CYPRUS

FOREST REPORT

1954

by

G. W. CHAPMAN, M.B.E., M.A.
Conservator of Forests

NICOSIA
PRINTED AT THE CYPRUS GOVERNMENT PRINTING OFFICE
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CONVERSION FACTORS.

1 donum	=	0.33 acres
1 acre	=	3.025 donums
1 donum	=	0.134 hectares
1 hectare	=	7.475 donums
1 square mile	=	1,936 donums
1 square kilometer	=	747.5 donums
1 oke (weight)	=	2.8 lbs. or 1.273 kilograms
1 gross matches	=	0.714 cubic feet (r) U.B.

Factors for the conversion of sawn timber, veneers and plywood and pulp and paper used in this report are the same as those adopted by F.A.O. and published in the Year Book of Forest Products Statistics.

WEIGHTS, MEASURES AND CURRENCY.

WEIGHT :	400 drams	=	1 oke.
	1 oke	=	2.8 lbs.
	44 okes	=	1 kantar.
	180 okes	=	1 Aleppo Kantar (carobs).
	800 okes	=	1 ton.
CAPACITY :	1 Cyprus litre	=	2.8 quarts.
	1 kilè	=	1 bushel.
	1 kouza	=	9 quarts } wine.
	16 kouzas	=	1 load }
LENGTH :	1 pic	=	2 feet.
AREA :	1 evlek	=	3,600 sq. feet.
	1 donum	=	14,400 sq. feet or 4 evleks.
CURRENCY :	1 piastre	=	1⅓ penny.
	9 piastres	=	1 shilling.
	20 shillings	=	1 pound.

CONTENTS

CONTENTS—*contd.* *Page.*

Report of the Forest Service in Cyprus for the year 1954

I.—INTRODUCTION.

The State Forests of Cyprus are divided in accordance with the Forest Law into two categories—the Main State Forests and the Minor State Forests. Minor State Forests may be declared village fuel or grazing areas under the control of Village Authorities and where this has been done a third category of Communal Forest comes into being. Areas of privately-owned natural forest with a steadily growing area of small-holder plantations make a fourth wood-land category.

The Main State Forests, comprising 79.56 per cent of the total forest area, are managed by the Forest Department, which is also responsible for the development of Communal Forests. The Minor State Forests are administered by the District Commissioners.

The approved Forest Policy for the Main Forests is described in a published (1950) Statement of Forest Policy* which is comprehensive and covers in its sixteen articles the following subjects :—

Forest Reservation ; Climatic Protection ; Water Conservation ; Soil Conservation ; Agricultural Protection ; Public Amenity ; Wild Life ; Forest Protection ; Forest Management ; Timber Supplies ; Fuel Supplies ; Employment ; Forest Industries ; Forest Research and Education ; Private Forests and Forest Revenue.

2. During the year 1954 the administration of the main forests ran smoothly and in harmony with the people. Afforestation, exploitation and other forestry works were carried out according to programme. A satisfactory and fruitful liaison with other land-use Departments was maintained through the Land-Use Co-ordination Committee composed of the Heads of the five Departments (Agriculture, Forest, Water Development, Lands and Surveys and Co-operative Development) most concerned with the improvement of land-use in the Colony.

3. Forest protection services were maintained in all parts of the main state forests and damage from forest fire was again kept below the average. It is unfortunate that the steady decline in reported forest crime characteristic of recent years has not continued in 1954. No good reason can be adduced to explain this change unless it be that the reorganization of the field staff in beats has lead to a more efficient detection of offences. Even so the total of offences reported (see paragraphs 35 to 38 and Appendix 5) is still unreasonably high in relation to the population and the area of the forests. Most of the crime concerns petty pilfering and trespass by flocks and though the damage caused may not be of serious proportions, the frequency of offences shows that there is still some way to go before the forest villagers come to respect the forests and the forest laws in the manner of civilized people. For this reason alone the Forest Service has to keep a high proportion of its field staff on patrolling and policing the forests, time which could be more profitably spent attending to silviculture and other technical activities more proper to their calling. To this unfortunate habit of certain sections of the forest villages we may also relate the relatively high charge for personal emoluments in the total cost of the Forest Service.

* Copies may be obtained from the Government Printer, Nicosia.

4. An outstanding feature of the year's work has been the progress made in forest research activities. This has now been put on an organised basis with the creation of the new Forest Research and Education Division and the recruitment of specialist staff. An account of the research work carried out during the year will be found in Chapters VI and XI and in Appendix 16.

5. Afforestation work in the main forests continued satisfactorily to the limit of the funds available. Exploitation made steady progress and fellings were made up to the limits of prescribed yields. More attention has been paid to thinnings and cleanings in young crops—a matter which is becoming increasingly urgent in all the areas which have been regenerated since the elimination of forest grazing. Fortunately there is a good demand for small size round-wood from the mines and vine growing areas which readily absorbs the out-turn from thinnings. The Department's new model sawmill at Morphou, though all installations are not yet complete, came into operation in September.

6. Forest expenditure from all votes fell from £254,167 to £239,731 but forest revenue (all sources) increased by £7,800 to £135,097.

II.—CONFERENCES AND VISITORS.

7. Mr. G. W. Chapman, Conservator of Forests and Mr. H. Michaelides, Assistant Conservator of Forests, attended the Fourth Session of the Sub-Commission on Mediterranean Forestry Problems held in Athens from the 31st May to 6th June and subsequently toured the forest areas of Greece.

8. Messrs. I. Sidki and G. Seraphim, Assistant Conservators of Forests, represented Cyprus at the Seminar on Forest Policy for Near East Countries which was organized by the Food and Agriculture Organization of the United Nations in Istanbul from the 13th to the 25th September, in conjunction with the Turkish Forest Service and the Forest Faculty of Istanbul University. The Conservator of Forests also participated as one of the principal lecturers nominated by F.A.O.

9. Mr. R. J. Streets, Senior Assistant Conservator of Forests, was enabled by a generous grant from the British Middle East Office to visit Cyrenaica and Tripolitania during October. He went on to represent Cyprus at the first meeting of the Mediterranean Eucalyptus Working Group convened in Morocco in November.

10. Mr. A. Polycarpou, Assistant Conservator of Forests, attended the Near East Poplar Conference at Damascus from 5th to 9th April and subsequently took part in a study tour in Syria and the Lebanon.

11. His Excellency the Governor, Sir Robert Perceval Armitage, K.C.M.G., M.B.E., made a number of official tours through the forests visiting all the more important forests and plantations in all divisions. Other official visitors to the forests during the year included :—

Lord Radnor, Chairman of the Forestry Commission ; Mr. V. Robertson, Hunting Aerosurveys Ltd., London; Mr. W. A. Morris of the Mediterranean Department in the Colonial Office ; Mr. Petros Dovas, Director of Agriculture in the Ministry of Co-ordination, Athens ; Mr. H. J. van Praag, Assistant Conservator of Forests, Israel ; Dr. David Webb, Professor of Botany at Trinity College, Dublin ; Professor F. E. Zeuner, Department of Environmental Archaeology, University of London ; Dr. Silberstein, Head of Haifa Technical College ; Mr. Matti Virkkunen, Sales Manager, Kolho Oy, Kolho, Finland ; Lord Hinchingbrooke ; W. F. Crawford, Development Division, B.M.E.O. ; Professor H. G. Champion, Director of the Imperial Forestry Institute ; Mr. F. C. Ford-Robertson, Director of the Commonwealth Forestry Bureau,

Oxford ; M. Osman Jerby, Conservator of Forests, Libya ; Messrs Sh. Muhtadie, Legal Adviser, Ministry of Justice and W. A. Majali, Assistant Under-Secretary Ministry of Economy, Amman, Jordan ; Professor J. F. Kools, of F.A.O. ; Delegates of the Near East Poplar Conference ; Mr. Goor, Chief Horticulture Officer, Israel, and a party of eleven Turkish Forest Officers lead by Mr. Galip Unturk, Senior Forest Officer, Antalya.

III.—THE FOREST ESTATE.

(1) Forest Areas.

12.—(*a*) The area of the Main State Forests was increased slightly from 532.53 to 532.77 square miles as a result of the addition of enclaves of private land by purchase (£329. 10*s*.).

(*b*) The area of Minor State Forests remained the same at 76.56 square miles.

(*c*) The area of Communal forests which are Minor State Forests allocated as Village Fuel Areas remained the same at 8.03 square miles.

(*d*) The provisional census of privately owned forests and plantations has been concluded and the total area of these is estimated as 52.3 square miles.

13. The total forest area amounts to 669.66 square miles or 18.74 per cent of the total land area of the Island.

There are also some 375 square miles of vacant crown land, some parts of which are covered with open maquis or degraded garigue vegetation which is mostly used as grazing range.

Further details concerning forest areas are given in Appendices 1 and 2.

14. An area of 1,063 donums of fertile bottom land in the Athalassa Main State Forest was handed over to the Department of Agriculture for conversion from wattle plantation to arable in order to provide land for the extension of experimental work and for other activities connected with the Athalassa Farm. This area comprises the bulk of the remaining bottom land and so brings to an end the Forest Department's programme in Athalassa of converting the land to eucalyptus high forest.

15. Part of the Fresh Water Lake Plantation near Ayios Loukas village, Famagusta, has been converted into a reservoir in connection with a scheme for recharging aquifers depleted by over-pumping in the Famagusta citrus area. This has involved clearing the eucalyptus plantations occupying the area of the new reservoir and will mean a further loss of 220 donums of highly productive eucalyptus plantations.

16. These reductions in the area of the forest estate have not yet been gazetted and have not therefore been deducted from the data given in Appendices 1 and 2.

17. An area of 505.75 donums of crown land within the perimeter of the Nicosia Airport has been allocated for afforestation to the Forest Department, but the land has not been constituted state forest under the provisions of the Forest Law.

18. A total of 1,978 donums of Main Forest land with 2,215 fruit trees were under leasehold cultivation during the year. Rents collected amounted to £243. 1*s*. In Larnaca and Famagusta Districts, 10,647 donums of Minor State Forests and 6,982 fruit trees were under lease for cultivation ; rents collected amounted to £1,155. 15*s*.

19. The water from 62 forest springs is used for piped water supplies for domestic consumption. Fifteen of these springs have been given on leasehold for an annual rent of £20. 13*s*. The remainder are used rent-free for village supplies under schemes carried out by the Water Development Department. A further 63 forest water sources have been used for irrigation purposes in private lands within or adjacent to the forest, 24 at a yearly rental of £9. 6*s*., the remainder rent-free.

(2) Forest Boundaries.

20. The boundaries of the Main State Forests total 1,105 miles and are demarcated by 16,122 concrete beacons, which were maintained in good order at a cost of £160. In the Northern Range Division 200 pre-cast concrete forest boundary cairns of a new type were erected demarcating private enclaves within the forest estate at a total cost of £126, i.e. 12.6 shillings per cairn.

IV.—CLIMATE.

21. For the first time in its history the Department can supply the usual meteorological data from its own forest stations for most of the year, with additional data of research value from the Forestry College. It has also successfully initiated in 1954 a system of public warnings on the fire danger, by daily radio broadcasts of a " fire hazard " calculated from the readings of its own meteorological observers.

22. The data is set out in Tables 1 to 5, the first three being concerned with the monthly rainfall, mean maximum and minimum temperatures, and relative humidities observed at 8 a.m. and 2 p.m. (local time), of eight forest stations ranging from 580 ft. above sea-level in the Carpass to 4,500 ft. on the Troodos mountains. Table 4 gives further observations from the Forestry College, Prodhromos, including soil temperatures, solar and terrestrial radiations, sunshine hours, and evaporation as measured by the Piche Evaporimeter. Table 5 summarises the Fire Hazard broadcasts by expressing the number of days on which each degree (Low, Moderate, High, etc.) occurred, as a percentage of the whole period of June to September.

23. Taking rainfall first, comparison of Table 1 with the comparable parts of last year's report (by elevation) shows that the annual precipitation was generally higher than that of the last two years, with significant increases in the spring and autumn rainfalls. There was also a greater spreading of rainfall through the summer months, especially at the higher stations. Grazing was, therefore, better than usual and the total fire danger lowered from that of the previous two years.

24. The temperatures followed the normal pattern, except during the last two months, when they were generally higher than usual, in accordance with the mild winter weather. The relative humidity figures were higher than usual for the spring and autumn months, following the increased rainfall.

The information given in Table 4 has been chiefly collected and used for the Research Division's investigations into the incidence and survival of both natural and artificial regeneration of *Pinus nigra*. Strip sowings were made in March in the immediate vicinity of the Meteorological Station, covering the four main aspects in the open and varying degrees of shelter. Daily counts of the resultant seedlings were made at the same time as the afternoon observations (14 hrs., local time), by students of the Forestry College.

25. The " fire hazard " of Table 5 refers only to the moisture content of the air, having been derived from the saturation deficit as calculated from the 2 p.m. observations of the standard " wet and dry bulb " thermometers. An arbitrary figure of 30 grams per cubic metre saturation deficit was taken to be the 100% fire hazard for all stations, and the resulting percentages were grouped into four arbitrary degrees of hazard (low, moderate, high and very high) for the daily broadcasts. First results suggest that the level of saturation deficit assumed for the maximum hazard is too low, although it was arrived at by averaging the rather scanty data of previous years, the 100% having been exceeded for 15% of the period, mostly at the lower altitude stations. The information was broadcast to the public by regions, the eight stations being grouped and their observations averaged to give a degree of fire hazard for each of the following four areas : Northern Range, Paphos Forest, Troodos Forest, Adelphi and Makhaera Forests. Only the current day's figures were reported, no attempt being made at a forecast.

TABLE 1.

MONTHLY RAINFALL IN INCHES.

Stations	Akradhes	Ayios Merkourios	Panayia Bridge	Halevga	Stavros	Pano Panayia	Platania	Prodhromos
	N. Range For. 580 ft. ASL.	Paphos Forest 800 ft. ASL.	Troodos For. 1,800 ft. ASL.	N. Range For. 2,500 ft. ASL.	Paphos Forest 2,600 ft. ASL.	Paphos Forest 2,800 ft. ASL.	Troodos For. 3,600 ft. ASL.	For. College 4,500 ft. ASL.
Month	Rainfall	Rainfall	Rainfall	Rainfall	Rainfall	Rainfall	Rain and Snow	Rain and Snow
January	3.19	N.A.	N.A.	3.25	11.69	N.A.	12.57	10.84
February	3.38	N.A.	N.A.	3.47	7.99	N.A.	6.15	6.79
March	1.86	2.16	4.69	1.65	3.12	2.42	3.79	3.68
April	2.36	2.19	0.68	1.70	2.51	1.40	2.13	2.41
May	0.08	0.16	0.25	0.01	0.32	0.21	0.28	0.27
June	—	—	2.21	0.09	—	0.07	0.57	1.58
July	—	—	—	—	—	—	—	—
August	—	—	—	—	0.20	—	—	0.15
September ..	0.12	0.05	—	—	0.03	0.70	0.04	0.07
October	3.71	2.64	2.33	3.30	3.50	3.28	3.68	3.24
November.. ..	6.89	2.63	0.67	5.02	5.02	2.14	2.11	2.06
December.. ..	10.92	6.66	6.67	10.77	12.13	7.69	12.41	12.35
Totals	32.51	16.49 *	17.50 *	29.26	46.51	16.91 *	43.73	43.44

N.A. = Not available. * = Figures for 10 months only.

TABLE 2.

MONTHLY AVERAGES, MAXIMUM AND MINIMUM TEMPERATURES (°F.).

Station	Akradhes		Ayios Merkourios		Panayia Bridge		Halevga		Stavros		Pano Panayia		Platania		Prodhromos	
	N. Range For. 580 ft. ASL.		Paphos Forest 800 ft. ASL.		Troodos For. 1,800 ft. ASL.		N. Range For. 2,500 ft. ASL.		Paphos Forest 2,600 ft. ASL.		Paphos Forest 2,800 ft. ASL.		Troodos For. 3,600 ft. ASL.		For. College 4,500 ft. ASL.	
Month	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
January	58.6	42.7	—	—	—	—	50.8	38.8	47.7	—	—	—	—	—	39.6	31.2
February	61.3	44.2	—	—	—	—	52.7	40.5	50.1	38.8	—	—	49.1	34.8	42.5	33.2
March	65.4	47.5	65.6	47.2	62.3	48.5	59.2	46.2	58.9	45.0	59.3	46.7	55.1	40.7	52.1	39.1
April	66.6	50.7	67.8	48.4	65.3	43.1	62.1	45.8	59.7	44.5	58.5	46.0	57.2	41.1	53.9	40.5
May	77.6	54.6	78.3	55.1	77.3	50.3	75.2	53.6	72.6	53.5	70.3	56.5	70.2	53.1	67.3	52.7
June	86.7	66.7	87.6	64.0	89.5	59.3	84.9	64.4	83.1	63.7	80.5	66.4	78.6	60.6	75.4	60.5
July	92.6	72.0	93.8	68.3	94.0	63.9	90.6	70.4	88.9	70.4	86.8	72.3	84.1	67.2	81.0	67.0
August	93.1	72.2	92.3	68.7	93.3	64.3	89.6	69.2	88.9	68.9	86.4	70.8	84.6	67.3	81.8	67.5
September ..	88.3	68.2	86.2	63.8	86.7	58.1	83.6	63.4	81.7	61.7	79.0	64.8	76.2	58.8	73.6	59.1
October	79.5	60.5	79.6	57.8	77.7	51.8	74.4	57.4	73.4	56.9	71.8	57.4	68.0	53.4	65.6	52.1
November.. ..	70.9	52.8	70.4	52.1	65.1	45.1	63.7	49.8	62.0	48.8	62.0	50.2	58.1	45.2	52.8	44.3
December ..	63.4	47.2	62.9	47.8	57.7	42.0	56.3	44.5	54.8	43.2	53.4	43.6	50.9	40.6	45.5	37.2

TABLE 3.

MONTHLY AVERAGES, RELATIVE HUMIDITY PER CENT.

Station	Akradhes		Ayios Merkourios		Panayia Bridge		Halevga		Stavros		Pano Panayia		Platania		Prodhromos	
	N. Range 580 ft. ASL.		Paphos Forest 800 ft. ASL.		Troodos Forest 1,800 ft. ASL.		N. Range 2,500 ft. ASL.		Paphos For. 2,600 ft. ASL.		Paphos For. 2,800 ft. ASL.		Troodos For. 3,600 ft. ASL.		For. College 4,500 ft. ASL.	
Month	Local Time		Local Time		Local Time		Local Time		Local Time		Local Time		Local Time		Local Time	
	08.00	14.00	08.00	14.00	08.00	14.00	08.00	14.00	08.00	14.00	08.00	14.00	08.00	14.00	08.00	14.00
January	85.5	80.6	—	—	—	—	81.3	73.9	79.9	76.6	—	—	—	—	85.1	84.1
February.. ..	87.2	77.1	—	—	—	—	83.8	83.0	79.3	73.2	—	—	77.7	76.2	73.9	83.3
March	86.9	81.6	68.6	56.5	—	—	78.6	76.0	64.3	55.8	58.8	64.9	58.8	65.8	58.3	67.7
April	78.1	74.5	65.6	55.3	—	—	68.5	65.3	64.0	61.4	71.6	63.4	50.0	56.2	57.0	68.0
May	80.5	78.7	50.1	49.7	—	—	53.5	48.2	50.7	41.8	51.9	44.8	33.7	44.2	40.2	47.8
June	67.9	53.8	51.6	53.9	38.0	39.8	60.1	53.4	39.4	39.9	47.8	44.1	30.3	44.2	40.0	49.0
July	62.4	47.3	41.1	38.4	35.5	32.9	52.3	46.7	28.6	30.9	33.5	36.7	24.5	33.5	32.0	41.0
August	65.3	50.7	43.0	39.0	41.5	37.0	55.6	47.2	30.5	33.2	37.8	35.0	27.7	41.9	31.0	45.0
September ..	64.1	47.4	46.4	46.0	38.6	37.3	64.0	42.8	45.5	43.6	45.8	48.1	33.2	46.2	42.0	48.2
October	66.3	56.0	53.5	50.4	58.9	51.7	66.2	60.9	51.8	50.3	51.8	53.5	50.4	56.0	55.4	60.9
November ..	74.9	66.2	72.5	58.4	79.6	—	79.4	79.3	69.2	66.7	63.7	59.5	70.3	75.6	70.0	78.0
December ..	77.1	65.3	79.9	64.1	82.8	—	83.5	82.3	78.7	71.4	75.9	71.4	79.5	78.2	82.0	85.6

Table 4.

Forestry College, Prodhromos.

OTHER OBSERVATIONS.

Month	Mean Air Temp. (Screen) 06.00 hrs. GMT	Mean Grass Min. Temp. 06.00 hrs. GMT	Mean Soil Temp. at 4 ins. 06.00 hrs. GMT	Mean Soil Temp. at 8 ins. 06.00 hrs. GMT	Mean Soil Temp. at 1 foot 06.00 hrs. GMT.	Mean Soil Temp. at 4 feet 06.00 hrs. GMT.	Mean Solar Maximum (Vacuum) 15.00 hrs. GMT.	Mean Solar Maximum (air) 15.00 hrs. GMT.	Mean Sunshine Hours per day	Mean Evaporation (Piche) per day.
January	34.4°F.	29.0°F.	—	36.8°F.	37.1°F.	44.4°F.	91.9°F.	48.4°F.	3.1 hrs.	—
February ..	36.9	30.5	35.1°F	37.2	38.0	42.4	102.9	54.0	3.6	—
March	44.9	35.6	40.7	44.0	44.3	43.9	119.9	64.5	5.3	4.1 cc.
April	46.4	36.4	45.2	49.3	49.8	48.8	126.9	67.7	7.8	5.5
May	59.3	48.7	61.2	64.9	64.5	56.3	142.2	82.9	10.5	9.4
June	69.0	56.6	71.4	74.8	74.5	65.7	151.9	91.0	12.3	9.1
July	74.7	63.0	78.0	83.0	82.1	72.3	151.3	95.9	13.1	12.0
August	74.1	62.0	76.3	82.8	82.0	76.1	152.7	96.5	11.8	11.4
September ..	65.4	52.9	65.8	73.0	73.0	73.6	145.0	88.7	9.8	8.9
October	57.5	47.2	56.7	63.5	63.8	68.8	134.4	78.4	7.8	6.7
November ..	48.1	36.0	44.2	48.9	50.0	59.7	115.8	64.1	4.5	2.5
December ..	40.5	34.3	38.6	41.9	42.4	52.0	96.2	53.9	3.5	1.4

Number of Ground Frost days in year, 41 (Dec. to April).

TABLE 5.

FIRE HAZARD, JUNE–SEPTEMBER, 1954.

Station	Low	Moderate	High	Very High
Akradhes	38.5% (of Period)	43.4% (of Period)	10.7% (of Period)	7.4% (of Period)
Ayios Merkourios	33.6 ,,	35.2 ,,	19.7 ,,	11.5 ,,
Panayia Bridge	18.0 ,,	34.4 ,,	22.2 ,,	25.4 ,,
Halevga	45.1 ,,	30.3 ,,	18.8 ,,	5.8 ,,
Stavros	32.0 ,,	31.1 ,,	21.3 ,,	15.6 ,,
Pano Panayia	42.6 ,,	36.1 ,,	17.2 ,,	4.1 ,,
Platania	50.0 ,,	32.0 ,,	14.8 ,,	3.2 ,,
Prodhromos	61.5 ,,	29.5 ,,	9.0 ,,	Nil ,,

Degrees of Fire Hazard { Low = up to 50%; Moderate = 51 – 70%; High = 71 – 90%; Very High = Over 90%.

Period = 122 days, June 1st to September 30th.

V.—FOREST PROTECTION.

(1) Damage by Natural Causes.

26. Damage to the forests from natural causes throughout the year has not been abnormal. As was mentioned in last year's report much of the damage from insect and fungal causes passes unnoticed in comparison with the much greater damage caused by man and his practices. The Forest Entomologist arrived in the spring and his report is awaited with interest.

27. The *Pinus brutia* plantations near Nicosia which were dusted with DDT from the air in the previous year in an attempt to control the pine processionary caterpillars which formerly appeared there in large numbers in most years, have once again become fairly heavily infested with the caterpillar this year. This indicates that the spraying with DDT was only palliative in action for the season of the spraying.

28. Lightning caused 4 small outbreaks of fire in the main pine forests in the course of the year.

(2) Damage by Man.

29. *Fire.*—The number of outbreaks was two more than in the previous year but the total area burnt was considerably less (41 outbreaks with a total area burnt of 960 donums compared with 39 outbreaks and a total area burnt of 4,125 donums in 1953). Out of the total number of outbreaks 8 fires were set intentionally and 33 accidentally or by natural causes.

30. Five outbreaks of fire, burning some 600 donums, were reported from the Minor State Forests. All these fires started accidentally.

31. The forest fire protection service was fully manned throughout the fire season as usual. A particular effort was made this year to predict the fire hazard every day in advance. Steps were taken to announce the degree of fire hazard daily on the radio and during periods of particularly high fire hazard all fire-fighting services were held at stand-to.

32. At Diagram 1, fire incidence and damage during the period 1886–1954 is given.

33. *Grazing.*—The grazing position remained similar to that of the previous year. Grazing in certain lowland forests and Village Fuel Areas was encouraged during the late autumn months on a scale slightly in advance of previous years. Because of very early rains and excellent growing conditions there was no shortage of fodder in private lands during the autumn, the period when most demands are usually made for grazing in the forests.

34. Two more villages bordering the Main State Forest closed their lands to free range goat grazing during the course of the year by free ballot under the terms of the Goats (Exclusion) Law, Cap. 99. Some 539 miles (i.e. 48.7%) of the forest boundary now fall within areas prescribed under the Goats Law. Further details concerning forest grazing investigations are given in Appendix 9.

35. The number of illicit grazing cases dealt with during the course of the year showed an increase on those of the previous year as follows :—

Incidence of illicit grazing (cases dealt with).

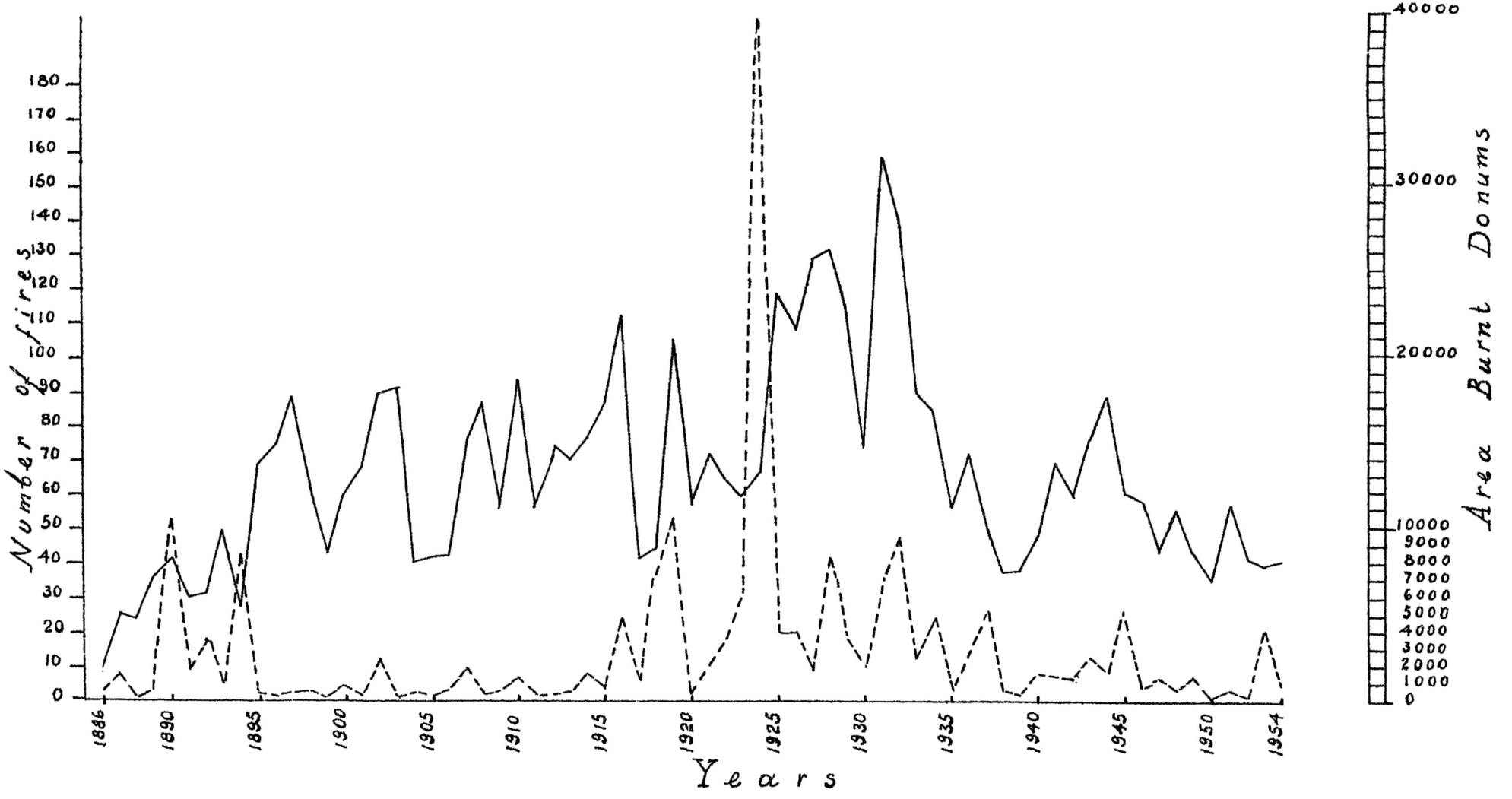
Year	*Main Forests*	*Minor Forests*	*Total*
1953	1,292	151	1,443
1954	1,654	264	1,918

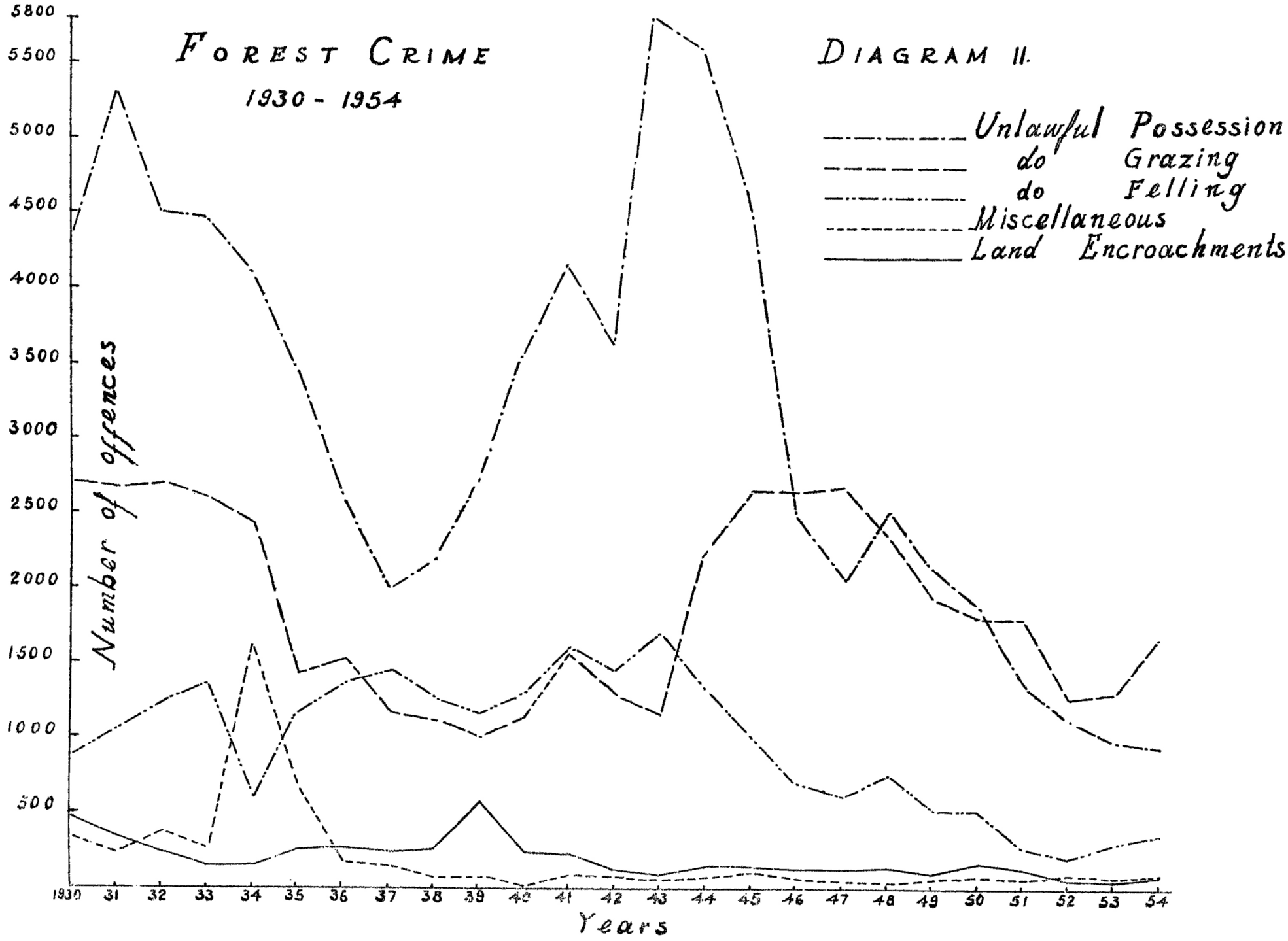
These figures bring the total illicit grazing to 50 per cent of all forms of forest crime detected during the course of the year.

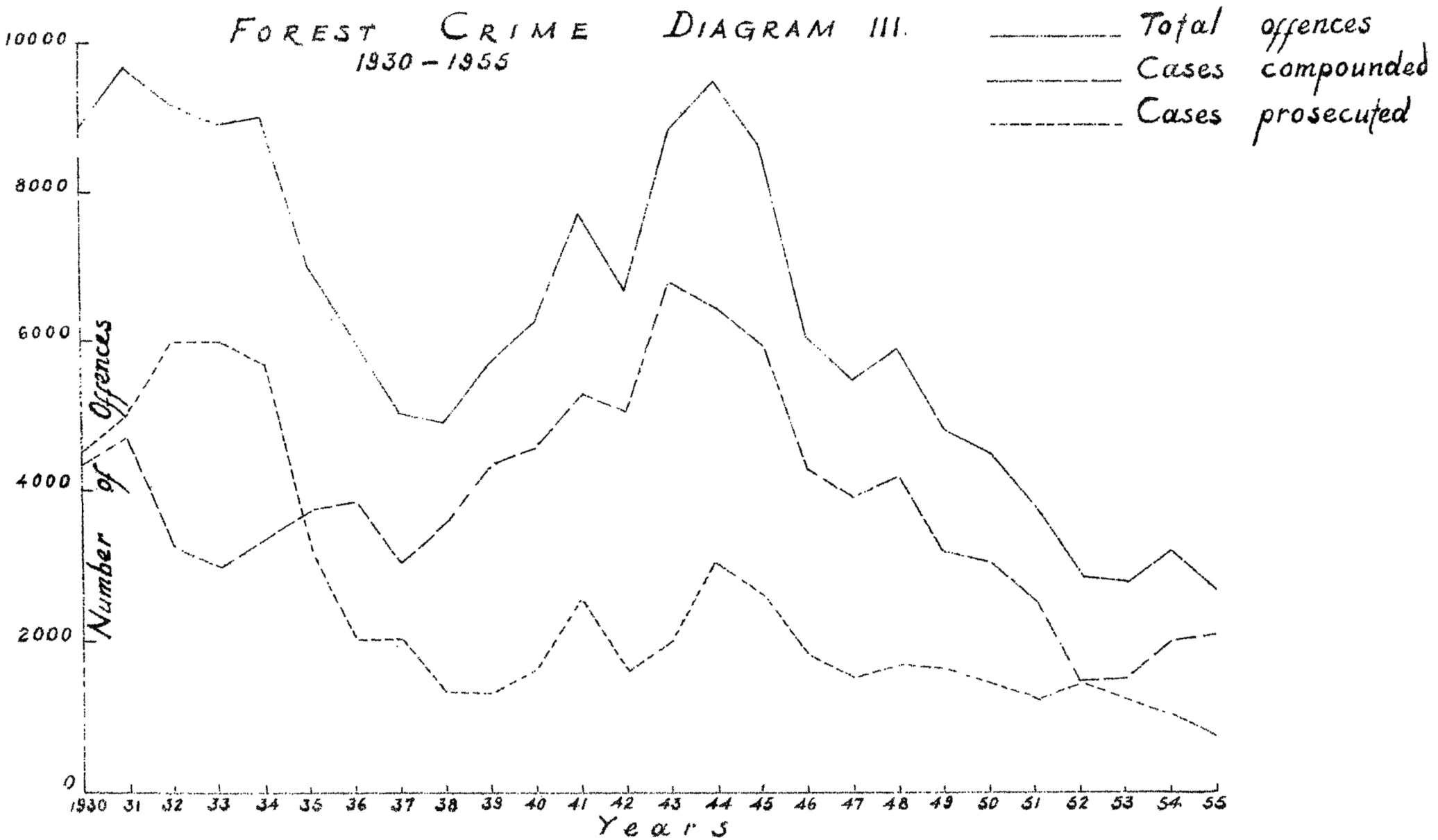
FOREST FIRES
1886 - 1954

DIAGRAM N° 1

——— Number of fires
- - - - - - - - Area burnt




FOREST CRIME
1930 - 1954
DIAGRAM II.
Unlawful Possession
do Grazing
do Felling
Miscellaneous
Land Encroachments
Number of offences
5800
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
1930 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54
Years


FOREST CRIME DIAGRAM III.
1930 – 1955
Total offences
Cases compounded
Cases prosecuted
Number of Offences
10000
8000
6000
4000
2000
0
1930 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55
Years

36. *Forest Crime.*—The total number of forest offences during the year was 3,826 (involving 4,344 persons) compared with 3,134 in the previous year. These figures represent a 22 per cent increase on the previous year's totals. Out of these total forest offences, 3,144 cases concern the Main Forests and 682 the Minor Forests, representing an incidence of 5.9 and 8.0 cases per square mile respectively.

37. After illicit grazing the chief form of crime detected in the forests was illicit cutting and possession of forest produce amounting to a total of 1,525 cases for all forests.

38. Of the total offences 36 per cent (1,383 cases) were tried before the Courts. The remaining cases were compounded. Diagrams 2 and 3 illustrate the course of forest crime during the period 1930–1954 in the Main and Minor Forests. A detailed analysis of forest crime in 1954 is given in Appendix 5. The reasons for the increase in crime this year are not easy to account for. In certain areas, flocks took illicit refuge in the foothill forests during the very prolonged autumn rains, in other grazing offences may have been encouraged by the more lenient punishments meted out by the courts in recent months.

(3) Private Forests.

39. The Forest Law enables private forest estates to be placed by their owners under the protection and management of the Forest Department. During the course of the year 16 private forests or plantations with a total area of 7.25 square miles were under the care of the Department.

40. Tree felling on private lands is also controlled by the Forest Service under the provisions of the Defence (Control of Tree Felling) Order 1943, a war-time Emergency Order which has been continued up to the present time. Throughout the course of the year 1,746 permits for the felling of 73,339 privately owned trees of different species were issued after examination on spot by members of the forest staff.

VI.—FOREST MANAGEMENT.

(1) Working Plans.

41. All important and productive areas of the Main State Forests are managed under working plans. The remaining forests—about 10 per cent by area—are all of low production value and will require only simple plans. Topographical maps on the 1 : 10,000 scale divided into compartments are now being prepared for these forests as a first step towards the preparation of detailed management plans.

42. All field and computation work has also been completed for the revision of the Ayia Felling Series (Paphos Forest) working plan.

43. Simple working plans on standard forms have also been prepared and issued for 42 Village Fuel Areas. Each plan is written in English and in Greek or Turkish, the former for the use of the District Commissioner concerned and the latter for the guidance of the village commission responsible, under the Commissioner's supervision, for the management and protection of its own Fuel Area.

44. The efforts of the Forest Management Division were again mainly concentrated on investigational work as a prelude to the revision and modernisation of existing working plans. Dr. F. C. Hummel, who had been seconded from the Forestry Commission to advise on management problems, completed his investigations and issued a report containing recommendations covering almost the whole field of forest management in Cyprus. After his departure in March the staff of the Forest Management Division concentrated on testing out certain

of his recommendations in the field and in following up new lines of investigation. The more important of these are briefly described in the following sub-sections :—

(*a*) *Stock mapping and sampling :*

The new classification of crop types in the forest stock maps, worked out in the previous year using air photos, has now been modified to include four categories of density for each crop type. Density is based on the estimated precentage of ground covered by the forest canopy when the photos are examined stereoscopically.

A new method of sampling the growing stock was also tested out in the Ayia Felling Series (18.5 square miles), and checked against results obtained by the systematic line circular plot method previously used. The new method involved the one hundred per cent enumeration of a number of selected representative compartments comprising 11.5 per cent of the total area of the felling series. In the end comparison of the total growing stock estimates obtained by both methods of sampling showed no significant difference : the sample compartment method, however, took only 20 per cent of the man-hours required by the former method and will therefore be adopted in future on grounds of economy.

(*b*) *Increment and Yield Regulation :*

Studies of pine increment continued and have contributed valuable new information. Work to-date suggests that the previous provisional formula* for computive the mean annual increment of the pine forests probably gave a 10 per cent under estimate. The investigations also supported the impression that increment rates in the pine forest hitherto classified as " currently productive areas " are generally depressed as a result of over-stocking. In other words the Cyprus pine forests—open though they may seem by comparison with conifer forest of the temperate regions—are yet still too dense in relation to the limitations on growth imposed by edaphic and climatic factors in a Mediterranean environment. This indicates a need for less conservative marking in the older stands with a probable progressive curtailment of the rotation and stresses particularly the need for a more intensive and extensive application of thinnings and cleanings in the younger age-groups.

The increment from lower density pine forests, excluded hitherto from Working Plan Yield calculations has been estimated by Dr. Hummel at about 10 per cent of the total pine yields previously assessed at 921,000 cubic feet R.U.B. It seems, therefore, that when the present investigations have been finally worked out an increase in the assessment of the permissible pine yields amounting to around 20 per cent may be expected, bringing the future total to about 1,105,000 cubic feet R.U.B.

The Working Plans Officer had made good progress during the year on making an interim revision of the yields of all forests under working plans using the existing compartment registers and new felling plans covering all forests will be completed early in 1955. A forest road construction programme keying into the felling plans is also nearing completion : the road plan is designed to extend the existing forest road system so that all important forest areas are made accessible for log extraction.

The new interim felling plans, which will be progressively superceded as the main working plans are gradually revised, also include for the first time definite prescriptions for controlling yields in the riverine forests of plane and alder and for working the coppice understorey.

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* The average mean annual increment was computed from the formula :—

$$\text{Area of Exploitable forest (donums)} \times 3 \text{ cubic feet R.U.B.} \times \frac{\text{actual density}}{15}.$$

Density under the existing working plans is found by dividing stem basal area at B.H. by the land area and is expressed in square feet. Density 15 square feet per donum is the average density of the total area of exploitable pine forest.

(*c*) *Mensuration Studies :*

The Standard Volume Tables for Aleppo pine (*P. brutia*) have been re-arranged and brought out in a new form called " Multiple Standard Volume Tables " to facilitate computation of volumes when large numbers of trees are involved.

New provisional volume tables have also been prepared for the Troodos pine (*P. nigra var. caramanica*) and for the Cyprus Black Poplar. Data is being gathered for volume tables for the main species of Eucalyptus grown in plantations.

45. The total number of permanent sample plots for all species has been increased to 164 with an aggregate area of 169 donums. Sample plot investigations are currently under review and it is probable that the present total will be radically cut down when the new programme for mensurational research has been finalized.

(2) Silvicultural Systems.

46. All pine forests are managed under a local form of the Group Selection System, whereby selective fellings in mature stands are carried out aiming at the release of groups of advance regeneration or the encouragement of natural regeneration by a cautious opening of the canopy. Cleanings and thinnings are made in sampling, pole and middle-aged crops, though this important aspect of silvicultural treatment has so far not received the attention it deserves. An expanding market for posts, poles and small round-wood is now making cleanings and thinnings in most forest areas an economic proposition and the steadily increasing proportion of college-trained beat officers allows of a more systematic extension of cultural operations of this kind. " Cleaning " plans have in fact been drawn up for every forest beat which the beat officer will be obliged to implement in the forests of his own beat. Thinnings (stems of 18 ins. G.B.H. and over) are usually marked simultaneously with the mature stands under the felling plans.

47. The natural hardwood forests in the mountains are plane and alder mixed with pine and occupy narrow belts along streams and rivers. Both plane and alder regenerate freely in the absence of goat-grazing so that clear felling can be practised safely. The other hardwood species of importance is *Quercus alnifolia* which is found on slopes and screes as pure forest or as a pine understorey. This species coppices well and is also clear felled.

48. In the hardwood plantations of the plains—mainly eucalyptus and acacia—clear felling on short rotations of 7 to 12 years is regularly practised.

VII.—FOREST UTILIZATION.

(1) Out-turn from the Forests.

49. Details of the out-turn of timber and firewood from the State Forests are given in Appendix 6. No figures are available for the out-turn from private woodlands and plantations but the yield of timber and roundwood is at present negligible. Yields of firewood from private forests, scrub covered crown land and from orchards probably contribute a further volume varying from 30 to 50 per cent of the out-turn from the Forests.

50. Yields of timber from the Main State Forests in 1954 amounted to 1,008,000 cubic feet. (r) U.B. (See Cols. 1 to 3 of Appendix 6). Softwood yields (mainly *Pinus brutia* and *Pinus nigra*) contributed 927,000 cubic feet or 92% of this total and represented a cut exceeding by 0.6%, the permissible yield calculated for 1953. As discussed elsewhere (para. 44) a recalculation of the permissible yield in the light of Dr. Hummel's recommendations, was in progress during the year so that in effect the volume is likely to be well within the revised figure. The remainder of the yield (81,000 cub. ft.) was composed of hardwood, mainly plane and alder from riverine forests and of eucalyptus from plantations. The reported timber yields from Minor Forests amounted to only 1,200 cubic feet.

51. The greater part of the yields were sold standing, the remainder being worked for departmental requirements. Sale prices for standing trees varied from 1.4 to 3.8 shillings per cubic foot, the bulk of the softwood fetching from 1.4 to 2.2 shillings. The prices for local sawn timber, retailing at between 7 to 10 shillings cub. ft. (sawn), were satisfactory and there is every indication that the demand will remain steady.

(2) Imports, Exports and Consumption.

52. Details of imports and exports of forest products are given in Appendix 8. Cyprus is obliged to import two-thirds of her needs, and exports, under licence are not normally allowed. A proportion of both imported and local timber is exported as fruit boxes and packing cases. These cases being manufactured goods connected with a specific export business are not included in the data given.

53. In table 6 net imports and local production are combined to show total island consumption.

54. The total population at the end of 1954 was estimated to be 509,000 so that the *per caput* consumption amounted to :

	Cubic feet round volume.	
	1953	*1954*
Timber	6.85	7.98
Fuel	0.91	1.72
Pulp products	0.69	0.76
Other products ..	0.38	0.36
Total consumption	8.83	10.82

(3) Minor Products.

55. Sales of Minor Forest produce (see Appendix 7) amounted to £4,308 the major items being sales of seeds and fruits (£1,743) and Nursery stock (£2,073).

56. The policy of issuing olive and carob stocks from the Forest was continued. A total of 27,000 stocks was issued bringing the total issued furing the last 18 years up to 906,000 (wild olive stocks 889,000 ; wild carob 17,000).

(4) Extraction, Sawmills, Forest Industries.

57. The greater part of the forest yields are sold standing by auction or tender to local timber contractors who are responsible for felling, extraction, conversion and marketing the timber. In past years the practice has been to sell the trees in a number of small coupes at different times through the year as soon as the trees had been marked. This system has lead to growing administrative inconvenience to the Forest Staff as well as creating conditions for cut-throat competition between a host of small contractors each trying to under-bid the other in selling off his timber. It was thought desirable from many angles to encourage if possible the emergence of a fewer number of large contractors with greater capital resouces and with this end in view almost the whole of the main yields were marked and offered for sale simultaneously in April. The coupes were also fewer in number and more compact and contractors were given the alternative of tendering for several coupes together. In the event eleven out of a total of 19 coupes went to one contractor, at a price which proved to be considerably higher than the sum of the highest tenders offered for the same eleven coupes individually. All eleven coupes were in the Paphos Division and the advantages of concentration became more and more obvious during the course of the year and it is to be hoped that this innovation will herald a new major step forward in forest extraction in Cyprus.

58. Logging methods continue to be simple with labour felling, extracting and loading. Efforts to increase efficiency by mechanical means met with no great interest although a short aerial ropeway was operated by the Department in one instance for a contractor, and D.2 caterpillar tractors were used on a few occasions for hauling logs. One bar to increased mechanization is the capital outlay needed to purchase the equipment and it is hoped that with the new system of larger coupes extraction will pass into the hands of contractors commanding the capital resources necessary for the introduction of mechanized extraction.

TABLE 6.

CONSUMPTION OF FOREST PRODUCTS, 1954.

(Expressed in thousands of cubic feet round volume underbark).

Kinds	Sawn timber	Round Timber	Fire-wood charcoal	Plywoods Veneers	Matches	Paper Pulp Products	Semi-manu-factured goods	Total
Net imports (*a*) ..	2,892	164	—	102	43	390	39	3,630
Local production (*b*)	879	130	877	—	—	—	—	1,886
Total consumption	3,771	294	877	102	43	390	39	5,516
	4,065							
Local production as percentage of total	23.3	44.2	100	—	—	—	—	34.2
	24.8							
Percentage of Grand Total	68.4	5.3	15.9	1.9	0.8	7.0	0.7	100

(*a*) Re-exports have been deducted.

(*b*) Excludes production of timber and fire-wood from non-forests.

59. Many of the smaller contractors found employment by sub-contracting to the main contractors for logging individual sections of the main sales.

60. Thinnings in pole crops continued to be handled departmentally as were special orders for other Government departments.

61. Labour shortages in certain Forest areas caused some concern but it is to be hoped that the attraction of constant employment, allied with a gradual increase in mechanization, will result in sufficient competent men being attracted to the work.

62. There are five breakdown sawmills which between them convert the greater part of the main yields. In addition to these an increasing number of small bandmills handle the domestic needs of the villages and the box shook industry. A revised census of these mills is in progress but they probably exceed 200.

63. The new Forest Department sawmill built as a low cost demonstration mill to encourage proper sawmill design, and operation came into production in September, 1954. At present the installation consists of breakdown and resaw bandmills, a trimmer, and a circular sawbench to deal with offcuts. Electric power is used throughout. Auxiliary equipment consists of a mono-rail hoist for log delivery to the breakdown saw, roller conveyors for internal movement of baulks and sawn timber and a dipping tank for treatment to control sapstain. The saw doctor's shop is complete and contains up-to-date equipment capable of dealing with both band and circular saws. Seasoning foundations are being built, the aim being to rent them at a low charge to persons hiring the mill in order to encourage proper air seasoning. Further development in 1955 will include plant for the conversion of offcuts into box shooks, a small, high temperature seasoning kiln and a pole-dressing machine.

64. The Government sawmill at Tsakistra in the Paphos forest continued to give excellent service despite its age. Major reconditioning of the main power unit (Diesel) was undertaken. The estimated intake was 145,000 cubic feet and the out-turn 110,000 giving a conversion of 76%. Operating costs amounted to £1,246 and revenue from private hire to £1,530. The mill was in continuous operation on working days (apart from about 10 days spent in the overhaul) from April until the end of the year.

65. There are no plywood, veneer or wood pulp processing mills in the island. Seasoning of freshly sawn timber by the producer is almost unknown and air seasoning techniques are not well ordered. This is inevitable on a sellers market but it is to be hoped that once kiln seasoned local timber is available, an increased price will be offered for seasoned stock.

66. There is only one preservation plant—a hot and cold creosote steeping tank operated by the Forest Department.

67. A survey of the Island's box shook making industry was in progress at the end of the year. Preliminary indications are that the expansion of this industry is both desirable and possible and provided that an improved quality of shooks, free from sapstain, can be produced, a much greater use will be made of the local product by the fruit export trade.

(5) Oil Conversion Scheme.

68. The regulations requiring kiln burners and other types of commercial heaters to burn oil instead of fuel were not enforced during the year, the only exception being the lime kilns. Whilst the price of oil fuels remained relatively steady, supplies of wood were adequate to meet demands.

VIII.—FOREST ENGINEERING.

(1) Forest Roads and Buildings.

69. The forest road system, maintained by the Department, totalled 436 miles at the beginning of the year. This total was increased by 14.5 miles during the year as follows :—

	Miles.
Graded extraction roads built at the expense of the purchasers of timber coupes	12.0
Commissioners road between Lythrodonta and Lefkara in Aetomoutti Forest taken over	3.0
Old extraction road in Limassol Forest reconstituted	3.0
Total	18.0
Less : Messapotamos–Saittas Road found to be a private road	3.5
Net total	14.5

A further length of 4 miles of road in the Troodos Forest was constructed by the Forest Department at the cost of the Cyprus Chrome Mining Co. from the company's ore-crushing plant at Ayios Nikolaos towards the chrome mine on Troodos. This road, though serving forest interests as well, will be maintained for the time being by the company.

70. All forest roads and bridges were maintained in good order during the year at a cost of £31.4 per mile. Six wooden deck bridges were replaced by reinforced concrete beam and slab bridges at a cost of £2,003 and work was begun on the replacement of the timber decking of the large trestle bridge on the road between Pedhoulas and Kykko. A further sum of £676 was spent for the maintenance of Forest paths.

71. The Forest Department is responsible for the construction and maintenance of all Forest buildings. At the close of the year these totalled 170 including 116 dwelling houses. £2,709 was spent on maintenance and improvement of these buildings. A survey of Forest buildings was in progress at the end of 1954 with a view to preparing a plan for future expansion and better maintenance of the existing structures.

72. The Forest Rest House at Stavros was used by a considerable number of visitors and 446 guest nights were recorded. The canteen in this station, where guests or passing travellers may obtain meals, was also well patronized.

(2) Forest Telephone System.

73. The Forest Department operates its own telephone service which links the Forest District Headquarters with all Forest Stations, Fire look-outs and some of the main " Forest " villages.

74. As has become customary full co-operation with Messrs. Cable & Wireless was maintained. At a number of points the Forest telephone system links in with the Cable & Wireless system to the betterment of telecommunications for the island.

75. By the end of the year the forest telephone system consisted of 345 miles of route (totalling 1,003 miles of wire) and 11 exchanges serving 195 instruments. The total capital value of the system including stores is reckoned to be £47,000. During the year 145,281 calls were recorded of which 118,596 were free departmental calls. Some 461 faults in the system were located and rectified. The

Forest Telephone Section keeps detailed cost-accounting records and from these it appears that the cost of operation and maintenance, including personal emoluments, transport and other charges amounted to £10,120. Nett revenue earned on private calls and other services amounted to £1,450 to which may be added a further £10,450 being the nominal value of free departmental calls. It would thus appear that the telephone system operated at a theoretical profit of £1,780.

76. In order to provide further trunk routes a very high frequency wireless link system supplied by PYE Company Ltd. of Cambridge was being installed for test purposes at the end of the year. Under this system a master (duplex) transmitter and receiver, linked to the Headquarters forest telephone exchange in Nicosia, will be able to communicate with similar sets, also linked to their local switchboards, at Stavros, Platania and Halevga, the three mountain Forest Divisional Headquarters. In addition a portable (simplex) transmitter and receiver calling into the Divisional sets will be used for emergencies and fire-fighting operations.

(3) Machinery and Plant.

77. The Department's fleet of vehicles (10 trucks ; 1 bus ; 10 cars and 24 motor-cycles) was maintained in the Departmental Workshops. In addition, major repairs of other machinery (2 Angledozers D6, 2 Tractors D2, 3 Compressors, and ancillary equipment such as electric generators and pumping equipment) was carried out in these workshops.

78. The earth-moving machinery was operated again on a self-balancing cost basis and all machinery was kept fully employed. Costs of operation amounted to £6,255 and receipts totalled £6,384.

IX.—AFFORESTATION.

(1) Mountain Forests.

79. The afforestation of bare mountain forests under the very good development plan continued and a total area of 6,035 donums was treated. Most of the work was carried out by means of direct sowings either in strips, with or without contour paths (gradoni), or by patches. Some 4,358 donums were sown in this way while 1,005 donums were prepared for sowing in the coming year. Planting techniques were used on only 119 donums of land limited mainly to particular problem areas in Troodos and Paphos Divisions. Some small experimental plantations were established in certain parts of Paphos Division using *Eucalyptus* species.

80. The bulk of the re-afforestation work, as in the previous year, continued to be concentrated in the Northern Range Division where Kantara Forest is being rapidly re-afforested. Of the total area treated some 3,843 donums were located in this forest. As a result of recent experience in this forest, a technique of patch cultivation has been worked out which appears to be very well adapted to the conditions of the country and is the cheapest form of re-afforestation yet achieved for the conditions to be dealt with. Patches 15 ft. long by 8 feet wide are cleared in staggered lines along the hillsides. These patches are cultivated with pick-axes to a depth of eight or nine inches and are then sown with a mixture of *Pinus brutia* and *Cupressus sempervirens* seed. The cost of the total operation works out at about £2 per donum of hillside treated. In most instances the late sowings in January have been found to give the best results. Early sowings also result in good initial germination and establishment but also allow for a heavy establishment of weeds which often cause high mortalities among the forest tree seedlings during the hot summer months.

81. Many of the older re-afforested areas have been thinned out during the course of the year to a desirable spacing. This operation can be carried out for a cost of two or three shillings per donum of hillside if the seedlings are not more

than two feet in height. Thinning is most effectively carried out by pruning scissors. The spacing aimed at varies between 4 and 5 feet.

82. Although the summer drought period was relatively short high temperature caused casualties in some of the older re-afforested areas in the Northern Range. The casualties were noticeably heavier in unthinned areas although they were quite serious in some of the thinned areas as well. A rough assessment has shown the following percentage casualties :—

In unthinned areas	13%.
In thinned areas	4%.

(2) Lowland Forests.

83. Afforestation continued at Ayia Irini in the Northern Range and in the Plains Division. Operations at Ayia Irini were similar to those of the previous year, i.e. stabilization of sand drifts by thatching and planting with *Acacia cyanophylla*. Small repair sowings and plantings were carried out in existing plantations of *Pinus pinea* and *Acacia cyanophylla*. Investigational plantings to discover the best method of stabilizing the artificially created littoral dune continued. Work at Athalassa consisted of the conversion of 112 donums of *Acacia cyanophylla* plantation to conditions suitable for the planting of fast growing hardwoods. Planting operations during the course of the year were mainly limited to experimental planting with a number of recently introduced *Eucalyptus* species.

84. Permission was obtained to afforest certain areas within the perimeter of Nicosia Airport (see paragraph 17). The total area available is 506 donums and will be planted mainly to Eucalyptus as a charge against Development funds. Work on the ploughing and preparation of the land for planting began in December.

85. A small amount of experimental planting with several *Casuarina* species was carried out in Limassol Marsh.

(3) Communal Forests.

86. There are now 97 Village Fuel Areas in existence, with a total area of 8.03 square miles. During the course of the year 42 were handed over to the management of Village Authorities under approved working plans. A sum of £2,336 was spent on the maintenance and extension of certain of the fuel areas where afforestation remained incomplete.

(4) Forest Nurseries.

87. During the course of the year the department operated 4 nurseries in the plains and 2 in the mountains as in the previous year. Half way through the year the two small nurseries in the plains at Kornos and Fresh Water Lake were closed down and production was concentrated on Athalassa and Morphou nurseries.

88. Production figures for nursery stock were as follows :

Stock carried over from previous year ..	431,571
New seedlings raised during the year ..	353,069
Total	784,640
Issues during the year for departmental use	57,943
Issued to other departments	80,275
Sold to the public	171,913
Culled or written off	223,108
Stock remaining at the end of the year ..	251,401

Revenue from the sale of nursery stock was £1,814 while expenditure on nursery work was £3,317.

89. Work on the new Morphou Nursery continued. During the course of the year the nursery was completely equipped with an overhead irrigation system and should be in full operation in the spring of the coming year.

90. The large number of seedlings culled or written off in the course of the year is accounted for by heavy frost damage in Athalassa and Morphou Nurseries early in the year, an unexpected drop in demand for eucalyptus seedlings during the year's planting season and the writing off of a number of unsaleable plants which had been held over for several consecutive years in the two nurseries which were closed down.

(5) Forest Seed Collection.

91. A total quantity of 3.97 tons of seed was collected in the course of the year, mainly *Pinus brutia* and *Acacia cyanophylla*. Of this 2.37 tons was exported and the remainder used locally in afforestation operations. The cost of seed collection totalled £1,020 while seed to the value of £2,635 was disposed of to customers abroad or for local use.

X.—FOREST EDUCATION.

(1) The Forestry College.

92. The College completed its third academic year and second full two-year course at the end of July. Of the 38 students in residence, all 19 Seniors obtained their Final Certificates and all 19 Juniors their Preliminary Certificates. Six of the Seniors gained Honours with more than 80% of the marks obtainable. The total complement of students comprised 24 Forest Guards and two candidates for University Scholarships from the Cyprus Forest Department and 12 Foreign Students (4 from Iraq, 4 from Jordan, 2 from Libya and 2 from the British Caribbean Territories).

93. The new academic year opened in October with a registration of 36 students, 25 of them from Cyprus and 11 from abroad (4 from Iraq, 3 from Libya, 1 from Syria, 1 from British Somaliland and 2 from British Honduras).

94. At Easter a special short course was given to 30 Cypriot Beat Officers, not sufficiently qualified to take the full two-year course. They studied timber measurement, map-reading, marking of thinnings, etc., for two weeks, under the guidance of the College Staff, all instruction being given in their own tongue.

95. Full control of the College was handed over to the Assistant Principal, Mr. George Seraphim, B.Sc., on 1st October, Mr. Streets having become Director of the new Research and Education Division of the Department as from 1st September.

96. Extracts from the Principal's Report, giving further details of College activities, may be found in Appendix 16.

(2) Other Training Courses.

97. Mr. O. Haji Nicolaou returned to Cyprus from the U.K. in May, having completed a six-months' training course in Sawmill Management, Saw Doctoring and Kiln Seasoning, and was posted to the Engineering Division as Forest Ranger in charge of the Utilization Section.

98. Two new Forestry Scholars, Messrs. Euripides Michaelides and Leontios Leontiades, left the Forestry College for the U.K. in September to start their pre-university training at the Dundee Technical College.

99. Mr. Halouk Hilmi, Forestry cadet, successfully completed his first year of University training at Aberdeen, and Mr. Fuad Ahmet another Forestry cadet gained admission to Aberdeen University on passing the Scottish Universities' Preliminary Examinations at Dundee.

(3) PUBLICATIONS.

100. The following publications have been issued during the year :— *

Technical Pamphlets.

No. 13. Multiple Standard Volume Table for *Pinus brutia.*
By A. POLYCARPOU, B.Sc., A.C.F.

No. 14. Standard Volume Tables for *Populus Nigra* L., " Kavaki " in Cyprus.
By A. POLYCARPOU, B.Sc., A.C.F.

No. 15. Analysis of Increment Cores (Extract from Dr. F. C. Hummel's Report " Proposals on some aspects of Forest Management in Cyprus ").
By A. POLYCARPOU, B.Sc., A.C.F.

No. 16. Provisional Volume Table for Troodos Pine in Cyprus. (*P. nigra var. caramanica*).
By A. POLYCARPOU, B.Sc., A.C.F.

No. 17. Classification of forest into crop types and the preparation and interpretation of stock maps in Cyprus.
By A. POLYCARPOU, B.Sc., A.C.F.

Reports, etc.

The Cyprus Eucalyptus, 1953. By ESTHER F. CHAPMAN.

Prospectus and Syllabus (Revised), Cyprus Forestry College.
By R. J. STREETS, M.A., S.A.C.F.

Pasture and Forestry integration studies, carried out by the Cyprus Forest Department. : An outline of work now in progress.
By D. F. DAVIDSON, B.Sc., S.A.C.F.

Joint Sub-Commission on Mediterranean Forestry Problems, 4th Session, Athens, 1st – 5th June, 1954. Ecological maps.
By G. W. CHAPMAN, M.A., *Conservator of Forests.*

Joint Sub-Commission on Mediterranean Forestry Problems.
By G. W. CHAPMAN, M.A., *Conservator of Forests.*

Land Use problems in the Mediterranean Basin.
By G. W. CHAPMAN, M.A., *Conservator of Forests.*

Cyprus Poplars, 1953. By ESTHER F. CHAPMAN.

A Statement prepared for the Near East Poplar Conference, Damascus, April, 1954. By A. POLYCARPOU, B.Sc., A.C.F.

Proposals on some aspects of Forest Management in Cyprus.
By F. C. HUMMEL, M.A., Ph.D. *Mensuration Officer, British Forestry Commission.*

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* The " Cyprus Eucalyptus, 1953 " is obtainable from the Cyprus Government Printing Office, Nicosia, at 250 mils; the rest may be obtained on application to the Conservator of Forests, Nicosia.

(4) Forest Extension.

101. Mr. John Georghiades, Forest Officer, was posted as Forest Extension Officer to the new Research and Education Division on 1st November with responsibility for all publicity work.

102. The second annual campaign for the encouragement of Poplar planting was organized in February, and the customary " Save our Forests " week was celebrated in June. In both campaigns Press and Radio gave generous support, the Cyprus Broadcasting Service being especially helpful during the summer with its daily news broadcasts on the fire danger. Articles and talks on forest topics are now a regular feature of the Cyprus newspapers and radio stations.

103. The Cyprus Forestry Association organized a series of excursions for its members during the year, and published summer and winter issues of its Journal, " Forest Treasures ". The annual Tree-Planting Festival of Cyprus was postponed to January, 1955, to coincide with the Silver Jubilee of the Association.

(5) Library.

104. The Departmental Library has been reorganised on the basis of the Oxford Decimal System by the Librarian, under the general direction of the Silviculturist. All periodicals are now classified and circulated to all officers who have applied for either general or particular information. The Library has been attached to the new Research and Education Division.

XI.—FOREST RESEARCH.

105. As the field of existing experiments was already too wide for the new Research and Education Division of the Department to cover alone, other officers of the Department, specialising in certain directions, were asked to continue for the time being, in collaboration with the Research Staff. The Divisional Officers were also asked to co-operate in providing facilities for the lay-out and assessment of experiments in the field. The general plan of the work done has been summarised below. Details are to be found in Appendix 17.

(1) *Silviculture.*—The Silviculturist has evaluated and taken over most of the existing experiments, and has introduced for them a system of standardized experimental record. He has also initiated two main investigations into the factors influencing natural and artificial regeneration in the mountain forests and into the selection of Eucalyptus species for afforestation in the lowlands.

(2) *Entomology.*—The Forest Entomologist has made a general survey of the Forest insect population. He has also made particular investigations into the seasonal activities of bark-beetles and wood-borers in the pine-forests, the effects of fire damage on the distribution of bark-beetles and wood-borers in coniferous crops, the incidence of insects on the crowns of *Pinus nigra* suffering from " die-back ", the distribution of Pine-shoot beetles and the Pine-shoot moth in natural regeneration groups of *Pinus nigra* and *Pinus brutia*, the distribution and activities of the Cypress Borer, the insects of the Cyprus Cedar with special reference to the Cone Moth and Seed Fly, and insects attacking the Eucalyptus species planted in the lowlands. During June he gave a week's course in Forest Entomology to both the Senior and Junior Classes of the Forestry College at Prodhromos.

(3) *Mensuration and Management.*—Dr. F. C. Hummel, Mensuration Officer of the British Forestry Commission, completed his investigations on management and yield problems in March, and produced a report entitled " Proposals on some aspects of Forest Management in Cyprus ", which is to be published in 1955. Several sections of the report were written in collaboration with the Working Plans Officer who has continued various investigations initiated by Dr. Hummel, into such matters as the bark percentage of *Pinus brutia*, sample plot procedure, the mapping of crop types and densities from aerial photographs, and the economics of artificial versus natural regeneration in the mountain forests.

(4) *Genetics.*—Last year's experiments on the grafting of Pines were continued. The hybrid seed obtained from a cross-pollination of *Pinus canariensis* and *Pinus halepensis* has been successfully germinated, but it is too early yet to be sure whether any heterotic hybrids have been obtained. The provenance trials of *Pinus brutia* were maintained.

(5) *Forest Botany and Ecology.*—Mrs. Chapman's work on the Eucalyptus culminated in the issue of "The Eucalyptus of Cyprus, 1953" a revised version of her preliminary report and this was presented at the F.A.O. Eucalyptus Study Group in Morocco in October. By the end of the year her phytogeographical survey of the forest vegetation had covered more than two-thirds of the total area of the Main Sate Forests.

(6) *Grazing.*—Experiments were continued on the suitability of *Acacia cyanophylla* as a fodder plant, on the possibilities of converting Juniper scrub-forest in the Carpass peninsula to perennial grass, on the feeding habits of sheep in lowland Pine forest at Dhiorios, and on the recovery of vegetation close to grazing in various lowland forests, with and without the application of fertilisers to the soil.

(7) *Utilization.*—Small-scale experiments at the Morphou Sawmill on the control of sap-stain in coniferous timber were initiated.

(8) *Land Reclamation.*—The Forestry College continued last year's work at Asprokremmos (about 5,000 ft. above sea-level) on heavily-eroded slopes in the gabbro formations of Troodos Forest, with particular attention to the best specific uses of branches and pine-needles in the thatching technique.

106. The combined effect of thatching, gully-plugging and torrent control has reduced flood run-off below to less than half its estimated original volume, as observed after heavy rains.

XII.—GAME PRESERVATION.

(1) Moufflon.

107. The mufflon in Paphos Forest Game Reserve continued to increase in numbers and complaints were received from Milikouri village that these animals were causing damage to their vineyards and rose gardens in the summer and autumn of the year. Steps were taken to post two guards temporarily in the area to drive the offending animals back into the forest.

(2) Pheasants.

108. The stock of breeding pheasants in Athalassa produced a number of young birds which were released in Athalassa Game Reserve and in the Kouklia Game Reserve near Paphos. Reports from both areas indicate that this bird is not well adapted to the Cyprus climate. Casualties among the released birds have been very heavy and they are rapidly decreasing in number. As in the previous year some of the released birds produced young ones, very few of which managed to survive the summer.

(3) Trout.

109. The Brown Trout which were introduced in 1950 to certain high level streams in the Troodos and Paphos Forests produced a number of young fish during the course of the year. The indications are that this fish is establishing itself very much more successfully than had been anticipated. Individual fish of 18 inches or more in length are now being reported from certain areas. Efforts are to be made to transfer some of the young fish to other rivers.

(4) Shooting in General.

110. The year under review proved a very good breeding year for partridge (*Alectora graeca cypriotes*) (Hart.) By the end of the year coveys were greatly reduced again although shooting was only permitted twice a week from November 25th. If two or three bad breeding seasons occur in succession, with the present intensity of shooting, the partridge population will again be reduced to a seriously low level. The same considerations apply to the other game bird of the island, the francolin, whose distribution is limited to two small areas only.

111. During the summer controlled pigeon shooting was again allowed in the Paphos Forest Game Reserve for a short period. Pressure of work, however, caused a limitation of the period as Forest staff could not be spared for very long to supervise the shooting which has become very popular.

XIII.—FOREST ADMINISTRATION.

(1) Organization.

112. The Main State Forests are grouped into four territorial divisions, namely :—

Paphos Division (H.Q. Stavros Psokas) comprising the Paphos and Akamas group of forests (258.613 square miles).

Troodos Division (H.Q. Platania) comprising the Troodos, Adelphi, Makhera, Stavrovouni, Aetomoutti and Limassol Forests and the lowland plantations near Limassol town and salt lake (150.833 square miles).

Northern Range Division (H.Q. Halevga) comprising the Dhiorios–Ayia Irini group and all the main forests situated along the northern range mountains and the Karpas peninsula (117.753 square miles).

Plains Division (H.Q. Nicosia) responsible for the lowland main forest plantations at Athalassa, Salamis and the Fresh Water Lake, Famagusta, and the village fuel area development scheme (5.570 sq. miles of plantation and 8.03 square miles of communal forest). The staff of this division are also responsible for extension and advisory work in private plantations.

In addition to these there are three specialist divisions :—

Forest Research and Education (Temporary H.Q. Prodhromos) comprising three sections—the Research Section, the Forestry College and the Extension Section. This Division came into being on 1st September and incorporates new sections for forest research and forest extension activities in the previous Forest Education Division.

Forest Management and Surveys Division (H.Q. Nicosia) comprising the Forest Survey and the Working Plan Sections.

Forest Engineering Division (H.Q. Nicosia) comprising five sections, namely : Roads & Buildings ; Telecommunications ; Machinery, Vehicles & Plant ; Utilization and Saw Mills and the Central Forest Store.

113. The Forest Department Headquarters is situated at the capital, Nicosia.

114. The minor state forests are administered by the District Commissioners, who employ some 28 forest constables for this protection. One Forest Ranger from the Forest Service is attached on secondment to the Famagusta District administration.

(2) Forest Staff.

115. A statement of the Forest staff is given in Appendix 15 and a summary of the staff is given in Table 7 below.

Table 7.—Forestry Staff on 31st December, 1954.

Permanent Establishment :		
Senior Staff	12	
Subordinate Staff	173	
		185
Temporary Establishment :		
Senior Staff	3	
Subordinate Staff	101	
		104
Total Technical Staff ..		289
Clerical Establishment :		
Principal Clerk	1	
Accounting Officer, 1st Grade	1	
Clerks, 1st Grade	2	
Clerks, 2nd Grade	5	
Clerical Assistant, General Clerical Staff ..	1	
Temporary Clerical Staff	2	
Messengers	2	
		14
Total All Staff		303

116. Mr. J. A. N. Burra, Assistant Conservator, arrived in the Colony on 11th February, 1954, on transfer from Dominica to fill an existing vacancy and was posted to Forest Headquarters in Nicosia.

117. Mr. R. J. Streets, Senior Assistant Conservator, and Principal of the Forestry College at Prodhromos was posted as Director of Research and Education in charge of the new division as from 1st September, Mr. G. Seraphim, Assistant Conservator, was posted to the Forestry College as Assistant Principal in February and took over full responsibility for the College from Mr. Streets in September.

118. Dr. R. N. Chrystal, M.A., lately lecturer in Entomology at the Forestry School in Oxford University was appointed as Forest Entomologist on a twelve-month contract to report on forest insect pests in Cyprus. Dr. Chrystal arrived in the Colony in June. Mr. J. V. Thirgood, B.Sc., was appointed Silviculturist on a two-year contract and took up duty in Cyprus in May. Both these officers were posted to the Research and Education Division.

(3) Forest Labour.

119. The following table summarizes the best available information regarding employment provided by Forestry and Forest Industries. Labour employment amounted to a total of about 485,000 man-days.

TABLE 8.—FOREST EMPLOYMENT.

Employment Category. (1)	No. of Industrial units. (2)	No. of persons employed annually. (3)	Quantities of wood including fuel used. Thousands of cubic feet. (4)	Value of minor products used in £ Sterling. (5)
A.—FORESTRY :				
(i) Management, Silviculture and Protection ..	Main Forests	249(*a*)	1,886	
(ii) Extraction		1,257(*b*)		
B.—INDUSTRIAL :				
(i) Primary :				
Sawmills	5	103	N.A.	N.A.
Essential Oils ..	1	10	N.A.	N.A.
(ii) Secondary	N.A.	4,417(*c*)	N.A.	N.A.

120. Full employment was available for forest communities wholly or partly dependent on the forests for employment. In some forests there were times when the demand for skilled wood-cutters exceeded numbers available and this contributed to further rises in labour rates. The Kambos Forest Workers Trade Union called its members out on strike on two occasions for ten-day strikes arising from disputes with timber contractor employers but satisfactory settlements were found on both occasions.

XIV.—FINANCIAL.

121. Details of Forest expenditure and revenue are given in Appendices 11, 12, 13 and 14. A summary of these is given in the following table :—

TABLE 9.—FINANCIAL SUMMARY.

	1953 £	1954 £
Personal Emoluments	81,056	108,321
Current Expenditure	94,211	98,718
Total	175,267	207,039
Forest Revenue	122,564	128,089
Deficit Balance	52,703	78,950*
Development Expenditure :		
(*a*) Personal Emoluments	3,850	5,409
(*b*) Other Charges	55,682	18,597
Total	59,532	24,006

(*a*) Labourers regularly employed in the Forest Service.
(*b*) Estimated on the basis of 5 cubic feet (*r*) per man-day and 300 working days to the year.
(*c*) Extract from the 1946 Census Report.
N.A. = Not available.
* The increase in the deficit balance is due entirely to the increase in personal emoluments resulting from a revision of salaries back-dating to 1st Junuary, 1953, which came into effect during the year.

TABLE 9.—FINANCIAL SUMMARY.—*continued.*

	1953		1954
	£		£
Development Revenue	3,776	..	4,499
Net Development Expenditure ..	55,756	..	19,507
Total Expenditure by Forest Department from other votes	19,368	..	8,686
Other Revenue Collected by the Forest Department	942	..	2,509
Total all expenditure	254,167	..	239,731
Total all revenue	127,282	..	135,098
Total Gross turn-over ..	£381,449	..	£374,829

122. In Table 10 Revenue and Expenditure are analysed by Divisions.

123. The above expenditure and revenue figures concern only the Main State Forests, with the exception of Village Fuel Areas, which are classified as Minor (Communal) Forests, but are at present under the direct control of the Forest Department. Revenue and expenditure relating to the other Minor State Forests are brought to account in District Forestry Funds under the control of the Commissioners.

124. Once again the year's balance sheet shows a substantial deficit, but it must be remembered that only one-third of the forest area managed by the Forest Service can be regarded as productive. The remaining two-thirds consist of forests that have been burned out and over-grazed for centuries and restoration to full productivity in these areas is a slow business which must and is being tackled with patient perseverance. Bearing in mind that it takes about 150 years under the climatic conditions prevailing in Cyprus for a pine tree to reach maturity and that it will take at least a full rotation to restore all the forests to a reasonable level of productivity, much progress has already been made since organised forestry began 75 years ago. Even so intensive management has developed only in the last twenty years or so and effective afforestation work, following the elimination of forest goat grazing, has been possible only within the last 15 years. The forests on the whole are well set on the path to recovery and it is possible to look forward to the time, perhaps a generation hence, when the balance sheet will begin to show profits. A glance at the statement of forest revenue in Appendix 14 shows a steady rise over the years and the prospects are that this trend will continue as currently productive areas expand.

G. W. CHAPMAN,

Conservator of Forests.

TABLE 10.

EXPENDITURE AND REVENUE BY DIVISIONS (£).

Divisions	Expenditure					Revenue			
	Forest Ordinary		Forest Development		Total Expenditure				
	Personal Emoluments	Other Charges	Personal Emoluments	Other Charges		Forest	Development	Other	Total
Headquarters	6,265	4,480	—	1,178	11,923	701	4,499	329	5,529
Specialist Divisions	33,302	45,495	2,027	2,774	83,598	17,606	—	19	17,625
Plains (5.57 square miles) ..	6,715	6,055	—	4,487	17,257	4,213	—	63	4,276
Northern Range (117.75 sq. miles) ..	17,793	9,197	1,423	6,139	34,552	7,034	—	1,179	8,213
Troodos (150.83 sq. miles) ..	21,694	11,223	667	1,559	35,143	15,707	—	493	16,200
Paphos (258.61 sq. miles) ..	22,552	22,268	1,292	2,460	48,572	82,828	—	426	83,254
Total	108,321	98,718	5,409	18,597	* 231,045	128,089	4,499	2,509	135,097

* Excludes £19,368 expenditure for work carried out by the Forest Service for other departments and charged to other votes.

APPENDIX 1.

CLASSIFICATION OF FOREST AREA IN SQUARE MILES 1954.

Class of forest	State Forests		Communal Forests		Private Forests		Total	% of Total Forest Area
	Main	Minor	Reserved	Unreserved	Protected*	Others		
A. Exploitable :								
(i) Softwoods	450.71	—	—	—	6.50	27.90	485.11	72.45
(ii) Mixedwoods	73.22	76.56	—	—	—	6.30	156.08	23.30
(iii) Hardwoods	8.84	—	8.03	—	0.75	10.85	28.47	4.25
Total	532.77	76.56	8.03	—	7.25	45.05	669.66	100.00
B. Potentially Exploitable	—	—	—	—	—	—	—	—
C. Other land classed as forest ..	—	—	—	—	—	—	—	—
Grand Total	532.77	76.56	8.03	—	7.25	45.05	669.66	—
		84.59			52.30			
Percentage of total forest area ..	79.56	11.43	1.20	—	1.08	6.73	100.00	—

* Under the protection and Management of the Forest Department.

APPENDIX 2.

STATEMENT IN SQUARE MILES OF PROGRESS IN FOREST RESERVATION AND DEMARCATION DURING THE YEAR ENDED 31ST DECEMBER, 1954.

Category of Forest Reserve	Reserves Constituted and Demarcated			On 31st December, 1954.
	On 1st January, 1954	Added during the year	Excluded during the year	
Main State Forests	532.53	0.24	—	532.77
Minor State Forests	76.56	—	—	76.56
Communal Forests	8.03	—	—	8.03
Total	617.12	0.24	—	617.36

APPENDIX 3.

STATEMENT IN SQUARE MILES OF PROGRESS MADE IN WORKING PLANS DURING THE YEAR ENDED 31ST DECEMBER, 1954.

Territorial Unit	Area Under Working Plans				Area not under Working Plan on 31st December 1954	Total area.	Area for which Working Plans were revised during the year.
	On 1st January 1954	Added during the year	Excluded during the year	On 31st December 1954			
Main State Forests ..	481	—	—	481.0	51.77	532.77	—
Minor State Forests ..	—	—	—	—	76.56	76.56	—
Communal Forests ..	—	3.70	—	3.70	4.33	8.03	—
Total	481	3.70	—	484.70	132.66	617.36	—

APPENDIX 4.

RECORD IN MILES OF FOREST COMMUNICATIONS FOR THE YEAR ENDED 31ST DECEMBER, 1954.

Category of Forest Land	Forest Roads		
	Added	Abandoned	Total at the end of the year.
Main State Forests	18.00	3.50	450.22
Minor State Forests	—	—	14.00
Total	18.00	3.50	464.22

APPENDIX 5.

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1954.

MAIN STATE FORESTS.

Category of Offence	Cases taken to Court							Total	
	Imprisonment without option of fine	Fined			Cautioned and Disch.	Acquitted or withdrawn	Bound over		
	Cases	Cases	Fine £ s. p.	Compensation for damage £ s. p.	Cases	Cases	Cases	Cases	Persons
Damage to forest by fire ..	1	10	16 10 0	35 11 2	—	1	—	12	14
Unauthorized Possession of Forest Produce	1	146	184 0 0	83 8 0	13	1	10	171	181
Unauthorized Fellings	—	28	35 16 0	28 0 0	3	—	2	33	39
Unauthorized Grazing	—	678	945 13 0	442 18 3	12	8	49	747	886
Land Encroachments	—	45	27 8 0	23 0 0	1	4	1	51	58
Oil Conversion	—	5	6 18 0	—	—	—	—	5	5
Miscellaneous	—	49	57 17 0	29 5 6	2	5	—	56	62
Total	2	961	1,274 2 0	642 3 2	31	19	62	1,075	1,245

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1954.

MAIN STATE FORESTS.—*continued.*

Category of Offence	Cases dealt with departmentally				Total		Offenders Unknown (Undetected)		Total all Offences		Confiscated Property sold or released		Cases pending from previous years	Cases Outstanding at the end of the year
	Compounded		Warned	Cancelled										
	Cases	Amount £ s. p.	Cases	Cases	Cases	Persons	Cases	Estimated Loss £	Cases	Persons	Cases	Amount £ s. p.	No.	No.
Damage to forest by fire	5	6 10 0	3	—	8	10	—	—	20	24	—	—	4	2
Unauthorized Possession of Forest Produce ..	737	420 18 0	24	6	767	838	—	—	938	1,019	50	53 5 3	129	86
Unauthorized Fellings	304	186 15 0	17	5	326	383	—	—	359	422	7	2 19 8	40	33
Unauthorized Grazing	870	1,092 15 0*	21	16	907	1,114	—	—	1,654	2,000	—	—	212	168
Land Encroachments ..	25	19 9 0	3	1	29	29	—	—	80	87	—	—	24	11
Oil Conversion.. ..	5	4 15 0	—	—	5	5	—	—	10	10	—	—	1	—
Miscellaneous	21	22 10 0	—	6	27	37	—	—	83	99	—	—	11	31
Total	1,967	1,753 12 0	68	34	2,069	2,416	—	—	3,144	3,661	57	56 5 2	421	331

* Includes £11. 15*s.* payable to owners of private properties under Government Protection.

APPENDIX 5—*contd.*

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1954.—MINOR STATE FORESTS.

Category of Offence	Cases taken to Court							Total	
	Imprisonment without option of fine	Fined			Cautioned and Disch.	Acquitted or withdrawn	Bound over		
	Cases	Cases	Fine £ s. p.	Compensation for damage £ s. p.	Cases	Cases	Cases	Cases	Persons
Damage to forest by fire ..	—	1	1 10 0	2 10 0	—	—	—	1	1
Unauthorized Possession of Forest Produce	2	38	38 3 0	16 8 0	—	1	—	41	41
Unauthorized Fellings	—	5	16 0 0	5 7 0	—	—	—	5	5
Unauthorized Grazing	—	96	114 4 0	18 4 0	—	—	1	97	97
Land Encroachments	3	132	194 8 0	134 15 0	—	11	14	160	160
Oil Conversion	—	—	—	—	—	—	—	—	—
Miscellaneous	—	4	4 0 0	1 18 0	—	—	—	4	4
Total	5	276	368 5 0	179 2 0	—	12	15	308	308
Total Main State Forests ..	2	961	1,274 2 0	642 3 2	31	19	62	1,075	1,245
Total Minor State Forests ..	5	276	368 5 0	179 2 0	—	12	15	308	308
Grand Total ..	7	1,237	1,642 7 0	821 5 2	31	31	77	1,383	1,553

APPENDIX 5—*contd.*

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1954.—MINOR STATE FORESTS.—*continued.*

Category of Offence	Cases dealt with departmentally				Total		Offenders Unknown (Undetected)		Total all Offences		Confiscated Property sold or released		Cases pending from previous years	Cases Outstanding at the end of the year
	Compounded		Warned	Cancelled										
	Cases	Amount £ s. p.	Cases	Cases	Cases	Persons	Cases	Estimated Loss £	Cases	Persons	Cases	Amount £	No.	No.
Damage to forest by fire	1	– 10 0	—	—	1	1	—	—	2	2	—	—	2	2
Unauthorized Possession of Forest Produce ..	135	132 19 0	—	—	135	135	—	—	176	176	—	—	24	24
Unauthorized Fellings..	47	27 0 0	—	—	47	47	—	—	52	52	—	—	—	3
Unauthorized Grazing..	167	143 8 0	—	—	167	168	—	—	264	265	—	—	14	42
Land Encoachments ..	17	16 14 0	—	—	17	17	—	—	177	177	—	—	16	13
Oil Conversion ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Miscellaneous	7	15 4 0	—	—	7	7	—	—	11	11	—	—	—	—
Total ..	374	335 15 0	—	—	374	375	—	—	682	683	—	—	56	84
Total Main State Forests	1,967	1,753 12 0	68	34	2,069	2,416	—	—	3,144	3,661	57	56 5 2	421	331
Total Minor State Forests	374	335 15 0	—	—	374	375	—	—	682	683	—	—	56	84
Grand Total ..	2,341	2,089 7 0	68	34	2,443	2,791	—	—	3,826	4,344	57	56 5 2	477	415

APPENDIX 6.

OUT-TURN IN SOLID CUBIC FEET (UNDER BARK) OF TIMBER AND FUEL FOR THE YEAR ENDED 31ST DECEMBER, 1954.

Territorial Unit	Lumber (1)	Round-timber (2)	Hewn timber (3)	Firewood (4)	Charcoal (c.ft. of timber equivalent) (5)	Total volume equivalent in round timber (6)	Total value (7)
							£
Main State Forests—							
Softwoods	840,569	86,327	484	698,819	24,986	1,651,185	100,049
Hardwoods	37,328	30,232	13,305	139,642	8,416	228,923	6,750
Total	877,897	116,559	13,789	838,461*	33,402	1,880,108	106,799
Minor State Forests—							
Softwoods	—	—	—	1,060	—	1,060	8
Hardwoods	1,044	130	—	3,950	—	5,124	457
Total	1,044	130	—	5,010	—	6,184	465
Total Softwoods	840,569	86,327	484	699,879	24,986	1,652,245	100,057
Total Hardwoods.. ..	38,372	30,362	13,305	143,592	8,416	234,047	7,207
Grand Total ..	878,941	116,689	13,789	843,471	33,402	1,886,292	107,264

* Includes 169,500 cub. ft. solid being the estimated quantity of dry fire wood collected by 165 scheduled villages privileged to collect dry fuel free of charge from the Forests.

Note :—Data for the out-turn from private woodlands or from other scrub covered vacant Crown lands are not available.

APPENDIX 7.

OUT-TURN OF MINOR FOREST PRODUCE, 1954.

Territorial Unit	(1) Origanum Plant		(2) Fodder, hay, grass, vetch and leaves		(3) Miscellaneous (stones and earth)		(4) Miscellaneous (fruit and seeds)	
	Tons	Value £	Tons	Value £	Tons	Value £	Tons	Value £
Main State Forests	19	40	13	86	8,631	255	27	1,197
Minor State Forests	—	—	—	—	610	20	67	546
Total	19	40	13	86	9,241	275	94	1,743

Territorial Unit	(5) Miscellaneous (cones)		(6) Miscellaneous (olive trees and nursery stock)		(7) Canes		(8) Pine-Bark		(9) Saw-dust		(10) Total
	Tons	Value £	No.	Value £	No.	Value £	Tons	Value £	Tons	Value £	Value £
Main State Forests	7	5	338,000	1,823	8,450	4	246	60	110	22	3,492
Minor State Forests ..	—	—	38,874	250	—	—	—	—	—	—	816
Total	7	5	376,874	2,073	8,450	4	246	60	110	22	4,308

APPENDIX 8.

WOOD AND WOOD PRODUCTS : IMPORTS AND EXPORTS FOR THE YEAR 1954. †

VOLUME IN THOUSANDS OF CUBIC FEET IN THE EQUIVALENT OF ROUND TIMBER IN TRUE MEASURE UNDER BARK, AND VALUE IN £ STERLING.

Category (1)	Gross Imports		Gross Exports*		Net imports(+)or exports (—)	
	Thousands of cubic feet (2)	C.I.F. value £ sterling (3)	Thousands of cubic feet (4)	F.O.B value £ sterling (5)	Thousands of cubic feet (6)	Value £ sterling (7)
PRIMARY PRODUCTS :						
Softwood (conifers)—						
Logs	—	—	—	—	—	—
Sleepers (sawn and hewn)	—	—	—	—	—	—
Other sawn and hewn Timber	2,885	831,922	—	—	+2,885	+831,922
Total Softwood Timber	2,885	831,922	—	—	+2,885	+831,922
Roundwood	164	67,972	—	—	+164	+67,972
Pulpwood	—	—	—	—	—	—
Firewood	—	—	—	—	—	—
Other sorts of wood	—	—	—	—	—	—
Total Softwood	164	67,972	—	—	+164	+67,972
Hardwood (broadleaved)—						
Logs	—	—	—	—	—	—
Sleepers (sawn and hewn)	—	—	—	—	—	—
Other sawn and hewn timber	7	3,432	—	—	+7	+3,432
Total Hardwood Timber	7	3,432	—	—	+7	+3,432

Roundwood	—	—	—	—	—	—
Pulpwood	—	—	—	—	—	—
Firewood	—	—	—	—	—	—
Other sorts of wood	—	—	—	—	—	—
Total Hardwood	—	—	—	—	—	—
Total Primary Products	3,056	903,326	—	—	+3,056	+903,326
DERIVATIVE PRODUCTS :—						
Veneers, plywood and other veneer products excluding matches	102	57,780	—	—	+102	+57,780
Matches	43	22,615	—	—	+43	+22,615
Pulp	—	—	—	—	—	—
Paper and Pulp products	392	376,484	2	1,690	+390	+374,794
Furniture and cabinet ware	3	5,736	1	1,012	+2	+4,724
Other wooden ware and builder's woodwork ..	38	85,410	1	2,717	+37	+82,693
Charcoal	—	—	—	—	—	—
Total Derivative Products	578	548,025	4	5,419	+574	+542,606
GRAND TOTAL	3,634	1,451,351	4	5,419	+3,630	+1,445,932

* *Note* :—Exports consisted mainly of re-exports.

† The figures refer to the twelve months November 1953 to October 1954 since full details for the calendar year were not available when this report was issued.

APPENDIX 9.

STATEMENT OF THE INCIDENCE OF FOREST GRAZING IN MAIN STATE FORESTS.

(*a*) Grazing Permits Issued.

	Free		On Payment		Total	
	1953	1954	1953	1954	1953	1954
1. Number of Permits	46	45	206	297	252	342
2. Number of Animals :—						
(*a*) Goats	2,834	1,773	—	120	2,834	1,893
(*b*) Sheep	993	476	4,359	11,424	5,352	11,900
(*c*) Other Animals	210	210	252	241	462	451
(*d*) Total Number of Animals	4,037	2,459	4,611	11,785	8,648	14,244
3. Fees Collected			£58.6.3	£138.18.6		

(*b*) Grazing Statistics.

	1953	1954
1. Area of Main State Forests grazed over lawfully, in square miles	72.49	74.98
2. Area of Main State Forests closed to grazing, in square miles	460.04	457.79
3. Total number of goats in the island counted for taxation	194,680	182,041
4. Number of goats allowed to graze in the Main State Forests	2,834	1,893
5. Number of goats allowed to graze in the Main State Forests, expressed as percentage of total number of goats	1.46%	1.04%
6. Total number of sheep in the island counted for taxation	346,895	361,337
7. Number of sheep allowed to graze in the Main State Forests	5,352	11,900
8. Number of sheep allowed to graze in the Main State Forests, expressed as percentage of total number of sheep	1.54%	3.29%

APPENDIX 10.

STATEMENT OF FIRE PROTECTIVE WORKS AND FIRE INCIDENCE FOR THE YEAR, 1954.

(*a*) Fire Traces.

1. Fire traces existing on 1st January, 1954	75 miles
2. New fire traces opened during the year	Nil.
3. Existing fire traces cleaned during the year	Nil.

(*b*) Telephones.

	Length miles	*No. of instruments*	*No. of switch boards.*
1. Existing telephone lines and instruments on 1.1.1954	341.79	190	11
2. Alterations (5.93 miles and 5 instruments additions, and 5.20 miles absolescent)	0.73	5	—
Total	342.52	195	11

(*c*) Fire Protection.

	No.
1. Fire watchers	52
2. Fire watchers' huts on 31st December, 1954	12
3. Huts repaired during the year	3

(*d*) Fire Incidence.

Year	*No. of Fires*	*Area burned sq. miles*	*Assessed damage*	*Cost of extinction*	*Cause.*
1954	41	0.49	£4,463 *	£1,358	25 accidental, 2 malicious, 4 lightning, 4 suspected accidental, 6 suspected intentional.

* This figure refers to the value of standing trees and bushes burned and does not include any estimate of the costs of reclamation or other forms of indirect damage resulting from the fires. Burned trees are salvaged whenever possible.

APPENDIX 11.

STATEMENT OF FOREST REVENUE COLLECTED IN 1953 AND 1954.

HEAD 4.—FORESTS.

Item of Revenue	1953 £ s. p.	1954 £ s. p.
1. Sale of :—		
Standing trees	53,627 5 2	59,581 16 0
Timber	40,890 11 2	41,054 12 8
Fuel	3,059 18 7	4,424 10 5
Charcoal	186 19 3	210 19 0
Bark and Stones	162 4 8	318 10 0
Seeds	2,303 3 6	894 14 4
Minor Forest Produce ..	1,298 8 4	458 18 2
Confiscations	39 11 6	68 4 4
Total Sales	101,568 3 2	107,012 5 5
2. Permit Fees :—		
Fuel Permits	545 6 3	585 2 6
Charcoal Permits	20 19 0	32 2 0
Grazing Permits	120 18 1	209 6 0
Gypsum and Pottery Permits	54 0 0	7 1 0
Bricks and Tiles Permits ..	39 10 0	10 0 0
Kiln Permits	—	64 10 0
Total Permits	780 13 4	908 1 6
3. Other Revenue :—		
Rents of Water, etc.	106 19 5	61 1 2
Rents of Sawmills	1,120 1 2	2,488 12 0
Rents of Tractors and Parts ..	- 9 5	—
Other Revenue..	2,672 11 6	624 16 4
Telephone charges	1,690 11 4	1,245 4 0
Protection Fees	92 9 3	80 4 6
Impounding Fees	58 1 3	93 11 7
Pots written off	98 10 2	—
Rent of Telephone Junction lines	—	94 9 7
Blasting material	—	1,092 13 7
Total other Revenue ..	5,839 14 3	5,780 13 6
4. Maintenance and operation of Earth Moving Machinery	5,583 8 2	6,384 6 7
5. Forest Nurseries	1,300 4 6	1,814 7 0
6. Forest College :—		
Foreign Students	—	3,546 5 0
Cypriot Students	—	2,602 19 4
Other	—	40 9 1
Total College	7,491 19 3	6,189 13 5
Total Revenue ..	£122,564 3 2	£128,089 8 2

DEVELOPMENT REVENUE.

HEAD 11.—OTHER DEVELOPMENT REVENUE.

Item of Revenue	1953	1954
	£ s. p.	£ s. p.
S.H. Sale of Baradji lands	3,775 13 2	4,499 6 7

REVENUE.—OTHER THAN FOREST REVENUE.

(Collected or related to the Forest Department.)

	£ s. p.	£ s. p.
3. *Fees of Court, etc.:—*		
1. Fines and Forfeitures ..	697 10 0	1,699 9 0
62. Staff on loan to other Bodies	—	18 15 5
63. Sundry Receipts	—	264 1 3
	697 10 0	1,982 5 8
6. *Rents and Royalties :—*		
1. Rent	244 6 5	462 3 1
8. *Miscellaneous Receipts :—*		
1. Sale of Stores	—	9 11 3
9. *Land Sales*	—	55 0 0
Total	£941 16 5	£2,509 0 3

APPENDIX 12.

STATEMENT OF EXPENDITURE FROM FOREST DEPARTMENT VOTES DURING 1953 AND 1954.

HEAD 11.—FORESTS.

Sub-head.	1953		1954	
	£ s. p.	£ s. p.	£ s. p.	£ s. p.
1. Personal Emoluments		81,056 0 0		108,320 13 0
2. Travelling		6,928 7 8		9,837 15 3
3. Maintenance of Plant, Machinery and Vehicles :—				
(i) Maintenance and operation of Motor Transport	7,141 4 2		7,684 11 7	
(ii) Maintenance of plant and Machinery	744 0 8		808 13 6	
(iii) Maintenance and Operation of Earth Moving Machinery	6,105 17 7		6,255 8 3	
(iv) Leave Pay to Regular Wages Employees	—		100 19 2	
		13,991 2 8		14,849 13 0
4. Maintenance of Forest Communications :—				
(i) Maintenance of Roads and Bridges	14,191 14 8		16,376 3 7	
(ii) Telephones	5,409 17 2		4,743 16 7	
		19,601 12 1		21,120 0 5
5. Maintenance of Forest Buildings and Equipment :—				
(i) Maintenance and Equipment of Buildings	4,159 9 0		2,821 18 7	
(ii) Water Supplies	644 15 8		571 10 5	
(iii) Rent	485 5 0		877 0 0	
(iv) Lighting, Heating and Electric Power	518 3 3		305 5 1	
		5,807 13 2		4,575 14 4
6. Forest Protection :—				
(i) Fire Protection	4,153 15 3		5,269 1 8	
(ii) Fire Fighting	1,918 9 4		1,358 3 0	
(iii) Delimitation	234 8 3		265 0 1	
(iv) Rewards	—		—	
(v) Upkeep and Protection of Railway Line Plantation	611 16 7		386 15 4	
		6,918 9 8		7,279 0 4

HEAD 11.—FORESTS—*contd.*

Sub-head.	1953 £ s. p.	1953 £ s. p.	1954 £ s. p.	1954 £ s. p.
7. Forest Utilization		17,000 14 3		15,285 8 3
8. Silviculture and Forest Management :				
(i) Silviculture	4,237 10 4		4,380 7 4	
(ii) Collection and purchase of Seed	1,160 13 8		1,020 5 4	
(iii) Forest Nurseries	4,215 10 8		3,441 18 4	
(iv) Forest Survey and Working Plans	500 0 0		802 4 6	
(v) Free Seedlings	—		46 8 1	
		10,113 15 2		9,691 4 1
9. Forestry College :—				
(i) Maintenance and operation of Instructional Equipment ..	47 14 2		154 11 5	
(ii) Food wages and Miscellaneous	3,816 14 0		3,784 19 6	
(iii) Lighting, Heating and Electric Power	1,215 3 5		1,147 19 2	
		5,079 11 7		5,087 10 4
— Leave Pay to Regular Wages Employees		482 0 8		
— Tools		673 17 0		
10. Office Expenses :				
(i) Library	49 14 4		38 13 6	
(ii) Refunds	476 4 8		13 1 5	
(iii) Forestry Exhibitions	128 18 5		90 17 4	
(iv) Incidentals	192 11 7		233 19 2	
		847 9 6		376 11 8
11. Forest Research :—				
(i) Purchase of Scientific Equipment			40 14 3	
(ii) Research Activities			470 19 3	
				511 13 6
12. Forest Uniforms		2,023 10 1		2,226 7 4
13. Training of Cypriot Staff Abroad		171 16 1		165 3 1

HEAD 11.—FORESTS.—*contd.*

Sub-head.	1953 £ s. p.	1953 £ s. p.	1954 £ s. p.	1954 £ s. p.
Special Expenditure.				
14. Morphou Saw Mill		2,219 10 7		3,276 4 6
15. Purchase of Motor Vehicles		1,167 0 4		973 6 0
16. Purchase of Ellams Duplicating Machine				44 11 8
17. Equipment and Plant				3,417 17 2
— New Buildings		623 14 6		
— Purchase of Survey Instruments		69 13 7		
— Purchase of Sawing Equipment		491 1 1		
TOTAL		£175,267 1 8		£207,038 15 5

STATEMENT OF EXPENDITURE FROM FOREST DEPARTMENT VOTES DURING 1953 AND 1954 UNDER DEVELOPMENT.

HEAD 44 FORESTS.	1953 £ s. p.	1954 £ s. p.
Mountain Forests	13,557 6 6	13,822 12 1
Lowland Forests	4,817 10 3	4,236 19 5
Village Fuel Areas	3,040 8 7	2,336 5 7
Forest Roads	10,292 3 3	340 3 6
Removal of Forest Settlements :		
Removal of Livadhi Village	27,824 12 3	3,269 9 2
	£59,532 1 4	£24,005 10 3

EXPENDITURE INCURRED BY FOREST DEPARTMENT FROM OTHER VOTES.

Head Number as in Estimates		*Sub-head.*	1953 £ s. p.	1954 £ s. p.
2	9	Encouragement of Tree Planting	—	87 3 0
2	13	Community Development	488 16 1	148 13 2
3	8	Investigation and Extension Services	53 0 6	24 17 1
3	11	Plant Protection	—	20 8 4
4	7	Maintenance of Ancient Monuments	30 5 5	13 3 8
7	6	Airport Management and Handling Expenses	—	69 3 0
14	6	Cost of Prosecutions	—	77 6 8
20	24	Protection of Game and Wild Birds	284 10 5	384 3 1
20	26	Compensation and other Expenditure for injuries to Government Employees	—	155 5 8
20	41	Hospitality	64 9 1	107 0 2
20	42	Telephone Service	201 18 7	209 1 4
—	—	Coronation Celebrations	886 16 2	—
28	1	Maintenance of Main and Secondary Roads	299 18 4	300 0 0
29	12	Kaimakli–Angastina–Engomi Road	—	377 17 3
29	26	Asphalting Nicosia–Agros Road	—	726 1 2
29	28	Ambelikou–Kambos Road	—	139 13 6
40	5	Construction of Prefabricated Buildings	13,880 17 2	4,421 9 8
40	14	Preparation of Sites and Approach Roads in villages	—	408 9 3
40	15	Repairs to Government Buildings	156 5 2	295 10 7
—	—	Construction of Stables	2,450 2 4	—
41	14	Land Reclamation and Development Schemes	—	39 6 8
41	25	Field Experiment (Labour)	—	70 0 6
48	10	Isolation Hospital : Construction of Buildings	—	77 0 1
Deposits	—	District Deposits, Famagusta (Reafforestation work at Topju Keuy Minor Forests)	458 14 3	458 8 4
do.		District Deposits, Paphos (Paphos–Polis Road Side Trees)	112 4 8	11 6 6
do.		Departmental Water Engineer (Nicosia Water Board Reservoir Site)	—	64 2 8
		TOTAL	£19,367 19 5	£8,685 14 1

APPENDIX 13.

DEVELOPMENT SCHEMES, TEN-YEAR PLAN 1946–1955.

	Estimated total cost	*Actual Expenditure to 31.12.1953*	*Expenditure 1954*	*Total Expenditure to 31.12.1954*	*Balance Remaining*
	£ s. p.	£ s. p.	£ s. p.	£ s. p.	£ s. p.
HEAD 44.—FORESTS.					
Mountain Forests	295,399 0 0	266,863 15 0	13,822 12 1	280,686 7 1	14,712 12 8
Lowland Forests	39,000 0 0	31,144 7 2	4,236 19 5	35,381 6 7	3,618 13 2
Village Fuel Areas	89,500 0 0	85,366 11 2	2,336 5 7	87,702 17 0	1,797 3 0
Forest Nurseries	19,775 0 0	19,775 0 0	—	19,775 0 0	—
Forest Roads	80,000 0 0	79,564 7 7	340 3 6	79,904 11 4	95 8 5
Forest Telephone System	29,987 0 0	29,987 0 0	—	29,987 0 0	—
Forest Buildings	31,790 0 0	31,790 0 0	—	31,790 0 0	—
Forest College :—					
(*a*) Capital Expenditure	46,700 0 0	46,700 0 0	—	46,700 0 0	—
(*b*) Recurrent Expenditure ..	15,586 0 0	15,586 0 0	—	15,586 0 0	—
Removal of Livadhi Village	101,126 0 0	97,610 5 0	3,269 9 2	100,879 14 2	246 5 7
Total	£748,863 0 0	£704,387 6 2	£24,005 10 3	£728,392 16 5	£20,470 3 4

APPENDIX 14.

COMPARATIVE FINANCIAL STATEMENT FOR THE 10 YEARS ENDED 31ST DECEMBER, 1954.

Year	Forest Revenue	Forest Expenditure	Surplus	Deficit	Expenditure under C.D.F.	Expenditure under L.S. Account	Expenditure under Development	Grand total of Expenditure
1945	100,467	100,330	137	—	33,285	—	—	133,615
1946	81,866	79,016	2,850	—	47,219	—	—	126,235
1947	42,748	86,943	—	44,195	48,205	18,095	5,880	159,123
1948	40,153	101,762	—	61,609	32,435	32,800	8,358	175,355
1949	32,023	92,583	—	60,560	24,135	—	64,873	181,591
1950	35,942	91,430	—	55,488	15,188	—	62,121	168,739
1951	51,391	106,845	—	55,454	9,324	—	85,266	201,435
1952	102,113	134,374	—	32,261	1,063	—	86,745	222,182
1953	122,564	175,267	—	52,703	—	—	59,532	234,799
1954	128,089	207,039	—	78,950	—	—	24,006	231,045
Total ..	737,356	1,175,589	2,987	441,220	210,854	50,895	396,781	1,834,119

APPENDIX 15.

STRENGTH OF FOREST STAFF ON 31ST DECEMBER, 1954.

Territorial Unit	Senior Staff			Subordinate, Field and Technical Staff															Total	Messengers	Clerical Staff	Permanent Labour Force
	Colonial Forest Service	Others	Total	Assistant Forest Officers	Forest Rangers	Foresters/ F. Guards	Temporary Forest Guards	Forest Foremen	Tractor-Drivers	Lorry-Drivers	Mechanical Assts.	Mechanics	Assistant Forest Surveyors	Prosecution Officers	Storekeepers	Storemen	Cooks	Domestic Orderlies				
Cyprus ..	5	10	15	8	23	141	9	66	4	10	3	1	1	3	1	1	1	2	274	2	12	96

APPENDIX 16.

CYPRUS FORESTRY COLLEGE ANNUAL REPORT FOR 1954.

(1) Courses.

The Second Term of the third academic year commenced on the 7th January. The total number of students was 38, of whom 26 were Cypriots (24 serving Forest Guards of the Cyprus Forest Department and 2 University Scholars) and 12 from abroad (2 from Libya, 4 from Jordan, 4 from Iraq, and 2 from British West Indies), divided into two courses of 19 seniors and 19 juniors. The seniors were further sub-divided into two groups, the " New Group " of 4 one-year students and the " Old Group " of 15 second-year students ; while the juniors included two Cypriot Scholarship candidates who were due to undergo a year's course at the College, before proceeding to the U.K. for further training at a University.

All 38 students gained their Certificates in July, 19 of them obtaining the Final and 19 the Preliminary Certificate. The pass mark for both Final and Preliminary Certificates, and the Honours grade of the Final, were maintained, at 50% and 80% respectively. 6 out of the 19 senior students were awarded Certificates with Honours. In addition 20 prizes were awarded, including the Governor's Medal to the best all-round student of the Senior Course, Badreddin Messaudi (Libya) ; the Conservator's Medal to the best all-round student of the Junior Course, Euripides Michaelides (Cyprus) ; 16 books given by Dr. Unwin and the Principal for the best performances in individual theory subjects ; and two money-prizes given by Mr. A. Polycarpou, the Working Plans Officer, for the best performances in practical work in the field. All certificates and prizes were presented by His Excellency the Governor on Prize Day, the 30th July.

As previously, the Preliminary and Final Examinations were set and marked by an External Examining Board, consisting of the Conservator of Forests, two Assistant Conservators of Forests and the Principal of the College, acting in an advisory capacity. The Practical Examination in the field was held again to supplement the Practical Assessment, made by the College Instructors on the whole year's practical work. The Certificates were awarded on the basis of 200 marks for the written examination and 100 marks for the combination of practical assessment and practical examination. An oral examination was also held to serve as check on the written papers, especially with regard to doubtful cases. Assessment of character and suitability for the job was made in Personal Reports.

With the completion of their course, on the 30th July, all senior students left the College. The Cypriots were given 21 days leave of absence and then took up their postings. The three Jordanians and the British West Indian left for their countries immediately, while the two Iraqis made a Forest tour of Turkey, Syria and Jordan before returning to their own country. The two Libyan students were given extensions to their Scholarships by the F.A.O., and underwent a special short course of training on Range Management, Aerial Survey, Soil Conservation and re-afforestation. The Junior Course, except the two " Cadets " who were given leave to prepare for their departure to the United Kingdom, moved to Halevga, where they spent the whole of August doing such field work as road tracing, alignment and construction, various silvicultural operations, such as cleanings and thinnings, and mensuration projects. In addition to the concentrated field instruction and practice at Halevga, a number of field inspection trips was made on the Northern Range ; this involved visits to places of interest for Forest Protection, Silviculture, Land Use and Research.

During the Easter holidays a special short course, which lasted for a fortnight, was given at the College to 30 Beat Officers who lacked the necessary qualifications to attend the College for the full two-year course. It was designed to give them such elementary forestry principles as measurement of timber, map-reading and thinning of young plantations, with more emphasis on the practical side than on the theory. Requests for further courses have resulted from this experiment.

The College re-opened on the 1st of October for its fourth academic year with a complement of 36 students, 25 from Cyprus and 11 from abroad. The new intake of 20 comprised 12 Cypriot Forest Guards and 8 Foreign Students—2 from Iraq, 3 from Cyrenaica, 1 from British Somaliland, 1 from Syria and 1 from British Honduras. Since the one-year course has now been abandoned, there was no necessity to sub-divide the Senior Class into two groups as in the previous years. The Christmas term ended on December 22nd after a brief terminal examination, in which all students were successful.

(2) Curriculum.

The basic system of training has been maintained, whereby instruction has been given on alternate days in the classroom and field, whenever the weather permitted. As in the previous year the Senior Course was given more "project work" on various forest operations, such as Afforestation, Working Plans, Soil Conservation, etc., which has proved to be particularly useful for the foreign students. In addition field inspection trips and demonstrations—mostly carried out during the Vacation Term and the winter visits to Dhiorios and Athalassa Forests—covered all the major forest operations practised or required in the Middle East.

During the short stay at Athalassa Forest all students received instruction in "Unarmed Combat" at the Wolseley Barracks, Nicosia, with the object of teaching them how to defend themselves against attacks from forest offenders.

Until the end of February all the theoretical instruction was given by the same teaching staff as in the previous year, but thereafter part of the Forest Policy and Science syllabus was taught by the Assistant Principal. The surveying course was taken over by Mr. Avraamides of the Lands and Surveys Department, while a short course on Forest Entomology was given for the first time by Dr. Chrystal, until recently Lecturer in Forest Entomology at the University of Oxford. The unarmed combat training was provided by Mr. Ben Sames, the Army sports organizer and expert on commando training.

The voluntary Evening Classes in English and Mathematics, run by Mr. Constantinides, Schoolmaster of Mitsis School, Lemythou, have been continued and proved very beneficial to all who have taken advantage of them.

A tabular analysis of all instruction given under the College Syllabus during the year is attached (See Appendix 16A).

Two College Qualifying Examinations, one in April and one in August, were held during the year. Of the 87 candidates, all junior officers of the Forest Department, 32 reached the required standard and qualified for the College waiting list.

(3) Visitors.

His Excellency the Governor and Members of the Executive Council honoured the College by their visits on two occasions, the Salti Shield Race in May and Prize Day in July. Other official visitors at Prize Day included Dr. Mooney, Forestry Adviser to the British Middle East Office, and various members of the Government. Mr. L. P. Smith, Head of the Agricultural Branch of the British Meteorological Office ; Dr. F. C. Hummel, Mensuration Officer of the British Forestry Commission ; Mr. Watson, Director of Agriculture and Forests in Somaliland ; Dr. Unwin ; Dr. Osmond of the British Soil Survey, Rothamstead Research Station; a party of Forest Officers from Turkey ; the Near East Poplar Conference with the Director General of Forests, Iraq, and Director of Forests, Syria ; representatives of F.A.O. and U.N.R.W.A. ; Messrs. Van Praag, Zahary and Goor of Israel ; the Morphou Teachers' Training College ; Melkonian Institute and various schools; Mr. Martin Ross, Special Correspondent of the Daily Telegraph ; Dr. Silberstein, Head of Haifa Technical College ; Professor Champion, Director of the Imperial Forestry Institute and Professor of Forestry, Oxford University ; Mr. Ford-Robertson, Head of the Commonwealth Forestry Bureau, Oxford ; and Professor Kools of Holland, Adviser to F.A.O. on Forestry Education in the Middle East, also visited the College on other occasions.

The Near East Broadcasting Corporation kindly undertook the recording of the Salti Shield Race at the end of May, and the Cyprus Broadcasting Service broadcast the Prize Day celebrations in July. The Forces Broadcasting Service made a special record on the College in action for a Christmas programme of the B.B.C. During the Vacation Term in August the College was again used as a " Summer School " by the Department of Agriculture, which ran a special course for some 50 officers on " Extension Services ".

(4) Activities.

Research work at the College has been continued on the same problems of mountain climate, fire hazard, seed storage and testing, nursery practice and artificial regeneration of Troodos pine (*P. Nigra*). The reclamation of torrent control work at Asprokremmos has also been extended.

The Salti Shield Race was held for the third time at the end of May on a new course from Phini up the Valley and across the main road to a water-splash near the Trooditissa Monastery. The Shield was won by Chapman House for the second time, while the Open Prize went to one of the University Cadets, Leontios Leontiades, and the Handicap Prize to D. Michaelides, one of the oldest Cypriot students.

The Students' Association has been active in organising games, film shows, the College Library and talks. The speakers included Dr. Mooney (on his tour of Ethiopia, illustrated by some excellent photographs in colour), Dr. Unwin and Mr. Chapman.

(5) Staff.

Until October the resident teaching staff consisted of the Principal, Mr. R. J. Streets, the Assistant Principal, Mr. G. M. Seraphim, A.F.O., Mr. Th. Michaelides, and the Forest Rangers, Messrs. D. Jacovides, and G. Gavrielides.

The visiting lecturers were Dr. Chrystal and Mr. Avraamides.

In October the Principal became Director of the newly created Division of Forest Research, Education and Publicity, and the Assistant Principal took over the College.

The Principal lectured on some of the basic Science subjects until July. The Assistant Principal lectured on Forest Policy and the rest of the basic Science subjects until July, and took over all the Science subjects in October. The three lecturers covered all applied forestry subjects and supervised the practical work in the field.

Forest Guard G. Tsangarides continued in charge of the Office, Accounts and Catering until October, when he was transferred to the Research Branch in Nicosia. He has been replaced by Forest Guard L. Themistocleous.

With regard to the Domestic Staff, two new Domestic Orderlies—one from Lemythou and one from Prodhromos—have replaced the previous ones, who moved to other jobs in the Agricultural and Forest Departments.

(6) Buildings, Equipment, etc.

No additions were made during 1954. Repairs and improvements were carried out in both the College buildings and staff houses. An adequate water supply for the College Gardens, permanent garages for the staff's vehicles, and a petrol store are still outstanding requirements. Operations began during Xmas for the connection of the College to the grid system of the Cyprus Electricity Authority.

(7) Acknowledgements.

Our thanks are due to the Conservator, all the staff of the College, to Dr. Chrystal and those members of the Government, Forest Department, Lands and Surveys Department, Agricultural Department and Locust Research Team, and of the Mitsis School, Lemythou, who have assisted the College in its work this year. It is also a pleasure to express appreciation of all the help and encouragement given by F.A.O., U.N.R.W.A., the Libyan-American Technical Assistance Service (Point Four) and all the Governments who have sponsored foreign students ; also by the British Middle East Office, which continues to draw students to the College from yet more countries of the Middle East. The sustained interest of Press and Radio is gratefully acknowledged, and special thanks are offered to the Director of Forests, Jordan, to Dr. Unwin, the Cyprus Forestry Association, Mr. Polycarpou and Mr. G. Papadopoullos for their generosity in the presentation of prizes.

APPENDIX 16A.

CYPRUS FORESTRY COLLEGE.

ANALYSIS OF ALL INSTRUCTION.

(1) *Spring and Summer Terms, January–July.* 1953–4–5 Courses.

Subjects.	*2nd Year Course.*	*One Year Course.*	*1st Year Course.*
Silviculture	17 pers. (1½hrs.)	29 pers. (1½hrs.)	29 pers.(1½hrs.)
Nursery Management ..	6	10	5
Mensuration and Costings	5	23	35
Forest Management ..	11	13	—
Utilization and Timber Identification	35	42	9
Forest Protection.. ..	3	15	18
Forest Engineering ..	12	23	14
Forest Policy, etc. ..	—	11	17
Surveying (including Field Work)	23	19	20
Botany and Forest Botany	23	43	19
Geology and Soils ..	8	12	6
Meteorology, Climate and Ecology..	16	19	2
Entomology (Forest) ..	33	33	33
Private Study and Revision	19	28	40
Essays and Tutorials ..	5	4	5
Examinations and Return of papers	32	32	32
Theory totals ..	248 = 62 days	356 = 89 days.	284 = 71 days.
Preparation of Ground ..	—	2	4
Plant and Beating-up ..	3	3	5
Weeding and Cleaning ..	—	—	3
Thinning, Felling, Coppicing	11	4	8
Marking for thinning ..	4	3	4
Nursery operations ..	9	4	17
Seed, collection and extraction	1	1	2
Tools and Stores Maintenance	3	4	6
Nursery Project ..	5	—	—
Afforestation Project ..	7	7	—
Thinning Project.. ..	2	—	—
Mensuration Project ..	—	—	2
Working Plans Project ..	13	3	—
Tours and Demonstrations	12	12	10
Unarmed Combat Course	3	3	3
	Practical work 73 days.	Practical work 46 days.	Practical work 64 days.
Total Theory and Practice.. ..	135 days.	135 days.	135 days.

(2) *Vacation Term, August.*

Field Work.	1953–55 Course. *1st Year Course.*
	Days.
Road Alignment and Construction Project, N. Range ..	10
Silvicultural (Thinning, etc.) Project N. Range	6
Mensuration Project	1
Tours and Demonstrations	4
Fire Fighting	1
Tour of	22 days.

(3) *Winter Term, October–December.*

Subjects.	1954–55–56 Courses. *2nd Year Course.*	*1st Year Course.*
Silviculture	9 periods (1½hrs.)	15 periods (1½hrs.)
Nursery Management	14	7
Mensuration and Costings.. ..	11	13
Utilization and Protection ..	13	22
Engineering (Roads and Buildings)	22	4
Survey	3	9
Botany	15	12
Geology and Soils	—	11
Meteorology and Climate	7	—
Private Study and Revision ..	3	3
Essays and Tutorials	—	1
Examination and Return of papers	7	7
Theory Totals ..	104 = 26 days.	104 = 26 days.
Preparation of Ground for Afforestation	11	10
Planting, Beating-up, Sowing ..	2	6
Soil Conservation	7	16
Thinning, Felling, Coppicing ..	3	1
Weeding and Cleaning	1	—
Tools and Stores Maintenance ..	2	1
Thinning Project	8	—
Tours and Demonstrations ..	1	1
Sports	4	4
Total of Theory and Practice ..	65 days.	65 days.
Vacation Tour	22	—
Spring and Summer Term ..	135	—
Total Working time in 1954 ..	222 days.	65 days.

APPENDIX 17.

FOREST RESEARCH.

(1) SILVICULTURE.

Silvicultural investigations are being pursued at some 260 different sites, widely distributed over the island. Some of these experiments are long-term investigations, the full results of which will not be apparent for a number of years, while others are short-term enquiries, lasting perhaps one or two years.

INVESTIGATIONS COMMENCED IN 1954.

A. *Mountain Forests.*

(*a*) Studies have been commenced on the natural regeneration of the mountain forests. Some two hundred 20′ × 20′ observational plots have been laid out in the *Pinus nigra*, *Pinus brutia* and *Cupressus sempervirens* forests of Troodos, Adelphi, Paphos and Northern Range. Plot distribution has been completely randomised and it is hoped that all combinations of site factors have been covered and a representative picture of conditions obtained. Seedling assessments are being made at fortnightly intervals.

(*b*) Adjacent to each of these observational plots, which in effect act as controls, a series of plots have been set out to investigate the effect, on both artificial and natural regeneration, of litter removal with both shallow and deep cultivation. Initial germination of artificial sowings with both site treatments has been most encouraging, although a high incidence of bird damage has been recorded. The seed is eaten before the cotyledons have shed the testa ; in some cases this results merely in damage to the cotyledons, but in others the whole seedling is cut off. It is hoped that by following these sowings through to establishment, a clearer picture will be available of the problems encountered in seedling survival.

(*c*) In the high level Troodos pine (*P. nigra var. caramanica*) region, there are large areas of poorly stocked open forest. Over-mature trees, which represent an extremely large and ever-deteriorating forest capital, have to be retained in such areas in the absence of regeneration. In an attempt to release this capital experiments have been set out, at Pasha Livadhi and at Damaskinari, to compare the relative merits of seeding and planting for the regeneration of *Troodos pine*, and of the influence of winter snowfall and frost on germination and seedling survival. In association with these experiments a trial planting has also been made of *Corsican pine* (*Pinus nigra var. Poiretiana*).

(*d*) At Katsaroudhi Kapsali, Paphos forest, a small experiment has been laid out to evaluate the effect of birds and moufflon on regeneration.

(*e*) Certain difficulties have been experienced with the use of *Cupressus sempervirens* for the re-afforestation of the Northern Range forests. A programme of research has been initiated at Kantara to provide basic information on the environmental factors.

B. *Eucalyptus.*

The introduction of Eucalyptus species of possible forest importance to Cyprus continues.

(*a*) A series of species trials has been established at Athalassa with the following objectives :—

(i) Comparing the growth of different species of Eucalypt, planted in small blocks and grown under normal forest conditions.

(ii) Comparing the progeny of different trees of the same species in the Chapman Collection, firstly with each other and secondly with trees raised from imported seed of the same species.

It is intended to establish here half-donum plots of species recently imported from Australia, and also of the progeny of the type trees of the Chapman Collection. Twenty-five such plots have already been planted.

(*b*) Comparative species trials are also being established over a wide range of representative sites. Altogether 35 species, some represented by several lots of different origins, have been employed in these trials. It is hoped that, as a result of these investigations, it may be possible to extend the scope of Eucalypt planting to include many site types which are at present " unplantable ", or are not fully productive under the present " production " species.

This programme of extensive trial planting has been much hampered by difficulties of plant production. Casualties were again high this year, mortality rising steeply after transplanting, and it is clear that close attention must be paid in future to nursery technique.

C. *Other.*

(*a*) A nursery experiment to determine the effects of stumping and root-pruning of *Acacia cyanophylla*, *Eucalyptus camaldulensis* and *Pinus brutia* is now in progress. It was originally hoped that in this way it might be possible to discover some means of conserving any surplus nursery stock which would otherwise be destroyed at the end of each season. Treatments are still continuing and any assessment of results would be premature, but the indications are that these species are capable of withstanding much rougher treatment than was previously considered advisable. If these impressions are supported by the final conclusions, they may have far-reaching effects on nursery technique and the general handling of planting stock.

(*b*) The Locust Research Team of the Department of Agriculture is establishing long-term observational plots, for studies of Locust populations under different types of land use. At Phrenaros there is to be a plot of 30 donums under tree cover and 20 donums untreated control. This site, which is representative of probably the worst type of limestone outcrop, has been planted with *Acacia cyanophylla* by the Forest Department. The opportunity has been taken to vary the prescribed treatment, so that a comparison will be possible between broadcast sowing on cultivated ground and planting in soil pockets.

Investigations completed in 1954.

A. *Mountain Forests.*

(*a*) A detailed examination was made of small sample areas of " gradoni " thickets of *Pinus brutia* at Kapoura. The plots selected were representative of tree growth on the lower " gradoni " of an area of very successful sowings, made during 1942–1944, on the site of a forest fire. Light cleanings had been done in 1952. Espacement varied between 6 inches to 30 inches in the untreated control and 12 inches to 60 inches in the cleaned thickets. Top height ranged from 6 feet to 19 feet.

Even these very light cleanings have been obviously beneficial to the crop, especially as regards form, vigour and general health ; but the need for much heavier and systematic cleaning of such newly-forested areas was clearly shown by a graphical representation of the data for top height and espacement.

(*b*) The successful experiment in pre-sowing treatment to obtain earlier germination of *Pinus brutia* and *Cupressus sempervirens* by burying in a manure heap, which was reported in the Annual Report of 1952, was repeated this year. No germination was obtained. This lack of confirmation of the earlier results, and in fact their complete reversal, probably stems from the impossibility in practice of obtaining controlled conditions within a manure heap.

B. *Eucalyptus.*

Uniformly low results obtained from sowing in both calcareous and non-calcareous soil showed clearly that a high content of lime in the soil is not the factor responsible for the low germination rate of Eucalypt seed experienced in the department's nurseries. It had been supposed that locally collected seed had a much higher germination capacity than seed imported from Australia, but germination tests of 29 samples of Eucalyptus seed of 15 different species, all locally collected do not bear out this supposition. The results obtained showed a uniformly low or nil germination. Some of the seed had been some considerable time in store, so that any conclusions from this isolated series of tests can only be tentative ; but they emphasise the need for fuller investigation. The results are sufficient to warrant the adoption of a standardised system for testing Eucalyptus seed.

C. *Other.*

(*a*) The initial assessments for survival of the *Casuarina Trials*, established in 1953 and 1954, are now completed. The following conclusions were reached on the basis of the nine trials, which had been laid out in the lowland forests and in the eastern part of the Northern Range. For the species employed, *Casuarina glauca*, *C. equisitifolia*, *C. cunninghamia*, and *C. torulosa*, patch cultivation cannot be considered a suitable method of site treatment, and complete cultivation is probably essential. *C. torulosa* is definitely unsuited to conditions in Cyprus under the techniques employed in these trials (i.e. either patch cultivation by hand or complete tractor cultivation).

With complete cultivation on good quality sites *Casuarina cunninghamia* and possibly *Casuarina glauca* may prove satisfactory, if a fairly high " beating-up " percentage is accepted.

No forecast can be given at this stage for the growth potential of any of these species.

The results of this experiment are in line with empirical experience, which seems to indicate that under lowland conditions in Cyprus complete cultivation is advisable for the establishment of forest plantations.

(*b*) An attempt to use rooted cuttings of *Tamarix articulata* for the stabilisation of littoral and sand-dunes, noted in last year's report, has failed, all the plants having died in spite of irrigation.

Silvicultural Experiments carried out by Divisional Staffs.

(i) *Effect of cultivation on the growth and survival of Stone Pine seedlings on an area of reclaimed sand-dune at Ayia Irini.*

The pilot experiment, which was recorded in the report for 1952, was followed by field trials in 1953 and 1954, with excellent results. The seedlings showed great improvement in growth rate and vigour. It has been shown that cultivation can, with advantage, be continued for the first 2–3 years after sowing. This technique has now been adopted as standard.

(ii) *Effect of Nitrate and Phosphate application on Chloritic Stone Pine at Ayia Irini.*

Chlorisis had been observed in certain of the sand-dune plantations of Stone Pine at Ayia Irini. Applications of nitrogenous and phosphatic manures were made to determine whether this chlorotic condition could be related to deficiencies in these two nutrients. Results obtained so far indicate that applications of nitrogen will correct this condition. The experiment is to be continued.

SUMMARY LIST OF INVESTIGATIONS INITIATED PRIOR TO BUT CONTINUED IN 1954, MOST OF WHICH ARE DESCRIBED IN PREVIOUS ANNUAL REPORTS.

A. *Mountain Forests.*

(i) *Provenance trials of Pinus brutia.*

(ii) Species trials of *Pinus brutia*, *Cupressus sempervirens*, and *Pinus pinea* in the eastern part of the Northern Range.

(iii) To determine the effects of light, burning of litter, and soil working on the regeneration of *Pinus brutia* in the forests of the Southern Range.

(iv) To test the effect of fertilizer applications on the germination and subsequent development of *Pinus brutia* and *Cupressus sempervirens* in the Northern Range.

(v) The use of *Robinia pseudacacia* as a fodder plant in mountain vineyards, and the site treatment necessary for establishment.

(vi) Suitability of the strip-felling silvicultural system for the regeneration of *Pinus brutia.*

(vii) Strip sowing of *Pinus nigra*, on different aspects and under varying degrees of shelter around a Forest Meteorological Station, to determine the influence of climatic factors on the survival of seedlings.

B. *Eucalyptus.*

(i) Small scale species trials.

(ii) Spacing trials.

(iii) Cultivation trials.

(iv) To determine the effect of stumping at time of planting.

(v) To test the results of planting three transplants in one hole.

(vi) To investigate the effect of Eucalypts on cereal production in adjacent fields.

C. *Other.*

(i) To study the effect of fertilizer applications on *Acacia cyanophylla* at time of sowing and planting, and on *Pinus nigra* seedlings planted on heavily-eroded mountain slopes.

(ii) To investigate the possibility of planting trees on " Kafkalla " lands, by the use of explosives to make holes in the " Kafkalla " lands (calcareous " hard-pan ").

(iii) Propagation of various *Poplar hybrids* from imported cuttings and of *Pistacia lentiscus* and *Rhus coriaria* from seed.

(iv) Storage of *indigenous Pine*, *Cypress* and *Cedar* seed in various types of sealed containers at various Forest Stations, in order to determine optimum storage conditions.

D. *Miscellaneous.*

(i) Seed of *Pinus nigra*, collected from young trees of 20–25 years, was supplied to the British Forestry Commission for experimental sowing at 4 Nurseries in Wales. The yield of seedlings fit for transplanting averaged 2,000 per $\frac{1}{4}$ lb. of seed.

(ii) Seed has also been supplied for the establishment of a stand of *Pinus halepensis var. brutia* at the National Pinetum, Badgebury, Kent.

(2) Forest Entomology.

Summary of Results to Date.

A. *Forest Insect Fauna—General Survey.*

(*a*) Good progress has been made in the collection of material for a basic check-list of the forest insect species which will be associated, as far as possible, with their particular host-tree species. In the material already collected, there are a number of species of bark-beetles, wood-borers, shoot-borers, etc., which have not been previously recorded.

(*b*) Some of the species—for example, the Cypress Buprestid (*B. Cupressi*), the Pine-shoot Moth (*Evetria*), Longhorn wood-borers in pine and eucalyptus—have been studied in greater detail.

B. *Studies on the Seasonal Activities of Bark-beetles and Wood-borers in P. nigra and P. brutia.*

As a result of the conditions arising from the hot and dry summer season, the bark-beetles' concentration upon newly-felled trees was very rapid. Within the space of a few weeks after felling, the trees (*P. brutia*) in the Paphos forest area were fully occupied by the bark-beetle brood, on both the main stem and the branches.

Of the two Pine-shoot Beetle species, *Myelophilus piniperda* and *minor*, the latter species has been found to be by far the most common, and it appears to breed here in much thicker-barked parts of the tree than is usually the case in Central Europe.

On the *P. brutia* in Paphos forest the commonest bark beetle species on the main stem is an Ips (? *Ips erosus*). Associated with this species is a much smaller bark-beetle, a species of *Crypturgus*, which we believe may play a significant part in reducing the number of the *Ips* species. On both pine species (*P. nigra* and *P. brutia*) there occur, on the upper parts of the main stem and on the branches, species of *Pityogenes* and *Pityophthorus*, the tunnel patterns and distribution of which are easily recognisable.

In the Cypress, a bark-beetle (*Phloeosinus armatus*) was found breeding in felled logs. The adults of this beetle have the same habit as the pine-shoot beetle (*Myelophilus*) in tunnelling in the green shoots of the cypress trees for feeding purposes. Shoots tunnelled in this way turn brown and are easily recognisable at some distance. Examples of this shoot damage have been seen at Halevga, and on the Forest road round the top of Mount Kornos.

Wood-Borers.

Associated with the *Ips* bark beetles in *P. brutia* there are certain Longhorn beetle species (*Col. Cerambycidae*). These beetles enter the logs " on the heels of " the bark-beetles, and their tunnels, by obliterating those of the bark beetles, must cause a certain amount of reduction in the number of the bark-beetle broods. Studies of the activities of these wood-borers over a long period have shown that they rapidly invade the sapwood region, and may, therefore, be responsible for damage in the superficial parts of the logs, the timber of which is used for box-making. We have not found evidence of much deep penetration by borers in coniferous logs.

C. *Fire damage and insect distribution in coniferous areas.*

So far, there have not been any specially favourable conditions in which this could be studied, but from the few areas examined it is clear that the pattern of behaviour of the bark-beetles and wood-borers is the same as in felled logs— i.e. immediate attack by bark-beetles, closely followed by wood-borer attack, usually by Cerambycid Longhorns on the main stem plus attacks by Buprestid species on

the upper parts of the tree. It is of interest to note here that so far only one case of attack by the well-known Hymenopterous *Sirex* woodwasp, one of the blue species, has been recorded from a log of *P. brutia.* As a general rule, the brief periods during which timber, green or fire-damaged, is allowed to lie in the forest, after felling, preclude any possibility that, even on large areas an insect population of any size could develop its numbers sufficiently to threaten other areas of standing timber in the immediate neighbourhood.

D. *Dieback on Crowns of Troodos pine and the incidence of insect attack.*

Throughout the Troodos Pine region the trees have shown, during the present season, remarkable examples of crown dieback, which varies from a few isolated shoots to the whole crown of the tree from the extreme tip downwards for some 6 to 8 feet. Detailed observations on the connection between the incidence of insect attack and this state of dieback have shown clearly that the insects follow upon the dieback condition, if they are present at all, and are certainly not a primary factor in its occurrence.

E. *Distribution Surveys in groups of young pine regeneration to determine the incidence of the Myelophilus shoot-borers (Pine-shoot beetles) and the Pine shoot-moth (Evetria).*

These surveys have been made on both species of pine. The percentage of incidence recorded has been confined to the leading shoots. So far, such surveys cannot be considered sufficiently extensive to record an accurate picture of distribution over wide areas, but it is already evident that they show some difference in percentage of incidence in the two species, and further that differences due to site values and condition of the young crop (whether it has been cleaned or not) may also be observed.

F. *The Cypress Borer (Buprestis cupressi).*

This insect was first noticed by us in June, in a young plantation of *C. sempervirens* at Athalassa. The damage done by the borers in the stems of the standing trees was very great, and it is obvious that this intensity of attack is directly associated with bad site factors operating over a long period. This borer is widely distributed and subsequent observations made at Kantara in the Northern Range have confirmed the above.

G. *Insects of the Cyprus Cedar (Cedrus brevifolia).*

The investigation into the insects attacking *C. brevifolia* was concentrated in the first instance on those attacking the cones. So far, two cone insects have been found, one species of Cone-Moth and one Hymenopterous Seed-Fly. Neither of these has been bred to the adult stage and they are, therefore, so far unidentified. In addition to these cone insects, there have also been recorded one bark-beetle, one Buprestid wood-borer, and two Longhorn borers. Previously, no insects have been recorded from *C. brevifolia* in Cyprus.

H. *Insects attacking Eucalyptus species.*

In view of the growing importance of the Eucalyptus species for planting in the plains region, the observation of any insect species attacking these trees is worthy of record.

So far, only two insects have been found, one species of Longhorn wood-borer (*Col. Cerambycidae*) bred from Eucalyptus logs lying at Athalassa, and a large species of Carabid ground-beetle (*Col. Carabidae, Scarites sp.*), which was found feeding on the roots of young plants in a village fuel area at Athienou. No economic importance is attached to either of these insects at the present time.

(3) Mensuration and Management.

The main object of these investigations was to subject to field tests the new procedures proposed by Dr. Hummel (" Proposals on some Aspects of Forest Management in Cyprus " cyclostyled, 1954).

(*a*) *Bark Percentage of P. brutia.*—The analysis of all the measurements taken indicates that for trees in the 3 feet and bigger girth-classes the previously accepted figure of 18% bark is correct ; but in the smaller girth-classes the allowance should be greater. A variation by locality was also confirmed.

(*b*) *Permanent Sample-Plot Procedure* has been revised as the result of field tests. Some permanent sample plots have been made in coppiced Eucalyptus plantations to observe the effects of various grades of thinnings.

(*c*) *Enumeration Procedure.*—The proposed method, whereby representative sample compartments are totally enumerated, instead of systematic line circular sample plots, has been tested over 18 square miles of Paphos Forest. The figures obtained differ little from those of the old system, but the new procedure requires less time and labour.

(*d*) *Mapping Crop Types and Densities from Aerial Photographs.*—A method has been evolved which compares very favourably in accuracy with a ground survey.

(*e*) *Economics of Artificial versus Natural Regeneration.*—In one compartment of Paphos Forest, a heavier than usual felling has been made in the Pine (*P. brutia*), and all gaps cultivated and sown in the autumn. A careful costing has been made, and comparison between the yield and survival of seedlings there, and the incidence and progress of natural regeneration in neighbouring compartments, will continue.

(4) Grazing.

(*a*) Investigation of the suitability of *Acacia cyanophylla* as a fodder plant continued. Seed of this species was fed to poultry and livestock. The results of the poultry trial were not encouraging, perhaps because of the nature of the trials, the seed having been fed to the birds in highly concentrated quantities. It has been suggested that further confirmatory trials should continue, using the seed as part ingredient of a compound feeding preparation. The tests carried out with sheep lasted over a period of 5 months, during which time it was found possible to build up the acacia seed (fed crushed) to 95% of the total ration, without any ill effects. Parallel tests carried out with the seed of Vicos (*Vicia sativa*) showed there was apparently no difference in fodder value between this seed and acacia seed. These results are very encouraging and further trials are proceeding.

(*b*) Pursuing the investigations on the fodder potential of *Acacia cyanophylla* further, an investigation was set out to discover the amount of seed produced by representative acacia plantations. Results from this investigation indicated that the average acacia bush could be expected to produce between two and three pounds of seed per annum, while production from one donum of average acacia plantation could be expected to vary between 16 and 20 pounds. Exceptionally good bushes were recorded as having produced up to 4 pounds of seed each, while stands of outstandingly good quality yielded up to 50 pounds of seed per donum.

(*c*) From investigations commenced in the previous year, it has been shown that the regrowth from established *Acacia cyanophylla* bushes, which have been newly coppiced, can be completely grazed off in the autumn months without harming the plants. In the investigations carried out, after the acacia leaves (Phyllodes) had been grazed off, the bare stalks were cut back to ground level ; after this, the root stock threw up satisfactory new shoots. It is hoped to graze off the regrowth again this year, afterwards cutting back the stalks as before.

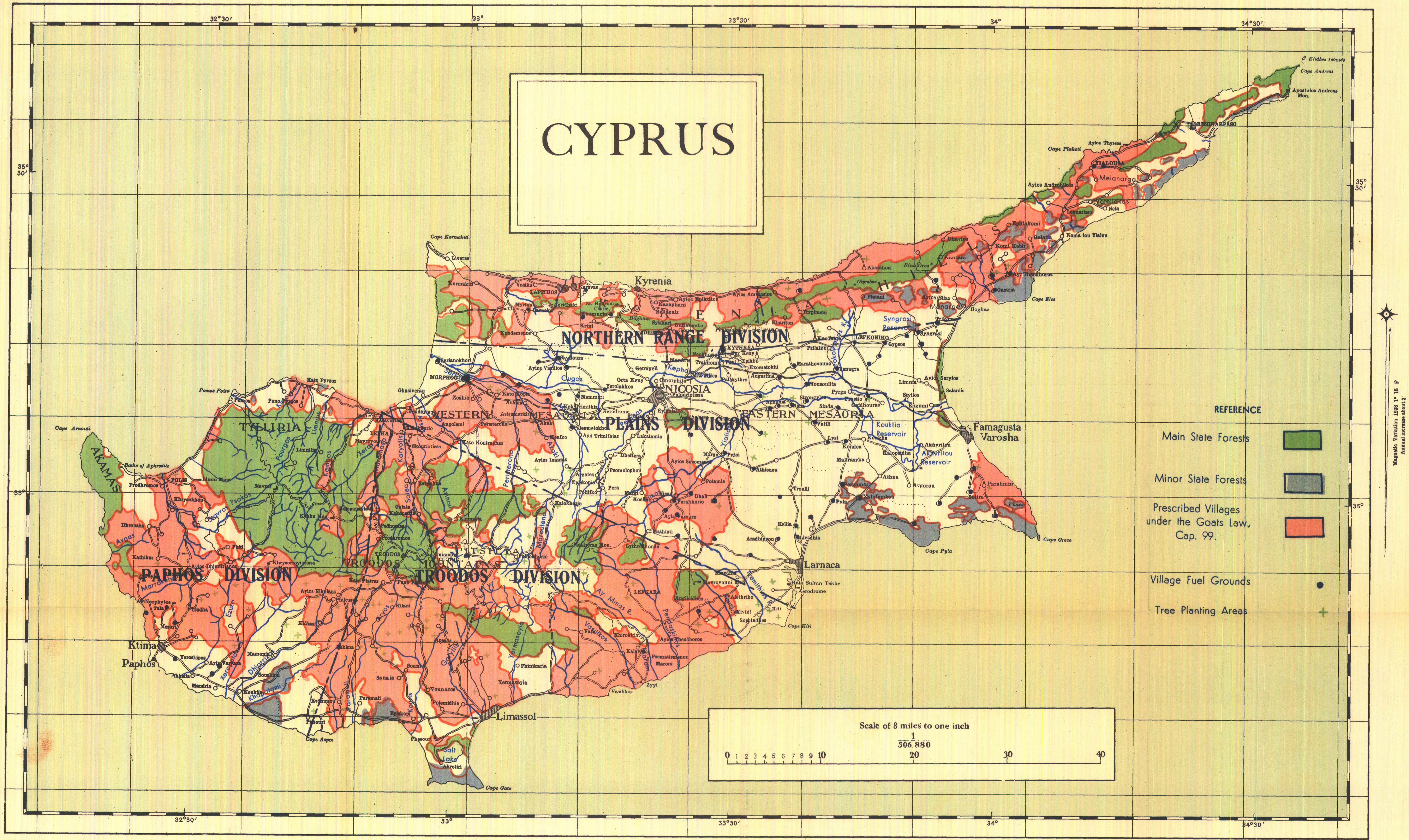
(*d*) Two fenced plots have been set up in the Karpass forests near Apostolos Andreas, to investigate the possibility of converting the juniper scrub forests of that area to perennial grass. One plot has been set up in co-operation with the Agricultural Department who are conducting all the experiments therein. A second and smaller plot has been set up by the Forest Department. In the latter plot 30 feet wide strips have been cleared of scrub and cultivated along the contour. These strips of cultivation have been drill-sown with *Phalaris tuberosa* and *Orizopsis meliacea.* A small-scale trial of a number of other promising species has also been laid down.

(*e*) Small scale investigations on the effect of the addition of fertilizers (Ammonium sulphate and Super-phosphate) to over-grazed hill-sides in Lakovounara forest (Kythrean clays) and Dhikomo forest (Trypanean Limestones) have been laid down. It has already been shown at Lakovounara forest that the addition of artificial fertilizers has a definitely beneficial effect on the development of natural vegetation, particularly if the addition of fertilizer is associated with cultivation of the surface soil.

(*f*) The investigation into the feeding habits of sheep grazed in lowland *Pinus brutia* forest, which was initiated in Dhiorios Forest last year, continues. The assessment of the information collected by the current investigation will take place in the spring of 1955, by which time a complete year's grazing cycle for one flock will be on record.

(*g*) The tests on the palatability of seedlings of *Pinus brutia* to sheep continue in Dhiorios forest. Although the seedlings are apparently unpalatable to the sheep, a definite reduction in the seedlings in the grazed area is now apparent, presumably as a result of the physical effect of being trodden on by the flock, which is introduced into the area once a quarter.

(*h*) The fenced plot in Dhikomo forest devoted to the study of the rate of natural re-vegetation after closure to grazing continues to be maintained and a definite improvement and thickening up of the vegetation within the area is apparent. This plot was laid out in 1947. The degree of regrowth of vegetation in the intervening years is disappointingly slow. A similar though smaller plot has been set out in Platanisso, at the root of the Karpass peninsula, for the same purpose. After only one growing season the improvement in the vegetation inside this plot is very marked.



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District Boundaries