A STUDY OF BRITISH COLUMBIA'S TREE FARM LICENCE TENURE AND A DISCUSSION OF ITS APPLICABILITY IN KENYA

by

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We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

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Department of Forestry

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Date 30 April 1962
ABSTRACT

In Kenya, as in British Columbia, a high percentage of the forest land is owned by the Crown. Since Government controls most of the raw material for the forest industry, its timber disposal policies will have a considerable influence on the pattern of industrial development. The most suitable policy will be that which allows the maximum degree of industrial efficiency to be achieved and at the same time, adequately protects the public interest in the forest resource.

The main methods of timber disposal open to the Kenya Government are:

(i) To dispose of all Crown timber by public auction.

(ii) To grant leases of Crown timber to private enterprise concerns, Government retaining the responsibility for forest management.

(iii) To grant leases to private enterprise concerns and, in addition, to delegate to these same concerns the responsibility for forest management. Such a lease would be equivalent to British Columbia's Tree Farm Licence.

(iv) To dispose of Crown timber by outright alienation.

(v) To establish State manufacturing plants.
It is not essential that the Government commit itself to any particular one of the above alternatives in practice, a combination of two or more may be desirable.

This thesis is primarily concerned with the Tree Farm Licence method of timber disposal. The main objectives are: to study the progress of the Tree Farm Licence, to assess its advantages and disadvantages and to discuss its applicability in Kenya.

The main conclusions drawn are that the Tree Farm Licence has brought several important benefits to British Columbia and in particular, has encouraged the establishment of the large integrated forest industries which play an important part in supporting the Provincial economy. The introduction of a similar licence into Kenya would be desirable, but for political reasons probably impracticable at present.
ACKNOWLEDGEMENT

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He would like to express his appreciation to those staff members of the University of British Columbia, officials of the British Columbia Forest Service and representatives of Industrial and other organisations, who assisted him to collect the information on which this thesis is based. His particular thanks are due to Professor J. H. G. Smith, of the Faculty of Forestry, of the University of British Columbia, under whose supervision the thesis was written and to Mr. A. Schutz of the British Columbia Forest Service.
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Introduction

British Columbia's productive forest area covers approximately 118 million acres and approximately 54 per cent of the Provincial land area. Forest industry provides a major proportion of the Provincial income; in 1960, the total value of forest production ($738,360,000), represented approximately 40 per cent of the total net value of Provincial production. Approximately 93 per cent of all the accessible mature forest land is owned by the Crown and forest policy favours the retention of forest land under Crown ownership.

The history of forest tenures in British Columbia is complicated, and to give a complete description of all the tenures used in the past would be beyond the scope of this thesis. A brief outline of each tenure is given in the British Columbia Forestry Handbook (University of British Columbia, Forest Club 1959). The significant feature of the various tenures awarded prior to 1944, was that they failed to make adequate provision for restocking of logged over lands. The system of temporary tenures, whereby timber lands reverted to the Crown when logged, encouraged operators to cut their mature timber and move on to other areas.
The approximate tenure position in 1944 is shown in Table 1.

### TABLE 1. FOREST LAND TENURE POSITION IN BRITISH COLUMBIA IN 1944
(Source: Sloan 1957 vol. 1 page 37)

<table>
<thead>
<tr>
<th>Tenures</th>
<th>Number of Contracts</th>
<th>Area (Acres)</th>
<th>Tenure Percentage</th>
<th>Percentage of Total Productive Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crown grants</td>
<td>1</td>
<td>5,175,500</td>
<td>57.1</td>
<td>6.90</td>
</tr>
<tr>
<td>Timber sales</td>
<td>3,721</td>
<td>978,000</td>
<td>10.8</td>
<td>1.31</td>
</tr>
<tr>
<td>Timber berths</td>
<td>205</td>
<td>424,671</td>
<td>4.7</td>
<td>0.57</td>
</tr>
<tr>
<td>Timber licences</td>
<td>2,850</td>
<td>1,795,817</td>
<td>19.8</td>
<td>2.39</td>
</tr>
<tr>
<td>Pulp licences</td>
<td>252</td>
<td>155,778</td>
<td>1.7</td>
<td>0.21</td>
</tr>
<tr>
<td>Timber leases</td>
<td>152</td>
<td>197,939</td>
<td>2.2</td>
<td>0.26</td>
</tr>
<tr>
<td>Pulp leases</td>
<td>33</td>
<td>335,611</td>
<td>3.7</td>
<td>0.44</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>7,213</strong></td>
<td><strong>9,063,316</strong></td>
<td><strong>100.0</strong></td>
<td><strong>12.08</strong></td>
</tr>
</tbody>
</table>

1 Including Indian reserves, E. and N. land, small wood-lots.

Of the tenures listed in Table 1, Crown granted lands were outright alienations; the remainder were temporary tenures of various lengths.

The British Columbia Forest Service, like many others, has always been severely handicapped by a shortage of funds and staff and intensity of forest management, has often fallen short of what Foresters would normally consider as desirable. Early exploitation was virtually unregulated and failure of natural regeneration of the desirable commercial species, frequently resulted in invasion of logged over forest lands by commercially useless scrub. Methods of logging were wasteful...
and, it is alleged, caused soil erosion and general site deterioration. The primary objectives of most forest operators were, to liquidate their forest holdings and to make as much profit as possible in the process; in short, to "cut and get out".

The appointment of the Sloan Commission

In 1944, public concern over the situation described above, led the Provincial Government to appoint the Honourable Gordon MacGregor Sloan, Chief Justice of British Columbia, as sole commissioner of a Royal Commission which was to examine the position and make recommendations for future improvements. The Royal Commission's report, (Sloan 1945), made numerous recommendations, including the introduction of a form of tenure which would encourage private companies and individuals, to manage their forest lands on a sustained yield basis. A "perpetual forest management licence", was suggested as a suitable tenure for this purpose and, in 1947, the Forest Act was amended to allow for its introduction. In 1958, legislation amended the name to Tree Farm Licence and made the licence a 21-year lease. The term Tree Farm Licence is used throughout this thesis.

The progress of the licence was discussed in a second Royal Commission Report, (Sloan 1957).

Objectives of the Tree Farm Licence

The main objective of the Tree Farm Licence, is to encourage
the practice of sustained yield forestry by companies and private individuals, on both freehold land and land held under temporary tenures from the Crown. Sustained yield is desirable, in order to ensure that, forests will provide a continuous and increasingly valuable asset, with long term benefits to the economy of the Province. Assured continuity of raw materials to industry, helps to ensure the construction, maintenance and uninterrupted operation, of expensive, integrated conversion plants and should result in a higher utilisation return and more effective competition in world markets. Stability in forest industry is desirable, in order to ensure maximum continuity in employment and the establishment of stable and prosperous communities. In addition, the system has partly transferred from the Forest Service to Industry, the responsibility for forest management of certain areas of Crown land, overriding control however, remaining with the Crown.

Summary of conditions

A full description of the Tree Farm Licence contract is given in Appendix I. A summary of the main conditions is given below, as a background to the discussion which follows.

Tree Farm Licences are awarded generally to maintain the manufacturing plant owned and operated by a company in a specified locality, or, to encourage investment in a new plant. Industrial plants must be capable of utilising the allowable cut of the licence. The plant is appurtenant to the lease, one cannot be sold separately from the other. Some licences have also been awarded to applicants with no industrial plant.
Field surveying of the licence boundaries is the responsibility of the licensee. Management must be carried out within the general terms specified in the British Columbia Forest Act (Revised Statutes of British Columbia, Chapter 153, 1960), and in accordance with the detailed prescriptions of a working plan, prepared by the licensee, and approved by the British Columbia Forest Service. In order to ensure satisfactory technical management, the licensee is required to employ at least one Registered Forester. The licensee must include all his own suitably located forest lands in the licence, as well as any such lands acquired after the date of signing the licence. All the productive forest land in the area must be kept under suitable growing stock. This entails artificial regeneration of those areas on which natural regeneration fails to appear within a specified period, which varies according to site quality. Within stated limits, the licensee must remove an approved annual cut from the area. Logging is controlled by the issue of cutting permits. The cutting permit states the methods of logging to be used and the stumpage and royalty to be paid. A sample cutting permit is included in Appendix II. Stumpage is calculated by the Forest Service, taking into consideration the management, protection and silvicultural costs incurred by the licensee. The actual method used, is discussed later. A rental, based on productive forest area, and a forest protection tax, based on annual cut, are also payable. The licensee is responsible for the costs of fighting all fires breaking out in the area, up to certain limits. In granting a licence, the Government reserves the right to withdraw land for various purposes,
such as railway and transmission lines, parks, etc. Mining, trapping, hunting and fishing interests are also protected. In the event of failure to comply with licence clauses, such as those relating to regeneration of cut over areas, the Government reserves the right to carry out the necessary operation at the licensee's expense. In the case of insect and disease epidemics, the British Columbia Government assumes half the financial liability for control measures that are undertaken.

Subject to the licensee accepting these obligations, the licence is granted for a period of 21 years and is renewable, if the obligations have been observed during the licence period. The contract is subject to periodic review and can be cancelled if the conditions have not been met.

Public Working Circles

In addition to Tree Farm Licences, the 1945 Royal Commission Report recommended the formation of Public Working Circles, areas of Crown forest land to be managed on a sustained yield basis by the Government Forest Service. The main reasons for this decision were: to extend sustained yield management to areas of Crown forest land outside Tree Farm Licences and, to establish areas of sustained yield forest from which smaller operators without Tree Farm Licences would be able to draw their log supplies. Timber from Public Working Circles is sold by public auction under a Timber Sale contract, a sample of which is included in Appendix III. In recent years, established
operators have been given preference under a "licensee priority" system, to be discussed later.

Tree Farms and Farm Wood-lot Licences

These are two other forms of tenure which encourage owners of Crown granted lands to practise sustained yield forest management. In the case of Tree Farms, taxation concessions are made and for Farm Wood Lot Licences, the incentive is an allocation of adjacent Crown timber not exceeding 640 acres.

Progress of the sustained yield program

Table 2, gives an indication of the progress made in placing Crown forest lands under sustained yield management since 1944.

TABLE 2. PROGRESS TO 1960 OF THE SUSTAINED YIELD PROGRAM

<table>
<thead>
<tr>
<th>Type of unit or tenure</th>
<th>No. of units</th>
<th>Productive area (acres)</th>
<th>Allowable annual cut (M.C.F.)</th>
</tr>
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<tbody>
<tr>
<td>Public Working Circles</td>
<td>72</td>
<td>40,257,302</td>
<td>464,620</td>
</tr>
<tr>
<td>Tree Farm Licences, operating and awarded</td>
<td>39</td>
<td>7,099,111</td>
<td>296,695</td>
</tr>
<tr>
<td>Tree Farms (excluding those in tree farm licences)</td>
<td>24</td>
<td>506,922</td>
<td>22,095</td>
</tr>
<tr>
<td>Farm Wood-lots</td>
<td>49</td>
<td>11,002</td>
<td>311</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>184</strong></td>
<td><strong>47,874,997</strong></td>
<td><strong>783,721</strong></td>
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</table>

Appendices IV and V, give details of the Tree Farm Licences awarded up to December 31st, 1961.
THE LARGE INTEGRATED FIRM, VERSUS THE SMALLER INDEPENDENT OPERATOR

In British Columbia, there are two distinct industrial groups, the large integrated forest industries and the smaller independent or semi-independent loggers or sawmillers. In order to provide a background to the discussion of Tree Farm Licences which follows, it is intended to examine briefly, the relative positions of these two groups.

At the end of 1960, the six largest integrated companies in British Columbia, controlled approximately 30 per cent of the total Provincial annual allowable cut, from those managed lands indicated in Table 2.

The large integrated firms have several advantages over smaller operators. These are:

(i) They usually have long term security over their timber supplies, and therefore do not have to compete for these on the open market.

(ii) Economies of scale help them to achieve lower production costs.

(iii) Integration enables them to make the most effective use of waste residues.
(iv) They have greater opportunity to diversify their activities and are usually more stable than smaller firms.

(v) They have several important marketing advantages. They are able to employ their own sales and marketing organisations and can more readily gain access to quality markets. Because of this they make fuller use of raw material.

(vi) They have greater incentive for research and development.

Because of these advantages, there has been a noticeable trend in North America towards concentration of forest land ownerships. Both the southern United States in the 1930’s, and the West Coast in the 1940’s, entered eras of extensive forest acquisition by large private firms. Disregarding the influence of tenures, the inference is that, large industrial units eventually assert their economic superiority. The same trend has also been noticed in certain branches of agriculture. Gibson (1956), compared the amalgamations which have taken place in British Columbia’s forest industry, with similar concentrations of ownership in the Saskatchewan farming industry between 1939 and 1951, during which period, approximately 40,000 small farms were concentrated into 8,500 large units.

Because of the size of their investment and long term interest, the larger integrated companies have an important stake in forest management. They secure the greatest financial return from the forest resource
in terms of conversion value per unit of raw material and are socially desirable, in that they help to ensure community stability.

The small independent operator is, nevertheless, an important part of the forest industry. The existence of the truly independent market logger in British Columbia, has been due to an excess of timber over mill capacity. He has remained in business, partly because of difficult terrain. Good quality timber often occurs in small pockets and under such conditions, owner operated concerns can operate efficiently.

An open log market is dependent on a large forest area being within easy competitive reach of a concentration of industries. This situation has prevailed on the Coast because of the excellent network of waterways and low costs of log transportation. This explains why there has been no open log market in the Interior of the Province.

It is generally agreed that, the number of truly independent loggers is declining. This is because timber supplies are becoming limited and this has prompted sawmillers and other consumers to acquire their timber before it reaches the market in the form of logs. Much of the land formerly operated by market loggers is now tied up in the form of leasehold tenures, which supply specific manufacturing plants. At the same time, logging methods have changed and efficient operation requires higher capital investment in equipment. Many of the small operators are unable to finance their own operations and have become tied, financially, to larger concerns from whom they borrow funds. It is said that the future of the independent market logger lies in contracting for the larger mills.
Industrially, the smaller operators are important as a group of sturdy independent business men, competing in the timber industry, or supplying an essential service to larger industrial units. In some situations, they can operate more efficiently than the larger companies and partly because of this, the present trend is for the latter to contract out a proportion of their logging operations rather than do the job themselves. By virtue of their number, and because public sympathy favours the small individual or company, rather than the large corporation, they command considerable political influence. Their interests are often short term and because of this they have sometimes earned the reputation of being poor forest managers.

The comments made above, do not necessarily apply to all operators. There are many medium sized firms which manage their manufacturing plants and forests as well, if not better than, large integrated companies. The present trend is towards the amalgamation of smaller firms into larger units and forest management should benefit from this.
The basic principles governing the award of licences at present are:

(i) The applicant must be able to provide from his own lands at least 25 per cent of the timber required to make up the licence area. Generally speaking, priority is given to the major owner of private timber within an area.

(ii) Existing industry is given preference where there is more than one applicant. First priority is given to the pulp and paper industries, because of their relative stability, size of the investment and the social and economic benefits they bring to the Province.

(iii) If several established operators cannot agree as to who should get the licence, the general policy is to turn the area into a Public Working Circle.

When the earlier applications were under consideration, applicants who had mature volumes of their own, but not enough for a sustained yield operation, and who were willing to allocate enough private timber to satisfy the allowable cut of the licence on a sustained yield basis, on the condition that, they be allocated areas logged over or immature from land, were given preference over those who required mature
Under these circumstances, the Crown benefited from a revenue return from the mature timber, but the licensee took over the responsibility for management of the second crop. Tree Farm Licence Number 2 was an example of this arrangement.

A number of earlier licences were also awarded on the "first come, first served" principle.

The mechanics of the actual application are defined in the Forest Act (Revised Statutes of British Columbia, Chapter 153, 1960). The main requirements are:

(i) The application must be made in writing in a form prescribed by the Minister and must contain a description of the lands desired.

(ii) If the lands appear available for a Tree Farm Licence, the Minister instructs the applicant to publish in one issue of the British Columbia Gazette, and in specified newspapers, a notice of the application, together with a description of the lands applied for.

(iii) Not less than sixty days after publication of the notice of application, the Minister may place the lands applied for under reserve, to enable the applicant to prepare a working plan.

(iv) No Tree Farm Licence is issued, until the working plan has been approved.
The influence of existing privately owned forest land

The amount of privately owned timber an applicant can contribute is one of the first criteria of his suitability for a licence. It is not essential that he own any timber, if he intends to apply for a licence in an undeveloped area, where there are no established operators. Most of the privately owned timber in British Columbia lies in the Coast region, where, as can be seen from Appendix V, the proportion of private-to-Crown timber is fairly substantial in most of the licences issued. In the Interior, there is comparatively little private timber and many of the licences issued there have no private timber at all.

In the Coast region, existing ownerships often controlled access to remaining areas of Crown timber and the timber would probably have gone to them anyway. Much of this remaining timber was marginal, and would not have justified expenditure on costly alternative access roads.

Definition of existing industry

Except for pulp and paper industries no preference has been given to industries of a particular size; the term "established industry," included independent market loggers with no conversion plants. Since smaller operators do not bring the same economic and social benefits to the Province, as the larger integrated firms, several witnesses who gave evidence to the 1956 Royal Commission suggested that, licences should be awarded on the basis of size of investment;
On principle, the conversion plant and not the logger should get the management ("Tree Farm") licence. And again on principle, the pulp mill and not the sawmill should be awarded the licence, as it gets the highest possible value for the end product per thousand feet of logs consumed. (Argument for Commission Counsel Vol. II, 82-2 (i)).

Politically, it would probably have been impossible to have excluded independent loggers from acquiring licences.

The Chief Forester stated in 1956, that the Forest Service was disappointed at the number of applications for smaller licences. Of the 39 licences in existence at the end of 1961, only four have no conversion plant. The present Tree Farm Licences range from 4353 acres, with an allowable annual cut of 208,000 cubic feet, to 2,537,673 acres, with an annual allowable cut of 30,000,000 cubic feet.

Where an application has included a conversion plant, the amount of timber granted, has depended on the potential capacity of the licensee's existing plant calculated on the basis of the last few years' performance. No set rule appears to have been observed but, in the "Argument for Commission Counsel," on which the second Royal Commission report was based, (Sections 81-2 and 84-1), it was frequently suggested that, a figure of approximately 80 per cent of the licensee's present requirements was considered a reasonable allocation, since this encouraged the practice of good forestry. In three of the early contracts, the annual yield was restricted to a specified maximum volume, being the estimated consumption of a certain plant, rather than to the
sustained yield capacity of the land as approved by working plans. Since a basic requirement of Tree Farm Licences is that, the whole area be managed for an annual production, "adjusted to the sustained yield capacity" of the licence area, this earlier restriction has not been applied to any of the later licences issued. Once demarcated and approved, the Tree Farm Licence boundaries are fixed and the licensee is thereby assured that his conversion plant will secure any increase in timber volume, which may result from more intensive forest management.

Appurtenance

Subsection (24), of section 36, of the Forest Act provides that:

Where a Tree Farm Licence is given for the maintenance of an existing or proposed mill or manufacturing plant, the Minister may make the licence appurtenant to the mill or manufacturing plant, and any such licence shall not be sold or transferred separately from the mill or plant during the continuance of the licence and any other tree farm farm licence shall not be transferable except on written consent of the Minister.

This clause has both economic and social implications. It is a measure of guarantee that a manufacturing plant will remain in an area even if the ownership changes hands.

Criticism of past awards

The Provincial Government was criticized for its handlings of earlier licence applications. It was contended that, prior to 1956, there were no clearly defined regulations to
It was suggested that, certain licences were awarded on the basis of inadequate inventory data thereby placing some companies in a more advantageous position than others. There was no clearly defined policy over the procedure for dealing with protests and in some cases they were discussed at public hearings, while in others they were not. The 1956 Royal Commission Report helped to clarify the situation and, as noted earlier in this section, the rules and principles governing an award are now more clearly defined. If a large number of protests are received, public hearings may be held.

There is still a division of opinion in British Columbia, between those who maintain that, the present system of allocating licences, where each case is considered on its merits and the final choice rests with the Minister, is less satisfactory than a system of public auctioning, as has sometimes been used in Eastern Canada. As the principles governing the award are defined at present, there should, in theory, never be a case where the Government could be accused of favouritism. It need never have to make an actual choice between one applicant and another, if it adheres to its policy of creating Public Working Circles wherever controversy exists.

Those who advocate a system based on auctioning of licences, maintain that this is the only fair method of allocation and, that it protects the Government from possible criticism. Opponents of this system argue that it could lead to speculation, and does not necessarily ensure that the best firm to do the job, actually gets the licence.
PROGRESS OF THE TREE FARM LICENCE

Introduction

The objective of the following sections is to discuss various questions which might be asked if use of the Tree Farm Licence were under consideration in other countries. The questions are:

(1) Has the major objective of the licence, the encouragement of sustained yield forest management been achieved?

(2) Have logged over lands been satisfactorily restocked?

(3) Have adequate standards of forest protection been maintained?

(4) Have working plans been prepared as required and are these of a satisfactory standard?

(5) Have licensees stayed within the allowable annual cut or has there still been a tendency for them to "cut and get out"?

(6) Have licensees carried out any research?

(7) Have indirect forest benefits such as catchment protection been adversely affected?

(8) Has private enterprise forest management of Tree Farm Licence lands been any better than that practised by the Government
on Public Working Circles? If so, what are the reasons for this?

(9) Has forest development had any greater financial security than in the past?

(10) Has the licence encouraged investment in manufacturing plants? Would such investment have taken place without such a licence?

(11) Has the licence helped to create more stable communities?

(12) Has vertical integration of forest and industrial management been of any benefit, if so, how?

(13) Have there been any major points of controversy between licensees and the Government. If so, what have they been?

(14) Has there been any opposition to the licence? If so, for what reasons?

(15) How have Tree Farm Licences been administered and has the Forest Service found it necessary to exert pressure on licensees in order to ensure that they comply with the conditions of the licence contract?

(16) Was the Tree Farm Licence introduced at the right time or should it have been introduced earlier or later than 1947?
(17) What would have happened if no tree farm licence had been introduced?

(18) What are future trends likely to be? Will such licences be necessary or even desirable in the future?

(19) Can the licence be recommended for use in other countries?

A detailed examination of every Tree Farm Licence area in British Columbia would have taken longer than the period available for this study. The information collected is the result of:

(i) A study of the annual reports on forest operations which Tree Farm Licensees are obliged to submit to the Forest Service. Permission was obtained to read the reports covering 21 out of a total of 39 licence areas. Of the remaining 18 licences, annual reports were not available for the three licences awarded in 1960.

(ii) A study of the 1945 and 1957 Royal Commission reports on the Forest Resources of British Columbia, and of the evidence on which these reports were based.

(iii) A study of the submissions made by various companies and other interested groups to the 1956 Royal Commission.

(iv) Correspondence with the Chief Forester of the British Columbia Forest Service and several Tree Farm Licence companies.
(v) Discussions with Forest Service officials, and company representatives in the Vancouver, Kamloops and Nelson Forest Districts. Discussions were also held with representatives of organisations which have opposed the Tree Farm Licence.

(vi) Field trips to several Tree Farm Licence areas made in conjunction with both Forest Service and Company officials.

In attempting to assess the progress of the Tree Farm Licence it was necessary to take into consideration the fact that acceptable standards of forest management in British Columbia do not necessarily correspond with those of other countries. Economic circumstances do not permit the same intensity of utilisation and forest management as is practised for instance, in many European countries.

It was also necessary to remember that, under the conditions of the British Columbia Forest Act, all operators on Crown forest land are required to observe certain standards of forest protection and to carry out specified operations such as slash burning. An attempt was made to assess whether or not, Tree Farm Licensees carry out such operations any more thoroughly than other operators and, to examine in particular, those operations which Tree Farm Licensees are obliged to carry out in addition to the normal requirements of the Forest Act.

(I) Encouragement of sustained yield forest management

The area of forest land placed under Tree Farm Licence tenure
up to 31st December 1960 was 7,099,111 acres. This represented approximately 15 per cent of the total area of forest land under sustained yield management and contributed approximately 37 per cent of the total annual allowable cut. It can therefore be stated with some certainty that the Tree Farm Licence has encouraged private companies and individuals to place their forest lands under sustained yield management.

Before entering into a discussion of individual aspects of forest management, it can be noted that the British Columbia Forest Service believes that, in general, standards of forest management on Tree Farm Licence lands have improved since the licence was introduced:

We consider that the award of Tree Farm Licences has resulted in a definite improvement in forest practice. (Personal correspondence, November 1958, Chief Forester, British Columbia Forest Service.)

(2) Restocking of denuded lands

Restocking of denuded lands is one of the obligations of the Tree Farm Licence contract. It is an obligation which is not required of operators in Public Working Circles where the responsibility for restocking rests with the Reforestation Division of the British Columbia Forest Service.

Under the terms of clauses 19 and 20 of the Tree Farm Licence
contract (January 1961 edition), licensees are required to keep all potentially productive forest land under growing stock. Any areas above a certain site quality which were in a denuded condition prior to the date of signing the licence, have to be reforested at a rate of not less than a thousand acres per annum, or ten per cent of the total area of such lands, whichever is the lesser. Any areas denuded after the date of signing the agreement (usually as a result of logging), must be restocked within 7 years of denudation, except for certain areas of defined lower site quality which must be restocked within 10 years.

Each company, in its annual report on forest development in the Tree Farm Licence is required to submit a return indicating the areas restocked. These are spot checked by members of the British Columbia Forest Service to ensure that stocking is of the required standard. The "stocked quadrat" method is used. By this method, groups of four square plots (each 6.6 feet square or an equal area in a circle) are examined at $\frac{1}{2}$ chain intervals on parallel lines run 10 chains apart. Each of these plots contain one-thousandth of an acre and is known as a milacre quadrat. Each quadrat is considered to be stocked, if it contains one or more established seedlings of a commercial species, provided no more than four consecutive groups are completely blank. "Established" means in condition to have a good chance of survival. If 31 per cent or more of the quadrats are stocked, the condition of the area is defined as adequate stocking. If 30 per cent or less, the area is not satisfactorily reforested.
Examination of Tree Farm Licence annual reports covering 21 licence areas, and discussion with Forest Service officials disclosed that restocking requirements have been satisfied in all but two cases. In one of these, commitments in a recently submitted working plan have been accepted as evidence of the company's intent to restock. In the other, a working plan is due in 1962, and its acceptance will be dependent on inclusion of an adequate restocking program.

In British Columbia profuse natural regeneration normally appears after denudation. Smith, Ker and Csizmazia, (1961) suggested that, in the Vancouver Forest District, 75 per cent of the land annually logged will restock naturally with commercial tree species. Nevertheless, the remaining 25 per cent, much of which will be sites of above average quality, will revert to brush or less desirable tree or shrub species unless reforested artificially. Even on land that is restocked naturally, important values are lost each year because of incomplete or delayed regeneration, increased predominance of species of lower commercial value and the difficulty and added expense of managing irregular natural stands. Because of this, artificial restocking is still necessary in many areas.

The British Columbia Forest Service and Tree Farm Licence company annual reports give details of acreages of Tree Farm Licence lands artificially restocked. Of a total of 18,185 acres of planta-
tions established in the Province by all agencies in 1960, for example, Industry planted more than 14,000 acres Tree Farm Licence lands. Forest Service officials in the Vancouver Forest District, (which contains 18 of the Tree Farm Licences awarded to date), confirmed that restocking on Tree Farm Licence lands is, in general, more assured than in Public Working Circles.

(iii) Forest protection

Forest protection in British Columbia is mainly concerned with fires, insects and disease. Of these, fires are the most obvious cause of timber loss. In the 10 year period 1951-1960, it was estimated that 22,077 fires destroyed or damaged 598,899 thousand cubic feet of standing timber and that total damage to forests and other forms of property exceeded $20,000,000. (British Columbia Forest Service Annual Report for 1960, p. 117)

All operators in British Columbia are required to observe standards of forest protection defined in Part XI of the British Columbia Forest Act. The most important obligations are:

(i) To maintain adequate fire fighting equipment.

(ii) To dispose of slash and dead standing trees (snags), left behind after logging operations. Disposal is usually by burning, but the Minister may direct an alternative method if he so desires.
(iii) To observe forest closure periods during times of exceptional fire hazard.

(iv) To be responsible for a fire fighting force equivalent to the company crews working in the area, and to fight any fire which may occur on the licence area.

(v) To pay a Forest Protection Tax at the rate of 9 cents per thousand feet board measure or 5 cents per hundred cubic feet, of the approved annual productive capacity of the licenced lands. (The money thus collected by Government, is credited to a fund which is used to finance part of the annual cost of fighting forest fires in the Province).

To attempt a complete survey of the methods of fire protection employed by Tree Farm Licence companies, would have been beyond the scope of this thesis. The Forest Service acknowledges that Industry is in general observing the requirements of the Forest Act and this was also suggested in the 1957 Royal Commission Report.

Industry as a whole is manifesting a genuine desire to co-operate fully with the Forest Service in matters of fire protection. A number of the larger companies (which have the most to lose and the money to spend) have assumed obligations in that behalf in instances in excess of requirements imposed by the Forest Service, both in relation to personnel and equipment. (Sloan 1957)
Forest Service officials confirmed that standards of fire protection on Tree Farm Licence lands have usually been more intensive than those practised by operators in Public Working Circles. The present trend towards more permanent operations on Public Working Circles may lead to improved fire protection.

The protection plans submitted by licensees as part of the working plan requirement are carefully scrutinised by the Forest Service and suggestions made to ensure that they meet the minimum requirements for fire control planning.

Protection from insect pests is mentioned in section 28 of the Tree Farm Licence contract. This requires that, in the event of what is considered to be a controllable outbreak of insect attack, the Government and licensee shall take such control measures as shall be mutually agreed upon, providing that, the cost of such control measures to the licensee at his own expense, shall not exceed one-half of the cost of such control measures incurred during that calendar year or, the total value of that year's allowable cut whichever may prove to be the lesser.

The provisions of this section have been put into practice on several occasions. On Tree Farm Licence number 6, for example, an outbreak of Black headed Budworm was successfully controlled by aerial spraying of insecticide and the costs were shared between the company and the Forest Service.
Research associated with forest protection is discussed in a later section.

Preparation of working plans

An applicant for a Tree Farm Licence is required to submit a working plan for the proposed area. The plan must be submitted to the Chief Forester and a licence is not awarded until the plan has been approved. The initial plan is usually for a short period (3-5 years), which allows the company time to gather data from which a revised and more complete plan can be prepared. Subsequent revisions occur at five or ten year intervals, depending on the amount of information available.

During the course of the present study, several working plans were examined in detail. Some of these were of an exceptionally high standard whereas others were not as good. They showed no greater variation than would probably be found in a random selection of working plans prepared by several different members of the same State Forest Service. All the plans examined were prepared by British Columbia Registered Foresters (defined later). Since no licence is awarded until the applicant's working plan has been approved, it can be assumed that plans relating to licences already awarded have met with Forest Service requirements.

It would be impracticable to draw a comparison between the
working plans prepared for Tree Farm Licences and those for Public Working Circles managed by the Forest Service. Shortage of staff and funds has had a limiting effect on Forest Service planning and in most cases, working plans for Public Working Circles do not exist.

(5) Annual allowable cut

The allowable cut for the licence area is determined before the licence is granted on the basis of an inventory carried out by the applicant at his expense. He is also responsible for calculating the proposed allowable cut for the area. This is included in the working plan and has to be approved by the Forest Service. The formula for calculating the allowable cut may vary from one licence to another, depending on the condition of the growing stock. The most commonly used formula is Hanzlik's, which estimates the sustained yield capacity by dividing the volume of mature timber by the average rotation age selected and adding the mean annual increment at rotation age from established immature stands. Several area/volume checks are required to arrive at a satisfactory allowable cut. This method is particularly suitable for even aged forests with a preponderance of over mature timber, which is the general situation in British Columbia. Revisions of the allowable cut at regular, (usually ten year) intervals are done as more inventory data becomes available. Areas which it is intended to work over the next few years are progressively cruised to operational standard prior to cutting.
Under clause 37, of the licence, the actual cut in any one year must not be less than 50 per cent, or more than 150 per cent, of the approved allowable cut as established in the working plan. Over a five year period, the volume cut must neither vary more or less than ten per cent from the allowable cut. The permissible cut is indicated in a cutting permit for which the company applies, giving details of the proposed area to be cut and methods of cutting to be used. It includes a definition of what the Forest Service is prepared to accept as satisfactory standards of utilisation.

It is a comparatively simple matter to ascertain whether companies have observed the above conditions, because the company's actual cut is recorded in its annual Tree Farm Licence report. Of the 21 companies examined, two cases of undercutting of the five year permissible cut and none of overcutting were recorded. Under clause 38(d), of the contract, a company may be refunded any fine it has incurred due to under or overcutting provided that, its cut over a ten year period is within ten per cent of the original permissible cut for the period. Of the two companies which have incurred fines so far, one has been refunded its fine under the above provisions and it is anticipated that the other will also recover its money in due course.

Discussion with Forest Service and Company officials disclosed certain criticisms of the principles governing the calculation
of annual cut. It is maintained by company officials that the Forest Service could afford to increase the present allowable cut. The subject is discussed later when dealing with points of controversy.

(6) Research

The Tree Farm Licence contract contains no clauses which would compel a licensee to undertake research but provision for research is included in its working plan. Some of the companies have displayed a keen interest in research work, and others very little.

The amount of research work carried out has depended largely on the size of the company. In general, it was suggested that the larger companies have been able to afford the most research and this was confirmed by examination of the Tree Farm Licence reports. A full analysis of all the research operations was not possible, but the following list of some of the projects undertaken indicates their scope:

Growth studies involving the demarcation and maintenance of growth and yield plots
Methods of site determination
Thinning studies
Methods of calculating volume tables
Experimental planting (mainly species trials)
Research in reforestation methods including aerial seeding and aerial spraying of weed species
Pruning experiments
Seed improvement studies including the selection of seed trees and the establishment of seed orchards.

Studies connected with forest protection including fire weather research, experiments with fire fighting equipment, insect surveys and tests of insecticides.

Chemical and mechanical brush control

Slash burning experiments

Fertiliser experiments

Drainage experiments

Breakage and utilisation studies particularly those connected with the reduction of waste.

It is probable that all aspects of the forest industry have benefited from the increased amount of research carried out since the Tree Farm Licence was introduced.

Indirect forest benefits

Besides acting as a source of timber for industrial and other consumers, the forests of British Columbia like those of other countries are of considerable catchment and soil protection importance.

The Forest Service is fully aware of the need to ensure adequate protection of Crown forest lands and, in its administration of Tree Farm Licences takes indirect forest benefits into consideration. If it is accepted that the Forest Service’s assessment of what is re-
quired to protect indirect forest benefits is sound, it remains to ascertain whether or not in fact its policies in this respect are being observed.

In practice, the Forest Service's attitude to indirect forest benefits appears to be that, if an adequate growing stock is maintained on a licence area, standards of exploitation are controlled through a cutting permit and an adequate system of forest protection is in force, indirect forest benefits will not suffer. The general impression gained during this study was that, the requirements of the licence contracts including cutting permit clauses are in fact being observed, and that indirect forest benefits are not therefore being adversely affected.

8) Government versus private company management

It is generally acknowledged by the Forest Service, that standards of forest management on Public Working Circles managed by the Forest Service are not as good as those achieved by Tree Farm Licence companies:

The Forest Service does not consider that forest management is, or could be, as good in public forests as in private management (tree farm) licences. (Correspondence, Chief Forester, British Columbia Forest Service, 1958)

One of the obvious reasons for this, is the Forest Service's shortage of funds and staff. Nevertheless, it was the opinion of the Chief Forester at the time of the second Royal Commission hearings
that, even if the Forest Service were to be granted unlimited funds, its management of Crown forest lands would still not be as good as that practised by Tree Farm Licensees. The main reasons advanced for this were:

(i) The relative degree of control which the Forest Service can maintain over Tree Farm Licence and Public Working Circle operators. It is easier for the Forest Service to control a single operator on a Tree Farm Licence than a group of operators in a Public Working Circle.

(ii) The Tree Farm Licensee has more to lose by neglecting forest management than smaller Public Working Circle operators and is therefore often more co-operative.

(iii) Private companies would tend to give greater emphasis to the economic and business aspects of forest management than the Forest Service and management would therefore be more efficient.

The first two of these contentions appear reasonable.

Many of the small operators in Public Working Circles are still operating on a liquidation basis and cannot be expected to be as concerned over what happens to the forest after they have finished cutting, as
the owner of a large integrated industry who will depend on the same area for his future raw material. Nevertheless, the present trend towards more permanent operation on Public Working Circles should result in improved forest management.

The third contention would be difficult to substantiate. During discussions with Forest Service and Company Foresters, reference was often made to the great variation in Forest Service and Company costs for apparently similar operations such as planting and road making, but a true comparison of these costs is difficult, because the work carried out has not been on the same area and because there is sometimes a difference of opinion over what constitutes a satisfactory job.

In theory, there is no reason why a Government Forest Service should not do as good a job as a private company, but it is unlikely that it will compete where cost is an important consideration. The majority of Forest Services operate as trustees of the public interest and their activities cover a far wider field than the average private company. Indirect forest benefits such as soil and catchment area protection, are difficult to assess in terms of monetary value and because of this, Government Forest Services are often protected from criticism of their operating costs. In practice, this has sometimes resulted in neglect of forest economics, there is a tendency for State Foresters to feel that, the importance of protection forestry outweighs that of trying to operate at a cheaper cost. But this belief should
not release foresters from the duty of being efficient and it is reasonable to expect that, whatever operation is being undertaken, it should be done in as economical a manner as possible. Departure from this principle means waste of public funds.

Commonly suggested explanations of State inefficiency are the prevalence of "red tape" restrictions, the security of the employee's position and lack of incentive. It is not possible to make a really accurate assessment of the effect of these factors on forest management. It is certainly true that the average Government service is far more tied up with restrictions than the average private company. The latter also has a decided advantage when it comes to the point of making rapid and often money saving decisions.

During recent years, it has become apparent that the interests of large private companies may coincide with the public interest and Governments have been more willing to delegate their forest management responsibilities.

The importance of control or outright ownership by the state varies according to the role of the forest. It is obvious for instance, that a forest which owing to its special situation and its protective importance is not able to provide regular revenue can be kept free from abuses and sufficiently protected only if it is owned by the state or is under the direct control of the state. On the other hand, in essentially commercial forests this requirement is less exacting, especially when the interest of the individual owner coincides with the general public interest and when this compatibility of interest can be achieved by means other than the acquisition or retention of the forest by the State. (F.A.O. 1954)
There is no evidence that the public interest in British Columbia has suffered as a result of the introduction of the Tree Farm Licence; more likely it has benefited by an increase in the efficiency of management on the forest lands under licence.

(9); Financial security

Forest development on Tree Farm Licence lands is financed by the companies themselves, but under an allowed forestry costs system, a proportion of their expenditure is refunded as a reduction from stumpage in the following year. Prior to 1947, all forest development on Crown forest lands was carried out by the Forest Service, financed by an annual treasury allocation from general revenue. The difficulties of operating under an annual treasury budget were discussed in the 1956 Royal Commission Report (Sloan 1957). The problem is common to almost all State Forest Services; long range planning is impossible without adequate financial security and Governments are seldom able to offer this. In British Columbia, Government has accepted the important principle of allowing forest development on Tree Farm Licence lands to be financed directly from stumpage revenues and a more sustained rate of forest development should be possible. Huguet (1953), mentioned the same argument when discussing a form of tenure similar to the Tree Farm Licence currently in use in Mexico:

There would be advantages in establishing some similar system in countries where the official Forest Service has not itself the
means of carrying out intensive management. This would apply particularly to those countries where, because of reluctance on the part of the government to grant funds or authorise recruitment, the forest services have a small budget or are understaffed. By the Unidad system, the woodworking industries themselves must provide the technical forest services which provided they are given sufficient freedom of action should be able to guarantee proper management of the forests.

Freedom from the restrictions of treasury budgeting, will not automatically guarantee long term financial security for forestry. The money for forest development still has to be voted by the companies as part of their own annual budget, and in times of economic depression, money may not be available. Forest Service officials with whom the topic was discussed believed that, forestry development on Tree Farm Licence lands has been more intensive than the Forest Service would have been able to ensure on these same lands, if they had continued to be operated under an annual Treasury budget.

When discussing the attitude of individual companies to forestry investment, five main points were frequently mentioned:

(i) The licence is a contract subject to frequent review, and companies are, in general, highly aware that failure to comply with its requirements could lead to its cancellation.

(ii) Forestry as an investment has never been given much consideration. This is partly because of the tre-
mendous surplus of old growth timber in the Province, which cannot all be absorbed by current markets and because of the ease with which natural regeneration is obtained. It is generally agreed that the amounts spent on forestry would be greater were there less old growth timber available.

(iii) The ability of companies to recover some of their expenditures by a reduction of stumpage, has an influence when a Board of Directors is being asked to finance forestry operations.

(iv) The amount the Directors are prepared to vote is often directly proportional to the ability of the Company Forester to "sell" forestry, when presenting his estimates.

(v) The attitude of most companies towards forestry investments has improved very noticeably over the last decade.

(10) Capital investment in new industrial plants

The Tree Farm Licence has been an important factor in attracting investment in new industrial plants:

There is no question that tree farm licences have been the incentive for establishment of new industry including three large pulp and paper mills and the expansion of output in other similar plants. (Correspondence, Chief Forester, British Columbia Forest Service, November 1958).
In 1956, it was estimated that the total expenditure incurred in the establishment of new pulp and paper plants since 1947, plus the estimated expenditure to which companies were actually then committed, exceeded $350,000,000 (Sloan 1957).

Since a major objective of this paper is to present a case for the long term tenure, it would be pertinent to discuss whether or not, the investment in new pulp and paper plants in British Columbia would have been secured without the introduction of the Tree Farm Licence. There are, in fact, numerous industrial plants in the Province, which rely on the open log market for their raw material supplies, but most of these are small, with low raw material requirements. There are no pulp and paper mills in this category.

Between 1907, when the Government of British Columbia terminated alienations of land by long term timber licences, and 1947, when the Tree Farm Licence was introduced, there was no way for a company without timber of its own, to acquire a sufficiently large reserve of timber from Crown lands to justify investment in a pulp mill or a paper mill. During this period, the pulp and paper industries of other Canadian provinces underwent a steady expansion, whereas those of British Columbia, remained frozen at the approximate level of 1907 potential production. When the Tree Farm Licence was introduced, rapid expansion of the industry took place:

Following and in great measure consequent upon the 1947 legislation which freed the Crown forests from being locked in by a 40 year "deep freeze" the pent up development of new pulp or paper plants in the Province and the overdue
expansion of existing facilities when thus released have been phenomenal. (Sloan 1957).

It can therefore be stated with some certainty, that the Tree Farm Licence has had an important influence on capital investment. But it is important to note that, such investment would not have taken place, had the economic conditions of the period not favoured the rapid growth of the pulp and paper industry.

It does not follow that long term tenures are the only satisfactory method of attracting industrial investment. In Quebec, for example, there exists the paradox of a large pulp and paper industry, operating on Crown land held under annual leases. Investment here has taken place because:

(i) The areas of Crown forest land leased to companies are large enough to supply their raw material requirements. (In practice several have far more than they can actually use at present).

(ii) Once a company has a lease, it is impossible for another firm to establish itself on the same land.

(iii) The annual lease is automatically renewable. To date there has been no case of Government refusal to renew a lease and in practice, this would be extremely difficult, mainly because of the
vested interests companies hold in industrial
plants and the social implications of putting
a large number of people out of work.

The length of tenure necessary to attract investment, will
vary according to local conditions and the size of the industry it
is hoped to establish. It is probable that there will always be a
wide variation in opinion as to the most suitable length of tenure
for an industry. In the summarised evidence of the 1956 Royal
Commission (Sloan 1957), 18 pages of evidence were devoted to this
one topic and the opinions of over 50 witnesses recorded. Their
arguments were seldom identical and their suggestions ranged from
annual leases as in Quebec, to outright alienation. More witnesses
favoured long term leases than short. The main arguments advanced
in favour of a long term tenure were:

(i) It is a good method of attracting capital investment.
   (Banks are prepared to accept the Tree Farm Licence
   as loan security.)

(ii) It helps to ensure sustained industrial operation
    and expansion and facilitates long term planning.

(iii) The profit motive is the governing factor in indus-
     try and the longer the lease, and less the restrictions,
     the greater the possibility of making a profit. Fee
     simple ownership would offer the greatest incentive
     of all.
(iv) Because it is conducive to efficiency, a long term tenure helps to keep firms competitive in world markets.

(v) The longer the lease, the greater the social security for the firm's employees.

Two basic principles agreed upon by several witnesses were that:

(i) Where an industrial plant is made appurtenant to the lease, the latter should be at least long enough to allow amortisation of the plant's capital value.

(ii) If management of a crop is part of the contract, a licence equivalent to a double rotation is desirable, in order to ensure reaping of the crop planted in the first rotation.

In summary it appears that, although investment can, and has taken place without long term tenures, it is doubtful if, in general, short term tenures would be as effective in securing large investments as would long.

(11) Community stability

The 1945 and 1957 Royal Commission reports, gave considerable prominence to the importance of achieving community stability in
British Columbia and this was one of the stated objectives of the Tree Farm Licence. During the hearings of the second Royal Commission, witnesses confirmed that the licence has been an important factor in encouraging community stability in various parts of the Province, quoting Midway, Boundary, Slocan, Prince Rupert, Terrace, Duncan Bay and Crofton as specific examples. Typical comments on this subject were:

In 1949, as soon as our employees found we were on a permanent basis they began to feel differently and began to acquire land and build houses. (Summary of evidence. 1956 Royal Commission Vol. IV 104 n.)

and

The benefits to the public of the Forest Management licence are the establishment of permanent industry; employees are moving in and building houses which they never did before. (Summary of evidence. 1956 Royal Commission Vol. IV 104 m.)

The relative degree of community stability which can be achieved on Public Working Circles and Tree Farm Licences was also compared:

I agree that if all the Prince George District were a public working circle, the total timber production and total payroll might be the same. But the licence brings about a social aspect and possibility of building up communities not inherent in the other system. (Summary of evidence. 1956 Royal Commission Vol. IV 104-4(i).)

If it is accepted that the present 21 year contracts will be automatically renewed except under very exceptional circumstances, it
could be stated with confidence that, the Tree Farm Licence will continue to play an important part in encouraging community stability.

(i2) The advantages of vertical integration

One of the important features of the Tree Farm Licence is that it has permitted the vertical integration of forest and industrial plant management.

The main advantages of vertical integration in the forest industry are:

(i) It may encourage Industry to take a professional interest in forestry. By introducing the Tree Farm Licence, the British Columbia Government has secured the cooperation and interest, of company personnel and the forest industry has undoubtedly benefited from an importation of fresh ideas and men, into the business of forest management.

(ii) Vertical integration could be expected to lead to a closer alignment of silvicultural techniques with industrial requirements. Where responsibility for forest and industrial plant management is divided, confusion over objectives of management can, and sometimes does arise.

(iii) Integration helps to reduce overheads. By sharing
common facilities such as the administrative organisation, arrangements for handling labour, welfare problems, etc., unnecessary duplication of effort is avoided.

(iv) The combined forest enterprise is usually able to make more efficient use of the varied skills in the labour force and to arrange steadier labour employment over the seasons. (Koroleff 1951)

(v) Integration may ensure more sustained forest development than would be possible if a State Forest Service remained responsible for the management of all Crown forest lands, because of the financial implications of treasury budgeting previously discussed.

Vertical integration, cannot be realised where forests and industrial plants are managed as separate entities. If Crown timber is the main raw material supply for an industry, it can only be achieved by the nationalisation of manufacturing plants or by "denationalisation" of the industrial forests as in British Columbia. Many of the western countries have been reluctant to establish State owned manufacturing plants, or to denationalise State forests, and they have therefore been unable to realise the advantages of vertical integration:
There is however in most countries, a very strong prejudice against the state entering into competition with industrial producers and, for this reason, forest services are actively discouraged from establishing their own mills. And, unless this disability can be overcome, state forestry will always be debarred from reaping the advantages that can be secured from combining the production and utilisation sides of the industry. (Hiley 1930)

(13) Points of controversy

A complete analysis of all the points of controversy which have arisen between licensees and the Forest Service would have been difficult. In the time available for this study, it was not possible to analyse all the various correspondence files in the Forest Service offices. Much of the information contained in these files is regarded as confidential and, while many companies would probably have been willing to have allowed their correspondence files to be studied, it would have been reasonable for others to have objected. Other sources of information, which give a good indication of the points of controversy are:

The minutes of the Vancouver Forest District Tree Farm Forestry Committee meetings' (The Tree Farm Forestry Committee is a body of Forest Service and industrial representatives, which meets periodically to discuss problems of mutual interest. The Committee was formed in January 1959; and, up to the time of this study (January 1962), had held 11 meetings.)

The British Columbia forestry and timber trade journals.
Submissions made by several companies to the 1956 Royal Commission.

The 1956 Royal Commission reports (Sloan 1957).

In addition, a considerable amount of information was gained by discussion with company and Forest Service representatives.

The most prominent points of controversy have been:

(a) Working plans
(b) Stumpage and forestry costs
(c) Definition of acceptable standards of forest management, protection and utilisation.
(d) The 30 per cent clause
(e) The licence clauses relating to permissible annual cut.

(a) Working plans

The type of working plan and amount of detail it should contain were discussed in some detail by the Tree Farm Forestry Committee during 1961.

Companies argued that:

(i) Detailed long term planning was a waste of time since the amount of money available for forestry would fluctuate from one year to the next according to the company's annual profit. Short term plans were more practicable.
The amount of paper work involved in producing long term plans consumed time that could be more profitably spent in the field.

The Forest Service had been too rigid in its interpretation of the working plan requirement clauses.

The Forest Service maintained that:

(i) Working plans were an essential part of forest management.

(ii) Tree Farm Licence contracts required a certain minimum standard of planning and, without planning, it would be impossible to assess whether the clauses of the licence were being observed.

The present position appears to be that, the majority of companies have accepted that working plans are essential and, as previously observed, have submitted plans which conform with Forest Service requirements. The Forest Service appears to be flexible in its interpretation of working plan requirement and the impression gained, was that the subject is no longer a serious issue.

(b) Stumpage and forestry costs

Stumpage has frequently been a source of controversy between
Industry and the Forest Service. This discussion is mainly confined
to problems which affect Tree Farm licensees. The problems are com-
plex and in order to facilitate discussion it is proposed to examine
a few general principles first.

Stumpage on Crown timber is usually paid for in one of two
ways. The commonest of these, and that which applies to British
Columbia and most other countries, is a payment made at the time of
cutting based on the value (in the stump), of the volume of wood re-
moved. Methods of calculating this value vary. The method used
in British Columbia, is to calculate stumpage as a residual value of
the selling price of logs or finished lumber, after deducting costs
of the "average" efficient operator and allowing a suitable margin for
profit and risk.

An alternative method of payment for stumpage, is on the
basis of a lump sum bid. The bid may be the result of negotiation or
auction, depending on the circumstances of the sale. It has been
argued that, lump sum sales possess several advantages over the method
described above:

Provided the trees to be sold are marked and their
volume carefully estimated, the lump sum transaction
is much to be preferred. Subsequent laborious
measurement is avoided, disputes over scale are es-
caped, and the seller is able to side step the trouble-
some problem of enforcing utilisation standards.
Furthermore, lump sum transactions are socially de-
sirable in that they foster voluntary close utili-
sation of the trees. (Duerr 1960, pp. 330)
An examination of the effect of the current tenures and taxes on forest management in Canada was made by Moore in 1957. He concluded that, almost all the present methods of timber disposal include the serious defect that the licensee has no assurance that he will benefit from any increase in yield which may result from his own investments. A solution suggested by Moore was that licensees should be required to pay for their timber on the basis of a ground rent, related to the normal productive capacity of the land, stated in terms of fixed volumes of wood. The rate to be paid would be calculated as a fixed proportion of the current selling price of primary forest products, the proportion to be established by bidding or negotiation at the time of signing the licence. Disposals of Crown timber would therefore be lump sum sales. A ground rent, based on the normal productive capacity of the area, would force a licensee to reconsider whether it was profitable for him to retain his claim to lands he was not operating. (This argument is of more particular relevance to Eastern Canada than to British Columbia). Methods of timber disposal incorporating rentals were advocated in the 1957 New Brunswick Forest Development Commission Report, (Government of New Brunswick 1957) and by Wilkes (1954), when discussing the taxation of Crown forest lands in Ontario.

Methods of stumpage assessment on Tree Farm Licence lands, have undergone certain modifications since the tenure was introduced.
On the earliest licences issued between 1947 and 1949, the licensee was required to pay, on all timber deemed to be merchantable at the time of signing the licence, full stumpage as assessed by the Forest Service, using the method of appraisal in current use. On all other timber, not considered merchantable at the time of signing the licence, and defined as timber of less than half rotation age, the licensee would be required to pay approximately 16 per cent of the appraised stumpage value at the time of cutting, the method of appraisal again to be that in current use by the Forest Service. The figure of 16 per cent was considered to be a fair return to the Crown, for that portion of the crop which would result from natural regeneration. It was based on the Oregon Forest Act of 1929, although the rate adopted for British Columbia was higher.

In 1949, the Forest Act was amended to introduce an alternative method of assessment, under which a licensee could claim as a reduction from his appraised stumpage, approved forestry costs incurred in the management, protection and silvicultural treatment of the area.

Neither of the methods of stumpage assessment described is a lump sum sale.

In 1958, the 16 per cent method was withdrawn from the statutes.

Of the 39 licences issued up to December 31st, 1961, three were operating under the 16 per cent method and the remaining 36 were
on the forestry costs system.

The main reason why more licensees have selected the forestry costs method of assessment appears to be because they prefer to recover some of their costs now, rather than gamble on the prospect of getting back 84 per cent of an unknown stumpage value in about 90 years time.

It is significant that two of the licences which are assessed under the 16 per cent method, contain a high proportion of private land. Under the forestry costs system, no allowance is made for forestry costs incurred on lands formerly held under other tenure. If a licence has a very low proportion of Crown land, the amount recoverable as forestry costs might be so small that the Company would not benefit very much, and in these circumstances, it may prefer to remain on the 16 per cent method.

In the case of the third licence operating under the 16 per cent method, the Crown land is all immature and the first cut is not due from it till 1974. Very little is being spent on the area and no advantage would be gained by electing the forestry costs method.

The official reason quoted by the Chief Forester of the British Columbia Forest Service for the Government's decision to withdraw the 16 per cent option was, that this method of assessment was "not in the public interest". In the absence of more precise information, it
is necessary to make various theoretical assumptions of the reasons actually considered and the most obvious ones appear to be:

(i) That most companies were not interested in the method.

(ii) That it is easier from the administrative point of view if all the licensees are on the same system.

(iii) Different methods of assessment could lead to future complications and allegations that some companies were paying less stumpage than others.

(iv) Government may consider that its direct revenues will be greater under the forestry costs system.

(v) Government can retain greater control over licensees by use of the forestry costs method of assessment, since this will automatically prevent licensees from acquiring any equity in the forest crops grown on Crown land.

(vi) Under the 16 per cent method it would be possible for a company to acquire a licence area, spend as little on forestry as it could safely risk without arousing Government criticism and at the time of cutting, cash in to the extent of 84 per cent of the stumpage value of the crop. Companies which elected the 16 per cent method could be expected to take a different view.
The Forest Service interpretation of the protection clause of the contract puts an onerous responsibility on the licensee. The price of the timber under the second election of section 33 is not merely 16 per cent of the market price. By our expenditures between now and the time we can cut the immature, we buy that crop and we consider we pay plenty for the doubtful privilege of cutting a crop 90 years from now at 16 per cent of an unknown price to be submitted to us for our acceptance 90 years from now.

Neither the forestry costs nor the 16 per cent method of stumpage assessment avoids the defects suggested by Moore. Under the forestry costs system, the licensee acquires no equity in crops except those grown on Crown-granted lands. His expenditures on forestry are mostly reimbursed and there is no incentive for him to practice intensive forestry in the hope of an increased stumpage return at the end of the rotation. He is in the position of a manager of Crown forest land and any increase in stumpage value, which results from better management, will benefit the Crown, and not the company. Under the 16 per cent method, the licensee would acquire an equity in the crop and would be assured of a major share of any increase in stumpage value resulting from his own investments. But he would not secure all of the increase in value. The Crown still considers that it is entitled to 16 per cent of the value of the crop at the time of felling and, if the company's investment has resulted in an increase in stumpage value, the Crown would benefit from the company's investment.

The fundamental theory underlying Moore's arguments is that, economic incentive is likely to result in more intensive forest manage-
ment than can be achieved by Government regulation. This is basically the reason why many of the witnesses who gave evidence to the 1956 Royal Commission, suggested that outright alienation would result in more intensive management of industrial forest lands than any form of lease. The same argument was expressed by several company representatives during the course of this study, reference being made to the Pacific North West states of the U.S.A., where many industrial companies own forest lands outright and manage them extremely well.

As previously noted, neither of the two methods of stumpage assessment in British Columbia is a lumpsum sale. It is argued that sales on a lump sum basis, would foster closer utilisation of less desirable species, would reduce the amount of time and money spent in scaling and thereby result in lower production costs.

It is difficult to be certain that the introduction of a rental system of assessment would result in any better forest management in British Columbia. The main arguments advanced against the suggestion were:

(i) Because of a surplus of old growth timber few companies in the past have considered forestry as an investment.

(ii) The Crown will probably always consider that it is entitled to that proportion of stumpage value representing natural growth. This limits the financial
return which can be expected from a private forest investment on Crown land.

(iii) A rental method of assessment would not increase incentive to remove marginal timber. It is left behind at present because it cannot be marketed for a profit and an alteration in method of stumpage assessment would not significantly alter this fact. Rather than cut marginal timber, an operator can usually cut more profitable timber from his own lands, or purchase such timber from Public Working Circles.

(iv) Unlike Eastern Canada, there is no problem of companies hanging on to more land than they actually need.

(v) Government's direct revenues would decrease.

(vi) Licensees are compelled to practice a satisfactory standard of forest management by Government regulation and this has so far proved effective.

(vii) The existing pattern of tenures is already complicated and any new modifications would complicate the situation even further.
In theory, economic incentive is a better method of ensuring good forest management than Government regulation. The case for using a rental method of assessment would be sound if Government could be certain that companies would find forestry a sufficiently attractive financial investment to justify intensive management. This would be more certain in countries where short rotation crops yielding a high financial profit are being grown and particularly where artificial regeneration is necessary. In this case the licensee would be in a very similar position to a farmer renting his land from the Crown. The Crown would be entitled to a rental related to the value of the land. If the crop is produced entirely as a result of a private investment, the stumpage value should accrue to the company making the investment.

Finally, mention should be made of other factors which affect forestry investments. Taxation, the prevailing rate of interest and probability of inflation, all tend to overshadow the relationship between stumpage value and level of forest investment. Each of these would need to be carefully considered if a change in method of stumpage assessment were under consideration. The importance of the forest as a supply of future raw material should also not be overlooked. This is the factor which perhaps more than any other, influences the decision of a large private company to acquire forest land.

Another frequent point of controversy between Tree Farm Licensees and the Forest Service and one which is closely related to the question of stumpage, is that of forestry costs. Under the
forestry costs system, a company can claim as a reduction from stumpage some of the costs incurred in management and protection of the licence area. Forestry costs are defined as, costs which would not be incurred, if the company were not practising forestry on a long term basis. The amount of forestry costs, is determined from a return submitted by the company as part of its annual Tree Farm Licence report. The total costs are related to the allowable annual cut for the following year and a deduction from stumpage is allowed of so many cents per unit volume of timber cut from the Crown forest land included in the licence. No allowance is made for expenditure on Crown granted lands included in the licence. Where minimum stumpage rates apply, only half the forestry costs are allowed. In discussions on forestry costs, companies have submitted that:

(i) Limitation of recoverable forestry costs to those items which the Minister deems to be "just and proper charges," has meant that licensees have sometimes not recovered all their forestry costs. Disputes have arisen over what constitute fair charges and forestry costs have not always been allowed. The companies argue that because of this, they are incurring charges on Crown forest land, the benefit of which will be realised by the Crown in future stumpage values and not by the company.
(ii) In cases where minimum stumpages are applied, the company only gets back half its forestry costs.

(iii) The company does not get back the full forestry costs relating to lands formerly held under other tenures and now included in the licence area. This is because forestry costs are related only to the volume of timber cut from Crown lands in the licence area, whereas the allowable cut is calculated on the basis of all tenures within the licence. The companies are carrying the cost of forest development on these other lands but will not benefit from the increased stumpage value when the lands revert to the Crown.

(iv) That the use of minimum stumpage rates is a deterrent to the clearing of marginal and decadent stands and that there would be greater incentive to practise close utilisation if minimum stumpages were abolished, or, the negative stumpage values of marginal stands were to be charged off against the positive stumpage in mixed stands.

The main counter arguments by the Forest Service are that:

(i) The Government can allow only those costs which are
incurred because the company is practising forestry on a long term basis. They cannot allow any costs which holders of other tenures have to incur, under the terms of the Forest Act, without giving Tree Farm Licensees an unfair competitive advantage.

(ii) The Forest Service's use of minimum stumpage rates is based on the propositions that, the public should not give its resources away for nothing and that it should not sell for ridiculously low prices now, what can probably be sold for a much higher price later on. If full forestry costs were deductable from minimum stumpage, cases would arise where appraisals would indicate a negative stumpage value and under these terms, the timber could not be sold. By allowing only half the forestry costs, the stumpage is given a positive value. Despite the protests of industry, timber is still removed at minimum stumpage rates.

(iii) Forestry costs are not allowed on the timber cut from lands formerly held under other tenures because, it is contended that, the timber on these lands has an additional value to the holder, over and above the current Royalty rates. Every owner of Crown stumpage should
contribute his proportionate share towards forestry development on a current cost basis, forestry costs are regarded as current operating costs, and not as an investment in the next crop.

(iv) It would be difficult to introduce the suggestion made by Industry in (iv) above, without introducing an element of discrimination between one operator and another. In some areas of the lower Coast for example, there is plenty of Douglas fir (at present the most desirable commercial species), and in others none at all. Operators in forests containing no Douglas fir, still have to pay minimum stumpage rates. To reduce the stumpage on Douglas fir in mixed stands, in order to create a positive stumpage value for less marketable species, would have the same effect as changing the indicated fir rate and selling the less desirable species at less than minimum rates. This would give operators in mixed stands, an unfair advantage over those operating in stands containing no Douglas fir.

(v) The Tree Farm Licence is a guarantee of long term security and will provide companies with raw material at a cheaper price than they could obtain it under any other tenure; they should therefore be prepared to pay
something for this privilege.

(vi) Forestry costs are a minor part of the whole timber appraisal in relation to other items, but receive more attention than appears justified. They usually run between ten cents and 40 cents per hundred cubic feet whereas total costs are usually more in the region of $20 per 100 cubic feet.

It is not proposed to attempt a solution to the problem of forestry costs, (assuming a satisfactory one to both parties exists). The arguments have been reproduced in order to give some indication of the type of difficulty the Forest Service has encountered in its administration of Tree Farm Licences. It is doubtful if a solution worked out for conditions in British Columbia, would have much applicability elsewhere.

It is pertinent to note that, in the 1956 Royal Commission report, Justice Sloan was of the personal opinion that, the forestry costs system contained certain weaknesses:

It is my thought that there is a basic weakness in the principle of forestry allowances, reduction of dues on temporary tenures or any other form of subsidy or preferential treatment in connection with management licences other than the allocation of Crown timber at non-competitive prices to assure the future supply of industry. It should be recognised by the licensee that the public is assisting them to build up a valuable property by allocation of timber at a cost less than they could obtain it
any other way and payable only as and when it is needed. This should in itself, as in the Eastern Provinces, justify reasonable expenditure on forestry practices designed to improve and perpetuate the forest; otherwise it is implied that the sustained yield forestry, even when applied to a forest with an ample supply of mature timber, is not an economic investment. This cannot be admitted. (Sloan 1957)

There appears to be general agreement in British Columbia that the forestry costs system is not a particularly good one, even though Industry in general, prefers this method to the 16 per cent method. Expenditures on forestry costs previously discussed are not very large and they entail considerable work in inspection and compilation. They have also led to the mistaken impression that Tree Farm Licensees are getting their timber for lower rates than other operators on Crown land.

(c) Definition of acceptable standards of forest management, protection and utilisation.

There have been a number of discussions over what companies and the Forest Service regard as acceptable standards of forest management, protection and utilisation. It is not intended to examine this subject in detail, because it appears that in general, the Forest Service is satisfied that the standards of forest management and protection on Tree Farm Licence lands are sufficient to satisfy the licence requirements. The amount of pressure which the Forest Service can exert on Tree Farm Licensees must presumably be influenced by the standards of management it is able to apply to Public Working Circles.
The acceptable standards of utilisation are defined in the cutting permit, which specifies diameter limits for various species, methods of felling to be used and other obligations relating to logging operations. Some critics of the cutting permit clauses argued that, by imposing diameter limits and other restrictions, the Forest Service has sometimes caused companies to operate at a loss. This did not appear to be a widely held view and the limits placed on cutting at present do not appear to be unreasonable.

In 1956, it was suggested by several witnesses giving evidence to the second Royal Commission that, the Forest Service should be more strict in its interpretation of acceptable utilisation standards. For instance, it could require the licensee to install machinery to make use of small and salvage timber, or to integrate his operations within a certain time. The Chief Forester of the British Columbia Forest Service maintained that such clauses would be too rigid, pointing out the difficulty which might arise with a small Interior mill and no pulping plants nearby. It was his opinion that it would be dangerous to put the control of manufacturing plants into the hands of the Government and that a firm would either keep itself up to the mark or go out of business.

Conversely, since the Government has already established the principle of cancelling the licence if certain provisions are not observed, there would seem in theory, no reason why it should not obligate the licensee by contract to keep his plant modern, warning him
that failure to observe the contract would result in cancellation of the licence.

(d) The 30 per cent clause

Under clause 27 of the Tree Farm Licence contract, the licensee is obliged to:

provide the opportunity for contractors, other than the licensee's own employees or shareholders who own more than one per cent interest to harvest a volume equivalent to a minimum of thirty per cent of the allowable cut from Crown lands not held under other tenure. (The percentage varies from one licence to another according to local circumstances)

This clause was included primarily to protect small loggers operating in an area subsequently to be issued as a Tree Farm Licence. It ensured that they would be given the opportunity to stay in business and to some extent, met the criticism that the Tree Farm Licence was a give-away of the country's forest resources to larger companies.

When first introduced, many licensees objected to the clause on the grounds that it tied them to dealing with contractors in areas where they would prefer to carry out logging operations themselves. Contractors also voiced objections, maintaining that companies could, if they so desired, manipulate their felling areas so as to exclude the small logger (e.g. by felling only on land formerly held under other tenure) or, so as to ensure that small loggers only obtained the worst timber. It was submitted that the Government was forcing a contract on both parties with "fixed terms."
The present position appears to be, that this particular clause of the licence is not a cause of serious controversy. In general, a satisfactory working relationship has been built up between the companies and the small independent contractors. In practice, both parties often benefit from the arrangement. Several of the company officials with whom the question was discussed, confirmed that the small logger can play a very useful part in the company's operations, since he is more adapted to the problems of exploiting small inaccessible areas and is familiar with local conditions. He can often operate these areas at a cheaper cost than the company could with its own men.

Many of the small loggers admit that the expansion of the bigger companies has provided them with more opportunity than before.

(e) Permissible annual cut

The licence clauses governing permissible allowable cut do not appear to have led to serious controversy but it was suggested by several company representatives, that such restrictions can have a serious effect on the efficiency of industry, by restricting their annual cut in times of good markets and preventing them from making maximum use of their raw material. It was their opinion that there should be greater flexibility in the interpretation of the clauses relating to allowable cut. Balancing of the cut over a ten year period, instead of five years, and a 20 per cent allowance either way, would be more reasonable than the present five years and ten per cent. It
was their contention that accelerated cutting in times of economic prosperity is of benefit to the economy in general and that providing reforestation is carried out, of no long term disadvantage to the Province. It was maintained that, even under a more liberal cutting policy, the available markets for timber would still not be large enough to lead to serious over cutting.

The traditional arguments in favour of equal annual cuts are well known and will not be repeated here.

Companies in general would prefer a higher annual cut than is at present permitted. They maintain that a shorter rotation is possible than the period laid down by the Forest Service. A shorter rotation period would increase the annual cut as calculated by the Hanzlik method.

It is also sometimes argued that companies should be allowed to include volumes of marginal timber and less desirable commercial species in their inventory cruise volumes since expanding markets and technological changes in the industry, will make it possible to use such timber during the first rotation.

The Forest Service has not so far accepted these arguments. The allowable cut is revisable at 10 year intervals and, if standards of utilisation have changed appreciably during the period, a higher allowable cut would be permitted.
In summary it can be noted that the point of controversy discussed have not seriously interfered with the administration or operation of Tree Farm Licences. The Tree Farm Forestry Committee has provided a useful form for discussions of forestry problems.

(14) Opposition to the Tree Farm Licence

The two main sources of opposition to the licence have been from independent operators who do not hold Tree Farm Licences and from groups such as the Ranching and Mining Industries which opposed the allocation of land for one particular form of use.

The term independent operator, includes independent market loggers with no manufacturing plant, as well as sawmillers cutting Public Working Circle timber. Not all independent operators are in opposition to the licence. As previously noted many of them appreciate that the expansion of the bigger companies has provided them with more opportunity than before.

The opinions of those who oppose the licence are represented by various associations such as the Independent Truck Loggers Association, Independent Loggers Association, Independent Timber Converters Co-operative Association and the Forest Development Association.

During the course of this study, it was possible to meet several representatives of these associations, including one of the leading opponents of the Tree Farm Licence, Mr. J. Gordon Gibson, former M. L. A.
The independent operators' main arguments against the Tree Farm Licence are:

(i) The only fair method of distributing Crown timber is by public auction. The Tree Farm Licensee is protected from competition and has an unfair advantage over those who buy their timber from Public Working Circles.

(ii) The protection of larger industries from competition could lead to their ultimate stagnation and this would have an undesirable effect on the Provincial economy.

(iii) The distribution of forest resources among a few companies on a long term basis, may conflict with the interests of future generations and locks up the best forest land in the Province indefinitely.

(iv) The Tree Farm Licence introduces an undesirable element of monopoly into the forest industry and could lead to a situation where a few large companies would be in a position to influence Government forest policy in their favour.

(v) The system encourages speculation in Crown timber and has provided many millions of dollars in tax
free capital gains for a few select individuals.

It is undoubtedly true that public auctioning of Crown timber helps to ensure a fair deal to all purchasers. The principle of auctioning Crown timber has been applied in many countries. The main advantages are that the method relieves Government from the responsibility of deciding which of several competing forms should be allocated Crown timber. It is also argued that auctioning ensures Government the maximum financial return.

A major disadvantage is that, in countries where Crown timber is the main source of raw material for industry, unless the Crown puts up large blocks of timber for sale, it is difficult for a company to acquire sufficient timber to justify investment in a large and expensive manufacturing plant. This was the situation in British Columbia between 1907 and 1947. Gordon (1961) noted that in both Cyprus and Trinidad a policy of auctioning Crown timber in small lots has effectively retarded the establishment of efficient sawmills. Huber (F.A.O. 1953), observed the same thing in India.

If the establishment of large integrated industries is considered to be in the public interest, it would seem that the quicker they are established the better, and that by auctioning its timber in small lots, Government may effectively retard their development.

In British Columbia, The Tree Farm Licence has made it possible for firms to acquire sufficient timber to justify large scale
Industrial investment. It is unlikely that the pulp and paper industry in particular, would have developed as rapidly as it has done since 1947, had all Crown timber continued to be disposed of by public auction.

It is contended by opponents of the Tree Farm Licence that, because the licensee is protected from competition, he will pay less for his timber than independent operators who have to bid for their timber on Public Working Circles. He is also able to bid on Public Working Circles and, because of the backlog of cheap timber held under other tenure, is able to outbid the independent operator and thus put him out of business. Both these arguments were discussed at some length in the 1956 Royal Commission report (pp. 182-192).

The main counter arguments were:

(i) Protection from competition does mean in theory, that the independent operator would tend to pay more for his timber, but in practice, this has not often been the case. Since the Tree Farm Licence was introduced, the majority of Timber Sales on Public Working Circles have gone at the appraised upset values, i.e., at non-competitive prices. The reasons for this will be discussed later.

(ii) Comparisons of the stumpage prices of Crown timber sold from Tree Farm Licences and Public Working Circles,
do sometimes, show a difference in favour of the former, but such comparisons often overlook the amounts spent by the companies on forestry development, (as represented by the allowed forestry costs in the stumpage appraisal).

(iii) It would be impracticable to prevent Tree Farm Licensees from bidding for timber on Public Working Circles, because the Government deliberately refrained from awarding a licensee all the timber his conversion plant required. Until such time as intensive management has resulted in the raising of the allowable cut from the licence area, to a proportion sufficient to meet the requirements of the firm's plant, it would be unwise to prevent the Tree Farm Licensee from bidding for the extra timber he requires on Public Working Circles, since this might force him into logging marginal timber at a loss.

There is no evidence in British Columbia that the Tree Farm Licence has led to the stagnation of larger companies. The general opinion gained during discussions of the subject with Forest Service and company representatives was that, the chances of this happening are no more serious than in the forest industries of most other western countries, and that so far, individual firms have remained highly com-
petitive within the field of their manufacturing activities.

The present trend towards larger manufacturing units may encourage monopolies and it is difficult to see how, under a free enterprise system, this can be prevented, except by use of anti-monopoly legislation of the type used in the U.S.A. (Dealey 1958).

When the Tree Farm Licence was first introduced, it was known as the "perpetual management licence" and, if the licensee accepted the obligations of the contract, it was awarded in perpetuity. During the 1956 Royal Commission hearings, it was the opinion of many witnesses who opposed the licence that, if such licences were to be awarded at all, they should not be perpetual, since this would tie the interest of future generations:

A principle objection to perpetual tenure is based on the fact that the next generation should be able to review the contract and that we would be depriving our children of opportunity. (1956 Royal Commission, Summary of Evidence Vol. II, pp. 89-7.)

Mainly because of the weight of opinion against the perpetual clause, the period of the licence was altered to 21 years and all Tree Farm Licences are now issued for this period.

In practice, there would appear to be very little difference between the perpetual and 21 year licences. There is certainly no desire on the part of the present Government to cancel the licences after 21 years, and, providing the licence clauses are observed, it seems that they will be automatically renewed. Whether the licence
period runs for 21, or an infinite number of years, is considered by some industrial operators to be irrelevant, since the Government has it within its power to cancel a licence at any time it chooses to do so. The history of several of the major industries in Great Britain, the Suez Canal and the British Columbia Electric Company, are sufficient evidence of the ability of Governments to take over privately controlled interests if they so desire.

Opponents of the licence also state that, it encourages speculation in Crown timber and that, it has provided many millions of dollars in tax free gains to a few select individuals.

There can be no doubt that a company's shares appreciate very considerably if it acquires a licence. The licence is an assurance of long term operation and is also accepted by the banks as security for the raising of loan capital. The British Columbia Government was aware that speculation might occur when the licence was introduced and, with this in mind, included clause 48 of the licence which states:

This tree-farm licence shall not be sold or transferred by the licensee within 10 years immediately subsequent to the issuance of this licence nor shall the control of the licence be transferred in any manner whatsoever to any person or persons, firm or firms, corporation, or corporations without the written consent of the Minister first having been obtained.

Evidence given during the 1956 Royal Commission hearings, failed to differentiate clearly, between capital appreciation of shares as part
of ordinary market improvement, and that due solely to the award of Tree Farm Licences, but it seems certain that a fair proportion was due to the latter. Opponents of the licence argued that, since Crown forest land was changing hands, the public should get the benefit and not the licensee and that, in some cases, the profits from increased share value went outside the Province, (presumably to American shareholders). Those who supported the licence argued that, the acquisition of a licence does not always result in enhanced share values. If money is made out of share transfers, these profits have very little to do with the overall benefit derived from having a stable and prosperous industry and the amount taken out by such shareholders, is insignificant.

Several sections of the 1956 Royal Commission dealt with the conflict between Tree Farm Licensees and those interested in using the forests for some other purpose than the growing of timber. The main interests involved were:

(i) Grazing  
(ii) Mining  
(iii) Fishing  
(iv) Hunting  
(v) Trapping  
(vi) Recreation.

Crown forest lands are an important source of fodder for the ranching industry. Between 1951 and 1961, over 100,000 cattle were
grazing under permit on Crown forest lands every year, as well as numerous horses and sheep.

Early opposition to the Tree Farm Licence arose from the wording of Section 33 (2) of the Forest Act:

The Minister may enter into agreement described as a tree-farm licence with any person for the management of Crown lands specified in the agreement to the sole use of the licensee for the purpose of growing continually and perpetually successive crops of forest products.

This section led to concern that, the interests of Tree Farm Licensees would take precedence over those of the ranching industry.

The conflict between grazing and forestry in British Columbia is similar to that of many other countries. Much of the so-called forest land, of the Interior, consists of open grasslands or parklands, which make excellent grazing pastures. There is no shortage of forest land for timber production in British Columbia and by permitting grazing, fuller use is made of the Province's land. Unfortunately, the areas suitable for grazing are sometimes closely associated with those lands also suited to timber production and conflicts of interest have arisen. Ranchers have complained that, loggers and sawmill operators damage fences, allow cattle to escape from their range and cause their stock to lose condition. From the timber operator's point of view, the existence of ranchers and stock in a forest area constitutes a threat to regeneration, a source of damage to growing trees and an increased fire hazard.
Over recent years, the fears that grazing interests would be adversely affected by the Tree Farm legislation have been largely dispelled. There has been no serious reduction of available grazing areas and the Interior Tree Farm Licensees continue to permit licensed grazing on their grasslands. The problems of grazing versus forestry remain and a solution will largely depend on the degree of mutual co-operation which can be built up between members of the two industries. In short, the Tree Farm Licence has not added any serious problem to those that were there before the tenure was introduced.

The mining industry in British Columbia is also an important one, ranking next to forestry as a source of production value from natural resources.

Many of the mining claims are on Tree Farm Licence lands. In 1953, these totalled 382 claims covering an area of 19,700 acres. Conflicts between the mining and forest industries have arisen because:

(i) Independent prospectors have in the past, been able to cut a certain amount of Crown timber free of charge. This concession is a form of encouragement to the prospector and enables him to establish his operations at cheaper cost. It has been asserted by Tree Farm Licensees that this privilege has been abused, some prospectors having laid claim to more timber than they actually required.
(ii) Tree Farm Licensees have protested in cases where mining operations cut into their best quality timber stands.

(iii) The mining industry expressed similar concern to that of the ranching industry, over the wording of Section 33 (2) of the Forest Act.

Mining versus forestry problems again affect all Crown timber lands and not only those under Tree Farm Licence. The mining industry is concerned about the creation of Public Working Circles as well as Tree Farm Licences. There is no easy solution to the problem and each case will presumably depend on whether the Government considers that mining, or forestry, is of greater importance to the national economy. Under clauses 9, 10, 12 and 16, of the contract, the Government has reserved the right to withdraw lands from the licence for the purpose of placing them under a higher form of economic use if this is deemed to be in the public interest.

For the purposes of this section, (10), the development of mines and mineral claims may be deemed to be essential to the public interest.

In practice, this clause has been applied in numerous cases both on Tree Farm Licence lands and on Public Working Circles. The implementation of the legislation, has helped to restore the confidence of those who formerly opposed the Tree Farm Licence on the grounds that
timber production would be given priority.

Opposition from groups interested in forest lands for hunting, trapping, fishing, recreation and hydroelectric power, has been for reasons similar to those analysed above. Over the past decade, opposition has decreased as it has become apparent that the Tree Farm Licence does not automatically exclude other forms of land use.

Tree Farm licence companies have, in some cases, gone out of their way to encourage wider public use of their lands, on the principles that exclusion of the public could only lead to political antagonism and that, public familiarity with the objectives and methods of the forest industry should result in more effective forest protection. Some companies have established official camping sites and many have erected sign boards explaining the company's activities.

To summarise, it appears that opposition to the Tree Farm Licence has had two main effects:

(i) It led in 1956, to a reappraisal of the principles governing the award of licences.

(ii) It has prevented the award of Tree Farm Licences in any area where independent operators are already established, except where the latter are in full agreement that a licence should be awarded.
It is significant that similar political opposition to long term tenures has been encountered in the U.S.A.:

As you found out for Canada, small operation interests abetted by misdirected insistence of federal branches that claim that the greatest stumpage return is obtained by auction bidding in small lots, have effectively prevented further development of the sustained yield unit whether federal or cooperative particularly the latter. (Meyer, W. H., Personal Correspondence, December 1961).

(15) Administration of Tree Farm Licences

The Forest Service has a staff of Tree Farm Licence Foresters in each of the five Forest Districts. They are assisted by a staff of Forest Rangers. In the Vancouver Forest District, supervision of the 18 licences in the District is the responsibility of a Tree Farm Licence Forester plus one assistant, (both graduate Foresters). They are based on the Forest Service District Headquarters office in Vancouver, and are assisted by 15 Rangers, each in charge of a specified area within the District. The latter have numerous other duties in addition to their Tree Farm Licence commitments, including supervision of logging on Public Working Circles, and general duties connected with Crown land forest development. Rangers spend much of their time in the field and carry out regular inspections of Tree Farm Licence operations. The Tree Farm Licence Foresters, spend most of their time on administrative matters. Their main duties include: study of the working plans submitted by companies, study of the annual company reports on forest
development, the settling of any minor matters of policy relating to the licence clauses, and the supervision of licensee activities to ensure they comply with the requirements of the contract. In short, it is their function to see that the public interest is adequately protected. The amount of time which Tree Farm Licence Foresters can spend in the field is Unfortunately limited by the volume of administrative work. In the Vancouver Forest District, the aim of the present Forester and his assistant, is for one or the other of them, to visit all current operating areas at least twice a year. There are 24 of these at present (1962). When making such visits, they are usually accompanied by the local Ranger, the Company Forester and sometimes by staff from other Divisions of the Forest Service such as Reforestation, Management and Working Plans Divisions.

The District Tree Farm Licence Foresters are responsible to the Head of the Management Division of the Forest Service in Victoria, to whom they submit annual reports on the activities of the licensees within their Districts.

Under clause 45 of the contract, companies are obliged to employ:

One Forester, registered under the terms of Chapter 37 R.S.B.C., 1960, and amendments thereto, and as many additional Registered Foresters as may be deemed necessary by the Chief Forester.
The majority of Registered Foresters hold forestry degrees and have had a minimum of two years practical experience of local conditions. It is their responsibility to ensure that forest operations in the licence area comply with licence requirements. In practice, there is a sound working relationship between the Forest Service and company administrative staff and most of the administration problems which arise, are settled by local discussion. Disputes over which local agreement cannot be reached, are forwarded to the Forest Service offices in Victoria, for the Chief Forester’s decision. If a company is not prepared to accept this decision, it may appeal to the Minister of Lands and Forests whose decision on the matter is final.

It appears that the Forest Service is satisfied that in general, standards of forest management on Tree Farm Licence lands come up to, and in many cases exceed, the requirements of the contract. It has not been necessary for the Forest Service to exert undue pressure on Tree Farm Licence operators in order to achieve this situation. An indication of the degree of co-operation being achieved was obtained by reference to the number of occasions on which companies have been penalised for failure to comply with the licence clauses. In the Vancouver Forest District, between 1957 and 1960, seven cases of fining were recorded. Four of these were for cutting outside defined cutting permit boundaries, one for damage to young regrowth during logging operations, one for the abandonment of felled and bucked material and one for failure to remove the specified allowable cut.
Whether it would be advisable to increase the number of Forest Service supervisory staff is debatable. On the one hand, an increase in staff would mean more effective inspection of Crown lands and an increase in the interchange of ideas on forestry problems. On the other, there would be a risk that companies would resent an increase in Forest Service supervision of their activities. It would also be difficult to increase supervisory staff on Tree Farm Licences while Public Working Circles remain understaffed.

(xvi) Timing of the licence policy and future trends

Three of the questions listed earlier, can be conveniently discussed together. They are:

(i) Was the Tree Farm Licence introduced at the right time?

(ii) What would have happened if no Tree Farm Licence had been introduced?

(iii) What is the future of the Tree Farm Licence likely to be?

It is generally considered that, the timing of the licence introduction was very appropriate. For many years, operators had worked on a "cut and get out" basis and the licence made it possible for them to plan for more permanent operation. The post World War II period in British Columbia, was one of rapid industrial expansion and favoured the pulp
and paper industry in particular. The Tree Farm Licence enabled companies to acquire a sufficient area of forest land to justify heavy capital investment. It could be suggested that, if a similar licence had been introduced at an earlier date, forestry in British Columbia would be further ahead than it is today, but it is difficult to be certain of this. Economic circumstances have been the main reason for the great expansion of Industry over the last 15 years and prior to 1939, conditions were less favourable to the establishment of large permanent industries.

If no Tree Farm Licence had been introduced, it is reasonable to assume that, the forest industry would not be in the same position as it is today. The Government Forest Service has continued to be handicapped by a shortage of staff and funds and it is unlikely that forest management would be as intensive as at present, if responsibility for all management had remained with the Forest Service.

Looking to the future, much will depend on what happens in Public Working Circles, which have provided the main source of timber for operators who do not hold Tree Farm Licences.

When first created, there were less operators in Public Working Circles than there are today. Since 1947, there has been a rapid increase in the number of Timber Sale applications and many of the Public Working Circles are now fully committed. Established operators in all areas have naturally made every possible attempt to
consolidate their position. The Protective Association movement which originated in the Prince George District was a deliberate move on the part of established operators to gain control of Public Working Circle timber and to deter outside competition. So far, it has had a successful history. Macfarlane (1961) stated that Protective Associations controlled 19 per cent of the Provincial allowable cut in 1960.

At the same time the Government, forced to recognise that existing operators already have a substantial capital investment in an area, and that over-bidding does not always ensure the best forest management or industrial stability, have helped existing operators to consolidate their position even further. In 1960, sealed tender bid legislation was introduced, which applies to any Public Working Circle classified as an "emergency" area (which in practice, means being overcut by a specified amount). This gives an opportunity for an established operator to match the highest bid made by any other operator on a parcel of timber which the established operator requires for further operation. A "licensee priority" system was also introduced, which gives established operators in all Public Working Circles an assigned commitment related to the amount of timber cut over the three preceding years.

In brief, the situation will soon be reached where, most of the accessible timber in British Columbia will be controlled by existing operators. Competition for raw material is gradually being reduced and it is becoming increasingly difficult for new operators to get a footing in the sawmilling business. This partly explains why Public
Working Circle timber is usually sold at the appraised upset price.

At the same time, the fact that large areas of Crown timber have been allocated to Tree Farm Licensees, has encouraged the latter to invest in expensive and efficient manufacturing machinery and helped them to reduce their production costs. The smaller operator in British Columbia thus finds himself in a dilemma. In order to keep pace with the larger firms, he may need to expand the scale of his operations. To do this, he has to acquire more timber and the only alternatives are, to buy out an existing operator within his Public Working Circle or overbid him at an auction sale. There is thus a trend towards the amalgamation of smaller firms as is happening at present for instance in the Prince George District. Taking the long term view, it may be inevitable that control of most Crown timber will fall into the hands of larger operators.

There will nevertheless always remain room for smaller operators, either acting in the capacity of contractors to the larger firms, or as independent operators, in areas where topographic, or market conditions, given them a special local economic advantage. Integration, by such methods as the co-operative marketing of waste residues, will help such operators to remain competitive and it is very much in the public interest that they should do so.

In all Public Working Circles, there has been a noticeable trend towards long term planning by individual operators. Because all
operators are required by the Forest Act, to observe certain standards of utilisation and protection, it has been argued by some, that the Government should recognise that they are carrying out almost the same operations as Tree Farm Licensees and that an allowance for forestry costs should therefore be made in their stumpage appraisals. It is suggested that this would create more incentive for such operators to practise good forestry.

In the future, there may be increasing pressure on the Government from Public Working Circle operators for the conversion of these areas into Tree Farm Licences. The arguments in favour of this will be:

(i) In many Public Working Circles most of the allowable cut will be controlled by a few large operators.

(ii) Competition for raw material will have been greatly reduced, if not almost eliminated. There will be little point in retaining a system of public auctioning aimed at securing Government a greater revenue return for its timber.

(iii) Even if competition remains, it will be extremely difficult for a non-established operator to acquire timber in a Public Working Circle. The only way he will be able to do this, will be either by pur-
chasing a Timber Sale from an established operator or, by over-bidding an established operator. In the former case, it is unlikely that an established operator would invite competition by selling off a portion of his raw material. If he sells out at all, it will probably be a sale of his whole operation inclusive of manufacturing plant. The possibility of a non-established operator over-bidding a well established operator will also be remote, if established operators continue to protect themselves by the use of Protective Associations.

(iv) One of the main objectives of Government forest policy is stability of forest industry and this will be encouraged by allocation of raw material supplies to well established industries, which will remain competitive at the manufacturing level.

If eventually, control of most Crown timber falls into the hands of larger operators, Public Working Circles will virtually become Tree Farm Licences in which Government will continue to carry the financial and administrative responsibility for forest management.

From an operator's point of view, the conversion of a Public Working Circle into a Tree Farm Licence, would give him complete security of raw material supplies. In exchange, he would have
to accept the obligations of forest management.

From Government's viewpoint, the conversion of a Public Working Circle into a Tree Farm Licence, would mean an opportunity to delegate complete responsibility for forest management to private enterprise. Whether or not it would be desirable for private enterprise to take over the responsibility for almost all forest management in British Columbia, is difficult to answer. In many countries, it is believed that a reasonable balance of State to privately managed forest land is most in the public interest. On the one hand, it would certainly appear desirable for Government to retain at least some stake in forest management, if only to ensure that Forest Service officials responsible for the administration of Tree Farm Licences have some yardstick on which to base their judgement of the licensee's operations.

Conversely, it may well prove in course of time that, economic necessity will force all operators into managing their forest lands intensively, as for instance is already the case on private company owned forest land in the Southern United States, New Zealand, South Africa and elsewhere. If this happens, it may be unnecessary to retain a Government administrative staff to supervise the activities of Tree Farm Licensees and it will make little difference whether forest lands are alienated outright to private enterprise, or retained under Crown ownership.
The use of the Tree Farm Licence in other countries

The Tree Farm Licence could be of particular significance in those countries where:

(i) Much of the forest land is owned by the Crown.

(ii) Private enterprise industrial investment is considered desirable.

(iii) It is desired to attract capital to the forest industry.

(iv) Economic and political conditions favour the establishment of large industrial units. Adequate markets would be essential and political stability very desirable.

(v) Forest crops show the prospect of a high financial return.

(vi) The State Forest Service is handicapped by a shortage of staff and funds.

The difference between British Columbia and many other countries is that, the old growth forest is so valuable and regeneration so easy, that sustained yield management is an economic proposition. That, in the first cut over virgin forest, is most exceptional. Therefore it will rarely be possible to introduce anything like the Tree Farm Licence into natural forest during the first rotation. But the situation may be very different at the end of the second rotation as a result
of improvement of the forest at Government expense. It will also be of particular significance in countries where artificially established forest crops show the prospect of high financial returns. Kenya would be a typical example.

Experience in North America suggests that, wherever economic conditions favour the establishment of large industrial units, it is almost certain that, sooner or later, much of the available raw material for an industry will be controlled by large operators. An allocation of Crown timber to a large concern is therefore merely forestalling the inevitable. It also follows that, because of the size of investment, economic necessity will force such concerns to operate their forestry on a sustained yield basis. The Tree Farm Licence may therefore be a logical conclusion for the forest policy of any country where the conditions previously outlined apply.

During the transition period Government's responsibility will be, to devise a policy which offers sufficient inducement to attract large capital investment, leaves ample scope for the smaller operator and maintains an element of healthy competition in the industry. British Columbia appears to be doing this very successfully.

Tenures similar to the Tree Farm Licence have already been introduced into Mexico, the U.S.A., British Guiana, the Phillipines and Tasmania.
THE APPLICATION OF THE TREE FARM LICENCE IN KENYA

Introduction

There are several obvious similarities between British Columbia and Kenya. The most important ones are:

(i) The majority of forest land is owned by the Crown and forest policy favours the retention of forest land under Crown ownership.

(ii) Forest policy has encouraged private enterprise rather than State investment in manufacturing plants.

(iii) Economic and political conditions favour the establishment of large manufacturing units.

(iv) Management of Crown forests by the Government Forest Service has been handicapped by shortage of staff and funds.

There are also some very obvious differences and those which are most pertinent to this thesis are:

(i) Unlike British Columbia, Kenya has no serious problem of trying to bring privately controlled lands under sustained yield management.

(ii) Forestry in Kenya is a far less important industry than in British Columbia. It is based on a local rather than an export market.
Protection forestry is given greater emphasis in Kenya. Adequate protection of water supplies is of particular importance.

The bulk of the planting in Kenya is of short rotation species which show promise of a quick financial return. Artificial rather than natural regeneration is the rule and plantation establishment requires a heavy initial capital investment.

There is no open log market in Kenya and there are no independent loggers.

Kenya's present Forest Policy was defined in Kenya Government White Paper Number 87 (1957). Two points in this policy of particular significance to this discussion are those in which the Government has undertaken to:

(i) Foster the conception of a mutually interdependent forest industry and integrate to the best advantage of Kenya the production, harvesting and utilisation of forest produce, by ensuring close co-ordination between all interests concerned in these aspects of the industry and, whenever opportunity occurs, to encourage industrial processes consuming forest products.

(ii) Increase the ability of local industries to utilise process or adapt forest products for economic consumption primarily by fostering an economic environment conducive to private enterprise on which development must chiefly depend.
BACKGROUND INFORMATION

Geography

Kenya lies on the East coast of Africa and is traversed by the equator. The country covers an area of approximately 225,000 square miles. Kenya's neighbours are Ethiopia to the North, the Sudan to the North West, Uganda to the West, Tanganyika to the South and Italian Somaliland and the Indian Ocean to the East. Almost two thirds of Kenya consists of low elevation lands with low rainfall which are classed as desert or semi-desert.

The bulk of the populace lives in the higher elevation lands in the South West of the country most of which lie between 4,000 and 10,000 feet in altitude. The climate of these highlands is cool and temperate and rainfall is sufficient to support a wide variety of agricultural crops.

There are four main communities in Kenya: Africans, Asians, Europeans and Arabs, distributed approximately as under:

<table>
<thead>
<tr>
<th>Community</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africans</td>
<td>6,000,000</td>
</tr>
<tr>
<td>Asians</td>
<td>160,000</td>
</tr>
<tr>
<td>Europeans</td>
<td>80,000</td>
</tr>
<tr>
<td>Arabs</td>
<td>6,000</td>
</tr>
<tr>
<td>Total</td>
<td>6,226,000</td>
</tr>
</tbody>
</table>
The African population consists of 87 different tribes many of whom have their own language and social customs. The degree of development of these tribes varies very widely; some like the Kikuyu are relatively advanced, others like the Turkana still very backward. At the present time the rate of growth of the African population is estimated at $1\frac{1}{2}$ per cent per annum, and at this rate it will double itself in 46 years. The Asian population is mainly commercial. The European population consists of settlers, (approximately 3,000 families), civil servants and those engaged in commerce.

Economic situation

Kenya's economy depends on agricultural produce which accounts for over 70 per cent of total exports. Over the last decade the most important exports expressed as a percentage of total export value of production have been:

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>34.7</td>
</tr>
<tr>
<td>Tea</td>
<td>10.8</td>
</tr>
<tr>
<td>Extracts of Wattle bark</td>
<td>8.8</td>
</tr>
<tr>
<td>Sisal</td>
<td>7.6</td>
</tr>
<tr>
<td>Maize</td>
<td>6.5</td>
</tr>
<tr>
<td>Hides and skins</td>
<td>5.1</td>
</tr>
<tr>
<td>Sodium carbonate</td>
<td>5.0</td>
</tr>
<tr>
<td>Cotton</td>
<td>2.7</td>
</tr>
<tr>
<td>Oil seeds and nuts</td>
<td>1.2</td>
</tr>
<tr>
<td>Pyrethrum</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Commodity Percentage
Gold 0.5
Timber 0.2
Meal and wheat flour 0.1
Other 15.7
Total 100 per cent

Rapid economic expansion in Kenya after the Second World War, combined with similar expansion in those countries consuming Kenya's exports, led to an increase in export production from approximately $15 million in 1945 to a peak of $75 million in 1956. Since that date, there has been a gradual deterioration in trade under the influence of the recent political instabilities. Kenya's greatest economic handicaps are her lack of mineral wealth and the long rail haul from areas of production to the Coast (over 400 miles), which has an adverse effect on the timber trade in particular. The relative significance of the timber industry to the general economy is small compared with British Columbia. Forestry provides less than 5 per cent of the national income compared with over 40 per cent in British Columbia.

The Forests

The approximate area of forests reserved under Crown ownership equals 6,000 square miles and these cover approximately 2.8 per cent of the total land area. There remain a further 800 square miles of forest as yet unprotected, of which 700 square miles lie within the tribal reserve of the Masai tribe. For political reasons, no Govern-
ment protection of these forests has been possible and they are rapidly being liquidated by uncontrolled fire and grazing.

The forests vary widely in character depending on altitude and rainfall; the most significant group is that classified by Wimbush, (Wimbush 1950), as "Mountain Conifer" which he described as the largest area of natural conifers in Africa. These forests contain two coniferous species, *Podocarpus gracilior* and *Juniperus procera* (East African Pencil Cedar), which have sustained the timber industry over the last fifty years. The forests also contain many secondary hardwoods some of which have been successfully marketed both locally and overseas.

Brief History of the Forest Industry

Early settlement

White settlement in Kenya has all taken place since 1888. Prior to that date the East and Central parts of Africa were virtually unexplored and were occupied by African tribes whose only previous contact with the rest of the world had been through various Arab slave traders who from time to time had visited the interior of the country on slaving expeditions. In 1888, a Royal Charter was granted to the Imperial East Africa Company authorising it to take over control of the area now known as Uganda and Kenya, with a view to developing the country and abolishing the slave trade. In 1895, control of this company was taken over by the British Government. In order to open up the interior of East Africa for economic development, the construc-
tion of a railway was started from the coastal port of Mombasa in 1895 and this reached Kisumu, a small town on the shores of Lake Victoria, by 1901. During the construction of the railway it was realised that much of the unoccupied land in the interior was suitable for agricultural settlement and the British Government actively encouraged pioneer European farmers to take up land. By 1910 a considerable influx of settlers had taken place and small towns appeared throughout the interior. The capital of the country was established at Nairobi in 1908. As early development proceeded, a local Government was formed with various administrative and technical branches of which the Forest Department was one. The first task facing the Forest Department was the exploration, demarcation, and preservation of the forests against their further destruction by fire, grazing and cultivation. This work proceeded steadily from 1903 onwards; by 1930, 4,000 square miles had been reserved as Government or local Government forests and as already mentioned, this figure had increased to 6,000 square miles by 1960.

Early development of the sawmilling industry

As agricultural development increased, demands for timber resulted in the construction of the first sawmills. Pitsawing had been commonly used on many farms to meet small local markets and still is used in isolated areas, but in general, pitsawing methods cannot cope with large markets and their use is strictly limited.
Logging of the indigenous forests during the early years was not as difficult as in British Columbia, mainly because of Kenya's easier terrain. Nevertheless, Kenya suffered the big disadvantage of poor timber transport routes. Waterways, railways and good motor roads were almost wholly lacking and logs had to be extracted on ox carts. The single railway line to the Coast charged high freight rates and has always been a limiting factor to the building up of an export trade.

The Government, anxious to encourage the establishment of a sawmilling industry, awarded several long term licences to sawmilling firms. These licences allowed operators to remove timber from their concessions in clear felling coupes, or by controlled selective logging. The Grogan licence awarded in 1912, expired in 1958 and two others (Meru and Bonser), probably due to an oversight, had no expiry date at all. Royalties, (stumpage rates), were fixed at very low levels in order to encourage long term investment. Unfortunately these licences did not result in particularly efficient management and because of this and Government's inability to increase Royalties a certain prejudice developed against the awarding of further long term licences. By 1916, timber demands had increased sufficiently to justify the opening up of further areas and more licences were awarded, but most of these were for shorter periods. In 1916, total round log sales equalled 447,000 cubic feet, and by 1925 this had risen to 1,288,000 cubic feet. The Government took no part in extraction and its policy has always
been to encourage the timber industry to develop through the medium of licensed private enterprise operators, rather than by the establishment of State owned manufacturing plants.

The two main timbers extracted were *Podocarpus gracilior* and *Juniperus procera*. The former is a general purpose timber of medium weight and good working properties, the latter is a very durable soft-wood which has properties very similar to Western Red Cedar. Since no strict control of cutting was applied to the various licences issued, and because local demands were still fairly limited, it was not long before the sawmillers began to explore the possibilities of exporting timber. The indigenous logs being cut were large in size, (the best old growth trees exceeded 100 feet in height and 8-10 feet in diameter) and only the best specimens were being cut. In consequence, long clear lengths of good quality timber were available for export and by 1924, a limited export trade of approximately 200,000 cubic feet per annum had been built up with the United Kingdom and other European countries. In recent years the quality of indigenous logs has declined.

Between 1924 and 1930, European settlement increased rapidly and the demands for timber encouraged the establishment of many new mills. In 1929, when the world wide slump which had affected the British Columbian timber industry reached Kenya, the mills found themselves in serious competition and in their own interests, banded together to form the East African Timber Co-operative Association, which allocated market
quotas to its members, and controlled timber prices. This association
has had a successful history, standing the member mills in good stead
during the lean pre-war years and placing them in an extremely strong
position during the war when there was an enhanced timber market.
Throughout the period 1929-1961, approximately 50 per cent of the saw-
mills in the country have belonged to this association.

Reforestation

As exploitation of the indigenous forests proceeded, Forest
Department policy became more concerned with the replanting of logged
areas. Natural regeneration of the desirable coniferous species does
not readily establish itself. The matrix of hardwoods in which the
two important conifers grow, contains very few species of economic
importance and in logged areas a vigorous undergrowth of commercially
valueless scrub similar to the Salmonberry of British Columbia, rapidly
invades the site if not replanted. In very few areas do the two main
coniferous species form more than 30 per cent of the crop and on an
average basis for the whole country, the commercial timber yield from
indigenous forests does not exceed 500 cubic feet per acre.

With this background, the Forest Department concentrated on
artificial replanting using first of all, the two coniferous species
Podocarpus and Juniperus and at a later stage, various introduced exotics.
It was discovered that the growth rate of the indigenous species was
infinitely slower than that of the exotic species; the average rotation
of Podocarpus would be approximately 80 years, whereas similar volumes of timber can be obtained from the most commonly used exotics in 25 to 30 years. An important difference between the forests of Kenya and British Columbia is that, those of the former occupy extremely fertile land. This, together with the excellent climatic conditions in the Highlands, which have no winter and two growing seasons, make it possible to use the fast growing Cypresses and Pines of Mexico and California to extremely good advantage. Over the course of the last 50 years, it has been found that, a rotation of 30 years for timber crops is possible and that this will produce a crop of trees with an average breast height diameter of 18" and a volume of approximately 6,000 cubic feet per acre. The species most commonly planted have been Cupressus macrocarpa, Cupressus lusitanica, Pinus radiata, Pinus patula, and Pinus elliottii.

Up to December 1961, approximately 150,000 acres of softwood plantations had been established. On the local market, exotic softwood timber is gradually replacing indigenous coniferous timber. Table 3 gives details of timber sales over the period, 1951-1960.

**TABLE 3. COMPARATIVE STATEMENT OF TIMBER SOLD IN TONS OF 50 CUBIC FEET TRUE, 1951-1960**


<table>
<thead>
<tr>
<th>Year</th>
<th>Podo</th>
<th>Cedar</th>
<th>Cypress</th>
<th>Pines</th>
<th>Others</th>
<th>Total Softwoods</th>
<th>Total Hardwoods</th>
<th>Total Softwoods and Hardwoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>82,792</td>
<td>28,169</td>
<td>19,913</td>
<td>-</td>
<td>477</td>
<td>131,351</td>
<td>34,362</td>
<td>165,713</td>
</tr>
<tr>
<td>1952</td>
<td>78,126</td>
<td>45,860</td>
<td>20,388</td>
<td>-</td>
<td>251</td>
<td>144,625</td>
<td>34,840</td>
<td>179,465</td>
</tr>
<tr>
<td>1953</td>
<td>80,863</td>
<td>30,486</td>
<td>19,756</td>
<td>-</td>
<td>591</td>
<td>131,696</td>
<td>24,953</td>
<td>156,649</td>
</tr>
<tr>
<td>1954</td>
<td>93,559</td>
<td>37,172</td>
<td>27,524</td>
<td>-</td>
<td>866</td>
<td>159,121</td>
<td>23,327</td>
<td>182,448</td>
</tr>
<tr>
<td>1955</td>
<td>89,197</td>
<td>39,406</td>
<td>29,645</td>
<td>1,115</td>
<td>1,141</td>
<td>160,504</td>
<td>23,994</td>
<td>184,498</td>
</tr>
<tr>
<td>1956</td>
<td>81,634</td>
<td>31,180</td>
<td>32,260</td>
<td>1,450</td>
<td>40</td>
<td>146,564</td>
<td>22,426</td>
<td>168,990</td>
</tr>
<tr>
<td>1957</td>
<td>66,015</td>
<td>17,642</td>
<td>34,137</td>
<td>3,225</td>
<td>38</td>
<td>121,057</td>
<td>26,421</td>
<td>147,478</td>
</tr>
<tr>
<td>1958</td>
<td>66,727</td>
<td>22,959</td>
<td>28,732</td>
<td>1,557</td>
<td>247</td>
<td>120,222</td>
<td>25,969</td>
<td>146,191</td>
</tr>
<tr>
<td>1959</td>
<td>62,749</td>
<td>21,221</td>
<td>27,247</td>
<td>4,224</td>
<td>244</td>
<td>115,684</td>
<td>22,662</td>
<td>138,347</td>
</tr>
<tr>
<td>1960</td>
<td>66,423</td>
<td>21,859</td>
<td>31,146</td>
<td>2,664</td>
<td>6</td>
<td>122,098</td>
<td>29,711</td>
<td>151,809</td>
</tr>
</tbody>
</table>
The "Shamba" system

One of the biggest factors in favour of a large planting program has been the very low cost of plantation establishment. A "Shamba" system of afforestation is used, which entails the voluntary cultivation of forest land for agricultural crops by African families before the trees are actually planted. Prior to European settlement in Kenya, the natives practised a form of shifting cultivation which involved clearance of an area of forest land by cutting and burning, followed by the planting of crops such as maize and beans. Once the fertility of the site had been exhausted, families moved on to another area. The Forest Department was able to make use of this natural custom by offering areas of logged over land to native families for cultivation for a period of two to three years, after which trees were planted in the cleaned land. Under this system, weeding costs are virtually negligible and the trees benefit from the advantages of a clean site and the shade protection of a maize crop in the first year of establishment, a factor of importance in a tropical country where soil temperatures of unshaded land are very high. In addition to the establishment of timber plantations, an extensive planting program of fuel species was undertaken in order to meet both domestic and railway demands. *Eucalyptus* spp. were mainly used and by 1950, approximately 20,000 acres of plantations had been established. During recent years, fuel demands have fallen off very rapidly with the introduction of cheap electric power from the Owen Falls dam on Lake Victoria in Uganda, and since the decision of the Railways Administration to introduce diesel
locomotives. Eucalypts have been suggested as a possible source of raw material for a pulp mill.

Expansion of the timber trade.

Local and export demands for timber have steadily increased since the 1920's and reached a peak during the Second World War when heavy shipments of timber were made to the Middle East. Log sales in 1945 totalled 5,826,750 cubic feet. After a slight drop, log sales rose steadily again until 1955 when they totalled 9,224,900 cubic feet, since that date, the political situation has resulted in a steady decline of building activity, and sales have decreased.

In sharp contrast to British Columbia, Kenya's timber trade has been built up around a local market which has been fairly consistent in demand and not very selective in quality. The export trade has expanded very slowly. In 1960 exports totalled 330,294 cubic feet of sawn timber representing approximately 15 per cent of total production.

Since 1945, the number of operating mills has increased from 41 to 67. These are mainly operating on revised licences dated from 1951, the majority of which were issued for 10 or 15 year periods. The period of each licence was determined on the basis of the remaining volume of merchantable timber in the various concession areas.

As previously noted, there has been a marked trend towards the wider use of exotic softwood timber during recent years, as produce from
plantations has taken a steadily increasing share of the market. The majority of accessible old growth indigenous forest areas have now been worked over, and the expected yield from exotic plantations is more than sufficient to supply present demands.

Future demands

Estimates of future wood consumption have been made on several occasions since 1945. Reports by Hiley, (1950) Craib, (1956) and an unpublished Government Working Party Report on the Craib Report, are the basis for the Forest Department's present planting program which aims to produce approximately 300,000 acres of plantations by 1980. This will allow for a local consumption of timber and timber products of 36,000,000 cubic feet (9 million population x 4 cubic feet per head) plus a surplus of approximately 26,000,000 cubic feet per annum for export to Uganda and overseas.

Plantations are being established in units of 10,000 acres, each with an expected sustained yield of 2,000,000 cubic feet of round logs per annum which, on the basis of South African experience, is the volume of timber required to support a mill of minimum economic size. Two of these units will reach maturity in the next five years. The aim is to plant up each unit as rapidly as possible, since South African experience has shown that small volumes of exotic softwood thinnings are difficult to market but, if these can be produced in sufficient quantity and concentration, it is possible to establish large manufac-
There are as yet, no pulp or board mills in Kenya, and there is only one small paper mill which uses waste paper as its raw material. A survey carried out by Dr. Julius Grant (1956), of the possibilities of establishing pulp and paper mills in Kenya, indicated that a small plant with an annual production of 15,000 tons of kraft pulp wrapping paper and general purpose printings and writings would be economically viable and would meet the internal demands of the East African territories. The estimated cost of such a plant would have been approximately $4,500,000 in 1956. Mainly because of the political instability of the last few years, no investment has taken place in this project. Kenya continues to rely on imported pulp and paper products, the annual value of which exceeds $7,500,000. Various unpublished surveys have been made of the possibilities of establishing plywood, hardboard and particle board plants in Kenya. These indicate that available raw material or internal demands for these products are as yet, insufficient to justify the establishment of local manufacturing plants. The introduction of pulp and board plants would greatly help to improve the efficiency of the sawmilling industry. At present, approximately 50 per cent of the total intake of round timber to all mills is wasted and no economic use exists for this mill residue. In addition, there is no market for the considerable volume of small sized plantation thinnings which are at present
felled and often left to rot on the ground. This applies to most of the material between 6" and 8" in diameter and to all the material of less than 6" in diameter.
THE SAWMILLING INDUSTRY

The sawmills

In 1960, there were 67 sawmills in Kenya, of which 37 held concessions in Crown forest reserves and the remainder purchased their timber through public auctions of Crown timber or from private forest lands. The approximate total consumption of round logs from Crown forest reserves in 1960, was 9 million cubic feet. Consumption of logs from private lands is not recorded. A survey by the Forestry Section of the Food and Agricultural Organisation in Rome is due this year. This will include figures of approximate log consumption from private lands.

The sawmills are mainly small, only 6 consuming more than 250,000 cubic feet of logs per annum. The majority of mills outside forest reserves are small family concerns with an annual consumption of less than 40,000 cubic feet. The largest indigenous mill has an average annual intake of approximately 500,000 cubic feet of logs and the largest exotic mill consumes a similar quantity. All the mills are operating on a one shift per day basis.

Logging methods

Felling and bucking is done with hand saws. Axes are still used for small sized plantation material in some areas. Several firms have experimented with power saws but because labour is relatively un-
skilled, it has been found difficult to prevent breakages and to ensure adequate maintenance. A number of firms have purchased power saws but later reverted to hand felling and bucking methods. In indigenous forests, only merchantable species are removed and these are erratically distributed. Unlike British Columbia, there has been no need to ensure that adequate seed trees are left behind or to control slash burning. Areas logged over are being artificially replanted with faster growing exotic species and under the "shamba" system previously mentioned, the commercially useless species left behind after logging are felled and burned by the families to whom the land is allocated for agricultural cultivation. Some of the residual material produces good charcoal and many cultivators sell this to local contractors.

In softwood plantations, both thinnings and clear fellings are removed. The industry has in general, refused to accept any log of less than 6" top diameter on the grounds that such material cannot profitably be converted into lumber. There is only a very limited market for poles and in consequence, the first thinning is carried out by Forest Department personnel and either burned, or left to rot in plantations, depending largely on the availability of funds. Logs over 6" top diameter which are felled and bucked by mill labour, are usually skidded out by tractor or oxen. The larger mills are mainly using Caterpillar tractors.

In the majority of present operating areas, there is an ade-
quate dry weather road system established either by the Forest Department or by the mills themselves. Logging and trucking is possible for at least 9 months of the year in most areas and in some plantation areas, all the year round. Logs are transported by petrol, or diesel trucks and tractors and trailers. In the majority of cases, a relatively short haul is involved, (up to a maximum of 15 miles), but a few mills situated outside forest reserves have transported logs over distances of up to 100 miles, depending largely on the species and quality of log. No river transportation of logs is possible and none of the mills use log ponds. Little log sorting is done and most mills take the logs as they come.

**Sawmilling**

Sawmills are primitive by North American standards. Some mills are equipped with log lifting gantry and block tackle apparatus, but in many, the haulage of logs from yards and mounting of logs onto carriages, is done by manual labour. Many mills employ old "Lane" type circular saw breakdown machines. A few of the more modern mills are using band or gang saws. Most are steam powered, a few use diesel power and one has its own electric generating plant. Far more labour is employed than in more advanced countries mainly because labour is cheap. Plant layout is generally poor and in many mills there is a bottleneck between breakdown and resawing machinery. There are only a few planing mills and kiln seasoning is rare.
Sawmill licences

As noted earlier, the present licences were originally granted to allow operators the right to remove a specified volume of timber related to the remaining merchantable volume within an area. Some of the later licences issued have also given cutting rights in softwood plantations.

A list of the licences in existence in December 1960 is given below:

<table>
<thead>
<tr>
<th>Forest Reserve</th>
<th>Sawmills</th>
<th>Date of Expiry of Current Licence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mt. Elgon</td>
<td>Suam</td>
<td>30.6.67.</td>
</tr>
<tr>
<td></td>
<td>Mt. Elgon</td>
<td>30.6.67.</td>
</tr>
<tr>
<td>Kakemega</td>
<td>Rondo Timber Co.</td>
<td>31.12.62.</td>
</tr>
<tr>
<td>Elgeyo</td>
<td>Algao Sawmills</td>
<td>31.1.72.</td>
</tr>
<tr>
<td>Kaptagat</td>
<td>Kaptagat Sawmills</td>
<td>31.12.77.</td>
</tr>
<tr>
<td>Kipkabus</td>
<td>Hans Raj</td>
<td>30.4.63.</td>
</tr>
<tr>
<td>N. Tinderet</td>
<td>Buret</td>
<td>31.5.62.</td>
</tr>
<tr>
<td></td>
<td>Singhalo</td>
<td>31.3.62.</td>
</tr>
<tr>
<td></td>
<td>Timsales Timboroa</td>
<td>1.7.72.</td>
</tr>
<tr>
<td></td>
<td>Timsales Station</td>
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</tr>
<tr>
<td></td>
<td>Highland Sawmills</td>
<td>31.3.62.</td>
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<tr>
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<td>Sikh Sawmills</td>
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<tr>
<td>Forest Reserve</td>
<td>Sawmills</td>
<td>Date of Expiry of Current Licence</td>
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<tr>
<td></td>
<td>Kibleso</td>
<td>30.12.62.</td>
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<tr>
<td></td>
<td>Amalgamated Sawmills (Mariashoni)</td>
<td>30.6.72.</td>
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<tr>
<td></td>
<td>Njoro</td>
<td>31.12.72.</td>
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<tr>
<td>Bahati</td>
<td>Bonser</td>
<td>31.12.66.</td>
</tr>
<tr>
<td>Marmarnet and Ol Bolossat</td>
<td>African Sawmills Ltd.</td>
<td>31.12.62.</td>
</tr>
<tr>
<td></td>
<td>Panara</td>
<td>31.12.63.</td>
</tr>
<tr>
<td></td>
<td>Marmarnet</td>
<td>31.12.72.</td>
</tr>
<tr>
<td>N. Kinangop</td>
<td>Kenya Pencil Slat Co.</td>
<td>31.5.62.</td>
</tr>
<tr>
<td></td>
<td>Keith Timbers</td>
<td>31.7.67.</td>
</tr>
<tr>
<td></td>
<td>Nanyuki Sawmills</td>
<td>30.6.67.</td>
</tr>
<tr>
<td></td>
<td>Ontulili Sawmills</td>
<td>30.6.67.</td>
</tr>
<tr>
<td>N. E. Mt. Kenya</td>
<td>Wason Timber Co.</td>
<td>1.7.72.</td>
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</tbody>
</table>
Of a total of 37 licences, 21 expire in 1962 or 1963, 7 in 1966 or 1967, 7 in 1972, and 2 in 1977. These licences are essentially allocations of timber. In most cases, the object has been to give the operator security of tenure and to attract initial capital investment. The licence specifies the volume of timber to be cut by species, methods of felling and extraction permitted and contains clauses to protect water supplies and to safeguard against soil erosion. Timber is scaled in the forest at the time of felling, or in the mill yard, depending on the circumstances. Scaling is done by Forest Department Officers who record merely the length, girth and defect in each log, the actual computation of volumes being carried out by a centralized accounting office in Nairobi. For some species, an average defect has been worked out and agreed upon by both the Forest Department and the Industry and an automatic deduction for defect is made. In other cases, the average defect has to be estimated by the scaling officer and agreed upon by a mill representative. Royalty rates are calculated as an agreed percentage of selling price of rough lumber and revised annually. Rates vary by species and for plantation softwoods, with the size of log.

The licence permits the operator to establish mill buildings and necessary housing on sites approved by the Forest Department, but on expiry of the licence, all such buildings plus mill equipment have to be removed from the area within a specified time. The licensee is permitted use of Forest Department roads and has to share maintenance costs. Any extra roads required for extraction purposes, have to be laid out with
Forest Department approval and constructed at the licensee's expense. The licensee is obliged to provide labourers for fire fighting if necessary. Subcontracting is not permitted without prior approval and various penalty clauses are also included. A deposit appropriate to the average monthly cut is also payable.

The licences used in Kenya, differ basically from British Columbia's Tree Farm Licence in that, the licensee is not required to assume any obligation for forest management, all of which is carried out by the Government Forest Department. There is therefore no reimbursement for approved forestry costs. No allowance is made in Royalty rates for cost of road construction, mainly because a fairly adequate network of Forest Department roads already exists. There is no assessment for stumpage rates according to "logging chance", mainly because operating conditions are fairly uniform. An allowance is made however, in cases where a mill is situated a considerable distance from railhead, a deduction from Royalty being permitted at a standard rate per mile, for hauls in excess of a specified limit.

Present condition of the sawmilling industry

The Kenya sawmilling industry is in general, badly organised undercapitalised and inefficient. In a report on the industry written in 1959, by the Forest Department Utilisation Officer, 9 mills were classed as "Very Efficient", 16 as "Efficient" and the remainder as "Poor". The bulk of this report was regarded as confidential and the
material in it cannot be reproduced but it can be noted that, all aspects of the industry were considered, including productivity, size of capital investment, type of machinery, plant design, technical skill of staff and marketing organisation. The main reasons for the present condition of the industry are discussed in the following sections.

Reliability of the local market and lack of outside competition

A dependable local market and lack of outside competition encouraged a certain complacency in the industry, particularly during the war years. The market has not been particular as to quality and there has been little incentive to install better machinery or drying kilns. Lack of outside competition is partly the result of the long rail haul to the Coast, which has both acted as a deterrent to the building up of an export trade and protected local mills from outside competition.

Poor quality logs

For many years the industry cut indigenous logs containing a high proportion of defect. Because mills have been mostly small and undercapitalised their equipment has often been unsuitable for dealing with this type of material. For a variety of reasons to be discussed later, the exotic softwood plantation logs now coming forward in increasing quantities also often contain a high proportion of defect.

Shortage of capital

Kenya is a relatively underdeveloped territory and capital is:
scarce. The small mills in the country have neither been able to generate sufficient capital from their own operations to justify investment in expensive and more efficient machinery, nor to attract outside local or foreign capital. It has also been alleged by Industry that, present Royalty rates are too high to enable mills to make a reasonable profit.

Lack of an outlet for waste

The absence of pulp, board and other residue consuming industries has prevented mills from making the most effective use of raw material. As previously noted the percentage of defect and waste from both indigenous and exotic logs is high and all such material is presently burned or dumped.

Insecurity of tenure

Industry has complained that the present short term tenures hold out insufficient inducement to capital investment in new machinery, a criticism which is particularly valid at the present time, when 21 of the existing licences are due to expire in 1962 or 1963.

Again this firm is not interested in capital expenditure until they have greater security of tenure. A lot of the third grade mill-run timber could be profitably converted into box shooks were the machinery available. (Annual Report of Elburgon Forest Division 1958.)

Security of tenure and a more stable political situation, will probably be two of the most important factors affecting the industry's
future development:

Thus whatever happens, the industry must seek capital from outside some time during the next 10 or 12 years. Investors are extremely sensitive and there are plenty of opportunities elsewhere. They will not put up large sums to be at risk over long periods unless they believe the Government will follow settled policies and that their operations will not suffer undue interference. Mature consideration will have to be given to the inducements to be offered to, or the restraints to be imposed upon, operators in the various branches of the industry. The paramount problem Kenya has to solve is to secure the development in each branch of the industry of units of optimum economic size, adequately planned and equipped, each covering a portion of the field and sustained by long term agreements giving continuity of operation and supply of raw material. (Henson 1957)

Lack of co-operation between Government and Industry

In the past, there has been a tendency for the Forest Department to confine its interest to silvicultural matters and to pay too little attention to the affairs of the sawmilling industry. It was believed that, if the Government produced adequate supplies of raw material, an industry capable of consuming this raw material would automatically develop. This attitude is one commonly held by many British trained Foresters. The emphasis in most colonial territories has been on reservation of forests and their protection from burning, over grazing and cultivation. The industrial aspects of forestry have been given far less emphasis in British University training than for example, in North America. As a result, there is a general lack of understanding of the basic economic principles which govern the establish—
ment of the manufacturing industries. An illustration of this was given in an F.A.O. report by Huber, (F.A.O., 1953), when commenting on high mountain extraction problems in India, where current forest policies remain largely, as laid down by the former British forest administration. Some of the difficulties being encountered, were attributed to the preoccupation of Forest Department officials with silvicultural and other management matters and their neglect of timber extraction problems. Timber was being sold in small lots and no incentive was given to operators to establish themselves on a more permanent basis.

A somewhat similar situation prevails in Kenya, where all the present forestry officials are British trained and where, in addition, the experience of the Grogan, Meru and Bonser concessions, has made forest officials adopt a cautious attitude towards the granting of long term tenures. A result of this is that, the Forest Department is sometimes accused of being insufficiently concerned about the industry's problems:

The present policy does lead to a lack of liaison between the grower and the user each tending to remain in his own watertight compartment. The main need seems to be to integrate the two in a common policy, which of course may vary from time to time according to the needs of the moment.

It would however be unreasonable to suggest that, the attitude of forestry officials has been a major cause of the sawmilling industry's present problems. Nor could British Universities be blamed
for placing emphasis on those subjects which have in fact, been of fundamental importance during the early years of forest development in most colonial territories. The answers to some of Kenya's economic problems have only become apparent within the last decade and Kenya is fortunate in being able to draw on the experience of countries such as British Columbia and South Africa in formulating her future policies.

Irregular supplies of raw material

The sawmilling industry has made frequent representations to the Forest Department that continuity of raw material supplies is essential if mills are to be operated efficiently. The criticism refers to plantation timber supplies:

Recently certain thinning programs have been issued by the Forest Department which show wide variations in the volumes offered to exotic softwood mills from one year to the next. A program devised in such a manner has obviously been compiled without regard to the economic consequences of operating a mill spasmodically. It is absolutely essential that Foresters should appreciate that capital invested in a mill must be kept occupied every year, and preferably at an intense level of operation. Interest charges are not waived by bankers and investors simply because the thinning program has been compiled to give spasmodic operation. Only regular and intense operation of mills can give costs sufficiently low to enable Kenya to export in the face of competition from countries more advanced in the application of common sense business practices to the utilization of their timber resources. (Henson 1957)
There are several reasons why this variation in thinning programs has occurred and some of them will be discussed later. One reason has already been discussed, i.e., the tendency of forestry officials to think in terms of silvicultural rather than industrial requirements.

**Efficient sawmills**

Despite the weaknesses of the industry previously discussed, there are several very efficient sawmills in Kenya. A number of sawmillers possess a sound technical knowledge of the local operating conditions and are anxious to create a more efficient industry. Some have been able to visit sawmills in Sweden, South Africa, New Zealand and other countries, and some of the techniques observed, have been successfully incorporated into local mills. An exotic softwood mill in the North Tinderet forest reserve, was acknowledged by a group of visiting experts from the U.S.A. and Canada, as being of sound design and as modern as many similar sized mills in Eastern Canada, where coniferous logs of comparable size are being milled.

Considerable thought has been given to the most suitable type of mill for dealing with the quantity and quality of softwood material which will become available from plantations over the coming decade. Details of a proposed mill have been described by Keen (1961). The capital cost of such a mill would exceed $600,000.

**Summary**

To summarize, the immediate objectives of the sawmilling in-
Industry are:

(i) To maintain, and expand local markets, in the face of the present political depression, and if possible, to increase the export market.

(ii) To attract investment capital.

(iii) To eliminate inefficient concerns and establish large and more efficient mills, with lower production costs.

(iv) To find an outlet for waste material.

(v) To secure the co-operation of Government over matters such as tenure policy and to encourage a wider understanding among forestry officials of the industry's basic requirements.
FOREST MANAGEMENT

Despite the emphasis in its declared Forest Policy on Protection forestry, the Kenya Forest Department is heavily committed to the more commercial business of softwood growing. The softwood program which is proceeding at an annual planting rate in excess of 12,000 acres, consumes over 75 per cent of the Department's average annual budget of approximately $1,500,000. The Department has encountered several difficulties in carrying out this program. This section discusses these difficulties.

Treasury control

The Kenya Forest Department is financed by an erratic annual treasury budget, and its freedom of action is limited by numerous treasury regulations. Under these circumstances it has sometimes been difficult to ensure efficient forest management. The impact of treasury control on forest management has been discussed in some detail in a directed study (Spears, 1962) and it is not therefore proposed to repeat this discussion. A brief summary of the more important points may be useful.

The main problem has been that of persuading the Government to allow sufficient funds and staff to ensure sustained forest development. The situation has not improved between 1925 and 1962 and was summarised up to 1953, in a statement by the Chief Conservator of
Forests in the Forest Department's Annual Report for that year:

Ever since the Department was first constituted it has struggled to cope effectively with a task far too great for its limited personnel. Very considerable expansion after the war still did not make up the leeway due to the annually increasing planting programme and to the snowballing of plantation work which followed in its wake. There is today an accumulated backlog of work of this kind to cope with which new measures must be sought.

Partly as a result of inadequate finance and maintenance, many plantations are understocked, unpruned and under thinned. This has lowered the quality of softwood timber, decreased the Government's revenue return from plantations and made it difficult to ensure a sustained supply of logs to sawmills. The effects of treasury budgeting on forest management were sufficiently serious for a Committee to be set up in 1951 under the chairmanship of W. E. Hiley in order to investigate the problem. The main conclusion of this Committee was that an independent Forestry Commission should be created to handle forest development:

The whole development of the colony's forest estate is a large commercial undertaking and an appropriate organisation is required to run it. Money is spent in order to produce revenue and although in forestry, returns are long deferred and it is difficult to associate particular income with particular expenditure, achievement should be definitely related to costs. For this reason we consider that the accounts of the Department should be kept on a commercial basis. Further, the Department is engaged in selling its products and, as in any commercial undertaking, it must endeavour to sell them in as
favourable a manner as possible. The present system under which its revenues are merged in the general revenues of the colony, while the Department is dependent on an annual vote to cover its expenditure, is unsuited to the requirements of such an undertaking. (Government of Kenya 1950, pp. 14).

The Committee recommended the formation of a Forestry Commission, to be organised as a self-financing business concern, and, subject to certain limitations, able to control its own expenditure. It also recommended that the Commission be authorised to borrow money for the capital completion of the forest development program.

The Government did not accept the recommendations of the Hiley Committee, mainly because it was considered undesirable for one particular Department of Government to be placed in a position where it would be able to control Government revenue. The decision was probably influenced by the fact that forestry in Kenya has a relatively low budget priority, its annual budget, as previously noted, representing less than 3 per cent of the average total annual Government expenditure. Since 1951, the Forest Department has continued to rely on an erratic treasury budget and forest management continues to be adversely affected.

Other problems which originate from the treasury budgeting system, are those of ensuring complete utilisation of funds, the inflexibility of vote allocation, the general restrictions relating to handling of Government funds, stores, vehicles, machinery and equipment and the effect which the system has on the incentive and morale of field
staff. The problem of ensuring closer utilisation of funds is mainly the result of a centralised accounts branch and the distance of the majority of Forest Stations from the Head Accounts Office, which means delays of up to a month, in accounts correspondence. Because every Forester is personally responsible for any over expenditure, there is a tendency for reserve balances to be held back at every Forest Station; the effect of this is the Department has returned as much as 8 percent of its already limited budget to general revenue at the end of a financial year. No authority is granted to Field Staff to transfer funds from one expenditure vote to another and on many occasions, work has been held up because of the time taken to obtain permission from Head office to do this. General treasury restrictions are also inflexible and cause a considerable loss of time, excessive paper work and wasted effort.

The combined effects of these difficulties are inefficient forest management and loss of incentive and morale among Field Staff. In many cases, an inevitable loss of output occurs.

Many other countries apart from Kenya have experienced similar financial difficulties. The effect of treasury budgeting in British Columbia was discussed by Sloan (1957). In general, there are three methods by which Governments have overcome the problem:

(i) By the establishment of Forestry Commissions,
(ii) By the setting up of special Forest Funds

(iii) By delegation of responsibility for forest management to private enterprise, as has been done, for example, in British Columbia.

It has been already noted that forest development on Tree Farm Licence lands is financed directly from stumpage revenues without them being paid into the Government's general revenue account. There is therefore no risk that a proportion of such revenue will be diverted to some purpose other than forestry.

Continuity of staff

In common with other Government Departments, the Forest Department has found it difficult to maintain continuity of staff at its Forest Stations. The problem is a result of frequent leave periods, retirements, resignations and in some cases, a deliberate policy of ensuring that Forest Officers, as Civil Servants, do not become too familiar with the local community. The result of frequent staff changes is that an officer seldom becomes really familiar with the problems of his own particular District and forest management suffers accordingly. The problem is one common to many countries and is an almost unavoidable weakness of Government forest management.

The political factor

A more recent problem of Government forest management in Kenya,
has been the effect of the recent political disturbances and in particular, the effect of the current political changes on staff recruitment policy. Up till 1952, the majority of Foresters were either University or Forester School trained expatriates. Kenya had no local Foresters Training School and training was obtained in either Great Britain or South Africa. In recent years, political pressure has forced the Government into a policy of accepting a greater number of local personnel and many of these have had no forestry training at all. In 1960, out of a total Forester staff of over 70, less than 30 had attended a Forester's Training School. A Foresters Training School has now been opened and intensive efforts are being made to train as many local people as possible in preparation for a possible change in Government.

In brief, it appears inevitable that forestry will continue to suffer from a lack of experienced Foresters for several years to come. In course of time, there is no reason to doubt that the situation will restore itself as local people acquire more experience.

Summary

Despite the difficulties previously described, the Kenya Forest Department has established a large acreage of plantations, plus an adequate road system and necessary staff housing and offices. It would be incorrect to suggest that the maintenance of all plantations has been neglected, that management is always inefficient and that the
morale of all Field staff is low. The objective of the preceding paragraphs has been to illustrate the difficulties of ensuring efficient management, when forestry development is tied by an annual treasury budget and flexibility of management restricted by numerous Government regulations. In practice, forest management in Kenya is probably as good as can be achieved under the prevailing system.

The advantages of vertical integration of forest and industrial plant management were mentioned when discussing the Tree Farm Licence. Under the prevailing system in Kenya these advantages cannot be realised.
FUTURE TIMBER DISPOSAL POLICIES

The Kenya Government, as owner of the main supplies of raw material for the forest industry, has five main alternatives open to it:

(i) To dispose of all Crown timber by public auction

(ii) To award licences to private enterprise concerns, Government retaining the responsibility for forest management.

(iii) To award licences to private enterprise concerns and, in addition, to delegate to these same concerns the responsibility for forest management.

(iv) To dispose of Crown timber by outright alienation.

(v) To establish State manufacturing plants.

It is not essential that Government commit itself to any particular one of the above alternatives, in practice, a combination of two or more may be desirable.

In discussing these alternatives, it should be recognised that, a sound timber disposal policy will not automatically ensure a healthy and efficient sawmilling industry. The biggest problems the industry have to face are: those of surviving in the face of a depressed market, the attraction of local and foreign capital and the establishment of more efficient mills. Nevertheless, it is important that Government's
timber disposal policy should be that which is most likely to encourage the establishment of an efficient industry and that the principles on which this policy is based should be clearly recognised. The main objective of this section is to discuss these principles.

Public Auctioning

As noted earlier, the main advantage of disposing of Crown timber by public auction is, that it completely relieves Government of the responsibility of deciding which of several competing firms, should be allocated Government owned timber. It is also sometimes argued that because competition for raw material is encouraged Government obtains a greater direct revenue.

On the debit side, experience in other countries indicates that public auctioning of Crown timber, particularly where small parcels are concerned, may retard the establishment of large manufacturing plants. The experiences of Cyprus, Trinidad, India and British Columbia have been previous discussed.

In Kenya, efficient conversion of the large quantities of softwood logs, which are becoming available as a result of the Government's softwood program, will require the establishment of expensive and well equipped sawmills. A suitable mill designed by Keen (1961), entails capital outlay of approximately $600,000. It is unlikely that an investment of this size will be secured unless some assurance is given over raw material supplies and it will be difficult to offer
such an assurance under a system of public auctioning of short term sales.

Experience in the U.S.A., Canada and elsewhere suggests that, in general, large manufacturing concerns possess substantial advantages over smaller operators and that the long term trend is for such firms to gain control of most of the available raw material. Even where attempts have been made to protect the smaller operator, as for instance by the establishment of Public Working Circles in British Columbia, there is a tendency for these small operators to band together in an effort to restrict outside competition and to amalgamate in order to keep pace with larger firms.

The problem which the Kenya Government has to face, is that of defining a policy, which will offer sufficient incentive to larger concerns to justify heavy capital investment, leave ample scope for the smaller operator and ensure an element of healthy competition in the industry. Unless it is decided to establish State sawmills, it may be inevitable that, in the long run, most of the raw material in Kenya will be controlled by a few large firms and competition for raw material greatly reduced. If this occurs it may be necessary to ensure competition at the manufacturing level by use of anti-monopoly legislation.

Public auctioning may be the best method of disposing of Crown timber which is not allocated to large firms and particularly for getting rid of parcels of timber from small isolated forests such
as those on the Machakos hills. Many such forests are situated in fairly heavily populated areas, which will require a steady supply of timber. Here, the small efficient operator will probably be able to remain in business by virtue of his lower overheads and reduced transportation costs, although he may have to pay more for his raw material than the larger firms. As noted when discussing the future of smaller operators in British Columbia, integration by such methods as the cooperative marketing of waste residues, will help small operators to remain competitive and it is very much in the public interest that they should do so.

Granting of leases to specific concerns, Government to retain the responsibility for forest management

This has been the main method of timber disposal in the past and it is the basis of the future policy.

We agree with Dr. Craib regarding the need to establish large mechanised mills furnished with large and convenient blocks of plantation timber. As Dr. Craib states elsewhere, such mills are much more economic. Their scale of operation permits the adoption of advanced logging, milling and management techniques, which are quite beyond the capacity of small mills all of which reflect reduced costs per unit of production. (Government of Kenya, Working Party Report on the Craib Report 1956)

In a letter to Kenya's two sawmilling Associations, dated August 1960, the Chief Conservator of Forests observed:
With greater dependence on the produce of the plantations, coupled with far greater concentration of production and improved road communications, it is apparent that fewer producing units will be needed in the future. The spreading of overhead charges over much larger volumes of production, will also be the most effective way of restoring prosperity to the industry. An appreciable reduction in production costs will also be imperative if Kenya timber is to compete effectively on world markets. The basis of the proposals which have been considered and approved by the Forest Advisory Committee, has therefore been that of the amalgamation of sawmilling firms. It is visualised that, for a start, the number of firms operating should be reduced by 50 per cent.

The proposals made, were for amalgamation of firms on a geographical basis and it was suggested that, if such amalgamations could be arranged, the Government would be prepared to offer firms up to a 20-year lease.

The main advantages of this policy to Industry are the assurance of a supply of raw material at non competitive prices, security of tenure, and the chance to invest in suitable machinery and equipment and to plan on a long term basis. The main advantages to Government are, that it creates suitable conditions for the establishment of a well equipped, stable, and prosperous industry. This should result in greater employment, an expansion of Kenya's export trade and more effective use of the forest resource.

Since a policy of allocation of timber to specific firms appears unavoidable, Government will have to face the problem of deciding to whom such allocations shall be made. There are two alter-
natives: allocations by public auction or on merit. As noted when discussing the same problem in British Columbia, a system of allocation by public auction protects Government from criticism, but may not ensure that the firm best equipped to do the job, actually gets the licence. Nevertheless, this principle has been used in Eastern Canada and elsewhere, and may be worth consideration. Allocation on merit, has been the principle used to govern the award of Tree Farm Licences in British Columbia, preference being given to established industry and particularly to the pulp and paper industries, because of their ability to contribute most to the economy.

Regardless of the method of allocation, Government would probably be advised to define certain criteria which all applicants should be required to fulfil before a licence is awarded. For example, applicants could be required to establish a suitable manufacturing plant within a specified period. The plant should be capable of absorbing the present allowable cut from an area, provision for future expansion should be mentioned and it should be made appurtenant to the lease. Applicants should also be required to submit evidence of their financial resources, details of previous experience and availability of trained technical staff. Because of the present political situation and depressed condition of the industry, it may be that, there will only be one applicant for an area. In this case, unless the applicant can meet those criteria which Government would require of applicants in more normal times, it would probably be unwise to award a long term
lease, since this could result in large areas of raw material being locked up by inefficient operators. Where several applicants apply for the same area, Government could base its choice on an assessment of which applicant could most successfully meet the specified requirements. Following the experience of British Columbia, it may be in the Government's interest to allow public hearings when such applications are under discussion. If such a method of allocation is undesirable, a system of public auctioning may help to solve the problem.

To summarise, the Government's present timber disposal policy appears fundamentally sound. The licences under consideration are similar in principle to British Columbia's Tree Farm Licence in that they offer Industry sufficient security of raw material to justify heavy capital investment. Government's main problem may be that deciding to whom allocations of timber shall be made. A possible improvement on a straight 20 year lease, would be a 20 year lease renewable at say, 5 year intervals. In this way the licensee would always have at least 16 years security of tenure.

The main limitations of the present policy are that it leaves Government saddled with the financial and administrative responsibility for forest management and that it does not permit vertical integration of forest and industrial management. Forest development will continue to be affected by the limitations of Government management previously discussed.
Granting of leases to specific firms, Government to delegate the responsibility for forest management

A lease of this type would be the equivalent of British Columbia's Tree Farm Licence and would be an extension beyond the Kenya Government's present timber disposal policy. The possibilities of using such a lease have been discussed by members of both Government and Industry:

Bearing in mind what I have already written I do believe that there is a very good case for the management licence system. It is really an extension of the Craib proposals and is sound in conception by eliminating the difficulty of determining how the value of the raw material should be assessed and the expense involved in doing so. Added to this, an independent and capitalistic enterprise of sufficient magnitude is likely to be more efficient in the economic handling of the plantations, unfettered as they would be by Government Departmental regulations, which involve so much paper work at the expense of actual field work and, of course, the uncertainty of treasury control. (Personal correspondence dated February 1960, from J. L. Riddoch, member of the Forestry Advisory Committee.)

The possibilities of introducing a Tree Farm Licence into Kenya in the immediate future, can probably be rejected. Under present political circumstances it is most unlikely that any firm would be interested in such a proposition. Nevertheless, this should not rule out the possibility of introducing the Tree Farm Licence at some future date. Investment confidence has been restored in many countries which have gone through similar periods of political instability.
As noted earlier, there is a difference between the circumstances which prevailed in British Columbia prior to the introduction of the Tree Farm Licence in 1947 and those which prevail in Kenya today. One of British Columbia's main problems was to ensure adequate management of those forest lands already alienated to private interests and over which, the Government had very little control. The licence has encouraged operators to place such forest lands under sustained yield management. There is no similar problem in Kenya. The Government still controls most of the forest land in the country and the forest areas which will form the basis of the future timber industry are already under intensive management, which, while carried on in the face of financial and administrative difficulties, is nevertheless sufficient to ensure a sustained yield of timber and a high degree of forest protection. This particular advantage of the licence must therefore be eliminated from the discussion.

It is also necessary to eliminate those features of the Tree Farm Licence which are already covered by the Government's present timber disposal policy. The most important of these is the assurance of an industry's raw material supplies, which permits adequate investment and encourages efficient operation.

The strongest argument in favour of the Tree Farm Licence is that it would relieve Government from the financial and administrative responsibility for plantation management, of those forest lands
under licence. It seems inevitable that large areas of plantation timber must be allocated on long term leases to specific industrial firms. Experience elsewhere suggests that large industrial firms with a heavy capital investment are forced by economic necessity to plan their operations on a sustained yield basis. Introduction of the Tree Farm Licence would enable Government to delegate responsibility for forest management to such firms, and at the same time adequately protect the public interest.

Introduction of the Tree Farm Licence would free plantation management from the restrictions of treasury control, lead to a closer alignment of Industrial and Government interests, and encourage the importation of fresh ideas and private enterprise methods into the forest growing business.

The main advantages to Industry of a Tree Farm Licence, would be those resulting from a complete integration of forest and industrial management, the longer term security which Government would be obliged to offer as an inducement to private investment in plantations, and the long term assurance of raw material at a known price related to the production costs of the firm's own organisation, instead of those of a Government Department.

The advantages to both parties would be a lowering of administrative overheads, more effective use of labour and lower production costs which should ensure more effective competition in
world markets.

The principles governing the award of Tree Farm Licences, could be substantially the same as those previously outlined for Government's present licences, with the additional requirement that an adequate working plan and proposals for forest management be included in the application.

If the Government considers the advantages of the Tree Farm Licence sufficient to warrant its use at some future date, a statement of its intentions may help to attract foreign capital to the industry. It would be desirable to experiment with such a licence on a small scale before making any such statement.

Disposal of Crown timber by outright alienation

There is little likelihood of Government agreeing to such a policy in the immediate future. It would also be imprudent to consider outright alienation, until a tradition of sound private enterprise forest management had been established. The main advantages of outright alienation to Industry, would be complete security of tenure (except from the possibility of expropriation), freedom from Government restrictions, greater flexibility of operation and the maximum incentive for long term planning. The advantages to Government, would be complete relief from the financial responsibility for supervision of alienated lands.
State investment in manufacturing plants

While out of line with Government's present accepted forest policy, it is possible that State investment in manufacturing plants may be necessary if the political climate and low quality of plantation produce continues to deter private enterprise investment:

There thus remains it seems to me, the possibility that the Kenya Government may be forced to take an interest in the utilisation of the plantations in the same way as the Government of South Africa was forced to do so - merely because no one else was willing to take on conversion of the quantities becoming available. (Personal correspondence, June 1954, F. T. Henson, General Manager, Timsales.)

Experience in South Africa is of particular interest to Kenya. Plantations of similar species form the basis of the industry and the State has also a considerable investment in plantations. The sawmilling industry is composed of both State and private mills. The main difference from Kenya is, that South Africa has a large area of privately owned plantations. The relative merits of State and private enterprise mills in South Africa and reasons for South Africa's decision to establish State mills, were discussed by O'Connor (1950) and Latham (1950).

The main advantages to Government of establishing State sawmills in Kenya, would be the immediate possibility of establishing large and more suitably equipped sawmills without having to wait until conditions favour private enterprise investment, elimination of the
problem of deciding to whom Crown timber should be allocated, the
realisation of the advantages of vertical integration of forest and
industrial management and the assurance of being able to prevent a
private enterprise monopoly arising within the industry.

The main problems of State manufacturing plants, would be
the difficulties of operating under treasury restrictions and the
general inflexibility of Government administration. The formation,
as in South Africa, of Utility companies, on which the Government
appoints the majority of the Board of Directors, could help to over­
come these difficulties.

A possibility which should not be overlooked, is that of
establishing State manufacturing plants to carry the industry through
the present period of political instability, followed by the de­
nationalisation of such plants at some future date, if private invest­
ment confidence is restored.

Summary

The Kenya Government is in the fortunate position of not
being completely committed to any one particular method of timber dis­
posal and of being able to draw on the experience of other countries
such as British Columbia and South Africa when formulating future
policies. Each of the timber disposal methods previously discussed
has its merits and as noted earlier, it would probably be unwise for
the Government to adhere to only one system. A combination of several, if not all, the alternatives discussed, may well result in the most healthy and competitive industry.

The Tree Farm Licence offers several advantages which cannot be realised under the Government's present timber disposal policy and the introduction of such a licence would be very desirable.
PRACTICAL APPLICATION

Questions which the Kenya Government might ask if the introduction of a Tree Farm Licence were under consideration would be:

(1) How should the Government go about introducing such a licence?

(2) What principles should govern licence awards?

(3) How large an area should a licence cover?

(4) Should licences be awarded to sawmills, to a pulp mill, or to both?

(5) How long should it be?

(6) What would happen to the smaller operator?

(7) Would there be any increase or decrease in Government revenue?

(8) Where would the necessary technical staff come from?

(9) What clauses would the licence have to include?

(10) Would the Government be able to retain effective control and to ensure adequate protection of the public interest?
1) Timing of licence introduction

As previously noted, the present political situation in Kenya would probably prevent the immediate introduction of the Tree Farm Licence because it is unlikely that any private investor would be interested in such a proposition. Nevertheless, it may be possible to interest one or two of the larger firms in co-operating in a pilot project, particularly if this could be arranged without committing private investment capital or altering the present licence period:

If relieved partially or in whole of the burden of royalty, parts of the Timber Industry are even now sound enough to embark on this type of development. (Personal Correspondence, R. Hoddinnott and J. Machin 1959)

A comparatively simple approach would be, for Government to contract out forest operations in suitable licence areas to local sawmilling firms which have been allocated plantations on a long term lease. Both parties would thus gain experience on which future policies could be based and neither would be seriously affected if the project failed.

2) Principles governing the award of Tree Farm Licences

Principles governing the award of Tree Farm Licences in Kenya have already been discussed. To summarise, it would be desirable to ensure that those firms to whom allocations were made, possessed adequate financial resources and technical ability, by requiring all applicants to fulfil certain specified criteria including the submission of
an adequate forest management plan. Preference would probably have to be given to existing industry. If no satisfactory agreement could be reached between several concerns operating in the same area, Government should base its decision either on an assessment of which applicant could most adequately satisfy the requirements of the licence or, if all applicants can satisfy these requirements to the same degree, by use of the principle of public auction. If an award is to be made on the basis of merit, public hearings may help to protect the Government from possible criticism.

3) Size of the licence area

Kenya's plantations are under intensive management, the volume of existing plantations can be calculated fairly accurately, closer utilisation is practised than in British Columbia and there is less competition for raw material. It is therefore unlikely that the Kenya Government would run into those problems which have arisen in British Columbia mainly because of a lack of adequate inventory data and requests by licensees for an increased annual allowable cut.

The Craib recommendation of 10,000 acre units, was based on a conception of the area of plantations needed to support a mill of minimum economic size. This does not mean that all sawmill licences should be awarded on a 10,000 acre basis. A mill consuming 2,000,000 cubic feet of round logs per annum, is still small by Swedish, or North American standards. It may well prove that, in the long run, a unit
of 20,000 acres or more will be more economic. If units of this size
do become desirable in the future, they could still be established by
an amalgamation of two existing firms and unless the award today, of
20,000 acres or more, means the difference between securing, or not
securing a considerable overseas capital investment in the industry,
the Government would probably be advised to adhere to its present policy
of 10,000 acre units. A certain increase in allowable cut will be
possible, as utilisation standards and forest management become more
intensive.

4) The type of industry

Allocation of licences to sawmill firms has been previously
discussed. Whether a licence should be awarded to a pulp and paper
mill will depend on what size of industry is under consideration. In
brief, if it proves economically possible to establish a pulp mill using
mainly mill residues, it should not be necessary for Government to allo-
cate Crown timber to such a mill. If a proposed pulp mill requires
more raw material than can be provided by available mill residues and
particularly if security of raw material is essential to attract invest-
ment capital, a licence should be granted. In practice, a pulp mill
will probably be integrated with one or more existing sawmills.

Similar principles should be applied to the board industries.
5) Period of the licence

Based on experience in British Columbia, it would not be advisable, or even necessary, to have a "perpetual" licence. The important thing from the licensee's point of view, would be to have sufficient security of tenure to cover at least the amortisation period of his plant and, if plantations were under consideration, a period long enough to ensure recovery of his capital investment. In practice, a 20-year licence as already under consideration for sawmills would probably be suitable for both the sawmill and pulp and paper industries if no plantation investment was involved. As previously suggested, a licence renewable at perhaps five-year intervals, would probably be more desirable than a straight 20-year licence, mainly because the licensee would thereby always be assured of at least 16 years security of tenure. For a Tree Farm Licence, a period equivalent to at least two rotations would probably be desirable but, since it is impossible for anyone to forecast 20 years ahead, the Industry may be prepared to accept a shorter period than this. The most important things are to ensure a more politically stable climate than at present, in order to encourage overseas investment and to leave ample room in any licence granted for regular revision of licence clauses by mutual agreement.

6) The smaller operator

The position of the smaller operator has already been discussed.
In brief, it was concluded that a gradual transition towards larger manufacturing units is probably economically inevitable and many of Kenya's existing smaller operators will probably be absorbed by larger firms or will fail to survive. There will nevertheless be a place for the small efficient operator, particularly in local situations where he has an assured market and substantial transportation advantages over the larger firms. It would probably be inadvisable to award Tree Farm Licences to such operators, mainly because small firms in general, have a low capital investment and short term outlook. In British Columbia, the forest resources of the Province are so large, forest industry so important and Forest Service so hampered by lack of staff and funds that it is probably in the public interest to encourage forest management by any firm which is prepared to accept the responsibility regardless of the size of the firm. Because small operators represent a large part in the Industry it would probably be politically impossible to exclude them from acquiring Tree Farm Licences.

These conditions do not prevail in Kenya, where a fairly intensive management is already practised. There are fewer small operators, no open log markets and less competition for raw material. Unless Government were certain that a delegation of responsibility for forest management to smaller operators would produce adequate forest management and protection, it would be unwise to do this. Experience in most countries indicates that in general, small operators have neither the financial resources nor the long range outlook necessary to ensure
adequate management. In countries where it is in the public interest that small private properties be adequately managed, it has usually been necessary to use both legislation and financial incentives in order to achieve this.

7) Financial implications

Government's main concern would be over revenue. At present Forest Department expenditure greatly exceeds revenue and this situation may persist until beyond 1970, when the present capital investment in plantations matures. Any private enterprise investment in forest plantations will reduce Government's own financial expenditure by the amount invested. Since Kenya is short of development capital, a private investment would therefore be to the country's advantage.

In the long run, providing that the Government recovers its financial outlay on the first rotation, any private enterprise investment in plantations will relieve Government from the financial responsibility of establishing and maintaining the second crop. Whatever capital the Government would have invested in this crop, will be available for an alternative investment.

Royalty could not be equitably charged on crops established entirely with private enterprise capital and Government's main financial return from Tree Farm Licence lands would come from indirect taxation and land rentals.
In order to ensure an adequate return on its investment in the first crop, Government would have to reserve the right to charge Royalty on the produce of these plantations, at similar rates to those it would have charged had no licence been granted. A possible method of doing this would be for the licensee to take over the established plantations in an area at the time of signing the licence on the basis of an agreed evaluation. Payment on a lump sum basis would be difficult, since, at a conservative estimate, the total value of plantations in a 10,000 acre unit would exceed $600,000. Payment over a period of 20 or 30 years would probably be more practicable, in which case, Government's evaluation would need to be increased by an appropriate interest rate.

It remains to assess whether the investment would be sufficient to attract private enterprise capital. Previous estimates of the profitability of softwood plantations in Kenya have given figures ranging from 5 per cent to 9 per cent (Forest Department Annual Report for 1948 6 per cent), (1951 Hiley Committee 8 per cent to 10 per cent), (Spears 1962 5 per cent to 6 per cent). The lower figure quoted for 1962, is attributed partly to use of present day Royalty rates, which are based on poor quality timber resulting from early thinnings and low prices resulting from a depressed market. The 1950 Hiley Committee estimated higher returns, based on the anticipated value of thinnings and final clear fellings. South African experience was used as a basis for these estimates. In South Africa large areas of
similar plantations have already been established by private enterprise and these plantations are yielding attractive financial returns (Hiley 1959).

The profitability of plantation forestry in Kenya is perhaps one of the most important factors in favour of the Tree Farm Licence.

8) Technical staff

Political pressure for the replacement of trained expatriate technicians will probably affect the Kenya Civil Service, to a greater degree than large commercial firms. If the experiences of India, Ghana, Malaya and other former Colonial territories are anything to go on, the trend has been for a rapid and almost complete replacement of expatriates in all Civil Service posts, but for the larger commercial firms, such as the tea companies in India and cocoa growing firms in West Africa, to retain their executive staff for a much longer period. From the Government's point of view, it is not in the public interest for the operations of these large commercial organisations to be seriously interrupted, since this would mean a loss of trade and reduced local employment.

This could be a substantial argument in favour of the Tree Farm Licence. If the present Forestry Department staff are to be replaced by locally trained personnel at a rate determined more by political pressure than technical ability, it may be inevitable that forest management will suffer. In the long run there is no doubt that as experience
is gained by local people of the problems of forest management, standards will return to normal. In the interim, the country would benefit by the Tree Farm Licence, mainly because many of the present expatriate Forest Department staff would probably stay on in Kenya, providing they were to be guaranteed political security and a reasonable job.

Conversely, it may be unwise to consider use of the Tree Farm Licence on a large scale until Government has had more experience of the licence and unless it is used on a large scale, relatively few expatriates will be retained.

9) Licence clauses

To define possible licence clauses in detail, would require wider discussion than is possible at present. It is not therefore proposed to define these, other than to suggest that British Columbia's licence would be a suitable model on which to base a Kenya licence. The clauses should require at least as adequate a standard of forest management as the Government could ensure were it to continue to manage forest lands itself. Clauses relating to exploitation could remain substantially the same as those covering existing licences.

10) Government control and protection of the public interest

The most important question from Government's viewpoint, is whether it would be able to retain effective control of the licence area.
It would be unwise to draw too many comparisons between British Columbia and Kenya, because operating conditions are very different, but it may be relevant to observe, that in no case examined during the course of this study, was there any suggestion that the British Columbia Government has lost control of the forest resource. The licence is a contract, which, on most important issues, is open ended in favour of the Crown. The objective of all licensees has been to assure themselves a future supply of raw material and in the interest of gaining that assurance, they have accepted the additional obligations of forest management. Having assumed these obligations, it is very much in the company's interest to ensure sound management of the forest resource, since the efficiency of present day forest management will reflect in lower production costs in the future. The result has been that in general, the licence clauses have been observed. Forest management on Tree Farm Licence lands has benefited by the closer attention of professionally qualified Foresters, who are in the fortunate position of being able to make a detailed study of local problems and to carry out their forest operations with a far greater degree of flexibility and assured continuity of finance than the members of the Government Forest Service. Except in a few cases, the members of the Forest Service charged with the responsibility of ensuring that the public interest is adequately protected, have not found it necessary to bring pressure to bear in order to ensure adequate forest management.

The Kenya Government is perhaps in an even better position
than the Government of British Columbia, because the forest crops which will comprise the bulk of future raw material are rapid growing species which show the prospect of a good financial return. Unlike Canada, there is no feeling that the forest resource is inexhaustible and because artificial rather than natural regeneration has to be used, there would be every incentive for licensees to replace logged over lands. Failure to do this would mean a future shortage of raw material. In practice Industry would be doing exactly the same job on Crown forest lands as the Government is doing at present and there would appear to be little risk that the public interest in the forest resource would be adversely affected.
CONCLUSION

The main conclusions of this thesis are that the Tree Farm Licence has brought several important benefits to British Columbia and that a similar licence would be desirable in Kenya. The benefits of the licence have been:

(i) It has encouraged Industrial operators to place their Forest lands under sustained yield management.

(ii) The Government has been relieved of the responsibility for forest management on Tree Farm Licence lands. Management of both private and Crown forest lands has greatly improved. Reforestation, protection and research in particular, are better than before.

(iii) Vertical integration of forest and industrial management has brought fresh ideas and men into the forest management business. The advantages of private enterprise management have been secured, without adversely affecting the public interest. The licence has encouraged industrial operators to study the forest more closely and will give greater opportunity for the alignment of silvicultural techniques with industry's raw material requirements.
(iv) It has resulted in a more direct link between forest revenue and expenditure on Tree Farm Licence lands. It avoids the difficulties of financing forest development on erratic annual treasury allocations.

(v) The licence has created suitable conditions for the establishment of large integrated forest industries and made an important contribution to the Province's social and economic progress.

(vi) It has guaranteed long term security of raw material for industrial operators, thereby facilitating long term planning and steady expansion. It has helped companies to improve their competitive position in world markets.

(vii) It has relieved industrial operators from the necessity of competing for their raw material and eliminated uncontrolled bidding on Tree Farm Licence lands.

(viii) It has resulted in closer utilisation of the forest resource. Security of tenure has encouraged the exploitation of undeveloped areas and there has been more incentive to take out marginal timber.
(ix) For the small contract operator, it has opened up back areas of timber which would otherwise have been unavailable to him. Expansion of the bigger companies has created more opportunity for the independent logger.

(x) Stabilisation and perpetuation of industry have resulted in greater community stability. There has been more incentive for people to build houses and establish permanent communities.

It appears that a similar licence could be of considerable benefit in Kenya. For political reasons the immediate introduction of a Tree Farm Licence would probably be impracticable but this should not rule out the possibility of introducing one in the future.

Chief Forester, British Columbia Forest Service, 12 November 58. Personal correspondence.


Henson, F. General Manager Timsales Ltd. Nairobi, Kenya. 10 November 58. Personal correspondence.


Riddoch, J. L. 1958. Member of the Kenya Forest Advisory Committee. Personal correspondence.


BIBLIOGRAPHY


Bendickson, A. B. Bendickson Logging Ltd. 19 October 61. Personal correspondence.


Craigie, J. K. Evans Products Company Ltd. 17 October 61. Personal correspondence.


de Grace, L. A. Industrial Forestry Service Ltd. 7 November 61. Personal correspondence.


Macleod, W. K. Salmon River Logging Company Ltd. 30 October 61. Personal correspondence.

Macmillan and Bloedel Ltd. 1955. A Brief submitted to the Royal Commission on forestry, British Columbia. 82 pp.

Macmullan, D. L. British Columbia Forest Products Ltd. 19 October 61. Personal correspondence.


Moss, A. S. M. Simpson Ltd. 18 October 61. Personal correspondence.


Rasmussen, S. Tansis Company Limited. 18 October 61. Personal correspondence.

Shorter, E. G. MacMillan and Bloedel and Powell River Ltd. 10 January 61. Personal correspondence.


Swantje, H. Forestal International Ltd. 23 October 61. Personal correspondence.


Western Plywood (Cariboo) Ltd. 1955. A brief to the Royal Commission on Forestry. 23 pp.

APPENDIX I

SAMPLE TREE FARM LICENCE CONTRACT
THIS AGREEMENT made in duplicate this ............... day of

......................... in the year of Our Lord One Thousand Nine

Hundred and ..............

BETWEEN:

THE MINISTER OF LANDS AND FORESTS of the
Province of British Columbia, who, with his
successors in office, is

hereinafter called "the Minister", of the one part,

AND

............................., a Corporation
duly incorporated under the laws of the
Province of British Columbia, and having
its registered office in the City of

........................., in the said Province,

hereinafter called "the Licensee", of the other part.

WHEREAS by Subsection (2) of Section 36 of the "Forest Act",
being Chapter 153 of the Revised Statutes of British Columbia, 1960
and subsequent amendments, it is provided that the Minister may by
agreement grant a tree farm licence to any person for the management
of Crown lands specified in the agreement, reserved to the sole use of
the Licensee for the purpose of growing continuously successive crops
of forest products to be harvested in approximately equal annual or
periodic cuts equalling the sustained yield capacity of the lands in
the area covered by the licence, or may enter into an agreement to be
known as a tree farm licence with the owner of other tenures to combine
such other tenures and Crown forest lands into a single unit reserved
by mutual consent and agreement to the sole use of the Licensee for the
like purpose:
AND WHEREAS the conditions precedent to the issuance of this licence, as set forth in said Section 36, have been complied with to the satisfaction of the Licensor:

NOW THIS AGREEMENT WITNESSETH THAT pursuant to Section 36 of the "Forest Act" and in consideration of the payments, agreements and stipulations to be made and observed by and on the part of the Licensee as hereinafter mentioned, the Minister doth hereby grant unto the Licensee the management of the Crown lands specified in Schedule "B" to this agreement, which lands are reserved to the sole use of the Licensee for the purpose of growing continuously successive crops of forest products to be harvested in approximately equal annual or periodic cuts equalling the sustained yield capacity of the lands described in this agreement.

And in consideration of the premises, IT IS HEREBY AGREED AS FOLLOWS:

1. This tree farm licence may be referred to as the "...... Tree Farm Licence" and is numbered .................(......) on the Forest Service register of tree farm licences and on the official atlas maps of the Department of Lands and Forests.

2. This licence is given for the maintenance of the manufacturing plant or plants owned and operated by the Licensee. Said plant or plants shall be capable of using the allowable cut from the licence area, and such plant or plants shall be maintained in operation in sufficient continuity to use the wood product of the licence annually.
Notwithstanding the provisions of this clause, the Minister may, for good and sufficient reasons, at his discretion, in writing, afford such relief from the provisions of this clause as he may see fit.

3. The Licensee shall manage the licence area in accordance with the provisions of the said Section 36 of the "Forest Act" and of regulations under the said Act for the regulation of tree farm licences, and in accordance with the management working plan applicable thereto, for the purpose of growing continuously successive crops of forest products to be harvested in approximately equal annual or periodic cuts equalling the sustained yield capacity of the licence area.

4. The term of this licence shall be 21 years from the date of this agreement, subject to the provisions of the "Forest Act", the regulations made thereunder and the provisions of this agreement, and compliance with the management working plan. This licence shall be renewable but subject to renegotiation of the terms and conditions of the contract according to the provisions of the "Forest Act" and the regulations in force at the time of the application for renewal.

5. The licence area includes all Crown lands not otherwise alienated at this date, as set forth in Schedule "B" hereto, together with all the lands owned or controlled by the Licensee, as set forth in Schedule "A" hereto, both of which are shown outlined in bold black line on the plan attached hereto, subject, however, to any increase, decrease, re-allocation or exchange of lands as provided by this
agreement or by subsection (14) of Section 36 of the "Forest Act";
and in addition it includes any and all lands that may be subsequently
acquired by the Licensee and incorporated into said Schedule "A" pur-
suant to Clause 7 hereof, provided also that any lands included in
Schedule "A", the title or interest to which reverts to the Crown, or
which the Licensee elects to revert to the Crown, shall be considered
as being included in Schedule "B" from the time of such reversion.

6. The Licensee hereby declares that it owns or controls
the cutting rights on each parcel of the lands listed and described in
Schedule "A" hereto.

7. The acquisition by the Licensee of forest lands, excepting
only cutting rights offered by the Forest Service for competitive sale,
subsequent to the issuance of this licence shall, pursuant to sub-
section (9) of said Section 36, be reported to the Minister, and such
forest lands shall be included forthwith in the licence area and be
incorporated in Schedule "A" hereto to the extent required by said
subsection (9).

8. For the purposes of subsection (8) of Section 36 of the
"Forest Act", the watershed and drainage basins relating to this
licence are defined as .................................................................
........................................................................................................
........................................................................................................
........................................................................................................
9. The Minister may from time to time withdraw from the Crown lands included in the licence area such lands as are required for forest experimental purposes, parks, or for aesthetic purposes; but the lands so withdrawn shall not exceed one per cent of the total area of lands in the licence area without the consent of the Licensee, and no land shall be withdrawn from areas being developed under the current cutting plan without the consent of the Licensee. Any such withdrawals shall be deducted from Schedule "B".

10. If at any time, or from time to time, part of the Crown lands within the tree farm licence area is found to be required for a higher economic use than raising forest crops, or for any use deemed to be essential to the public interest, said lands may be withdrawn from the licence area by the Minister, provided that if by such withdrawal the productive capacity of the licence area is diminished by more than one-half of one per cent of its total productive capacity, other lands, if available, will be added to the licence area in substitution therefor. Any such withdrawals shall be deducted from Schedule "B", and any such additions shall be added to Schedule "B". For the purposes of this clause, the development of mines and mineral claims may be deemed to be essential to the public interest.

11. It is expressly understood that the Minister may at his discretion and at any time, either permanently or for a specified time, withdraw from this licence and from the licence area any Crown lands needed for rights-of-way under Part VI of the "Forest Act", or
for railway, highway, power transmission, or other right-of-way purposes, and such lands will be deducted from Schedule "B".

12. In the event of the withdrawal of any lands from the licence area pursuant to Clauses 9, 10, 11, and 14 hereof, the Minister may require the Licensee to remove from such lands within one hundred and twenty days thereafter all timber then cut thereon and all buildings, machinery, equipment, and other property placed by it thereon and which is capable of removal. Compensation shall be paid to the Licensee in respect of improvements capable of removal from the lands so withdrawn to the extent only of the cost of removal and damage incidental thereto; and compensation shall be paid to the Licensee in respect of improvements not capable of removal on the basis of cost less depreciation.

Without limiting the generality of the foregoing, the term "improvements" means all buildings, structures, fixtures, and things erected upon or affixed to such lands and shall include machinery, boilers, tanks, pipes, dams, flumes, roads, railways, transmission lines, and other works used in connection with the business of the Licensee. Improvements shall also mean areas artificially reforested by planting or seeding, compensation for which shall be the cost incurred in the act of reforesting.

If the amount of compensation payable to the Licensee is not agreed upon, then such amount shall be appraised and awarded by a single arbitrator in case the Minister and Licensee agree upon one; otherwise by three arbitrators, one to be appointed by the Minister, one to be appointed by the Licensee, and the third to be appointed
by writing under the hands of the two appointed, such arbitration to be in accordance with the provisions of the "Arbitration Act" of the Province of British Columbia. In the event that both parties are unable to agree on a third arbitrator, the Chief Justice of the Supreme Court of British Columbia shall be requested to make an appointment.

13. If at any time, or from time to time, part of the lands included in Schedule "A" is found to be required for a higher economic use than raising forest crops, said lands may be withdrawn from the licence area at the request of the Licensee and on the consent of the Minister, and after such withdrawal such lands will be deducted from Schedule "A" and shall be disposed of by the Licensee for the purpose for which they were withdrawn.

14. Where the licence includes within the described boundaries a belt of area of non-productive land surrounding or adjacent to the productive forest land of the licence, any or all of such non-productive land may be withdrawn from the licence at the pleasure of the Minister.

15. Other tenures included in this tree farm licence shall not be sold, transferred, or otherwise disposed of except as hereinbefore provided or except as provided in Section 36 of the "Forest Act".

16. This licence, insofar as Crown lands in Schedule "B" are concerned, shall not be considered to limit the use of the lands at the discretion of the Minister for other purposes such as mining,
trapping, hunting, fishing, hydro-electric development, or any use that does not materially prejudice the rights granted to the Licensee to employ the use of the lands for the growing and harvesting of forest products under the terms of this licence.

17. It is understood and agreed between the parties hereto that any rights under this agreement in respect of Crown lands do not include any riparian or foreshore rights, and all such riparian and foreshore rights vested in the Crown in respect of the said Crown lands mentioned in this agreement shall remain in the same status as if this agreement had not been entered into, and the Licensee shall have no rights or claims whatsoever in respect thereto by virtue of this agreement.

18. The Minister may direct the Licensee to have surveyed and defined on the ground, and at the Licensee's expense, any or all the boundaries of the licence area which he may deem necessary to have so surveyed and defined. In the event of failure of the Licensee to complete any such survey within time limits set by the Minister, the Minister may cause the survey to be made and the costs shall be charged to and be payable forthwith by the Licensee.

19. As a first essential to the primary object of sustained yield management of this licence, it is agreed that all potentially productive forest land within the licence area shall be kept by the Licensee in growing stock as provided in Clause 20 hereof, and adequately
stocked in accordance with standards to be defined from time to time by the Forest Service lands of a comparable site quality in British Columbia.

20. Any lands in the licence area denuded before the date of this agreement which are found to be stocked below the minimum standards defined by the Forest Service as provided in Clause 19, above, shall be classified as to site quality and those determined by the Forest Service to be of a site quality index equal to or better than 80, unless in the opinion of the Minister they are occupied by an advanced growth of brush, or otherwise in such condition as to make planting operations economically impractical, shall be reforested by the Licensee by artificial means with a merchantable species suitable to the locality at a rate per year of not less than one thousand acres, or ten per cent of the total acreage of such lands, whichever is the lesser, all to the satisfaction of the Licensor.

The Licensee further agrees that lands of site quality index better than 110 denuded after the date of this agreement, and not found to be restocked satisfactorily five years after logging, will be artificially regenerated by the Licensee before the end of the seventh year after logging; and that lands of site quality index between 80 and 110 not found to be restocked satisfactorily eight years after logging, will be artificially regenerated by the Licensee before the end of the tenth year after logging, all to the satisfaction of the Minister. The Licensee may be directed by the Minister to take earlier action to regen-
erate lands in the areas specified above when in the opinion of the
Chief Forester there is danger of brush encroachment on such areas.

21. On failure of the Licensee to comply with the provisions of Clause 20, the Minister, his servants or agents, may enter on the lands in respect of which the Licensee is in default, and restock them, and the cost thereof shall be recoverable by the Crown from the Licensee and may be taken in whole or in part from the deposit referred to in Clause 35 hereof.

22. The operations covered by the licence shall be managed in accordance with the currently approved management working plan, each of which in turn as approved for each successive period is hereby incorporated into and made a part of this agreement.

23. Management working plans will be approved for such period as the Chief Forester may decide, and will be subject to revision as set forth in the said plans.

24. Revised management working plans shall be submitted for the approval of the Chief Forester not later than six months prior to the expiry of currently approved plans.

25. The object of each succeeding plan shall be to implement the primary object of the licence; i.e., sustained yield in equal annual or periodic cuts, and may embody any method of attaining that objective that in the opinion of the Chief Forester will prove economically feasible over a reasonable period of years, and that is not inconsistent
with the spirit and intent of the Act and regulations. In preparing the management working plan, advantage shall be taken of all available data and experience.

26. Should it appear at any time to either party hereto necessary or expedient in case of emergency to increase or decrease the rate of cutting contemplated by the cutting budget then in effect, or to alter the cutting plan then being observed, then, subject to the approval of the Chief Forester, emergency revision of the management working plan will be undertaken upon the request of either the Licensee or the Chief Forester.

Without limiting the generalities of the preceding paragraph, cause for revision on account of emergency conditions will cover such things as fire damage of major proportions, serious windthrow, insect or disease attacks, serious damage to the Licensee's manufacturing plant, or other catastrophe of great moment, or should there occur a national emergency brought about by war, or an economic depression severe enough in the opinion of the Minister to justify revision of the management working plan.

27. In the process of harvesting the crop from the licence area, regardless of the tenure of the land from which it is harvested, the Licensee shall provide the opportunity for contractors, other than the Licensee's own employees or shareholders who own more than one per cent interest to harvest a volume equivalent to a minimum of fifty per
cent of the allowable cut from Crown lands not held under other tenure but where the Minister is satisfied that such contract operation is not feasible, either by reason of lack of operators or for other good and sufficient reason, the Minister may relieve the Licensee in whole or in part from this responsibility.

28. In the event of the development on the licence area of injurious insects in numbers which in the opinion of the Minister will seriously reduce the current or future allowable annual harvest of wood, and which in the opinion of the Minister can be controlled, then the Licensee and Licensor shall take such control measures as may be mutually agreed upon, or the Licensee shall take such control measures as the Minister shall direct, provided that the cost of such control measures to the Licensee at its own expense in any one calendar year shall not exceed one-half the cost of such control measures incurred during that calendar year, or the total stumpage value of that year's allowable cut, whichever may prove to be the lesser. For the purposes of this clause, the stumpage value shall be the value appraised by the Forest Service.

29. In the event that mutual agreement cannot be reached between the parties hereto as to the sustained-yield cutting capacity or as to the sequence or methods of cutting to be employed at the time an emergency, or any other revision of the cutting plan or cutting budget is undertaken, the Licensor shall determine the permissible cut and the plan and methods of cutting.
30. The Licensee, in its logging operations on the licence area, shall at all times maintain at least as high a standard of utilization as, in the Chief Forester's reasonable opinion, is being maintained by well-conducted logging operations in the ................. Forest District in which the Licensee's operation is located.

31. Cutting on the licence area shall be done only in accordance with the management working plan, and only after notice of intent has been given to the Chief Forester and a cutting permit has been issued. Such cutting permit shall be issued by the Chief Forester if the proposed cutting is in keeping with the provisions of this licence and the management working plan. If the proposed cutting is to be on other tenures, the cutting permit will constitute the Minister's concurrence that the cutting is according to plan and specify such other details as he may deem necessary, such details, however, always to be in keeping with the provisions of the management working plan and this agreement. If cutting is on Crown lands not held under other tenures, the cutting permit will, in addition, fix the stumpage in accordance with subsection (20), Section 36 of the "Forest Act". Any cutting not covered by a cutting permit will be deemed to be in trespass and the Licensee shall be assessed a sum by the Minister in respect thereof in an amount not in excess of the value of the logs or other product so cut or wasted or destroyed.

32. Timber marks shall be secured by the Licensee and marking carried out as required by Part IX of the "Forest Act".
33. All timber harvested on the licence area shall be scaled in cubic feet and otherwise in all respects in accordance with the provisions of Part VIII of the "Forest Act".

34. Timber and wood cut from lands included in this licence, regardless of the tenure of the lands, shall be subject in all respects to the provisions of Part X of the "Forest Act" insofar as they relate to lands granted after the 12th day of March 1906.

35. The Licensee herewith deposits, pursuant to subsection (6) of Section 36 of the "Forest Act", the sum of ................. Dollars ($ ), receipt of which is acknowledged and will supplement this deposit by the payment of ten cents on each one hundred cubic feet of wood harvested, but the sum total of deposits held at any one time by the Licensor under this clause shall not exceed .................... Dollars ($ ). In the event that the amount of the deposit becomes less than ....................... Dollars ($ ), the Licensee will forthwith deposit sufficient money with the Minister to bring the total amount up to ....................... Dollars ($ ), and thereafter will supplement the deposit by the payment of ten cents on each one hundred cubic feet of wood harvested to bring the total amount up to ............................... Dollars ($ ). The said deposits shall be held for the purpose of ensuring compliance on the part of the terms of the "Forest Act", the regulations made thereunder, this agreement, the management working plan, and any permit issued pursuant to this agreement.
36. The Licensee agrees to pay stumpage on all merchantable wood cut, wasted, or removed by the Licensee or its agents on or from that part of the licence area described in Schedule "B" hereto, as provided in this agreement, the "Forest Act" and the cutting permit.

37. Starting on the first day of January next following the date of this agreement, the wood harvested from the licence area in any one year shall not be less than fifty per cent and not more than one hundred and fifty per cent of the approved annual cut, and shall not vary more than ten per cent from the total approved cut over a period of five years.

38. Damages, recoverable in full or in part from the deposit made by the Licensee under Clause 35 hereof, will be assessed by the Minister for failure to observe the provisions of Clause 37 of this agreement, as follows:

(a) The full stumpage value as appraised by the Forest Service on the quantity of timber by which the year's cut falls below fifty per cent of the approved annual cut, and any stumpage paid on such excess under Clause 36 will be credited against such assessment.

(b) Double the stumpage value as appraised by the Forest Service on the quantity of timber by which the year's cut is in excess of one hundred and fifty per cent of the approved annual cut, whether cut from Crown lands or from other tenures.

(c) Should the total cut over five consecutive years vary more than ten per cent over the total of the five years' approved cut,
a sum per one hundred cubic feet double the stumpage as established for the fifth year of the period, will be assessed by the Minister on the amount cut over the ten per cent allowance, whether cut from Crown land or from other tenures. Should the total cut over five consecutive years vary more than ten per cent under the total of the five years' approved cut, a sum per one hundred cubic feet equal to the stumpage as established for the fifth year of the period, will be assessed by the Minister on the amount cut under the ten per cent allowance whether cut from Crown land or from other tenures.

(d) Should the total cut over ten consecutive years, including the five-year period referred to in (c) above, vary less than ten per cent from the total of the ten-year cutting budget as approved in the working plan, the damage assessed in paragraph (c) above, if any, will be refunded.

(e) For the purposes of this paragraph, stumpage shall be appraised on the same basis and in the same manner as provided in Clause 31 hereof.

(f) Any damages provided for in any cutting permit mentioned in Clause 31 may be deducted from the deposit mentioned in Clause 35, and thereupon the Licensee shall forthwith deposit with the Minister sufficient moneys to make the said deposit equal to the amount of deposit thus required.

(g) In the event that the licence is cancelled by reason of any default or breach of the licence by the Licensee, then all
moneys on deposit with the Licensor under the terms of this agreement shall be payable to the Crown for damages.

39. For the purpose of carrying out the provisions of Clause 38 hereof, the Licensee may elect to start a new five-year period from any year in which the periodic cut for the preceding five-year period is within ten per cent of the accumulated approved annual cuts.

40. The aggregate acreage of the Crown lands not held under other tenure in the licence area for the purposes of rental under subsection (19) of Section 36 of the "Forest Act", as of this date, shall be the total acreage as set forth in the current approved working plan.

41. For the purposes of Section 126, subsection (1) of the "Forest Act", Chapter 153 of the Statutes of British Columbia for 1960 and subsequent amendments, the approved annual productive capacity of the licence shall be such as may be determined in the current approved working plan, and forest protection tax shall be payable as provided by the said Section 126.

42. All camps or other living quarters established incident to the management of the licence area shall be of a standard at least as high as those that, in the Minister's reasonable opinion, are being maintained by comparable well conducted forest operations in the ..... Forest District.

43. All roads, on lands within the boundaries of this licence, including the lands listed in Schedule "A", shall be held available for
public use in accordance with the terms of the "Industrial Transportation Act" and of the "Forest Act" relating thereto.

44. The Licensee shall provide, to the satisfaction of the Chief Forester reasonable office and living accommodation for a reasonable Forest Service inspection staff on the licence area or at any headquarters, plant, or operation maintained by the Licensee, if instructed by the Chief Forester in writing to do so.

45. The Licensee shall employ one Forester, registered under the terms of Chapter 37 R.S.B.C., 1960, and amendments thereto, and as many additional Registered Foresters as may be deemed necessary by the Chief Forester. The working plan and all revisions and amendments thereto shall be signed and sealed by the Registered Forester.

46. In the event of the bankruptcy or insolvency of the Licensee, the Minister may cancel the licence and any or all moneys on deposit may be declared by the Minister to be payable to the Crown for damages.

47. This agreement may be amended by the parties hereto by a memorandum in writing signed by the parties hereto.

48. This tree farm licence shall not be sold or transferred by the Licensee within ten years immediately subsequent to the issuance of this licence nor shall the control of the licence be transferred in any manner whatsoever to any person or persons, firm or firms, corporation or corporations without the written consent of the Minister first having been obtained.
49. Any notice required to be given to the Licensee by the Minister or Chief Forester under this agreement, may be given by written notice sent by registered mail or delivered to the registered office of the Licensee in British Columbia, and shall be deemed to be so given on the day it would be received by the Licensee in the ordinary course of post, or on the day it was so delivered.

50. (a) This licence may be terminated at any time by mutual consent of the parties hereto.

(b) The Licensee may terminate this licence on two years' notice in writing given to the Minister subject as hereinafter provided.

(c) In the event that the Licensee serves notice of termination of this licence as provided in the next preceding sub-clause or if the Minister terminates the licence such termination shall be subject to the following conditions:

(i) All moneys held as security deposit of whatsoever nature or kind or any part thereof may be declared by the Minister payable to the Crown for damages or otherwise and the Minister shall not be obliged to account in respect thereof.

(ii) All tenures which have reverted to the Crown pursuant to this contract shall not revert in the Licensee.

(iii) All improvements made on Crown lands included in Schedule "B" shall become and be the property of
the Crown and the Licensee shall have no claim or in any way be entitled to compensation therefor:
Provided the Licensee may remove its own improvements which are capable of removal in such a manner as not to damage other improvements:
Provided also such removal shall not in any way affect the lien of the Crown on such fixtures as provided in the "Forest Act".

(iv) All cutting permits issued pursuant to this agreement shall terminate on the termination of the agreement.

(v) The Licensee shall forthwith pay all moneys owing on outstanding accounts for stumpage, royalty, taxes, and annual rental.

(vi) All rights granted pursuant to any statute or regulations or under this agreement as ancillary thereunto and all appurtenances shall be cancelled effective on the termination of this licence.

51. In the event that this licence is cancelled or terminated, existing other tenures owned or controlled by the Licensee included within the licence area shall in no way be encumbered by any commitments, agreements, understanding or in any other manner arising out of the execution of this licence.
52. In this licence:

"Act" means the "Forest Act", R.S.B.C. 1960, Chapter 153, and amendments thereto in force from time to time during the currency of this agreement.

"Approved", if not otherwise defined in the context, means approved by the Minister.

"Denuded" or "denuded lands" means any forest lands in the licence area from or on which substantially all mature timber has been cut, logged, or destroyed, and on which trees of young growth in sufficient numbers to produce a valuable crop according to the standards of the Forest Service have not yet been established.

"Forest Service" means the Forest Service of the Department of Lands and Forests of British Columbia.

"Higher economic use" means that use which in the opinion of the Licensor will contribute most to the good and welfare of the Province, including non-monetary uses.

"Minister" means the Minister of Lands and Forests and his successors in office.

"Other tenure" means any title, licence, lease, or berth whereby the Licensee has the right to cut timber on land included in Schedule "A" hereto, or on land that subsequently may be acquired by the Licensee and added to the licence pursuant to Clause 7 hereof.
"Management working plan" means the management and working plan submitted by the Licensee with the application for this tree farm licence and approved prior to the execution of these presents and subsequent revised management working plans to be submitted by the applicant in accordance with the terms of this licence as herein appearing.

53. This licence shall enure to the benefit of and shall be binding upon, not only the parties hereto, but also the successors in office of the Minister and the successors and assigns of the Licensee, respectively.

54. This agreement is subject to the provisions of the "Forest Act" and such amendments thereto as may be made from time to time.

IN WITNESS WHEREOF the Licensor has executed these presents and the Licensee has hereunto affixed its corporate seal by the hands of its proper officers in that behalf.

SIGNED SEALED AND DELIVERED in the presence of:

Witness                        Minister of Lands and Forests

THE COMMON SEAL OF THE LICENSEE was hereunto affixed in the presence of:

______________________________

__________
Tree-farm Licence No. .................. Cutting Permit No. ..................

Under authority of section .................. of Tree-farm Licence No. .................., permission is hereby granted the .................. during the period from .................. to .................. to cut and remove under terms and conditions herein specified, together with all other Cutting Permits issued for Tree-farm Licence No. .................. and applicable to such period, a volume of timber not exceeding the approved cutting budget for the licence area.

1. DESCRIPTION OF PERMIT AREA (Crown Lands and (or) Tenures Other than Crown Land) as shown outlined on the attached sketch.

2. AREAS APPROVED FOR CUTTING
3. PAYMENTS

(a) Timber from Crown lands:—

The Permittee agrees to pay in addition to any other payment as provided in the Tree-farm Licence a stumpage price (inclusive of royalty) for the timber at the following rates immediately upon receipt of account:—

(b) Timber from lands other than Crown lands:—

Royalties, as provided in the "Forest Act" and amendments, for timber cut as authorized herein shall be payable to the Forest Service immediately upon receipt of account.

4. CONDITIONS

Any and all cutting on and removal of timber under this Cutting Permit shall be carried out in strict conformity with the provisions of the "Forest Act" and regulations made thereunder and with the Working Plan, and in general conformity with the intent and purpose of the Tree-farm Licence in so far as sustained-yield and management practices are concerned. Without limiting the generality of the foregoing, the Permittee shall comply fully with the following conditions:—

(a) Timber marks:—

(i) No timber shall be removed from Crown lands within the Permit area until same has been conspicuously marked with the following registered mark(s):—

(ii) No timber shall be removed from other tenures within the Permit area until same has been conspicuously marked with the proper marks applicable in accordance with the provisions of the "Forest Act."

(b) All trees as hereinafter defined, and only such trees, shall be cut:—

F.S. 427 (3)—o
(c) Stumps shall be cut as low as practical and not higher than __________ inches on the side adjacent to the highest ground, and trees shall be utilized to as low a top diameter as practical and to a maximum diameter of __________ inches, where merchantable.

(d) (i) Slash resulting from the operations shall be disposed of as follows:

(ii) As far as practicable, all branches of the logging operation shall keep pace with one another, and in no instance shall slash-disposal be allowed to fall behind cutting, except with the written consent of the Forest Officer in charge.

(e) All provisions of the Forest Act and regulations passed thereunder in connection with the prevention and suppression of forest fires shall be observed.

(f) Other conditions.

(i) No deviation will be permitted from the conditions embodied in this cutting permit without the prior written approval of the Forest Officer in charge.

(ii) Trees designated for cutting in Provision 4 (b) which are left uncut, any standing merchantable trees that have been isolated or rendered economically inaccessible, timber not utilized to the top diameter specified, trees cut higher than the stated stump height, or any felled merchantable timber not removed from any portion of the cutting area shall be scaled, measured, or counted as hereinafter provided and will be assessed at twice the stumpage rate set forth in Provision 3 of this cutting permit.

(iii) No damage will be done to reproduction or any tree designated to be left standing in areas not approved for clear cutting, burning, or scarifying. Any damage will be paid for as follows:

(iv) All timber cut under this cutting permit shall be scaled in accordance with the provisions of the Forest Act, amendments to same, regulations, and any instructions issued by the District Forester. The District Forester in charge may at any time designate in writing the place for scaling of any timber cut under this cutting permit.
CONDITION 4 (/) OF CUTTING PERMIT

During the periods between reappraisal or during the extension period the stumpage rates as established under Condition 3 (a) or Condition 6 of this Cutting Permit of any or all species quoted in Provision VII below will be adjusted up or down whenever the average market value of logs or (dressed lumber f.o.b. car) as determined by the Chief Forester (which determined value shall hereinafter be referred to as the Average Market Value) has departed by 15 per cent or more from the Average Market Value which formed the basis on which the last existing stumpage rate was established, provided:—

I. The Basic Ratio shall be the relationship of the stumpage rate set or later established by reappraisal to the Average Market Value on which said stumpage was established.

II. When the Average Market Value is greater than that quoted in Provision VII below or later established by reappraisal, and at the same time has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, the new stumpage rate shall be five-fourths ($\frac{5}{4}$) of the Basic Ratio times the new Average Market Value, provided such stumpage rate shall be rounded off to the nearest ten (10) cents.

III. When the Average Market Value is less than that quoted in Provision VII below or later established by reappraisal, and at the same time has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, the new stumpage rate shall be three-quarters ($\frac{3}{4}$) of the Basic Ratio times the new Average Market Value, provided such stumpage rate shall be rounded off to the nearest ten (10) cents.

IV. Notwithstanding the provisions of II and III above, when the Average Market Value has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, and at the same time is within the range of 10 per cent of the Average Market Value quoted in Provision VII below or later established by reappraisal, the new stumpage rate shall be the rate as set out in Condition 3 (a) of the permit or later established by reappraisal. A further adjustment will be made in accordance with II or III above when the Average Market Value has departed not less than 15 per cent from that quoted in Provision VII below.

V. Notwithstanding any other condition set out herein, the new stumpage rate as a result of any adjustment shall not be less than the minimum used by the Forest Service for stumpage appraisals at the time of the adjustment.

VI. Notwithstanding the provisions of II and III above, the increase or decrease in stumpage rate per C c f as a result of any adjustment made in accordance with these provisions shall not exceed 50 per cent of the change in the market value.

VII. The Average Market Values which formed the basis on which the stumpage rates set out in Condition 3 (a) were established are as follows:—

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<th>Species</th>
<th>Average Market Value</th>
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N.B.—The above Average Market Values will be re-established by reappraisal as provided for by Condition 3 (a) or 6 of this Permit.

VIII. All material scaled on and after the date specified in the notice of adjustment shall be paid for at the stumpage rates set out therein.

IX. The District Forester shall determine the revised rates of stumpage and notify the permittee of such rates and effective date thereof.
5. FAILURE TO COMPLY WITH PERMIT PROVISIONS

Failure to comply with any of the Permit provisions shall subject this Permit to cancellation or suspension by the Minister of Lands and Forests, whose decision will be final in the interpretation of any of the terms and conditions thereof.

6. EXPIRY

This Permit shall expire on the..............................day of......................................................, 19........ when all rights of cutting by the Permittee shall absolutely terminate; provided that the Chief Forester may, for good cause, extend the said term, which he may do for a period not exceeding one year, when the conditions and stumpage may be changed as the Chief Forester may decide.

Date .................................................. .................................................. ..................................................

Chief Forester.
APPENDIX III

SAMPLE TIMBER SALE CONTRACT
TIMBER SALE CONTRACT X

This indenture, made the __________ day of __________, A.D. 19_____,
Between:

Her Majesty the Queen (herein represented and acting by

who is hereinafter called the "Licensor"), OF THE ONE PART,

and

who, together with executors, administrators, successors, and assigns, is hereinafter called the "Licensee," OF THE OTHER PART.

WITNESSETH that, in consideration of the payments and stipulations to be made and observed by and on the part of the Licensee and of the Licensee's offer to purchase made under and subject to the provisions of Part III of the "Forest Act," the Licensor doth hereby grant unto the Licensee, subject to the provisions of the said Act, and for the term and subject to the reservations and conditions hereinafter provided, a licence to cut and remove all the dead timber, standing or down, and all the live timber designated for cutting by a Forest Officer, merchantable as hereinafter defined, upon an area which is agreed to comprise __________ acres, more or less, situated and described hereunder, from the date hereof, for the term of __________ years ensuing.

Description of Timber Sale Area—1. As shown outlined upon the map hereto annexed:—
Payments—2.

In consideration whereof the Licensee hereby covenants, promises, and agrees with the Licensor as follows: The Licensee shall pay to the said Licensor the several sums at the times and in the manner following, namely:—

(a) A stumpage price (inclusive of royalty) for the timber at the following rates, payable immediately upon receipt of account:—

(b) An annual rental, based on acres, at the rate of per acre, amounting to $ further payments to be made annually in advance on the day of in each year hereafter during the continuance of the licence hereby granted: Provided that such annual rental is to be reduced in each year by the omission from its computation of not less than six hundred and forty acres as provided in section 17, subsection (2) (b), of the "Forest Act."

(c) All forest-protection dues as provided in the "Forest Act" and amendments, payable annually in advance on the day of in each year during the life of this contract.

(d) The cost of cruising and advertising incident to this contract, being the sum of $______________

(e) The cost of scaling, payable immediately upon receipt of account.

Conditions—3.

And the Licensee further covenants, promises, and agrees to cut and remove said timber in strict accordance with the following conditions and with all regulations and provisions governing timber sales in the "Forest Act" and amendments:—

(a) No timber will be removed from the sale area until it has been conspicuously marked with the following registered mark issued for this timber sale: Δ

(b) Stumps will be cut so as to cause the least practicable waste, and will not be cut higher than the diameter of the tree at the point where it is cut, and in no case higher than inches on the side adjacent to the highest ground except in unusual cases in the discretion of the officer of the Forest Service in charge.

   All trees will be utilized to as low a diameter in the tops as practicable, so as to cause the least waste, and to the minimum diameter of inches

when merchantable in the judgment of the officer of the Forest Service in charge. Log lengths will be varied so as to provide for the complete utilization of merchantable timber.
(e.) Timber described as follows shall be considered merchantable under terms of this contract, and may be designated for cutting by the Forest Officer.

(d) All trees, designated as hereinafter defined, shall be cut:

(e) No damage will be done to young growth or to trees left standing. So far as practicable, trees will be felled uphill, and no trees will be left lodged in the process of felling. If trees or young growth designated to be left standing are badly damaged during the process of logging, they will be paid for at the rate of

$ per tree.

$ per acre.

(f) When operations are begun on any natural logging area the cutting on that area shall be fully completed to the satisfaction of the Forest Officer in charge before cutting may begin on other areas, unless such cutting is authorized in writing with the requirement that cutting shall be completed on the area left unfinished as soon as practicable.

(g) As far as practicable, all branches of the logging operation shall keep pace with one another, and in no instance shall slash-disposal be allowed to fall behind cutting, except with the written consent of the Forest Officer in charge.

(h) All timber cut under this contract shall be scaled in accordance with the provisions of the “Forest Act” and amendments and regulations, and in no case will any such timber be manufactured or sold until it has been properly scaled as provided in the “Forest Act” and amendments and regulations. The District Forester in charge may at any time during the term of this contract, or any extension thereto, designate in writing the place for scaling of any timber cut under this contract: Provided, however, that where this contract authorizes the cutting of sawlogs, and sawlogs are cut, then such sawlogs shall be scaled according to the British Columbia Cubic Scale.

(i) Trees designated for cutting in clause (d) which are left uncut, timber wasted in tops and stumps, trees left lodged in the process of felling, and any merchantable timber which is cut and not removed from any portion of the cutting area after logging on that portion of the cutting area is completed shall be scaled, measured, or counted as hereinbefore provided, and paid for as follows:
(j) Slash will be disposed of as follows:

(k) Provisions for fire-protection: As provided by Part XI of the "Forest Act."

(l) Other clauses:

(m) The Licensor reserves the right to grant rights-of-way to other persons across, through, or over
the sale area hereinbefore described, provided, however, the rights-of-way so granted shall not
unnecessarily interfere with the Licensee's rights under this contract or with the Licensee's
improvements on the said sale area, or give any rights to use the Licensee's improvements
without the consent of the said Licensee while this contract is in effect.

Provided that, upon expiration of the said term, all rights of the Licensee hereunder shall absolutely
terminate, and any and all timber cut from and lying on the said lands shall become the absolute property of
the Licensor: Provided that the Minister of Lands and Forests may for a good and sufficient reason extend
this contract for a period in keeping with the term of this contract and the operating history to date, when
the stumpage may be varied on the basis of reappraisal and stumpage adjustment currently in use by the
Forest Service at the time the reappraisal or adjustment is made.
Notwithstanding the rates bid as set out in condition 2 (a), stumpage rates of any or all species quoted in provision (vii) below will be adjusted up or down whenever the average market value as determined by the Chief Forester (which determined value shall hereinafter be referred to as the “Average Market Value”) has departed by 15 per cent or more from the Average Market Value which formed the basis on which the existing stumpage rates were established, provided:

(i) The Basic Ratio shall be the relationship of the stumpage rate bid to the Average Market Value quoted in provision (vii) below.

(ii) When the Average Market Value is greater than that quoted in provision (vii) below, and at the same time has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, the new stumpage rate shall be five-fourths (¾) of the Basic Ratio times the new Average Market Value; provided such stumpage rate shall be rounded off to the nearest ten (10) cents.

(iii) When the Average Market Value is less than that quoted in provision (vii) below, and at the same time has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, the new stumpage rate shall be three-quarters (¾) of the Basic Ratio times the new Average Market Value; provided such stumpage rate shall be rounded off to the nearest ten (10) cents.

(iv) Notwithstanding the provisions of any other clause, when the Average Market Value has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, and at the same time is within the range of 10 per cent of the Average Market Value quoted in provision (vii) below, the new stumpage rate shall be the original rate bid (as set out in condition 2 (a) of the contract). A further adjustment will be made in accordance with (ii) or (iii) above when the Average Market Value has departed not less than 15 per cent from that quoted in provision (vii) below.

(v) Notwithstanding any other condition herein, except as provided in clause (iv), the new stumpage rate as a result of any adjustment shall not be less than the minimum used by the Forest Service for stumpage appraisals at the time of the adjustment.

(vi) The increase or decrease per C c.f. in stumpage rate as a result of any adjustment made in accordance with clause (ii) or (iii) above shall not exceed one-half of the increase or decrease per M b.m. in the Average Market Value.

(vii) The Average Market Values which formed the basis on which the stumpage rates set out in condition 2 (a) were established are as follows:

<table>
<thead>
<tr>
<th>Species</th>
<th>Average Market Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Average Market Value</td>
</tr>
</tbody>
</table>

(viii) All material scaled on and after the date specified in the notice of adjustment shall be paid for at the stumpage rates set out therein.

(ix) The District Forester shall determine the revised rates of stumpage and notify the licensee of such rates and effective date thereof.
The Licensee agrees that the sum of $ which accompanied tender for timber covered by this contract, shall be held until the completion of the contract; and provided that the contract has been faithfully carried out to the satisfaction of the Licensor will be refunded; otherwise this amount will be subject to such deductions as the Licensor may find necessary in order to carry out the full intent and provisions of this contract; or otherwise will be applied for damages or other charges.

Except as may otherwise be provided by any Statute or Order in Council that may from time to time be in force, all timber cut under this contract shall be used in this Province, or be manufactured in this Province into boards, laths, shingles, or other sawn lumber, to such an extent to be of use in the trades without further manufacturing, except in the case of piles, telegraph and telephone poles, ties, and crib timber, which may be exported under an Order in Council.

The Licensee covenants with the Licensor:—
(a) That he will not assign or transfer the licence hereby granted or any interest therein without the written consent of the Licensor first had and obtained;
(b) That in carrying out his operations under this licence he will in no way block, obstruct, or damage any road, trail, or other property, and any obstruction caused or damage done by him will be removed and repaired forthwith by the Licensee at his own expense.

The decision of the Minister of Lands and Forests will be final in the interpretation of any of the terms and conditions of this contract.

The Forest Officer in charge, by giving notice to that effect in writing to the Licensee, or to the person in charge of logging operations upon the area, may suspend any logging or milling operations conducted upon this area, should violation of any of the terms, covenants, provisos, or conditions of this contract have occurred; and such violation shall render this contract liable to cancellation by the Minister of Lands and Forests.

Provided further that the interest, rights, and privileges of the Licensee in the said hereditaments, tenements, and premises shall be construed as subject always to all the provisions of the "Forest Act" and amendments thereof.

The Licensor reserves the right to suspend or cancel this contract if the Licensee is, or becomes, bankrupt or insolvent, unless the Licensee’s account with the Forest Service is paid up in full and continues in that condition.

The Licensee agrees that any person or persons who conducts or is conducting operations on the licence area to the knowledge of or with the consent of the Licensee is and are the agents or servants of the Licensee.

In witness whereof the parties hereto have hereunto set their hands and seals the day and year first above written.

Signed, sealed, and delivered by the }  
Licensor in the presence of—  

Signed, sealed, and delivered by the }  
Licensee in the presence of—  

NOTE.—If contracting party is a copartnership, the instrument must be signed and sealed by each member of the partnership. All written signatures must be made in ink.

It contracting party is a corporation, the corporate seal must be affixed by the officials who are authorized to execute deeds on behalf of the corporation and be accompanied by the signature of these officials.
APPENDIX IV

LIST OF TREE FARM LICENCES AWARDED UP TO

31st DECEMBER 1961
### TREE FARM LICENCES AWARDED

<table>
<thead>
<tr>
<th>T.F.L. No.</th>
<th>Forest District</th>
<th>Name of Licensee</th>
<th>Date of Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pr. R.</td>
<td>Columbia Cellulose Co. Ltd.</td>
<td>4. 5.48</td>
</tr>
<tr>
<td>2</td>
<td>V</td>
<td>Elk Falls Co. Ltd.</td>
<td>24.1.49</td>
</tr>
<tr>
<td>3</td>
<td>N</td>
<td>Passmore Lumber Company Ltd.</td>
<td>1. 2.50</td>
</tr>
<tr>
<td>4</td>
<td>V</td>
<td>I. W. McDonagh</td>
<td>15. 5.50</td>
</tr>
<tr>
<td>5</td>
<td>Pr. G.</td>
<td>Western Plywood (Cariboo) Ltd.</td>
<td>15. 5.50</td>
</tr>
<tr>
<td>6</td>
<td>V</td>
<td>Rayonier Canada (B.C.) Limited</td>
<td>26.10.50</td>
</tr>
<tr>
<td>7</td>
<td>V</td>
<td>Salmon River Logging Co. Ltd.</td>
<td>15.12.50</td>
</tr>
<tr>
<td>8</td>
<td>N</td>
<td>Boundary Sawmills Ltd.</td>
<td>26. 1.51</td>
</tr>
<tr>
<td>9</td>
<td>K</td>
<td>S. M. Simpson Ltd.</td>
<td>16. 8.51</td>
</tr>
<tr>
<td>10</td>
<td>V</td>
<td>Timberland Development Co. Ltd.</td>
<td>7.11.51</td>
</tr>
<tr>
<td>11</td>
<td>N</td>
<td>Olinger Lumber Co. Ltd.</td>
<td>14. 1.52</td>
</tr>
<tr>
<td>12</td>
<td>V</td>
<td>Bendickson Logging Ltd.</td>
<td>25. 2.52</td>
</tr>
<tr>
<td>13</td>
<td>N</td>
<td>Galloway Lumber Co. Ltd.</td>
<td>17. 6.52</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot; &quot; &quot; &quot; &quot; &quot; Extension</td>
<td>27.11.59</td>
</tr>
<tr>
<td>14</td>
<td>N</td>
<td>Crestbrook Timbers Limited</td>
<td>23.12.53</td>
</tr>
<tr>
<td>15</td>
<td>K</td>
<td>Oliver Sawmills Limited</td>
<td>22. 4.54</td>
</tr>
<tr>
<td>16</td>
<td>K</td>
<td>Pondosa Pine Lumber Co. Ltd.</td>
<td>22. 4.54</td>
</tr>
<tr>
<td>17</td>
<td>V</td>
<td>Evans Products Co. Ltd.</td>
<td>29. 7.54</td>
</tr>
<tr>
<td>18</td>
<td>K</td>
<td>Clearwater Timber Products Ltd.</td>
<td>2.11.54</td>
</tr>
<tr>
<td>19</td>
<td>V</td>
<td>Tahsis Company Ltd.</td>
<td>23.12.54</td>
</tr>
<tr>
<td>20</td>
<td>V</td>
<td>MacMillan Bloedel &amp; Powell River Industries Ltd.</td>
<td>24. 1.55 (Tafino</td>
</tr>
<tr>
<td>T.F.L. No.</td>
<td>Forest District</td>
<td>Name of Licensee</td>
<td>Date of Award</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>21</td>
<td>V</td>
<td>MacMillan Bloedel &amp; Powell River Industries Ltd.</td>
<td>19.3.55</td>
</tr>
<tr>
<td>22</td>
<td>V</td>
<td>B.C. Forest Products Ltd.</td>
<td>18.5.55</td>
</tr>
<tr>
<td>23</td>
<td>N</td>
<td>Celgar Limited</td>
<td>20.7.55</td>
</tr>
<tr>
<td>24</td>
<td>Pr. R.</td>
<td>Rayonier Canada (B.C.) Limited</td>
<td>2.5.58</td>
</tr>
<tr>
<td>25</td>
<td>V-Pr. R.</td>
<td>Rayonier Canada (B.C.) Limited</td>
<td>21.5.58</td>
</tr>
<tr>
<td>26</td>
<td>V</td>
<td>Corporation of the District of Mission</td>
<td>22.7.58</td>
</tr>
<tr>
<td>27</td>
<td>V</td>
<td>Moore Whittington Lumber Co. Ltd.</td>
<td>20.10.58</td>
</tr>
<tr>
<td>28</td>
<td>Pr. G.</td>
<td>Shelley Development Ltd.</td>
<td>1.5.59</td>
</tr>
<tr>
<td>29</td>
<td>Pr. G.</td>
<td>Eagle Lake Sawmills Ltd.</td>
<td>4.5.59</td>
</tr>
<tr>
<td>30</td>
<td>Pr. G.</td>
<td>Sinclair Spruce Lumber Co. Ltd.</td>
<td>30.6.59</td>
</tr>
<tr>
<td>31</td>
<td>Pr. G.</td>
<td>Upper Fraser Spruce Mills Ltd.</td>
<td>29.6.59</td>
</tr>
<tr>
<td>32</td>
<td>K</td>
<td>Vernon Box &amp; Pine Lumber Co. Ltd.</td>
<td>29.6.59</td>
</tr>
<tr>
<td>33</td>
<td>K</td>
<td>Shuswap Timbers Ltd.</td>
<td>20.7.59</td>
</tr>
<tr>
<td>34</td>
<td>Pr. G.</td>
<td>Church Sawmill Ltd.</td>
<td>27.8.59</td>
</tr>
<tr>
<td>35</td>
<td>K</td>
<td>B.C. Interior Sawmills Ltd.</td>
<td>8.9.59</td>
</tr>
<tr>
<td>36</td>
<td>V</td>
<td>F &amp; R Logging Co. Ltd.</td>
<td>23.12.59</td>
</tr>
<tr>
<td>37</td>
<td>V</td>
<td>Canadian Forest Products Ltd.</td>
<td>28.12.60</td>
</tr>
<tr>
<td>38</td>
<td>V</td>
<td>Empire Mills Limited</td>
<td>2.6.61</td>
</tr>
<tr>
<td>39</td>
<td>V-Pr. R.</td>
<td>MacMillan Bloedel &amp; Powell River Ltd.</td>
<td>27.10.61</td>
</tr>
</tbody>
</table>
APPENDIX V

DETAILS OF TREE FARM LICENCES AWARDED UP TO
31st DECEMBER 1961
<table>
<thead>
<tr>
<th>Forest District</th>
<th>TFL No.</th>
<th>Name</th>
<th>Licensee</th>
<th>Productive Area (Acres)</th>
<th>Total Area (Acres)</th>
<th>Total Mature Volume (M cu.ft.)</th>
<th>Annual Cut</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Crown</td>
<td>Private</td>
<td>Total</td>
<td>Crown</td>
</tr>
<tr>
<td>Vancouver</td>
<td>2</td>
<td>&quot;Duncan Bay&quot;</td>
<td>Elk Falls Co. Ltd.</td>
<td>163,612</td>
<td>116,946</td>
<td>280,558</td>
<td>378,371</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>&quot;Blind Channel&quot;</td>
<td>I.W. McDonagh</td>
<td>3,881</td>
<td></td>
<td>3,881</td>
<td>4,353</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>&quot;Quatsino&quot;</td>
<td>Rayonier Canada B.C.Ltd.</td>
<td>190,092</td>
<td>114,453</td>
<td>301,545</td>
<td>437,247</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>&quot;Salmon River&quot;</td>
<td>MacMillan, Bloedel and Powell River Ltd.</td>
<td>87,512</td>
<td>30,526</td>
<td>118,038</td>
<td>164,346</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>&quot;Tobs&quot;</td>
<td>Timberland Development Co.</td>
<td>48,742</td>
<td>545</td>
<td>49,287</td>
<td>491,874</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>&quot;Hardwicke&quot;</td>
<td>Bendickson Logging Ltd.</td>
<td>17,752</td>
<td>640</td>
<td>20,392</td>
<td>23,207</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>&quot;Knight Inlet&quot;</td>
<td>Evans Products Co. Ltd.</td>
<td>66,740</td>
<td>640</td>
<td>73,380</td>
<td>473,900</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>&quot;Tahsis&quot;</td>
<td>Tahsis Company Ltd.</td>
<td>164,180</td>
<td>27,541</td>
<td>191,721</td>
<td>398,122</td>
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<td></td>
<td>20</td>
<td>&quot;Tofino&quot;</td>
<td>MacMillan, Bloedel and Powell River Ltd.</td>
<td>233,044</td>
<td>144,452</td>
<td>377,496</td>
<td>426,123</td>
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<td>21</td>
<td>&quot;Alberni&quot;</td>
<td>Powell River Ind. Ltd.</td>
<td>280,574</td>
<td>271,454</td>
<td>552,028</td>
<td>634,250</td>
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<tr>
<td></td>
<td>22</td>
<td>&quot;Macquinn&quot;</td>
<td>B.C. Forest Products Ltd.</td>
<td>180,955</td>
<td>67,968</td>
<td>248,523</td>
<td>392,165</td>
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<td></td>
<td>25</td>
<td>&quot;Naka&quot;</td>
<td>Rayonier Canada B.C.Ltd.</td>
<td>119,807</td>
<td>72,513</td>
<td>192,320</td>
<td>345,229</td>
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<tr>
<td></td>
<td>26</td>
<td>&quot;Mission Municipal&quot;</td>
<td>Corporation of the District of Mission</td>
<td>13,449</td>
<td>2,664</td>
<td>16,113</td>
<td>17,860</td>
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<tr>
<td></td>
<td>27</td>
<td>&quot;Nitinat&quot;</td>
<td>Moore-Whittington Lumber</td>
<td>26,274</td>
<td>3,729</td>
<td>30,003</td>
<td>34,792</td>
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<td>36</td>
<td>&quot;Cordero&quot;</td>
<td>F &amp; R Logging Co. Ltd.</td>
<td>12,141</td>
<td>1,249</td>
<td>13,390</td>
<td>19,165</td>
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<tr>
<td></td>
<td>37</td>
<td>&quot;Nimpkish&quot;</td>
<td>Canadian Forest Prod. Ltd.</td>
<td>124,207</td>
<td>104,499</td>
<td>228,706</td>
<td>457,895</td>
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<td></td>
<td>38</td>
<td>&quot;Squamish&quot;</td>
<td>Empire Mills Ltd.</td>
<td>79,964</td>
<td>565</td>
<td>80,529</td>
<td>313,658</td>
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<tr>
<td></td>
<td>39</td>
<td>&quot;Haida&quot;</td>
<td>MacMillan, Bloedel and Powell River Ltd.</td>
<td>247,821</td>
<td>192,674</td>
<td>440,495</td>
<td>501,926</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
<td>2,066,567</td>
<td>1,155,819</td>
<td>3,222,386</td>
<td>5,513,856</td>
</tr>
<tr>
<td>Pr. Rupert</td>
<td>1</td>
<td>&quot;Port Edward&quot;</td>
<td>Columbia Cellulose Co.</td>
<td>721,036</td>
<td>11,924</td>
<td>732,960</td>
<td>1,961,399</td>
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<tr>
<td></td>
<td>24</td>
<td>&quot;Moresby&quot;</td>
<td>Rayonier Canada B.C.Ltd.</td>
<td>112,718</td>
<td>21,219</td>
<td>133,937</td>
<td>297,228</td>
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<tr>
<td></td>
<td>25</td>
<td>&quot;Naka&quot;</td>
<td>Rayonier Canada B.C.Ltd.</td>
<td>80,207</td>
<td>26,294</td>
<td>106,501</td>
<td>212,794</td>
</tr>
<tr>
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<td>39</td>
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<td>MacMillan, Bloedel and Powell River Ltd.</td>
<td>322,890</td>
<td>127,049</td>
<td>449,939</td>
<td>513,731</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td></td>
<td>1,246,851</td>
<td>216,486</td>
<td>1,463,337</td>
<td>3,568,391</td>
</tr>
</tbody>
</table>
### TREE FARM LICENCES AWARDED

**December 31, 1961.**

<table>
<thead>
<tr>
<th>District No</th>
<th>Name</th>
<th>Licensee</th>
<th>Productive Area (Acres)</th>
<th>Total Area (Acres)</th>
<th>Total Mature Volume (M cu.ft.)</th>
<th>Allowable Annual Cut (M cu.ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>&quot;MacKenzie-Cariboo&quot;</td>
<td>Western Plywood (Cariboo)</td>
<td>81,215</td>
<td>81,410</td>
<td>83,960</td>
<td>106,597</td>
</tr>
<tr>
<td>28</td>
<td>&quot;Shelley&quot;</td>
<td>Shelley Development Ltd.</td>
<td>71,635</td>
<td>71,638</td>
<td>89,538</td>
<td>90,018</td>
</tr>
<tr>
<td>29</td>
<td>&quot;Eagle Lake&quot;</td>
<td>Eagle Lake Sawmills Ltd.</td>
<td>98,617</td>
<td>98,617</td>
<td>105,912</td>
<td>126,817</td>
</tr>
<tr>
<td>30</td>
<td>&quot;Sinclair&quot;</td>
<td>Sinclair Spruce Ltd.</td>
<td>71,083</td>
<td>71,083</td>
<td>84,373</td>
<td>112,199</td>
</tr>
<tr>
<td>31</td>
<td>&quot;McGregor&quot;</td>
<td>Upper Fraser Spruce Mills</td>
<td>42,534</td>
<td>42,534</td>
<td>45,761</td>
<td>102,338</td>
</tr>
<tr>
<td>34</td>
<td>&quot;Seebach&quot;</td>
<td>Church Sawmill Ltd.</td>
<td>42,071</td>
<td>42,071</td>
<td>53,858</td>
<td>98,630</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>404,131</strong></td>
<td><strong>415,153</strong></td>
<td><strong>463,402</strong></td>
<td><strong>718,629</strong></td>
</tr>
<tr>
<td>9</td>
<td>&quot;Okanagan (West)&quot;</td>
<td>S.M. Simpson Ltd.</td>
<td>169,531</td>
<td>170,433</td>
<td>195,435</td>
<td>188,522</td>
</tr>
<tr>
<td>15</td>
<td>&quot;Inkameep&quot;</td>
<td>Oliver Sawmills Ltd.</td>
<td>90,540</td>
<td>90,700</td>
<td>115,600</td>
<td>98,674</td>
</tr>
<tr>
<td>16</td>
<td>&quot;Monte Lake&quot;</td>
<td>Ponderosa Pine Lumber Co.</td>
<td>122,169</td>
<td>122,169</td>
<td>128,756</td>
<td>126,817</td>
</tr>
<tr>
<td>18</td>
<td>&quot;Clearwater&quot;</td>
<td>Clearwater Timber Prod.</td>
<td>161,047</td>
<td>161,047</td>
<td>184,405</td>
<td>192,943</td>
</tr>
<tr>
<td>32</td>
<td>&quot;Boleman&quot;</td>
<td>Vernon Box &amp; Pine Co. Ltd.</td>
<td>31,074</td>
<td>32,214</td>
<td>39,700</td>
<td>35,063</td>
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<tr>
<td>36</td>
<td>&quot;Sicamous&quot;</td>
<td>Shuswap Timbers Ltd.</td>
<td>14,565</td>
<td>14,565</td>
<td>17,260</td>
<td>15,289</td>
</tr>
<tr>
<td>35</td>
<td>&quot;Jenison Creek&quot;</td>
<td>B.C. Interior Sawmills Ltd.</td>
<td>97,236</td>
<td>97,236</td>
<td>100,964</td>
<td>112,949</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>686,162</strong></td>
<td><strong>784,091</strong></td>
<td><strong>972,406</strong></td>
<td><strong>1,188,392</strong></td>
</tr>
<tr>
<td>3</td>
<td>&quot;Little Slocan&quot;</td>
<td>Passmore Lumber Co. Ltd.</td>
<td>100,085</td>
<td>100,085</td>
<td>106,625</td>
<td>112,625</td>
</tr>
<tr>
<td>8</td>
<td>&quot;Boundary Creek&quot;</td>
<td>Boundary Sawmills Ltd.</td>
<td>89,530</td>
<td>89,530</td>
<td>111,810</td>
<td>117,810</td>
</tr>
<tr>
<td>11</td>
<td>&quot;Carni&quot;</td>
<td>Olinger Lumber Co. Ltd.</td>
<td>64,787</td>
<td>64,787</td>
<td>80,815</td>
<td>86,815</td>
</tr>
<tr>
<td>13</td>
<td>&quot;Hull River&quot;</td>
<td>Gallaway Lumber Co. Ltd.</td>
<td>38,856</td>
<td>38,856</td>
<td>100,280</td>
<td>105,280</td>
</tr>
<tr>
<td>14</td>
<td>&quot;Spillimacheen&quot;</td>
<td>Crestbrook Timbers Ltd.</td>
<td>67,925</td>
<td>71,715</td>
<td>308,294</td>
<td>314,294</td>
</tr>
<tr>
<td>23</td>
<td>&quot;Arrow Lakes&quot;</td>
<td>Celgar Limited</td>
<td>827,271</td>
<td>863,761</td>
<td>2,537,673</td>
<td>2,687,673</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>1,188,454</strong></td>
<td><strong>1,228,734</strong></td>
<td><strong>3,334,697</strong></td>
<td><strong>3,388,785</strong></td>
</tr>
</tbody>
</table>

**GRAND TOTAL**

|               | 5,592,165                      |

* This cut is for entire area including Prince Rupert Blocks.

** Total allowable cut for Licence shown under Vancouver District.
Tree-farm Licence No. .................. Cutting Permit No. ..................

Under authority of section ................. of Tree-farm Licence No. .........................., permission is hereby granted the ............................................................. during the period from ............................................................. to ............................................................. to cut and remove under terms and conditions herein specified, together with all other Cutting Permits issued for Tree-farm Licence No. .......................... and applicable to such period, a volume of timber not exceeding the approved cutting budget for the licence area.

1. DESCRIPTION OF PERMIT AREA (Crown Lands and (or) Tenures Other than Crown Land) as shown outlined on the attached sketch.

2. AREAS APPROVED FOR CUTTING
3. Payments

(a) Timber from Crown lands:—

The Permittee agrees to pay in addition to any other payment as provided in the Tree-farm Licence a stumpage price (inclusive of royalty) for the timber at the following rates immediately upon receipt of account:—

(b) Timber from lands other than Crown lands:—

Royalties, as provided in the "Forest Act" and amendments, for timber cut as authorized herein shall be payable to the Forest Service immediately upon receipt of account.

4. Conditions

Any and all cutting on and removal of timber under this Cutting Permit shall be carried out in strict conformity with the provisions of the "Forest Act" and regulations made thereunder and with the Working Plan, and in general conformity with the intent and purpose of the Tree-farm Licence in so far as sustained-yield and management practices are concerned. Without limiting the generality of the foregoing, the Permittee shall comply fully with the following conditions:—

(a) Timber marks:—

(i) No timber shall be removed from Crown lands within the Permit area until same has been conspicuously marked with the following registered mark(s):—

(ii) No timber shall be removed from other tenures within the Permit area until same has been conspicuously marked with the proper marks applicable in accordance with the provisions of the "Forest Act."

(b) All trees as hereinafter defined, and only such trees, shall be cut:—
(c) Stumps shall be cut as low as practical and not higher than ___________________ inches on the side adjacent to the highest ground, and trees shall be utilized to as low a top diameter as practical and to a maximum diameter of ___________________ inches, where merchantable.

(d) (i) Slash resulting from the operations shall be disposed of as follows:

(ii) As far as practicable, all branches of the logging operation shall keep pace with one another, and in no instance shall slash-disposal be allowed to fall behind cutting, except with the written consent of the Forest Officer in charge.

(e) All provisions of the Forest Act and regulations passed thereunder in connection with the prevention and suppression of forest fires shall be observed.

(f) Other conditions:

(i) No deviation will be permitted from the conditions embodied in this cutting permit without the prior written approval of the Forest Officer in charge.

(ii) Trees designated for cutting in Provision 4 (b) which are left uncut, any standing merchantable trees that have been isolated or rendered economically inaccessible, timber not utilized to the top diameter specified, trees cut higher than the stated stump height, or any felled merchantable timber not removed from any portion of the cutting area shall be scaled, measured, or counted as hereinafter provided and will be assessed at twice the stumpage rate set forth in Provision 3 of this cutting permit.

(iii) No damage will be done to reproduction or any tree designated to be left standing in areas not approved for clear cutting, burning, or scarifying. Any damage will be paid for as follows:

(iv) All timber cut under this cutting permit shall be scaled in accordance with the provisions of the Forest Act, amendments to same, regulations, and any instructions issued by the District Forester. The District Forester in charge may at any time designate in writing the place for scaling of any timber cut under this cutting permit.
CONDITION 4 (f) OF CUTTING PERMIT

During the periods between reappraisal or during the extension period the stumpage rates as established under Condition 3 (a) or Condition 6 of this Cutting Permit of any or all species quoted in Provision VII below will be adjusted up or down whenever the average market value of logs or (dressed lumber f.o.b. car) as determined by the Chief Forester (which determined value shall hereinafter be referred to as the Average Market Value) has departed by 15 per cent or more from the Average Market Value which formed the basis on which the last existing stumpage rate was established, provided:—

I. The Basic Ratio shall be the relationship of the stumpage rate set or later established by reappraisal to the Average Market Value on which said stumpage was established.

II. When the Average Market Value is greater than that quoted in Provision VII below or later established by reappraisal, and at the same time has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, the new stumpage rate shall be five-fourths ($\frac{5}{4}$) of the Basic Ratio times the new Average Market Value, provided such stumpage rate shall be rounded off to the nearest ten (10) cents.

III. When the Average Market Value is less than that quoted in Provision VII below or later established by reappraisal, and at the same time has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, the new stumpage rate shall be three-quarters ($\frac{3}{4}$) of the Basic Ratio times the new Average Market Value, provided such stumpage rate shall be rounded off to the nearest ten (10) cents.

IV. Notwithstanding the provisions of II and III above, when the Average Market Value has departed not less than 15 per cent from the Average Market Value which formed the basis on which the existing rates were established, and at the same time is within the range of 10 per cent of the Average Market Value quoted in Provision VII below or later established by reappraisal, the new stumpage rate shall be the rate as set out in Condition 3 (a) of the permit or later established by reappraisal. A further adjustment will be made in accordance with II or III above when the Average Market Value has departed not less than 15 per cent from that quoted in Provision VII below.

V. Notwithstanding any other condition set out herein, the new stumpage rate as a result of any adjustment shall not be less than the minimum used by the Forest Service for stumpage appraisals at the time of the adjustment.

VI. Notwithstanding the provisions of II and III above, the increase or decrease in stumpage rate per C c.f. as a result of any adjustment made in accordance with these provisions shall not exceed 50 per cent of the change in the market value.

VII. The Average Market Values which formed the basis on which the stumpage rates set out in Condition 3 (a) were established are as follows:—

<table>
<thead>
<tr>
<th>Species</th>
<th>Average Market Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Average Market Value</td>
</tr>
</tbody>
</table>

N.B.—The above Average Market Values will be re-established by reappraisal as provided for by Condition 3 (a) or 6 of this Permit.

VIII. All material scaled on and after the date specified in the notice of adjustment shall be paid for at the stumpage rates set out therein.

IX. The District Forester shall determine the revised rates of stumpage and notify the permittee of such rates and effective date thereof.
5. **Failure to Comply with Permit Provisions**

    Failure to comply with any of the Permit provisions shall subject this Permit to cancellation or suspension by the Minister of Lands and Forests, whose decision will be final in the interpretation of any of the terms and conditions thereof.

6. **Expiry**

    This Permit shall expire on the……………………day of……………………………, 19………………………… when all rights of cutting by the Permittee shall absolutely terminate; provided that the Chief Forester may, for good cause, extend the said term, which he may do for a period not exceeding one year, when the conditions and stumpage may be changed as the Chief Forester may decide.

    Date……………………………………………………………..…………………………………………………………………………………..

    Chief Forester.

F.S. 427 (4)—o
<table>
<thead>
<tr>
<th>Forest District</th>
<th>TFL No.</th>
<th>Name</th>
<th>Licensee</th>
<th>Total Mature Volume (M cu.ft)</th>
<th>Allowable Annual Cut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancouver</td>
<td>2</td>
<td>&quot;Duncan Bay&quot;</td>
<td>Elk Falls Co. Ltd.</td>
<td>216,486</td>
<td>216,486</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>&quot;Blind Channel&quot;</td>
<td>I.W. McDougall</td>
<td>1,463,337</td>
<td>1,463,337</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>&quot;Cordwinder&quot;</td>
<td>Rayonier Canada B.C. Ltd.</td>
<td>3,881</td>
<td>3,881</td>
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<tr>
<td></td>
<td>7</td>
<td>&quot;Salmon River&quot;</td>
<td>MacMillan, Bloedel and Powell River Ltd.</td>
<td>144,452</td>
<td>144,452</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>&quot;Tofino&quot;</td>
<td>Timberland Development Co.</td>
<td>80,207</td>
<td>80,207</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>&quot;Hardwick&quot;</td>
<td>Bendickson Logging Ltd.</td>
<td>112,718</td>
<td>112,718</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>&quot;Knight Inlet&quot;</td>
<td>Evans Products Co. Ltd.</td>
<td>1,246,851</td>
<td>1,246,851</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>&quot;Nahla&quot;</td>
<td>Rayonier Canada B.C. Ltd.</td>
<td>2,066,567</td>
<td>2,066,567</td>
</tr>
<tr>
<td>Pr. Rupert</td>
<td>1</td>
<td>&quot;Port Edward&quot;</td>
<td>Columbia Cellulose Co.</td>
<td>1,246,851</td>
<td>1,246,851</td>
</tr>
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<td></td>
<td>24</td>
<td>&quot;Moresby&quot;</td>
<td>Rayonier Canada B.C. Ltd.</td>
<td>3,568,391</td>
<td>3,568,391</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>&quot;Nahla&quot;</td>
<td>Rayonier Canada B.C. Ltd.</td>
<td>261,486</td>
<td>261,486</td>
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<tr>
<td></td>
<td>39</td>
<td>&quot;Haida&quot;</td>
<td>MacMillan, Bloedel and Powell River Ltd.</td>
<td>1,463,337</td>
<td>1,463,337</td>
</tr>
</tbody>
</table>

**TOTAL**

- **Crown**: 2,066,567
- **Private**: 3,568,391
- **Total**: 5,635,958

**December 31, 1961.**
**TREE FARM LICENCES AWARDED**

<table>
<thead>
<tr>
<th>District No</th>
<th>Name</th>
<th>Licensee</th>
<th>Forest TFL</th>
<th>Crown Productive Area (Lacs)</th>
<th>Private Productive Area (Lacs)</th>
<th>Total Productive Area (Lacs)</th>
<th>Total Allowable Cut (M cu.ft.)</th>
<th>Total Mature Volume (M cu.ft.)</th>
<th>Allowable Annual Cut (M cu.ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr.George</td>
<td>&quot;MacKenzie-Cariboo&quot;</td>
<td>Western Plywood (Cariboo)</td>
<td>81,215</td>
<td>195</td>
<td>81,410</td>
<td>83,960</td>
<td>106,597</td>
<td>163</td>
<td>2,500</td>
</tr>
<tr>
<td></td>
<td>&quot;Shelley&quot;</td>
<td>Shelley Development Ltd.</td>
<td>71,635</td>
<td>9,633</td>
<td>81,268</td>
<td>89,538</td>
<td>90,018</td>
<td>10,099</td>
<td>100,057</td>
</tr>
<tr>
<td>29</td>
<td>&quot;Eagle Lake&quot;</td>
<td>Eagle Lake Sawmills Ltd.</td>
<td>95,593</td>
<td>1,224</td>
<td>96,817</td>
<td>105,912</td>
<td>208,847</td>
<td>3,835</td>
<td>212,682</td>
</tr>
<tr>
<td>30</td>
<td>&quot;Sinclair&quot;</td>
<td>Sinclair Spruce Lbr Co. Ltd.</td>
<td>71,083</td>
<td>71,083</td>
<td>52,585</td>
<td>98,630</td>
<td>102,338</td>
<td>-</td>
<td>102,338</td>
</tr>
<tr>
<td>31</td>
<td>&quot;McGregor&quot;</td>
<td>Upper Fraser Spruce Mills</td>
<td>42,534</td>
<td>42,534</td>
<td>45,761</td>
<td>102,338</td>
<td>-</td>
<td>1,038</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>&quot;Seebach&quot;</td>
<td>Church Sawmill Ltd.</td>
<td>42,071</td>
<td>42,071</td>
<td>58,538</td>
<td>96,630</td>
<td>-</td>
<td>822</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL**

|                |                   |                                               | 404,131    | 11,052                      | 415,183                       | 463,402                      | 718,629                        | 14,037                         | 732,666                         |

| Kamloops      | "Okanagan (West)" | S.M. Simpson Ltd.                             | 169,531    | 1,102                       | 170,633                       | 195,435                      | 89,522                         | 1,180                          | 90,702                          |
| 15           | "Ikaness"         | Oliver Sawmills Ltd.                          | 90,540     | 160                         | 90,700                        | 119,600                      | 38,874                         | -                              | 38,874                          |
| 16           | "Monte Lake"      | Fonsosa Pine Lumber Co.                      | 122,169    | 122,169                     | 128,756                       | 46,505                       | -                              | 46,505                         |
| 18           | "Clearwater"      | Clearwater Timber Prod.                      | 161,047    | 161,047                     | 184,405                       | 123,453                      | -                              | 123,453                         |
| 32           | "Bolcan"          | Vernon Box & Pine Co. Ltd.                   | 31,074     | 250                         | 31,324                        | 32,721                       | 26,846                         | 573                            | 25,519                          |
| 33           | "Sicamous"        | Shuswap Timbers Ltd.                         | 14,565     | 280                         | 14,845                        | 22,520                       | 27,622                         | 573                            | 28,189                          |
| 35           | "Kinlaw"          | B.C. Interior Timbers Ltd.                   | 97,236     | 97,236                      | 100,964                       | 46,584                       | -                              | 46,584                          |

**TOTAL**

|                |                   |                                               | 686,162    | 1,792                       | 687,954                       | 784,091                      | 397,406                        | 2,320                          | 399,726                         |

| Nelson        | "Little Slocan"   | Passmore Lumber Co. Ltd.                     | 100,085    | -                           | 100,085                       | 196,625                      | 52,879                         | -                              | 52,879                          |
| 8            | "Boundary Creek"  | Boundary Sawmills Ltd.                       | 89,530     | -                           | 89,530                        | 111,010                      | 59,620                         | -                              | 59,620                          |
| 11           | "Carmi"           | Olinger Lumber Co. Ltd.                      | 64,787     | -                           | 64,787                        | 80,815                       | 17,400                         | -                              | 17,400                          |
| 13           | "Salie River"     | Gallaway Lumber Co. Ltd.                     | 38,856     | -                           | 38,856                        | 100,280                      | 45,704                         | -                              | 45,704                          |
| 14           | "Spillimacheen"   | Crestbrook Timbers Ltd.                      | 67,925     | 3,790                       | 71,715                        | 308,294                      | 54,622                         | 7,011                          | 61,633                          |

**TOTAL**

|                |                   |                                               | 1,188,545  | 40,280                      | 1,228,824                     | 3,334,697                    | 1,338,785                      | 348,726                        | 1,687,511                       |

**GRAND TOTAL**

|                |                   |                                               | 5,592,165  | 1,425,480                   | 7,017,645                     | 13,660,541                   | 15,793,228                     | 6,284,763                      | 22,077,991                      | 323,203                         |

*This cut is for entire area including Prince Rupert Blocks.*

**This Total allowable cut for Licence shown under Vancouver District.**