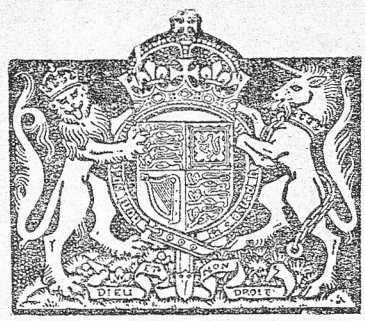


CYPRUS

# REPORT

OF THE

# FOREST ADMINISTRATION

FOR THE YEAR

# 1946

BY

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NICOSIA

PRINTED AT THE CYPRUS GOVERNMENT PRINTING OFFICE

1948

[Jan., 1948. M.P. 268/46.]

Price 3 shillings.

# CONTENTS

# Annual Report of the Forest Administration in Cyprus for the Year 1946.

NOTE.—The last complete printed Annual Report on this subject, in the standard form, was written for the year 1938. The intervening years are covered by a composite report and by the report " Empire Forests during the war 1939–1945, Cyprus ".

## I.—INTRODUCTION.

The first recognized fundamental aim of forest management in Cyprus is taken to introduce the 1946 Report :-

" To establish and maintain a fully stocked forest vegetative cover to provide complete soil conservation and protection of the hillsides from erosion, and also to provide and maintain a rainwater catchment at the highest level of efficiency to prevent flood damage and to preserve surplus winter waters for irrigation in spring and summer ".

And here are two quotations from the reports of D. E. Hutchins, 1909 and R. C. Reid, 1908 (on Forestry & Water Supply respectively) to illustrate the background from which this aim developed :—

" We cannot prove how much extra rainfall we can get by reforesting but we can prove that forest humus (leaf mould) will hold up and retain two-thirds its bulk and between 2 and 3 times its weight of water. This is a laboratory experiment which has been often verified in Europe and repeated with humus from Australian trees planted near Cape Town " (which has a climate comparable to that of Cyprus).

" It needs but a simple calculation to show the extent of the vast natural reservoir of water that can be created by forest humus. If, for instance, we suppose the humus to be one foot thick then a square mile of such forest would hold up nearly 12 million gallons of water ; or, if we take four times the area of Makhera Forest and supposed it covered with six inches of humus, it would retain the water supply of a big town for a year. This would be the water storage from the humus layer alone and which we can measure. There would be a further and considerable storage of water from the opening of the ground by the tree roots ". (Report on Cyprus Forestry, D. E. Hutchins, 1909, p. 88).

" The rainfall is adequate if regulated, though not large ; but instead of the rain soaking into the ground, feeding the springs and being given off for months after the fall had ceased, it now nearly all runs off the surface in the winter. In doing so the rate of erosion is greatly increased ; the soil in the slopes is swept away, the slopes are cut up into channels difficult to cultivate and large deltas of coarse detritus are formed in the lowlands. If we can make the rivers flow for a month longer than they do now we shall have solved one of the main difficulties and at the same time we shall improve the Subterranean Supply of water ". (Report on the Water Supply of Cyprus, R. C. Reid, 1908).

Such then being the primary objective of Forestry in Cyprus, it is easy to understand how forestry becomes involved in the general subject of land use as, for example, it might be considered that the Department should take part in and, possibly, initiate action in case of any catchment area inadequately protected, or so used as to prevent the conservation of water, and to cause damage to the valleys by floods, etc. ; recent forestry participation in concerted soil conservation activities of this kind is recorded in two reports completed during the year, a report of " The Proceedings of a Conference in a Mediterranean Environment " and the " Report of the Land Utilization Committee, 1946 ".

2. The efforts made to encourage popular interest in forestry and tree planting continue to show results and there is strong and continuous demand for trees by individuals, and for the establishment of lowland village fuel areas by communities. These plantations exist in great numbers ; their first appearance is often unobtrusive but in a year or two they will be plainly visible and, together with the plantations of village tree planting societies and individual planters, they will begin to belie the description of the Messaoria as a " treeless plain ".

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## II.—CONSTITUTION.

(*The years* 1939–1946 *are taken as there has been no statement of area since* 1939.)

### FOREST AREA.

During the years 1939–1946 there was an increase in the forest area by 652.25 donums. The total forest area is now computed to be 1,204,192 donums or 398,080 acres equal to 17.41% of the total area of the Colony.

The following figures in donums show the changes during the years 1939–1946 :—

| | |
|---|---|
| Forest area on 1st January, 1939 .. .. .. .. .. .. | 1,203,539.75 |
| New lands acquired up to 31st December, 1946 .. .. .. .. | 652.25 |
| Forest area on 31st December, 1946, .. .. .. .. .. | 1,204,192 |

NOTE.—1 acre=3.025 donums.

Of the 622 square miles of State Forests, 530 square miles consist of Main State Forests and plantations while the remaining 92 square miles are Minor State Forests which consist mostly of lowland areas supporting poor scrub growth used as fuel and grazing grounds. It is estimated that there are also approximately 23 square miles of private forests, woodlands and plantations and 7 square miles of Monastic, Church and Evcaf forests (Evcaf forests are those belonging to Moslem religious bodies).

In compliance with the policy approved by the Secretary of State for the Colonies in 1937, the Minor State Forests were handed over to the District Commissioners for maintenance and management.

### FOREST BOUNDARIES.

Ever since the original delimitation of the forests, the forest boundaries have been most inadequately demarcated by boundary marks or cairns built of stone rubble and lime. These, unfortunately, are in most cases too far apart and being of a non-durable nature they are destroyed so that encroachments may proceed unnoticed. On the other hand, in many cases internal boundaries are not marked on the ground at all. With the drafting of the new forest law it became apparent that no effective control of the forest boundaries could be contemplated until an accurate re-delimitation of the forests had been carried out. Accordingly, during 1939–1946 additional expenditure was provided and the forests of the Troodos, Paphos and part of the Northern Range Divisions were re-delimited. This work was carried out by the Forest Surveyor working in conjunction with the Land Registration and Survey Department, and great care was taken to mark all internal and external boundaries accurately on the ground with cement concrete boundary marks built on solid foundations. Whenever possible

the opportunity was taken to simplify the boundary by the inclusion or exclusion of land that would tend to straighten the line. Sufficient marks were placed in order to leave no doubt as to the exact position of the boundary line when viewed from any point along the line. Such work is of a permanent nature and when completed it will be possible to reduce the cost of maintenance of the forest boundaries, and at the same time save the expense and time involved by constant enquiries and litigation, which in the past frequently led to the loss of forest lands.

### Forest Survey.

A Forest Section was maintained and was responsible for the maintenance of forest boundaries and all re-delimitation work, also for the survey, registration and record of all forest lands encroached upon, leased, acquired or conceded during the years 1939–1946. All plans and sunprints required in the Department were prepared in the draughtsmen's office. The four Assistant Forest Surveyors were engaged with the working plan parties or re-delimitation parties or with such divisional tasks as boundary maintenance, surveying encroachments or tracing new roads.

The Forest Surveyor also spent the greater part of his time in the field with the re-delimitation party.

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## III.—PROTECTION.

### Protection from Unlawful Cutting.

Since the appreciation of the fact that offences under this head were influenced by the quantities of fuel and timber that could be obtained without recourse to theft, there has been a steady reduction in the incidence of illegal cutting. In the Main State Forests of the Southern Range containing exploitable forest, where sustained yields of timber and fuel can be worked for the requirements of the surrounding villages, cases of unlawful cutting are becoming rare. Unlawful cutting for fuel occurred on a considerable scale in only one locality and the offences ceased when fellings were marked in an area accessible to the villagers. There have been a few cases of unlawful felling for timber but protection against this form of unlawful cutting is relatively easy owing to the time required for felling, logging and removing trees of timber size.

In the Northern Range forests and the Minor forest areas of the South-east the problem is however much more acute and is therefore being tackled in two ways : directly, by systematic patrols and by the combined action of Forest, Police and Administrative Staff directed at discovering and prosecuting all offenders ; and indirectly, by the oil conversion scheme and the village fuel areas scheme, respectively reducing the demand for wood fuel and increasing the supply. The oil conversion scheme has had an immediate effect, particularly the conversion of lime kilns, the exact extent of which is shown in the appended report; it will of course take longer for the village fuel plantations to have more than a moral effect, but when the considerable areas already planted are old enough for cutting their effect may well be decisive. While these schemes were planned with the principal intention of relieving the Northern Range and the Lowland Forests from fuel cutters, their influence is reported as having played a noticeable part in the protection of the Southern Range forests as well. It can then be reported for the year 1946 that the satisfactory position achieved in the Southern Range, by the cumulative effects of supplying timber, fuel and work for the people of the surrounding countryside, was maintained without retrogression ; and that the methods adopted for the protection of the Northern Range, direct and indirect, are proving to be both theoretically sound and of practical effect.

The protection of Village Fuel Areas rests with the Village Authorities and, with a few minor exceptions, protection during the year was most satisfactory.

### Protection from Grazing.

The effect of grazing on forest is difficult to express exactly, and unless the damage is wanton in the extreme it is not immediately obvious. The first point is that in the Cyprus forests, owing to the herbs and grasses being mainly annual, grazing invariably means browsing. To the casual observer the fact that browsing animals eat only foliage implies that there is no loss of actual timber, but any loss of foliage actually means a reduction of the material converted into timber through the action of the leaves ; add the fact that the shoots browsed are the new growth, the most vigorous and efficient foliage, and the possibility can be imagined of growth being so reduced as to be negligible. The next step in demonstrating the effect of grazing is to express growth in terms of money. The average annual growth for Cyprus forest is calculated at 7 cubic feet per donum (14,150 cubic feet per square mile). In a forest that is heavily browsed the growth, or material converted into timber, would be unlikely to amount to 2 cubic feet per donum so that 5 cubic feet would be lost. The value of this now would be about £1. 10*s*., so that the annual loss from grazing in a forest is probably higher than the normal rents charged for good agricultural land. In addition to this direct loss, which can be expressed in money, there are the losses resulting from the removal of ground cover creating unstable soils subject to erosion ; the cost of reclaiming steep slopes, which have been fired and then divested of all cover by grazing, and kept loose by trampling hooves, may be entirely uneconomic ; for example, a figure in the region of £50 per donum has been expended in a small demonstration area.

There has been steady progress towards the aim of eliminating free range grazing from the forests. The method of compensation introduced to deal with privileged grazing, originally employed in concluding agreements with Monasteries which showed besides public spirit, great good sense in recognizing that grazing was a grossly uneconomic use of land, has been extended to include habitual graziers whose privileges were not recognized by law. Such graziers were first induced to legalize their status by accepting licences and were then gradually persuaded to accept compensation and sign agreements relinquishing their rights ; in fact the Southern forests are free from grazing by forest villages though they are still subject locally to grazing by flocks kept in villages adjacent to the boundaries. Final protection from damage on this account depends mainly on the application of the Goats Law.

The Southern forests are now almost entirely surrounded by prescribed areas under the Goats Law and without the continued and active co-operation of the administrative staff this final step in protection against grazing could not have been taken.

In the Northern Range the position is different in that, firstly, there are no graziers actually isolated within the forest such as constituted the main problem in the Southern forests, and secondly the pressure from outside the forests is greater, also the boundaries in relation to the forest areas are much more extensive and effective patrolling is more difficult to organize. Considerable progress has been made by organized patrolling and by adopting the methods employed successfully in the Southern Ranges. Here again the co-operation of the administrative service and the police has been readily forthcoming and of the utmost value.

The policy of offering employment to those who have given up forest grazing has been steadily pursued in the Southern forests. This policy cannot yet be introduced in the Northern Range, although re-afforestation funds are available, because protection is not yet effective ; it is constantly impressed on the people concerned that as soon as forest grazing is generally abandoned employment on major forest works will be available for them.

It has been recognized for some time that villages isolated within the forest, such as had formerly lived mainly by grazing sheep and goats, and possessing insufficient land to support themselves by agriculture, could not so continue indefinitely. They must depend on employment in the forest but, while this might be provided for a time, this solution would cease to be effective when the present population has increased and the large-scale reclamation works now contemplated have been completed. The policy of resettlement has, therefore, been introduced instead and some initial steps have been taken in the case of one forest village the inhabitants of which have applied for resettlement. A comprehensive and detailed scheme was prepared and is now under consideration by Government.

Other factors which affect or may affect the question of protection from grazing are water supply and the supply of goats of the improved breeds that can be kept as tethered goats, and the assistance given in this connection by the departments of Water Supply and Irrigation and Agriculture has been most valuable.

The general trend of opinion against unrestricted grazing continues to act powerfully in the protection of the forests. Besides the application of the Goats Law already referred to, the Village Tree Planting Law is being increasingly used, and this affects the forests indirectly as in cases where the areas may adjoin forest boundaries, and costly by increasing sources of fuel supply. Up to the end of 1946, 204 villages had applied the Goats Law and 116 villages had adopted the Village Tree Planting Law.

Appendix 10 gives details of the incidence of grazing during 1946 as compared with 1945.

### Protection from Fire.

During the year 60 fires were reported accounting for the destruction of 0.47 square miles of forest, valued at £2,284, plus the cost of extinguishing the fire amounting to £1,272. The corresponding figures for 1945 were 60 fires, 3.43 square miles (6,646 donums). £20,560 (excluding costs of reclamations, deterioration of site and compound interest) £5,424. As shewn the reduction in 1946 was very marked, the area consumed in the previous year being almost ten times greater.

The disastrous damage of 1945 stressed the need for taking stronger measures against incendiarism, particularly with regard to the prosecution of suspected offenders. The Law was accordingly strengthened by the enactment of the Forest (Protection against Incendiarism) Law, 1946.

It will be noted that the Law was passed before the hottest part of the year 1946. In Paphos Forest there were two malicious fires, two were reported in Adelphi and one in Limassol Forest, and seven malicious fires were reported from the Northern Range, making a total of twelve ; the average for the five pre-war years was 22, so that a reduction of nearly 50 % in the number of incendiary fires followed the *enactment* of the new legislation (examples of the enforcement could not have had much effect during the period under review). The new Law was enforced on two occasions. In attempting to assess its efficacy, the possible effects of other factors should be considered at the same time. The other factors influencing fire protection are telephone communications, transport, staff and the weather. As compared with 1945, there was little change during 1946 in these factors, the system of forest telephones and fire look-outs being the same during the two years (except that an internal field telephone system was installed in Makhera Forest, where one fire occurred in 1945 and none during 1946) ; the staff engaged in each year was the same, and the transport available for the movement of patrolling staff was also much the same.

It may then be said, with regard to fire incidence during 1946, that there was a great reduction compared with previous years, special legislation was enacted to deal with incendiarism and there are strong grounds for ascribing this reduction, particularly of incendiarism, to the new legislation.

### Protection from Encroachments.

The re-delimitation started in 1938 is now nearing completion. The most important boundaries have all been dealt with and are now clearly marked and accurately described. This, combined with the forest law of 1939, has very greatly improved protection from this form of damage.

### Protection from Wind and Snow.

Aleppo Pine (*P. halepensis* v. *brutia*) is the most important native species at low elevations. It is however particularly susceptible to wind and is useless for the afforestation of windy sites. There is an alternative, Stone Pine (*P. Pinea*), which however produces inferior timber, and is slow growing.

Monterey Pine (*P. insignis*) was introduced experimentally a few years ago as a possible substitute, and as it seems to have been successfully established its extensive use on exposed sites is being considered. No exceptional damage from snow has been observed during the year.

### Protection from Insects, Fungi and Birds.

No exceptional damage was observed from the common forms of insect pest, processionary caterpillar, wood and bark borers, and no protective measures, beyond normal silviculture, were taken against these forms of attack during the year.

### Protection of Private Forests.

During the year 19,838 donums of private forest land were taken under the protection of the Forest Law. The total area of private forests now under protection is 30 square miles.

### Forest Offences.

An analysis of forest offences dealt with during the year is given in Appendix 12. It will be noted that these figures are for detected offences compounded or taken to court. Increases do not, therefore, necessarily mean increase in crime but increase in detected crime. This is particularly the case in the Northern Range where special efforts at protection from unlawful cutting and grazing were made during the year.

## IV.—MANAGEMENT.

### Forest Policy.

The forest policy, or the fundamental aim of forest management in Cyprus, are defined as follows : Firstly, to establish and maintain fully stocked forest vegetative cover to provide complete soil conservation and protection of the hillsides from erosion ; and also to provide and maintain a rainwater catchment at the highest level of efficiency to prevent flood damage and to preserve surplus winter water for irrigation in spring and summer ; secondly, to provide and maintain the maximum, regular, sustained yields of timber, and other forest products and thus to support the various local industries working and consuming forest products ; thirdly, to provide maximum employment for the inhabitants of the forest villages ; and fourthly, to provide money returns in the form of revenue.

The first aim requires a concerted land use policy for the country such as that outlined in the Land Utilization Committee's report. The second aim has to be modified for the time being until the over-cutting of the yield made necessary by war demands has been made good by new growth ; the other points of forest policy, set out above, are being steadily persued.

### Working Plans.

Working Plans were in charge of an A.C.F. Plans were under preparation for Akamas and Limassol forests, and the revision of the Paphos Working Plan was started. Appendix 3 provides details of forests now under Working Plans.

### Roads.

No new roads were constructed during the year. 311 miles of existing forest roads were maintained generally in good condition at the low average cost of £30 per mile. In addition 32 miles of road were taken over from the administration and maintained.

### Telephones.

The system of forest telephones continues to operate efficiently and was maintained in good condition. There are 334 miles of line, 69 instruments and 6 telephone exchanges ; full details are given in Appendix 11. Further extensions planned had to be postponed owing to the delay in the delivery of materials ordered. Extensions of 21 miles on poles and 3 miles on living trees were constructed during the year while Makhera forest was fitted with an internal telephone system connecting fire watcher posts with the forest stations of a length of 32 miles. This operated successfully. Telephone pole route lines have been reduced by 14 miles during the year through straightening and improvement of routes.

### Water Supplies.

The forests were again called upon to supply water for use outside the forests. 3 other springs, 51 water channels and 6 wells were leased for rents amounting to £23. 8*s*.

### Land Leases.

Since the former policy of leasing low-land scrub forest areas for cultivation for a five-year period did not prove a success, many applications for such leases were refused. Also many leases which expired were not renewed. During the year 228 separate leases covering a total area of 1,478 donums were in force. The total rent collected from leases of land was £99. 8*s*. 4*p*.

## V.—EXPLOITATION.

### Timber Markets.

All the timber produced in Cyprus is consumed within the Island. The demand continued keen throughout the year and prices were abnormally high. The production of the Cyprus forests represented a relatively small proportion of the Island's requirements except for specialized uses such as threshing boards and wooden troughs.

### Timber Yields.

The total output of timber from the State forests during the year was 620,834 cubic feet, but of this volume more than half was extracted from the forest burned in the 1945 fires.

The actual yield cut was kept below the normal yield to allow the growing stock, depleted by the heavy fellings of the war years, to be built up to allow normal production as soon as possible. For comparison with the present year the yield for 1938 viz., 903,793 cubic feet is quoted. All figures quoted are " Whole stem volume over bark ".

### Timber Imports.

In countries like Cyprus at a time when the yield of the forest is much below the demands of market and where, in addition, the forests are not protected by nature or tradition, imports are of vital concern to forestry. The heavy contributions in timber which the Cyprus forests made during the war, when Mid East Forces were cut off from other sources of supply, and the resulting strong claim of Cyprus to a fair share of the available world supplies during the critical period, till the forests can resume normal production, have been previously stressed, and estimates of requirements worked out in conjunction with the Controller of Supplies, Transport and Marketing and a substantial import programme has been arranged. The figures for 1946 were 924,000 cubic feet.

Import Duties on timber are as follows :—

| Description | Unit | Rate of Import Duty | |
|---|---|---|---|
| | | Preferential Tariff | General Tariff |
| (*a*) Planks, boards, logs, beams and rafters of mahogany, walnut, oak, teak and beech .. .. | per cubic foot | *p*.<br>4 | *p*.<br>6 |
| (*b*) Other planks, boards, logs, beams and rafters .. .. | per cubic foot | $2\frac{1}{2}$ | $3\frac{3}{4}$ |
| (*c*) Plywood .. .. .. | *ad valorem* | 20% | 30% |
| (*d*) Other, not otherwise specified | *ad valorem* | 20% | 30% |

### Exemption from Import Duty.

Exemption from import duty is allowed on the following categories of timber :—

(*a*) Sawn and round timber of any dimension imported solely for use underground in any mine of the importer.

(*b*) Timber imported into the Colony ready-cut to size for the purpose of being used for the making of cases for packing fruit, vegetables or eggs.

(*c*) Timber imported into the Colony for the purpose of being used for the making of cases for the packing of goods which are the produce of the Colony for export, not being timber imported into the Colony ready-cut to size for the purpose of being used for the making of cases for packing fruit, vegetables or eggs.

The Conservator of Forests again carried out the duties of Timber Controller during the year.

### Wood Fuel.

Wood fuel still supplies much of the fuel requirements of the Island, but as a result of the oil conversion programme over 50% of the Island's fuel requirements are now met by oil fuel. The present consumption is calculated at 100,000 tons approximately. The consumption before conversion was estimated at 220,000 tons approximately.

The sale of fuel continued to be controlled by the Conservator of Forests through the Fuel and Charcoal Controller. During the year the demand was met without great difficulty, though prices remained high. In the Main State Forests fellings of riverine forest and coppice underwood were carried out mainly to supply local demands for wood fuel; about 430,000 cubic feet (40,000 tons) of material were extracted mainly for local fuel requirements. Production of wood fuel for 1946 amounted to 1,277,038 cubic feet.

### Charcoal.

The reduction in consumption of wood fuel stated above includes charcoal, the manufacture of which has also been reduced by 50%. The supply was maintained by the Controller and 526.27 tons were produced during the year.

Full details for the production of timber fuel and charcoal are given in Appendix 6.

The oil conversion scheme continued to make great progress during the year. A brief report is appended. The important effect of this scheme on forest policy and management has already been stressed in relation to the protection of forests against unlawful cutting.

### Ploughwood, Cartwood and Chairwood.

Golden oak (*Quercus alnifolia*) supplies the material for most of the ploughs, wheels and other agricultural implements of local make. Chairwood comes from arbutus (*A. andrachne*). The material is selected from the coppice growth of these species cut for fuel. 6,525 cubic feet of timber for these purposes was cut in the Main State Forests during the year.

### Trough Making.

The demand for Pine trees for trough making continues. The troughs are carved, in the same way as dug-out canoes, from whole stems. It is a wasteful process as the chippings are not generally recovered. The troughs are used for general household and farmyard purposes and at the present time suitable substitutes cannot easily be found.

### Wild Fruit Trees.

Wild olive, carob and hawthorn trees are found in great numbers in some parts of the forests. Where these are required as grafting stocks for village tree planting areas, the prospective planters are allowed to uproot them free of charge from the forests.

### Minor Forest Produce.

The sales under this item were £714. Enquiries were started concerning the collection of gum mastic from *Pistacia lentiscus*, as is done in the Island of Chios. The enquiries are still going on.

### Agency of Exploitation.

There was generally no change in the system previously employed. A special arrangement was made to assist ex-servicemen from Kambos to form a "Wood-cutters Co-operative Society Ltd." whereby they were allowed to work plane and alder in the Kambos valley on royalty rates; average auction prices were high.

### Exploitation of Burnt Areas.

These are exploited only when the cause of the fire is known and if in the case of a fire set on purpose, the offender can be identified and the offence proved. This is to eliminate profit as a motive for starting fires, as it had commonly proved to be in the past.

### Utilization.

Cyprus is well equipped with sawmills and wood-working machinery generally and remarkable ingenuity was shown during and immediately after the war in keeping the plants running effectively without replacements. Much of the machinery is now out of date and machines which are more economical in conversion are becoming available for replacement. A start has been made in converting the Government mill at Kambos from plate saws to band saws.

### Saw-Mills.

Excluding saw-benches cutting fuel only, there were 3 Government owned sawmills operating in the forests during the year.

### Timber Grading.

No staff were employed in grading during the year.

## VI.—SILVICULTURE.

### Silvicultural Systems.

The forests of Cyprus consist mainly of hill forests. These contain coniferous high forest and hardwood coppice with riverine high forest, mainly hardwoods, in the valley bottoms. There are also some areas of coniferous forest in the lowlands, and plantations, in which the principal species are Eucalyptus and Acacia. The hill forests are primarily protection forests, they are treated under the selection system though at this stage the treatment consists of selective improvement fellings. The hardwood coppice, to retain its value as a soil cover, is also worked selectively, stems over five-inch diameter being cut from the compartments being worked. The riverine forest is mainly worked by selective fellings but recently some valleys have been treated by clear-felling to secure more vigorous coppice growth. The lowland coniferous forests, until the results of complete protection have developed, are being treated in the same way as the hill forests. The plantations of Eucaylptus and Acacia are clear felled to produce coppice regrowth.

### Climate.

1946 was an average year generally; though the rainfall, 18 inches, was slightly below the average for the last 10 years.

### Natural Regeneration.

The main forests are composed almost entirely of indigenous species. Normally, under selection fellings, replacement from natural regeneration can be relied on, though it may be very slow on areas denuded by fire and grazing; adequate supplies of seed were produced during the year.

### Artificial Regeneration including Reclamation and Erosion Control.

Artificial regeneration is applied under two distinct main sets of conditions, one being the reafforestation of forest land which may be either partly covered with forest already, or wholly denuded of all cover by fire, grazing and erosion ; and the other the establishment or extension of plantations such as the supply of fuel, the fixing of shifting sand, anti-malarial swamp drainage, or a combination of these. All these works were charged to Colonial Development and Welfare funds.

*Reclamation of Forest Lands.*—Operations covered about 7,500 donums during the year. The usual form of treatment consisted of some kind of contour work, such as gradonia or contour strips, followed by sowing with pine seed. Gully plugging is carried out at the same time if necessary. Small areas were treated with stone-wall terraces and planted. In some areas the gullies only are treated. The cheapest method is sowing on contour strips and this method is followed wherever there is sufficient ground vegetation to make it effective. The expense of stone-wall terracing and planting can only be justified in special circumstances. For normal treatments, sowing on gradonia and contour strips, costs range between £2 and £7 per donum, stone-wall terracing and planting costs from £20–£50 per donum.

*Government Plantations.*—Sowing was carried out over 330 donums following tractor ploughing at Ayia Irini where sand fixation is the main objective ; the cost of this operation is approximately seven shillings per donum.

In the lowland forest plantations, which include the dune plantations at Salamis and the plantations at Freshwater Lake and Athalassa 416 donums were treated by direct sowing or planting ; the total area is 11,058 donums or 5½ square miles.

### Village Fuel Areas.

During the year the number of village fuel areas was increased from 65 to 69 and the area from 4,816 donums to 5,283, (approximately 1,400 acres). The species most generally used, have been Acacia and Eucalyptus *gompocephala*, though other Eucalyptus have been used, also Cypress and Carob. The methods employed have been planting with Eucalyptus and sowing or planting with Carob, Acacia and Cypress. Where planting is employed plants which have previously been raised in pots or tins are used. Planting intervals are $12' \times 12'$ for Eucalyptus $8' \times 8'$ for Acacia, and where gradonia are necessary plants are put in at intervals of 5 to 6 feet on the bank. Where possible sowing is preceded by ploughing. In areas where Eucalyptus is not certain to succeed but worth trying, Acacia has been sown as well to ensure against failures. The sites on which plantations have been established vary in quality but consist mainly of poor marginal land, generally hali lands. A great variety of techniques has been evolved to deal with the various problems presented by the different sites.

### Nursery Work and Seed Collection.

Six large nurseries were maintained during the year. Just under a million plants were raised, of which 156,000 were disposed of to the public and the remainder used by Government. £6,001. 4*s*. 2*p*. was expended on nurseries and seed collection during the year.

### Cultural Operations.

In newly established areas some form of cultivation is necessary for one or two years, in order to check weed growth or to improve aeration and reduce evaporation. It is carried out by hoeing or, if the site permits, by tractor ploughing or harrowings and this is one factor which has decided the adoption of a wide espacement in planting ($12' \times 12'$), tractor cultivation being now very much the cheapest form of cultivation.

Cultural operations in established forest are mainly combined with the major fellings, when the exploitable areas are felled over every ten years. Thinnings and mature trees are marked and sold in one operation. In this way thinnings are carried out without cost to Government. The plantations are for the most part worked as coppice and require no thinning.

## VII.—RESEARCH.

### Resin Tapping.

The experiments on tapping *Pinus halepensis* have shown that the product is of good quality but that on account of the type of forest (uneven aged selection forest) and the nature of the ground it would be generally uneconomic to carry out resin tapping in the main forests. There are some areas on relatively level ground, but at present, the stocking is too light for tapping to be done economically.

### Silvicultural Research.

Tree planting of Juglans regia walnut, was continued in the riverine belts ; some trials were also made in the artificial establishment of *Cedrus brevifolia*. Sumach (*Rhus coriaria*) was tested as a soil fixer on steep eroding slopes at high altitudes under extreme conditions, and it appears so far to possess useful properties for this purpose. In the lowlands trials were made of various techniques in the formation of plantations or types of marginal land ranging from flat marshland exposed to sea breezes to the arid rocky slopes of the foothills. The use of tractor-drawn equipment for cultivation played an important part in the results achieved.

### Timber Preservation and Timber Strength.

No further experimental work has been done on these lines.

### Volume Tables.

Volume Tables for *Pinus halepensis* have been completed and are in use.

### Oil Conversion (Lime Burning).

Experiments have been confined mainly to the conversion of gypsum and umber Kilns from woodfuel to oil ; when these give successful results the major industries previously using wood fuel will have been converted to oil burning.

## VIII.—FINANCIAL.

The total departmental expenditure and revenue for 1946 as compared with 1945 is shown as follows :—

| | 1945 | 1946 |
|---|---|---|
| Expenditure .. .. .. .. .. .. .. | £100,330 | £79,016 |
| Revenue .. .. .. .. .. .. .. .. | £100,467 | £81,866 |

The reduction in revenue is due to the curtailment of fellings.

Expenditure under Colonial Development and Welfare Fund amounted to £47,219, as compared with £33,285 in 1945.

## IX.—ADMINISTRATION.

### Senior Staff.

The Senior Staff consisted of:—

1 Conservator of Forests, 5 Assistant Conservator of Forests, and 1 Forest Surveyor.

(Mr. Willan was transferred to Nyasaland and left the Cyprus Service on 16th November, 1945.)

(Mr. Chapman accepted a secondment to Iraq for 3 years. He left Cyprus on 2nd November, 1946, after sixteen years' service.)

The Department was organized as follows during the year :—Head-quarters, Paphos Division, Troodos Division, Working Plans Division, Northern Range Division, Plains Division, Telephone and Mechanical Section, Fuel and Charcoal Section.

### Subordinate Field Staff.

During the year the established permanent staff was as follows :—6 Forest Rangers, 14 Foresters and 80 Forest Guards. There were also 37 Temporary Forest Guards, 86 Forest Foremen and 4 Temporary Forest Officers, (Prosecutions) serving with the Department.

### General Clerical Staff.

8 members of General Clerical Staff were attached to the Department during the year. Mr. Tingherides was seconded as Fuel and Charcoal Controller during the whole year.

### Training of Staff.

Mr. D. Couppis, Forester i/c Telephone and Mechanical Section, left on 28th September, 1946, for two-years scholarship in Forest Engineering in the United Kingdom.

### Acting Appointments.

Mr. H. Michaelides, Forest Ranger, acted as Assistant Conservator of Forests, Paphos Division, for the whole year.

Mr. O. Haji Nicolaou acted as Forester, i/c Telephone and Mechanical Section from 28th September, 1946, to the end of the year.

### Acknowledgment.

The year was one of great activity resulting in considerable demands on the field and clerical staff, who are to be congratulated for the work done and the high standard they achieved and maintained.

E. H. Probyn,
*Acting Conservator of Forests*

*29th August*, 1947.

APPENDIX 1.

AREA IN SQUARE MILES OF FOREST LAND ON 31ST DECEMBER, 1946.

| Category of Forest Land | Total area of unit | State Forest | | | | Private Forest | Total Forest Land | Percent. of whole area of Cyprus | |
|---|---|---|---|---|---|---|---|---|---|
| | | Product. reserves | Protect. reserves | Unreserved | Total State Forest | | | Forest reserves | Total Forest land |
| Main State Forest | 530.49 | — | 530.49 | — | 530.49 | — | 530.49 | 14.83 | 14.83 |
| Minor State Forest | 91.91 | — | 91.91 | — | 91.91 | — | 91.91 | 2.58 | 2.58 |
| Private Forest .. | 30.00 | — | — | — | — | 30.00 | 30.00 | — | 0.84 |
| Total .. | 652.40 | — | 622.40 | — | 622.40 | 30.00 | 652.40 | 17.41 | 18.25 |

APPENDIX 2.

STATEMENT IN SQUARE MILES OF PROGRESS IN FOREST RESERVATION AND DEMARCATION DURING THE YEAR ENDED 31ST DECEMBER, 1946.

| Category of Forest Reserve | Reserves Constituted and Demarcated | | | | |
|---|---|---|---|---|---|
| | On 1st January, 1946 | Added during the year | Excluded during the year | On 1st Dec., 1946 | |
| Main State Forests .. | 530.37 | 0.15 * | — | 530.52 | * Land purchases in and adjoining main Forests. |
| Minor State Forests .. | 91.91 | — | — | 91.91 | |
| Total .. .. | 622.28 | 0.15 | — | 622.43 | |

APPENDIX 3.

STATEMENT IN SQUARE MILES OF PROGRESS MADE IN WORKING PLANS DURING THE YEAR ENDED 31ST DECEMBER, 1946.

| Territorial Unit | Area under Working Plans | | | | Area not under Working Plans on 31st Dec., 1946 | Total Area | Area for which plans were revised during the year |
|---|---|---|---|---|---|---|---|
| | On 1st Jan., 1946 | Added during the year | Excluded during the year | On 31st Dec., 1946 | | | |
| Main State Forests (Intensive) .. .. | 384.29 | 27.45 | — | 411.74 | 146.08 | 557.82 | 1.32 |
| Minor State Forests .. | — | — | — | — | 91.91 | 91.91 | — |
| Total .. .. | 384.29 | 27.45 | — | 411.74 | 237.99 | 649.73 | 1.32 |

APPENDIX 4.

RECORD IN MILES OF FOREST COMMUNICATIONS FOR THE YEAR ENDED 31ST DECEMBER, 1946.

| Category of Forest land | Forest Roads | | |
|---|---|---|---|
| | Added | Abandoned | Total at the end of the year |
| Main State Forest .. .. .. | 32.22 | — | 310.99 |
| Minor State Forest .. .. .. | — | — | 14.00 |
| Total .. .. .. .. | 32.22 | — | 324.99 |

APPENDIX 5.

SUMMARY OF FOREST OFFENCES FOR THE YEAR ENDED 31ST DECEMBER, 1946.

| Category of offence | Cases taken to Court | | | | | | | Total | | Cases dealt with Departmentally | | Offen. unknown | Total all offences | | Confiscated property sold or released | | Compensation for damage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Imprisn. without option of fine | Fined | | Cautioned and Disch. | Acquit. | Bound over | Whipped | | | | | | | | | | |
| | Cases | Cases | Fine | Cases | Cases | Cases | Cases | Cases | Pers. | Cases | £ s. p. | Cases | Cases | Prs. | Cases | £ s. p. | £ s. p. |
| Damage to forest by fire .. .. | — | 1 | £ s. p. 1 0 0 | — | — | — | — | 1 | 1 | 4 | 12 0 0 | — | 5 | 9 | — | — | – 10 0 |
| Unauthorized possession of forest produce .. .. .. .. | 5 | 380 | 476 7 0 | 26 | 12 | 21 | — | 444 | 460 | 2,052 | 1,478 16 0 | — | 2,496 | 2,599 | 94 | 191 18 7 | 236 19 0 |
| Unauthorized fellings .. .. | 2 | 106 | 225 0 0 | 5 | 4 | 9 | — | 129 | 142 | 571 | 412 11 0 | 3 | 700 | 775 | 6 | 1 9 6 | 126 6 3 |
| Unauthorized grazing .. .. | 44 | 908 | 1,985 5 0 | 24 | 76 | 63 | 1 | 1,116 | 1,248 | 1,514 | 1,458 19 0 | — | 2,630 | 2,951 | 6 | 25 12 0 | 351 18 6 |
| Land encroachments .. .. | 1 | 89 | 261 15 0 | 2 | 5 | 4 | — | 101 | 110 | 19 | 10 15 0 | — | 120 | 129 | — | — | 8 1 0 |
| Miscellaneous .. .. .. .. | — | 21 | 24 11 0 | 1 | — | 3 | — | 25 | 28 | 35 | 14 4 0 | — | 60 | 64 | — | — | 3 5 0 |
| Total .. .. .. | 52 | 1,505 | 2,973 18 0 | 58 | 97 | 100 | 1 | 1,816 | 1,989 | 4,195 | 3,387 5 0 | 3 | 6,011 | 6,527 | 106 | 219 0 4 | 727 0 0 |

APPENDIX 6.

OUTTURN IN SOLID CUBIC FEET (WHOLE STEM VOLUME OVERBARK) OF TIMBER AND FUEL FOR THE YEAR ENDED 31ST DECEMBER, 1946.

| Territorial Unit | Logs (Sold standing) | Sawn (Royalty Sales & Departmental) Timber. | Other hewn wood (Ploughwood, etc.) | Firewood | Charcoal (c. ft. of timber equivalent) | Total volume equivalent in round timber | Total value |
|---|---|---|---|---|---|---|---|
| Main and Minor State Forests .. .. .. .. | 443,020 | 177,814 | 6,525 | 1,277,038 | 105,254 | 2,009,651 | £83,995 |



APPENDIX 7.

OUTTURN OF MINOR FOREST PRODUCE, 1946.

| Territorial Unit | Canes | | Fodder, hay, grass, vetch and leaves | | Tans & Dyes (bark) | | Vegetable oils (origanum) | | Miscellaneous (Stone and earth) | | Miscellaneous (Fruit and Seeds) | | Miscellaneous (Pine cones) | | Miscellaneous (other material) | | Miscellaneous (olive trees and Nursery stock) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pieces | Value £ | Tons | Value £ | Tons | Value £ | Tons | Value £ | Tons | Value £ | Tons | Value £ | Tons | Value £ | Tons | Value £ | No. | Value £ |
| Cyprus .. .. | 2,000 | 1 | 29.5 | 7 | 24.5 | 16 | 0.5 | 67 | 3,098 | issued free | 23 | 568 | 17 | 11 | 1 | 6 | 57,800 | 38 |

APPENDIX 8.

COMPARATIVE FINANCIAL STATEMENT FOR THE 10 YEARS ENDED 31st DECEMBER, 1946.

| Year | Forest Revenue | Revenue from C.D.F. | Forest Expenditure | Expenditure under C.D.F. | Surplus | Deficit |
|---|---|---|---|---|---|---|
| | £ | £ | £ | £ | £ | £ |
| 1937 .. .. .. .. .. | 13,736 | — | 23,384 | — | — | 9,648 |
| 1938 .. .. .. .. .. | 13,074 | — | 28,120 | — | — | 15,046 |
| 1939 .. .. .. .. .. | 12,134 | — | 35,229 | — | — | 23,095 |
| 1940 .. .. .. .. .. | 56,123 | — | 61,099 | — | — | 4,976 |
| 1941 .. .. .. .. .. | 56,881 | 16,672 | 47,291 | 16,672 | 9,590 | — |
| 1942 .. .. .. .. .. | 74,864 | 24,677 | 87,283 | 24,677 | — | 12,419 |
| 1943 .. .. .. .. .. | 181,031 | 19,635 | 140,519 | 19,635 | 40,512 | — |
| 1944 .. .. .. .. .. | 127,774 | 21,621 | 144,498 | 21,621 | — | 16,724 |
| 1945 .. .. .. .. .. | 100,467 | 33,285 | 100,330 | 33,285 | 137 | — |
| 1946 .. .. .. .. .. | 81,866 | 47,219 | 79,016 | 47,219 | 2,850 | — |
| Total .. .. .. .. | 717,950 | 163,109 | 746,769 | 163,109 | 53,089 | 81,908 |

APPENDIX 9.

STRENGTH OF FOREST STAFF ON 31ST DECEMBER, 1946.

| Territorial Unit | Senior Staff | | | Subordinate Field Staff | | | | | | | | Clerical Staff | Technic. subordinates | Permanent labour force |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Colonial Forest Service | Others | Total | Forest Rangers | Foresters | Forest Guards | Temp. Forest Guards | Forest Foremen | Prosec. officers | Mess., Storekeepers, etc. | Total | | | |
| Cyprus .. .. .. | 6 | 1 | 7 | 6 | 14 | 80 | 37 | 86 | 4 | 39 | 273 | 31 | 30 | 61 |

APPENDIX 10.

## STATEMENT OF THE INCIDENCE OF FOREST GRAZING.

### (*a*) Grazing Permits Issued.

| | Free, 1946 | On Payment, 1946 | Total |
|---|---|---|---|
| 1. Number of Permits .. .. | 52 | 178 | 230 |
| 2. Number of Animals : | | | |
| (*a*) Goats .. .. .. | 4,427 | 4,196 | 8,623 |
| (*b*) Sheep .. .. .. | 961 | 5,327 | 6,288 |
| (*c*) Other Animals .. .. | 514 | 135 | 649 |
| (*d*) Total No. of Animals .. | 5,902 | 9,658 | 15,560 |
| 3. Fees Collected .. .. | £149. 14*s*. 3*p*. | | |

### (*b*) Grazing Statistics.

| | |
|---|---|
| 1. Area grazed over lawfully, in square miles .. .. .. .. .. .. .. | 172.88 |
| 2. Area theoretically closed to grazing, in square miles .. .. .. .. .. | 449.52 |
| 3. Total number of goats in the Island counted for taxation in 1946 .. .. .. .. | 204,281 |
| 4. Number of goats allowed to graze in the State Forests .. .. .. .. .. | 8,623 |
| 5. Number of goats allowed to graze in the forests, expressed as percentage of total number of goats .. .. .. .. .. .. .. .. .. .. .. .. | 4.22% |
| 6. Total number of sheep in the Island counted for taxation in 1946 .. .. .. .. | 314,940 |
| 7. Number of sheep allowed to graze in State Forests .. .. .. .. .. .. | 6,288 |
| 8. Number of sheep allowed to graze in the forests, expressed as percentage of total number of sheep .. .. .. .. .. .. .. .. .. .. .. .. | 2% |

APPENDIX 11.

## STATEMENT OF FIRE PROTECTIVE WORKS AND FIRE INCIDENCE.

### (*a*) Fire Traces.

1. Fire traces existing on 1st January, 1946 .. .. .. .. .. .. .. 102½ Miles.
2. No new fire traces were opened during the year.
3. Existing fire traces cleaned during the year .. .. .. .. .. .. .. 47 Miles

### (*b*) Telephones.

| | *Length Miles* | *No. of instruments* | *No. of switch boards* | |
|---|---|---|---|---|
| 1. Existing telephone lines and instruments on 1.1.46.. | 281 m. 1,630 yds. | 69 | 5 | |
| 2. Alterations (66 m. 130 yds., additions, 14 obsolescent, and 1 switch board added) .. .. .. .. | 52 m. 130 yds. | — | 1 | |
| 3. Details of expenditure under sub-head "Telephones":— | | | | £ *s. p.* |
| (*a*) Installation fees (for all lines) .. .. .. .. .. .. .. | | | | 734 2 1 |
| (*b*) Rental paid for Nicosia–Platania line for 1946 .. .. .. .. .. .. | | | | 168 0 0 |
| (*c*) Maintenance of Telephones and Telephone lines .. .. .. .. | | | | 1,261 4 7 |
| (*d*) Indent for Telephone materials .. .. .. .. .. .. .. | | | | 84 6 0 |
| Total .. .. .. .. .. .. | 334 m. | 69 | 6 | £2,247 12 8 |

### (*c*) Fire Detection.

| | |
|---|---|
| 1. Fire watchers .. .. .. .. .. .. .. .. .. .. | 28 |
| 2. Fire watcher's huts on 1.1.46 .. .. .. .. .. .. .. .. .. | 12 |
| 3. Huts repaired during the year .. .. .. .. .. .. .. .. .. | 18 |

### (*d*) Fire Incidence.

| *Year* | *No. of fires* | *Area burned sq. miles* | *Assessed damage* * | *Cost of extinction* | | *Cause* |
|---|---|---|---|---|---|---|
| 1946 | 60 .. | 0.47 .. | £2,284 .. | £1,272 .. | 25 | Accidental, 19 Carelessness, 2 Intentional, 12 Malicious, and 2 Lightning. |

* The figures do not include { cost of reclamation ; cost of deterioration of site ; cost of compound interest on capital value at the time of the fire.

APPENDIX 12.

(A) ANALYSIS OF FOREST OFFENCES TAKEN UP BY THE FOREST DEPARTMENT FOR THE YEAR ENDED 31ST DECEMBER, 1946.

| Category | Cases taken to Court | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Convicted | | | | | | | | | Total Court Cases | |
| | Imprisonment without option of fine Cases | Fined | | | Cautioned | B. Over | Acquitted | Withdrawn | Whipped | | |
| | | Cases | Fine £ s. p. | Damages compensation £ s. p. | Cases | Cases | Cases | Cases | Cases | Cases | Persons |
| Damage to forest by fire .. .. | — | 1 | 1 0 0 | - 10 0 | — | — | — | — | — | 1 | 1 |
| Unauthorized possession of forest produce .. .. .. .. | 5 | 380 | 481 7 0 | 236 19 0 | 26 | 21 | 12 | — | — | 444 | 460 |
| Unauthorized fellings .. .. .. | 2 | 106 | 225 0 0 | 126 6 3 | 5 | 9 | 4 | 3 | — | 129 | 142 |
| Unauthorized grazing .. .. .. | 44 | 908 | 1,985 5 0 | 351 19 2 | 24 | 63 | 76 | — | 1 | 1,116 | 1,248 |
| Land encroachments .. .. .. | 1 | 89 | 251 15 0 | 8 1 0 | 2 | 4 | 5 | — | — | 101 | 110 |
| Miscellaneous .. .. .. .. | — | 21 | 24 11 0 | 3 5 0 | 1 | 3 | — | — | — | 25 | 28 |
| Total .. .. .. .. | 52 | 1,505 | 2,968 18 0 | 727 0 5 | 58 | 100 | 97 | 3 | 1 | 1,816 | 1,989 |

(B) ANALYSIS OF FOREST OFFENCES TAKEN UP BY THE FOREST DEPARTMENT FOR THE YEAR ENDED 31ST DECEMBER, 1946.

| Category | Cases dealt with departmentally | | | | | | | | Confiscated property sold or released | | Cases pending from previous year | Cases outstanding at the end of the year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total No. dealt with departmentally | | Compounded | | Warned Cases | Cancelled Cases | Offenders unknown (undetected) | | | | | |
| | Cases | Persons | Cases | Amount £ s. p. | | | Cases | Estimated loss £ | Cases | Amount £ s. p. | No. | No. |
| Damage to forest by fire .. .. .. | 4 | 8 | 4 | 12 0 0 | — | — | — | — | — | — | — | 1 |
| Unauthorized possession of forest produce .. .. .. .. .. | 2,052 | 2,139 | 1,994 | 1,478 16 0 | 31 | 27 | — | — | 104 | 191 18 7 | 315 | 308 |
| Unauthorized fellings .. .. .. | 571 | 633 | 557 | 412 11 0 | 9 | 5 | — | — | 6 | 1 9 6 | 104 | 173 |
| Unauthorized grazing .. .. .. | 1,514 | 1,703 | 1,225 | 1,458 19 0 | 41 | 248 | — | — | 6 | 25 12 0 | 587 | 736 |
| Land encroachments .. .. .. | 19 | 19 | 16 | 10 15 0 | 1 | 2 | — | — | — | — | 17 | 59 |
| Miscellaneous .. .. .. .. | 35 | 36 | 14 | 14 4 0 | 7 | 14 | — | — | — | — | 9 | 2 |
| Total .. .. .. .. | 4,195 | 4,538 | 3,810 | 3,387 5 0 | 89 | 296 | — | — | 116 | 219 0 4 | 1,032 | 1,279 |

APPENDIX 13.

STATEMENT OF FOREST REVENUE COLLECTED IN 1945 AND 1946.

| Item of Revenue | 1945 Revenue | 1946 Revenue |
|---|---|---|
| *Permit Fees :* | £ s. p. | £ s. p. |
| Fuel Permits | 988 3 8 | 725 17 3 |
| Charcoal Permits | 7 7 0 | 8 6 2 |
| Grazing Permits | 44 12 2 | 44 1 7 |
| Lime Permits | 47 0 0 | 20 0 0 |
| Pottery Permits | 7 0 0 | — |
| Tiles Permits | 2 0 0 | — |
| Bricks Permits | 2 0 0 | 3 0 0 |
| Gypsum Permits | 6 0 0 | 4 9 0 |
| Total Permit Fees | 1,104 3 1 | 805 14 3 |
| *Sales of Timber, etc. :* | | |
| Sale of Standing Trees | 6,988 15 5 | 31,959 11 3 |
| Sale of Timber | 31,909 8 8 | 15,652 8 3 |
| Sale of Fuel | 15,454 13 4 | 8,867 13 4 |
| Sale of Charcoal | 43,050 16 1 | 21,651 10 4 |
| Sale of Seeds and Nursery Stock | 162 11 7 | 356 19 2 |
| Sale of Minor Forest Produce | 277 4 6 | 301 4 5 |
| Sale of Confiscations | 273 10 5 | 343 15 2 |
| Total Sales | 98,117 1 0 | 79,133 2 5 |
| *Other Revenue :* | | |
| Rents of lands, water, etc. | 222 3 7 | 278 0 2 |
| Rents of Sawmills | 52 6 4 | 135 12 8 |
| Rents of Tractors | — | 545 16 6 |
| Other Revenue | 661 13 6 | 605 4 5 |
| Impounding Fees | 92 6 7 | 121 14 3 |
| Telephone Charges | 183 16 5 | 204 11 8 |
| Protection Fees | 32 18 2 | 35 14 6 |
| Total | 1,245 5 4 | 1,926 15 2 |
| GRAND TOTAL | 100,466 9 5 | 81,865 12 1 |

APPENDIX 14.

STATEMENT OF EXPENDITURE FROM FOREST DEPARTMENT VOTES DURING 1945–1946.

| Sub-head | 1945 | 1946 |
|---|---|---|
| | £ s. p. | £ s. p. |
| Personal Emoluments | 14,536 11 0 | 23,544 2 3 |
| Unestablished Staff | 5,159 19 6 | — |
| Travelling | 5,104 12 3 | 4,657 17 5 |
| Library | 16 5 0 | 13 19 5 |
| Fire Protection | 3,155 12 5 | 3,264 16 2 |
| Telephones | 2,197 12 0 | 2,247 12 8 |
| Fire Fighting | 5,435 4 0 | 1,511 3 1 |
| Silviculture | 869 4 4 | 882 9 0 |
| Transport of Material and Confiscation | 40 13 3 | 27 10 5 |
| Salvage of Burnt Trees | 1,791 0 0 | 1,581 15 2 |
| Supervision of Tree Felling and Mensuration work | 914 5 2 | 2,064 11 2 |
| Maintenance of Plant, Machinery and Animals | 5,353 11 0 | 1,694 0 0 |
| Maintenance of Motor Transport | 1,294 1 3 | 5,743 4 2 |
| Tools | 97 8 0 | 215 11 6 |
| Maintenance of Roads and Bridges | 10,119 1 2 | 10,155 0 5 |
| Maintenance and Equipment of Buildings | 1,182 6 8 | 1,139 7 6 |
| Delimitation, Forest Survey and Working Plans | 1,202 19 0 | 2,620 8 1 |
| Water Supplies | 103 10 2 | 276 14 4 |
| Uniforms | 738 17 7 | 1,494 0 1 |
| Rent | 341 4 0 | 456 16 6 |
| Lighting, Heating and Electric Power | 186 14 4 | 234 16 5 |
| Contributions | 475 1 0 | — |
| Leave, Sick and Accident Pay to daily wages employees | 123 5 1 | 177 13 2 |
| Forest Protection | 17 18 7 | 45 17 8 |
| Plantations, Government House Grounds | 128 9 6 | 124 18 7 |
| Refunds | 98 19 2 | 23 10 0 |
| Incidentals | 74 0 3 | 99 19 0 |
| *Special Expenditure :* | | |
| Construction and Improvement of Roads | 199 19 3 | — |
| Afforestation | 21,806 6 7 | — |
| Extraction and Supply of Timber, etc. | 47,556 10 2 | 16,942 13 7 |
| Village Fuel Areas | 11,479 2 2 | — |
| Maintenance and Upkeep of Stavros Forest Station | — | 99 4 5 |
| Total | 141,800 6 1 | 81,339 14 8 |
| *Less :* Sales of Timber and Fuel to other Government Departments | 8,185 8 8 | 2,323 9 0 |
| Total | 133,614 17 2 | 79,016 5 8 |

EXPENDITURE INCURRED BY FOREST DEPARTMENT FROM OTHER VOTES

| Head No. as in Estimates : | Sub-head | 1945 | 1946 |
|---|---|---|---|
| 1946 : | | £ s p. | £ s. p. |
| 7 | Reclamation and Reafforestation | — | 32,000 9 7 |
| 7 | Village Fuel Reserves | — | 15,083 10 7 |
| 7 | Soil Erosion Works | 100 0 0 | 135 9 0 |
| 21 | Preservation of Moufflon | 25 4 8 | 27 19 4 |
| 21 | Compensation and other expenditure for injuries to Government employees | 121 12 4 | 94 19 1 |
| 3B | Improvement and Protection of Agriculture | — | 23 16 7 |
| 3B | Agricultural Shows | — | 33 16 2 |
| 2 | Village and other Roads and Minor Works | 98 18 4 | 399 19 2 |
| 11 | Allowances and other expenses on Scholarships | — | 16 16 0 |
| 1945 : | | | |
| 8 | Control of Timber, Fuel and Charcoal | 960 12 0 | — |
| 8 | Travelling | 764 7 4 | — |
| 8 | Defence Orders Control Service | 96 16 0 | — |
| 8 | Miscellaneous | 2,355 17 1 | — |
| 19 | Village Lands Survey and Investigations | 160 16 8 | — |
| 28 | Additional Expenditure | 98 19 1 | — |
| | Total | 4,783 4 3 | 47,816 16 3 |

## PROGRESS REPORT OF THE CONVERSION SCHEME FROM WOODFUEL TO OIL BURNING DURING THE PERIOD 1ST SEPTEMBER, 1945, TO 31ST DECEMBER, 1946.

Since the publication in January, 1946, of the first report on the process of the conversion of industrial and domestic installations from woodfuel to oil burning, in order to conserve the Island's supplies of timber and woodfuel the consumption of which for military and other purposes during the war had reached a dangerously high level, very substantial progress has been made. A large-scale conversion has been steadily brought about, frequently in the face of determined opposition on the part of backward villagers, but opposition has been gradually giving way as the advantages of the change are realized and appreciated. Little wonder therefore that people who had once opposed the scheme have now become its enthusiastic supporters.

Increasing attention has during the past year been given to a number of local industries, such as the manufacture of lime, gypsum, brick and pottery, etc., which have always been amongst the biggest consumers of woodfuel. Conversion of these industries into oil burning has proceeded satisfactorily but the plants originally employed were of a rather primitive type and in May, 1946, the Fuel and Charcoal Controller was sent to the U.K. to study modern oil-burning technique and to explore and facilitate the importation into the Island of efficient modern oil-burning apparatuses. On his return the Controller brought with him designs and specifications of various plants and other useful information regarding oil conversion, and it can be confidently expected that the scheme will now be put on a more efficient and economic basis.

The following types of wood-burning installations have been totally or partially converted into oil burning :—

(*a*) *Steam producing boilers :* Out of 63 such boilers operating in the Island 51 have been converted to oil burning, 10 are idle and 2 are working with domnut waste or coal.

(*b*) *Furnaces for heating soap and pigment earths :* All the soap furnaces amounting to 11 have been converted to oil burning. Conversion of the furnaces for heating pigment earths, which consume an annual quantity of about 3,700 tons of woodfuel, has, on the other hand, been postponed pending the analysis of samples of wood-fired and oil-fired umber with a view to ascertaining whether the manufacturers' contention that oil-fired umber is of inferior quality is justified. If and when a satisfactory report is received conversion of terra-umbra kilns will be made compulsory but meanwhile offers have been received from U.K. firms for the erection of up-to-date continuous oil-fired kilns, the erection of which is being considered by umber manufacturers.

(*c*) *Kilns for burning lime :* Conversion of lime kilns, which was made compulsory with effect from May, 1945, has on the whole proceeded smoothly and by the second half of 1946 it was complete. Lime burners generally realize the advantages of the change but oil-burning kilns, though more economical than wood-burning kilns, are not as efficient as desired and the Controller is examining with manufacturers the possibility of erecting oil-fired lime plants of the continuous burning type which will be operated on a co-operative basis.

(*d*) *Gypsum kilns :* The progress made in the conversion of gypsum kilns has been limited owing to the variety of types of kilns used. The ultimate aim is the installation of modern continuous burning kilns, as in the case of lime, and two big firms have already been formed with this object in view.

(*e*) *Kilns for burning bricks and tiles :* 31 such kilns consuming about 1,047 tons of woodfuel annually have been converted since 1945, raising the total number of oil-burning kilns to 56.

(*f*) *Pottery kilns :* 10 more such kilns with an annual consumption of about 240 tons of fuelwood were converted during the period under review.

(*g*) *Stoves for heating water or for cooking purposes in hotels, restaurants and public institutions :* All the hot-water boilers except the ordinary bath geysers in hotels and public institutions were converted to oil-firing with locally-made burners and as imported appliances became available the local burners were gradually replaced. In regard to cooking stoves very little progress has been made owing to the fact that the burners which can be made locally for fitting into cooking stoves are inadequate both in design and manufacture some burner units for cooking stoves have been imported but many more are required before a substantial reduction in the use of woodfuel can be brought about.

(*h*) *Public Turkish baths :* 20 such baths had been converted by the end of 1946 leaving only 7 very small baths which have remained idle are and unlikely to be put into action again.

(*i*) *Commercial bakeries :* 271 ovens operating on a commercial basis were converted during the period under review ; these consumed about 6,050 tons of fuel annually. This raises the total number of converted ovens to 372 with an estimated annual consumption of 13,250 tons of wood. Conversion of bakers' ovens has been very successful, all the ovens in the six towns and big villages having been converted. Compulsory conversion is proceeding by areas.

(*j*) *Village bakeries :* In addition to the 1945 licensed bakeries which work on a commercial basis there are also about 7,000 small ovens in villages which are used by the villagers for baking their bread and which consume a considerable quantity of fuelwood and branchwood. Arrangements are being made for the importation of oil burners suitable for such ovens at a cost of £5 to £6 each, and it is proposed that co-operative societies or other bodies in villages should purchase them for the purpose of hiring them to householders on payment of a small fee, say 2*p*. to 3*p*. each time.

(*k*) *Stills for the manufacture of spirits :* Demonstrations of oil-burning stills were continued in the wine producing centres. The producers have at last realized the advantages of the scheme and are now proceeding to convert small stills in addition to the big stills the conversion of which has been made compulsory.

(*l*) *Domestic cooking stoves, etc.* Paraffin cooking stoves are now widely used in the Island in substitution for charcoal, 34,000 such stoves having been imported in the latter months of 1945 and in 1946. The importation of electric irons to replace charcoal irons has added to the saving effected in the use of charcoal by the conversion of coffee-shop appliances.

Notwithstanding the many difficulties encountered at the beginning in the form of opposition on the part of the persons concerned and lack of proper appliances, the results achieved must on the whole be regarded as more than satisfactory. The total annual saving of woodfuel since the introduction of the scheme in 1944 is estimated at approximately 150,000 tons and this reduction is reflected in the consumption of oils which, as illustrated by the comparative table appended below, has increased considerably.

| | 1943 | 1944 | 1945 | 1946 |
|---|---|---|---|---|
| Black oils (tons) .. | 5,350 .. | 8,069 .. | 14,848 .. | 24,580 |
| Kerosene (tons) .. | 3,115 .. | 5,459 .. | 6,473 .. | 10,158 |
| [Fuelwood (tons) .. | 220,350 .. | 205,130 .. | 114,550 .. | 70,200 |

The following are some of the main features of the oil conversion scheme from the forest point of view :—

(i) The permanent elimination of an acute demand for woodfuel from the Lefka area, which is in the neighbourhood of valuable State forests, and the eradication of a gang of professional forest thieves who for the last 20 years have been systematically firing and raiding the forests to provide dry fuel for their unlawful trade.

(ii) The elimination of the demand for woodfuel for the lime-burning ..ry, which is mostly centred along the northern range, and the great reduction in the demand ..r woodfuel for other purposes from the northern range forests. This is evidenced by the reduction in forest offences for fuel cutting which from 340 in 1945 fell to 160 in 1946. Prior to the introduction of the scheme, the state of affairs obtaining in the northern range had been similar to that described above and there is not the least doubt that whatever protective measures might have been taken the devastation of the forests in that area would have proceeded rapidly and total destruction would have been unavoidable. The results which have attended the relief of these forests are indeed spectacular.

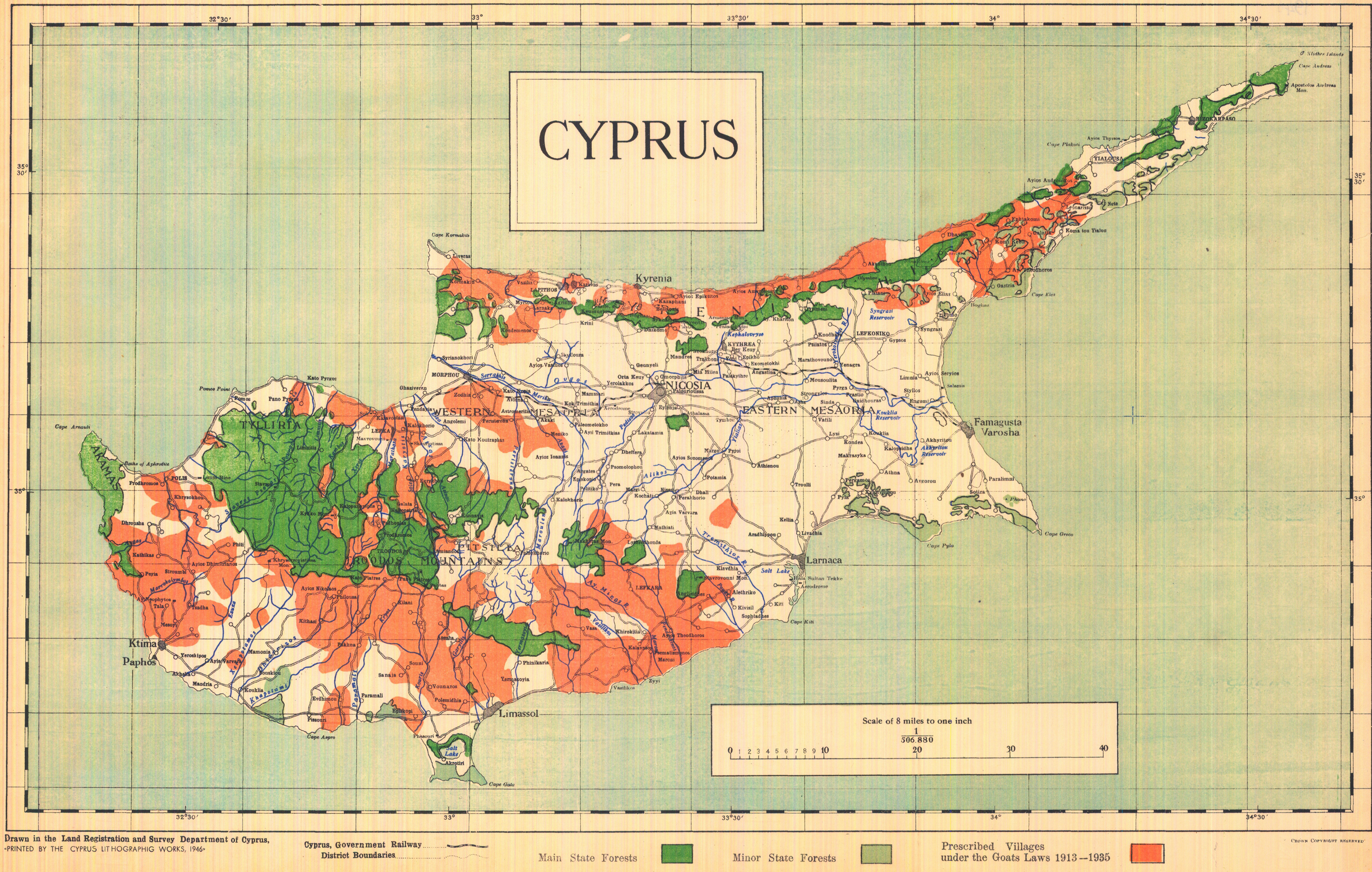
The campaign will be pursued by all possible means with the object of converting all industrial, commercial and urban domestic appliances to oil burning or electricity. It will necessarily be a long-term policy until the problem has been fully solved by the provision of cheap electricity.

The attached statement shows the number of heaters and the savings in woodfuel effected up to the end of 1946.

STATEMENT SHOWING NUMBER OF HEATERS AND ESTIMATED ANNUAL CONSUMPTION OF WOODFUEL IN CYPRUS.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Classification of Heaters | No of licensed heaters in 1944 | Estimated quantity of fuelwood consumed annually before conversion | Total No. of heaters converted up to 31.12.46 | Estimated annual saving of fuelwood on 31.12.46 |
| | | *Tons* | | *Tons* |
| 1. Steam producing boilers .. .. .. .. | 63 | 9,564 | 51 | 7,334 |
| 2. Furnaces for heating ores, pigment earths, soap constituents :— | | | | |
| (*a*) furnaces for pigment earths .. .. .. | 15 | 3,700 | — | — |
| (*b*) furnaces for soap constituents .. .. .. | 11 | 262 | 11 | 262 |
| 3. Kilns for burning lime and gypsum :— | | | | |
| (*a*) kilns for burning lime .. .. .. .. | 70 | 11,500 | 100 | 23,000 |
| (*b*) kilns for burning gypsum .. .. .. | 67 | 2,400 | 17 | 1,185 |
| 4. Kilns for burning or baking pottery, brick & tiles :— | | | | |
| (*a*) kilns for burning bricks and tiles .. .. | 140 | 5,600 | 56 | 3,060 |
| (*b*) kilns for burning pottery .. .. .. | 40 | 1,600 | 17 | 814 |
| 5. Stoves used for heating water or for cooking purposes in hotels, restaurants and public institutions .. (*figures not available for column* 1) | — | 10,000 | 41 | 1,041 |
| 6. Public Turkish Baths .. .. .. .. .. | 27 | 1,404 | 20 | 1,366 |
| 7. Bakers' type ovens in operation by Commissioner's licence .. .. .. .. .. .. | 945 | 24,000 | 372 | 13,246 |
| 8. Stills for the manufacture of spirits .. .. .. | 2,083 | 9,365 | 315 | 6,560 |
| 9. Tar or asphalt boilers .. .. .. .. .. | 3 | 36 | 3 | 36 |
| 10. Boilers and other heaters not otherwise classified .. | 300 | 3,000 | 250 | 2,600 |
| 11. Wood-burning heaters in Government Offices, Institutions, etc. .. .. .. .. .. .. | — | 5,000 | — | 3,500 |
| 12. Government Railway Locomotives .. .. .. (7 *using oil*, 5 *using coal*) | 12 | 4,424 | 7 | 4,424 |
| 13. Domestic cooking stoves, geysers, village type bakers' ovens, heating stoves, etc. .. .. .. .. | — | 10,000 | — | 2,500 |
| | — | 101,855 | — | 70,928 |
| 14. Estimated quantity of fuelwood in tons used for the manufacture of charcoal .. .. .. .. | | 60,000 | | |
| 15. Saving in fuelwood as a result of decrease in charcoal consumption effected through use of kerosene stoves in coffee-shops, households, etc., and of electric irons. | | | | 30,000 |
| Total saving through actual conversion .. | | | | 100,928 |
| *REMARKS* | | | | |
| Item 1.—*Add :* To column 4 ; 2,230 tons of fuelwood representing consumption of idle steam boilers as at 31.12.46 and those of the Cyprus Wine and Spirits Co. Ltd., and the Schiza Gum Factory which operated with fuelwood during the war but have now turned to domnuts, coal, etc., as a result of the Order .. .. .. .. .. | | | | 2,230 |
| Item 3 (*a*).—*Add :* To column 2 ; 58,500 tons representing consumption of about 471 unlicensed lime kilns which were out of use due to limited demand for lime during the war and which would have been consuming that figure if they had been in operation .. .. .. | | 58,500 | | |
| To column 4 ; 47,000 tons consumption of remaining idle kilns .. .. .. .. .. .. .. | | | | 47,000 |
| Item 11.—The difference of 1,500 tons represents consumption of fuelwood in fire places and other heaters which were impossible to convert into oil firing. | | | | |
| GRAND TOTAL .. .. .. | | 220,355 | | 150,158 |

# CYPRUS




Drawn in the Land Registration and Survey Department of Cyprus,
«PRINTED BY THE CYPRUS LITHOGRAPHIC WORKS, 1946»

Cyprus, Government Railway
District Boundaries

Main State Forests

Minor State Forests

Prescribed Villages
under the Goats Laws 1913—1935