365	0.73
1970-71	..	..	..	..	29,669.57	38,707	0.77
1971-72	..	..	..	..	29,594.92	33,122	0.89
1972-73	..	..	..	..	29,942.90	33,726.5	0.89
1973-74	..	..	..	..	29,106.23	33,907.5	0.86
1974-75	..	..	..	..	29,170.77	32,500	0.90

The grazing incidence is high from the point of view of conservation and development of the forests of the division.

131. *Stall feeding.*—In G.O. Ms. No. 10, Agriculture, dated 3rd January 1955 the Government sanctioned the concession of free removal of monsoon grass from reserved forests by ryots and Co-operative Milk Supply Unions and Societies and the concession was renewed annually, until in G.O. Ms. No. 5887, Food and Agriculturist, dated 22nd December 1962, the Government fixed the rate of Re. 1.00 per cart load and Re. 0.05 per head load of the commodity with effect from 1st January 1963. The Government at the same time ordered in the same G.O. that grass from areas in reserved forests planted with other species may be allowed to be removed free with view to reducing the fire hazard in such plantations. In G.O. Ms. No. 2428, Agriculture Department, dated 2nd September 1971 the Government while sanctioning the continuance of the concession for a further period of one year from 1st April 1971 raised the rates to Rs. 2.00 per cart load and Rs. 0.10 per head load. There is no evidence of either the ryots or Co-operative Milk Supply Unions having availed of the concession.

132. *The grazing year.*—The grazing year has traditionally coincided with the fasli year which commences on the 1st July and no change in this arrangement is advocated. During the rainy season from October to December when agricultural fields are under standing crops, cattle resort to the forests for grazing in larger numbers.

133. *Minor Forest Produce.*—The minor forest products of importance are only Cashew raw nuts from the numerous Cashew plantations, Palmyrah usufructs including leaves, and granite from the 139 stone quarries in the division. A certain amount of latch grass is also removed from the Reserved Lands in Tiruvallur Range. Barring Cashew raw nuts which are collected departmentally other items of minor forest produce are exploited through contractual agency. Each Range is treated as a Minor Forest Produce unit and there are five such units in the division. The lease period is the fasli year from 1st July to 30th June. In the case of stone quarries each quarry is treated as a separate unit. The lease period for quarries was fixed as two years in G.O. Ms. No. 3299, Agriculture Department, dated 7th November 1968 and this was reiterated by the Government in their Memo. No. 24326/72/E2, dated 28th November 1972 although in between in 1971, the Government fixed the lease period for quarries in Tambaram and Pulikaradu R.F.'s at three years.

SECTION 2—MARKETS AND MARKETABLE PRODUCTS.

134. *Fuel.*—Fuel was being exploited from two fuel series in Tiruvallur Range and the outturn transported to Madras city for consumption. The series were worked up to 1973-74 and then wound up for the reason mentioned in paragraph 125.

135. *Cashew raw nuts.*—This is the most important produce of the division and the largest earner of revenue. Cashew usufructs were exploited through contractual agency, that is, the right to collect and remove the usufructs was sold to contractors but from 1968 unsold units were exploited departmentally. As departmental working was found more profitable a complete switch over to this mode of working was made in 1971.

136. The results of exploitation of Cashew raw nuts between 1958-59, when exploitation first started, and 1970-71, which was the final year of exploitation through contractual agency, is furnished in the sub-joined statement :—

<i>Year.</i>	<i>Yield obtained in Kg.</i>	<i>Revenue realised in rupees.</i>
(1)	(2)	(3)
1958-59	120	60.00
1959-60	472	256.00
1960-61	1,340	892.00
1961-62	1,846	2,156.00
1962-63	6,530	4,950.00
1963-64	17,630	18,300.00
1964-65	41,412	30,470.00
1965-66	70,265	65,519.00
1966-67	62,594	85,236.00
1967-68	22,778	75,027.00
1968-69	60,180	55,652.00
1969-70	62,263	98,235.00
1970-71	1,88,019	2,91,096.00

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142. *Roads*.—The division has a very good net work of roads which render the various forest blocks easy of access. As a result, supervision of works and exploitation of the various plantations raised are comparatively much easier than in most other divisions in the State. The total length of the various types of roads (under the control of the Department of Highways and Rural Works) is 6,892.94 K.M. The break up for the same is as follows :—

State Highways	...	...	...	...	9.60 K.M.
Major District road	...	...	...	...	1,139.70 K.M.
Other District roads	...	...	...	...	1,291.74 K.M.
Panchayat Union roads	...	...	...	...	2,567.20 K.M.
Panchayat roads	...	...	...	...	1,884.50 K.M.

In addition, portions of the following National Highways traverse the division :—

(I) National Highways 45—Madras—Tiruchirappalli—Dindigul road from 0|0 Km. to 104|0 Km. (0|0 Km. to 11|6 Km. lies in Madras City.)

(II) National Highways 4—Madras—Chittoor—Bangalore road from 0|0 Km. to 86|2 Km. (0|0 Km. to 8|9 Km. lies in Madras City).

(III) National Highways 5—Madras—Calcutta G.N.T. road from 0|0 Km. to 52|8 Km. (0|0 Km. to 7|6 Km. lies in Madras City).

143. *Forest Roads*.—There is only one forest road that is from Allikuli to Ramancheri over a distance of 10.86 Km. It is a fair weather road and was being used for transport of firewood from the fuel series in Allikuli Reserved Forest.

144. *Canals*.—The Buckingham canal is an important and cheap water-way for water transport. This salt water navigation canal stretches from the backwaters of Marakanam to the deltaic canal waters of the Krishna river in Andhra Pradesh over a total length of 600 kilometres. The canal South of Madras is mainly used by boats of 0.61 m. to 1.83 m. draught with a maximum capacity of 10 tonnes.

SECTION 4—METHODS OF EXPLOITATION AND THEIR COSTS.

145. *Cashew raw nuts*.—Cashew raw nuts are exclusively being collected by the department since 1971. The period of collection is from the middle of March to the middle of June. For nuts collected from the tree no wages are paid but the mazdoors are allowed to appropriate the apples in lieu of payment. For nuts collected from the ground a rate of 0.50 per kilogram is paid.

146. The procedure followed in the departmental collection of raw nuts is as follows :—

Plantations to be exploited are divided into tasks, each task consisting of 500 trees. The tasks are demarcated with small white washed cairns. Each task is in charge of a taskman who does the actual collection of the produce. As already stated he is not paid any wages but is allowed to appropriate the apples for himself. He is, however, paid Re. 0.50 per kilogram of fallen seed. The work of ten taskmen is supervised by a Plot Mazdoor who is paid Rs. 120 per mensem. The nuts when collected are delivered at Collection Centres. They may be located in small temporary sheds or under a tree. Further, they may be located within the forest or in its proximity. The centres are comparable to forest depots and each is in charge of a Forester or Forest Guard. From the Collection Centres the daily collection of nuts is transported to sub-godowns located at section

headquarters or central points and which are in charge of separate Foresters who weigh and acknowledge the nuts in the Daily Collection Register maintained by the subordinates in charge of the Collection Centres. At the sub-godowns, which are ordinarily located in private rented buildings, the nuts are sun-dried for two days. They are then bagged, transported and delivered at Central Godowns which are in charge of separate Foresters. The Central Godowns in the division are located at Illaure, Hanumanthaputheri, Vandalur and Seethancheri, the last named being located in a private building, and serves as sale depot.

147. The forms in which the accounting registers at the different depots are maintained are furnished below.—

(i) COLLECTION DEPOT.

(a) Register of daily collection.

Name and year of Plantation—

Block number.	Name of labourer.	Task number.	Date							
			of 1	of 2	of 3	of 4	of 5	of 6	of 7	of 8
			Quantity nuts.	Quantity nuts.	Quantity nuts.	Quantity nuts.	Quantity nuts.	Quantity nuts.	Quantity nuts.	Quantity nuts.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

(ii) SUB GODOWN.

(a) Form 3—Register of receipts of raw nuts. (Printed on page 414 of the Forest Department Code).

(b) Invoice to cover transport of raw nuts.

Name and designation of the
sub-godown-keeper who
sends the nuts.

Serial number :

Number of bags.	Name of plantations from which nuts are collected.	Dates of collection of nuts.	Quantity of nuts sent to Central Godown.	Acknowledgement of the Central Godown- Keeper.
(1)	(2)	(3)	(4)	(5)

Signature of Sub-godown-
keeper.

Signature of Central godown-
keeper.

(c) Form 4 (Printed on page 418 of the Forest Department Code).

(iii) Number of violations of game rules detected.—Nil.

(iv) Areas closed to shooting.—Nil.

513. A few practical suggestions are made for implementation in connection with the conservation of wild life in the division. They are :—

(i) See whether a step-well can be dug in Thaiyur or Kolathur R.F. which will provide water in summer for the deer and black buck in these reserved forests. Also, provide a salt lick for these animals.

(ii) See whether fodder can be supplied to these animals artificially using the departmental lorry, during the months.

(iii) Introduce Peafowl in Hanumanthaputheri, Appur and Vandalur R.F's, Koramangalam R.L. and certain wellstocked Farm Forestry plantations. The birds, if necessary, can be procured from the Islamia Uravinmurai Trust Board, Veeracholan, Ramanathapuram District which runs a Government sponsored Peafowl farm.

(iv) Maintain a close watch on Narikoravar gangs who are the main destroyers of wild life for commercial purposes and book those indulging in poaching.

(v) Amply reward subordinates detecting poaching.

SECTION 10—FARM FORESTRY.

514. *Objects of management.*—The area under Reserved Forests and Reserved Lands accounts for only about 16.2 per cent of the total geographical area of Tamil Nadu whereas in Chingleput Division taking existing farm forests into consideration it is about 6.42 per cent. According to the National Forest Policy of India laid down in 1952 the proportion of land to be kept permanently under forests is placed at 33 per cent of the total land area. The proportion of the forest area not only in this state but also in this division falls very much short of this standard. Moreover, what natural forests are left after converting the comparatively better type of forests into Cashew and Eucalypt plantations are in a hopelessly degraded condition while vast extents of reserved lands in Thiruvallur Range are absolutely barren and the only function they serve is that of low quality pasture for village cattle. The villagers, therefore, face a chronic scarcity of fuel and timber. Efforts had to be made to design a scheme to raise forests on "Poromboke" lands not suited to agriculture to meet exclusively the requirements of the villagers in respect of forest produce, divert cow dung from the village hearth to the field and to aid soil and moisture conservation which are essential requirements of agriculture. With these objectives in view the scheme of Farm Forestry was formulated and launched during the Third Five-Year Plan.

515. *General constitution.*—The formulation and launching of the scheme was preceded by a reconnaissance survey of lands available for planting under the scheme which was carried out in 1957-58 by a special division constituted for the purpose. The survey disclosed that the extent of 20.23 hectares (50 acres) and above blocks available in the division for planting was 1,403.96 square kilometres. Of this extent 63.45 square kilometres has since been planted leaving a balance of 1,340.51 square kilometres for future planting. Incidentally, if the balance area is also fully planted up the area under forests under the management of the Forest Department will shoot up from a paltry 6.42 per cent at present to an impressive 23.40 per cent in the future and bring it on a par with the national average of 23.1 per cent. No doubt some of the areas that were available for planting up with tree crops due to assignment of land to the weaker sections of the community and transfer to other departments for implementing Plan schemes and so on since then, but all the same a major part of it should be still available and if effectively afforested under the scheme should increase the forest potential of the division considerably. A part of the future strategy of the department should therefore, be to concentrate heavily on the implementation of this Five Year Plan Scheme. A taluk-wise abstract of the area listed out as being available for planting of the area already planted up and the balance area available for planting is furnished in the subjoined statement, whereas the detailed list of areas available is furnished in appendix XVI.

**STATEMENT OF AREA AVAILABLE FOR RAISING FARM
FORESTS IN FUTURE.**

<i>Serial number and name of taluk.</i>	<i>Area of 20,23 hectares and over blocks selected as fit for planting.</i>	<i>Area planted up till the end of 1975-76 in hectares.</i>	<i>Balance area available for planting in hectares.</i>	<i>Remarks.</i>
(1)	(2)	(3)	(4)	(5)
1 Chingleput	21,151.30	1,192.68	19,958.62	
2 Kanchcepuram .. .	18,922.88	693.51	18,229.37	
3 Tiruvallur	15,251.21	1,064.53	14,186.68	
4 Sriperumbudur	11,271.85	1,032.04	10,239.81	
5 Tiruttani	19,378.80	978.25	18,400.55	
6 Ponneri	23,138.16	754.59	22,383.57	
7 Madurantakam	25,281.54	410.00	24,871.54	
8 Saidapet	6,000.33	218.93	5,781.40	
Total.	<u>1,40,396.07</u>	<u>6,344.53</u>	<u>1,34,051.54</u>	

516. *Planting programme.*—Planting was commenced in 1960–61 and till the end of 1975–76 an extent of 60.64 square kilometers was planted up leaving a balance of about 1,343.31 square kilometres to be afforested in future years. The average annual target works out to 3.79 square kilometres. As already pointed out there is a strong case for its being stepped up steadily over the years. The District Forest Officer should therefore, ask for increased financial allotments under this scheme every year.

517. *Method of treatment.*—The silvicultural treatment for new areas will be concentrated artificial regeneration and in lands other than tank beds the present practice of clearing, uprooting and tractor ploughing before planting will be continued. In the case of existing plantations the simple coppice system will be followed with restocking of sizable blanks with suitable species if soil conditions permit.

518. *Choice of species.*—In sites liable to water-logging it will be *Acacia arabica*, on saline alkali sites *Acacia leucophloea* or such other species that will thrive on such soils and in other areas it will be *Eucalyptus tereticornis*. While this will be the general pattern the District Forest Officer may introduce other species with the concurrence of the Conservator of Forests. Cashew has not been recommended because of the low yields and difficulty in protecting the crop in small scattered plantations. Tank beds liable to prolonged stagnation of water which will result in the killing out of the planted seedlings should not be planted up. In some of these tanks this drawback does not extend to their foreshores in which case the foreshores could, with profit be planted up.

519. *Espacement.*—The espacement will be 2 m. by 2 m. for Eucalypt and 3.50 m. by 3.50 m for other species.

520. *Regeneration technique.*—The regeneration technique will consist of planting container plants in 30 cm. cube pits with the commencements of the south-west shower or as the water recedes depending on the type of area and pattern of water storage if they are tank beds. The nursery practice and subsidiary silvicultural operations to be followed have been dealt with in detail in the chapters on the Eucalypt plantation and Afforestation working circles and may be followed with such modifications as found necessary.