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**FOREST DEPARTMENT
ANNUAL REPORT
1969**

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**FOREST DEPARTMENT
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FOREWORD

Yet again the year 1969 has been a success for the Forest Department in managing the country's forests. New plantations have been established to the tune of 7,073.01 hectares bringing total hectarage under plantation to 107,722.80.

A remarkable change this year has been the gazettelement of the Forest (General) Rules under Legal Notice No. 153 of 12th June, 1969, in which all units of measurement were expressed in metric system.

The signing of the loan agreement between the World Bank and the Kenya Government on a loan of 2.6 million US dollars providing establishment of 1,245.97 hectares of Saw-Wood and 622.93 hectares of Pulpwood plantations was concluded during the year.

The progress and achievements made on the enthusiasm and energy of the Chief Conservator of Forests and his staff in which the achievement and team work has been shown in full measure are gratefully acknowledged by the Government and the public.

I look forward to further developments, help and encouragement in all aspects of forestry and even closer co-operation between the Department and the "Wananchi" in furthering the aims and prosperity of forestry in its long term objectives.

W. O. OMAMO,
Minister for Natural Resources.

FOREST DEPARTMENT ANNUAL REPORT—1969

CHAPTER I—FOREST POLICY AND LEGISLATION

The Forests Act.—Although there was some progress towards the revision of the Forests Act, it unfortunately did not reach a stage where it could be published as a Bill. This was unfortunate since it continued to hold up gazettment of new forests on Trust Land.

The Forests (General) Rules, 1969, were gazetted under Legal Notice No. 153 of 12th June, 1969. The main change from previous Rules was that all the units of measurement were expressed in the metric system.

The annual revision of royalties meeting between the industry and the department was held in June. The average selling prices of sawn timber tended to rise and consequently there had been a rise in royalty for most species. The royalties for cypress rose by between 1 cent and 4 cents a cu. ft.; whereas for pine the rise was between 4 cents and 12 cents.

The Forest Policy.—The Forest Policy for Kenya was set out in Sessional Paper No. 1 of 1968, and was reported on in the report for that year.

In November, 1969 the loan agreement for which negotiations between the World Bank and the Kenya Government had been going on for some time was signed. This was a six year loan of 2.6 million dollars (U.S.) provided for establishing 1,245.97 hectares of saw-wood plantations and 622.93 hectares of pulp-wood plantations between 1970 and 1975. It is also provided for carrying out of a market survey.

The five year Development Plan 1970-74 was published at the end of 1969. On the Forestry Sector it provided planting of 36,000 hectares during the period and with a clearfell of about 1,300 hectares. This gives a net annual addition of about 6,000 hectares. By the end of the Plan period there will be an area of 132,000 hectares under plantations. According to the plan the target for 1980 will be 140,000 hectares of softwood plantations for timber production and 20,000 hectares for pulp-wood.

In line with the Government's intention to switch to metric system of measurement, the Forest Department completely switched over to this system as from 1st July, 1969.

CHAPTER II—SURVEY, FOREST INVENTORY AND WORKING PLANS

The Forest Estate.—Three excisions amounting to 92.35 hectares were gazetted during the year. The details were as shown below:—

Legal Notice	Forest	Area (hectares)	Reasons
L.N. 12	Mt. Kenya Forest.	65.56	Tea Estate for Kagochi factory.
L.N. 240	Ngong Road Forest.	17.60	City Council.
L.N. 241	Kikuyu Escarpment.	9.19	Extension to Sasumua dam.

The only addition to the Forest Reserve was 2.30 hectares to Marmanet Forest by Legal Notice No. 8.

Field Surveys.—Surveyors carried out boundary checks in the office for Turbo, Taita and Elgeyo and the necessary adjustments and sorting out were completed.

Some boundary alterations were done in Homa Mt. Forest. Corner beacons were fixed and given reference by two surveyors who had come back from the Polytechnic after completing their first year course.

Most of Anyua forest was resurveyed because a lot of it did not appear on the photographs. The corners were fixed and referenced.

South Nandi addition was set out, completed and sent to the Survey of Kenya for checking. North Nandi excision No. 16 was completed.

Re-establishment of Boundaries.—Some work was carried out on Kamiti Forest boundaries.

Aerial Survey and Mapping.—Through arrangement with the Survey of Kenya, Taita Forests were flown over and aerial photos taken.

The boundaries of the following new forests were plotted from aerial photographs:—

- (i) Homa.
- (ii) Miriu.
- (iii) Koguta.
- (iv) Anyua.
- (v) Wire.

Part of Game Moat in connexion with Liki excision was plotted but no mapping was done due to shortage of staff and non-availability of the latest photographs.

Boundary Plans.—The following boundary plans were registered during the year:—

<i>Boundary Plans</i>	<i>Purpose</i>	<i>Area (hectares)</i>
175/40 ..	Excision from Ngong Forest	17.60
175/143 ..	Excision from Kikuyu Escarpment Forest	9.19

Drawing Office—

- (a) 242 new plantation Surveys were received and adjusted while the same number of amendments were done to the 1/10,000 sheets.
- (b) 12 different roads were plotted on different sheets.
- (c) Three new forest plans were produced from aerial photos.
- (d) Boundary production was as follows:—

Additions	—	2	} = 10
Excisions	—	3	
New forests	—	5	
- (e) 7 demarcation plans were prepared.
- (f) 14 Welfare Centres were adjusted and plotted.
- (g) 10 completely new forest sheets 1/10,000 were produced.
- (h) 7 Forest sheets were re-drawn.
- (i) 35 write-off plantations were dealt with.
- (j) Individual amendments to the Forest sheets amounted to 153.
- (k) Many more miscellaneous jobs were completed.

Printing.—The printing section printed 3,039 prints of 1/10,000 maps etc. for field officers and specialists. The printing machine was out of order on several occasions and required replacement.

Staff.—Mr. W. J. F. Rutherford continued to run the section throughout the year. Mr. Kalsi was for some time in South Nyanza engaged in boundary plotting. Messrs. C. Kimotari and E. Odina returned from Polytechnic in July and were both employed in the field. Mr. G. Abiero was 3½ months in the office before proceeding to the Polytechnic for the remaining 8½ months for the first year course. Mr. D. N. Babu returned from the Roads Unit in Eldoret and was 3½ months in the field prior to his return to the Polytechnic for the second year course.

Buildings and Construction—

- (i) One vehicle ramp was built.
- (ii) Inventory Office was put up. More houses were required for Surveyors, Cartographers and Subordinate Staff.
- (iii) One Category "C" house was approved to be put up at Karura.
- (iv) Two grade 9 houses were approved for construction.

General.—Messrs. D. S. Kalsi and Odera passed level 1 of the French Examination while Messrs. Rutherford and Kalsi passed part II. The former was exempt from part I.

Forest Inventory.—There was a deliberate bias towards fulfilment of requests from departmental offices which resulted in a back-log of work in the major project.

Mr. C. F. Smith left for Canada early in the year after a 5-year term with the Forest Inventory Project. Mr. G. A. Jones, the last Canadian Forest Inventory Project Manager, handed over the office to Mr. R. S. Kiama. The rest of the staff set-up was as follows:—

Mr. W. W. Ruara, Senior Forester.

The Established Junior Staff were:—

- 2 Rangers
- 3 Drivers, and
- 1 Copy Typist.

Mr. S. Migui, a previous headquarter storeman was transferred to Eldoret on appointment. M. K. A. Khan a draughtsman retired from the Civil Service after twenty years' service with the department. In December, 1969, two Rangers from Londiani Forest Training School joined the section. They were Messrs. Z. Meruah and E. N. Komu. Mr. Samuel Muhuhe was transferred to Nairobi Division

FOREST INVENTORY OPERATIONS

1. INDIGENOUS FORESTS

A. Indigenous Forests Reports (Final Project Reports)

By the end of 1969, twenty condensed sampling Unit reports were completed. However, some work remained to be done in the following reports.

1. East Mau (Western Section).
2. Upper and Lower Imenti.
3. Central Elgeyo (Elgeyo A).
4. Mau Masai and Chepalungu.
5. Irangi.
6. Part I (Indigenous Forest Inventory Specifications). Very little had been done on Irangi Sampling Unit report because map detail discrepancies necessitated total recompilation.

B. Mangrove Forests—South of Lamu

An aerial photographic study was done in some Mangrove areas South of Lamu. The aim of this study was to indicate the more productive types in which poles of Mkoko and Mkandaa species might be found. It was estimated that out of a total of 11,109.3 hectares under study, only 1,800 hectares were stocked with Mkoko and 313 hectares were stocked with Mkandaa species.

C. General Forest Inventory Cruise

Nyambene and Ngaia Forest Reserves were inventoried during the year and data processing was started.

D. High Intensity Cruise—Production Oriented Estimation

Operational cruise work was carried out in the areas as shown below:—

1. Suam Sawmill licence area—North Mt. Elgon; report was completed.
2. Cheboyet Sawmill—proposed licence area—Central Elgeyo.
3. Marakwet Sawmill—proposed licence area—Central Elgeyo.
4. Marmanet Forest—All areas outside the present M/s. Marmanet Sawmills licence—for extension of licence.

F. Management Scale Cruises

Low sample intensity sampling was carried out in Meru Forest District over an area of approximately 466.4 hectares. It was noticed that areas of older plantation were quite a bit out and needed revision. An attempt was made to correct these and efforts were made to hasten the pace of report writing.

G. Volume Tables

New volume tables (Revised) were received from Commonwealth Forestry Institute, Oxford Computing Section. These tables covered only the following species:—

1. Cypress.
2. *Pinus radiata*.
3. *Pinus patula*.
4. *Eucalyptus* species.

Volume table data for some other planted indigenous and exotic species were sent to Oxford for volume table construction.

H. Permanent Sample Plots

The annual (P.S.P.) establishment and re-measurement were completed by July. It was felt that in a majority of cases, P.S.P.s were not receiving the necessary attention as laid down in Technical Order No. 40 of 1968.

Complications also came up because of delayed operations, particularly in thinning. Where a tree (No. X) was marked for thinning, say, in 1969 and this thinning did not take place in a reasonable time, or even perhaps before the 1970 P.S.P. re-measurement period. Such a tree would still be recorded again as having been marked for thinning. If the two consecutive records went into the computing Section unaltered, we would expect to get the particular P.S.P. returned which showed that the tree number X was thinned twice. It was decided to delay despatching of a current year re-measurement to Oxford until the following year's record was available for comparison to detect the error. Correction would be that the "TO BE THINNED" remark should have been erased on the 1969 record. Similarly there was the opposite case of a tree number X which was found thinned by mistake. Such a tree not having been marked in 1969 was expected to be still standing in 1970. In this case, correction would be to make good the mistake by showing on the record that the tree number Z was marked for thinning in 1969. The intended new system gave time to insert alterations as necessary. It was made very clear that the system was not intended to provide cover for any errors although it might have helped this office in the preparation of P.S.P. data before sending them to Oxford for computation. As in the past, there was no condoning of mistakes done in P.S.P.s. There might have been a case for delayed commercial operations but none for any unwarranted silvicultural malpractice. To facilitate a forest station's programme of work affecting plantation with P.S.P.s a list was prepared from inventory section to all stations involved. The total number of P.S.P.s was 371.

I. Plantation Suitability Reports

Little need be reported in this section since most of the areas remained pending during the year.

J. Volume and Decay Studies

Nothing to report. Further work programmes required planning.

WORKING PLANS

Mr. T. A. R. Choate retired from the Kenya Forest Department on 3rd July, 1969 when he handed over to Mr. G. A. Jones, B.C.R.F., of the Canadian International Development Agency, previously project Manager of the Forest Inventory Section from 1966 to March, 1969.

Mr. H. C. Hauge, Norwegian Volunteer started field work in the Maji Mazuri area in mid-April and continued doing field work until December. His job consisted of collecting the necessary data for the following management plans:—

1. Maji Mazuri.
2. Timboroa/Nabkoi/N. Tinderet.
3. Kakamega.

4. N.W. Mt. Kenya.

5. N.E. Mt. Kenya.

Mr. J. A. L. Muhenge, Forester, was posted to the Working Plans Section on 1st October, 1969 and helped in field work in connexion with new management plans that were being produced. Peter Kimotho and Titus Kimeu, cartographers of the Karura Survey Section were directed to carry out the drafting of the new 1:25,000 management plan maps, and corrected the 1:10,000 plantation maps respectively for the Working Plans Section in the areas where field work had been completed.

Driver Julius Ogara was attached to Working Plans during the latter half of the year to drive S.W.B. Land-Rover during field work. Plans were submitted to the Ministry of Works during the latter part of 1969 for estimates for the proposed new Working Plans office to be built in the Karura Forest during 1970/71, adjacent to the Karura Survey and Forest Inventory Offices.

CHAPTER III—FOREST PROTECTION

Offences.—In the last few years the total number of cases reported has been decreasing. In 1969, however, the decrease was at a declining rate as illustrated below.

Year						Number of Offences	Cases Less than Previous Year	Per cent Drop in Number of cases
1966	..	..	..	..	..	3,949	—	—
1967	..	..	..	..	..	3,541	408	10.33
1968	..	..	..	..	..	2,564	977	27.44
1969	..	..	..	..	..	2,202	362	16.44

Cases of careless use of fire and illicit honey-hunting were almost three times the numbers for the previous year while damage to young trees dropped considerably, and only a very slight change in the number of cases, of illegal removal of forest produce which had been consistently high. Shortage of Forest Guards seemed to be the main reason for the consistently high figures.

In many districts the culprits preferred the compounding of offences by the forest officers to being taken to court, apparently due to the lenient compensations imposed by forest officers. Certain offences like illegal grazing in some areas were constant problems whereas illegal squatters continued to be a menace in the administration within the department.

Climatic Influences.—Without exception rainfall in 1969 was either sporadic or off-season and in all cases inadequate, and much less than the previous year. The result was late-planting, very low survival per cent and heavy beating up in 1970 was expected. In some parts the mortality was so high that in North Marmanet for example a plantation which had 10 per cent survival had to be fully replanted. However, most access roads remained open for the protection of the Forest Estate from other agencies.

Fires and Fire Protection.—In 1969 there were 75 outbreaks of fire which swept 89.97 hectares of plantation, 23.6 hectares of indigenous forest and 423.37 hectares of grass-land. The total loss to the Government through the fires amounted to over K£11,000, while a further K£14,000 was spent on preventive measures.

Three fire-towers were built at Forestal, Nzoia and Stanley respectively in Turbo pulpwood afforestation Division.

The response of labour and neighbours to fire calls was good while the gradually increasing use of mobile and fixed V.H.F.s radio-phones, field telephones, made detection and control of fires more efficient.

The supply of mechanical fire-fighting equipment was still very low while experience showed that whatever precautions were taken fires will invariably always break out. The importance of having efficient fire-fighting equipment to combat this inevitable hazard could not, therefore, be over-emphasized.

Publicity in the local press of the fire season was carried out using all public media—radio, television and movie theatres.

Wild Animals.—Rats and moles were a great nuisance in many areas and a lot of work was done in cleaning the areas, trapping and poisoning. Cleaning the area around trees seemed to be the most effective control measure used. Poisoning failed badly during the rain season. Hawk perches were erected in grassland young plantations in Nyeri. Poaching was a headache in some Divisions but the Game Department was very helpful in its control. Damage by big game was reported highest in the neighbourhood of indigenous forests and resident workmen were employed in affected stations for monkey control.

The extent of damage by other big game varied considerably across the country and numbers of the different kinds killed in a conservancy was a fair indication of the extent of damage expected from the animals in the area.

Properly maintained game moats formed a good barrier to big game. At Kabaru the moat was extended by 4 kilometres making the total in the Division 108.8 kilometres. About 10 kilometres of moat was dug around Kimothon Shambas.

The numbers of game shot or trapped in the Forest Reserves were as below:—

CONSERVANCY				
	<i>Nakuru</i>	<i>East</i>	<i>West</i>	<i>Total</i>
Rats and Moles	9,647	529	22,145	32,321
Monkeys and Baboons	1,851	3,576	2,722	8,149
Buck	50	9	1,549	1,608
Porcupines	9	191	616	816
Buffaloes	24	70	5	99
Elephants	—	28	6	34
Wild Pigs	52	477	792	1,321
Warthogs	40	—	—	40
Rhinos	—	2	—	2

DISEASES

Some *Pinus patula* plantations in Nessuit and Molo were damaged by Poria root disease. At Molo, Dundori, Nandi, Esageri and Ngabuia, *Armillaria mellea* was also reported to have attacked plantations. The pathology section was informed and prescriptions were awaited. Damping off in nurseries in Kisumu and Nairobi Divisions was being reduced by application of perenox and regular change of soil. Damping off was also reported in all nurseries in T. Falls Division. In Nyeri it was controlled by application of Blitox "5".

Dothistroma pinii continued to attack young *Pinus radiata* but recovery in older trees was reported very encouraging in T. Falls. A few aerial sprays were carried out at Nabkoi experimental plots.

Death of *Cupressus lusitanica* in Nurseries at Nandi, Kaptagat and Penon was thought to be due to *Botrytis spp.* of fungi while at Kipkurere it was thought to be due to *Schlerophorne pityophila*.

Investigations were under-way on eucalyptus canker caused by either *Cytospora eucalytica* or *Botryodiplodia theobromae*. Also under investigation was a fungus on *Melia volkensii* which was identified as *Ganoderma spp.* but the primary cause of the disease was not certain. The two fungi were reported at the Coast.

INSECTS

Termites attacked eucalyptus plantations at Makuli and *Eucalyptus paniculata* was attacked by an unidentified beetle, especially when debarked prior to dying.

Defoliators invaded Vitex seedlings at Meru but were quickly checked by application of insecticides. Crickets and Cutworms populations were reported high in nurseries at Njuki-ini. They were successfully controlled by application of Agrocide No. 7. Similar action was taken at Kimakia and Gatara, Elburgon, Kitale, Kipkabus and Nandi, while Aldin achieved the same result in T. Falls.

An outbreak of woolly-aphid at Muguga led to the removal of all pine plantations there. Work on the removal of pines in areas near Muguga designated by Legal Notices Nos. 162 and 163 of 19th June, 1969 under the Plants Protection Act and prohibiting growing of pines in that area continued throughout the year.

A *P. radiata* plantation (Moridjo 4B) in T. Falls suffered under a mild outbreak of *Orygia* spp.

At Cherangani, bag worms were found on *Aningeria adolfi-friederici* (Muna) leaves. They were later identified by the entomologist as *Semimanatha aethiops hamps* (Lepidoptera pschidae). Later on they were found on a Mweri tree and the Entomologist was informed. No insect damage was reported at Turbo.

OTHER AGENCIES

Man ranked high as a destructive agency. In Turbo about 70 *Pinus patula* trees were slashed down by an unknown person.

CHAPTER IV—SILVICULTURE

General.—The Senior Staff position improved during the latter part of the year with the arrival of P. G. MacDonald (A.C.F.) and R. Denison, an American peace corp.

Ben Veldhoen attended a three-month Research Officers' course at Oxford during his leave, while B. Kipkemboi was awarded an F.A.O. fellowship for a nine months elementary statistics course at the University College, Dar es Salaam.

E.A.A.F.R.O. Statistics Division assisted in analysing several experiments.

Nurseries.—The old nursery at Ronge was re-opened during the year while that at Witu was ready for re-opening in 1970. Poor growth of *Vitex* at Ragati necessitated the opening of the Sagana nursery in mid-November for raising seedlings for 1971 planting.

The former pyrethrum nursery at Malagat was converted to a forest nursery to cope with increased planting programme. New nurseries were also opened at Kipkabus and Cherangani but at Turbo only five permanent seedbeds were constructed.

Seedling Production.—Production at Jilore changed over entirely to polythene tubing, and attempts to regenerate vegetatively failed.

Discussion with field staff and the feelings expressed at the Foresters' Conference revealed that the present policy of growing fast growing exotics was not understood by Foresters. A paper explaining the factors behind the present policy was being prepared. Many Foresters felt that more indigenous plantations should be established.

Lack of proper thinning, silvicultural technique and rainfall led to unusual deaths in the Nyanza Afforestation Scheme particularly in Ramogi and Usenge where nearly all young trees and seedlings died.

Most of the written-off plantations were due to fire but a few plantations established in wrong sites and attacked by *Dothistroma pinii* were also written-off.

FACTORS OF THE ENVIRONMENT

The Silvicultural Section assisted the soil survey unit in organizing a detailed Soil Survey of Turbo. The report will help the future management as well as the planning of the future experiments.

A note was produced from this Section during the year on rainfall, temperature and soils of all stations.

Soil samples from Witu Forest were analysed during the year.

Growth rate continued to be collected from the three species to assist in site classification.

1. Ecology of *P. radiata* and *C. lusitanica*

It was found that *P. radiata* does better at high altitudes than at low altitudes provided other factors remained constant. *C. lusitanica* was also found to be less sensitive to rainfall than *P. patula* but *P. patula* had better establishment in low rainfall, low altitude sites than either *C. lusitanica* or *P. radiata*. For the same available moisture and soil conditions, *C. lusitanica* is expected to grow faster at low altitudes than at high altitudes.

On recommendations from the Chief Conservator of Forests, observations were made on the ecology of *Polyscias kikuyuensis*.

2. Species and Provenance Trials

More species and provenance trial experiments were planted during the year at Kakamega, Turbo, Kimakia and at the Coast.

The compilation of several interim results of previous species and provenance trials were due to be completed in 1970. Species trials at Galore continued.

3. Seed Orchards

Because of the woolly aphid outbreak, in 1969 *P. patula* and *P. radiata* were not planted. *C. lusitanica* orchard originally intended for Londiani was planted at Muguga.

4. Seed Collection

P. caribaea seed stands were marked at Kwale and Kapsaret Forests. Collection of *C. lusitanica* and *P. patula* was done in the old seed stands.

5. Purchase and sale of Seeds

There was a £300 rise in seed sale to foreign countries over 1968 figure. Nearly all the department's seed requirements were met by the section. There were a few purchases for experimental work; the rest of the seeds for experimental work were obtained on exchange basis.

A seed catalogue was produced during the year and copies sent to several dealers.

6. Tending of Stands

Analysis of a Cypress thinning experiment was done during the year.

Pruning experiment was measured but mill test was not carried out because of other engagements.

7. Species Check List

This was started by P. G. MacDonald in collaboration with E.A. Herbarium and National Parks.

8. Nursery

Experiments to find the best methods of improving nursery techniques for several hardwood species continued.

Solutions sought were:—

(a) How to improve germination.

(b) Time of sowing and period in the nursery to ensure good establishment.

(c) Pre-sowing treatments if any.

9. Measurement

Several sample plots were established in hardwood plantation forests at Kakamega to study their growth. Sample plots were also established at the Coast in *P. caribaea* and *A. cunninghamii* plantations.

10. Publications

Technical Orders Numbers

42 Treatment of Cypress plantations.

43 Treatment of *Pinus patula* plantations.

44 Treatment of *Pinus radiata* plantations.

- 45 Treatment of *Cedar* plantations.
- 46 Treatment of *Araucaria angustifolia* plantations.
- 47 Treatment of *Vitex keniensis* crops.

Technical Notes Numbers

- 114 Seed weight and the expected number of seedlings of tree species growing in Kenya.
- 116 Plantation sampling procedures for field management.
- 117 Marketing and Selection procedures in Kenya Plantation crops.
- 118 Altitude, temperature and rainfall of Kenya forests.
- 119 The Geology and Soils of Kenya forests.
- 120 Factors affecting the rate of growth and distribution of *P. patula* in Kenya.
- 121 Factors affecting the rate of growth and distribution of *P. radiata*.
- 122 Effect of rainfall and altitude on growth of *C. lusitanica* in Kenya.
- 123 Results of Direct planting experiment (*C. lusitanica*) R. E. 254/65.

FOREST PATHOLOGY AND ENTOMOLOGY

The Pathology Section was under supervision from E.A.A.F.R.O. and Mr. Kamanza who took over from David Wangai in June as a Forester in charge of entomology and pathology west of Rift, was posted to Londiani.

The Forest Entomologist Mr. J. A. Odera was in charge of the Entomology Section.

ACTIVITIES

A bark beetle study was set up at Cengalo, Chepalungu and Masaita to provide information on development history, host range and ecology of *Phloeosinus schemensis* (Coleoptera: Scolytidae). Observations continued on pine and Cypress billets treated by Dip-diffusion method against termites at Kakamega and Muguga.

A woolly aphid of pines (*Pineus* Sp. Homoptera: Adelgidae) was discovered in E.A.A.F.R.O. Arboretum in February, 1969. Being aware of its destructive habits in other countries, this insect was accorded first priority and all resources were channelled to its study and control. Extensive reconnaissance surveys were mounted to map out its distribution and host range. Detailed checks covered pine stands at Muguga, Kikuyu, Ndeiya and Limuru areas. In other areas the surveys were restricted to stands which had links with the known centres of attack, such as research plots and stands which were established with seedlings from Muguga, especially the tree breeding section E.A.A.F.R.O. The pest was possibly carried to these stands either by plant material, vehicles and/or human beings.

Results of these surveys showed that the pest was discovered before it had time to spread into the main pine growing areas. Heavy infestations occurred in Muguga area especially in E.A.A.F.R.O. estates. Isolated attacks were discovered in Kikuyu, Limuru and Rironi farms and from a research plot at Uplands Forest Station.

Nearly all species were susceptible to attack but field observations showed that *Pinus ayacaluite*, *P. strobus* var. *chiapensis* remained clean in mixed stands and plots in which other species had heavy infestations. These two species are probably resistant to attack.

CONTROL

Following its discovery at E.A.A.F.R.O. the Entomologist stopped all pine planting of seedlings from E.A.A.F.R.O. This stand and other representations from the Department forced E.A.A.F.R.O. to adopt a direct control method comprising of felling and burning of all pine material in the estate. The Chief Conservator of Forests in turn ordered similar treatment of all pine stands in Muguga Forest. According to the Plant Protection Act, Cap. 324, Legal Notice No. 163 of June, 1969, this treatment was extended to all farms in Limuru and Kikuyu Divisions as described in the Legal Notice.

Felling proceeded very slowly in the farms because of many factors. In many cases the trees were growing close to permanent structures like houses, power and telephone lines. This situation required specialized techniques and considerable patience so as to avoid

or reduce damage to the standing structures. So far only a slight damage occurred to a house. Old and unreliable tools also deterred the progress. Many farmers generally resented felling and regarded it as a violation of their rights. Besides barazas which were held with the Chiefs and D.O.s, many farmers still insisted on compensation prior to felling. Compensation was requested for loss of pines, agricultural crops damaged during felling and in a few cases the loss of beauty and aesthetic attributes of the pines. Felling was halted for four months between August and November, 1969, when the funds allotted were drained. Felling will, therefore, spread well into 1970. While it was too early to analyse the effect of destroying pines in this restricted area, preparatory arrangements were under-way for introducing predators of *Pineus* from Europe.

The Section maintained routine extension services on identification and prescription of control to field staff and various other co-operators. Defoliation continued to show increasing importance especially in exotic softwood plantations and wood lost in private farms. A bag worm *Seminanatha sethiops* (*Lepidoptera psychidae*) was reported from Cherangani Forest District, defoliating Muna. *Orgyia* Sp. (*Lepidoptera lymatridae*) was also reported from Ontulili Forest Station, Nyeri Division. These outbreaks were effectively controlled by chemical treatment with 2.0 per cent DDT.

Large instances of defoliation by *Gonometa podocarpi* (*lepidoptera: lasiocanrpidae*) on pines and podo were reported from farms in Limuru and Kikuyu areas.

Intensive surveys on the cause of death of terminal shoots of Mutati (*Polyscias kikuyuensis*) in Bahati and Kakamega forests were conducted between September and November. The results were still inconclusive mainly because the survey was conducted long after deaths had occurred. It was likely that the insects collected during the surveys were secondary arrivals. Observations were started in a plot close to Londiani and was to be maintained throughout 1970 to provide more accurate information on the primary pest of this species and its development histories.

Light Trap.—The section continued to operate a light trap at Londiani and Muguga for the army worm division E.A.A.F.R.O.

Rainfall.—Londiani recorded 764.4 mm. and Muguga 662.9 mm.

UTILIZATION RESEARCH

General.—The Utilization Section was fully established. However two members of the Section were sent for overseas advanced timber technology course, bringing the number of officers from Utilization Section on courses overseas to three. The section did a lot of advisory work on setting up new sawmills. However, later in the year a sawmill expert arrived from Canada and started a new section known as Sawmill Advisory Section. This section dealt mainly with extension work advising and assisting both new and already established sawmills.

Manufacture Research.—Strip flooring and parquet flooring were made from both *Eucalyptus paniculata* and *E. saligna*, and the results were quite encouraging. Four metric prefabricated components were constructed for the City Council Timber Development committee. This was the committee formed to investigate the possibility of building low cost timber houses for the City Council of Nairobi. Plantation grown *vitex keniensis* timber produced as attractive furniture as the furniture made from indigenous vitex timber.

Seasoning.—Three pine seasoning trials were carried out to identify and assess the significance of air seasoning defects in Kenya pines. The third test had not been completed and the full report will be given in 1970 report.

Mechanical Timber Testing.—Green and dry tests on 30-35 years old and 17 years old Cypress were completed and computed. The results were given in Dr. D. N. Patterson's Research Bulletin No. 23. The static, bending, compression hardness, shear and clearance tests were started on pines which were to be felled from the 21 trial plots from the E.A.A.F.R.O. arboretum.

Pulp Research.—Results of pulping trials carried out in U.K. and U.S.A. were re-examined because some of the results were conflicting. Re-assessment reports were received during the third quarter of the year.

PRESERVATION

Dip-diffusion.—Samples from our second dip-diffusion trials were sent to two laboratories in U.K. where comparative tests would be carried out on:—

- (a) Untreated pine.
- (b) Preservative treated pine.
- (c) Preservative and fire retardant treated pine. Further trials of both Rentesol and Twig Dip Diffusion salts were established. Both salts are now available commercially in Nairobi.

CHAPTER V—RESEARCH AND INVESTIGATION

SILVICULTURE

General.—Among many foreign visitors those who were interested in the seed growing laboratories were Messrs. Patric Broph on an F.A.O. Fellowship, M. Clade Malvas from Madagascar, the East African Community Working Party on research priorities and administration and a group of eight students and an instructor from Forest Training School, Olmotonyi in Tanzania.

The Silviculturist visited Colombia, Mexico and Britain to gain practical experience in various fields. The Section was represented at various scientific meetings including the Agricultural Research Council, the East African Specialist Committee and both Foresters' and D.F.O.s' Conferences.

In addition to producing "New" Technical Orders and Notes, the Section was involved in converting order prescriptions and Technical Orders to Metric. The change was easily assimilated by field staff except in the pulp wood areas where the change was accompanied by some confusion.

Species trials revealed that the following stations might have to change their choice of species.

- (a) Kitondo—Katende.
- (b) Lambwe, Homa Mts., etc.
- (c) Turbo.
- (d) Gathiuru, especially the lower parts.

On recommendations from the Divisional Forest Officer, Nairobi, the Chief Conservator of Forests decided that the first Cypress thinnings should be delayed with a view to selling them to Sawmill operators. Analysis of Inventory reports revealed over-thinning in Nyeri, Nairobi, Londiani and Elburgon Divisions while under-thinning was evident in T. Falls and Southern Divisions. Indications from the data collected were that different silvicultural prescriptions were required for plantations in Coast, Kisumu and some stations in Kitale Division.

The use of cattle dung instead of P.N.K. was introduced in Eldoret and Nabkoi. To avoid introducing cockchafers and other insects into the boxes or beds the dung was soaked in water and stirred vigorously. The suspension so formed was then allowed to settle to the bottom of the container. The material on the surface was then removed and the clear solution left was applied to boxes and beds. A simple experiment at Eldoret had shown that cattle dung was doing better than N.P.K. in raising seedlings.

One seed-bed covered with polythene sheets was used for raising cuttings at Karura. An attack on cypress seedlings at Gathiuru nursery was discovered to be an association of *Sclerophoma pithyophila* and *Botrytis cinerea*. Feruide was recommended.

Germination Rates.—Unusually good germination rates for *Pinus elliotti* were achieved at the Coast while extremely poor results of *E. camaldulensis* were recorded at Jilore. The latter contrasted with the very good results of the same sample at Kwale.

In general, however, good germination rates were reported, which again contrasted very sharply with the generally poor survival percentages as a result of the poor rainfall distribution and quantity during the year.

New Planting.—1969 was a year of uncertainty throughout the country as far as rainfall was concerned. This led to late planting in most areas. The new plantations experienced very high percentages of failures. The extent was such that beating up of 1967 planting was abandoned in Nyeri and Nairobi Divisions and some plantations had to be fully replanted. The ratio of cypress to pine plantations varied considerably in all stations. At the Coast a great difference in growth rates was noted between cultivated and abandoned areas with the former showing a considerably high growing rate. The D.F.O. (Coast) recommended clearing of abandoned areas especially during seasons of low rainfall.

The problem of illegal grazing in young tree plantations remained acute at Olengape glades and at the time of writing this report the plantations there had already been written-off.

The total area planted in 1969 excluding Turbo was 6,022.70 hectares which exceeded the planting target of 4,855.2 hectares. Turbo planted a total of 1,214.49 hectares. The total area under plantation in the country was 107,722.80 hectares. A total of 457.79 hectares were written-off during the year thus leaving 107,265.01 hectares under plantation. The areas noted for dirty shambas were Maji Mazuri, Makutano, Malagat, and Kerisoi, Geta (Mekaro) and Baraget.

Pruning.—In most cases the pruning programme was not achieved and the reasons commonly encountered were lack of funds, immature plantations and change of staff.

Thinning.—As in the case of pruning, some stations did not complete their thinning programme. The plantations affected were mainly the under 12 years old thinnings which the sawmillers were reluctant to take. Thinning by licensees was badly behind schedule in some areas.

In Nairobi, however, the backlog of thinning was deliberate as the D.F.O. still expected to sell the first thinnings.

Natural Regeneration.—At the coastal areas where charcoal burning had been carried out, natural regeneration was reported unsatisfactory. The situation in other areas was very encouraging. At North Marmanet all natural regeneration of *Juniperus procera* was doing very well while Ruikithia and Oxford plots at Irangi showed promising Vitex, Camphor and Fagara regeneration. Climber cutting was carried out there.

CHAPTER VI—RURAL AFFORESTATION SCHEMES

West Pokot District.—There was talk of gazettement Kamatira Forest Reserve in Kapenguria District but the year ended before the Department and West Pokot Area Council had enough consultations.

Nyanza.—Many schemes opened up during the year and maintenance of the existing one continued. Work in Miriu had however to be stopped due to interference from the local people and politicians in South Nyanza District.

Suth Nyanza.—The boundaries of the following hills were completed and iron beacons fixed on corners:—

Migori—

1. Otacho.
2. Magina Marabu.
3. Mikure.
4. Aroso.

The hills are in the vicinity of Migori township. Planting started on the same hills for species trials but no work was carried out on others in the same division due to some financial limitations.

With B.A.T. invading the area for tobacco growing, more fuel and poles will be required for that project hence the importance of surveying and gazettement the land available in Migori.

Siaya District.—Ramogi/Usenge had their first planting in 1969.

Western.—Odiado and Odima Hills were agreed upon for afforestation.

Maragoli Hills.—Work stopped at the end of February, 1969 due to a trouble-making group who occasionally burnt the areas and chased the working gang in the same forest. The Forest Department remained on the border watching for culprits who might damage the growing trees. The stoppage of work in Maragoli rendered at least 42 families who were engaged in the plantations jobless.

Busia District.—No new hills were acquired during the year. Migori new schemes had boundaries demarcated during the year.

Legal Notice No. 12 of 10th December, 1969 added 0.40 hectares of land to Ol Arabel Forest Reserve in North Marmanet so as to include the Maskie Forest Guard Post.

An exchange of land at South Marmanet Forest Reserve added to the Forest Reserve 2.3 hectares as compared with a loss of 0.9 hectares (Legal Notice No. 8 of 10th January, 1969 refers).

Approximately 11.4 hectares of land at Tumu (Mt. Nyiru) were demarcated and designated for Welfare Centre. No proper survey or demarcation had been done.

Embu/Kirinyaga.—Both Embu and Kirinyaga County Council forests were not gazetted though the councils were keen to see this done. It was hoped that gazettelement would be effected as soon as the Forest Act was amended.

Machakos/Kitui.—The full meeting of Kitui County Council endorsed the decision of the Natural Resources Committee and revoked Minute No. 11/1957 which had given away Enday to Forest Department.

There was hope that more areas may be added to the Forest Reserve in Machakos since the people there were beginning to pressurize the Government after realizing the value of forests.

Taita/Taveta District.—No further progress was made in finalizing the gazettelement of the Taita hills proposed forest areas. The issue was complicated by offers of additional areas and at Sagalla and Ronge by the local people and the fact that land adjudication was taking place and areas classified as suitable for agriculture might be included for forestry in the near future. This increase in land available for forestry purposes in Taita will make the district more economically viable as far as forestry is concerned.

In general boundary establishment and maintenance was a dominant item of expenditure in all afforestation schemes.

CHAPTER VII—FOREST ENGINEERING

ROADS AND BRIDGES

The Forest Industrial Road Construction Unit continued work well in spite of bad wheather and the breakdown of machineries.

During the year the Road Unit completed construction and surfacing of 28 kilometres of new roads. In addition only surfacing remained to complete 60 kilometres more. The total distance of 88 kilometres bulldozed during the year was 32 kilometres more than the comparable figure for the previous year.

The unit which had been split into two in the previous year was re-organized into one Unit.

A total of 154 kilometres of new roads were constructed during the year through divisional efforts in addition to a few roads constructed by sawmillers. Maintenance of roads was carried out in all Divisions.

Bridges were constructed in Ol Bolossat and along Thegi/Mathako, Ndathi/Tagwa and across Thika river in South Kinangop. The news about the take-over by the Central Government of County Council roads was highly welcome.

New buildings completed during the year were as follows:—

CONSERVANCY AND DIVISION

PROJECT	WEST				NAKURU				EAST			R&P	F.I.D.	Total
	Kisumu	Kitale	Eldoret	Turbo	Londiani	Thomson's Falls	Elburgon	Nairobi	Nyeri	South-ern	Coast			
Junior Staff Houses ..	3	4	1	4	26	3	1	3	3	1	—	—	—	18
Forest guards' houses ..	—	—	10	—	1	11	8	9	17	7	3	—	1	98
Garage ..	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Temporary safari houses ..	—	—	—	—	—	—	—	—	—	—	—	—	—	0
Offices ..	—	—	1	—	—	—	—	—	—	—	—	—	—	1
Offices extension ..	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Superior type workmen's houses	1	21	23	110	26	32	27	59	34	6	—	—	—	1
Labour lines ..	—	—	1	—	—	—	—	1	2	1	—	—	—	339
Water supply ..	—	—	2	—	1	2	—	—	—	—	—	—	—	1
Water supply extension ..	2	1	2	—	—	2	—	—	—	—	—	—	—	9
Stores, petrol, nursery, etc. ..	—	1	1	—	—	1	1	—	1	1	—	—	—	5
Miscellaneous Projects ..	—	1	—	—	5	1	—	—	—	—	—	—	—	5
Fire tower ..	—	—	—	—	—	—	—	—	—	—	—	—	—	9
Dispensaries ..	—	—	—	—	—	1	—	—	—	—	—	—	—	1
Picnic shelters ..	—	—	—	—	—	—	—	—	—	—	—	—	—	0
	—	—	—	—	—	—	—	—	—	—	—	—	—	0

CHAPTER VIII—UTILIZATION AND FOREST INDUSTRIAL DEVELOPMENT

FOREST INDUSTRIAL DEVELOPMENT CENTRE

(a) *Sawmill.*—The sawmill continued to operate well and the training also went on well. All the New Zealand staff left by the end of the year, thus Africanizing all the staff at the centre.

The Government sawmill cut a total of 7.4 cu. m. of Cedar for the use by Prefabricated Houses Section. This was in addition to 6,337 cu. m. of mainly cypress produced by the sawmill. The revenue collected during the year was Sh. 1,028,810 as against expenditure of Sh. 707,703.

There was no problem in F.I.T.C. selling timber produced. In fact the centre sold quite a considerable amount to the export market through direct contact with European buyers.

(b) *Logging Unit.*—The Logging Unit at Maji Mazuri went on smoothly although the Hymac loader developed a serious breakdown on the grapple. In fact we realized that this equipment was not suitable for our conditions because of very high maintenance costs and the difficulty in obtaining spare parts. The other equipments operated satisfactorily although their maintenance costs was relatively high due to their age.

117,453 cu.m. were logged during the year at an expenditure of Sh. 237,164 and a revenue of Sh. 357,502. The Logging Unit also undertook to log for M/s. Sokoro Plywood on a temporary basis.

(c) *Prefabricated Houses.*—The prefabricated houses factory at the Forest Industrial Training Centre continued to improve and was kept busy with orders. A new type known as "300" was introduced for the Forest Department staff. Private orders were so many particularly for the "404" and "481" that the factory could not cope with them. During the year 303 houses were built fetching a revenue of Sh. 586,300. Better finished houses were built and this reduced the number of houses which could have been built.

(d) *Pressure Treatment Plant.*—A small timber impregnation plant was installed at F.I.T.C. The capacity of the plant is 14.16cu.m. and this is too small for commercial operations. All the timber treated at the plant was used for the prefabricated timber houses.

AFRICAN PARTICIPATION IN SAWMILLS

The most important event was the establishment of the sawmillers Africanization Fund. This was a fund voluntarily established to help African employees of non-citizens who owned mills, to buy the sawmills of the contributors when such mills came up for sale. The sawmills which are participating in the fund contribute one per cent of their annual turnover to the fund.

FOREST PRODUCT MARKETING

Local Market.—The local market for sawn wood continued to be brisk. In fact there were indications that the demand was more than the supply. The plywood supplied locally was still below the country's requirement. The quantity imported during the year was 1,766.595 square metres whereas the local production amounted to 11,128 cu.m. with no exports.

EXPANSION AND DIVERSIFICATION

Plywood.—The construction of a third plywood factory in Kenya was given green light. It is hoped to be the most modern in the country and it is also hoped that it will produce high quality verneer for export. When this factory comes to full production and the others operate a double shift they should satisfy the country's demand for plywood. However, the market seemed to be expanding very fast and it seemed likely that by the time this factory gets into operation the market will have expanded even more.

Fibreboard.—E.C.A./F.A.O. carried out a feasibility study on the establishment of a fibreboard factory in Kenya. The field work was completed but the full results were not yet out. The indications were that a small factory would meet the demand. However, the market was also expanding rapidly and by the time a factory is built the situation will have changed in such a way that a medium factory will meet the needs better than a small one.

General.—There were plenty of inquiries from possible investors in forest based industries in Kenya. Although the local market was small, the upward expansion trend of forest industries showed that the future prospects were bright.

Forest Economics.—The Forest Economist Mr. Gacago completed a revision of fuel royalties for Nairobi Division. This revision which proposed an increase in fuel royalty was accepted by the Permanent Secretary.

A similar report for Elburgon and Londiani Divisions as well as a cost analysis exercise for F.I.T.C. were untouched owing to financial limitations.

CHAPTER IX—EDUCATION AND TRAINING

Professional Training.—No scholarships were awarded in 1969 for under-graduate training in Forestry, but two Assistant Conservators of Forests proceeded overseas for post-graduate training in Forestry. Mr. F. Ng'ang'a proceeded to the University of Melbourne, Australia for post-graduate training in Forest Utilization, whereas Mr. F. K. arap Sang proceeded to University of Toronto, Canada for a post-graduate course in Pathology. The former Conservator of Forests, West, Mr. S. C. Mbinda proceeded for one academic year, Forest Officers courses at the Commonwealth Forestry Institute, Oxford. At the end of the year there were 25 local men studying Forestry at Universities overseas. These were distributed as follows:—

Wales—Bangor	..	..	..	..	..	2
Nigeria—Ibadan	..	..	..	..	..	2
Canada—University of New Brunswick	..	..	..	..	..	4
University of British Columbia	..	..	..	..	..	3
University of Toronto	..	..	..	..	..	1
Australia—Melbourne	..	..	..	..	..	1
U.S.A.—Georgia	..	..	..	..	..	1
U.S.S.R.	..	..	..	..	..	5
East Germany	..	..	..	..	..	5
Czechoslovakia	..	..	..	..	..	1
TOTAL	..	..	..	..	..	<u>25</u>

Sub-professional Training.—Two Foresters with diplomas were given scholarships for higher training. Mr. B. Kipkemboi undertook a 9-month course in statistics and statistical analysis in Dar es Salaam—Mr. J. Nyaroo proceeded to Highcombe, England for a diploma in Advanced Wood Technology.

Rangers' Training.—The 8th Rangers' Long Course which commenced on 1st July, 1968 ended on 28th November, 1969 when all 18 students passed out successfully and were presented with certificates by Mr. J. M. Ojal, the Permanent Secretary, Ministry of Natural Resources.

The passing out of 18 students in the year brought the number of men who have trained at this school since its inception to 246.

Rangers' Short Course.—No Rangers' Short Courses were held during the year.

Rangers' Promotion Examinations.—Grade III to II and Grade II to I Rangers' Promotion Examinations were held from 10 to 12th February and from 17th to 19th December, 1969. The promotion examinations held in February were supposed to have been held in December, 1968 but were postponed until February due to shortage of time.

Six Rangers passed the Grade III to II and three passed the Grade II to I promotion examinations held in February.

Forest Training School—General.—Mr. Z. L. Amahwa took over the School from Mr. B. M. Beer on 1st January, 1969 and was Principal throughout the year. Mr. Beer remained at the School as Senior Forester Instructor until 30th April, 1969 when he went on six months' accumable leave pending retirement.

Messrs. S. M. Ireri and J. M. Njehia worked as Forester Instructors throughout the whole year, and Mr. F. M. Ndungu joined the school as Forester Instructor on 13th December, 1969.

Mr. Victor Heath, the Canadian Technical Assistance Curriculum Adviser arrived at the Forest Training School on 10th November, 1969 to take up his one year contract as Curriculum Adviser and was expected to draft syllabus for both the Long Rangers' and Advanced Courses.

CHAPTER X—TERRITORIAL ORGANIZATION, STAFF AND LABOUR

TERRITORIAL ORGANIZATION

In order to facilitate proper management of the World Bank loan whose plantations were to be concentrated in few management units, arrangements were underway for the transfer of Bahati/Dundori Forest District to Elburgon Division.

Teret Forest Station which until December was under Egerton College was absorbed back into Nessuit District forming the second sub-station of the Nessuit group.

Jilore became a self accounting station with the posting of a Forester there while Wire, a new Forest Station, was opened and the Forester and Staff at Kisii moved to the new station.

A new sub-forest station to Turbo Nursery was opened at Nzoia where over 200 workmen were employed for maintaining plantations.

Two Forest villages were opened at Stanley and Everglades in Turbo Division.

The name of the office of the Project Manager was changed to Divisional Forest Office (Turbo) but telephone and P.O. Box numbers remained the same.

Staff.—The Africanization of staff continued during the year with the arrival of two new A.C.F.'s Messrs. B. G. Wamugunda and James Migunda both holders of B.Sc. (Forestry) degree from Ibadan and New Brunswick University respectively. A number of specialized sections were however still headed by S.C.A.A.P. Personnel.

Mr. C. C. Plumb, Conservator of Forests (Nakuru) retired during the year.

Rangers' and Clerks' refresher courses continued to be run at Londiani and Maseno respectively. The Senior posts in the Department were held as follows:—

Chief Conservator of Forests

J. P. W. Logie.

Deputy Chief Conservator of Forests

O. M. Mburu, from 5th August-31st December.

J. D. O. Onyango (Acting) from 1st January to 4th August.

Conservator of Forests (West)

S. C. Mbinda—1st January to 6th October.

P. G. Ciera (Acting) 7th October to 31st December.

Conservator of Forests (East)

T. A. M. Gardner—1st January to 31st December.

Conservator of Forests (Nakuru)

C. C. Plumb—1st January to 12th October.

F. M. Kamau (Acting)—1st January to 5th August.

Conservator of Forests (Research and Planning)

F. M. Kamau (Acting)—1st January to 5th August;

J. D. O. Onyango—5th August to 31st December.

Conservator of Forests (Forest Industrial Development)

J. J. Y. Wawiye.

As at 31st December, 1969:—

Divisional Forest Officer, Kitale	—	D. T. Ndegwa.
Divisional Forest Officer, Kisumu	—	J. N. Gachahe.
Divisional Forest Officer, Eldoret	—	C. N. Ndegwa.
Divisional Forest Officer, Londiani	—	D. S. Muturi.
Divisional Forest Officer, T. Falls	—	F. H. M. Wanyeki.
Divisional Forest Officer, Elburgon	—	J. N. Ndatho.
Divisional Forest Officer, Nairobi	—	B. K. R. Shuma.
Divisional Forest Officer, Nyeri	—	H. Z. Gathu.
Divisional Forest Officer, Southern	—	T. K. Kasango.
Divisional Forest Officer, Coast	—	R. Murtland.
Divisional Forest Officer, Turbo	—	Ikenyo.
Forest Pathologist	—	Vacant.
Entomologist	—	J. A. Odera.
Utilization Officer	—	C. C. Bengough.
Staff Surveyor	—	Vacant.
Working Plans Officer	—	G. A. Jones.
Project Manager (Roads)	—	G. Ogude.
Project Manager (F.I.T.C.)	—	D. M. Kamweti.
Forest Inventory	—	R. S. Kiama.
Principal, F.T.S.	—	Z. L. Amahwa.
Marketing Officer	—	S. Gachie.
Silviculturist	—	Vacant.
Forest Economist	—	M. R. Gachago.
Sawmill Adviser	—	V. Gregory.

Officers on leave pending retirement:—

M. B. Beer.	—	Principal, Forest Training School.
R. M. Jarold.	—	Assistant Conservator of Forests, Contract expired.

On Course:—

F. Ng'ang'a.
J. M. Kangara.
F. A. Sang.
H. T. Matiru.
S. Kinara.
J. Nyaroo.
B. Kipkemboi.
S. C. Mbinda.
J. Masai.

Staff Seconded from Commonwealth Countries:—

G. A. Jones.	}	Canada.
C. C. Bengough.		
B. J. Veldhoen		
J. Eccles	—	Britain.

The following changes took place:—

First Appointments.

B. G. Wamugunda	—	Assistant Conservator of Forests.
J. Migunda	—	Assistant Conservator of Forests.

Resignations, Retirements and Expiry of Contract:—

C. C. Plumb	—	Conservator of Forests.
R. M. Jarold	—	Assistant Conservator of Forests.
C. F. Smith	—	Forestry Inventory.
T. A. R. Choate	—	Working Plans.
J. Migunda	—	9th September.

The authorized establishment of the Department at the end of the year was:—

Chief Conservator of Forests	—	1
Deputy Chief Conservator of Forests	—	1
Conservator of Forests	—	5
Assistant Conservator of Forests	—	22
Silviculturist	—	1
Entomologist	—	1
Forest Pathologist	—	1
Utilization Officer	—	1
Staff Surveyor	—	1
Assistant Surveyors	—	4
Road Superintendents	—	2
Senior Foresters	—	14
Foresters	—	95
Shorthand Typists	—	5
Personal Secretary	—	1
Executive Officers	—	8
Senior Assistant Draughtsman	—	1
Survey Assistant	—	1
Assistant Draughtsmen	—	7
Forest Rangers	—	170
Photo Printer	—	1
Clerks	—	116
Dressers	—	58
Drivers	—	160
Plant Operators	—	5
Forest Guards	—	910
Subordinate Staff	—	21
Storemen	—	5

LABOUR:

With the exception of Turbo which had no resident workmen; the employment of casuals dropped considerably in most Divisions. The resignation of resident workmen was a dominant feature at Teret with workmen starting their own business while a few cases of slackness were observed in Nairobi and Nabkoi.

The following table shows the employment figures as at 31st December, 1969.

Division						Resident Workmen	Casual Labourers	Employees of Sawmills and and Contractors
Kitale	..	..	..	..	..	480	—	903
Kisumu	..	..	..	..	..	132	239	—
Eldoret	..	..	..	..	..	1,008	—	586
Turbo	..	..	..	..	..	—	480	—
Londiani	..	..	..	..	..	1,180	—	831
Thomson's Falls	..	..	..	..	..	1,291	57	1,357
Elburgon	..	..	..	..	..	1,359	65	303
Nairobi	..	..	..	..	..	265	57	860
Nyeri	..	..	..	..	..	864	282	1,994
Southern	..	..	..	..	..	91	708	88
Coast..	..	..	..	..	..	—	52	1,070
F.T.S.	..	..	..	..	..	14	33	—
Research and Planning	..	..	..	..	..	—	71	—
TOTAL						6,695	2,044	7,992
TOTAL FOR 1978						7,291	2,382	9,334

MINISTERIAL JOINT INDUSTRIAL COMMITTEE

During the year two meetings of the committee were held and agreement was reached on the following major issues:—

- (a) The keeping of livestock and pigs was allowed in certain specified areas approved by the Veterinary authorities.
- (b) The 303 square feet one roomed prefabricated house was replaced by 300 square feet double roomed prefabricated. The living room on the new design was considered superior hygienically to mud and log cabin houses built by the department and much better than the one-roomed prefabricated house previously built by the Forest Department. The question of Storemen and Stores Issuers was deferred to the next M. J. I. C. Meeting in 1970.

WELFARE AND COMMUNITY DEVELOPMENT

Most schools, playgrounds and teachers' houses were handed over to county councils. The maintenance of these buildings by county councils all over the country was found to be very poor despite the fact that the county councils were still collecting two shillings on top of the GPT from the Forest workers.

In certain cases county councils had refused to supply drugs to dispensaries run by the Forest Department.

Maintenance of welfare services in Kakamega had to revert to the Forest Department after the county councils refused to take over.

The general income and expenditure account for the year ending 30th June, 1969 was as follows:—

FOREST WELFARE FUND

	INCOME								
	East Conservancy			West Conservancy			Nakuru Conservancy		
	K£	s.	cts.	K£	s.	cts.	K£	s.	cts.
RENTS, FEES AND CONTRIBUTIONS—									
Rents from shops and houses	125	16	00	1,264	11	80	781	7	05
Miscellaneous	328	8	95	602	4	95	328	11	10
Interest on investments	101	13	25	1,968	10	05	1,211	11	60
WORKS EXPENDITURE—									
Maintenance of buildings and playing fields ..	—	—	—	1,542	1	85	757	13	95
Audit fees	8	7	00	8	7	00	8	6	00
Refund of rents to County Councils	1,046	15	80	—	—	—	—	—	—
TOTAL	1,055	2	80	1,550	8	85	765	19	95

CHAPTER XI—MISCELLANEOUS

Publicity.—Public Relations matters were handled by Mr. J. A. Pereira in conjunction with Mr. A. B. Cahusac, the Ministry's Public Relations Officer.

T.V. and Radio Programmes.—A regular feature was the presentation of short talks by the different departments in the Ministry on the radio programme—"Resources Review".

Many forms of presentations were tried during the year with the object of trying to get the public's interest drawn.

Agricultural Shows, Films etc.—The Department participated in 1969 A.S.K. and local shows at high standards which brought home prizes and trophies in a number of shows as shown below. An attempt was made to bring out a theme in each of the shows instead of having a general display in all cases. Ways were being explored towards improving the

standard of shows at reduced costs through re-organization in the preparation. A proposal to purchase a 7-ton lorry was put up aimed at ensuring easier transportation of display material to various show centres at short notices. The prizes won in the various shows were:—

Nyeri	}	1st Prize
Thomson's Falls		
Kitale		
Baringo	}	2nd Prize
Kisii		
Mombasa	}	3rd Prize
Embu		
Eldoret	=	Trophy

National Tree Planting Day.—On the occasion of the National Tree Planting Day which fell on 30th April, 1969, His Excellency the President, Mzee Jomo Kenyatta led the Nation by planting a tree at Uplands. Schools happened to be on vacation at the time but celebrated the occasion shortly after resumption on 8th May.

As usual 5-10 trees were given free to schools and similar institutions. Some people also received free issues within limits of our supply.

A discount of 50 per cent was allowed for any one school purchasing up to a maximum of 500 plants.

The number of free issues was 22,472 trees as compared to 38,098 in 1968. The results of a survey carried out on plants planted in seven divisions were very encouraging.

Recreational Use of Forests.—The public was gradually becoming conscious of the facilities available in the forests for recreational purposes. During the year a revised list of rest houses, costs and other relevant details was produced. The list can be obtained from the Public Relations Office, Forest Department, P.O. Box 30513, Nairobi or sent on request.

Conferences.—Four liaison meetings, and the annual Divisional Forest Officers' and Foresters' conferences were held during the year.

Finance.—With less expenditure than the previous year, the total revenue of K£437,087 was a new record. The deficit dropped from K£1,319,201 in 1968 to K£1,039,120 in 1969—showing a healthy sign of development in the trade.

The drop in expenditure can partly be explained in terms of the non-incurrence of capital expenditure for the establishment of F.I.T.C. which is now fully established.

BOUNDARY STATEMENT AS AT 21ST DECEMBER, 1969

Kenya Form 1

Division	ARTIFICIAL BOUNDARIES						Total length of boundaries (km.)	
	Maintained during the year		New demarcation during year		Total length (km.)	Natural boundary (km.)		
	km.	Cost	Cost per km.	km.				Cost
		K£	K£					K£
Kitale	..	335.85	1,226.79	3.66	—	1,050.90	153.69	1,204.59
Kisumu	..	219.59	1,355.35	6.17	32.41	504.62	57.79	562.41
Eldoret	..	139.00	682.55	4.91	—	317.20	19.70	336.90
Turbo	..	83.70	277.67	3.32	—	83.70	16.30	100.00
Londiani	..	199.20	734.65	3.69	—	388.50	86.00	474.50
Thomson's Falls	..	252.80	1,480.34	5.86	—	1,140.90	102.70	1,243.60
Elburgon	..	41.70	413.20	9.91	—	455.30	161.00	616.30
Nairobi	..	209.18	861.80	4.12	—	348.19	78.53	426.72
Nyeri	..	591.94	1,794.65	3.28	—	1,290.31	294.17	1,584.48
Southern	..	528.70	2,779.07	5.26	—	764.60	13.50	778.10
Coast	..	182.70	687.75	3.76	—	328.44	100.91	429.35
TOTAL	..	2,784.36	1,174.38	4.9 (Aver.)	32.41	6,672.66	1,084.29	7,335.21

FIRE PROTECTION AND OUTBREAKS OF FIRE

Kenya Form 2

DIVISION	PREVENTIVE MEASURE					Total	OUTBREAKS OF FIRE				Direct cost of extin- guishing	Total cost
	Fire lines established during year (km)	Early burning of grasslands (hectares)	DIRECT LABOUR COSTS		AREA BURNT (HECTARES)			Value of forest produce lost				
			Fire lines, and early burning	Patrols, lookouts etc.	Indigenous forest		Grass, bush					
									Plantation			
Kitale ..	244.05	105.8	K£ 432.78	K£ 572.94	1,005.72	1	—	—	2.02	K£ 0.50	K£ 0.50	
Kisumu ..	103.77	863.00	821.59	906.78	1,728.37	11	20.47	—	3.02	1,196.75	258.01	
Eldoret ..	74.9	1,247.48	893.85	1,054.70	1,948.55	10	14.15	8.5	4.50	5,617.50	463.75	
Turbo ..	8.0	586.8	346.85	535.45	882.30	1	46.9	—	—	2,552.00	148.50	
Londiani ..	28.5	814.39	781.23	811.03	1,592.25	3	4.14	—	—	358.20	9.33	
Elburgon ..	92.34	469.7	929.23	505.54	1,434.77	1	—	—	—	176.00	1.23	
Thomson's Falls ..	30.5	1,806.30	714.72	1,813.13	2,527.85	17	1.81	5.0	118.60	396.00	208.02	
Nairobi ..	60.5	29.3	542.75	588.05	1,130.80	1	10.1	—	—	20.00	—	
Nyeri ..	82.80	424.54	412.86	45.00	457.86	13	100.0	—	128.37	52.90	15.52	
Southern ..	117.7	—	666.28	479.93	1,146.21	2	—	—	76.30	12.90	3.85	
Coast ..	24.70	173.9	208.05	43.60	251.65	15	—	—	197.30	—	—	
TOTAL ..	792.86	6,521.21	6,750.19	7,356.15	14,106.33	75	188.48	13.5	423.37	10,382.75	876.00	
						</						

ROUND LOG SALE 1960/69

Kenya Form 3

(In metric tons)

Year	Podo	Cedar	Cypress	Pinus R.	Pinus P.	Other Softwoods	Total Softwoods	Hardwoods	Total softwoods and hardwoods
1960	65,374	21,514	30,654	26,219	6	—	120,169	29,241	149,411
1961	32,444	13,794	20,894	115	18	—	67,265	12,762	80,026
1962	348,399	14,755	32,811	2,392	11	—	84,808	11,525	96,333
1963	31,986	10,366	37,731	3,258	164	—	83,512	9,833	93,266
1964	34,709	15,722	52,204	2,721	1,725	6	107,293	11,412	118,705
1965	38,014	14,315	68,438	3,027	909	385	124,925	11,845	136,770
1966	29,993	95,635	82,896	4,818	586	317	127,884	10,262	138,146
1967	24,534	12,380	111,049	2,199	1,016	185	151,367	11,542	162,909
1968	26,729	17,250	88,025	2,549	15,078	93	136,145	11,649	147,794
1969	2,589	1,835	126,801	516	371	50	132,252	9,077	141,329

EXPORTS OF TIMBER AND FOREST PRODUCTS 1960/69

Kenya Form 4

Year	Cedar pencil slats cu. m.	TIMBER					Charcoal Metric Tons	Mangrove poles No.	Mangrove bark Metric Tons	Wood carvings K£	Total value of all exports K£
		Cedar cu. m.	Podo cu. m.	Cypress cu. m.	Other softwoods cu. m.	Hard-woods cu. m.					
1960	1,132	1,064	9,133	4,376	36	8,408	920	551,741	166	—	1,139,923
1961	1,825	847	6,570	3,893	—	5,659	2,774	264,777	487	—	1,163,234
1962	1,534	1,103	6,115	6,340	19	5,468	5,433	338,023	729	—	1,254,401
1963	1,485	1,549	6,471	5,438	12	5,787	5,115	224,387	1,047	—	1,553,050
1964	1,170	1,504	9,263	5,331	77	5,620	8,150	507,303	616	237,501	2,138,412
1965	950	3,500	8,679	10,250	20	6,799	21,633	414,906	574	346,364	2,697,901
1966	257	1,892	6,019	12,945	18	6,447	18,744	305,584	372	399,527	3,141,713
1967	542	1,470	4,801	16,789	543	5,241	23,359	216,171	51	344,498	3,128,524
1968	286	1,536	4,612	26,637	4,997	2,414	23,447	388,273	25	313,581	3,631,260
1969	436	588	753	23,918	341	11,392	1,180,514	—	—	390	2,383,035

NOTE—Data for the years 1960–1966 have been amended and will not be the same as the annual reports for those years.

STATEMENT OF FIREWOOD SALES

Kenya Form 5

(Thousands of stacked cubic metres)

YEAR	KENYA NATIONAL FOREST			Trust Land Forests	Total
	Railway	Public	Total	Public	
Average of 1930-39	244.69	102.47	347.16	—	347.16
1940-49	457.81	286.02	743.83	22.17	766.00
1950-59	91.69	238.57	330.26	31.04	361.30
1960	9.41	222.13	231.54	28.41	259.95
1961	5.98	205.51	211.49	18.78	230.27
1962	Breakdown not available		257.28	17.45	274.73
1963			188.63	22.86	211.49
1964			190.08	21.16	211.24
1965			204.57	18.09	222.66
1966			262.08	38.83	300.91
1967			117.84	21.63	139.47
1968			264.46	9.88	274.34
1969			6,254.40	804.46	7,058.86

NOTES.—1. Railways ceased to be major consumers of wood fuel in mid-nineteen fifties.

2. Trust land forests includes gazetted forests formerly known as A.D.C. or County Council forests which are managed by the Forest Department. They were re-designated as Central Government forests vide Legal Notice No. 174/64 with effect from 1st June, 1963.

NEW PLANTING, REPAIRS AND MAINTENANCE 1961/1968

Kenya Form 6

YEAR	NEW WORK			REPAIRS			MAINTENANCE		
	Hectare	Total Cost	Cost per Hectare	Hectares	Total Cost	Cost per Hectare	Hectares	Total Cost	Cost per Hectare
1961	6,451	£	Sh.	320.84	£	Sh.	3,044	£	K£.
1962	5,522	—	82.58	180.27	—	20.31	—	—	20.26
1963	5,218	19,771	93.90	138.15	1,753	31.14	3,438	39,430	20.39
1964	4,566	22,481	75.78	104.98	2,449	25.38	3,406	51,068	20.96
1965	4,281	22,809	98.47	220.04	3,784	46.56	3,016	44,650	30.00
1966	41,77	23,653	106.56	262.44	4,696	34.39	3,597	49,307	29.63
1967	5,127	30,148	113.23	249.08	4,169	35.80	4,159	54,230	21.82
1968	5,535	32,441	117.60	1,669.73	3,169	33.48	38,583	52,576	26.09
			117.22			37.96			27.97

NEW PLANTING, REPAIRS AND MAINTENANCE 1969

Kenya Form 6—(Contd.)

YEAR	NEW WORK			REPAIRS			MAINTENANCE		
	Hectares	Total Cost	Cost per Hectare	Hectares	Total Cost	Cost per Hectare	Hectares	Total Cost	Cost per Hectare
		K£	Sh.		K£	Sh.		K£	K£
Kitale	319.35	2,225.38	138.92	50.90	591.70	232.50	8,852.50	7,602.31	17.18
Kisumu	318.86	7,891.90	520.80	20.24	255.60	252.57	1,067.91	3,905.30	73.14
Eldoret	1,093.61	3,859.99	71.88	726.40	768.72	21.16	5,370.97	6,206.63	23.11
Londiani	849.42	3,176.38	74.70	378.80	417.05	24.66	30,937.80	10,225.72	6.61
Thomson's Falls	783.45	3,776.60	73.80	404.40	509.19	25.18	11,939.70	15,604.97	26.12
Elburgon	909.70	5,487.35	106.21	60.00	32.15	10.72	16,442.70	19,473.22	23.68
Nairobi	592.60	1,374.54	50.02	75.80	195.34	51.45	8,375.70	13,831.42	33.02
Nyeri	628.87	3,513.67	104.77	114.20	238.27	41.73	4,296.32	128,317.37	59.61
Southern	296.15	4,207.46	225.00	110.00	206.52	37.55	956.20	6,870.83	143.70
Coast	65.70	1,624.20	451.79	—	—	—	318.70	404.86	25.40
TOTAL	5,858.71	37,137.47	116.58	1,940.75	3,214.54	33.13	88,558.50	96,942.63	21.89
Turbo	1,214.70	10,019.80	164.98	40.50	194.30	95.95	1,651.30	485.90	58.85
GRAND TOTAL	7,073.01	38,157.27	100.60	1,981.25	3,408.84	34.41	90,209.80	97,428.53	21.60

AREA OF PLANTATIONS BY DIVISIONS

(a) AREA OF PLANTATIONS AS AT 31ST DECEMBER, 1968

Kenya Form 7

Hectares

Division	Indigenous softwoods	Indigenous hardwoods	EXOTIC SOFTWOODS		EXOTIC HARDWOODS		Total
			Cypress	Pines	Timber	Fuel	
Kitale	221.79	10.91	2,712.86	2,807.88	39.99	323.20	6,116.55
Kisumu	14.94	1,669.33	772.04	1,099.28	29.89	313.91	3,899.39
Eldoret	311.48	336.13	6,201.80	6,599.34	521.96	117.16	14,087.87
Londiani	147.54	342.59	7,542.68	6,990.20	182.20	1,301.28	16,506.70
Thomson's Falls ..	633.47	105.85	5,482.28	4,744.98	403.19	722.35	12,092.12
Elburgon	732.05	33.94	7,523.28	6,737.91	670.23	549.04	16,246.45
Nairobi	294.92	310.27	4,393.90	6,352.09	421.37	2,320.98	14,092.53
Nyeri	896.48	1,153.02	4,262.20	5,313.81	157.15	562.77	12,345.43
Southern	54.94	75.95	1,062.92	3,225.16	59.38	754.67	5,233.02
Coast	—	20.60	—	808.40	13.74	12.93	855.67
TOTAL	3,307.61	4,058.59	33,953.96	44,679.18	2,499.10	6,978.29	101,475.34
Per cent	4.5	4.0	38.9	43.4	2.4	6.8	100.00
Turbo	—	—	—	1,913.34	—	—	1,913.34
GRAND TOTAL ..	3,307.61	4,058.59	33,953.96	46,592.52	2,499.10	6,978.29	103,389.07

AREA OF PLANTATIONS BY DIVISIONS—(Contd.)

(b) AREA OF PLANTING DURING 1969

Kenya Form 7—(Contd.)

Hectares

Division	Indigenous Softwoods	Indigenous Hardwoods	EXOTIC SOFTWOODS		EXOTIC HARDWOODS		Total
			Cypress	Pines	Timber	Fuel	
Kitale	—	3.30	165.68	150.37	—	—	319.35
Kisumu	—	28.33	55.60	149.29	75.74	9.90	318.86
Eldoret	—	—	720.27	373.34	—	—	1,093.61
Londiani	—	—	522.85	317.57	—	9.00	849.42
Thomson's Falls ..	—	—	182.06	601.39	—	—	783.45
Elburgon	—	—	498.00	377.70	—	34.00	909.70
Nairobi	—	—	332.10	212.70	—	47.80	592.60
Nyeri	—	78.40	285.27	242.95	—	22.25	628.87
Southern	—	0.40	11.70	253.05	15.00	16.80	296.95
Coast	—	—	30.50	35.00	—	—	65.50
TOTAL	—	110.43	2,804.03	2,713.36	90.75	139.75	5,858.71
Turbo	—	—	—	1,214.70	—	—	1,214.70
GRAND TOTAL ..	—	110.43	2,804.03	3,928.06	90.75	139.75	7,073.01

AREA OF PLANTATIONS BY DIVISIONS—(Contd.)

(c) UTILIZED, WRITTEN OFF OR RECOUNT

Kenya Form 7—(Contd.)

Hectares

Division	Indigenous Softwoods	Indigenous Hardwoods	EXOTIC SOFTWOODS		EXOTIC HARDWOODS		Total
			Cypress	Pines	Timber	Fuel	
Inter-station transfer ..	—	—	—	—	3·2	—	3·2
Maturity	—	—	33·1	—	—	—	331·1
Fire damage	—	—	—	—	—	269·7	269·7
Not established or unthrifty	—	35·2	301·9	96·4	99·1	38·9	571·5
Land required for other purposes	4·1	—	—	196·6	—	27·1	227·8
Resurvey of recount ..	—	—	—	—	—	—	—
TOTAL	4·1	35·2	633·0	293·0	102·3	335·7	1,403·3

ADDITIONS

Inter-station transfers ..	—	—	2,991·0	6,896·6	40·4	811·6	—
Resurvey or recount ..	—	171·6	—	—	—	—	171·6
TOTAL	—	171·6	2,991·0	6,896·6	40·4	811·6	10,911·2
Final adjustment ..	4·1	+35·5	+2,358·0	+6,603·6	—61·9	+475·9	+9,468·9

AREA OF PLANTATIONS BY DIVISIONS—(Contd.)

(d) Area of Plantations as at 31st December, 1969

Kenya Form 7—(Contd.)

Hectares

Division	Indigenous Softwoods	Indigenous Hardwoods	EXOTIC SOFTWOODS		EXOTIC HARDWOODS		Total
			Cypress	Pines	Timber	Fuel	
Kitale	222·19	14·27	2,844·34	2,962·94	40·06	323·75	6,407·55
Kisumu	14·97	1,761·18	818·13	1,243·22	35·99	335·34	4,208·83
Eldoret	311·30	301·60	6,582·60	7,314·70	425·80	108·50	15,044·50
Londiani	1,478·20	343·10	8,043·50	7,333·50	182·50	1,303·60	18,684·40
Thomson's Falls ..	630·40	106·00	6,258·20	5,010·20	403·90	723·60	13,132·10
Elburgon	733·60	734·00	7,878·90	7,099·10	671·80	565·20	16,982·60
Nairobi	295·60	314·00	5,520·00	6,575·90	421·40	2,388·30	15,515·20
Nyeri	897·93	1,223·44	4,390·13	5,481·03	155·46	586·03	12,734·02
Southern	—	25·80	8·80	884·00	20·20	34·80	983·60
Coast	—	21·10	18·20	839·40	20·20	31·00	929·90
Turbo	—	—	—	3,100·10	—	—	3,100·10
TOTAL	4,584·19	4,144·49	42,372·80	44,743·79	2,377·31	6,400·12	104,622·70
GRAND TOTAL ..	4,584·19	4,144·49	42,372·80	47,843·89	2,377·31	6,400·12	107,722·80
Percentage	4·3	3·8	39·3	44·4	2·3	5·9	100

Standard Form I
AREA OF GAZETTED FOREST RESERVES BY TYPE AS AT 31ST DECEMBER, 1969

Unit—Hectares

DIVISION	RESERVE	HIGH FOREST			BUSHLAND	BAMBOO	GRASSLAND	MANGROVE	FOREST RESERVE	GRAND TOTAL
		Productive	Protective	Total						
Kitale	G	14,529.8	21,137.2	35,665.8	10,079.7	14,506.7	4,415.5	—	64,667.7	—
Kisumu	T	40,006.3	38,832.8	78,839.1	9,679.0	16,661.0	21,956.2	—	127,135.3	19,083.1
Eldoret	G	4,143.6	46,116.3	50,259.9	4,364.8	4,046.9	—	—	58,671.6	—
Turbo	T	25,376.8	23,822.3	49,199.1	1,939.7	404.7	6,670.4	—	56,789.2	115,460.8
Londiani	G	28,127.4	12,030.7	40,258.1	5,170.6	2,410.7	3,741.6	—	51,581.0	—
Thomson's Falls ..	T	59,824.5	2,816.3	62,640.8	2,678.0	401.0	960.8	—	66,680.6	118,261.6
Elburgon	G	5,479.0	—	5,479.0	1,011.7	—	1,213.7	—	7,704.4	—
Nairobi	T	—	27,257.5	—	—	2,473.0	—	—	—	7,704.4
Nyeri	G	30,966.3	2,925.1	33,891.4	4,585.1	809.4	9,305.4	—	74,587.3	—
Southern	T	853.5	25,950.8	26,804.3	19,854.2	1,782.6	6,904.3	—	31,346.5	105,933.8
Coast	G	29,911.8	109,587.2	139,499.0	5,896.3	123.0	20,350.7	—	233,571.7	233,571.7
TOTAL	T	30,307.9	50,489.5	80,797.4	3,936.4	10,708.4	14,910.3	—	110,352.5	—
GRAND TOTAL	G	1,655.0	9,180.5	10,835.5	310.5	8,657.1	16,102.0	—	3,590.6	146,257.6
Grand Total as a percentage of total land area of Kenya	T	13,600.6	33,774.0	47,374.6	5,333.5	32,062.4	2,331.5	—	87,129.1	—
	G	710.5	216.3	926.8	232.7	—	81.3	—	1,240.8	88,369.9
	T	86,583.7	28,391.9	121,984.1	36,391.4	58,289.3	3,337.3	—	22,002.1	306,463.6
	G	1,166.6	59,939.8	61,106.4	25,158.1	—	197.0	—	86,461.5	—
	T	4,972.8	139.8	5,112.6	5,693.8	—	—	—	5,693.8	—
	G	45,691.0	2,762.0	48,453.0	30,280.1	—	—	—	30,280.1	35,973.9
	T	4,218.0	607.0	4,825.0	4,871.0	—	14,445.0	45,068.0	112,837.0	—
	G	453,183.0	247,631.2	700,814.2	82,415.7	126,280.0	67,293.2	45,068.0	1,034,340.5	—
	T	139,086.8	138,479.9	277,566.7	90,710.3	26,933.2	52,377.3	—	477,318.3	—
	G	592,269.8	386,111.1	978,380.9	173,126.0	153,213.2	119,670.5	45,068.0	1,469,458.6	1,469,458.6
	T	2.27	—	—	—	—	—	—	—	—

KEY:—G = Government

T = Trust

PROGRESS IN FOREST RESERVATION 1969

Standard Form II

Hectares

DIVISION	Government or Trust	AREAS APPROVED BUT NEITHER DEMARCATED NOR GAZETTED			AREAS APPROVED AND DEMARCATED BUT NOT GAZETTED			RESERVES DEMARCATED AND GAZETTED			Total as at 31-12-69
		At 31-12-68	Change during Year	At 31-12-69	At 31-12-68	Change during Year	At 31-12-69	At 31-12-68	Change during Year	At 31-12-69	
Kitale ..	G	—	—	—	—	—	—	77,026.0	35.1	76,990.9	76,990.9
..	T	207.2	0.5	202.3	10,126.9	6.1	10,133.0	113,804.6	7.9	113,812.5	1,241,471.8
Kisumu ..	G	—	—	—	—	—	—	58,509.1	625.7	59,882.4	57,882.4
..	T	—	—	—	26,236.7	87.7	26,324.4	57,912.4	471.1	58,383.5	84,707.9
Eldoret ..	G	—	—	—	—	—	—	51,463.3	5.2	51,458.5	51,468.5
..	T	—	—	—	—	—	—	36,593.7	10.2	36,583.6	36,583.6
Turbo ..	G	—	—	—	4,377.1	1,746.2	2,630.9	12,069.4	4,365.0	7,704.4	10,335.3
..	T	—	—	—	—	—	—	—	—	—	—
Londiani ..	G	—	—	—	—	—	—	88,681.6	14,094.3	74,587.3	74,587.3
..	T	—	—	—	—	—	—	31,313.1	33.4	31,346.5	31,346.5
Thomson's Falls ..	G	—	—	—	4,092.2	55.9	4,148.1	90,054.3	4,402.2	94,456.5	90,308.4
..	T	—	135.6	135.6	—	—	—	328,800.5	6.1	328,806.6	328,942.2
Elburgon ..	G	—	—	—	2,460.5	2,460.5	—	110,308.1	44.4	110,352.5	110,352.5
..	T	—	—	—	—	—	28.3	50,971.2	33.9	51,005.1	51,033.4
Nairobi ..	G	2.3	2.3	—	3,263.4	168.5	168.5	87,102.0	27.1	87,102.0	87,270.5
..	T	—	—	—	—	—	—	1,240.8	—	1,240.8	1,240.8
Nyeri ..	G	—	—	—	5,439.0	5,439.0	—	315,445.1	65.5	315,379.6	315,379.6
..	T	—	—	—	—	5,439.7	5,439.7	38,228.4	17,135.3	21,093.1	26,532.8
Southern ..	G	—	—	—	—	—	—	29,966.3	24,272.5	5,693.8	5,693.8
..	T	1,631.7	12.7	1,619.0	15,593.7	—	15,593.7	68,557.3	38,585.9	29,971.4	45,725.0
Coast ..	G	—	—	—	—	—	—	45,068.0	—	45,068.0	45,068.0
..	T	—	—	—	1,150.0	—	1,150.0	—	—	—	1,150.0
TOTAL ..	G	209.5	135.6	—	—	9,348.2	1,348.7	1,775,692.2	9,511.6	926,685.9	925,337.2
..	T	163.7	13.2	1,956.9	53,107.3	5,756.0	58,756.0	727,422.0	52,179.0	672,243.1	730,999.9
GRAND TOTAL ..	—	4,841.2	122.4	1,956.9	53,107.3	14,767.2	60,105.5	2,503,114.2	61,690.6	1,598,929.0	1,656,337.1

PROGRESS MADE IN WORKING PLANS

Standard Form III

Square kilometre

STATUS OF PLANS	AREA UNDER PLANS				Area not under plans	Total area Forest Reserves
	At 31-12-68	Added during period	Excluded during period	At 31-12-69		
1. Sanctioned and approved	1,676	49	146	1,579	—	—
2. Plans completed and awaiting sanction or approval	—	—	—	—	—	—
3. Plans under preparation	49	804	—	804	—	—
4. Areas for which plans have existed but for which the plans have expired ..	415	—	—	—	—	—
TOTAL	2,140	853	—	2,383	4,102	6,485

Standard Form IV

FOREST COMMUNICATIONS 1969

Kilometres

DIVISION	ROADS			FIRELINES			INSPECTION PATHS		
	On 31-12-68	Added during 1969	Abandoned during 1969	Total at 31-12-69	Added during 1969	Abandoned during 1969	Total at 31-12-69	Added during 1969	Total at 31-12-69
Kitale	418.4	12.9	—	431.3	No reliable information				
Kisumu	121.5	3.2	—	124.7					
Eldoret	527.5	66.6	2.5	591.6					
Turbo	78.5	63.5	—	142.0					
Londiani	604.1	19.3	—	617.0					
Thomson's Falls ..	1,142.5	55.8	1.6	1,196.7					
Elburgon	526.0	26.4	—	552.4					
Nairobi	641.7	2.4	—	643.9					
Nyeri	797.09	98.9	1.6	882.6					
Southern	181.1	—	17.7	163.4					
Coast	183.88	8.2	—	192.07					
TOTAL	5,222.27	357.2	23.4	5,537.67					

Standard Form V

SUMMARY OF FOREST OFFENCES 1969

Offences	Number of cases reported	CASES TAKEN TO COURT					CASES COMPOUNDED	
		Number of cases	Acquitted (Number)	Imprisoned without option of fine	Fined and/or ordered to pay compensation		Number of cases	Compensa- tion paid
					Number	Fine		
A. Illegal removal of forest produce	847	234	59	11	164	Sh. 7,608	Sh. 613	Sh. 7,709
B. Illicit grazing	557	174	23	28	123	10,086	383	5,840
C. Careless use of fire and illicit honey hunting	173	84	22	8	54	2,485	89	2,230
D. Damage to young trees	193	51	2	10	59	2,025	143	1,851
E. Other offences	432	261	66	41	154	8,648	171	2,600
TOTAL	2,202	804	172	98	534	30,852	1,399	20,230

PROGRESS IN REGENERATION AND AFFORESTATION

Standard Form VI

Hectares

DIVISION	REGENERATION OF EXPLOITED FOREST						AREA OF PLANTATIONS			
	On 31-12-68	Added during year	Excluded during year	On 31-12-69	On 31-12-68	Added during year	On 31-12-68	Added during year	Excluded during year	On 31-12-69
Kitale ..	..	..	..	..	..	..	..	..	..	..
Kisumu ..	..	..	..	..	..	..	..	..	..	..
Eldoret ..	..	..	..	..	..	..	..	..	..	..
Turbo ..	..	..	..	..	..	..	..	..	..	..
Londiani ..	..	..	..	..	..	..	..	..	..	..
Thomson's Falls ..	..	..	..	..	..	..	..	..	..	..
Elburgon ..	..	..	..	..	..	..	..	..	..	..
Nairobi ..	..	..	..	..	..	..	..	..	..	..
Nyeri ..	..	..	..	..	..	..	..	..	..	..
Southern ..	..	..	..	..	..	..	..	..	..	..
Coast ..	..	..	..	..	..	..	..	..	..	..
TOTAL	..	..	..	..	..	..	..	..	..	..

No reliable information

Standard Form VII

SALES OF TIMBER, FIREWOOD AND TELEPHONE POLES, 1969

Timber (True Cubic Metre)

	Podo	Cedar	Cypress	Pine .R	Pine P.	other	Total softwoods	Hardwoods	Total	Fuel wood	Charcoal	Total	Power and Telegraph Poles
Kenya National Forest ..	29,844.47	25,203.81	176,572.05	7,323.76	4,942.92	70.53	243,957.54	18,077.86	262,035.40	7,484.49	98,918.99	68,438.88	6,836
County Council Forest ..	6,918.25	899.48	3,612.74	8.15	324.83	—	11,763.45	5,436.76	17,200.21	13,869.61	8,391.53	39,461.35	850
TOTAL	36,762.72	26,103.29	180,184.79	7,331.91	5,267.75	70.53	255,720.99	2,351.62	279,235.61	21,354.10	107,310.52	407,900.23	7,686
Tons Cu. Metres	2,589	1,835	126,886	516	370	50	180,050	16,599	199,610	62,541	75,568	348,876	

F.T.—Fuel Tickets

Total fuel, charcoal and F.T.

F.T. 20,103.14
495,421.37

SALES OF OTHER FOREST PRODUCE, 1969

Standard Form VIII

Units as stated

Mangrove poles	Other poles	Bamboos	Withies	Fence posts	Mangrove bark	Plants	Seeds	Stone	Werram	Xmas trees
No.	R/M	R/M	H/L	Cu. M.	Kg.	No.	Kg.	Cu. M.	Tons	No.
534,510	1,999,258	1,363,330	201,695	12,873.39	123.00	497,525	249.83	12,748.70	1,242	2,116

Sand	Gum poles	Stone	Off-cuts	Clay soil	Bricks	Soil	Wattle bark	Grass	Hay	Cedar Shingles
M. Ton	Kg.	Tons	R/M	Ton	Number	Tons	Kg.	H/l.	Tons	Number
8,716	—	5,730	19,931	—	85,000	294	512.55	13,062	27	59,342

PRIMARY FOREST INDUSTRIES 1969

Standard Form IX PERSONS EMPLOYED (APPROXIMATE NUMBER) IN FOREST RESERVES AS AT 31ST DECEMBER, 1969

Division	Fuel Wood	Charcoal Burning	Bricks Stone	Poles	Fence Posts	Mangrove Cutting	Bamboo Cutting	Timber Sawmills	Timber Pitsawyers	Others	Total
Kitale ..	9	18	—	—	3	—	—	732	141	—	903
Kisumu ..	12	292	—	30	3	—	—	120	91	—	548
Eldoret ..	47	82	—	1	21	—	—	561	46	—	758
Turbo ..	—	—	—	—	—	—	—	—	—	—	—
Londiani ..	64	125	—	18	13	—	—	474	135	—	829
Thomson's Falls ..	137	150	—	20	70	—	—	707	273	—	1,357
Elburgon ..	122	364	—	11	40	—	—	793	—	17	1,347
Nairobi ..	124	157	—	69	87	—	—	275	123	123	835
Nyeri ..	358	320	—	106	460	—	—	352	816	185	2,597
Southern ..	22	34	—	—	—	—	—	20	—	—	88
Coast ..	94	83	—	135	22	675	—	40	—	1,157	2,206
TOTAL ..	989	1,625	—	390	719	675	—	4,074	1,514	1,482	11,468

TRADE IN TIMBER AND TIMBER PRODUCTS 1969

Standard Form X

Value in K£

ITEM	Quantity Unit	TRADE OUTSIDE EAST AFRICA				TRADE WITHIN EAST AFRICA				BALANCE
		Imports		Exports		Imports		Exports		
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Firewood including sawdust	Centals	—	—	100	59	48	19	321	392	432
Charcoal	"	—	—	492,912	294,599	39	11	294,611	105,961	+ 400,549
Sawlogs—conifer	Tonnes	—	—	—	—	—	—	—	—	—
Cypress	"	—	—	—	—	—	—	15.24	201	+ 201
Others	"	—	—	—	—	11.18	597	4.06	70	+ 527
Sawlogs—Non-conifer	"	—	—	—	—	—	—	—	—	—
Mvule	Cu. m.	—	—	—	—	7.46	4,332	—	—	4,332
Blackwood	"	—	—	0.03	382	—	—	—	—	382
Others	"	—	—	0.80	405	6.85	5,973	1.98	1,068	4,500
Pitprops (mine timber)	Tonnes	—	—	—	—	—	—	—	—	—
Pole and Posts	"	—	—	—	—	—	—	—	—	—
Mangroves	"	—	—	396,047	16,897	—	—	—	—	+ 16,897
Others	"	—	—	218	4,627	—	2,162	—	—	2,250
Sawn Timber—Conifer	"	—	—	—	—	—	—	—	—	—
Cedar	"	—	—	21,082	11,883	251.98	804	37,324	17,792	+ 28,871
Podocarpus	"	—	—	27,013	66,401	—	—	88,767	43,480	+ 32,253
Pencil slats	"	—	11,296	15,619	—	—	—	—	—	15,372
Others	"	—	—	141	52	1,746	1,245	12,093	5,443	+ 4,250
Cypress	"	—	—	94,985	49,463	3,999	1,762	763,223	273,765	+ 321,466
Sawn Timber—Non-Conifer	"	—	—	—	—	—	—	—	—	—
Mvule (Iroko)	"	—	—	21.23	606	2,085.9	28,253	19.46	276	+ 27,371
Camphorwood	"	—	—	38.43	844	—	—	48.67	759	+ 1,603
Blackwood	"	—	—	18.38	3,361	—	—	—	—	3,361
Mahogany	"	—	—	9.05	342	—	—	72.22	1,421	+ 1,763
Muhugu	"	—	—	—	—	15.25	451	—	—	451
Others	"	77.87	3,001	579.89	10,958	705.14	11,382	306.13	4,098	+ 673
Boxes, Cases, Crates etc.	Centals	2,209	7,017	580	2,991	3,835.2	181,701	14,742	70,595	+ 115,132
"Improved" or reconstituted wood	"	—	—	—	—	—	—	—	—	—
and wood simply worked	"	75,287	4,311	—	1,505	—	13,036	—	132,654	+ 116,812

Standard Form X—(Contd.).

TRADE IN TIMBER AND FOREST PRODUCTS 1969—(Contd.)

Value in K£

ITEM	Quantity Unit	TRADE OUTSIDE EAST AFRICA		TRADE WITHIN EAST AFRICA		BALANCE
		Imports	Exports	Imports	Exports	
		Quantity	Value	Quantity	Value	
Builders woodwork and prefabricated buildings of wood including doors						
Carvings	—	—	9,974	—	294,435	+ 243,280
Railways sleepers	Cu. m.	—	—	23.44	69,634	— 287
Veneer sheets	Sq. m.	16,000	4,717	—	390	— 4,717
Plywood	"	1,272,271	263,457	494,324	152,385	— 252,933
Cooperage products	"	—	69,945	6,641	—	— 14
Furniture wood	Gross	—	6,945	125,890	—	— 12,581
Matches	—	17,868	22,189	—	68,819	— 53,383
Other manufactures	—	—	—	—	10,834	— 12,913
TOTAL WOOD	—	—	384,840	—	571,378	+ 727,100
Paper and paperboard						
Manufactures	—	1,116,464	473,292	—	76,072	— 2,894,944
Fibreboards	Sq. m.	630,395	85,952	1,842	841	— 84,550
TOTAL PULP	—	—	4,817,244	—	76,913	— 2,979,494
Mangrove bark	Centals	—	—	—	—	—
Wattle bark	"	—	—	—	—	+ 4,322
Others for drying and tanning	"	3,504	28,914	3	14	+ 42,443
Cedar wood oil	Kgm.	—	—	—	—	— 31,326
Gum resins	Centals	2,014	19,739	9	85	— 19,652
TOTAL OTHERS	—	—	48,653	—	99	+ 58,439
GRAND TOTAL	—	—	5,250,737	—	648,390	— 1,149,475

Standard Form XI

SUMMARY OF REVENUE AND EXPENDITURE FOR THE CALENDAR YEAR 1969

	Revenue	EXPENDITURE								
		Central Government (Recurrent) Including R.A.S.	County Council Forests	Forest Development	Local Afforestation	Turbo Afforestation	Extraction Roads	Logging Unit	Forest Industrial Training Centre	Miscellaneous Projects
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
	£	£	£	£	£	£	£	£	£	£
1. Timber Royalties	232,212	—	—	—	—	—	—	—	—	—
2. Fuel Royalties	20,405	—	—	—	—	—	—	—	—	—
3. Seeds and Plants	7,439	—	—	—	—	—	—	—	—	—
4. Miscellaneous	35,131	—	—	—	—	—	—	—	—	—
5. Sundry (Offences compounded and unclaimed balances)	893	—	—	—	—	—	—	—	—	—
6. Reimbursements (County Council Forests)	58,910*	—	—	—	—	—	—	—	—	—
7. Logging unit receipts	19,506	—	—	—	—	—	—	—	—	—
8. F.I.T.C. receipts	62,382	—	—	—	—	—	—	—	—	—
9. Turbo afforestation scheme	209	—	—	—	—	—	—	—	—	—
10. Salaries and allowances	—	697,607	95,071	—	—	—	—	—	—	—
11. Travelling expenses	—	5,619	14,037	—	—	—	—	—	—	—
12. Replacement, maintenance and running expenses of vehicles	—	94,509	(included in item)	—	—	—	—	—	—	—
		30,376	3,150	—	—	—	—	—	—	—
13. Works expenditure	—	—	—	—	—	—	—	—	—	—
14. Purchase and maintenance of uniforms, boats, tools plants, equipment and stores	—	35,824	2,524	—	—	—	—	—	—	—
15. Miscellaneous	437,087	19,066	7,154	72,152	11,005	165,948	114,186	15,403	73,883	17,722
TOTAL	874,174	883,001	101,936	72,153	11,005	165,948	114,186	15,403	73,883	17,722

*Out of this amount £7,014 refer to development expenditure.

*Include £21,140 being transferred to A.I.A. in respect of revenue for Elgeyo County Council for period 1-7-64 to 30-6-68 kept under deposit pending the decision as to whether or not to credit to Government Appropriation.

REVENUE AND EXPENDITURE 1960-1969

Standard Form XII

Year				Revenue	Expenditure	Surplus or deficit	Value of free issue
				K£	K£	K£	K£
1960	..	..	..	263,392	711,598	—488,206	3,452
1961	..	..	..	179,145	769,739	—586,594	Not available
1962	..	..	..	174,364	732,139	—557,775	„
1963	..	..	..	153,002	790,611	—637,609	„
1964	..	..	..	187,471	881,197	—693,726	„
1965	..	..	..	198,406	1,131,919	—933,513	„
1966	..	..	..	185,820	1,269,157	—1,083,337	433 plants
1967	..	..	..	256,747	1,521,750	—1,265,503	205 plants
1968	..	..	..	310,298	1,629,499	—1,319,201	473 plants
1969	..	..	..	437,087	1,476,216	—1,039,129	160,000 plants

Standard Form XIII

STRENGTH OF FOREST STAFF ON 31ST DECEMBER, 1969

	SENIOR STAFF		INTERMEDIATE STAFF		SUBORDINATE STAFF		Clerical staff	Permanent labour Force	Other miscellaneous staff. Medical dressers, drivers, etc.
	Field	Specialists	Foresters and senior Foresters	Others	Rangers	Forest guards			
Head Office	2	—	2	4	—	—	7	30	1
Research and planning conservancy	6	4	16	16	8	—	8	11	9
Forest Industrial Development Conservancy	6	10	11	6	1	—	4	414	6
<i>West Conservancy</i>									
Conservator's Office	1	—	—	—	—	—	5	2	1
Kitale Division	—	—	7	—	8	—	7	480	13
Kisumu Division	—	—	6	—	7	—	6	132	11
Eldoret Division	2	—	10	—	18	—	13	1,008	27
Turbo Division	—	—	2	—	3	—	1	—	3
<i>Nakuru Conservancy</i>									
Conservator's Office	1	—	—	1	—	—	3	—	—
Elburgon Division	—	—	9	—	19	—	10	1,314	24
Londiani Division	1	—	12	—	22	—	13	1,379	24
Thomson's Falls Division	1	—	10	—	18	—	12	1,172	28
<i>East Conservancy</i>									
Conservator's Office	1	—	—	—	—	—	2	1	—
Nairobi	1	—	9	—	20	—	12	992	26
Nyeri	—	—	13	—	29	—	14	864	39
Southern	—	—	4	—	5	—	3	91	3
Coast	1	—	3	—	6	—	5	58	7
On Courses, Secondment etc.	—	—	—	—	—	—	—	—	—
TOTAL	23	14	114	29	164	895	125	7,948	222

