CYPRUS

FOREST REPORT

1955

by

D. F. DAVIDSON, B.Sc.
Conservator of Forests

NICOSIA
PRINTED AT THE COSMOS PRESS, LTD.
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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 kilé	=	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 :	1.000 mils	=	1 pound.

CONTENTS

Report of the Forest Service in Cyprus for the year 1955

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. As in previous years the administration of the Main State Forests has been conducted in harmony with the requirements of the people. The disturbed political situation had no serious effect on the general operations of the Department.

3. The year under review saw the end of the 1st Development Plan which had been in operation from 1946.

4. On account of the large volume of expenditure made by the Armed Forces conditions of full employment for the rural population continued throughout the year. This had the effect of depressing forest crime and of increasing the cost of forest works where labour was required. The year was notable for the fact that the newly constituted Research Section was able to get down to a full year's planned working. Particular reference to the activities of this Section is made in Appendix 17 at the end of this report.

5. The biggest fire for many years occurred near Kapoura in the Adelphi Forest. An area of 3,000 donums was destroyed by the fire which raged for two days under conditions of high temperature, low humidity and unusually turbulent winds.

6. During the course of the year the currency changed to a decimal system whereby the pound sterling was subdivided into mils at the rate of 1,000 mils = £1.

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

II.—CONFERENCES AND VISITORS.

7. Mr. D. F. Davidson, Senior Assistant Conservator of Forests, attended the 4th meeting of the Mediterranean Pasture and Fodder Development Committee in Lisbon from the 9th to 16th of May. The same officer also attended the first session of the Near East Forestry Commission held in Teheran as the Cyprus and United Kingdom representative from the 24th to the 29th September and afterwards participated in a study tour of one week in the Caspian provinces.

8. Visitors to the Department during the year included Mr. J. E. Mayne, Adviser on Mechanization to the Secretary of State for the Colonies; Dr. Charles C. Larson, Lecturer in Forest Policy Administration and Economics at the State University of New York College of Forestry; Col. A. H. Lloyd, O.B.E., M.C., M.A., Lecturer in Forest Engineering and Utilization, Oxford University; Mr. T. A. Stodart, Managing Director, Stenners of Tiverton Ltd., Devon; M. Georges Illy, Forest Officer, French Morocco; Mr. Robert Baltaxe, Bagdad, Iraq; Mr. Clarke A. Anderson, Forester, United States of America Operations Mission to Lebanon; Messrs. R. Berjaoui and M. Basbous, Assistant Directors of Forestry in Lebanon; Messrs. Yehuda Hershenson, Israel Shapira and Moshe Shendler of the Israel Forest Service.

III.—THE FOREST ESTATE.

(1) FOREST AREAS.

9. (a) The area of the Main State Forests decreased from 532.77 sq. miles to 532.61 miles as the result of an exchange of land at Ay. Erini in the Morphou Bay area. By this exchange a block of formerly productive land now invaded by moving sand dunes was taken over from its owners by the Department for afforestation in exchange for cultivable Main State Forest land elsewhere in the neighbourhood. The land given up was greater in area than the land taken over in order to make the exchange attractive.

(b) The area of Minor State Forests remained at 76.56 sq. miles as in the former year.

(c) The area of communal forests which are Minor State Forests allocated as Village Fuel Areas remained the same as in the former year at 8.03 sq. miles.

(d) The area of privately owned forests and plantations during the year under review was assumed to be 52.3 sq. miles. This figure is taken from the provisional census of privately owned forests and plantations completed in the previous year. No information of recent adjustments in this figure is available

10. The total forest area of the Island now amounts to 669.50 sq. miles. This is 18.74 per cent of the total land area. Further details concerning forest areas are given in Appendices 1 and 2.

11. An area of 2,378 donums of Main State Forest land together with 2,447 fruit trees was leased for cultivation during the year.

A sum of £263.722 was collected from the rents for this land and trees. In the Minor State Forests 10,626 donums of land and 6,903 fruit trees were under lease for cultivation. The rents collected amounted to £1,150.415.

12. A total of fifty-nine forest springs was used for piped water supplies for domestic consumption. Eight of these springs were given on leasehold at an annual rent of £6.350, the remainder were enjoyed

rent free by villages under schemes approved by the Water Development Department. Thirty-nine small forest springs were leased for irrigation purposes in private lands adjacent to the forests for a total rental of £10.650.

(2) FOREST BOUNDARIES.

13. A sum of £385 was spent on maintaining the concrete beacons which mark the boundaries of the Main State Forests. No substantial changes were made in the boundaries of the Main State Forests during the year under review.

IV.—CLIMATE.

14. Last year's network of Forest Meteorological Stations was maintained throughout 1955, and was augmented in March by the establishment of a new station at Kornos in the Machaera Forest at the eastern end of the Troodos Range. The daily radio broadcasts of "fire hazard" were also continued from June to September, on a system slightly modified by last year's experience.

15. The meteorological data of the nine stations is set out in tables 1 to 5, the first three being concerned with rainfall, mean max. and min. temperatures, and mean relative humidities observed at 8 a.m. and 2 p.m. local time (06.00 and 12.00 G.M.T.). Table 4 gives further observations from the Forestry College, Prodromos, including soil temperatures, solar and terrestrial radiations, sunshine hours, and evaporation as measured by the Piche Evaporimeter. Table 5 summarizes 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.

Taking rainfall first, comparison of Table 1 with last year's shows that the annual precipitation was generally much lower, but even better spread over the year as a whole, no month being without some rain in some part of the forest area. No snow fell on the mountain stations, however, until the end of the year, the unusually mild weather of December 1954 having been continued into January and February 1955. This lack of snow, combined with abnormally hot and dry weather in June, tended to counter the better summer rainfall, and grazing was poor compared with last year. The fire danger was higher in June and July, as indicated by two large fires in Adelphi Forest, the most dangerous area.

Min. temperatures were below average in March and max. temps. reached a record high level in June, which tended to shorten the growing season. The relative humidities were higher than usual from July to September, thus lowering the autumn fire danger.

The information given in table 4 was again used to interpret the mortality of *Pinus nigra* seedlings on the experimental plots adjoining the station. The preliminary conclusions suggest that evaporation is the primary factor in survival on the unshaded plots.

The "fire hazard" of table 5 was again derived from the saturation deficit as calculated from the 2 p.m. (local time) readings of the wet and dry bulb thermometers. This year, however, the maximum hazard was assumed to correspond to a saturation deficit of 35 instead of 30 grams per cubic metre, with the result that the 100% figure was exceeded for less than 6% of the period. Next year, it is proposed to fix the maximum at 40 grams per cu. metre, since that has been the highest saturation deficit reached for the last two years, with a corresponding

adjustment in the degrees of hazard. These were slightly changed this year, as indicated below, table 5, in order to keep about the same level of saturation deficit for each degree of hazard as used originally in 1954, for the sake of comparing results year by year. A similar adjustment is intended next year.

This comparatively simple system of warning the public of the forest fire danger, by daily broadcasts on a regional basis, has considerably assisted the Forest Department in fighting fires; and the meteorological data have indicated both the most dangerous periods and the most dangerous areas in the Main State Forests.

V.—FOREST PROTECTION.

(1) DAMAGE BY NATURAL CAUSES.

16. An increase in the damage to young plantations of *Eucalyptus camaldulensis* and *E. gomphocephala* by the beetle *Phoracantha semipunctata* was noted.

No other extraordinary damage by natural agencies was reported. Mention of Dr. Chrystal's work on the Forest insects is made in Section XI, Forest Research.

(2) DAMAGE BY MAN.

17. *Fire.*— The number of outbreaks was 61 and the area burnt 3,918 donums. One fire accounted for 3,000 donums, so that apart from this one serious outbreak the area of damage was comparable to 1954. There was a slight increase in the number of fires suspected to have been intentional, due, it is thought, to the prevailing atmosphere of political unrest.

18. The one serious fire occurred in the Adelphi Forest in Troodos Division. Prior to its occurrence the entire staff had been alerted on account of abnormally dry atmospheric conditions and a sustained turbulent wind which created a situation where any outbreak of fire might be expected to assume serious proportions.

The fire was almost brought under control after twenty-four hours but got away again and was not finally encircled until the evening of the second day, when the wind moderated at a time when the worst fire front had reached the top of a high ridge. The quality of the labour secured for fire-fighting was, with few exceptions, poorer than that secured for the last large fire in Paphos Forest in 1953, and it is clear that a revision in fire-fighting technique is required.

19. There were 8 outbreaks of fire, involving some 133 donums, in the Minor State Forests. All these fires started accidentally. As in the former year the fire hazard was predicted every day throughout the summer for all the main forest areas. (Details of the system employed are described in para. 15 of Section IV CLIMATE).

20. *Grazing.*— The total number of illicit grazing offences in the forest reported for the year was less than for the previous year. This reflects a considerable reduction in grazing offences for the main forests of the southern mountains. In the Northern Range forests a tendency towards an increase in illicit grazing was apparent.

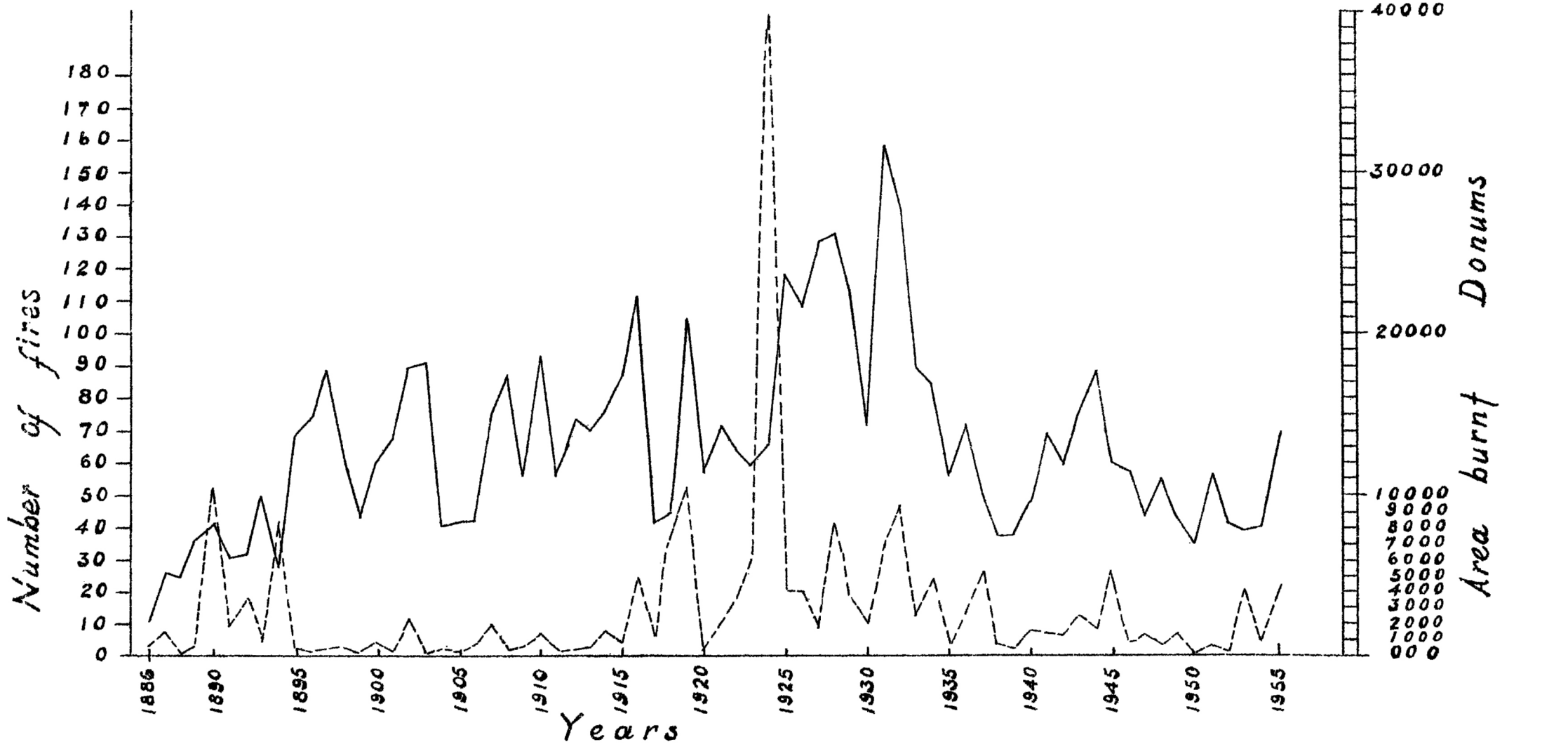
21. Autumn and winter grazing in lowland forests and Village Fuel Areas was again permitted and is now established as a standard practice. Because of late autumn rains there was a great demand for grazing in the forests at that time which, where sheep were involved, was met whenever possible.

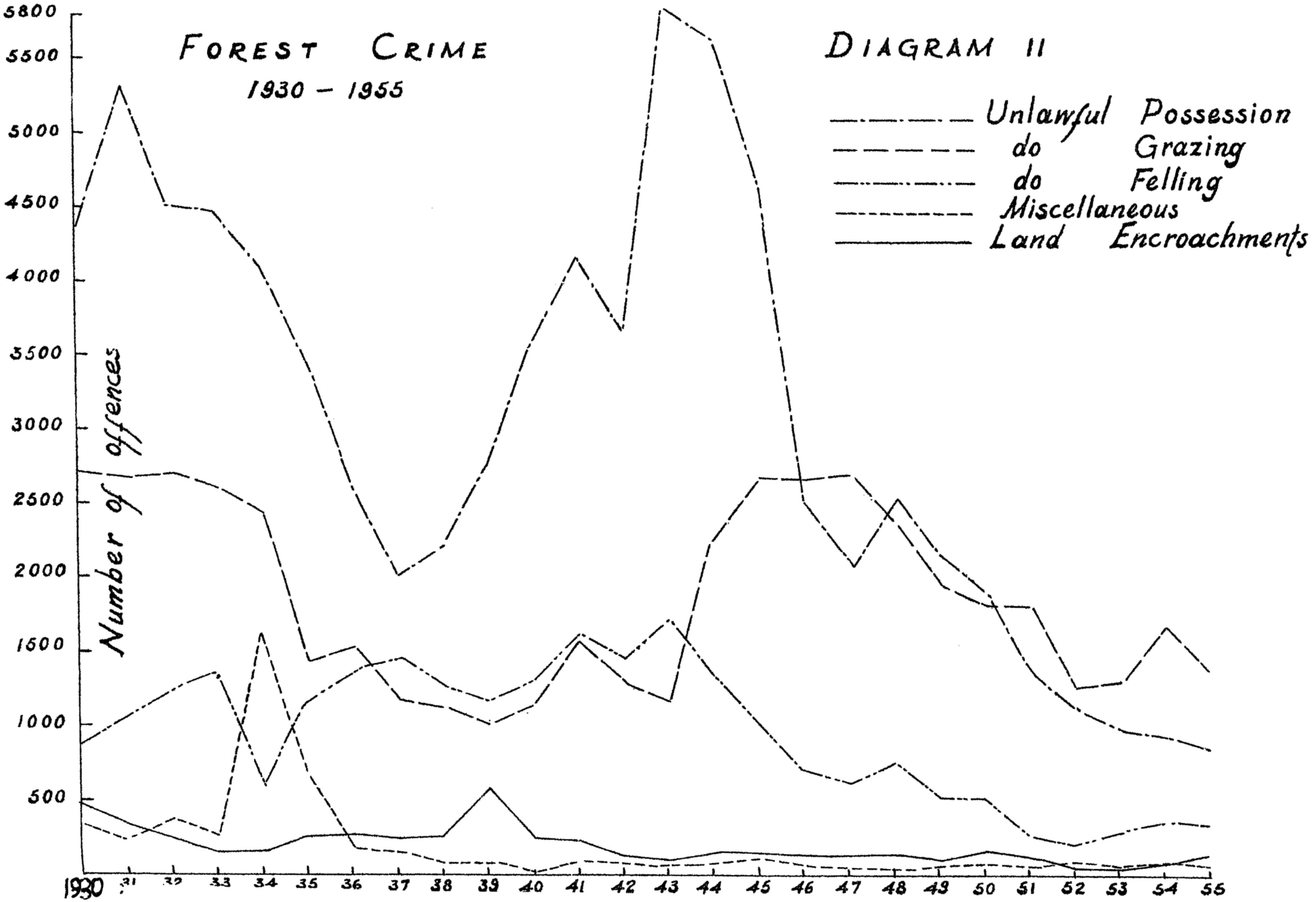
FOREST FIRES

1886 — 1955

DIAGRAM Nº 1 —— Number of fires

------- Area burnt




FOREST CRIME
1930 – 1955
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 55

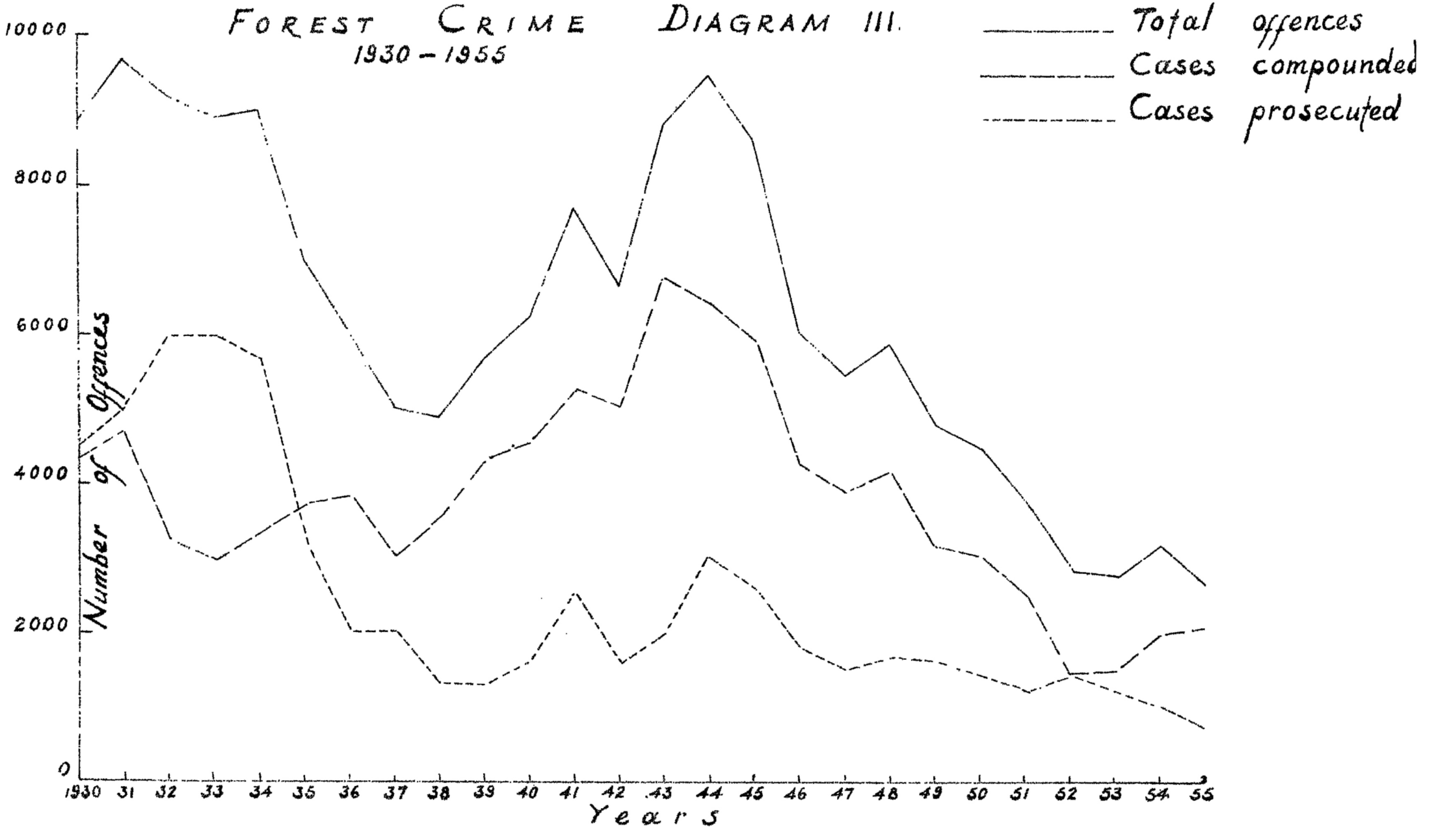

FOREST CRIME DIAGRAM III.
1930 – 1955
Total offences
Cases compounded
Cases prosecuted
Number of Offences
10000
8000
6000
4000
2000
0
1930 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55
Years

TABLE 1.

MONTHLY RAINFALL IN INCHES.

Stations	Akradhes	Ayios Merkourios	Kornos	Panayia Bridge	Halevga	Stavros	Pano Panayia	Platania	Prodhromos
	N. Range 580 ft. ASL.	Paphos Forest 800 ft. ASL.	Troodos For. 1,100 ft. ASL.	Troodos For. 1,800 ft. ASL.	N. Range 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	Rainfall	Rain and Snow	Rain and Snow
January	1.56	1.77	N.A.	1.29	1.71	2.55	3.04	2.97	2.86
February	1.18	1.85	N.A.	0.78	1.03	3.60	2.78	1.78	2.50
March	3.81	3.63	N.A.	2.43	4.57	5.89	5.72	2.62	4.58
April	0.91	0.93	1.00	1.21	0.96	1.26	0.75	0.54	0.84
May	0.10	0.33	0.79	0.90	1.00	0.70	0.44	0.57	1.69
June	—	—	—	—	—	0.97	0.26	—	—
July	0.04	—	—	—	0.71	—	—	0.29	—
August	0.02	0.02	—	0.15	0.01	—	0.70	1.35	0.90
September	—	—	—	—	0.21	—	—	0.30	0.59
October	Traces	0.61	0.49	0.72	0.61	1.14	1.39	0.37	0.79
November	3.47	1.83	1.20	1.80	2.37	2.61	2.13	5.14	4.33
December	6.14	5.16	5.50	5.16	8.36	6.89	5.39	5.99	6.48
Totals	17.23	16.13	8.98 *	14.44	21.54	25.61	22.60	21.87	25.56

N.A. = Not available. * = Figures for 9 months only. (Station started mid-March).

TABLE 2.

MAXIMUM AND MINIMUM TEMPERATURES (°F.).

MONTHLY AVERAGES.

Stations	Akradhes		Ayios Merkourios		Kornos		Panayia Bridge		Halevga		Stavros		Pano Panayia		Platania		Prodhromos	
	N. Range 580 ft. ASL.		Paphos Forest 800 ft. ASL.		Troodos For. 1,100 ft. ASL.		Troodos For. 1,800 ft. ASL.		N. Range 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.	Max.	Min.
January ..	63.5	42.5	63.3	45.1	N.A.	N.A.	60.5	38.8	56.6	41.8	56.1	42.2	54.0	43.7	49.5	37.9	47.3	37.7
February ..	64.6	44.8	64.9	44.8	N.A.	N.A.	63.1	39.4	59.3	43.9	58.3	44.0	57.6	45.2	54.5	40.2	51.6	40.2
March	65.2	45.8	65.3	44.3	N.A.	N.A.	64.6	39.8	59.7	44.3	58.2	44.5	57.1	45.0	53.9	39.4	50.4	38.7
April	70.7	50.5	71.0	49.4	70.6	51.2	70.6	44.5	65.3	47.8	63.7	47.0	61.6	47.7	60.2	42.9	57.5	42.6
May	79.8	56.8	81.2	56.5	79.7	59.0	80.9	52.4	77.0	56.4	76.3	58.0	73.1	59.4	70.8	53.6	68.9	53.3
June	88.7	66.4	90.8	61.9	90.5	68.5	92.2	60.0	87.1	65.6	86.5	66.2	83.3	70.3	82.0	62.8	79.2	63.3
July	90.8	71.0	92.2	65.8	91.3	70.1	92.2	63.3	87.2	67.5	87.6	67.8	84.4	71.3	82.5	63.6	79.8	63.8
August ..	89.3	69.3	88.6	64.8	89.7	68.9	89.7	61.0	85.5	64.9	84.5	65.5	81.2	66.2	80.5	61.4	77.9	62.3
September ..	86.5	67.4	86.8	63.7	87.2	66.8	87.1	59.1	81.4	64.1	82.5	63.2	80.4	64.9	76.7	59.2	74.8	59.6
October ..	83.6	61.8	81.7	60.4	84.1	63.3	83.7	54.1	78.1	60.9	78.6	60.9	79.9	62.4	72.5	55.1	70.4	56.4
November ..	71.4	53.0	71.2	53.1	69.3	54.2	68.7	46.9	64.1	50.5	63.3	49.6	61.6	51.1	57.6	44.3	53.5	43.5
December ..	62.7	46.6	63.8	46.9	61.3	46.4	59.9	39.7	55.8	44.4	55.4	42.9	54.7	45.1	50.9	37.8	46.7	37.6

N.A. = Not available (Station started mid-March).

TABLE 3.

RELATIVE HUMIDITY PER CENT.

MONTHLY AVERAGES.

Stations	Akradhes		Ayios Merkourios		Kornos		Panayia Bridge		Halevga		Stavros		Pano Panayia		Platania		Prodhromos	
	N. Range 580 ft. ASL.		Paphos Forest 800 ft. ASL.		Troodos For. 1,100 ft. ASL.		Troodos For. 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		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	08.00	14.00
January ..	72.6	67.0	81.0	60.3	N.A.	N.A.	88.2	*	85.0	76.9	71.9	63.5	70.4	69.8	72.9	74.9	70.7	78.8
February ..	82.0	59.2	75.9	64.6	N.A.	N.A.	80.3	56.0	80.4	72.9	67.7	59.1	67.3	62.2	61.4	65.6	59.2	62.7
March	71.0	56.2	68.3	64.5	N.A.	N.A.	65.6	48.1	71.9	68.3	67.4	58.6	59.4	64.4	52.1	53.8	59.1	63.8
April	63.7	53.4	55.5	50.7	55.5	40.2	52.5	45.3	62.9	59.5	60.1	51.1	58.7	54.5	46.5	51.8	57.5	57.6
May	66.5	52.9	45.7	45.5	48.4	47.6	45.2	40.2	58.1	52.0	46.4	40.0	47.3	44.5	37.8	45.7	44.6	51.9
June	61.6	48.9	29.5	33.4	45.8	39.8	29.7	29.4	53.1	40.6	38.2	35.7	34.8	35.4	25.4	36.1	31.4	37.4
July	64.7	48.7	38.7	38.8	45.7	41.8	35.2	37.1	58.3	45.1	45.9	44.1	37.9	38.1	28.0	44.2	35.9	46.7
August	67.3	52.0	50.9	51.1	52.0	45.6	42.0	41.0	62.6	53.2	54.0	49.6	47.6	48.6	33.5	48.9	39.4	49.6
September ..	66.4	50.6	55.5	45.5	50.5	45.6	44.3	41.0	63.1	53.7	52.2	43.2	53.8	48.9	37.5	49.4	46.6	54.3
October ..	70.3	48.9	57.6	53.9	47.7	42.5	49.8	42.5	54.6	55.0	50.3	44.5	52.4	47.1	35.5	43.1	43.6	48.4
November ..	67.3	56.4	65.3	48.3	64.5	54.7	71.2	48.5	76.9	68.4	69.7	62.0	72.2	59.1	68.7	66.3	75.6	76.6
December ..	75.7	66.2	77.3	62.6	76.6	70.2	86.8	68.1	81.3	76.4	84.0	72.6	73.0	70.3	77.8	79.2	79.5	83.8

N.A. = Not available (Station started mid-March). * No afternoon observations taken.

TABLE 4.

FORESTRY COLLEGE, PRODHROMOS.

OTHER OBSERVATIONS.

Month	Mean Air Temp. (in Screen) 06.00hrs. 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 Max. Temp. (in Vacuum) 15.00 hrs. GMT.	Mean Solar Max. Temp. in (air) 15.00 hrs. GMT.	Mean Sunshine Hours per day	Mean Evaporation (Piche) per day.
January	41.1°F.	37.7°F.	37.5°F.	41.0°F.	41.3°F.	47.7°F.	97.1°F.	58.9°F.	4.5 hrs.	2.3 c.c.
February ..	44.2	36.6	40.4	44.3	44.5	47.6	112.5	62.8	6.4	5.5
March	44.0	35.4	41.2	45.1	45 6	48.6	147.4	63.7	6.3	4.9
April	49.4	39.3	51.8	56.0	55.9	52.9	132.6	75.0	8.9	5.7
May	61.8	49.6	62.4	65.6	65.1	58.1	142.4	88.3	10.6	9.6
June	71.0	59.0	75.8	80.1	78.7	69.2	147.9	98.3	12.9	12.6
July	71.6	58.9	76.9	82.3	81.1	74.2	149.8	99.7	12.4	10.7
August	69.3	56.8	71.9	79.3	78.7	74.9	143.4	93.9	11.8	9.5
September ..	65.4	55.0	67.2	74.7	74.3	74.0	143.0	93.5	10.3	8.2
October	61.6	50.6	60.3	67.1	66.9	69.9	136.5	87.6	9.0	6.9
November ..	47.3	39.0	45.7	51.2	52.1	61.9	113.0	68.7	5.5	2.7
December ..	41.1	33.4	38.1	41.6	42.5	52.7	100.0	59.3	4.0	1.5

Total number of Ground Frost days 22 (Jan. to April and Dec.) (i.e. Grass Minimum Temperature 30.4°F. or less.)

TABLE 5.

FOREST FIRE HAZARD, JUNE–SEPTEMBER, 1955.

Station	Low	Moderate	High	Very High
Akradhes, 58, ft. ASL. ..	45.9% (of Period)	34.4% (of Period)	13.1% (of Period)	6.6% (of Period)
Ayios Merkourios,800 ft.ASL.	24.6 ,,	45.9 ,,	18.0 ,,	11.5 ,,
Kornos, 1,100 ft. ASL. ..	27.0 ,,	44.3 ,,	21.3 ,,	7.4 ,,
Panayia Bridge, 1,800 ft.ASL.	22.1 ,,	30.3 ,,	32.8 ,,	14.8 ,,
Halevga, 2,500 ft. ASL. ..	53.3 ,,	22.9 ,,	20.5 ,,	3.3 ,,
Stavros, 2,600 ft. ASL. ..	36.9 ,,	43.4 ,,	17.2 ,,	2.5 ,,
Pano Panayia, 2,800 ft. ASL.	50.0 ,,	36.9 ,,	12.3 ,,	0.8 ,,
Platania, 3,600 ft. ASL. ..	57.4 ,,	32.0 ,,	9.8 ,,	0.8 ,,
Prodhromos, 4,500 ft. ASL.	64.8 ,,	30.3 ,,	4.9 ,,	Nil ,,

Degrees of Hazard { Low = up to 40%; Moderate = 41 – 60%; High = 61 – 80%; Very High = Over 80%.

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

22. In the course of the year the sheep grazing situation in the Akamas was reviewed with the result that a considerable increase in permitted grazing was allowed. This increase became possible as a result of the study made over the previous two years of the grazing habits of the flocks already permitted to graze in the area. This study revealed that the average flock made very much smaller demands on forest grazing than had been anticipated.

23. Three villages bordering the Minor State Forests closed their lands to free range goat grazing during the course of the year by free ballot under the Goats (Exclusion) Law. Some 539 miles (i.e. 48.7%) of the forest boundary now fall within the areas prescribed under the Goats Law. Further details concerning forest grazing incidence are given in Appendix 9.

24. *Forest crime.*— The total number of forest offences during the year was 2,742 (involving 3,157 persons) compared with 3,826 in the previous year. These figures represent a 17 per cent decrease on the previous year's totals. Out of these forest offences, 2,277 cases concern the Main Forests and 465 the Minor Forests, representing an incidence of 4.2 and 5.4 cases per square mile respectively.

25. After illicit grazing which accounted for 1,346 offences the chief form of crime detected in the forests was illicit cutting and possession of forest produce amounting to a total of 1,173 cases for all forests.

26. Of the total offences 22 per cent (593 cases) were tried before the Courts. The remaining cases were compounded. Diagrams 2 and 3 illustrate the course of forest crime during the period 1930-55 in the Main and Minor Forests.

A detailed analysis of forest crime in 1955 is given in Appendix 5.

(3) PRIVATE FORESTS.

27. The Forest Law enables private forest estates to be placed by their owners under the protection of the Forest Department on payment of prescribed fees. During the course of the year 18 private forest estates with a total area of 7.21 square miles were under the protection of the Department in this way.

28. The felling of privately owned forest species is controlled by the Forest Department. During the course of the year 2,612 licences were issued for the felling of 74,720 privately owned trees.

VI.—FOREST MANAGEMENT.

29. The Working Plans Officer was absent from the Colony for most of the year and during his absence the Working Plans Section carried out mainly routine duties.

30. Enumeration for the revision of the working plans of the Stavros and Kambos felling series in Paphos Forest continued. The procedure already described in last year's Annual Report whereby sample compartments form the sampling unit was applied. Such compartments are now subject to 100 per cent. enumeration and are sampled for increment studies at an intensity of approximately 25 per cent by area.

31. Computation of the data collected in the field in the previous season together with the classification of crop types from air photos continued.

32. Another 21 simple working plans on standard forms were prepared and issued for Village Fuel Areas. This brings the total number

of Village Fuel Areas managed under such Working Plans to 63. 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.

33. Volume tables for *Eucalyptus camaldulensis* and *E. gomphocephala* were prepared. In the preparation of the volume tables for *E. camaldulensis* a formula method, whereby the regression of volume on basal area is calculated, was used. This method was found inapplicable for the preparation of the volume tables for *E. gomphocephala,* for which purpose graphical means were used. These volume tables are provisional and have not yet been issued for general use.

34. The new standard and multiple standard volume tables for *Pinus brutia* and *Populus nigra* (Cyprus Black Poplar) are now available and in general use. Preliminary work was commenced on the collection of data for the preparation of volume tables for *Cupressus sempervirens* and for the hardwood species *Platanus orientalis* and *Alnus orientalis.*

35. The Survey Section was kept very busy preparing various maps, plans and sun prints for the use of the various other sections of the Department. Two of the Forest Surveyors were engaged for much of the year on enumeration work in Paphos Forest with the Working Plan Section. Other operations of the Survey Section included the mapping of new roads, afforestation work and encroachments for the various forest divisions.

36. The local form of Group Selection System continued to be the system of management for all pine forests.

37. Thinning programmes on the basis of a ten year cycle were prepared for most forest areas. Adjustments were made to the cleaning plans drawn up in the former year to allow for more convenient supervision and operation of the works concerned. It was found advisable to arrange the cleaning cycle on the basis of the Forest Range rather than for each Forest Guard's beat. In this way cleaning operations were concentrated in one place in each Range instead of being carried out within each beat in the Range as had originally been planned.

38. The natural hardwood forests in the mountains which consist mainly of riverine stands of plane (*Platanus orientalis)* and alder (*Alnus orientalis*) mixed with pine were worked on a clear felling system with an area control. The coppice oak (*Quercus alnifolia*) which is found on slopes and screes as a pure forest or as an understory was worked in the same way. The hardwood plantations in the plains, mainly *Eucalyptus* species and *Acacia cyanophylla* were worked on short rotations varying from 7 to 20 years, on a clear felling system with or without an area control.

VII.—FOREST UTILIZATION.

(1) OUT-TURN FROM THE FORESTS.

(N.B. All volumes of yield refer to measurement "Roundwood under bark".)

39. 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; the yield of timber and roundwood from these sources 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.

40. Yields of timber from the Main State Forests in 1955 amounted to 1,220,000 cubic feet (see columns 1 to 3 of Appendix 6). Softwood yields contributed 1,146,000 cu. ft. or 94% of this total and represented a 3% excess over the yield cut in 1954. As explained in last year's Annual Report the softwood cut has been increased considerably, although by a very conservative margin, in anticipation of the increased permissible yield which will result from the yield calculations recommended by Dr. Hummel in his final report. (Dr. Hummel was seconded to Cyprus from the British Forestry Commission for three months in 1953-54 to advise on management problems). Work on these recalculations of yield for the softwood forests has already showed that the increase in yield which will result from this reappraisal of stock will allow for an even greater increase than was originally anticipated. The remainder of the yield was composed of hardwood, mainly plane and alder, from riverine fellings. The yield from the Minor Forests was only 150 cu. ft.

41. Almost the whole yield was sold standing. Sale prices for standing trees remained comparable with the 1954 figures, at from 65 to 100 mils per cubic foot.

(2) IMPORTS, EXPORTS AND CONSUMPTION.

42. 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. As these articles are considered to be manufactured goods connected with a specific export business, details concerning them are not included in the data given.

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

44. The total population at the end of 1955 was estimated to be 517,000, so that the *per caput* consumption amounted to:

	Cubic ft. round volume	
	1954	1955
Timber	7.98	7.50
Fuel	1.72	1.09
Pulp products	0.76	1.01
Other products	0.36	0.65
Total consumption	10.82	10.25

(3) MINOR PRODUCTS.

45. Sales of Minor Forest produce (see Appendix 7) were valued at £3,853 the major items being sales of seeds and fruits (£1,772) and Nursery stock (£1,592).

46. The policy of issuing olive and carob stocks from the Forest was continued. A total of 30,042 stocks was issued.

(4) EXTRACTION.

47. As in the previous two years the greater part of the yield was sold standing by tender. Two contractors undertook to work 738,400 cu. ft. in the Paphos Forest whilst in other forests three others covered a further 160,000 cu. ft. of the yield. The remainder was sold in smaller lots by auction, mainly in the Troodos and Adelphi forests.

TABLE 6.

CONSUMPTION OF FOREST PRODUCTS, 1955.

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

Kinds	Sawn timber	Round Timber	Fire-wood charcoal	Plywoods Veneers	Matches	Paper Pulp Products	Semi-manufactured goods	Total
Net imports (*a*) ..	2,533	124	—	153	82	526	100	3,518
Local production (*b*)	1,124	96	564	—	—	—	—	1,784
Total consumption	3,657	220	564	153	82	526	100	5,302
	3,877							
Local production as percentage of total	30.7	43.6	100	—	—	—	—	33.6
	31.4							
Percentage of Grand Total	69.0	4.1	10.6	2.9	1.5	9.9	1.9	100

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

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

48. The system followed of disposing of the year's cut in a few large sales, produced some special problems. Serious delays in the completion of contracts showed that contractors were unable to provide themselves with sufficient working capital and it is clear that unless more capital is forthcoming a partial return to a system of smaller coupes must be contemplated. The labour shortage resulting from full employment proved an outstanding impediment to the quick fulfilment of contracts. The younger men in the Forest villages were attracted by easier working conditions in the towns and in the mines where all the amenities of life are available. With the increasing yield and the shortage and expense of skilled labour, the need for introducing mechanization wherever possible becomes increasingly important.

49. The intensity of the programme of thinning and cleaning in pole crops and dense regeneration was stepped up in all divisions. There was no difficulty in disposing of the produce. Further reference to this subject is made in para 37.

(5) SAWMILLING AND FOREST INDUSTRIES.

50. There were five breakdown sawmills in operation, four in private hands and one owned by Government. These mills have managed to handle the output of the forests.

51. Due to the pressure of demand the quality of sawn timber turned out from the private mills remained far from satisfactory. The prices for local green sawn timber remained at between 350 and 500 mils per cubic foot. Until such time as the retail merchant is willing to refuse to accept delivery of excessively knotty and unsound timber the situation is most difficult to counter. Neither the mill owners nor the retail merchants appear to be able to appreciate that by delivering poor quality timber now they will make disposal far more difficult once the extraordinary demands created by Military works cease. All efforts to promote any simple grading and seasoning standards have so far met with apathy.

52. The box-shook industry continued to expand. It is hoped that if the quality of shook delivered to the exporters can be improved, a substantial reduction in the number of imported shooks with a resultant improvement in the local industry can be achieved. A note on current work connected with the control of sapstain, the chief bar to efficient local box shook production, is included in para. 5 of part XI Research.

53. The new Utilization Centre at Morphou was almost completed during the year. The sawmill, employing Stenner band mills, settled down to custom sawing to contractors' specifications, early in the year. Total output was 120,359 cu. ft. sawn. The daily output for all working days of 1955 varied from 500 to 600 cu. ft. sawn per day. This output was considered to be satisfactory as a large proportion of the timber sawn was of very small dimensions. Certain modifications to machinery to increase efficiency and reduce labour costs are planned and will be described in future reports. An overall profit of £533 was made over the year's trading after all expenses, including depreciation, had been allowed for. Considering the experimental nature of certain of the operations undertaken this result of the first full year's work is thought to be satisfactory.

54. The seasoning kiln and pole-dressing machine arrived during the year but due to delay in the provision of electrical power neither had come into production by the end of December.

55. Uncovered seasoning space, using concrete foundations and railway line bearers, was provided for hire by contractors who only made use of the facility for the storage of temporarily unsaleable timber. Nevertheless an improvement in quality was apparent after only six to eight weeks in stack.

56. Work on the construction of covered seasoning space was commenced in the latter part of the year. By the end of the year one hundred and twenty foot run of covered space had been completed.

57. The creosoting plant (hot and cold method) continued to operate. A substantial order was completed for creosoting large baulks of timber for harbour works at Limassol.

(6) OIL CONVERSION SCHEME.

58. The regulations requiring kiln burners and other types of commercial heaters to burn oil instead of wood fuel were enforced during the year only in respect of lime kilns. The price of oil fuels remained relatively steady and supplies of wood fuel were adequate to meet the demand.

(7) VISIT BY ADVISER ON UTILIZATION.

59. Col. A. H. Lloyd O.B.E., M.C., Lecturer in Forest Engineering and Utilization at the Imperial Forestry Institute, Oxford, visited the island for three months to advise upon all aspects of Forest Utilization. In his report he emphasized the need to increase the mechanization of all aspects of Utilization, particularly with regard to extraction from stump to roadside, if revenue from sales of timber is to be maintained. To this end he recommended the purchase of three Wyssen (W 30) Skyline Cranes and three Unipower Forestry tractors. The former were ordered and had arrived by the end of the year and are mentioned elsewhere in this report.

60. In the fields of sawmilling, preservation and timber use, he made a number of valuable recommendations which are being adopted. He realized the difficulty of securing proper seasoning and grading standards in a country where excellent prices can be secured for all classes of wood products straight from the saw. His advice on all aspects of Utilization was greatly appreciated.

VIII.—FOREST ENGINEERING.

(1) FOREST ROADS AND BUILDINGS.

61. The Forest road system maintained by the Department totalled 450 miles at the beginning of the year. The increase in mileage shown below includes only those roads completed during the year. A further 3¼ miles were partly constructed and work on a further 2 miles had to be completely abandoned because of the limitation imposed on the movement of explosives as a result of the political situation.

	Miles
Graded roads built at the expense of the purchasers of timber coupes	13.25
Roads constructed from Government funds	9.75
Roads constructed from Mining Coy. funds	4.00
Roads taken over from other authorities	3.00
Roads handed over to other authorities	—
Total increase in mileage	30.00

62. All forest roads and bridges were maintained. The Troullia wooden trestle bridge, a well-known landmark built by the late Conservator of Forests Mr. G. W. Chapman, M.B.E. to span a chasm on the Pedhoulas—Kykko road, was renovated to enable it to give service for a further five years. It will then need replacing.

63. Eight miles of road was widened. With the increasing weight and volume of traffic some stretches of road are proving too narrow and a comprehensive scheme of road widening is planned.

64. Departmental building operations were concentrated on maintenance rather than on the construction of new buildings. Apart from the construction of a new Forest Station at Salamis, built to replace the old one which is to be demolished in order to allow for further excavations by the Antiquities Department, no new work of any importance was carried out. The sum spent on all works was just under £6,500.

65. The Forest Rest House at Stavros continued to be well patronized, 546 guest nights being recorded.

(2) FOREST TELEPHONE SYSTEM.

66. 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. As has become customary, full co-operation with the Cyprus Inland Telecommunications Authority was maintained. The Forest telephone system links in with the Authority's system at a number of points, and is recognized as a permanent part of the Island's telecommunication system.

67. By the end of the year the forest telephone system consisted of 390 miles of route (totalling 1,070 miles of wire) and 14 exchanges serving 238 instruments. The total capital value of the system, including stores, is estimated to be about £52,000. During the year 134,693 calls were recorded of which 99,527 were free departmental calls. Some 431 faults in the system were located and rectified. The cost of operation and maintenance, including personal emoluments, transport and other charges, amounted to £11,427. Net revenue earned on private calls and other services amounted to £1,756, to which may be added a further £7,147 being the nominal value of free departmental calls.

68. Tests continued on the Very High Frequency radio network and there can be no doubt that this system of providing additional trunk routes is admirably suited to Cyprus. It has not been decided whether the system can be used to replace existing pole routes. Tests are to be continued.

69. The Mountain Air Rescue team maintained by the Royal Air Force rendered outstanding service with their "Walkie-Talkie" type radio sets during the big Forest fire at Kapoura (reported earlier), as well as assisting in food distribution and fire-fighting.

(3) MACHINERY AND PLANT.

70. The Department's fleet of vehicles (10 trucks; 1 bus; 8 cars and 10 motor-cycles) was maintained in the Departmental Workshops. In addition, major repairs to other machinery (2 Angle dozers D6, 2 tractors D2, 1 Ferguson Tractor, 3 Compressors, and ancillary equipment such as electric generators and pumping equipment) were carried out in these workshops.

71. 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 £7,942 and receipts totalled £8,353.

72. In early December the first of three Wyssen Skyline Cranes (W. 30 Model) arrived together with a Swiss instructional engineer and two assistants. The machine was installed in a coupe in Paphos Forest and the training of a local crew was commenced. It is too early as yet to assess the value of these machines working in the scattered fellings resulting from the application of the local Group Section system. There is no doubt however that in certain chosen sites logging costs will be substantially reduced.

IX.—AFFORESTATION.

(1) MOUNTAIN FORESTS.

73. The afforestation of bare mountain forest land continued as in previous years with funds supplied from the first Development Plan. A total area of 4,308 donums was treated for an expenditure of £8,038. The bulk of the work was carried out in the limestone mountains of the Northern Range with direct sowing techniques, mainly using the checker-board patch system described in last year's report. This system continued to give good results in many areas, but in some parts where conditions were apparently favourable to tree growth results were very disappointing. Casualties were greatest in those areas where a dense growth of *Arbutus andrachne* and *Myrtus Communis* existed. A series of experiments set out by the Silviculturist in the previous year revealed that there is apparently no significant site effect operating from the shade of the surrounding vegetation or from root competition. The reason for the casualties remained undiscovered. The cost of the work was kept down to the £2 per donum average of the previous year. This represents a considerable achievement when considered against the background of rising wages which existed in the year under review.

74. The summer was very hot and autumn rains were considerably delayed in many areas, with the result that the overall incidence of casualties was high. Tending and cleaning operations in the young crops established in preceding years continued normally with a slight rise in costs as a result of increased labour wages and labour shortage.

(2) LOWLAND FORESTS.

75. The afforestation of the Ay. Erini sand drifts was almost completed by the end of the year.

The work of stabilizing the artificially created littoral dune continued, with best results being obtained from rooted cuttings of *Tamarisk spp.*

76. An area of 68 donums was planted with various *Eucalyptus spp.* in the vicinity of Nicosia. These plantations were in the nature of large scale trials of certain species which had already commended themselves for use in the arid lowlands of the Island.

(3) COMMUNAL FORESTS.

77. The number of Village Fuel Areas in existence remained at 97 with a total area of 8.03 sq. miles. Another 22 of these Village Fuel Areas were handed over to the management of Village Authorities under approved working plans. Every effort was made to complete the plantation of all existing fuel areas with the remaining Development funds before the end of the year.

(4) FOREST NURSERIES.

78. Two nurseries were in operation in the lowlands and two in the mountains during the course of the year. The main production of seedlings was concentrated at the new Morphou nursery with its overhead irrigation system and abundant water supply.

79. The Athalassa nursery, which had hitherto been the main departmental nursery for the production of tree species for planting in the lowlands, was given over entirely to the Research Section for experimental purposes and for raising the new *Eucalyptus* species required for the trials which are now being initiated throughout the Island. Production figures for nursery stock were as follows:

Stock carried over from previous year . .	251,401
New seedlings raised during the year . .	334,313
Total	585,714
Issues during the year for departmental use	64,659
Issued to other departments	15,539
Sold to the public	80,840
Culled or written off	80,252
Stock remaining at the end of the year	344,424

One of the notable innovations introduced in the course of last year in nursery practice was the use of polythene bags in place of pots. These bags last at least one year under local conditions and save much bulk and weight in transport to the planting site. At planting they are expendable, the seedlings being planted in the bag which is slashed and incised with a knife to allow for the easy passage of roots into the surrounding soil.

The drop in demand for eucalyptus seedlings was again noticeable. This was attributed to the fact that farmers are now finding that this species is very demanding in its requirements and that it interferes considerably with surrounding crops.

(5) FOREST SEED COLLECTION.

80. A total quantity of 4.52 tons of seed was collected in the course of the year, mainly *Pinus brutia* and *Cupressus sempervirens*. Of this 0.40 ton was exported and the remainder used locally in afforestation operations. The cost of seed collection totalled £755, while seed to the value of £1,026 was disposed of to customers abroad or for local use.

X.—FOREST EDUCATION.

(1) THE FORESTRY COLLEGE.

81. The College completed its fourth academic year and its third full two-year course at the end of July. Of the 36 students in residence, all 16 Seniors secured their Final Certificates and all 20 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 from the Cyprus Forest Department and 12 Foreign Students, 4 of whom were from Iraq, 3 from Libya, 2 from British Honduras, 1 from Jordan, 1 from Syria and 1 from British Somaliland.

82. The fifth academic year opened in October, again with the full complement of 36 students, 21 from Cyprus and 15 from abroad. The new intake consisted of 9 Cypriot Forest Guards and 8 Foreign Students, 3 of them from Libya, 2 from Iraq, 2 from Persia and 1 from British Honduras.

83. During the summer vacation the Principal, Mr. George Seraphim, made a brief tour of mainland forests in Syria, Jordan and Lebanon, where he also discussed the training of students for those countries with the Governments concerned. Two of the Instructors, Messrs. D. Jacovides and G. Gavrielides, paid a visit to Turkey, in order to study the organization of Forester training there and to see something of the forests, particularly in the south. Grateful acknowledgment is made to all the Governments and Forest Services who co-operated so generously in the arrangement of these tours, which have proved of great value to the College Staff.

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

(2) OTHER TRAINING COURSES.

85. Mr. Andreas Polycarpou, Assistant Conservator of Forests, left Cyprus in May to attend two special short courses arranged by the Imperial Forestry Institute, on "Costing of Forest Operations" and "Forest Management Practice", prior to the usual post-graduate year at Oxford starting in October.

86. The four Forestry Scholars continued their studies in Scotland. Mr. Halouk Hilmi completed his second year and Mr. Fuad Ahmed his first at the University of Aberdeen, and Messrs. L. Leontiades and E. Michaelides were both successful in passing the Scottish Universities' Preliminary Examination at Dundee Technical College, and in gaining admission to Aberdeen University in October.

87. A new type of training was pioneered by Forester Charis Gavrielides, who spent six months studying modern practices of Forest Mensuration at the Forest Research Station, Alice Holt, Surrey, by courtesy of H. M. Forestry Commission. His course was planned and supervised by Dr. F. Hummel, who recommended him for it during his visit to Cyprus in 1954 to advise the Forest Department on Management problems. This kind of "follow through" training promises well for the future.

(3) PUBLICATIONS.

88. The only publication issued during the year (in cyclostyled form with photographs) was:—

Israeli Forestry, Notes and Impressions of a Study Tour, July 4-27, 1955. By J. V. Thirgood, B.Sc., *Silviculturist.*

89. Reports were also prepared for limited circulation (in typed form) as follows:—

(a) Preliminary Report on the Results of a Survey of the Insect Fauna of the Cyprus Forests and Plantations, June 1954—June 1955.
By R. N. Chrystal, M.A., D.Sc., *Entomologist.*

(b) A Phyto-geographical Survey of the Forest Vegetation of Cyprus, 1953-1955.
By Esther F. Chapman.

(c) Eucalyptus Study Tour, Joint Sub-Commission on Mediterranean Forestry Problems, Morocco, October, 1954.
By R. J. Streets, M.A., *Senior Asst. Conservator of Forests.*

(d) First Session of Near East Forestry Commission, Teheran, September, 1955.
By D. F. Davidson, B.Sc., *Acting Conservator of Forests.*

(e) A note on the testing of Eucalyptus seed.
By J. V. Thirgood, B.Sc., *Silviculturist.*

(4) FOREST EXTENSION.

90. Publicity, information and advisory services were continued throughout the year under the direction of a Forest Officer, with a marked increase in the number of articles and talks on Forestry featured by the Cyprus Press and Radio. The new "Countryman" magazine published by the Government Information Service included a Forestry section in each monthly issue.

91. The year was marked by the Silver Jubilee of the Cyprus Forestry Association, which celebrated the occasion in a fitting manner by establishing a Eucalyptus plantation within the municipal boundaries of the capital, Nicosia. The ceremony in January was attended by H.E. the Governor, members of the Executive Council and the founder of the Association, Dr. Unwin. It was the climax of the Tree Planting Festival, during which a record number of trees was planted by Villages, Schools, Clubs, Societies and private landowners throughout the island.

92. The customary "Save our Forests" Week was organized in June with increased support from all sections of the Press and Radio. Slogans were added to the nightly "fire hazard" broadcasts of the Cyprus Broadcasting Service, and some of the newspapers gave special prominence to "eye-witness" reports of actual fires during the season.

93. Considerable advisory work was done, particularly for municipalities on the choice of species for planting, and by the Forest Entomologist, Dr. Chrystal, on insect damage to buildings and plantations.

(5) LIBRARY.

94. During the year the Department became a subscribing member of the Commonwealth Forestry Bureau's "Centralised Title Service" to facilitate the compilation of the subject, author and regional card indices now maintained.

95. Arrangements were made for the binding of the large arrears of unbound publications held by the Department, but great difficulty has been experienced as a result of pressure of work on the Government Printing Office and only six volumes were in fact bound during 1955. Recently a simple, but very satisfactory, type of folder has been introduced and it is hoped that this will overcome present difficulties.

96. During 1955 the Library acquired some 30 books, 400 periodicals and 200 separates. Issues of 50 periodicals or series were received and 140 different agencies supplied publications. Some 200 volumes were issued within the Department during the year.

XI.—FOREST RESEARCH.

97. Work continued on the same general lines as last year, the Research Staff being assisted by other members of the Department who are still carrying out certain specialised investigations based on previous work of their own. The progress in each main field is summarised below, and details can be found in Appendix 17. A brief study tour in Israel was made during July by the majority of the research team, led by the Silviculturist. His report is included in the year's publications (para. 88).

(1) *Silviculture.* The two main trends of research stated in last year's report were continued. In the semi-arid lowlands the search was extended for suitable species to plant, particularly on the poorer sites available to the peasant farmer. So far the genus most employed has been *Eucalyptus*, but it is intended to try other suitable genera more

extensively. In the coniferous forests of the mountains, there have been two lines of approach to the problems of regeneration: the observation of the progress of natural seedling survival through the year, and of seedling survival from sowings with various site treatments. These schemes have been followed on a very large number of sites, randomised throughout the main state forests, which have been observed regularly at very frequent intervals. Certain formal experiments have also been made to provide basic information on the sowings of *Cupressus sempervirens* in the Northern Range. A start has been made on research into nursery techniques, and various other miscellaneous investigations have been carried out.

(2) *Entomology.* Dr. R. N. Chrystal, Forest Entomologist, completed his initial survey of the forest insects of Cyprus in June, and submitted a report (see para. 89). After his return to England his work was continued by the Assistant Entomologist, particularly on the life-cycles of the Eucalyptus and Cypress Borers, and of the Cedar Seed Fly and Cone Moth. Shortly before his departure, Dr. Chrystal demonstrated his findings at an exhibition of his collections in the Research Office. He also gave a week's course in Forest Entomology to all students at the Forestry College at Prodromos. His final report, prepared after further identification of the insect collections in Britain, will be published in 1956.

(3) *Mensuration and Management.* Since the Working Plans Officer left for a course at Oxford in May, this work has been limited to a continuation of last year's investigations into the forest inventory procedure, the economics of artificial versus natural regeneration in the mountain forests, and the progress of natural regeneration of *Pinus brutia* during the last 15 years in one felling series of the Paphos Forest (Ayia, 18.5 square miles).

(4) *Forest Ecology.* Mrs. Chapman's report on her phyto-geographical survey of the forest vegetation was completed in June, and it is hoped that it will be published with the maps in 1956.

(5) *Utilisation.* The small scale experiments initiated last year, on the control of sap-stain in coniferous timber, were extended to include the drying of box-shooks in a special rack, for periods varying from 48 to 96 hours, before wiring them into bundles and storing under cover. First indications are that by such drying "bluestain" can be eliminated as effectively as by chemicals.

(6) *Grazing.* The grazing studies laid out in Dhiorios Forest in the previous year continued. Observations were carried out on the effect of sheep grazing on young stands of *Pinus brutia* and *Cypressus sempervirens* established by direct sowing. This experiment is now in its third year and to date no damage has been noted to result from sheep grazing. Indeed the sheep grazing, by reducing the amount of grass and other annual vegetation appeared to have a beneficial effect on the establishment and survival of *Cypressus sempervirens.*

98. One plot was laid out in Halasta Forest to study the possibility of establishing pasture grasses in cleared strips in maquis forest. The results at the end of the year were very encouraging, particularly with *Phalaris tuberosa.*

99. Trials were continued in the Agricultural Department to test the suitability of the seed of *Acacia cyanophylla* as a concentrated food for livestock, following the encouraging reports received from the Imperial Institute in London, which had established that this seed was equal in feeding value to undecorticated cotton seed and that it contained no poisonous elements. Trials were carried out using the crushed seed as

part of a concentrate ration fed to young poultry. The results so far have been very satisfactory and it has already been demonstrated that crushed *Acacia cyanophylla* seed may be used as a substitute for cotton seed in concentrated feeds up to 22 per cent of the total of the concentrated mixture.

XII.—GAME PRESERVATION.

(1) MOUFFLON.

100. Steps were taken in Paphos Forest Game Reserve to erect a fence along that part of the forest boundary adjacent to the Vineyards and rose gardens of Milikouri village where moufflon damage had become serious in recent years. It was found that this fence was unexpectedly effective in excluding moufflon from the village properties.

(2) PHEASANTS.

101. The experimental introduction of these birds to the forests of Cyprus was considered to have failed. The birds are not adapted to the Cyprus climate, nor are they adapted to survive the two and four-footed hazards facing them in the country. All further work on the introduction of these birds to forest areas was halted and the breeding stock was handed over to the Agricultural Department for poultry yard production for table and ornamental purposes.

(3) TROUT.

102. The brown trout introduced in 1950 to some of the high level streams in the Troodos and Paphos Forest continued to flourish. They appeared to be breeding successfully in mountain streams where maximum temperatures in the summer months rose as far as 22° Centigrade. The transfer of young fish to other suitable rivers in the mountains has commenced.

(4) SHOOTING IN GENERAL.

103. The year was again a satisfactory one for the breeding of the Cyprus partridge (*Alectora graeca cypriotes*) (Hart). As in the previous year, however, heavy and uncontrolled shooting decimated the coveys, leaving a greatly reduced breeding stock. The same considerations apply to the other game bird of the Island, the francolin, whose distribution is limited to two small areas only. The question of extending game reserves to assist the increase of this bird was taken up with the Government sponsored central game committee.

104. During the summer controlled week-end pigeon shoots were again allowed in the Paphos Forest Game Reserve. An attempt was made to reduce the number of parties shooting at any one time in order to lessen the burden on the supervising forest staff. This measure was accepted with understanding by the shooting public.

XIII.—FOREST ADMINISTRATION.

(1) ORGANISATION.

105. 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 sq. miles).

Troodos Division (H.Q. Platania) comprising the Troodos, Adelphi, Machera, Stavrovouni, Aetomouti and Limassol Forests and the lowland plantations near Limassol town and salt lake (150.851 sq. miles).

Northern Range Division (H.Q. Halevga) comprising the Dhiorios—Ayia Erini group and all the Main Forests situated along the Northern Range mountains and the Karpas peninsula (117.579 sq. 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 plantations and 8.03 sq. 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 (H.Q. Nicosia) comprising three sections—the Research Section, the Forestry College and the Extension Section.

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

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

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

107. The Minor State Forests are administered by the District Commissioners, who employ some 28 forest constables for protection purposes. One Forest Ranger from the Forest Service is attached on secondment to the Famagusta District administration.

(2) FOREST STAFF.

108. 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, 1955.

Permanent Establishment:		
Senior Staff	10	
Subordinate Staff	174	
		184
Temporary Establishment:		
Senior Staff	3	
Subordinate Staff	99	
		102
Total Technical Staff . .		286
Clerical Establishment:		
Principal Clerk	1	
Accounting Officer, 1st Grade . .	1	
Clerks, 1st Grade	2	
Clerks, 2nd Grade	5	
Temporary Clerical Staff	1	
Messengers	2	
		12
Total All Staff		298

109. Mr. G. W. Chapman relinquished the post of Conservator of Forests in the Colony on December the 7th and proceeded to Iraq, where he has taken up duties as Forestry Adviser in the employment of the Food and Agricultural Organization. Mr. D. F. Davidson, Senior Assistant Conservator of Forests, was promoted to fill the vacancy created by this move.

110. Dr. R. N. Chrystal M.A., lately lecturer in Forest Entomology at Oxford University, completed his twelve month contract of work for the Forest Department. His visit to the Island was exceedingly valuable to the Forest Service and much important information has been derived from his observations.

111. Col. A. H. Lloyd, O.B.E., M.C., Lecturer in Forest Engineering and Utilization at Oxford University, spent three months working on contract with the Department in the autumn advising on all aspects of the Island's forest engineering and utilization problems. His final report and recommendations were much appreciated.

112. Mr. A. Polycarpou, B.Sc., Assistant Conservator of Forests, left the Colony in the summer to undergo a one year's post-graduate course at Oxford University.

113. Mr. D. Brierton, B.Sc., was appointed on contract to the post of Assistant Conservator of Forests, Class II and was posted to Stavros Psokas in charge of the Paphos Division.

(3) FOREST LABOUR.

114. The following table shows the employment provided by Forestry and Forest Industries. Labour employed amounted to a total of about 403,000 mandays.

TABLE 8.—FOREST EMPLOYMENT.

Employment Category.	No. of Industrial units.	No. of persons employed annually.	Quantities of wood including fuel used. Thousands of cubic feet.	Value of minor products used in £ Sterling.
(1)	(2)	(3)	(4)	(5)
A.—FORESTRY :				
(i) Management, Silviculture and Protection . .	Main Forests	348(a)	1,784	
(ii) Extraction . .		1,190(b)		
B.—INDUSTRIAL :				
(i) Primary:				
Sawmills	5	133	N.A.	N.A.
Essential Oils . .	1	8	N.A.	N.A.
(ii) Secondary	N.A.	4,417(c)	N.A.	N.A.

(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.

115. As in the previous year the demand for labour both skilled and unskilled was in excess of the supply with the result that wages increased and the cost of timber remained stable with a slight tendency to rise. No dispute with organised labour occurred during the year.

XIV.—FINANCIAL.

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

TABLE 9.—FINANCIAL SUMMARY.

	1954 £	1955 £
Personal Emoluments	108,321	107,276
Current Expenditure	98,718	122,901
Total	207,039	230,184
Forest Revenue	128,089	129,956
Deficit Balance	78,950	100,228
Development Expenditure:		
(*a*) Personal Emoluments	5,409	5,173
(*b*) Other charges.	18,597	14,075
Total	24,006	19,248
Development Revenue	4,499	176
Net Development Expenditure	19,507	19,072
Total Expenditure by Forest Department from other votes	8,686	7,066
Other Revenue collected by Forest Department	2,509	2,041
Total all expenditure	239,731	256,498
Total all revenue	135,098	132,173
Total Gross turn-over	374,829	388,671

117. 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.

118. The revenue level of the previous year was maintained. A big deficit still exists between revenue and expenditure. As has been pointed out in previous reports however only some 30% of the forest estate is in a state of reasonable productivity. Large sums are being spent on improving and protecting the very considerable areas of burnt out and degraded forests which will not come into productivity for many years to come. Already, however, these forests, because of the protection which is now being applied to them by the better organized patrolling services made possible by the new roads, telephone systems and forest stations, are playing an ever increasing role in watershed protection which is not of course reflected in an increase in direct financial revenue.

XV.—ACKNOWLEDGENT.

119. The writer wishes to pay tribute to the hard work and devotion to duty of all members of the Department during the year under review.

D. F. DAVIDSON,
Conservator of Forests.

APPENDIX 1.

CLASSIFICATION OF FOREST AREA IN SQUARE MILES 1955.

Class of forest	State Forests		Communal Forests		Private Forests		Total	% of Total Forest Area
	Main	Minor	Reserved	Unreserved	Protected*	Others		
A. Exploitable :								
(i) Softwoods	450.55	—	—	—	6.46	27.94	484.95	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	532.61	76.56	8.03	—	7.21	45.09	669.50	100.00
B. Potentially Exploitable	—	—	—	—	—	—	—	—
C. Other land classed as forest ..	—	—	—	—	—	—	—	—
Grand Total	532.61	76.56	8.03	—	7.21	45.09	669.50	—
		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, 1955.

Category of Forest Reserve	Reserves Constituted and Demarcated			On 31st December, 1955.
	On 1st January, 1955	Added during the year	Excluded during the year	
Main State Forests	532.77	0.03	0.19	532.61
Minor State Forests	76.56	—	—	76.56
Communal Forests	8.03	—	—	8.03
Total	617.36	0,03	0.19	617.20

APPENDIX 3.

STATEMENT IN SQUARE MILES OF PROGRESS MADE IN WORKING PLANS DURING THE YEAR ENDED 31ST DECEMBER, 1955.

Territorial Unit	Area Under Working Plans				Area not under Working Plan on 31st December 1955	Total area.	Area for which Working Plans were revised during the year.
	On 1st January 1955	Added during the year	Excluded during the year	On 31st December 1955			
Main State Forests ..	481.00	—	—	481.00	51.61	532.61	6.10
Minor State Forests ..	—	—	—	—	76.56	76.56	—
Communal Forests ..	3.70	—	—	3.70	4.33	8.03	—
Total	484.70	—	—	484.70	132.70	617.20	6.10

APPENDIX 4.

RECORD IN MILES OF FOREST COMMUNICATIONS FOR THE YEAR ENDED 31ST DECEMBER, 1955.

Category of Forest Land	Forest Roads		
	Added	Abandoned	Total at the end of the year.
Main State Forests	30.00	—	480.22
Minor State Forests	—	—	14.00
Total	30.00	—	494.22

APPENDIX 5.

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1955.

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 £ mils	Compensation for damage £ mils	Cases	Cases	Cases	Cases	Persons
Damage to forest by fire ..	—	13	30.300	—	1	—	2	16	19
Unauthorized Possession of Forest Produce	—	71	135.650	39.900	2	4	7	84	93
Unauthorized Fellings	—	9	11.200	18.000	3	1	—	13	14
Unauthorized Grazing	—	295	416.400	238.403	1	4	13	313	394
Land Encroachments	—	17	9.700	1.500	—	—	3	20	22
Oil Conversion	—	1	1.050	—	—	—	—	1	1
Miscellaneous	—	3	6.400	—	2	—	—	5	7
Total	—	409	610.700	297.803	9	9	25	452	550

APPENDIX 5—*contd.*

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1955.

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 £ mils	Cases	Cases	Cases	Persons	Cases	Estimated Loss £	Cases	Persons	Cases	Amount £ mils	No.	No.
Damage to forest by fire	6	12.250	5	1	12	15	—	—	28	34	—	—	2	4
Unauthorized Possession of Forest Produce ..	599	439.500	17	5	621	661	—	—	705	754	40	59.550	86	74
Unauthorized Fellings	255	199.400	12	3	270	316	—	—	283	330	4	22.350	33	13
Unauthorized Grazing	760	937.562	76	4	840	1,033	—	—	1,153	1,427	—	—	168	172
Land Encroachments ..	19	12.950	8	—	27	30	—	—	47	52	—	—	11	4
Oil Conversion.. ..	—	—	—	—	—	—	—	—	1	1	—	—	—	—
Miscellaneous	46	37.800	1	8	55	68	—	—	60	75	—	—	31	18
Total	1,685	1,639.462	119	21	1,825	2,123	—	—	2,277	2,673	44	81.900	331	285

APPENDIX 5—*contd.*

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1955.

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 £ mils	Compensation for damage £ mils	Cases	Cases	Cases	Cases	Persons
Damage to forest by fire ..	—	—	—	—	—	—	—	—	—
Unauthorized Possession of Forest Produce	—	16	13.750	0.950	—	—	—	16	17
Unauthorized Fellings	—	3	4.000	2.800	—	—	—	3	3
Unauthorized Grazing	—	56	17.900	20.000	—	—	—	56	63
Land Encroachments	—	62	21.400	38.350	—	—	2	64	68
Oil Conversion	—	—	—	—	—	—	—	—	—
Miscellaneous	—	1	—	—	—	1	—	2	2
Total	—	138	57.050	62.100	—	1	2	141	153
Total Main State Forests ..	—	409	610.700	297.803	9	9	25	452	550
Total Minor State Forests ..	—	138	57.050	62.100	—	1	2	141	153
Grand Total ..	—	547	667.750	359.903	9	10	27	593	703

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1955.

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 £ mils	Cases	Cases	Cases	Persons	Cases	Estimated Loss £	Cases	Persons	Cases	Amount £ mils	No.	No.
Damage to forest by fire	2	21.000	—	—	2	2	—	—	2	2	—	—	2	—
Unauthorized Possession of Forest Produce ..	125	96.700	—	3	128	132	—	—	144	149	—	—	24	10
Unauthorized Fellings..	38	31.150	—	—	38	38	—	—	41	41	—	—	3	12
Unauthorized Grazing..	137	126.050	—	—	137	140	—	—	193	203	—	—	42	52
Land Encroachments ..	11	54 000	—	—	11	11	—	—	75	79	—	—	13	29
Oil Conversion ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Miscellaneous	8	7.400	—	—	8	8	—	—	10	10	—	—	—	—
Total ..	321	336.300	—	3	324	331	—	—	465	484	—	—	84	103
Total Main State Forests	1,685	1,639.462	119	21	1,825	2,123	—	—	2,277	2,673	44	81.900	331	285
Total Minor State Forests	321	336.300	—	3	324	331	—	—	465	484	—	—	84	103
Grand Total ..	2,006	1,975.762	119	24	2,149	2,454	—	—	2,742	3,157	44	81.900	415	388

APPENDIX 6.

OUT-TURN IN SOLID CUBIC FEET (UNDER BARK) OF TIMBER AND FUEL FOR THE YEAR ENDED 31ST DECEMBER, 1955.

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	1,077,719	67,975	501	387,581	5,861	1,539,637	94,927
Hardwoods	41,978	27,764	4,393	141,093	23,811	239,039	9,635
Total	1,119,697	95,739	4,894	528,674*	29,672	1,778,676	104,562
Minor State Forests—							
Softwoods	—	—	—	3,020	—	3,020	20
Hardwoods	—	150	—	2,410	—	2,560	292
Total	—	150	—	5,430	—	5,580	312
Total Softwoods	1,077,719	67,975	501	390,601	5,861	1,542,657	94,947
Total Hardwoods.. ..	41,978	27,914	4,393	143,503	23,811	241,599	9,927
Grand Total ..	1,119,697	95,889	4,894	534,104	29,672	1,784,256	104,874

* Includes 174,500 cub. ft. solid being the estimated quantity of dry firewood 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, 1955.

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	21	172	7,700	242	74	837
Minor State Forests	—	—	—	—	116	4	104	935
Total	19	40	21	172	7,816	246	178	1,772

Territorial Unit	(5) Miscellaneous (cones)		(6) Miscellaneous (olive trees and nursery stock)		(7) Canes		(8) Pine-Bark		(9) Miscellaneous (Other material)		(10) Total
	Tons	Value £	No.	Value £	No.	Value £	Tons	Value £	Tons	Value £	Value £
Main State Forests	15	10	191,080	1,403	12,250	12	28	4	4	5	2,725
Minor State Forests ..	—	—	14,717	189	—	—	—	—	—	—	1,128
Total	15	10	205,797	1,592	12,250	12	28	4	4	5	3,853

APPENDIX 8.

WOOD AND WOOD PRODUCTS : IMPORTS AND EXPORTS FOR THE YEAR 1955.*

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	2,490	782,248	3	701	+2,487	+781,547
Total Softwood Timber	2,490	782,248	3	701	+2,487	+781,547
Roundwood	124	77,486	—	—	+124	+77,486
Pulpwood	—	—	—	—	—	—
Firewood	—	—	—	—	—	—
Other sorts of wood	—	—	—	—	—	—
Total Softwood	124	77,486	—	—	+124	+77,486
Hardwood (broadleaved)—						
Logs	—	—	—	—	—	—
Sleepers (sawn and hewn)	—	—	—	—	—	—
Other sawn and hewn timber	46	16,549	—	—	+46	+16,549
Total Hardwood Timber	46	16,549	—	—	+46	+16,549

* The figures refer to the twelve months November, 1954 to October, 1955, since full details for the calendar year were not available when the report was issued.

† Exports consisted mainly of re-exports.

APPENDIX 8.—*contd.*

WOOD AND WOOD PRODUCTS: IMPORTS AND EXPORTS FOR THE YEAR 1955.*—*contd.*

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

Category	Gross Imports		Gross Exports†		Net imports(+) or exports(—)	
	Thousands of cubic feet	C.I.F. value £ sterling	Thousands of cubic feet	F.O.B. value £ sterling	Thousands of cubic feet	Value £ sterling
(1)	(2)	(3)	(4)	(5)	(6)	(7)
PRIMARY PRODUCTS.—*contd.*						
Roundwood	—	—	—	—	—	—
Pulpwood	—	—	—	—	—	—
Firewood	—	—	—	—	—	—
Other sorts of wood	—	—	—	—	—	—
Total Hardwood	—	—	—	—	—	—
Total Primary Products	2,660	876,283	3	701	+2,657	+875,582
DERIVATIVE PRODUCTS:—						
Veneers, plywood and other veneer products excluding matches	153	83,801	—	—	+153	+83,801
Matches	82	39,509	—	—	+82	+39,509
Pulp	—	—	—	—	—	—
Paper and Pulp products	530	511,002	4	9,930	+526	+501,072
Furniture and cabinet ware	11	25,278	1	1,807	+10	+23,471
Other wooden ware and builder's woodwork	92	207,933	2	4,133	+90	+203,800
Charcoal	—	—	—	—	—	—
Total Derivative Products	868	867,523	7	15,870	+861	+851,653
GRAND TOTAL	3,528	1,743,806	10	16,571	+3,518	+1,727,235

* The figures refer to the twelve months November, 1954 to October, 1955, since full details for the calendar year were not available when the report was issued.

† Exports consisted mainly of re-exports.

APPENDIX 9.

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

(*a*) Grazing Permits Issued.

	Free		On Payment		Total	
	1954	1955	1954	1955	1954	1955
1. Number of Permits	45	42	297	374	342	416
2. Number of Animals :—						
(*a*) Goats	1,773	2,595	120	889	1,893	3,484
(*b*) Sheep	476	990	11,424	15,675	11,900	16,665
(*c*) Other Animals	210	210	241	234	451	444
(*d*) Total Number of Animals	2,459	3,795	11,785	16,798	14,244	20,593
3. Fees Collected			£138.933	£278.628		

(*b*) Grazing Statistics.

	1954	1955
1. Area of Main State Forests grazed over lawfully, in square miles	74.98	82.82
2. Area of Main State Forests closed to grazing, in square miles	457.79	449.79
3. Total number of goats in the island counted for taxation	182,041	173,052
4. Number of goats allowed to graze in the Main State Forests	1,893	3,484
5. Number of goats allowed to graze in the Main State Forests, expressed as percentage of total number of goats	1.04%	2.01%
6. Total number of sheep in the island counted for taxation	361,337	382,386
7. Number of sheep allowed to graze in the Main State Forests	11,900	16,665
8. Number of sheep allowed to graze in the Main State Forests, expressed as percentage of total number of sheep	3.29%	4.35%

APPENDIX 10.

STATEMENT OF FIRE PROTECTIVE WORKS AND FIRE INCIDENCE FOR THE YEAR 1955.

(*a*) Fire Traces.

1. Fire traces existing on 1st January, 1955	75.00 miles
2. New fire traces opened during the year	0.28 „
3. Existing fire traces cleaned during the year	0.28 „

(*b*) Telephones.

	Length miles	*No. of instruments*	*No. of switch boards*
1. Existing telephone lines and instruments on 1.1.1955	342.52	195	11
2. Alterations (54.29 miles and 47 instruments and 3 switch boards additions and 6.85 miles and 4 instruments obsolescent)	47.44	43	3
Total	389.96	238	14

(*c*) Fire Protection.

	No.
1. Fire watchers	52
2. Fire watchers' huts on 31st December, 1955	13
3. Huts repaired during the year	3

(*d*) Fire Incidence.

Year	*No. of Fires*	*Area burned sq. miles*	*Assessed damage*	*Cost of extinction*	*Cause.*
1955	61	2.02	£38,372 *	£9,941	35 accidental, 8 suspected accidental, 4 intentional, 13 suspected intentional, 1 lightning.

* 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 II.

STATEMENT OF FOREST REVENUE COLLECTED IN 1954 AND 1955.

HEAD 4.—FORESTS.

Item of Revenue	1954 £ s. p.	1955 £ mils
1. Sale of :—		
Standing trees	59,581 16 0	80,240.344
Timber	41,054 12 8	19,042.867
Fuel	4,424 10 5	3,745.233
Charcoal	210 19 0	367.119
Bark and Stones	318 10 0	235.995
Seeds	894 14 4	1,542.031
Minor Forest Produce ..	458 18 2	579.277
Confiscations	68 4 4	87.274
Total Sales	107,012 5 5	105,840.140
2. Permit Fees :—		
Fuel Permits	585 2 6	661.297
Charcoal Permits	32 2 0	23.205
Grazing Permits	209 6 0	285.182
Gypsum and Pottery Permits	7 1 0	—
Bricks and Tiles Permits ..	10 0 0	14.000
Kiln Permits	64 10 0	71.150
Total Permits	908 1 6	1,054.834
3. Other Revenue :—		
Rent of Water, etc.	61 1 2	148.356
Rents of Sawmills	2,488 12 0	7,031.331
Other Revenue..	624 16 4	1,049.470
Telephone charges	1,245 4 0	197.757
Protection Fees	80 4 6	66.836
Impounding Fees	93 11 7	29.803
Rent of Telephone Junction lines	94 9 7	—
Blasting material	1,092 13 7	—
Total other Revenue ..	5,780 13 6	8,523.553
4. Maintenance and operation of Earth Moving Machinery	6,384 6 7	8,409.784
5. Forest Nurseries	1,814 7 0	1,387.215
6. Forest College :—		
Foreign Students	3,546 5 0	2,494.063
Cypriot Students	2,602 19 4	2,190.630
Other	40 9 1	54.954
Total College	6,189 13 5	4,739.647
Total Revenue ..	£128,089 8 2	£129,955.173

DEVELOPMENT REVENUE.

HEAD 11.—OTHER DEVELOPMENT REVENUE.

Item of Revenue	1954 £ s. p.	1955 £ *mils*
S.H. Sale of Baradji lands	4,499 6 7	176.000

REVENUE.—OTHER THAN FOREST REVENUE.

(Collected or related to the Forest Department.)

	£ s. p.	£ *mils*
3. *Fees of Court, etc.:—*		
1. Fines and Forfeitures ..	1,699 9 0	1,608.634
62. Staff on loan to other Bodies	18 15 5	—
63. Sundry Receipts	264 1 3	—
	1,982 5 8	1,608.634
6. *Rents and Royalties :—*		
1. Rent	462 3 1	399.769
8. *Miscellaneous Receipts :—*		
1. Sale of Stores	9 11 3	32.117
9. *Land Sales*	55 0 0	—
Total	£2,509 0 3	£2,040.520

APPENDIX 12.

STATEMENT OF EXPENDITURE FROM FOREST DEPARTMENT VOTES DURING 1954 AND 1955.

HEAD 27.—FORESTS.

Sub-head.	1954 £ s. p.	1954 £ s. p.	1955 £ mils	1955 £ mils
1. Personal Emoluments		108,320 13 0		107,275.106
2. Travelling		9,837 15 3		10,929.737
3. Maintenance of Plant, Machinery and Vehicles :—				
(i) Maintenance and operation of Motor Transport ..	7,684 11 7		4,225.611	
(ii) Maintenance of plant and Machinery	808 13 6		1,159.760	
(iii) Maintenance and Operation of Earth Moving Machinery	6,255 8 3		9,792.965	
(iv) Leave Pay to Regular Wages Employees	100 19 2		—	
		14,849 13 0		15,178.336
4. Maintenance of Forest Communications :—				
(i) Maintenance of Roads and Buildings	16,376 3 7		14,885.302	
(ii) Telephones	4,743 16 7		6,149.947	
		21,120 0 5		21,035.249
5. Maintenance of Forest Buildings and Equipment :—				
(i) Maintenance and Equipment of Buildings	2,821 18 7		3,280.432	
(ii) Water Supplies	571 10 5		506.867	
(iii) Rent	877 0 0		862.039	
(iv) Lighting, Heating and Electric Power	305 5 1		349.088	
		4,575 14 4		4,998.426
6. Forest Protection :—				
(i) Fire Protection	5,269 1 8		6,653.866	
(ii) Fire Fighting	1,358 3 0		9,931.498	
(iii) Delimitation	265 0 1		389.769	
(iv) Rewards	—		—	
(v) Upkeep and Protection of Railway Line Plantation ..	386 15 4		234.680	
		7,279 0 4		17,209.813

HEAD 27.—FORESTS—*contd.*

Sub-head.	1954 £ s. p.	1954 £ s. p.	1955 £ mils	1955 £ mils
7. Forest Utilization		15,285 8 3		19,210.686
8. Silviculture and Forest Management :				
(i) Silviculture	4,380 7 4		4,773.858	
(ii) Collection and purchase of Seed	1,020 5 4		1,071.462	
(iii) Forest Nurseries	3,441 18 4		4,327.684	
(iv) Forest Survey and Working Plans	802 4 6		658.172	
(v) Free Seedlings	46 8 1		65.877	
		9,691 4 1		10,897.053
9. Forestry College :—				
(i) Maintenance and operation of Instructional Equipment ..	154 11 5		206.806	
(ii) Food wages and Miscellaneous	3,784 19 6		3,823.576	
(iii) Lighting, Heating and Electric Power	1,147 19 2		1,164.146	
		5,087 10 4		5,194.528
10. Office Expenses :				
(i) Library	38 13 6		81.044	
(ii) Refunds	13 1 5		12.250	
(iii) Forestry Exhibitions	90 17 4		145.075	
(iv) Incidentals	233 19 2		227.656	
		376 11 8		466.025
11. Forest Research :—				
(i) Purchase of Scientific Equipment	40 14 3		72.205	
(ii) Research Activities	470 19 3		385.520	
		511 13 6		457.725
12. Forest Uniforms		2,226 7 4		3,196.053
13. Training of Cypriot Staff Abroad		165 3 1		306.909

HEAD 27.—FORESTS.—*contd.*

Sub-head.	1954 £ s. p.	1954 £ s. p.	1955 £ mils	1955 £ mils
Special Expenditure:				
14. Morphou Saw Mill		3,276 4 6		3,859.467
15. Purchase of Motor Vehicles		973 6 0		491.700
— Purchase of Ellams Duplicating Machine		44 11 8		—
16. Equipment and Plant		3,417 17 2		7,090.909
17. Purchase of Typewriters		—		159.000
18. New Buildings		—		987.263
19. Purchase of Refrigerators		—		75.300
20. Widening Kykko–Pedhoulas Road		—		827.376
21. Resin Tapping		—		32.277
22. Construction of a New Bridge in Adelphi Forest		—		205.303
TOTAL		£207,038 15 5		£230,183.933

STATEMENT OF EXPENDITURE FROM FOREST DEPARTMENT VOTES DURING 1954 AND 1955 UNDER DEVELOPMENT.

HEAD 27D FORESTS.	1954 £ s. p.	1955 £ mils
Mountain Forests	13,822 12 1	14,120.429
Lowland Forests	4,236 19 5	3,517.776
Village Fuel Areas	2,336 5 7	1,372.966
Forest Roads	340 3 6	2.531
Removal of Forest Settlements :		
Removal of Livadhi Village	3,269 9 2	111.281
Forest Nurseries	—	114.034
Forest Buildings	—	8.000
TOTAL	£24,005 10 3	£19,247.017

EXPENDITURE INCURRED BY FOREST DEPARTMENT FROM OTHER VOTES.

Head in Estimates	*Number as*	*Sub-head.*	1954 £ s. p.	1955 £ mils
2	9	Encouragement of Tree Planting	87 3 0	—
2	13	Community Development	148 13 2	—
3	8	Investigation and Extension Services	24 17 1	—
3	11	Plant Protection	20 8 4	—
4	7	Maintenance of Ancient Monuments	13 3 8	—
4	31(iii)	Community Development	—	134.870
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	384 3 1	328.951
20	26	Compensation and other Expenditure for injuries to Government Employees	155 5 8	—
20	39	Hospitality	107 0 2	30.000
20	42	Telephone Service	209 1 4	—
26	11	Plant Protection	—	30.861
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	—
32	6	Conservancy of Office	—	50.000
36	21	Removal of Forest Hut Salamis	—	2,643.046
40	1	Maintenance of Main and Secondary Roads	300 0 0	299.105
40	5	Construction of Prefabricated Buildings	4,421 9 8	—
40	14	Preparation of Sites and Approach Roads in villages	408 9 3	—
40	—	Repairs to Government Buildings	259 10 7	—
40	15	Meteorological Service	—	48.000
41	14	Land Reclamation and Development Schemes	39 6 8	—
41	16(B)	Akamas Road	—	3,239.268
41	25	Field Experiment (Labour)	70 0 6	—
41	48	Security Measures	—	137.266
48	10	Isolation Hospital : Construction of Buildings	77 0 1	—
Deposits	—	District Deposits, Famagusta (Reafforestation work at Topju Keuy Minor Forests)	458 8 4	66.733
do.		District Deposits, Paphos (Paphos–Polis Road Side Trees)	11 6 6	58.871
do.		Departmental Water Engineer (Nicosia Water Board Reservoir Site)	64 2 8	—
		TOTAL	£8,685 14 1	£7,066.971

APPENDIX 13.

DEVELOPMENT SCHEMES, TEN-YEAR PLAN 1946–1955.

	Estimated total cost	*Actual Expenditure to* 31.12.1954	*Expenditure* 1955	*Total Expenditure to* 31.12.1955	*Balance Remaining*
HEAD 27D.—FORESTS.	£ *mils*	£ *s. p.*	£ *mils*	£ *mils*	£ *mils*
Mountain Forests	295,399.000	280,686 7 1	14,120.429	294,806.784	592.216
Lowland Forests	39,000.000	35,381 6 7	3,517.776	38,899.115	100.885
Village Fuel Areas	89,500.000	87,702 17 0	1,372.966	89,075.816	424.184
Forest Nurseries	20,400.000	19,775 0 0	114.034	19,889.034	510.966
Forest Roads	80,000.000	79,904 11 4	2.531	79,907.103	92.897
Forest Telephone System	29,987.000	29,987 0 0	—	29,987.000	—
Forest Buildings	31,809.000	31,790 0 0	8.000	31,798.000	11.000
Forest College :—					
(*a*) Capital Expenditure	46,700.000	46,700 0 0	—	46,700.000	—
(*b*) Recurrent Expenditure ..	15,586.000	15,586 0 0	—	15,586.000	—
Removal of Livadhi Village	101,126.000	100,879 14 2	111.281	100,990.993	135.007
Total	£749,507.000	£728,392 16 5	£19,247.017	£747,639.845	£1,867.155

APPENDIX 14.

COMPARATIVE FINANCIAL STATEMENT FOR THE 10 YEARS ENDED 31ST DECEMBER, 1955.

Year	Forest Revenue	Forest Expenditure	Surplus	Deficit	Expenditure under C.D.F.	Expenditure under L.S. Account	Expenditure under Development	Grand total of Expenditure
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
1955	129,956	230,184	—	100,228	—	—	19,248	249,433
Total ..	766,845	1,305,443	2,850	541,449	177,569	50,895	416,029	1,949,937

APPENDIX 15.

STRENGTH OF FOREST STAFF ON 31ST DECEMBER, 1955.

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 ..	4	9	13	8	23	142	10	66	1	10	3	1	1	3	1	1	1	2	273	2	10	121

APPENDIX 16.

CYPRUS FORESTRY COLLEGE, ANNUAL REPORT FOR 1955.

(1) COURSES.

The College re-opened for the Second Term of the fourth academic year on the 8th January with the normal complement of 36 students, divided into two Courses of 16 Seniors and 20 Juniors. Of these 36 students, 24 were Cypriots (Forest Guards of the Cyprus Forest Department) and 12 Foreigners—4 from Iraq, 3 from Cyrenaica, 2 from British Honduras, 1 from Jordan, 1 from Syria and one from British Somaliland, drawn mainly from the Forest Services of these countries. One Cypriot senior student resigned from his post of Forest Guard and left the College at the beginning of the term; while the Jordan Senior student, who was late to come, joined his class then.

All 36 students were successful at the end of the academic year in July. 16 of them obtained the Final and 20 the Preliminary Certificate. For both Certificates the pass mark of 50% was maintained, with 80% for the Honours grade of the Final. 6 out of 16 senior students were awarded Certificates with Honours. 22 prizes were also awarded, including the Governor's Medal to the best all-round student of the Senior Course, Taher Ismail (Iraq); the Conservator's Medal to the best all-round student of the Junior Course, Louis S. Lindo (British Honduras); 16 books and two money-prizes, given by Dr. Unwin for the best performances in individual theory subjects and Essays; 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 the Acting Colonial Secretary on Prize Day, the 29th July.

The preliminary and Final Examinations were again set and marked by an External Examining Board, consisting of the Conservator of Forests, the Director of Forest Research and Education, an Assistant Conservator of Forests and the Principal of the College. In addition to the written examination, a Practical Examination in the field was held to serve as a complement to 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 practical assessment and examination combined. An oral examination was again held, in order to consider border-line cases. Character and suitability for the job were assessed in Personal Reports.

After Prize Day, on the 29th July, all the graduates left the College. 11 of the Cypriots went back to the Divisions as Beat Officers, while one was attached to the Telephone and Mechanical Section at the Morphou sawmill. The foreign students (1 from Jordan, 1 from British Honduras and 2 from Iraq) left for their own countries. The Junior Course, except one (from Libya) who was called back for one year by the Libyan Government, moved to Ayia in Paphos Forest, where they stayed for the whole of August and carried out such field work as road tracing, alignment and construction; various silvicultural operations, such as cleanings and thinnings; and mensuration exercises, such as enumeration, sample plots and so on. Forest tours were made to Akamas forest and within Paphos Forest to places of interest with regard to Forest Protection, Silviculture and Management. The wood distillation factory in Ktima was also visited.

The fifth academic year began on the 3rd of October with the normal registration of 36 students, 21 from Cyprus and 15 from abroad. The new intake of 17 comprised 9 Cypriot Forest Guards and 8 Foreign Students—3 from Cyrenaica, 2 from Iraq, 2 from Iran and 1 from

British Honduras. The first term ended on December 22nd after the usual terminal examination.

(2) CURRICULUM.

The same system of training, namely the alternate day programme, whereby a subject taught one day in class is put into practice in the field the next day, has been continued from previous years for each Course, with more emphasis on project work for the Seniors. Specific problems dealt with in projects include Soil Conservation, Nursery Practice, Afforestation on an Ecological basis, Thinnings and Working Plans. Tours 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.

Theoretical instruction was given mainly by the same College teaching staff. The surveying course, which used to be given by an Officer of the Lands and Surveys Department in previous years, was taken over by Mr. D. Jacovides, member of the College teaching staff. But, special courses were also given by visiting lecturers. The short course on Forest Entomology was given again, for the second time running, by Dr. R. N. Chrystal, who was until recently Lecturer in Forest Entomology at Oxford University. Mr. Paschalis, Forest Prosecuting Officer, lectured to some of the Cypriot students on Court Statements, while Mr. Constantinides of the Mitsis School, Lemythou, continued the voluntary Evening Classes in English and Mathematics. The unarmed combat training, aimed at teaching foresters how to defend themselves against attacks from forest offenders, was provided by Mr. Eveleigh, the Army sports organiser, and his Assistant at the Kykko Camp, near Nicosia.

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

Two College Qualifying Examinations, one in March and one in August, were held during the year. Of the 38 candidates (all Junior Officers of the Forest Department) only 20 were successful and qualified for the College waiting list.

(3) VISITORS.

Visitors to the College included His Excellency the Governor and Members of the Executive Council on the occasion of the Salti Shield Race in May; the Acting Colonial Secretary, the Commissioner, Limassol, Dr. Unwin and various members of the Government on Prize Day in July; Mr. Truscott, Information Officer of the Colonial Office; Colonel Lloyd of the University of Oxford; Mr. Anderson, American "Point Four" adviser on Forestry and Range Management to the Government of Lebanon; Messrs. Basbous and Berjaoui, Lebanese Forest Officers; a party of Forest Officers from Israel; and a number of Elementary Schools.

The Cyprus Broadcasting Service kindly undertook the recording of the Salti Race and Prize Day celebrations. The Near East Broadcasting Corporation also kindly made recordings on both occasions. During August the College was used as a "Summer School" by the Department of Agriculture.

(4) ACTIVITIES.

The College has continued its Research work, much of which has been undertaken by the students themselves. Investigations have been made into:

(i) The artificial regeneration of the Troodos pine (Pinus nigra) near the College and elsewhere in the forest (field-scale trial on Troodos);

(ii) the seed collection, storage and testing at the College laboratory, and sowing techniques at Platania Nursery;

(iii) the planting of exotic species near the College;

(iv) the local climate by the taking of records at the College Meteorological Station, and the forest fire hazard;

(v) the soil conservation, torrent control, and re-afforestation works at Asprokremmos.

The traditional Foresters' Race was held for the fourth time in May on the previous course — from Phini up the valley across the main road to a water-splash near the Trooditissa Monastery. The team competition for the Salti Shield was won by Chapman House for the third time, and both the Open and Handicap Prizes went to S. Geroudes of Cyprus. His Excellency the Governor presented the prizes at a party which followed the race.

The Students' Association has maintained its interest in running the College library and organizing games and talks. The speakers included Dr. Unwin, Mr. K. Jones, Research Officer of the Department of Agriculture, Mr. Grehan, Hydrologist of the Water Development Department, and Mr. Chapman.

(5) STAFF.

There were no changes in the resident teaching staff which consisted of the Principal, Mr. G. M. Seraphim; A.F.O., Mr. Th. Michaelides; and Forest Rangers, Messrs. G. Gavrielides and D. Jacovides. The Principal lectured on the basic science subjects and Forest Policy; the three instructors covered all the applied forestry subjects and supervised all the practical work in the field. Mr. R. J. Streets left the College for Nicosia in March.

Forest Guard L. Themistocleous continued to be the College Clerk until October, when he became a College student. He was then replaced by Forest Guard A. Ibrahim.

In the Domestic Staff there was only one change. The Cook, who left to take up the running of the Canteen at Stavros tis Psokas, has been replaced by the present Cook from Polystipos.

(6) BUILDINGS, EQUIPMENT, ETC.

No additions were made in 1955. Repairs were carried out to the College and the Principal's house. The College has been connected to the grid system of the Cyprus Electricity Authority. The "stand-by" generator, however, continues to be very useful.

(7) ACKNOWLEDGMENTS.

My thanks are due to the Conservator, the Director of Forest Research and Education, my staff, Dr. Chrystal, all other members of the Forest Department and to the Mitsis School, Lemythou, who have assisted the work of the College during the year. It is also a pleasure to acknowledge the help and co-operation given by F.A.O., U.S.O.M. (United States Operations Mission), the British Middle East Office and all the Governments who have sponsored students. The continued interest of Press and radio is gratefully acknowledged; and, finally, my thanks are offered to the Director of Forests, Jordan; to Dr. Unwin; the Cyprus Forestry Association and to Mr. Polycarpou for their generosity in offering prizes.

G. M. SERAPHIM,

Principal, Forestry College.

APPENDIX 16 A.

CYPRUS FORESTRY COLLEGE.

ANALYSIS OF ALL INSTRUCTION.

(1) *Spring and Summer Terms, January–July.*	*1954-55-56 Courses.*			
Subjects	*2nd Year Course*		*1st Year Course*	
Silviculture	45	periods (1½ hrs.)	28	periods (1½ hrs.)
Nursery Management	3		15	
Mensuration and Costings	—		36	
Forest Management	14		—	
Utilization	41		32	
Timber Identification	9		—	
Engineering (Roads and Buildings)	21		21	
Forest Policy	—		11	
Surveying (including Field work)	30		32	
Botany and Forest Botany	17		27	
Geology and Soils	11		10	
Meteorology and Climate	23		7	
Forest Entomology	28		28	
Private study and Revision	36		36	
Essays and Tutorials	18		13	
Examinations and Return of papers	44		44	
Theory totals	340	=85 days	340	=85 days
Preparation of ground for afforestation	6	"	7	"
Planting and Beating up	—	"	5	"
Weeding and Cleaning	3	"	7	"
Thinning, Felling, Coppicing	8	"	14	"
Nursery operations	1	"	10	"
Seed collection and Extraction	—	"	4	"
Tools and Store Maintenance	3	"	2	"
Nursery Project	5	"	—	"
Ecology Project	5	"	—	"
Thinning Project	6	"	—	"
Working Plan Project	6	"	—	"
Roadwork	3	"	3	"
Anti-erosion Project	5	"	—	"
Tours and Demonstrations	13	"	12	"
Unarmed Combat Course	3	"	3	"
Sports	2	"	2	"
	Practical work 69 days		Practical work 69 days	
Total Theory and Practice	154 days		154 days	

(2) *Vacation Tour, August.* *Field Work*	*1954–55 Course* *1st Year Course*
Road alignment and construction project, Paphos Forest	5 days
Mensuration Project, Paphos Forest	2 "
Silvicultural Project, Paphos Forest	8 "
Collection of Seed, Troodos Forest	2 "
Tours and Demonstrations	6 "
Tour total	23 days

(3) *Winter Term. October—December* — *1955-56-57 Courses*

Subjects	*2nd Year Course*	*1st Year Course*
Silviculture	15 periods (1½ hrs.)	14 periods (1½ hrs.)
Nursery Management	14	11
Mensuration and Costings	18	22
Utilization and Protection	18	23
Engineering (Roads and Buildings)	22	4
Survey	1	8
Botany	7	16
Geology and Soils	—	13
Meteorology and Climate	16	—
Private Study and Revision	13	13
Examinations	8	8
Theory totals	132=33 days	132=33 days

Preparation of Ground for Afforestation	— ”		18 ”	
Planting, Beating-up, Sowing	2 ”		7 ”	
Thinning, Felling, Coppicing	6 ”	Practical work 33 days	— ”	Practical work 33 days
Tools and Store Maintenance	2 ”		2 ”	
Thinning Project	9 ”		— ”	
Afforestation Project	9 ”		— ”	
Tours and Demonstrations	3 ”		4 ”	
Sports	2 ”		2 ”	
Total theory and practice	66 ”		66 days	

Summary of Total Working time:

(1) Total of Theory and Practice during the Spring and Summer terms	154 days	— days
(2) Vacation Tour	23 ”	— ”
(3) Total of Theory and Practice during the Winter Term	66 ”	66 ”
Total Working time in 1955	243 days	66 days

APPENDIX 17.

FOREST RESEARCH.

(1) SILVICULTURE.

Silvicultural investigations are being pursued at 261 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.

During the past year nineteen experiments were completed or closed, and eighteen were laid down. In all there are fifty-four experiments extant.

A. *Records.*

(*a*) The systematization of records was taken a stage further during the year.

(*b*) A separate file is now maintained for each experiment; in these are kept subfolders, each containing standard record forms which cover various aspects of the individual project.

(*c*) A Plan Introduction Ledger has been opened. This holds plant introduction record forms with provision for all data from seed acquisition to stand maintenance. A search, which was made for introductions of the past decade or so, met with very disappointing results, and it is apparent that a very considerable amount of useful information has been lost for want of adequate records.

(*d*) A Register of Seed Identity Numbers has been instituted; registers have been compiled for the years 1953, 1954 and 1955 so far as the available information allows. All seed passing through the central seed store, or through the research branch, is now registered and given an identity number, which will allow of subsequent identification of the resulting nursery stock and plantations. This register will be published annually henceforth.

(*e*) A series of Technical Information Files, classified according to the Oxford Decimal System, have been opened.

B. *Mountain Forests.*

(*a*) As reported last year some 200 plots have been laid out in the *Pinus nigra, Pinus brutia* and *Cupressus sempervirens* forests of Troodos, Adelphi, Paphos and Northern Range, to observe the progress of natural regeneration. Adjacent to each of these observational plots, a series of plots was set out to investigate the effect, of both artificial and natural regeneration, of litter removal with both shallow and deep cultivation. During the first part of the season seedling assessments were made at fortnightly intervals, and during the latter part, at monthly intervals. The data for individual plots is now being studied in detail and the attempt is being made to correlate seedling behaviour with the individual factors of the environment, such as rainfall, temperature, relative humidity, shade, canopy density, soil conditions and aspect. The overall pattern of seedling germination and survival has already been determined, and the general position of regeneration under a tree cover or in small gaps, by natural seeding, by cultivation to facilitate natural seeding, or by sowing with and without cultivation, must be considered as unsatisfactory for all species. Initial germination was, in most cases.

satisfactory after sowing and, even with natural seeding, might have been acceptable. However, bird damage, as described in last year's report, resulted in an initial loss of from 30% to 60%, and was followed by sharp and heavy mortality in May to mid-June, a time of rapid change in conditions associated with the sudden rise in temperature at the beginning of summer, when between 1/3 and 2/3 of the surviving seedlings were lost. Mortality continued throughout the summer, the level rising with changes in climatic conditions, until by the time of the first winter rains at the end of October only a sufficient number of natural seedlings remained to replace those which had survived from previous seasons, only to be killed this year.

Previously, such losses have been ascribed to high surface temperatures which resulted in scorching at the root collar and were said to be characterized by the falling over of the seedlings; however, observations suggest death to be more probably the result of transpiration stress. Seedlings died suddenly; they often remained green for some time, but were brittle and crumbled to the touch. Scorch marks and slight resin exudates were sometimes noted at the root collar, but these often seemed to appear after death or to be secondary factors.

With artificial seedling after cultivation the maximum survival obtained was fifteen seedlings per hundred square feet, in the case of *Cupressus sempervirens*. With *Pinus brutia* seedlings survival was of the order of four per hundred square feet, and with *Pinus brutia* less than two per hundred square feet. There was no difference in survival between sowings with shallow or deep cultivation and only one sixth of the sown plots had a seedling population.

Artificial seedling without cultivation gave very poor results. Average survivals were much as obtained under conditions of natural seedling and the seedlings were confined to a very few plots, only sixteen out of 236.

Survivals from unassisted natural seedling were of a very low order, *Cupressus sempervirens*; 4 seedlings per thousand square feet, *Pinus nigra;* less than one per thousand square feet, and *Pinus brutia;* intermediate between the other two species, except in Northern Range where it was rather more successful than the *Cupressus sempervirens* with which it was associated. By the end of the season less than one third of the demarcated plots had seedlings.

Cultivations, whether shallow or deep, prior to natural seedling, resulted in only slightly better survival, — of the order of one to six seedlings per thousand square feet, and a poorer distribution was in fact obtained, a greater number of plots being completely empty.

Such results clearly do not warrant the expenditure involved in the extensive cultivation and sowing which would be necessary if the whole forest area, where regeneration is desired, were to be treated in this way. Furthermore it may be expected that only a small proportion of these surviving seedlings will survive a second summer.

Observations showed that mortality, although increasing throughout the summer months, did not progress steadily; after any temporary alleviation of climatic conditions the number of deaths increased sharply. This suggests that far from being welcomed as a beneficial factor, such changes, if followed by a reversal to more extreme conditions, are harmful to survival. Possibly the improved conditions lift the seedlings from a state of dormancy, or near dormancy, and induce growth activity which lowers resistance when the seedlings are exposed once again to more extreme conditions. Subsequent observations during winter have shown a further mortality of from 10 to 20% of the seedlings surviving at the end of summer. Previously it had been supposed that deaths were confined to the period of extreme summer conditions.

These plots will be the subject of further observations next season, but the data already collected suggests that under the present conditions of the mountain forest, the native coniferous species cannot economically be regenerated either by natural or artificial seeding.

(*b*) At Katsaroudhi Kapsali, Ayia Felling Series, Paphos Forest, certain patch sowings of *Pinus brutia* were caged. Observations showed the great initial seedling losses of *Pinus brutia* to be caused quite definitely by a biotic factor, which circumstantial evidence identifies as birds; this can be prevented by use of protective netting. It was found that early germinated seeds withstood summer drought better than late, but were very liable to extremely heavy damage from birds, and that in any one sowing the early germinated seed produced better, more healthy and more vigorous seedlings.

(*c*) Beginning and end of season assessments were made of *Pinus brutia* patch seedings in the Paphos Forest management field trial on the economics of natural and artificial regeneration, mentioned in the 1954 Report, and also in a similar field trial made by the Forestry College in the Troodos pine areas. Survival was at the same level as in the experiments reported above. This confirmation from trials extending over more than 100 donums, in each case, is useful because of the ever-present possibility that biotic damage in isolated experimental plots may be on a scale quite different from that which may be experienced where large areas are treated.

(*d*) It has been suggested that the absence of regeneration in the open over-mature forest may be partially the result of non-production of viable seed. Cone samples have been taken from young, middle aged and over mature *Pinus brutia* and *Pinus nigra* in various areas. The seed has been extracted and is now under test for germination capacity to determine this point. Certain differences in number of seeds per cone and in weight have been noted.

(*e*) Experiments laid out in 1952 on four sites in an attempt 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 were reviewed. No conclusions could be drawn from these experiments, which were then closed.

(*f*) Experiments to test the effect of fertiliser applications on the germination and subsequent development of *Pinus brutia* and *Cupressus sempervirens,* which were laid out in 1953 at Stavri and Malounda, in the Northern Range, and at Ayios Theodoros in Paphos Forest, were reviewed and closed during the year. Ammonium sulphate, Super-phosphate and Potash (in the form of woodash) had been applied at the rate of 4 okes/donum, 10 okes/donum and 30 okes/donum respectively, alone and in various combinations. No pattern could be observed in the data and it was clear that other factors had obscured any results which might be attributable to the fertiliser applications.

(*g*) In 1950/51 an experiment was laid down to test the suitability of the strip felling silvicultural system for the regeneration of *Pinus brutia.* A strip 150 feet wide and 3,000 feet long was clear-felled in Paphos forest, along the contour near the top of a well-stocked slope at an elevation of 3,000 feet. General aspect was west. 475 trees were removed, producing 8,000 cubic feet of round timber. Certain plots of between 1 donum and 1½ donums in area, and extending the full width of the strip, were demarcated, cultivated and sown. Sowing densities varied between 1¼ and 2¾ okes per donum. In the absence of a demarcated and assessed control, precise definition is impossible; but the progress of regeneration during the five-year period, although slow, has proceeded

steadily. The pattern of height distribution suggests that germination and seedling establishment has continued throughout the period and is still continuing despite quite considerable seedling losses. There is, however, evidence of unequal distribution across the strip. Seedlings are less frequent towards the upper edge, the greatest concentration is found towards the centre and there is a certain fall-off in population towards the lower margin. Artificial seeding has had but little influence on the overall pattern of regeneration. Noticeable erosion has not resulted from this clear felling. Observations are to be continued.

(*h*) Failure of patch sowings in the Northern Range afforestation areas has been increasingly common of recent years. This has been variously ascribed to aspect, to the influence of marginal vegetation acting through root competition, and to what has been popularly called "air stagnation" (it was suggested that high marginal vegetation prevented free movement of air and that this led to increased air temperatures in the plots which on occasion reached lethal levels).

A series of experiments were designed to test the validity of these explanations. In certain plots all roots were severed to a depth of 3 feet round patch margins to eliminate root competition, and in certain others vegetation was also cut back to a distance of 5 feet. Experiments were laid out on varying aspects and in sowings of the current year, of 1954 and of 1950/51. Marginal vegetation, whether acting through root competition or "air stagnation", or in any other way, was found not to be a factor influencing the progress of germination, seedling survival or development; however, the effect was not sufficient to explain the complete failures often obtained. Observations suggest that these failures, where seed of known satisfactory viability is used, may very often be attributable to lack of care in raking after sowing, and consequent too deep coverage of the seed. Of incidental interest was the record of delayed germination of Cypress seed sown the previous season, indicating that a proportion of the seed of this species may undergo a period of dormancy.

(*i*) There are certain disadvantages inherent in the use of patch sowings for afforestation — lack of selectivity in seed collection as a result of the large quantities required, expense of cultivations with present high labour costs, skill necessary in making sowings, uncertainty as to success, the long period before a plantation can be considered to be fully established and the poor distribution of the resultant tree crop. In other Mediterranean countries, climatically both more and less extreme than Cyprus, planting techniques are widely adopted. Trials are being made in Cyprus.

(i) In the 1954 Report there was a note on the establishment of experiments to compare seeding and planting techniques for the regeneration of poorly stocked open Troodos pine forest. These experiments have shown that both Troodos and Corsican pine can be successfully established by planting and that this technique provides a much more successful method of establishment of *Pinus nigra* than does sowing, which can only be considered as unsatisfactory. A high incidence of damage by hares was noted, and it is likely that control measures will be necesssary in any future divisional regeneration projects. Observations will be continued. A small sowing trial of *Pinus nigra* was also made in the Northern Range, but no germination was obtained and the experiment was written off.

(ii) A small planting trial was made at three different localities in the Northern Range; out of 50 trees only three failed.

(iii) Three experiments have been laid down this season to compare a planting technique employed in Israel with the standard patch sowings of *Pinus brutia* and *Cupressus sempervirens*. Site types

which have given most difficulty in past afforestation have been selected for this experiment: slopes with thick maquis vegetation at Kantara Forest, Northern Range; south facing, bare, severely eroded rocky slopes at Onisha, Northern Range; and various aspects of the mountain slopes at Lavramis burnt area in Paphos Forest. Very striking differences in relative costs have been discovered, with 10 feet x 10 feet cultivated and sown patches and a spacing of 5 feet between patches, and planting at 5 feet spacing. The sowings were between two and three times as expensive as the planting, which costs would be further very considerably reduced under conditions of large scale working. The cost of two cultivations during summer have yet to be added to the cost of planting but the total expenditure should still be considerably less than for the present-day sowing technique.

To further reduce costs and to facilitate transport the use of naked rooted plants is to be desired. To this end a proportion of the plants used in this trial have been planted with naked roots.

(iv) Naked-rooted *P. brutia,* obtained as thinnings from successful patch sowings, have been used in a planting trial at Kantara forest.

(v) In Paphos Forest, a small trial planting of *P. brutia* has been made on a site where patch sowings have failed repeatedly.

(*j*) The Provenance trials of *Pinus brutia* laid down in 1952 were reviewed; four were written off and two, those at Dhiorios Forest and at Sandallik, Kartaldagh Forest, were retained.

(*k*) At Ay. Photis, Northern Range, the beneficial effect of cleanings on gradoni-sown *Pinus brutia* has been clearly demonstrated. In a crop sown in 1950/51, cleanings made in 1953/54 have resulted in greatly increased height growth in the treated plots, and also in the absence of the losses which occur each summer in the untreated controls.

C. *Species Trials.*

In the 1954 Report the species trials programme was fully described.

During the year thirteen new sites were developed, bringing the total of those established during the past two years to twenty-two. These contain 1057 individual plots, of which 972 have been planted during the period under review.

To date, detailed attention has been concentrated on the genus *Eucalyptus,* but a number of other species have also been planted. The scope of these trials will be extended into other genera and a start has been made on the importation of seed of other trees, especially *Acacias,* which may prove tolerant of semi-arid conditions.

Many of the sites selected are very much below the fertility level normally considered suitable for eucalyptus, and some indeed are at the extreme lower limit of site classification. They are typical, however, of much of the land which is available for lowland tree planting in Cyprus, and efforts are being concentrated on finding species which may be more productive than *Acacia cyanophylla,* at present used on such sites. Only such establishment methods as are available to the small peasant farmer are employed.

LIST OF EUCALYPTUS SPECIES PLANTED IN TRIALS.

Seed obtained from Australia.

Eucalyptus albens
E. astringens
E. bicolor
E. bicostata
E. botryoides
E. brockwayii
E. citriodora
E. cladocalyx
E. calcicultrix
E. cornuta
E. dundasi
E. floctonia
E. gomphocephala
E. gracilis
E. intertexta
E. leucoxylon
E. longicornis
E. maideni
E. melliodora
Eucalyptus microcarpa
E. occidentalis
E. odorata
E. oleosa
E. ovata
E. paniculata
E. populifolia
E. polyanthemos
E. robusta
E. rudis
E. saligna
E. salmonophloia
E. salubris
E. sargenti
E. torquata
E. transcontinentalis
E. umbelata
E. wandoo

Seed collected locally from trees of the Chapman Collection (figure within brackets denotes number of individual seed trees under comparative trial).

Eucalyptus albens	(1)	Eucalyptus melliodora	(2)
E. astringens	(1)	E. occidentalis	(4)
E. camaldulensis	(8)	E. paniculata	(1)
E. cornuta	(1)	E. polyanthemos	(1)
E. cornuta x	(1)	E. salubris	(1)
E. globulus	(1)	E. sideroxylon	(1)
E. gomphocephala	(1)	E. siderophloia	(1)
E. grandis	(2)		
E. gracilis	(1)	E. umbelata	(1)
E. hemiphloia	(2)	E. wandoo	(1)
E. longicornis	(1)		

It is too soon to draw any conclusions from these plantings, but very surprising growth has been noted in trials in the mountains. In many cases, better growth has been obtained here than in the better lowland sites, where Eucalypts have previously been planted.

D. *Lowlands.*

(*a*) A study has been made to determine the most suitable means of establishing *Acacia cyanophylla,* by comparing cultivation and sowing with planting.

The evidence of the Acacia establishment at the Phrenaros locust research plot, described in the 1954 Report, and in (*d*) I. below and of the Acacia fertiliser trial also referred to in that report, was considered; and the records of 68 acacia plantations in village fuel areas were examined. It was clearly shown that planting was more successful than sowing. In every case greater success was obtained, stocking and distribution of the growing stock was much improved and the difference between the two methods was often one of success or failuie. Further, the planted trees came into production earlier. The difference in cost was extremely marked on broken ground, where hand-cultivation is necessary and cost of sowing may be of the order of three times that of pit planting. When mechanical cultivations can be employed cost of sowing is much reduced and may be rather less than the cost of planting when the standard

method is used, but it is still much more expensive than in planting by the modified mattock or digging hoe technique, described in (*d*) I. These costings are based on initial establishment only and no account has been taken of the cost of any subsequent replacement necessitated by failures.

(*b*) An experiment to study the effect of fertilizer applications on *Acacia cyanophylla* at time of sowing and planting, which was laid down in 1953, was reviewed. It was found that applications of ammonium sulphate and superphosphate at time of sowing or planting, either alone or in combination, and at the levels used (i.e. ammonium sulphate 4 okes/donum, superphosphate 10 okes/donum with sowings, or 5 drams/plant and 12 drams/plant respectively with planting) had no influence on the subsequent survival and growth of the species.

(c) Certain excavations were made in a *Eucalyptus camaldulensis* stand on a drained swamp at Fresh Water Lake plantation, in an attempt to obtain some indication of what effect, if any, this species has on underground aquifers.

Free water was found at a depth of 14 feet. No taproot formation was found and no roots over 1/3 inch in diameter were observed below a distance of 4 feet from the surface. There was no evidence that the main horizontal root system sent down any large sinker roots. Only very rare fine hair roots on occasion reached the water surface. Roots penetrated soil with an Nacl concentration of 4,379 parts per million.

(*d*) Efforts are being directed towards the reduction of establishment costs in lowland afforestation.

I. In the Phrenaros Locust Research Plot work has been done on *Acacia cyanophylla* to compare

(i) Planting of naked-rooted plants, raised in pots and raised in beds, with planting of standard potted plants;

(ii) Planting in standard large size prepared holes, with mattock pit planting;

(iii) Combinations of (i) and (ii).

The difference in planting costs between the two planting methods was of the order of 3 to 1. With experience this differential could be still further increased. This costing did not take into account the very considerable saving in transport effected by the use of naked-rooted stock.

Initial survival of all treatments has been completely satisfactory.

II. A similar experiment has been laid out at Nicosia airport using *Eucalyptus gomphocephala.* In this case the difference in costs between the two methods of planting was of the order of 10 to 1, in favour of the modified planting technique.

III. Trials were made of the Ferguson Post-hole digger attachment for the preparation of eucalypt planting holes. Certain teaching troubles were encountered, but it is clear that, with reasonably extensive areas, on deep soil relatively free from stones, this technique will result in an appreciable saving in costs. A technique was worked out for the rapid alignment of the planting spots to facilitate rapid working.

(e) Treatment of the soil with the chelating agent Sequestrene NaFe has been found by R. Karshon ([1]) to correct lime-induced chlorosis of *Eucalyptus camaldulensis.*

Certain chlorotic *Eucalyptus camaldulensis,* which were showing

(1) R. Karshon "Recherches sur la chlorose de l'eucalyptus", International Association of Forest Research Organizations.

severe dieback, have been stumped and treated with this chemical to determine whether this condition in Cyprus is also the result of lime-induced iron deficiency. This experiment is still in progress, but an initial leaf analysis showed a high concentration of calcium and a low concentration of iron, and visual examination of the first coppice shoots shows no chlorotic development on treated stumps, while the untreated controls show extreme chlorosis.

(*f*) The importance of breaking any hard pan when planting Eucalypts has been clearly demonstrated at Vatyli. Certain species were planted here in 1953 in a species trial. Further planting of the current programme was made in 1954 and 1955. Growth of the 1954/55 planting, in certain cases of the same species, has far surpassed the early planting, which also had a higher incidence of failure. Examination has shown that in the early planting a limestone "Kafkalla" pan was left untouched at a depth of 18 inches — 2 feet, while in the 1954 and 1955 planting this was broken by means of crow-bars.

E. *Nursery*.

Athalassa nursery was handed over to the research branch during the year. Activities have largely been confined to the supply of planting stock for the trials programme; investigational work has aimed at more efficient production and the reduction of costs.

(*a*) The difficulties of nursery production, which were referred to last year as hampering the species trial programme, have been largely overcome. Casualties, although still high, were much reduced, although there was a severe water shortage during six weeks of summer, and ample stock was available. This can fairly be ascribed to improved nursery management and greater care in production.

Deaths were found to result from the following main causes:—

Before transplanting:

(1) Sun-scorch of young seedlings in the open.
(2) Damping-off on an extensive scale.
(3) Mechanical damage of seedlings during watering.
(4) Physiological shock during watering.

After transplanting:

(5) Delay in transplanting, resulting in the use of seedlings too large for dibbling.
(6) Bad planting.

(*b*) Cheshunt Compound was applied, at the rate of 1 oz. to 2 gallons of water, to control damping off, but with unfortunate results. Toxic effects occurred, and it is clear that this preparation cannot be employed to control damping off of Eucalyptus. Possibly a mercuric seed dressing may provide an adequate substitute.

(c) An experiment to determine the effect of stumping and root-pruning on *Acacia cyanophylla, Eucalyptus camaldulensis* and *Pinus brutia* was recorded in the 1954 report. This has had the important result of demonstrating that Eucalypts can be held over for a second season by cutting back the main stem, and that they remain in a plantable condition. The lower the stumping the better the form of the resulting plant. This is of importance, both in eliminating a source of wastage, and in facilitating the maintenance of stocks for species trials without the necessity of importing fresh seed each season.

It was found that *P. brutia* and *E. camaldulensis* can clearly withstand much more robust nursery treatment during winter than is current practice; unfortunately the position of *Acacia cyanophylla* could not be determined because of side effects resulting from the extreme water shortage in the nursery last summer. Root pruning did not influence height growth of any species. Stumping significantly reduced height development of *E. camaldulensis,* but not of *A. cyanophylla,* which was, however, controlled by combined stumping and root pruning. Stumping of *E. camaldulensis* and A. *cyanophylla* had no influence on mortality. If root pruning of *Acacia cyanophylla* is left until a large tap root has developed, as is standard practice, increased mortality results. Root pruning did not result in increased deaths of *Pinus brutia* or *E. camaldulensis.*

(*d*) In an attempt to counter the water shortage, all eucalypts in Athalassa nursery in excess of 18'' were cut back to that height during late summer. This empirical treatment has confirmed the experimental results given above, that cutting back has no ill effects. It is clear, however, that the lower the plant is cut, the more satisfactory is the resulting planting stock; but provided subsequent pruning is done if necessary, it is not considered that any lasting deterioration in form will result from cutting back during the transplant stage.

(*e*) Comparison of *Acacia cyanophylla* raised in pots and in a bed showed quite clearly the lower water requirements of the latter. As a result of lack of water potted plants received minimal irrigation and there was wide-spread mortality. The bedded plants, which had been broadcast-sown and were much overcrowded, were left unirrigated for a period of six weeks during the height of summer, yet survived better than those which were potted and had received some water. Tap root formation of these bedded plants was not excessive, and at 8 inches was no more than that of non-root-pruned potted plants receiving normal irrigation. These plants were used in the Phrenaros Acacia planting trial.

(*f*) A further experiment has been laid down this season to compare Acacias raised in pots, drill-sown in beds, with and without under-cutting, and broadcast-sown in beds, in terms of production of plantable stock and water requirements.

(*g*) A trial was made of pressed soil blocks, using *Eucalyptus camaldulensis.* Various soil mixes were used. There was no difference between the various mixes, and it was apparent that no advantage is to be gained from the use of complex and expensive soil mixtures for the raising of transplants.

The blocks used were in the form of truncated pyramids. It was found necessary to fill the interspaces between the sloping sides of the blocks with soil. If this was not done, water did not penetrate and the plants died.

Blocks used were 9 inches deep, 6 inches square at the bottom and tapering to 4 inches square at the top, with a planting hole 5'' deep, 1½'' top diameter, and 1'' bottom diameter. Only the upper portion of the block was used by the plant and much smaller blocks would prove quite satisfactory and in addition facilitate handling.

(*h*) Comparison was made between pressed soil blocks; clay pots, cavity 5'' deep, 4½'' top diameter, 3½'' bottom diameter; cement pots, cavity 4'' deep 3'' square; and polythene bags, 5'' deep and 3½'' diameter. All receptacles were planted with standard-sized *E. camaldulensis* seedlings of a common origin. In order of good growth, plants raised in soil blocks were best, followed by those raised in clay pots and polythene bags while those raised in cement pots showed the poorest growth.

(*i*) Comparison was made between clay and cement pots, free standing, as is standard practice, and sunk in raised beds i.e. with the pot inter-spaces filled with soil. Water requirements were found to be considerably reduced with the latter technique.

(*j*) The incidence of chlorosis and die-back is of great significance in eucalypt introductions. No detailed assessments have yet been made of growth in the newly established trials but an assessment has been made in the nursery stage.

Plants of the following species showed chlorotic symptoms in Athalassa nursery:—

E. cornuta
E. hemiphloia
E. saligna
E. grandis
E. robusta
E. melliodora
E. occidentalis
E. botryoides
E. bicostata
E. umbellata
E. camaldulensis
E. cladocalyx
E. citriodora
E. paniculata

The following species failed entirely:—

E. maideni
E. robertsoni
E. rubida
E. bicolor
E. cinerea
E. macarthuri

But it is not known whether they failed as a consequence of chlorosis.

(*k*) Tests were made of presowing treatment of *Prosopis juliflora* and *Prosopis tamarugo*. It had been stated that to obtain germination it was necessary that they be passed through the digestive tract of a goat. However the podded seeds proved unpalatable to goats. Various methods of pretreatment, immersion in hot water, in commercial sulphuric acid, and for various periods were tried. No advantage in germination was obtained by pretreatment, except possibly by immersing in hot water until cold; but seed extraction from the pods was greatly facilitated by the use of sulphuric acid.

(*l*) To facilitate weed control a wheeled and hooded flame gun has been obtained. This has been found highly satisfactory under trial, and will result in a very considerable saving in labour costs.

F. *Seed.*

(*a*) Pods of *Prosopis tamarugo* and *Prosopis juliflora syn. chilensis syn. siliquastrum* were received from Chile as potential fodder trees. The latter had originally been introduced from Argentine to Chile as cattle fodder.

On test they were found to be unpalatable to goats. Analysis by the Agricultural Chemist showed the following nutritional values:

P. juliflora	7—8% crude protein 70% fibre
P. tamarugo	7—8% crude protein over 40% fibre

The pulp of *P. juliflora* was very gummy.

It was considered that both materials were of very low value as feeding stuffs and that it was unlikely that they would be palatable to livestock.

Thanks are due to Mr. Djavid Ramadan, Animal Nutrition Superintendent of the Department of Agriculture for making this analysis.

(*b*) The small size of *Eucalyptus* seed, the very variable germination capacity, and the very high level of impurities which usually have to be accepted, can lead to great difficulties in purity analysis and in tests of viability, if the International Rules for Testing Seed of Forest Tree Species (1) & (2) adopted by the International Seed Testing Association in 1953, are followed. A testing method has therefore been developed, based on a technique used at Nancy (3), which gives a measure of the germination capacity of the uncleaned seed. It is recognized that this method employs grosser techniques than those prescribed in the "International Rules" but it is considered that, for the special conditions of eucalypt seed, and in view of the poor facilities often available for the testing of this species, this technique provides a practical method of obtaining a measure of the viability of the individual seed lot.

(*c*) Examination of the germination curves of the series of tests made during the development of this technique, in which seed of 43 different species of eucalypts, all of Australian origin, were used, show a remarkably uniform pattern of germination. While individual seeds did not sprout until after 34 days or more, in all except nine seed lots of low germinative power, the bulk (80-100%) of the viable seed germinated within 16 days, and in 71% of the tests a germination figure of more than 70% total germination was obtained in the first 12 days.

Germination per gram was found to vary between 1 and over 900 seeds germinated.

(*d*) The effect of prechilling *eucalyptus* seed has been investigated, but the value of this treatment is still uncertain. Indications are that it may have an appreciable effect on the germination capacity of seed of poor quality; however, it would seem to have but little effect on the progress of germination of good quality seed.

Thanks are due to Mr. Papasolomontos, Seed Analyst, Department of Agriculture, for making the various tests in these series of eucalypt seed investigations.

G. *Miscellaneous Observations.*

(*a*) Large callous formations were observed at the root collars of certain potted eucalypt transplants. Cause is unknown, but mechanical damage would seem unlikely. Bacterial infection is perhaps a possibility and specimens have been sent for culturing and possible identification.

(*b*) Certain two-year-old plants of *Cedrus brevifolia* were packed for transit abroad in polythene bags. Plants were packed individually. Soil was shaken from the roots which were then wrapped in moist balls of lichen and enclosed in a polythene wrapping. The whole plant was then placed in a polythene bag. The neck of the bag was not sealed hermetically and it was possible for air to enter. Specimens were retained for observation. After three months these plants are still alive without any further attention and new needles are starting to burst. Mould has developed on the lichen.

(*c*) Newly-cut arbutus posts, in effect stem cuttings, have been observed to shoot and take root if inserted in the ground.

(*d*) At Akradhes severe damage to eucalypt foliage and tender shoots was reported. Examination showed this to be very similar to the typical

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(1) Abstract of International Rules for Testing Seed of Forest Tree Species—Cyclostyled F.A.O. 54/4/2292.

(2) Handling Forest Tree Seed—F.A.O. Forestry Development Paper No. 4.

(3) Report of the Mediterranean Eucalypt Conference, Morocco 1954—Cyclostyled F.A.O. SCM/UC/2A.

effect of hormone sprays used in weed control. No evidence of the use of such substances in the vicinity could be obtained, and there are no references in the literature to the reaction of *Eucalyptus* spp. to these specific weed killers.

(e) A small quantity of *Pinus nigra var. caramanica* seed was supplied to the U.K. Forestry Commission Research Branch.

Summary list of investigations, not discussed in this report, which were initiated prior to, but continued in 1955, most of which are described in previous annual reports.

Experiments by Divisional Staffs:

(i) Effect of Nitrate and Phosphate application on Chlorotic Stone Pine at Ayia Irini (Northern Range Division).
(ii) *The use of Robinia pseudacacia* as a fodder plant in mountain vine-yards, and the site treatment necessary for establishment (Paphos Division).
(iii) Field trial planting of *Troodos and Corsican pine* (Troodos Division).
(iv) Building up of stocks of various newly-introduced *Poplar hybrids.*
(v) Attempts at the propagation of *Pistacia lentiscus* from seed and from cuttings.

Mountain Forests:

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

Lowland Eucalyptus:

(vii) Small scale species trials.
(viii) Spacing trials.
(ix) Cultivation trials.
(x) To determine the effect of stumping at time of planting.
(xi) To test the results of planting three transplants in one hole.

Other:

(xii) To investigate the possibility of planting trees on "Kafkalla" (Gr. "Crust") lands, by the use of explosives to make holes in the Kafkalla.

J. V. THIRGOOD,
Silviculturist.

(2) FOREST ENTOMOLOGY.

The general survey of the forest insect population, which was started by Dr. Chrystal in June, 1954, was continued till July, 1955.

After the departure of Dr. Chrystal on June the 30th, 1955, Forester E. Anaxagoras, who had been assistant to Dr. Chrystal during 1954-55, continued the forest insect investigations along certain lines which had been discussed with Dr. Chrystal prior to his departure. First of these was concerned with the Eucalyptus borer, *Phoracantha semipunctata* Fabr. The studies carried out on this beetle included preliminary research on the egg-laying habits in the field and the laboratory, and also further

surveys of the Eucalyptus areas in Athalassa and Trikomo village fuel area. Valuable new data were obtained on the egg-laying habits and on the distribution of the insect in the Eucalyptus plantations.

A second line of enquiry dealt with the relationship between the Bark-beetle *Crypturgus mediterraneus* Eichh. and *Ips erosus* Woll. on *Pinus brutia*. So far the results seem to bear out certain conclusions reached by European workers on the economic value of the *Crypturgus* as a check restraining the numbers of the *Ips*.

A third line of enquiry was concerned with the *Cypress Buprestid* borer, *Buprestis cupressi* Dej. In addition to these, surveys were made on areas of fire-killed timber, studying the distribution and rapidity of working of the longhorn borers. These surveys were made in Kapoura-Lidji areas (Adelphi Forest).

Some of the results obtained during the period July—September, 1955 are mentioned in Dr. Chrystal's report. The main lines of study outlined above need to be continued during the coming season, when particular attention will be paid to field studies of the distribution of the Eucalyptus and Cypress borer in areas where different conditions are found.

The die-back of Troodos Pine crowns, mentioned in last year's report, did not recur in the summer of 1955. It is hoped, however, that the problem will be investigated by the Forest Pathologist next year.

E. ANAXAGORAS,

Assistant Entomologist.

(3) MANAGEMENT.

(*a*) *Forest Inventory procedure*— Investigations into the forest inventory procedure were continued, and the results were incorporated in the further refinement of the method applied in 1954. Stratification by crop type was extended to cover site quality as well, and trees are now recorded and classified into 6 inch girth classes instead of the 1 foot girth classes hitherto applied. This increased precision enormously without any appreciable rise in costs.

Investigations are now complete and the findings have been used in the drafting of a procedure to be applied in future.

(*b*) *Economics of Artificial versus Natural Regeneration.*—Experiments of 1954 continued, but not finally assessed (Ayia, Paphos Forest).

(c) *Natural Regeneration Studies.*—Counts of seedlings in 1191 plots laid out in Ayia (18.5 sq. miles) were analysed, to study the progress of natural regeneration of the P. brutia forests in the last 15 years. The results have shown that stocking is unsatisfactory, about 1%. Aspect has a significant effect, certain aspects being much more favourable than others. The other important finding, from the Management point of view, is that overhead shade and protection is significant, the stocking of regeneration being best under a fairly dense canopy. This implies that if natural regeneration is to be relied upon, fellings must be light. Dwarf shrubs and leaf litter have also been found to have a beneficial effect on seedling survival.

A. POLYCARPOU,

Working Plans Officer.

(4) UTILIZATION.

Control of Sapstain

(*a*) *Boxshooks.*—Preliminary experiments in the control of sapstain by the use of chemicals were concluded. Full control was secured, using

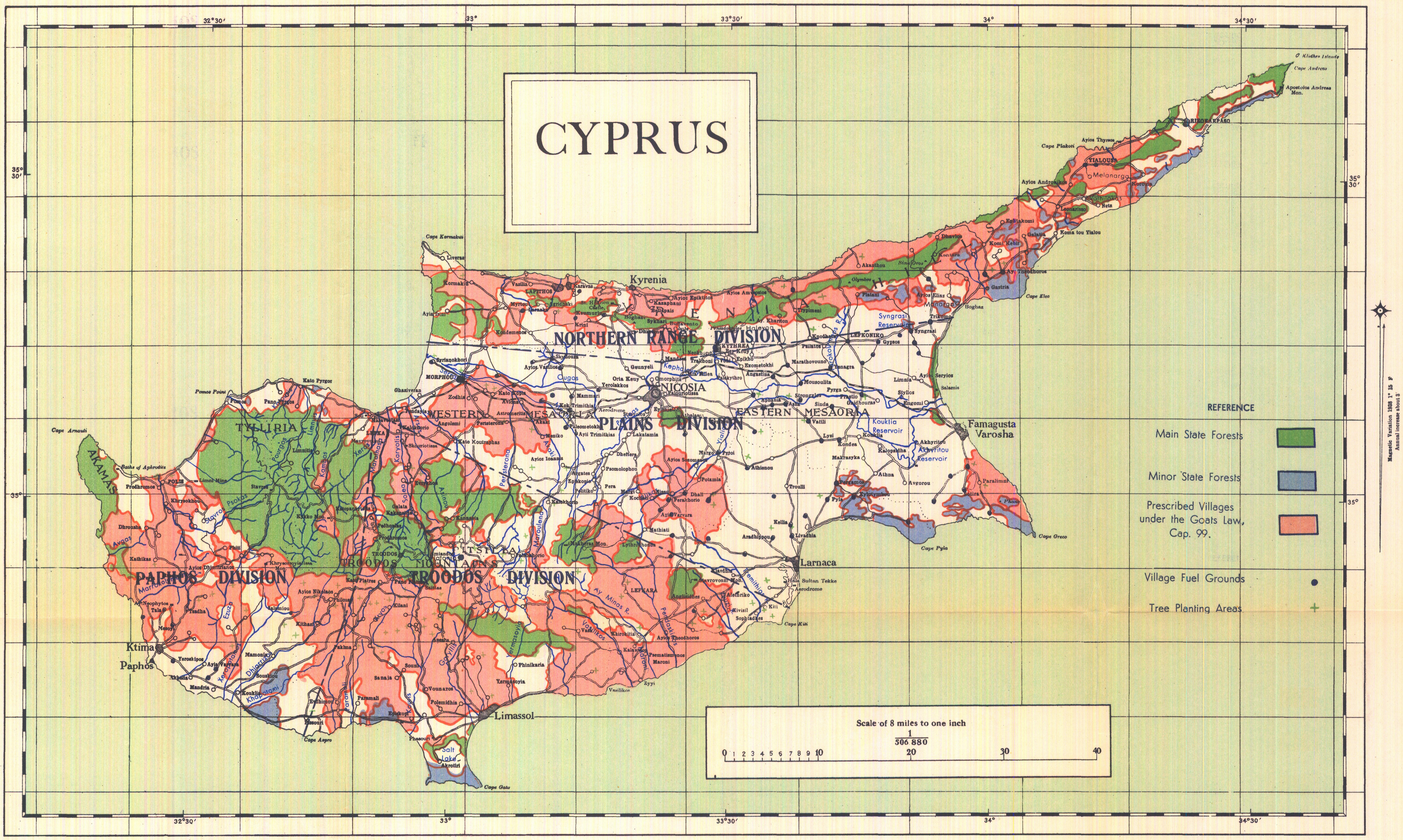
a proprietary brand of chemical with a pentachlorophenol base. Borax proved ineffective when dipping was followed by immediate wiring into bundles.

A new series of experiments was begun in the autumn on the recommendation of Col. A. H. Lloyd, Utilization Adviser. A drying rack with a small roof was constructed, employing a timber frame-work with vertical wires at ½'' and 1'' spacing, to divide one boxshook from another. A log from a freshly-felled tree is being delivered weekly to the sawmill at Morphou from November to March. This log, which comes from a vigorous tree of about 3' girth at b.h., is sawn on arrival into shooks. The shooks are set in the rack at ½'' and 1'' spacing between the wires. It was found in December that shooks kept in the rack (which stands in the open where the morning sun reaches the ends of the shooks), for only 48 hours, developed mottled (not full) sapstain within 14 days of being wired into bundles and stored under cover. The control developed complete sapstain in the same time, having been bundled straight from the saw. Those shooks kept for 96 hours have remained free. The experiment has now been changed to allow 72 hours and 96 hours in the rack, at ½'' and 1'' spacings, before wiring into bundles. No sapstain has developed in the bundles after 3 weeks' storage, except in the controls bundled straight off the saw. The experiment proceeds. First indications are that by drying in racks bluestain can be eliminated.

(*b*) *Sawn timber.*—A brief test was carried out in March 1955, using sawn timber, both dipped and undipped. It was found, as might be expected, that the dipped timber when piled without stickers under cover did not develop sapstain, whereas the undipped timber became blue. Neither control nor dipped timber developed stain when stickered under cover. Undipped timber developed stain even when stickers were employed, when the timber was stored in the open.

J. A. N. BURRA,

Officer in charge of Utilization.



drawn in the Land Registration and Survey Department of Cyprus.

District Boundaries

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