Expenditures in this Province by Canada are estimated by the Provincial Finance Department as follows:

**Table 137**

**EXPENDITURES OF GOVERNMENT OF CANADA ON FOREST INDUSTRIES (FOREST SURVEYS AND RESEARCH) IN BRITISH COLUMBIA, 1949–55**

(In thousands of dollars.)

<table>
<thead>
<tr>
<th></th>
<th>Operations Division (National Resources)</th>
<th>Provincial Parks (National Resources)</th>
<th>Forest Products Laboratories (National Resources)</th>
<th>Federal Department of Agriculture, Science Service (Entomology and Pathology)</th>
<th>Total Federal Government Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949–50</td>
<td></td>
<td>911</td>
<td>N.A.</td>
<td>N.A.</td>
<td>911</td>
</tr>
<tr>
<td>1950–51</td>
<td></td>
<td></td>
<td>163,316</td>
<td>282,314</td>
<td>445,630</td>
</tr>
<tr>
<td>1951–52</td>
<td></td>
<td></td>
<td>168,293</td>
<td>291,798</td>
<td>482,091</td>
</tr>
<tr>
<td>1952–53</td>
<td></td>
<td></td>
<td>180,082</td>
<td>343,834</td>
<td>527,916</td>
</tr>
<tr>
<td>1953–54</td>
<td></td>
<td></td>
<td>192,755</td>
<td>351,173</td>
<td>543,928</td>
</tr>
<tr>
<td>1954–55</td>
<td></td>
<td>523,652</td>
<td>200,767</td>
<td>381,865</td>
<td>1,186,284</td>
</tr>
<tr>
<td>1955–56 (estimate)</td>
<td>482,500</td>
<td></td>
<td>N.A.</td>
<td>N.A.</td>
<td>1,186,284</td>
</tr>
<tr>
<td>1956–57 (estimate)</td>
<td>459,000</td>
<td></td>
<td>N.A.</td>
<td>N.A.</td>
<td>1,186,284</td>
</tr>
</tbody>
</table>

N.A. = Not available.

1 Federal Government statement of expenditures, letter from Deputy Minister of Department of Northern Affairs and National Resources.
2 British Columbia estimates of revenue and expenditure.
3 A new Forest Products Laboratory is now under construction by the Federal Government on the campus of the University, estimated to cost about $1,000,000.

Assuming these estimates are correct, and I must accept that premise as sound in the absence of any evidence to the contrary, it would seem to me that a reinvestment by Canada of less than 1 per cent of the revenue received from our forest industries in the conservation of the forestry resources of this Province is worthy of comment.

In a brief presented to the plenary session of the Federal-Provincial Conference at Ottawa on October 3rd, 1955, by the Honourable W. A. C. Bennett, it is said, at page 7:

"The economy of British Columbia, like that of some other Provinces, is almost wholly dependent upon the development of its natural resources. The sale of its natural products in their various forms in the markets of the world is an important contributing factor to the national income of Canada and to the Federal revenues; in fact, by far the major portion of the revenues from the exploitation of Provincial natural resources is paid to the Federal Government. It is therefore in the national interest that these resources, particularly of forestry and agriculture, be conserved and protected.

"Accordingly, British Columbia recommends that this Conference agree in principle that the Federal Government will share equally with the Provinces in the costs of conservation of their basic resources."
I do not consider that I should attempt to say what contribution Canada should make to the Province in this regard. I content myself with the comment that the present expenditures on forestry projects by Canada in this Province, in view of the major contribution our forest industries make to the national economy in the domestic and international markets of the world, is certainly not overly generous.

Before leaving this subject of forest finances, I would like to take a quick look at the larger picture of Provincial revenues in order to put in proper perspective the revenues received from our natural resources—the so-called "public domain"—amounting to a total of $42,567,000 for 1955–56. Forest revenues contributed about $30,000,000 to this total.

The figures in question appear on the following table:

**Table 138**

PROVINCIAL REVENUES BY PRINCIPAL SOURCES, FISCAL YEARS ENDED MARCH 31ST, 1940, 1946, 1955, AND 1956

(In thousands of dollars.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value</td>
<td>Per Cent</td>
<td>Value</td>
<td>Per Cent</td>
</tr>
<tr>
<td>A. Progressive-rate taxes (personal and corporate income taxes and succession duties)</td>
<td>11,074</td>
<td>33.74</td>
<td>1,998</td>
<td>4.33</td>
</tr>
<tr>
<td>B. Dominion lease rental for progressive taxes</td>
<td></td>
<td></td>
<td>12,048</td>
<td>36.09</td>
</tr>
<tr>
<td>C. Sales taxes (gasoline, amusement, liquor and social services taxes)</td>
<td>9,396</td>
<td>28.27</td>
<td>7,828</td>
<td>16.95</td>
</tr>
<tr>
<td>D. Public domain</td>
<td>9,060</td>
<td>27.60</td>
<td>7,916</td>
<td>17.13</td>
</tr>
<tr>
<td>E. Other revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total current revenues</td>
<td>32,826</td>
<td>100.00</td>
<td>46,183</td>
<td>100.00</td>
</tr>
</tbody>
</table>

1 Excludes $21,545,000 of revenues shown as offsets to individual expenditure votes (including matching grants of other Governments).

Sources:-
Detailed revenue analysis for other three fiscal years.

The most striking feature in the foregoing table is the percentage increase in consumer taxes from 25 per cent of the total revenue in 1939–40 to 50 per cent in 1955–56.

Receipts from natural resources have increased during this same period from $4,300,000 to $42,500,000 or about 100 per cent, but the revenue from this source has only increased by about 5 per cent in terms of percentage of total revenues.
As about one-half of Government revenues are now dependent upon consumer levies in the form of sales taxes, it is manifest that if we are to continue to support this present tax structure, gainful employment and the purchasing power of the people of this Province must be maintained at a high level.

I do not wish to imply that the revenue from sales taxes is derived solely from individual purchases of consumer goods. In 1956 the tax on capital expenditures made by Industry generally for new construction and repairs contributed 49.5 per cent to sales-tax collections. Individual, as opposed to industrial, purchases made up the balance of 50.5 per cent.

In this connection it may be noted that in 1956 of the total sum of one billion two hundred and seventy-seven thousand dollars expended by Industry generally on new construction and repairs, the wood-using industries contributed one hundred and forty-six million dollars to that total, or about 12 per cent thereof.

I have, throughout this Report, stressed, and now repeat in this context, that the continued prosperity of our forest industries depends upon our ability to produce goods for export to world markets at competitive prices. It follows that taxes on the raw materials of our forests and on our processes of conversion, which enter into and affect the cost of production, must be maintained at minimal levels. Any other policy, in my opinion, would inevitably inflict grave consequences upon our forest industries and in turn upon Governmental revenues, including the logging-profits tax, now received directly and indirectly from this major segment of our economy.

It is in the public interest that both the direct and indirect benefits accruing to the public purse from the forest industries remain unimpaired by short-term and short-sighted fiscal policies, that would increase basic costs of production, urged upon the Government by those without a clear and objective appreciation of the infinite complexities of this industry and its undeniable dependence on world markets.
SCALING

COAST

This subject lies in an eddy of controversy. It is my intention to treat this matter in much the same order as I have other issues concerning which conflicts of opinion were expressed. First of all, I would determine the Forest Service policy and then the criticisms directed thereto, and to its administration, followed by such recommendations as I consider are warranted by the evidence. In recording the Forest Service policy, I have drawn heavily upon the content of Exhibit 34 presented by Dr. Orchard.

It may seem to the initiated unnecessary for me to descend to fundamentals, but that is where I believe it is best to begin the examination of scaling.

The terms "scale" and "scaling," as used throughout the forest industries and the Forest Service, refer exclusively to the act or process of measuring raw-wood materials in suitable units, and the final results thereof in terms of species, quantity, and grade. Scale and grade are first essentials in the sale and purchase of timber products, and find a wide variety of other uses throughout the industry. Timber is frequently felled, loaded, hauled, towed, or barged at rates per unit based on the scale, and all Government dues on the timber itself are collected on the scale. The sum total of industry's interest, depending on the scale, is measured by the total dollar value of the raw wood product delivered to the mill, and would be several times the Government revenue interest. An accurate and dependable scale, in which all parties concerned will have the utmost confidence, is, therefore, of first importance to all concerned, from labour in the woods, through owner, buyer, and vendor, to the Provincial Government.

The scale in such products as hewn railway-ties and fence-posts may be nothing more than a piece-count and grading by the scaler for merchantability according to specified standards. Fuel-wood, 4-foot pulp-wood, and shingle-bolts are scaled by the cord. Poles and piling are scaled in lineal feet and graded, especially poles, according to strict specifications as to top and butt diameters, length, and various other characteristics specified by the buyer. Logs, which constitute vastly the greater bulk of our raw-wood production, traditionally throughout North America, have been scaled in board-feet.

A board-foot is that amount of manufactured lumber in any physical shape that will equal the wood content of a piece of board 1 foot square and 1 inch thick.

Originally the board-foot delivered to the buyer, possibly the product of the saw-pit or the local water-power mill, was just that. With the advent of better and more refined machinery and the introduction of the
planer, the board-foot delivered to the buyer was what was left of the rough, full measure after the planer had finished with it. Planers take off about one-quarter inch. The delivered board-foot of planed lumber, therefore, is 1 foot square and three-quarters of an inch thick (or “quarter scant”), and this is the board-foot of the lumber business in finished lumber. Rough boards are still delivered full inch. Other products are, of course, delivered in any dimensions as ordered.

Stumpage and scale have followed a traditional course of development throughout North America and, likewise, in British Columbia. In the early stages of logging and manufacture, the standing timber, if it did not go with the land, was sold at so much per tree.

Chapter 32 of the Statutes of British Columbia, 1884, “An Act relating to the Cutting of Timber upon Provincial Lands, and for the Purpose of Deriving a Revenue Therefrom,” provided for the issuance of timber leases. The licensee or lessee was required to keep “an account in writing of the number of trees felled.” “At the expiration of every six months,” he was required to furnish a sworn statement, and “forthwith pay in respect of each tree felled the sum of fifteen cents.” Incidentally it may be of interest to note that elsewhere in the same Act it was expressly provided that “this Act shall not apply to the cutting of trees known as hemlock.”

The actual number of trees removed, to determine the payment due to the owner, was readily and accurately checked by a count of the stumps; hence the origin of the term “stumpage,” as I pointed out before, to describe the purchase or sale price of standing timber.

Obviously this was a most inaccurate measure of values exchanged. Both the volume and the quality of the wood of trees of the same species, and of the same age, vary between extremely wide limits, and, in any event, the logger and the mill-man deal in logs rather than in trees. Very soon, therefore, and in the early stages of the industry in British Columbia, the need for a more accurate and more versatile measure was recognized, and in 1895 the British Columbia Board-foot Log Scale was established as the official scale. The new scale was used in the first instance only on the Coast, but the “Timber Royalty Act” of 1914 extended its use as the only legal measurement for transactions in raw wood for the manufacture of lumber, Province-wide, as from the 1st day of January, 1915.

Many board-foot scales have been invented, a mere comparison of which is enough to point up their gross inaccuracies. The following comparison between the Scribner Decimal C, the Doyle (both of which were widely used in British Columbia before the British Columbia scale was introduced), the International (commonly conceded to be the best of the board-foot rules, although also subject to some infirmity), and the British Columbia rule, in the case of a few logs, will illustrate this point.
The British Columbia Log Scale was derived diagrammatically and mathematically, tempered throughout with certain arbitrary assumptions, all of which may be summarized as follows:—

1. Assume that all the log outside of a cylinder on a diameter equal to the diameter of the small end of the log will be wasted in slabs.

2. Assume that, in cutting this cylinder into rectangular forms of lumber, there will be a further waste equal to a collar of wood three-quarters of an inch thick around the entire length of the cylinder.

3. Assume that the mill will saw only 1-inch boards, wasting a 3/8-inch kerf in sawdust.

The result is a mathematical formula, 0476 (D—1½) 2L, from which tables can be prepared which will allegedly show the number of board-feet that the mill will saw out of a log of any given dimensions; that is to say, of any small-end diameter in inches and length in feet.

At the time the rule was devised by the Forest Service in co-operation with an industrial committee, it was realized that in long logs the factor of taper would in itself introduce a large element of error, and another element was added by a rule that provided “in the case of logs over forty feet in length, an allowance on half the length of the log is made in order to compensate for the increase in diameter; this allowance consists of an increase in the mean diameter at the small end of one inch for each additional ten feet in length over forty feet.”

Now, let us see how this scale works out in actual practice. It should be admitted as axiomatic that if a logger fells a tree and delivers the bole to the mill, he has delivered some specific and readily measurable quantity of raw wood that should measure the same quantity and be worth the same number of dollars, no matter how it may be delivered, providing only that it is delivered whole or bucked only into lengths that are reasonable, acceptable, and usable for the purposes of the buyer. Take for our example an average tree of normal form and taper, and assume, for easy figuring, a

<table>
<thead>
<tr>
<th>Diameter (Inches)</th>
<th>Length (Feet)</th>
<th>Scribner</th>
<th>Doyle</th>
<th>International</th>
<th>B.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>30</td>
<td>22</td>
<td>35</td>
<td>34</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>70</td>
<td>44</td>
<td>85</td>
<td>69</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
<td>110</td>
<td>66</td>
<td>150</td>
<td>103</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
<td>170</td>
<td>160</td>
<td>175</td>
<td>163</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>350</td>
<td>320</td>
<td>370</td>
<td>326</td>
</tr>
<tr>
<td>20</td>
<td>30</td>
<td>520</td>
<td>480</td>
<td>595</td>
<td>489</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>410</td>
<td>422</td>
<td>410</td>
<td>387</td>
</tr>
<tr>
<td>30</td>
<td>20</td>
<td>820</td>
<td>844</td>
<td>860</td>
<td>773</td>
</tr>
<tr>
<td>30</td>
<td>30</td>
<td>1,230</td>
<td>1,266</td>
<td>1,345</td>
<td>1,160</td>
</tr>
</tbody>
</table>

**Table 139**
value of $30 per thousand camp run. The usable bole of the tree taken out of the woods is 80 feet to a 6-inch top. If the stick is delivered in one piece, we have on the British Columbia Log Scale:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-inch top, 80 feet</td>
<td>177 f.b.m.</td>
</tr>
</tbody>
</table>

Or it might be bucked into two 40-foot logs:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-inch top, 40 feet</td>
<td>39 f.b.m.</td>
</tr>
<tr>
<td>15-inch top, 40 feet</td>
<td>347 f.b.m.</td>
</tr>
</tbody>
</table>

Or it might be delivered in 20-foot lengths:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-inch top, 20 feet</td>
<td>19 f.b.m.</td>
</tr>
<tr>
<td>10-inch top, 20 feet</td>
<td>69 f.b.m.</td>
</tr>
<tr>
<td>15-inch top, 20 feet</td>
<td>174 f.b.m.</td>
</tr>
<tr>
<td>19-inch top, 20 feet</td>
<td>292 f.b.m.</td>
</tr>
</tbody>
</table>

Or it might be cut into 16-foot logs:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-inch top, 16 feet</td>
<td>15 f.b.m.</td>
</tr>
<tr>
<td>9-inch top, 16 feet</td>
<td>43 f.b.m.</td>
</tr>
<tr>
<td>13-inch top, 16 feet</td>
<td>101 f.b.m.</td>
</tr>
<tr>
<td>16-inch top, 16 feet</td>
<td>180 f.b.m.</td>
</tr>
<tr>
<td>20-inch top, 16 feet</td>
<td>261 f.b.m.</td>
</tr>
</tbody>
</table>

For every combination of log lengths a different result is obtained, with really long logs and small tops giving fantastically gross undermeasurements. If the logger brought in another 12 feet in this particular tree, making 92 feet to a 4-inch top, and scaled it as such, the scale for the 92 feet would have been 116 f.b.m., worth $3.48; that is to say, 34 per cent less for the 92-foot stick than he got for the 80-foot stick, and only 19 per cent of what he gets for the 80-foot stick if he bucked it into 20-foot logs.

The British Columbia Board-foot Log Scale will give fairly consistent, even though inaccurate, results when it is applied only to logs approximating within rather narrow limits the same size and length. This was the type of logs that came into the mills from the woods in 1895 when the rule was introduced, and for some years thereafter—the finest of large firs and cedars, with only one destination, the sawmill. Under these conditions the official board-foot scale was reasonably satisfactory, but with radically changed conditions the Forest Service now contends that the scale has outgrown its usefulness, and for a number of reasons. The more important of these submissions by Dr. Orchard are:

"1. With smaller and longer logs, the scale is grossly inaccurate. Small, long logs already predominate in a substantial part of the industry, and their use is steadily on the increase. At the same time, the log scale has become increasingly the basis for the payment of wages, hauling, towing, insurance, and a long list of activities attendant on the process of harvesting our wood crop. An inaccurate scale that can be

* Exhibit 34, p. 4 et seq.
readily manipulated between very wide limits places every step of the harvesting industry—from the sale of stumpage to the delivery of the logs at the jack-ladder, and everyone involved therein—from the owner, through labour and the various services, to a great extent at the mercy of the logger without hope of recourse.

“2. The board-foot scale never did have any direct application to any business other than that of the sawmill, and when it was introduced there was no other destination for a log. At present over 50 per cent of our total cut of logs is converted into pulp, shingles, and plywood, and unquestionably the proportion of our harvest to be diverted to these new uses, which have no connection with, or interest in, the board-foot, will be increased substantially and permanently within the next few years.

“It was recognized that we must introduce some rational degree of forest management into the woods, and it is impossible to manage a forest on a scale that will give us anywhere from 116 feet to 554 feet—a spread of about 477 per cent for the same small tree, depending on how the logger happens to cut it up and scale it.”

His solution of the problem is the cubic-foot scale. He continued:

“Cubic scale simply measures the cubic content of the log without reference to the use to which it is to be put. It is left to the manufacturer to convert his cubic feet, cubic yards or cubic meters, into terms of lumber, pulp, paper, cellulose, or alcohol.

“Cubic scale is as readily applied as is board-foot scale and, in contrast to the board-foot scale, it gives consistently accurate results and is not susceptible to manipulation (by, e.g., cutting logs into various lengths). The Service believes it is an absolute essential as one of the 'tools' of forest management. It was this last consideration that influenced the Government to take the first steps to introduce cubic scale in British Columbia. Crown stumpage is now sold only on a basis of cubic scale.”

Dr. Orchard concedes that the scale of cubic content leaves a number of things to be desired, of which quality and the variation in the density of various woods are outstanding, but he states these two important factors can be taken care of to a large degree by grading, and that cubic scale in its desirable features seems to be the best compromise. He said it can be applied anywhere that the diameter and length of a stick can be measured—in the woods, in the load, in the water, or on the jack-ladder; it can be applied at modest cost; and it is capable of almost absolutely accurate application wherein the sum of the parts will add up exactly to the scale of the whole; and even in the most practical application set out in the now officially prescribed British Columbia Cubic Scale Rule, it gives remarkably uniform results, no matter how the tree may be bucked. As an exam-
ple of these results, he invited us to examine again the tree used in our earlier review of the board-foot rule with the following result:

<table>
<thead>
<tr>
<th>Top Diameter</th>
<th>Feet</th>
<th>B.C. Board-foot Scale</th>
<th>B.C. Cubic Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-inch</td>
<td>92</td>
<td>116 f.b.m.</td>
<td>115 c.f.</td>
</tr>
<tr>
<td>6-inch</td>
<td>80</td>
<td>177 f.b.m. (100%)</td>
<td>104 c.f. (100%)</td>
</tr>
<tr>
<td>6-inch</td>
<td>40</td>
<td>39 f.b.m.</td>
<td>28 c.f.</td>
</tr>
<tr>
<td>15-inch</td>
<td>40</td>
<td>347 f.b.m.</td>
<td>73 c.f.</td>
</tr>
</tbody>
</table>

(Note that adding 12 feet to a 4-inch top does not reduce the cubic scale.)

<table>
<thead>
<tr>
<th>Top Diameter</th>
<th>Feet</th>
<th>B.C. Board-foot Scale</th>
<th>B.C. Cubic Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-inch</td>
<td>20</td>
<td>19 f.b.m.</td>
<td>12.4 c.f.</td>
</tr>
<tr>
<td>10-inch</td>
<td>20</td>
<td>69 f.b.m.</td>
<td>17.7 c.f.</td>
</tr>
<tr>
<td>15-inch</td>
<td>20</td>
<td>174 f.b.m.</td>
<td>31.9 c.f.</td>
</tr>
<tr>
<td>19-inch</td>
<td>20</td>
<td>292 f.b.m.</td>
<td>43.7 c.f.</td>
</tr>
</tbody>
</table>

386 f.b.m. (209%) | 101 c.f. (97%)

<table>
<thead>
<tr>
<th>Top Diameter</th>
<th>Feet</th>
<th>B.C. Board-foot Scale</th>
<th>B.C. Cubic Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-inch</td>
<td>16</td>
<td>15 f.b.m.</td>
<td>5.1 c.f.</td>
</tr>
<tr>
<td>9-inch</td>
<td>16</td>
<td>43 f.b.m.</td>
<td>10.9 c.f.</td>
</tr>
<tr>
<td>13-inch</td>
<td>16</td>
<td>101 f.b.m.</td>
<td>18.5 c.f.</td>
</tr>
<tr>
<td>16-inch</td>
<td>16</td>
<td>160 f.b.m.</td>
<td>28.6 c.f.</td>
</tr>
<tr>
<td>20-inch</td>
<td>16</td>
<td>261 f.b.m.</td>
<td>38.5 c.f.</td>
</tr>
</tbody>
</table>

554 f.b.m. (311%) | 105.7 c.f. (102%)

<table>
<thead>
<tr>
<th>Top Diameter</th>
<th>Feet</th>
<th>B.C. Board-foot Scale</th>
<th>B.C. Cubic Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-inch</td>
<td>16</td>
<td>15 f.b.m.</td>
<td>5.1 c.f.</td>
</tr>
<tr>
<td>9-inch</td>
<td>16</td>
<td>43 f.b.m.</td>
<td>10.9 c.f.</td>
</tr>
<tr>
<td>13-inch</td>
<td>16</td>
<td>101 f.b.m.</td>
<td>18.5 c.f.</td>
</tr>
<tr>
<td>16-inch</td>
<td>16</td>
<td>160 f.b.m.</td>
<td>28.6 c.f.</td>
</tr>
<tr>
<td>20-inch</td>
<td>16</td>
<td>261 f.b.m.</td>
<td>38.5 c.f.</td>
</tr>
</tbody>
</table>

580 f.b.m. (328%) | 101.6 c.f. (97%)

The Smalian formula, which has been adopted as the British Columbia Cubic Scale, determines the volume of the log from measurements of the two end diameters and the length of the log in feet. The end areas are calculated in square feet, averaged, and multiplied by the length to give the volume of the log, or the contents of the two cylinders, calculated on the two end diameters, are added together and divided by 2 to give the volume of the log. Tables are prepared giving the cubic contents of cylinders in cubic feet for various diameters in inches and lengths in feet, from which, once the measurements are made of the log, the contents can be taken direct, added, and divided by 2 for the desired total.

There are two sources of error in this formula. It has been proved long since by the most careful investigations and measurements that the form of a log is not that of a truncated cone. A normal log is in the form of a truncated parabola, which, for all the detail we need, is just a mathematician's way of saying the sides are curved, or bulged. This curve, or bulge, is liable to give slightly too great a volume, but these errors, according to the evidence of Dr. Orchard, are modest, they are compensating, and there is no way in which they can be manipulated readily to the advantage of the buyer or vendor. The errors in the board-foot rule, on the other hand, are undoubtedly gross, covering a range of 328 per cent cited in the quoted example, and are readily taken advantage of by the simple device of cutting logs as long as possible and to the smallest possible top diameter. This bulge is the explanation of the 2- to 3-per-cent difference in the various cubic scales of our sample 80-foot tree.
The second, and more serious, error results from the effects of any detectable swell at the stump cut, and this error, always on the high side, increases sharply as the length of the butt log is increased, to a maximum error in tree lengths. Normally, however, it affects only the butt log, and in any length can be entirely eliminated by projecting the natural taper of the log to the butt and deducting from the butt diameter the inches of the swell. This deduction is, I am advised, incorporated in the official scale rule.

There is no "overrun" in the old accepted sense in the case of the cubic scale, but recovery in merchantable lumber will still vary between fairly wide limits, depending on the size, type, and quality of the logs, and on the efficiency of the mill.

Sections 61 to 79, inclusive, of the "Forest Act" make the Forest Service, on behalf of the Government, solely responsible for the administration of scaling in the Province, and, in addition to various details, direct that no log shall be manufactured, or forest product shipped out of the Province, before it has been scaled; establish the British Columbia Log Scale or the British Columbia Cubic Scale as the only legal scale in the Province; and provide for a staff of Official Scalers to do all official scaling on the Coast, or in any other district of the Province, as the Government may decide.

The Official Scalers and necessary attendant supervisory and clerical staff are Civil Servants. Provision is made in the Act to defray all costs of scaling by this scaling staff through the medium of a fee per unit scaled, which is paid in to a Scaling Fund. The fee is adjusted from time to time to keep income at a level that will pay scaling costs without "profit" to the general revenues of the Province. Over the years the Fund has fluctuated from a substantial deficit to a substantial credit. Deficits have been carried pro tem. by the Government and eventually paid by raising the scaling fee. When credits get unnecessarily high, the Fund is adjusted by a downward revision of scaling fees.

Provision is made in the Act to extend the system of official scaling to other parts of the Province, but it has never been used outside the Coast region.

For many years there has been in operation an unofficial Scaling Advisory Committee, composed of Forest Service officials and representatives of both manufacturers and loggers, to assist the Government in the solution of scaling problems pertaining to the official scale on the Coast. The Committee normally meets once a month in Vancouver.

Section 65 of the "Forest Act" is regarded by the Forest Service as its authority for refusing to dispose of Crown timber except on the basis of the cubic-foot scale.
This section reads, in part, as follows:—

"65 (1). Timber shall be scaled either in feet board measure or in cubic feet, as elected by the person for whom the scale is made."

The Forest Service interprets this section to include the Crown as “the person for whom the scale is made.” Whether the scale is intended as an instrument of measurement to be selected by the buyer or the seller of Crown timber and whether in this context “person” includes the Crown are matters not altogether free from ambiguity. Section 65 has its genesis in the recommendations contained in the 1945 Report. There was considerable debate at that time whether or not the cubic-foot scale should be introduced in place of the then current f.b.m. scale. I said (in part), after considering the evidence adduced on this issue:—

“The scale of small logs on the basis of the production therefrom in terms of this measurement is manifestly inaccurate and can be regarded only as a convenient symbol upon which to base transactions involving this class of material.

“The cubic foot in a unit of measurement that does, however, give the entire volume of wood material within the tree or log, and does not take into account any waste in manufacturing processes.

“The Deputy Minister of Forests is of the opinion—in which I concur—that the ‘Forest Act’ should be broadened to permit the use of the cubic-foot scale as well as the board-foot system of measurement.

“As methods of extracting and processing (the so-called) logging-waste are developed in the future it seems reasonable to assume that loggers and manufacturers might find it desirable to base their transactions in this class of material upon the cubic system. The implementation of the recommendation of the Deputy Minister would allow this to be done.

“I do not agree that the adoption of the cubic-foot scale be made mandatory in computing pulp-wood volume. It seems to me the wisest course to pursue at present is to give statutory recognition to the two systems of measurement, leaving it to industry to adopt which of these is found by future experience the more practicable in the circumstances.”*

Because I suggested the two scaling systems remain in operation, section 65 (1) was drafted in its present form. It was not my intention to recommend that the Forest Service should arbitrarily, and in this instance without consultation with the Advisory Committee on Scaling, by ministerial directive sell Crown timber solely on the cubic-foot basis. My proposal was meant to convey the thought, perhaps not too clearly expressed, that the election would be that of the purchaser. I do not see now, however, that I can make any recommendations that would, after the operation of the present system of disposing of Crown timber on the cubic-foot scale

for about eight years, do any more than attempt to alleviate the difficulties inherent therein.

Industrial witnesses, with a few exceptions, were united in their attack upon compulsory scaling of Crown timber on the cubic-foot basis. There was some variation in the area of criticism. Some witnesses were of the opinion that the cubic-foot scale should be abolished in toto; others, not so extreme in their views, considered that the cubic scale should not be applied to bigger-size logs cut from old-growth stands, but should be limited to scaling the smaller-size logs, pulp-logs, salvaged material, and such like.

The opposition to the present dual system of scaling seems to stem from three main considerations. There are other and collateral reasons advanced in support of the opposing forces, but generally it can be said, I think, that the three-pronged attack may be summarized as follows:—

(a) The cubic scale in its compulsory aspect is unfair in an economic sense to the logger who sells to sawmills:

(b) Dual scales are an unnecessary expense:

(c) The present system results in confusion and inconvenience.

With respect to (a) it is a fact that according to a long-established practice no booms of standard logs are sold to sawmills on the Coast except on the board-foot scale. The logger, however, is compelled to purchase his Crown timber on a cubic-foot basis. He is buying on one form of measurement and selling on another. The conversion factor is not accurate, except when applied to a very large number of logs, and then the average factor of 167 per thousand may be a reasonably close approximation for statistical purposes, but for log-trading it does not work out fairly. For instance, a scale of 1,000 cubic feet of small logs cannot produce 6,000 board-feet mill tally, and the mill pays on a unit of measurement related to the end product—boards. In a converse sense in ordinary trade transactions in logs, board-feet cannot be accurately converted to cubic feet.

The logger who is fortunate enough to put a boom of large logs together is not penalized in buying on the cubic-foot scale and selling on the board-foot scale because in this instance the logs are capable of being sawn into boards having an end total mill tally within close distance of the assumed conversion factor. In other words, when bidding in a sale of 10,000 cubic feet of Crown timber, he can, if the trees are large, cut and sell 60,000 board-feet of logs from the sale to a sawmill. If he buys 10,000 cubic feet in a sale of small trees, he is unable to log the stand and produce logs that will actually scale out for sawmill purposes at anything like 60,000 board-feet.

If he buys from the Crown on the cubic-foot scale and sells his log production, whether large or small, to a pulp-mill which buys on a cubic-scale basis, the element of unfairness disappears.

Turning to (b). Men who all their lives have known nothing but the board-foot scale think of and visualize timber and logs in those terms.
Their records and their company records are based on this unit of measurement. United States statistics and many of our own are built up in that form. Sub-contracts for falling and bucking and so on are let on foot board measurement. Men who work on piece work render their accounts based on a wood scale or boom scale on a f.b.m. basis. Towing charges are on a similar standard. In fact, the whole Industry, except for the pulp companies in some transactions, is geared to and conditioned by the old system. This trade practice has dictated the demand for dual scaling. But this is an additional cost which can be quite substantial, as will appear from the following compilation:

<table>
<thead>
<tr>
<th>Date</th>
<th>Scaling Fees M F.B.M.</th>
<th>Scaling Fees C C.F.</th>
<th>Extra Cost for Dual Scale M F.B.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 1st, 1950</td>
<td>16c</td>
<td>16c</td>
<td></td>
</tr>
<tr>
<td>September 1st, 1950</td>
<td>10c</td>
<td>10c</td>
<td></td>
</tr>
<tr>
<td>August 1st, 1951</td>
<td>16c</td>
<td>16c</td>
<td></td>
</tr>
<tr>
<td>October 1st, 1951</td>
<td>20c</td>
<td>20c</td>
<td></td>
</tr>
<tr>
<td>May 1st, 1952</td>
<td>16c</td>
<td>16c</td>
<td></td>
</tr>
<tr>
<td>July 1st, 1953</td>
<td>14c</td>
<td>14c</td>
<td></td>
</tr>
<tr>
<td>September 1st, 1953</td>
<td>12c</td>
<td>13c</td>
<td></td>
</tr>
<tr>
<td>November 1st, 1954</td>
<td>10c</td>
<td>8c</td>
<td>3c</td>
</tr>
<tr>
<td>February 1st, 1956</td>
<td>16c</td>
<td>13c</td>
<td>5c</td>
</tr>
</tbody>
</table>

The fluctuations in the scaling fees reflect the moneys to the credit of the Scaling Fund. For instance, in November of 1954 the Fund had a surplus of about $300,000 and the Scaling Fund was reduced. At the same time the system was changed so that the dual scale could be obtained by paying 8 cents per C c.f. plus an additional 3 cents per M f.b.m. instead of the former rates of 12 cents plus 13 cents. This resulted in a reduction in the surplus to about $75,000 or a drop of about $225,000, which indicated that the cost of the service was exceeding the fees charged. I have not any later figures, but I judge that the fees charged as of February 1st, 1956, will deplete the Fund to the point where an increase in fees will be necessary.

Turning to the third heading of contention (c), I have touched upon this already in pointing out the difficulties encountered in everyday experience when two units of measurement are in actual use—the one imposed by the Forest Service and the other in common use in commercial transactions, private contracts, and generally by the Industry at large when dealing with the same sort of raw material.

I have given this problem considerable thought but without reaching any firm conclusion. I have considered among other things:

(a) The complete abolition of the board-foot scale as a legal unit of measurement:
(b) The complete abolition of the cubic-foot scale and the revision of
the present British Columbia Log Scale in order to alleviate, if
not remove entirely, those elements in it which render its applica-
tion in some aspects so grossly inadequate:

(c) To permit the purchaser of Crown timber to pay for timber over
10 inches in top diameter on the present log-scale and to pay for
smaller logs on the cubic-foot basis:

(d) To permit the purchaser of Crown timber who is selling to a saw-
mill to elect at the time of the sale upon which scale he is to pay
stumpage:

(e) To suggest that the Government for a stated period, say ten years,
absorb the extra cost of the dual scale on a theory somewhat akin
to a bank absorbing the adverse differential on the exchange of
currency to a coinage acceptable to the bank. By that time
another Commissioner may have a better idea of what can be
done.

The effluxion of time will indubitably supply the answer as a new gen-
eration of loggers and foresters are born into a cubic-foot scale economy.
In the meantime I leave the above suggestions for consideration to the
Forest Service, the Advisory Committee on Scaling, and the Provincial
Advisory Council.

This is essentially a problem for the joint study of the Forest Service
and industry working together in an atmosphere of reasonable compro-
mise. I do not doubt that their respective experts can come up with an
interim solution in this transition period fair to both. I regret to say the
evidence before me does not point to any clear-cut answer, and I must
leave it at that.

Quite apart from whatever system of measuring the content of a log
is finally agreed upon between the Service and Industry—and I am opti-
mistic enough to think that such a consummation is not mere wishful
thinking on my part—the question of administering the scaling system falls
into a different category.

I have carefully considered the evidence on this issue and have reached
the conclusion that scaling on the Coast should be the function of an inde-
pendent non-profit bureau organized by Industry and staffed by profes-
sional scalers of a calibre acceptable to the Service. Precedent is not
lacking for such a recommendation. Scaling is carried on by such an inde-
pendent organization in Washington and Oregon for example—the Colum-
bia River Scaling Bureau. The Pacific Coast Lumber Inspection Bureau
is a parallel concept. The method of establishing such an organization, its
scope, duties, obligations, and professional status, together with whatever
arrangements may be acceptable to the Government with respect to the
present Scaling Fund, its assets and liabilities, I leave to negotiation be-
tween the Service and Industry. Should this recommendation be imple-
mented, it is my sincere hope that the present staff of official Scalers be employed by such Bureau or absorbed in other branches of the Service without financial loss to themselves.

The establishment of this recommended system would, of course, materially affect some of my other tentative suggestions which were predicated upon the continuance of the scaling by Official Scalers, such as, for example, the cost of the dual scale being borne by the Government.

INTERIOR SCALING

The system of scaling in the Interior differs drastically from that in force on the Coast. There are no Official Scalers.

In 1945, after an examination of the situation then prevailing, I wrote:—

"In the Interior scaling is done by scalers authorized by licence or permit to carry on this work, and they are employed and paid by the operator whose logs they scale. In many instances the operator does his own scaling as a licensed or permit scaler.

"In the Interior there is very little timber cut for sale. Millers log their own tracts for their own use. In consequence scaling in the Interior has as its primary and practically sole purpose the protection of the Crown revenue. To leave the computations of the amount owing the Crown in the control of the man who has to pay it, or his employees, does not seem to me to be an efficient system unless effective safeguards are provided to protect the Crown’s financial interests.

"The Deputy Minister of Forests when asked by me why the Coast scaling system would not be feasible in the Interior stated that ‘there is not a big enough volume of scaling in any one place to maintain the staff at any price that the operator could pay.’ The evidence of Interior witnesses supports this view and I accept it as the real explanation of the existence of the present Interior scaling system."

Notwithstanding the tremendous increase of log production in the Interior over the last decade, the situation has not changed for the better to any appreciable degree.

Inspectors of Scalers have been added to the District Foresters’ staffs throughout the Interior during the past ten years, thereby giving the Service considerably better supervision of scaling, and Dr. Orchard believes that the introduction of cubic scale on all timber sales and management licences has simplified the problem of scaling supervision, but, apart from this, there has been little change or improvement during the past ten years, and there is very little prospect that the official scaling system can be extended to the Interior in the foreseeable future. The vast majority of operations are too small to stand the cost of an official scale.

* 1945 Report, p. 166.
Over 95 per cent of the total scale in the Interior is in sawlog material, and while there are no records of independent logging, it is safe to say that more than 95 per cent of this sawlog cut is logged by mill owners or operators by themselves, or by contract, for manufacture in their own mills.

These mills have greatly increased in number in the last ten years, from about 550 in 1944 to close to 2,000, but the average annual cut per mill is well under a million feet a year. In the Interior, unlike the Coast, logs are not collected at central points in decks or booming-grounds. There are in general no big log inventories. They are brought right out of the woods to the mill or the mill is set up at the point of logging; that is, a system of "hot logging" is generally practised. And it is the difficulty of financing an Official Scaler on shows of this type that is the real problem. An Official Scaler would have to be in constant attendance at an operation of this nature, and as each mill cuts, as I have said, on the average less than a million feet a year, the cost of an Official Scaler on a salary of $3,600 per annum would exceed $4 per thousand, which is prohibitive. A few of the larger mills with a much greater annual production could afford these services, but there are not many of them.

Certainly the presently existing circumstance calls for some remedial action because the Crown revenues are not being properly protected.

A series of questions directed by me to Dr. Orchard and his answers are, I think, the most appropriate manner in which to record this aspect of the matter:

"Q.—Dr. Orchard, do you consider, in your opinion, that the present system of scaling in the Interior is adequate for the protection of the Crown revenue? A.—No. Not fully adequate at all.

"Q.—Then how would you suggest that it should be made adequate. A.—Use Official Scalers wherever the scale of the operation is big enough to warrant it. And 100 per cent cubic scale, and additional supervisory staff. Since 1944 we have made some attempt and, so far as it went, a very good attempt, I think, to train Interior scalers. We would profit by more of that training, and that is another way of saying more supervisors.

"Q.—The first two out of the three are within your capacity now. That is to say, having the scalers attached to the large plants in the Interior, and, secondly, more supervisors for checking scaling at the smaller mills. Cubic scaling may be something else again, but those two out of the three are not too difficult of attainment. Why haven’t they been done? A.—We just didn’t have the dollars voted to us to do it.

"Q.—We come back to the old story again about the forest revenue being used for other purposes? A.—Yes, and as a taxpayer, and I read the papers and so on, I am 100 per cent in favour of holding
down this modern tendency of Civil Services to grow and cost money, but when I come to apply it to our own staff, you find that if we hold the staff down and there is a great pressure to hold it down, then you just can’t expand your services. If we are not going to add any permanent employees to the Forest Service, we can’t have any more supervisors of scalers.

"Q.—I can understand that in a general way, but where the Crown revenues are possibly suffering, I won’t say they are, but possibly suffering to an extent, wouldn’t that more than offset the cost of your extra staff in order to obviate that loss of revenue? A.—I don’t think there is any question. We would make their salaries and expenses many times over if we had them. We have got to sell that to a Legislature, and it is difficult to do."

In 1944 there were two Scaling Supervisors in the Interior and now there are ten whose specific duties are to train, examine, and check scalers in their districts.

Dr. Orchard continued at a later stage of his evidence when questioned by Mr. Brazier, as follows:

"Q.—Now, looking at your last statement, there, Dr. Orchard, that you would make their salaries and expenses many times over. I got the impression that you were of the opinion that you were losing a great deal of revenue due to the method of scaling in the Interior at the present time? A.—Well, that is something I can’t prove, but that is my impression. Now that sounds a little bit as if I were levelling a general charge of thievery at all of the Interior mills, which is the farthest thing in the world from my mind. Part of it is just ignorance of scaling methods, a part of it is our inability to check, part of it is an understanding of what you can do under the law, and that isn’t thievery. And there are a vast number, a surprisingly large number, of very small operations in the Interior which add up to a lot of timber. There is plenty of room there, just out of two or three things, rank carelessness, ignorance, inexperience, we will leave deliberate malpractice out of the picture altogether. Just out of unintentional, inexperience, I am sure we are losing a lot of money. Now, how much I just can’t say.

"Q.—And do you think that you employ sufficient Official Scalers to look after that situation in the Interior? A.—Not to keep a sharp eye on all of them all the time, but we would spend our money on a few extra supervisors, we would visit them a little oftener, and one thing we’d try to do would be to give them some training. Now I have said that we are giving them some training, but it’s pitifully little. I would like to see us in a position to train, give a fairly good course of training to all scalers in the Interior. . . . The fall-down is in the lack of training of the scaler and the lack of supervision on the

* Transcript, p. 719 et seq.
part of the Forest Service, and both of those are aggravated by the seasonal lack of employment, steady employment for a scaler as a scaler.

"Q.—Now, do they have to pass any tests or anything before you license them? A.—Everyone of them has passed a licensed scaler exam.

"Q.—And is he required to take any oath? A.—Yes.

"Q.—He is under oath to report correctly? A.—Yes, the oath is in the Act.

"Q.—Is in the Act itself? A.—But the vast majority of those are out on farms to-day and clerking in a store, they're running a service-station, or hot-dog stand, almost anything other than scaling logs.

"Q.—I take it, generally, from your evidence, Dr. Orchard, you're not levelling in your brief any criticism at the Interior industries so far as the scaling problem is concerned? A.—No, I am levelling criticism at the Department and its failure to conduct scaling as we thought it ought to be conducted, and to institute those checks that ought to go with the business of selling $17,000,000 worth of stumpage a year. It's just too big to take any chance."

The evidence Dr. Orchard and that of many other witnesses supports my conclusion that "the existing circumstance calls for some remedial action."

The following points emerge for consideration:

(a) The appointment of more Supervisors:

(b) Better training for licensed scalers, preferably in a school operated by the Forest Service:

(c) The organization and operation of a registration bureau for licensed scalers at strategic points—without cost to Industry—perhaps operated by local Boards of Trade. Once this is in operation no permits should be issued to non-licensed scalers unless the registration bureau is unable, on application, to supply a registered licensed scaler:

(e) The use of Official Scalers be mandatory in mills large enough to absorb the cost without hardship:

(f) The formation of an Interior Scaling Advisory Committee (in the absence of Interior Advisory Boards) to work in co-operation with the Service to ascertain ways and means of improving the present scaling system:

(g) The possibility of forming a scaling bureau similar to that suggested for the Coast.

I cannot blue-print in detail what should be done, but the implementation of the more practicable of the points I have suggested for consideration by the Service and Industry should go a considerable way in remedying the present unsatisfactory method of scaling in the Interior.

* Transcript, p. 2764 et seq.
Governments may formulate policies and legislatures may frame and enact laws in accordance with those policies, but even the best policies and the best laws fail to attain the desired result expected of them unless the administrative branch of the Government—the Civil Service—functions efficiently in the execution of its responsibilities imposed thereunder. It is upon the shoulders of these public servants that the daily burden of detail administration in such instances ultimately rests. If they fail or falter in the discharge of their appointed tasks, the degree of their failure determines in large measure the exact extent of the estimation by the public of the soundness of the policy sought to be made effective.

The Forest Service is charged with the grave responsibility of administering the policy of the Government and the relevant forestry laws relating to our most important natural resource. It is a heavier administrative burden than that borne by any other department of Government in this Province.

Other branches of the Government service are primarily concerned with varied functions of our social and economic structure which exists outside and apart from the Government itself, such as the administration of justice, education, agriculture, labour relations, social services, trade and industry, public works and highways, and the imposition and collection of taxes. The Forest Service, on the other hand, is in business. Its primary function is the conservation, management, and sale of our forest resource, a responsibility without parallel in any other department of Government. The Department of Agriculture does not, for example, grow vast quantities of wheat for sale, neither does it manage far-flung cattle-ranches. The Forest Service does, in its own sphere, that very thing.

This, of course, is the direct consequence of the long-continued policy of retaining in the Crown the ownership of our forest lands. The obligation of management has, however, been alleviated to a degree by delegating to Industry the management of Crown lands in forest management licences, but that is only, so far, in terms of area, a palliative programme. The Forest Service, also moving with Industry from a policy of liquidation to one of sustained yield and forest management on Crown lands, has been faced with a tremendous task in the implementation of this new concept. The first shock has been absorbed by the Service, but the after-tremors will be felt for a long time yet.

We are in one sense at the cross-roads. If the Government is to maintain its policy of retaining Crown forest land, then it is faced with the imperative necessity of managing such areas properly, efficiently, and adequately. There can be no escape from such a programme by any responsible Government which is desirous of fulfilling its obligations to the public, now and for future generations.
The only alternative to the acceptance and complete fulfilment of this obligation is to permit private enterprise to acquire ownership of Crown forest lands, to a reasonable degree, upon condition that Industry assumes and fulfils the functions of management. I have considered this aspect of the matter in another part of this Report and refer to it again in this context as an introduction to the necessity of regarding the functions of the Forest Service in a proper perspective.

The evidence clearly establishes that the Forest Service has not the staff of trained men required to manage the Crown forests. The Service generally is understaffed, overworked, and—measured in terms of responsibility—underpaid. Were it not for the devoted and dedicated services of the senior men in the Service, we would be facing to-day a situation even more serious than that with which we are now confronted.

There was, I am happy to record and to concur therewith, an almost unanimity of opinion expressed during the Inquiry that the Forest Service, within the limitations imposed upon it by Government appropriations, was deserving of high praise, but something more tangible than commendation is required if the Service is to fulfil its function. It needs more skilled men and it needs more money.

This is not a new development. Ever since its formation in 1912 the Service has been starved for funds. Both the 1910 Commission and my Report of 1945 dealt with this aspect of our public finances and stressed the necessity for a more realistic allocation of funds commensurate with the value of the forest resource and the necessity for maintaining it as a continuing and expanding source of productive wealth.

I am not unmindful of the difficulties facing a Government in paying higher salaries to one class of Civil Servants than to another. Justification for such a reclassification may, I think, be found in the fact that no other department of Government is exercising the functions of a like character. The evidence before me in 1945, and now, clearly demonstrated that many of the best men in the Service are finding more remunerative employment in industry, and if this trend continues, as it will at the present salary differentials and a general shortage of trained men, the management of our Forest Service will undoubtedly be directed, eventually, by officials with little experience. Such a situation would, in my opinion, be highly undesirable, contrary to the public interest, and with heavy financial loss to the Government.

The loss to industry of experienced men in the past decade is clearly indicated in the following seniority table:
### Table 141

**Staff Seniority in Years as at December 31st, 1956, British Columbia Forest Service**

<table>
<thead>
<tr>
<th>Position</th>
<th>Numbers Employed</th>
<th>Seniority in Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Victoria</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistant Chief Forester</td>
<td>2</td>
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</tr>
<tr>
<td>Divisional Foresters</td>
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<td></td>
</tr>
<tr>
<td>Foresters</td>
<td>4</td>
<td></td>
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<tr>
<td>Assistant Foresters</td>
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<td>Departmental Comptroller</td>
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<td>Agrologist</td>
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<td>Assistant Forest Agrologist</td>
<td>3</td>
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<tr>
<td>Forest Protection Officer</td>
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<td></td>
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<tr>
<td>Forester i/c Ranger School</td>
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<td>Meteorologist</td>
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<td><strong>District Staff</strong></td>
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<td>District Forester</td>
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<tr>
<td>Assistant District Forester</td>
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<tr>
<td>Foresters</td>
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<tr>
<td>Assistant: Foresters</td>
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<td>2</td>
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<tr>
<td>Forest Protection Officers</td>
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</tr>
<tr>
<td>Ranger Supervisors</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Inspectors of Licensed Scalers</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Scalers</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Scalers, temporary</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td><strong>Total positions</strong></td>
<td>315</td>
<td>37</td>
</tr>
</tbody>
</table>
If we take for example the seventy-six Assistant Foresters in the Victoria office, it will be seen that thirty-six of these, or about one-half, have had no more than five years' experience in the Service. Of these thirty-six, twenty-three of them have no more than three years' service. Of the seventy-six, only nine of them have had over ten years' service.

Looking at the district staff for a moment, it is apparent that of forty-three Assistant Foresters none has had more than ten years' service and only six have exceeded eight years on the staff. Needless to say, these Assistant Foresters perform responsible tasks and the retention of their services is a basic requirement. Other factors will be apparent to anyone looking at these figures, and I pass on without further comment to an examination of the administrative set-up.

The responsible Minister occupies the dual portfolio of Lands and Forests. The senior administrative officer of the Forest Service is Dr. Orchard, who also occupies the dual position of Deputy Minister of Forests and Chief Forester. A number of witnesses were critical of the fact that the positions of Deputy Minister and Chief Forester were combined in one man and expressed the opinion that these two administrative positions should be separated, but as that is solely a matter of Governmental discretion, I do not consider I should do any more than record the objection and that it was strongly pressed.

There is another feature of Forest Service organization that in my view deserves reconsideration. There are two Assistant Chief Foresters—one in charge of the technical branch and the other limited to the operations branch. It follows in consequence that neither can be expected to have, from the nature of his limited responsibilities, as complete and comprehensive knowledge of the Service and its problems as the Chief Forester, who oversees every branch. On his retirement the difficulty of his replacement is at once manifest. It is my opinion that there should be one Senior Assistant Chief Forester trained and experienced in all branches of Forest Service administration immediately next in authority to the Chief Forester and with the prerogative right of succession to his office, a principle well established in large industrial organizations.

The Forest Service may be classified into two broad divisions—head office administration and field staff. Each of these two divisions can be broken down as follows:

Head Office Administration comprising:

(a) Staff:

Chief Forester.
Departmental Comptroller.
Forest Counsel.
Personnel Officer.
Public Relations and Education Officials.
(b) *Technical Planning Branch* in charge of an Assistant Chief Forester comprising—

Surveys and Inventories Division.
Research Division.
Reforestation Division.
Working Plans Division.
Parks and Recreational Division.*

(c) *Operations Branch* in charge of an Assistant Chief Forester comprising—

Management Division.
Grazing Division.
Engineering Services Division.
Protection Division.
Ranger School.

The field administration is divided into five forest districts, and each forest district is subdivided into ranger districts. Each forest district is staffed with a District Forester, an Assistant District Forester, Foresters, Assistant Foresters, Rangers, and other complementary personnel.

Distribution of strength for 1956 by forest districts, including head office personnel, is as follows:—

*Placed under separate department, March, 1957.*
### Table 142
DISTRIBUTION OF PERSONNEL, 1956

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Vancouver</th>
<th>Prince Rupert</th>
<th>Prince George</th>
<th>Kamloops</th>
<th>Nelson</th>
<th>Victoria Headquarters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Continuously Employed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chief Forester, Assistant Chief Foresters, and Division Foresters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Counsel and Personnel Officer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District Foresters and Assistant District Foresters</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Foresters and Assistant Foresters</td>
<td>11</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>76</td>
<td>125</td>
</tr>
<tr>
<td>Agrologists and Assistants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineers and Assistants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Protection Officers</td>
<td>4</td>
<td>1</td>
<td></td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>10</td>
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<tr>
<td>Supervisor of Rangers</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Rangers</td>
<td>27</td>
<td>14</td>
<td>19</td>
<td>24</td>
<td>24</td>
<td>2</td>
<td>110</td>
</tr>
<tr>
<td>Supervisor of Scalers and Assistants</td>
<td>11</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Scalers, Official</td>
<td>74</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>Scalers, Official, temporary</td>
<td>49</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>Comptroller and Audit Assistants</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering, Mechanical and Radio</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>66</td>
<td>82</td>
</tr>
<tr>
<td>Technical Forest and Public Relations Assistants</td>
<td>4</td>
<td>4</td>
<td>31</td>
<td>34</td>
<td>9</td>
<td>13</td>
<td>95</td>
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<tr>
<td>Reforestation, Parks, Research, and Survey Assistants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursery Superintendents</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draughtsmen</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>33</td>
<td>52</td>
</tr>
<tr>
<td>Clerks, Stenographers, and Messengers</td>
<td>99</td>
<td>30</td>
<td>28</td>
<td>31</td>
<td>27</td>
<td>135</td>
<td>350</td>
</tr>
<tr>
<td>Superintendent and Foremen, Forest Service Marine Station</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics, Carpenters, and Technicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>Launch Crewmen</td>
<td>15</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Assistant and Acting Rangers</td>
<td>37</td>
<td>24</td>
<td>33</td>
<td>48</td>
<td>36</td>
<td></td>
<td>178</td>
</tr>
<tr>
<td>Dispatchers</td>
<td>20</td>
<td>5</td>
<td>7</td>
<td>11</td>
<td>8</td>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>Cruisers, Compassmen, and Marking Crewmen</td>
<td>17</td>
<td>24</td>
<td>12</td>
<td>15</td>
<td>12</td>
<td></td>
<td>80</td>
</tr>
<tr>
<td>Truck and Tractor Operators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foremen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>35</td>
<td>48</td>
</tr>
<tr>
<td><strong>Totals, permanent personnel</strong></td>
<td>385</td>
<td>131</td>
<td>166</td>
<td>198</td>
<td>149</td>
<td>592</td>
<td>1,620</td>
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<tr>
<td><strong>Seasonally Employed</strong></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Assistant and Acting Rangers</td>
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<td>4</td>
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<td>41</td>
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<tr>
<td>Patrolmen</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>14</td>
<td>7</td>
<td>39</td>
</tr>
<tr>
<td>Lookoutmen</td>
<td>34</td>
<td>16</td>
<td>19</td>
<td>29</td>
<td>39</td>
<td>3</td>
<td>140</td>
</tr>
<tr>
<td>Dispatchers and Radio Operators</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>12</td>
<td>3</td>
<td>35</td>
</tr>
<tr>
<td>Fire-suppression Crewmen</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>32</td>
<td>130</td>
</tr>
<tr>
<td>Reforestation — Snag-fallers, Planters, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cruisers and Compassmen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Truck and Tractor Operators</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>33</td>
<td>55</td>
</tr>
<tr>
<td>Student and Survey Assistants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>311</td>
<td>312</td>
</tr>
<tr>
<td>Silvicultural Crewmen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foremen</td>
<td>5</td>
<td>1</td>
<td>10</td>
<td>6</td>
<td>1</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Youth Training Programme</td>
<td>24</td>
<td>23</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>176</td>
<td>263</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>13</td>
<td>20</td>
<td>25</td>
<td>19</td>
<td>12</td>
<td>214</td>
<td>303</td>
</tr>
<tr>
<td><strong>Totals, seasonal personnel</strong></td>
<td>133</td>
<td>76</td>
<td>83</td>
<td>161</td>
<td>150</td>
<td>914</td>
<td>1,517</td>
</tr>
<tr>
<td><strong>Totals, all personnel</strong></td>
<td>518</td>
<td>207</td>
<td>249</td>
<td>359</td>
<td>298</td>
<td>1,506</td>
<td>3,137</td>
</tr>
</tbody>
</table>
The following table has been compiled from the foregoing distribution of personnel to enumerate District Foresters, Assistant District Foresters, and Rangers, to which I have added the areas of each district, with the following comparative results:

<table>
<thead>
<tr>
<th>Forest District</th>
<th>Forest District's Area</th>
<th>Number of District Foresters and Assistant District Foresters</th>
<th>Acres per District Forester</th>
<th>Ranger Districts' Area</th>
<th>Number of Rangers (Excluding Supervisors)</th>
<th>Acres per Ranger</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Square Miles</td>
<td>Acres</td>
<td>2</td>
<td>11,010,000</td>
<td>26</td>
<td>1,323</td>
</tr>
<tr>
<td>Vancouver</td>
<td>34,406</td>
<td>22,020,000</td>
<td>2</td>
<td>11,010,000</td>
<td>26</td>
<td>1,323</td>
</tr>
<tr>
<td>Prince Rupert</td>
<td>108,053</td>
<td>69,150,000</td>
<td>2</td>
<td>34,575,000</td>
<td>14</td>
<td>7,718</td>
</tr>
<tr>
<td>Prince George</td>
<td>137,922</td>
<td>88,270,000</td>
<td>2</td>
<td>44,135,000</td>
<td>17</td>
<td>8,113</td>
</tr>
<tr>
<td>Kamloops</td>
<td>53,509</td>
<td>34,240,000</td>
<td>2</td>
<td>17,120,000</td>
<td>24</td>
<td>2,230</td>
</tr>
<tr>
<td>Nelson</td>
<td>30,687</td>
<td>19,640,000</td>
<td>2</td>
<td>9,820,000</td>
<td>22</td>
<td>1,395</td>
</tr>
<tr>
<td>Totals</td>
<td>364,377</td>
<td>233,320,000</td>
<td>10</td>
<td>116,660,000</td>
<td>103</td>
<td>20,779</td>
</tr>
<tr>
<td>Averages</td>
<td></td>
<td>23,332,000</td>
<td></td>
<td>23,332,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This sort of comparison does not, I am free to admit, take into sufficient account the differences in production from each district. For example, the work and responsibilities devolving upon each Ranger in the Vancouver District are much more onerous than those attached to that same officer in the Prince Rupert District. This is recognized in the size of the ranger districts in those two forest districts and the number of Rangers employed therein. It is to be noted, however, that the number of District Forcsters and Assistant District Foresters is the same in each district.

When it is appreciated that in each of the five districts the Forest Service is solely responsible for the management of the areas included in public working circles as well as for the protection, conservation, regeneration, and sale of Crown timber outside the public working circles, it must be at once manifest that the present staff is inadequate to carry out this obligation to the extent required.

It has long been apparent and now of impelling necessity that the forest and ranger districts be increased in number and decreased in area. This will, of course, necessitate a concomitant increase in both the district and ranger staffs. I made this same recommendation in the 1945 Report.* It is my considered opinion that in view of the added responsibilities of management now assumed by the Service, the Province should be divided into at least ten forest districts instead of five as at present. As I pointed out in an earlier part of this Report, districts have, over the years, gradually increased in size and decreased in number.

Dr. Orchard traced this development in his evidence. He said:—†

"The title 'Forest District' emerges first in 1913. In 1913 we had eleven forest districts, each in charge of a District Forester.

"In 1916—I am going to put into record the names of these—Vancouver, Victoria (which was headquarters for the Island District), Prince Rupert, Hazelton, Fort George, Tête Jaune, Lillooet, Kamloops, Vernon, Nelson, and Cranbrook. In 1916, Tête Jaune District was merged with the Prince George and Kamloops Districts. The Tête Jaune District was a small district up there and it was split, part put into the Kamloops District and part into the Prince George District.

"In 1917 the Hazelton District was merged with the Prince Rupert District.

"In 1918 the Lillooet District was merged with the Kamloops District.

"In 1919 the Island District was merged with the Vancouver District, to make what is now the Vancouver District.

"In 1920 a new district was established in the Cariboo with headquarters at Williams Lake. We then had eight from eleven.

---

* 1945 Report, p. 124.
† Transcript, p. 2319 et seq.
“In 1925 the Vernon, Nelson, and Cranbrook Districts were merged into the Southern Interior Region and we had six.

“In 1930 we got the Dominion lands which were added largely to the Kamloops District.

“In ’32 Cariboo District, which was established in ’25, was merged with the Kamloops and Prince George Districts, and we then had five. And the only change since 1932, the Okanagan was taken out of the Southern Interior District and transferred to the Kamloops District. I couldn’t find the exact date of that, but it is since 1932. That’s the district history.

“Q.—So that since 1932, then, you have operated with five?
A.—Since 1932 we have operated with five.”

The time has now come to reverse the process. The number and exact delineation of the new districts I leave to the Forest Service, neither do I feel qualified to express any opinion as to what ought to be the number and area of the ranger districts. That, too, is a matter for the Service to study in co-operation with Industry and advise the Government upon.

As a matter of comparison, it may be noted, in passing, that, in the United States, Montana and Idaho have in combination fourteen ranger districts and a staff of 148, whereas an approximately equal area in the comparable Nelson Forest District has only five ranger districts and a staff of thirty-five. In the Province of Quebec there are 320 Rangers and 376 Assistant Rangers. I am not quite clear as to scope of their authority.

The assignment of a resident and qualified forester to each public working circle, with the attendant and necessary personnel to ensure its proper supervision, regulation, and management, would, in my opinion, be a very desirable innovation and consonant with the compulsory employment of a registered forester by forest management licensees (unless excepted).

It was stated in evidence* that each forester in the employ of the Service administered and endeavoured to manage twelve times the acreage managed by a forester in industrial employment. Assuming this to be so, the appointment of a resident forester to each public working circle would close this gap by some degree at least.

A consideration of the present administrative structure reveals that it is built around a core of experts centred at Victoria. For that reason it may also be said that my analysis of the responsibilities of the District Foresters and Rangers in terms of area might not be altogether free from criticism on that score. In one sense the Victoria staff of foresters may be said to be assisting, indirectly, the staff in the field. A number of witnesses were critical of this system of remote control, and in relation to appraisals of timber sales and other administrative matters it was thought these should be better left to the determination of the man on the ground rather than by reference for decision to the Victoria office.

The issue narrows down to a question of pure policy as to whether there should be a strong centralized control vested in the senior officials at Victoria with directives to the field staffs or whether there should be a decentralized system of administration with field officers vested with wide powers of decision in matters affecting their own forest districts. Governments in this Province have, over the years, adopted and developed the centralized system of control. It may well be that with greater management burdens calling for speedy administrative decisions, some more comprehensive measure of authority should be permitted the appropriate senior field officers. This is, I think, particularly so in the Interior.

Mr. F. J. G. Johnson, in presenting a submission on behalf of the Cariboo Lumbermen's Association, said in part:—*

"We recommend also wide autonomy and discretionary latitude be allowed the District Foresters, since we feel that in many instances the Chief Forester's staff at Victoria are conditioned to make decisions which, lacking local knowledge, are not always applicable regionally and specifically."

And Mr. L. O. Dahlgren, of the Fraser Lake and District Board of Trade, said in part:—†

"It is the belief of this Association that the discretion and judgment of local forest officers should be trusted in connection with the details of forest regulation imposed through timber sale contracts and general policy."

These excerpts are selected as typical of many other like suggestions advanced both by Interior and Coast witnesses.

Dr. Orchard, when asked for his views on this phase of administration, said:—‡

"As we have progressed and got experience, and got more staff, we have consistently passed out to the Rangers, and the fieldmen, and particularly to the District Foresters, more and more power of autonomy to make their own decisions, and there is no question that that will be further developed, but as long as you are going to have a staff responsible to the Minister or the Chief Forester, or any central body, I don't see how you can possibly tell a Ranger or a District Forester, 'Now, here, you make all the decisions.' If you did that, within a forest district you would have one Ranger refusing timber sales on one score and his neighbour issuing timber sales under exactly the same conditions, as between district and district. Those are things that have to be laid down to keep some kind of uniformity."

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* Transcript, p. 13284.
† Transcript, p. 8038.
‡ Transcript, p. 13406.
I am in agreement with Dr. Orchard that each forest district cannot be regarded as a self-governing division divorced from all centralized control. Such a situation would have chaotic results. On the other hand, there should be some reasonable balance between the centripetal and centrifugal forces now operating in the Service with, of course, the residual power of decision in appropriate matters remaining always with the central authority in Victoria. That is, as I understand Dr. Orchard's evidence, the ultimate course the administrative policy will pursue.

As a small step in this direction, I recommend that the District Foresters be empowered to sell Crown stumpage up to the value of $7,000 without reference to Victoria. The present limit is $4,000.

I made mention before of the head office administrative division and the centralization of the technical staffs at Victoria.

The head office staffs, as indicated, are divided into several subdivisions, as follows:

**Working Plans Divisions.**—This Division was established in February, 1952 (prior to this time it functioned as a unit of the Management Division), under separate direction of a Divisional Forester with responsibilities pertaining to (1) forest management licences, (2) public working circles, (3) farm wood-lots and demonstration forests, and (4) tree-farm certification. The staff consists of the Forester in Charge, Mr. W. G. Hughes, five Assistant Foresters, and one clerk.

The magnitude and importance of the tasks assigned to this Division may be gauged by a short summation of its functions contained in a directive to Mr. Hughes from Dr. Orchard, reading in part as follows:

"The function of the Working Plans Division relative to Management Licences will be to take all applications, analyze them, gather together all pertinent information, and forward this to the Deputy Minister for consideration prior to advertising. If advertising is proceeded with, the Division will follow this through and summarize the protests, if any, for presentation to the Government. In the event of the application being approved, the Division will review the working plan; and after its approval, draft the licence document. Finally, when the Licence has been signed the administration of the area is turned over to the Management Division and the District officers. From this point the Working Plans Division acts in an advisory capacity relative to cutting permits and revision on working plans.

"In the case of Working Circles, the Working Plans Division will endeavour to supplement District activities in delineating Working Circle boundaries and drafting working plans, including the setting up of cutting budgets. For the most part the function of the Division will be to act in an advisory capacity and to train men for assignment to District
stuffs as working plan officers administering Management Licences and Working Circles.

“For lack of technical assistance in the districts, the burden of implementing the farm wood-lot legislation has been falling on the Victoria staff. We will endeavour to do as much as we can from the Working Plans Division, but as soon as there is sufficient manpower in the Districts, the Victoria staff will act only in an advisory capacity.

“Certification of forest land as Tree Farms under the Taxation Act is a new responsibility for the Forest Service, and in view of the current shortage of technical personnel in the districts, we will endeavour to handle the requests from the Finance Department with Victoria staff. When routines have been worked out and we gain some experience in these matters the field examinations will undoubtedly be referred to the Districts.”*

*Exhibit 36, pp. 24-25.

Management Division.—This Division is under the direction of Mr. J. S. Stokes, and its primary function is the disposal of Crown timber and the administration of all contracts related thereto. This extends to all phases, including acceptance of applications, cruising, appraisal of timber values, drawing up of contracts with various clauses designed to assure proper logging practices, periodic inspections of areas to see that contract conditions are fulfilled, scaling of products cut, and the final disposition of any deposits that may be held at expiry date of the contract.

In the harvesting of Crown timber there are other allied administrative functions, such as the issuing of timber marks, logging-road easements, permits to export, and so on, which in themselves are minor functions but in total amount to a considerable volume of administrative detail.

It seems to me that this Division will eventually, if not now, be mainly concerned with areas included in forest management licences and public working circles.

Once the working plan for a forest management licence has been approved by the Working Plans Division, acting in conjunction with the Management Division in order to ensure that existing timber sales are protected, the Management Division is charged with the responsibility of issuing cutting permits, regulating the allowable cut and appraising stumpage values within the terms of the licence, the working plans, and the relevant provisions of the “Forest Act.”

In a parallel exercise of jurisdiction in public working circles and in relation to timber sales generally, the Management Division enforces a degree of regulation of the cut and includes in timber sale contracts in these areas provisions for sustained-yield management, such as logging methods and proper silvicultural treatment of timber stands, which in the Interior includes selected tree-marking in spruce-balsam forests.
This Division, as I said, appraises stumpage, oversees scaling, and determines values—functions which led to considerable controversy and with which I dealt under separate headings of this Report.

It is my impression that this Division is not aptly named. It is not essentially engaged in "management" as such. That, so far as forest management licences is concerned, is the basic function of the Working Plans Division. The degree of management exercised by the Management Division is a collateral function tied in with its main responsibility of appraising and selling Crown timber, whether in forest management licences, in public working circles, or from unorganized Crown forest land.

Head office officials consist of, in addition to the Forester in Charge, two Foresters, five Assistant Foresters, and a Chief Clerk.

**Inventory Division.**—In an earlier part of this Report I dealt extensively with the importance of an adequate forest inventory and examined in detail the valuable work done by this Division and its accomplishments in this highly important field. There is nothing to add at this juncture except to record that the head office personnel consists of Mr. H. M. Pogue, the Forester in Charge, together with his staff of one Forester, twenty Assistant Foresters, twelve Foresters-in-training, one Chief Draughtsman, a mechanical Superintendent, and other clerical assistants.

**Reforestation Division.**—The function of this Division is, as its name indicates, to ensure regeneration by planting or seeding of denuded, logged, burned, and N.S.R. areas wherein natural regeneration has failed. I had occasion in another part of this Report to examine the activities of this Division in some detail. The Forester in Charge is Mr. H. G. MacWilliams, and his Victoria staff consists of three Assistant Foresters and one technical assistant.

Nurseries have been established at Cranbrook, Duncan, Quinsam, and Green Timbers. As I said elsewhere, the need is apparent for a more intensive programme of regeneration with the necessary staff increases. It is worthy of note that for the years 1951 to 1955, inclusive, reforestation crews seasonably employed averaged about 460 men. In 1956 the number employed dropped to 161.

**Forest Protection Division.**—The responsibilities of this Division extend to fire-weather co-ordination and research, protection planning, including approval of forest management licence fire-protection plans, supervision of all protection seasonal staff and records, administration of protection staffs, project funds, equipment supply, and preparation of estimates and requisitions for protection work.

Head office staff consists of Mr. I. T. Cameron, Forester in Charge. Working with him are two Assistant Foresters, one Protection Officer, two Forest Assistants, and two Foresters-in-training. The meteorological staff consists of one man on loan from the Federal Government. His primary duty—and it is an important one—is to correlate weather information from Forest and private weather stations and the Federal Meteorological
Service, as far as it is relevant, in the assessment of a hazard "build-up." His activities are, in general, limited to the Vancouver Forest District. I have dealt with the subject of fire protection elsewhere and stressed the necessity of greatly increased expenditures upon this branch of the Service.

A good start would be the appointment of a meteorologist for each forest district. Head office staff will require an increase in personnel generally if field expenditures are increased.

**Engineering Division.**—This Division is made up of five sections and is under the direction of Mr. R. D. Greggor, Forester in Charge. These subdivisions are:

The Mechanical Section, which is responsible for the supervision of the operation and maintenance of Forest Service mechanical equipment, valued at close to $3,000,000. It also advises on the selection and purchase of required equipment.

The Radio Section is in charge of technically trained personnel and is furnished with the necessary equipment to maintain and operate six Forest Service radio networks.

The Structural Section is responsible for the design and construction of suitable accommodation for Forest Rangers and their equipment. Projects have included the construction of buildings costing up to $300,000 to be used as forest district headquarters.

The Engineering Section has, as its primary function, the locating, designing, and constructing, or supervising the construction, of access or forest-development roads. Whether this responsibility should be transferred to the Highways Department is a matter I left to the Government to decide when I dealt with the road question at large.

The Marine Station is a branch of the Engineering Division and has grown from a small unit to one of considerable size and importance. I was surprised to learn of the scope of its activities. Its main function is the operation of a well-equipped repair station designed especially for the maintenance of the fleet of launches used by the Service, chiefly in Coastal waters. It also repairs small mechanized units, such as fire-pumps and outboard motors. As an indication of the versatility of its staff, this Section, in slack periods, undertakes as a side-line boat-building and the construction of other items. For example, 1954 was a light fire year and not as much repair work in fire-fighting equipment was required. In consequence, the men of the Station directed their attention and efforts to other fields of endeavour and turned out a 32-foot twin-engined high-speed supervisor's launch built to a design produced by the Structural Section, one 26-foot launch for use on Quesnel Lake, four 14-foot outboard cruisers, five 30-foot river-boats, and eighteen skiffs and dinghies. A special feature was the construction of a 45-foot equipment barge capable of carrying a load of 60,000 pounds. This craft was designed by the Structural Section to be used for fire-fighting on Quesnel Lake.
A carpenter or prefabricating shop was added to the Station in 1947, originally to prefabricate lookout buildings. The work of this subsection has since expanded to include various types of sectional buildings constructed to meet the special requirements of the Service and also to manufacture various types of furniture. The 1954 production included six 20-by 24-foot sectional buildings, ten 24- by 32-foot residence buildings for Assistant Rangers in isolated parts of the Province, seven lookout buildings, two truck canopies, fourteen pieces of office furniture, twelve map-rollers, and 179 pump-crates.

I have only touched lightly on this Marine Station section, and its record is even more impressive than the items I have selected for illustrative purposes. In its own field it is making a very creditable contribution to the efficient functioning of the Forest Service.

These five subsections of the Engineering Division are staffed at Victoria, with a diversity of technicians specializing in their own fields of endeavour, totalling about 100 in all, of which about ten are top officials, such as the Chief Engineer, Construction Engineer, Survey Engineer, Design Engineer, Mechanical Superintendent, Radio Superintendent, and so on.

Grazing Division.—The Crown range is administered under the provisions of the "Grazing Act" (R.S.B.C. 1948, chapter 138) and amendments and regulations thereunder. Responsibility for grazing administration is placed on the Forest Service by the relevant sections of the "Forest Act." This has been the case since the "Grazing Act" was passed in 1919. Grazing leases, issued under the provisions of section 82 of the "Land Act" (R.S.B.C. 1948, chapter 175) do not, as such, come under the jurisdiction of the Forest Service, although any timber thereon may be disposed of under the provisions of the "Forest Act" by the Forest Service.

As provided for in section 3 of the "Grazing Act," grazing districts have been constituted, the boundaries of which coincide with those of forest districts. Grazing and forest districts are known by the same names.

Practically all of the Crown range currently in use lies within the Kamloops and Nelson Grazing (Forest) Districts, with the bulk being within the Kamloops District. Only a minor amount of Crown range is in use in the Prince George Grazing (Forest) District, and little or none in the Prince Rupert and Vancouver Districts.

The management and allocation of the Crown range is carried out in close co-operation with the range-users and other agencies interested in wild-land management. The objective of the Forest Service is to obtain maximum live-stock production consistent with the conservation of the range resource and the requirements of other forms of land use.

Responsibility for range management, allocation, and improvement is placed on the District Foresters under general direction from the Chief Forester's office. Routine field work required in connection with enforcement of regulations and grazing-permit conditions and range improvement and other miscellaneous inspections are carried out by the Ranger staff.
under direction from the District Forester. Technical grazing personnel are employed in the Chief Forester's and District Foresters' offices to advise and assist in the direction of range administration.

The employment of technically trained range-management personnel in the Service has been increased from one at the beginning of 1945 to eight at the present time. These positions are distributed as follows: Chief Forester's office, Victoria, 1; District Forester's office, Kamloops, 5; District Forester's office, Nelson, 2. All of the present incumbents in the above positions are graduates from the School of Agriculture at the University of British Columbia and are registered agrologists.

In addition to the above, from two to four students from the School of Agriculture are employed on a seasonal basis each year to assist on range surveys and other field work.

Grazing maps and sketch plans are prepared by the general draughting staffs in the district offices.

There is no doubt that the technical aspects of range management require closer attention than is possible with the existing technical staff. However, the problem is not solely a shortage of specialized range-management personnel. The benefits accruing from such features, as improved range inventory, range-management plans, and range condition and trend studies, are largely lost unless backed up by adequate inspections to ensure that approved management plans, seasons of use, and rates of stocking are adhered to by grazing permittees. This phase of range administration does not require highly specialized personnel. It is most efficiently performed by the local Forest Ranger in conjunction with his other duties. Therefore, grazing control, in common with other phases of forest administration, suffers from the inadequate number of the present Ranger staff in grazing areas.

The main range areas lie in the Interior, and I propose to examine the grazing question and related problems when dealing with matters more or less peculiar to the Interior.

Research Division.—The function of this Division is to undertake investigations of all kinds that may be required by the Forest Service in its administration and management of the forest resources of the Province.

The type of study for which this Division is staffed and equipped may be defined as applied research; that is, the application of known principles or procedures to local conditions in which the specific reactions can only be determined by direct experimentation and observation. This is the type of research usually conducted by this Division, although fundamental studies are undertaken in rare instances when such are an essential prerequisite to the solution of a specific problem under investigation, and when other sources for this type of information do not exist or are unavailable. Research for the sake of knowledge itself and without a practical objective cannot be undertaken with the limited staff and facilities presently available.
This Division is under the direction of Mr. R. H. Spilsbury, and his staff at Victoria consists of an Assistant Forester, two Agrologists, together with a Forester-in-training.

Research is, beyond question, one of the most important aspects of forest management. Past efforts of the Service on any sustained basis have been in the Douglas fir belt on the Coast. Studies elsewhere have been sporadic. The expansion of industry into the more remote areas of the Province is a foregone conclusion, and many problems incident thereto will arise for solution through research. The next ten years will demonstrate the need of doubling the present staff during this coming decade.

At the moment, increases in the technical staff are an immediate need. Applied research, to a large degree, consists of routine procedures, such as the recording and compilation of material, all of which can be accomplished adequately by assistants under proper supervision. Assistants, when trained to carry out such routine duties, would relieve the present staff of such work and enable foresters both at head office and regionally to carry out more important duties and research programmes. In order to attract younger men and women, the most persuasive enticement would be permanent positions with reasonable salaries and chances of promotion.

I intend to treat with the subject of research under a separate heading in more detail. At the moment I am merely looking at one segment of a larger picture.

From this short summary of the Forest Service administration and its various head office divisions it is apparent that its organization can be visualized in diagrammatic shape as something akin to the shape of a wheel with the hub at Victoria and with spokes radiating out to the various districts while at the periphery the field staffs function. It is, as I said at the outset, based upon the concept of centralized authority. I do not mean to imply that the Forest Service staff is located in a general sense at Victoria. While control is centralized at that point, the staff is widely spread throughout the Province. A glance at the table of personnel distribution amply demonstrates that fact. Neither am I unmindful, when recommending further staff increases, of the growth in permanent personnel during recent years. The total permanent strength has increased from 1,021 in 1951 to 1,620 in 1956, although temporary or seasonal employment dropped from 1,644 in 1951 to 1,517 in 1956.

Particulars of these staff changes appear in the following table for the years 1951 to 1956, inclusive:
### Table 144

**Distribution of Total Personnel**

<table>
<thead>
<tr>
<th>Position and Department</th>
<th>1951</th>
<th>1952</th>
<th>1953</th>
<th>1954</th>
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<td>Foresters and Assistant Foresters</td>
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<td>112</td>
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<td>125</td>
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<td>10</td>
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<td></td>
<td></td>
<td></td>
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<td>8</td>
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<td>93</td>
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<td>103</td>
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<td>7</td>
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<td>Technical Forest and Public Relations Assistants</td>
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<td>Reforestation, Parks, Research, and Survey Assistants</td>
<td>29</td>
<td>38</td>
<td>73</td>
<td>74</td>
<td>115</td>
<td>89</td>
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<td>290</td>
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<td>317</td>
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<td>5</td>
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<td>18</td>
<td>37</td>
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<td>21</td>
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<td>22</td>
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<tr>
<td>Assistant and Acting Rangers</td>
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<td>130</td>
<td>140</td>
<td>156</td>
<td>169</td>
<td>178</td>
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<td>37</td>
<td>46</td>
<td>40</td>
<td>38</td>
<td>52</td>
</tr>
<tr>
<td>Cruisers, Compassmen, and Marking Crewmen</td>
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<td>62</td>
<td>33</td>
<td>40</td>
<td>104</td>
<td>80</td>
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<tr>
<td>Truck and Tractor Operators</td>
<td>22</td>
<td>23</td>
<td>29</td>
<td>31</td>
<td>49</td>
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<tr>
<td>Foremen</td>
<td>18</td>
<td>5</td>
<td>17</td>
<td>17</td>
<td>18</td>
<td>14</td>
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<td>55</td>
<td>89</td>
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<td>48</td>
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<td><strong>Totals, permanent personnel</strong></td>
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<td>1,265</td>
<td>1,382</td>
<td>1,535</td>
<td>1,620</td>
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<tr>
<td>Assistant and Acting Rangers</td>
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<td>63</td>
<td>59</td>
<td>46</td>
<td>36</td>
<td>41</td>
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<td>Patrolmen</td>
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<td>35</td>
<td>37</td>
<td>39</td>
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<td>Lookoutmen</td>
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<td>127</td>
<td>127</td>
<td>132</td>
<td>135</td>
<td>140</td>
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<td>Dispatchers and Radio Operators</td>
<td>33</td>
<td>53</td>
<td>49</td>
<td>41</td>
<td>41</td>
<td>35</td>
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<td>Fire-suppression Crewmen</td>
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<td>126</td>
<td>123</td>
<td>151</td>
<td>151</td>
<td>130</td>
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<tr>
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<td>500</td>
<td>500</td>
<td>442</td>
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<td>161</td>
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<tr>
<td>Cruisers and Compassmen</td>
<td>136</td>
<td>10</td>
<td>18</td>
<td>24</td>
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<tr>
<td>Truck and Tractor Operators</td>
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<td>Student and Survey Assistants</td>
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<td>276</td>
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<td>Silvicultural Crewmen</td>
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<td>25</td>
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<td>Youth Training Crews</td>
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<td>1,774</td>
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<tr>
<td><strong>Totals, seasonal personnel</strong></td>
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<td>1,753</td>
<td>1,571</td>
<td>1,516</td>
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<tr>
<td><strong>Totals, all personnel</strong></td>
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<td>2,907</td>
<td>3,018</td>
<td>2,953</td>
<td>3,051</td>
<td>3,137</td>
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</table>
RANGER SCHOOL

In the 1945 Report I recommended the establishment of a Ranger School.*

Between the professional forester, university trained, and the man doing the actual field work there exists the need of trained personnel of the supervisory type. This is particularly applicable where Government forestry is concerned.

The key fieldman is the Forest Ranger, who, under the direction of his District Forester, is the responsible forest officer within his ranger district.

It is essential that this official should have some knowledge of the fundamental principles of forestry in order to carry out, intelligently, policy instructions and technical procedures as directed by the professional forester staff. The Ranger must be well versed in his administrative duties and the various problems involved. The purpose of a Forest Ranger School is to provide appropriate training which is not available at any other school.

The Ranger School opened in January of 1946, and twenty students were selected from the Ranger and Assistant Ranger staff as the first pupils. The teaching staff consisted of the Forester in Charge and an Assistant Forester, both of many years' experience. In 1947 grazing administration was added to the curriculum, and in 1948 a well-attended course for lookoutmen was established.

In 1949 a new building was constructed at the Green Timber Forestry Station to house the school, together with appropriate living-quarters for teachers and pupils.

The main building contains a general office and two staff offices, two classrooms, each capable of seating thirty men, and a workshop classroom suitable for instruction concerning mechanical equipment. A library-room completes this unit.

The living-quarters consist of twenty-seven bedrooms, with full conveniences on each floor. A modern kitchen, dining-room, lounge, and recreation-room completes this unit.

Dr. Orchard, in his evidence, summarizes the manner in which Rangers are selected for tutelage in the Ranger School. I quote:—

"Q.—How does a man get to be a Ranger, or an Assistant Ranger, in the first place? A.—Anybody with the qualifications of age and education can come in and write the Assistant Ranger examination. Then he is qualified, and when there is a vacancy he gets an appointment as an Assistant Ranger. Every Assistant Ranger who has two years' experience in the Service, and some other classifications of a similar level, are entitled to write an entrance examination to the school. Of those people who pass the examination, the principal of the school, Mr. Pedley at the present time, goes out and interviews very carefully the men in

* 1945 Report, p. 124.
the field, and after he has looked into and got as much information as possible about their physical ability, health, character, integrity, and any other features that have a bearing, including his future intentions as far as employment are concerned, he goes over all those factors very carefully with the District Forester. Then we have a fairly well selected eligible list. But that list is gone over again in a round-table discussion with the Chief Forester and senior officers, and finally out of the Assistant Rangers and comparable staff we have an eligible list of from twenty to thirty men. From that list, district by district, the District Foresters recommend the people they would like to have attend the school.

"Q.—The candidature, then, is a Service candidature? It comes from within the Service? A.—Yes, we don't accept applications from outside the Service at all. The Ranger position is viewed in the Service as promotional. The good Forest Ranger is a special type of man. Not only must he perform a wide variety of duties calling for intelligence and physical ability, but he must perform these in close contact with the public. He must, therefore, have the characteristics that bring the respect of the community in which he lives, tact being by no means the least of these requirements. The function of the Ranger school is to find these men and train them accordingly. From the Ranger School, depending on how good he is, and the opportunities that turn up, and luck and various other things, he can go up in the Service to a position equivalent to these very top officers, Foresters in Charge of a Division. We wouldn't call him a Forester because of technicalities, but he would be a Forest Protection Officer. But he can get as high in rank, and draw as much money, as a graduate forester in charge of one of our divisions or District Forester. There is keen competition in the Assistant Ranger staff for the opportunity to go to the Ranger School.

"Q.—Is it possible for an Assistant Ranger to be promoted to a Ranger unless he holds a certificate from the Ranger School? A.—No, we won't appoint him otherwise, not as a full-fledged Ranger. We will appoint him as an Acting-Ranger under necessity."*

Commencing late in 1949 the course at the school was extended to three terms of three months each. In other words, the course covers a period of nine months, during which time the pupil in training is paid his full wages and other necessary items of expense. The course is not continuous. Ranger pupils resume their duties in the woods from about the middle of April to mid-September. In consequence, eighteen months elapse between each graduation. Thus with a class of twenty, providing all pass, twenty will graduate in eighteen months and forty every three years.

The training is extensive and covers a wide variety of subjects. In order that members of the public who come in contact with the Rangers be made aware of the training these men receive, I think it appropriate to outline the Ranger School curriculum for 1955–56. It is as follows:—

* Transcript, p. 572 et seq.
BRITISH COLUMBIA

RANGER SCHOOL CURRICULUM, 1955-56

FIRE LAW AND OPERATION PROCEDURE

(b) O.L.O. regulations and procedure.
(c) Permit burning.
(d) Slash-disposal requirements.
(e) Railway fires. General Order No. 548, Board of Railway Commissioners.
(f) Fire-law enforcement.

PRELIMINARY FIRE ORGANIZATION

(a) Fire occurrences and risks.
(b) Hazard indices. Rating systems.
(c) Detection systems. Transportation systems.
(d) Distribution: Personnel and equipment.
(e) Organization of voluntary personnel.
(f) Aerial delivery of supplies and personnel.
(g) Radio communication.
(h) Fire-prevention programmes.

FIRE SUPPRESSION

(a) Elementary forest pyrology and meteorology.
(b) Factors governing fire behaviour.
(c) Fire camp and line organization.
(d) Fire-fighting tools and equipment.
(e) Fire-fighting methods.
(f) Uses of water on fires.
(g) Problems and examples.
(h) Organization and handling of slash burns.

MECHANICAL EQUIPMENT—OPERATION AND CARE OF

(a) Cars and trucks.
(b) Fire-pumps. Outboard engines.
(c) Power-saws.

CONSTRUCTION TECHNIQUES

(a) Trails and forest roads.
(b) Telephone line and equipment maintenance.
(c) Building maintenance and contracts.

LOG-SCALING

(a) Theory.
(b) Practice.

RANGER DISTRICT ORGANIZATION

(a) Office routine and filing system.
(b) Property accounting and records.
(c) Business English.
(d) Reports and standard forms.
(e) Field-work organization.

PUBLIC RELATIONS

(a) Public relations.
(b) Personnel management.
(c) Public speaking
(d) Correspondence. Expression of ideas.

MATHEMATICS REVIEW

(a) Review—mensuration and geometry.
(b) Review—simple trigonometry.
(c) Review—use of slide rule.

SURVEYING AND MAPPING

(a) Use of staff compass, abney level and topography chain.
(b) Methods of offsetting and triangulation.
(c) Compilation of traverses.
FOREST INQUIRY

(d) Field-notes and mapping.
(e) Field traverses.
(f) Interpretation of aerial photos (field work at U.B.C. Forest).

FOREST MENSURATION

(a) Tree measurements. D.b.h.
(b) Volume tables—the use of.
(c) Measuring stands of timber.
(d) Compilation of cruises and map-making (field work at U.B.C. Forest).

FOREST MANAGEMENT—POLICY AND PROCEDURE

(a) Review of the "Forest Act."
(b) Timber-sale contracts—policy and procedure.
(c) Logging inspections.
(d) Management licences—ranger district procedure.
(e) Farm wood-lots—ranger district procedure.
(f) Review—management manual and circulars.

FOREST INVENTORY AND MAPPING

(a) Cover-mapping.
(b) Map indexing and filing.

FOREST ENTOMOLOGY

Dangerous insects of British Columbia.

FOREST PATHOLOGY

Tree diseases of British Columbia.

STUMPAGE APPRAISALS

(a) Appraisal methods.
(b) Working out examples.

BOTANY—DENDROLOGY

(a) Life and growth of forest trees, leading to understanding of silvicultural principles.
(b) Characteristics of native species.

SILVICULTURE

(a) Elementary silvics.
(b) Application in British Columbia.

The following table indicates the summary of enrolment and distribution of candidates:

<table>
<thead>
<tr>
<th>Class Year</th>
<th>Enrolled</th>
<th>Distribution and Disposition</th>
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<tbody>
<tr>
<td></td>
<td>Completed</td>
<td>Dismissals and Resignations</td>
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<td>1946</td>
<td>20</td>
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<td>1947</td>
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<tr>
<td>1955-56</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Totals</td>
<td>164</td>
<td>160</td>
</tr>
</tbody>
</table>

TABLE 145
The wastage occurring in graduates up to and including the 1949–50 class was noted and countered by more stringent screening, commencing during 1949. This has been possible due to a continually increasing eligible list.

To avoid wastage, a medical certificate is required showing their physical fitness for the job, and each selected candidate is required to sign a statement promising to stay with the Service, if offered appointment, for at least two years following graduation.

The training is expensive and would not be justified if the trained men only remained with the Service for the two-year minimum period. The above table indicates that the Service expectation that the majority of these men will continue in Service employment for much longer seems justified.

If my recommendation is accepted that the ranger districts be reduced in area, more Rangers will undoubtedly be required. The present graduation of twenty men every eighteen months just about balances the present wastage due to promotions, retirements, resignations, and other causes and is not sufficient to provide for the projected increases in the Ranger staff.

The enrolment should be increased to thirty pupils or more as soon as possible. Teaching personnel is now adequate, and the only other facilities required would be more bedrooms to provide for the ten or other additional enrolments. In view of the necessity for more Rangers and the important functions they fulfill, the extra cost occasioned would be relatively minor.

This Ranger School is presently exercising an extremely valuable function and, I believe, it will in time extend and expand its activities into other fields of training, for example, in providing refresher courses by experts in specialized subjects to ranking officers of the Service and other staff officials.

FOREST COMMISSION

This subject is correlative to administration. In the 1944–45 Inquiry the evidence indicated that Industry at that time was strongly in favour of having a Forest Commission vested and charged with the responsibility of organizing, planning, and carrying into execution the concept of sustained-yield management. In consequence I recommended the creation of this proposed Commission in my Report. In this connection I said in part:

"It is my opinion that a Forest Commission should be created.

"The chief reason compelling me to this conclusion is the long-range planning required, without which it will be impossible to change over from our present system of forest liquidation and depletion to one of sustained-yield management.

"This kind of planning has as its concomitant, long-range financing. The present system of annual appropriations from the general revenue, for which the Forest Service must compete with other spending departments of Government, is subject to vagaries in general business activity, the exigencies of short-term financing, and the uncertainty of money
supply due to temporal variations in governmental receipts available for departmental allocation. These factors, coupled with recurrent periods of transitory demands for increased expenditures in social and economic fields, unrelated to forestry, have in the past and will in the future, under the present system, retard if not frustrate any long-term policy of forest management.

"In the language of one witness, 'Forest policy is put in bondage to the system of Treasury control.'

"By reason of the constitutional limitations imposed upon this Province all public moneys from whatever source of revenue derived must be paid into the Consolidated Revenue Fund to be appropriated for the public service of the Province as the Legislature may direct.

"The only way in which direct Treasury control over departmental appropriations may be avoided is to place the Forest Service under a Commission empowered to collect all direct forest revenue and to expend all or that part thereof as may be necessary to finance adequately its operation.

"Then, too, administrative Commissions have been created not only to ensure a more convenient method of handling public finance, which in many instances is a mere incident in the exercise of their powers, but also as a device designed to carry out administrative functions of Government in highly specialized and technical fields of endeavour.

"A Forest Commission would thus have two main purposes: First, to formulate and administer a long-term system of planned forest management and forest industry regulation where essential thereto. Second, to supply the machinery for long-range financing divorced from the system of annual departmental appropriation from general revenue.

"The Commission would be charged, therefore, with a very heavy responsibility. It should, in consequence, be vested with jurisdiction wide enough to permit the proper discharge of that responsibility.

"Statutes creating Commissions usually fall within one of two classifications: Those in which the powers conferred upon Commissions are defined in minute detail and hedged about with confining restrictions, and those in which a broad governmental policy is delineated and the Commission given wide and exclusive powers to effectuate that policy.

"Future forest planning and management, with its concomitant forest industry regulation, will be a complex business calling for the solution of a multiplicity of problems arising from an infinite variety of circumstance.

"I therefore recommend that the Commission be not imprisoned within the iron framework of prescribed rules and regulations, but that within its own sphere of activity it be given a free and powerful hand.

"Objections have been voiced from time to time to what has been described as 'an ever-increasing bureaucracy,' but it must be recognized
that modern developments in the fields of economics and sociology have thrust upon Governments duties and obligations that are difficult if not impossible of fulfilment by the same departmental processes that were designed to function in the horse and buggy era. Delegation of authority to Commissions in technological fields has been found an effective way of adapting existing processes of government to the requirements of a modern civilization. Our forest problem, it seems to me, can not be met and solved effectively except by this form of administration.

"The Commission should, in my opinion, consist of not more than five and not less than three members, one of whom shall be Chairman or Chief Commissioner. The Deputy Minister of Forests should be a member, but not the Chairman of the Commission. He would be the liaison officer between the Commission and the Minister of Forests. I am of the firm view that members of the Commission should not be appointed thereto as representatives of any branch of the forest industries. Their duties are bound to compel them from time to time to make far-reaching decisions concerning matters in which private and public interests will be in conflict. They must therefore be in a position to reach their conclusions free from any self-interest and solely on the basis of merit.

"It follows in consequence that in selecting the members of the Commission the Government should seek to appoint those of proven ability, of personal integrity, sound judgment, and with general business experience.

"In the final analysis the Commission should be composed of reliable men of sound common sense who can accept responsibility and make proper decisions free from any trammelling influences—political or otherwise."

This recommendation was not implemented by the Government of 1945 nor since.

During this Inquiry a considerable number of informed witnesses and organizations still supported the Commission plan. For instance, the Canadian Institute of Forestry submitted that "the long range planning required for sustained yield management can be accomplished best under a Forest Commission. Such a Commission should have full control, under the Legislature, of forest policy administration and finance in order to secure the full long-term benefits of the forest resource."* The view-point of industrial witnesses in favour of a Forest Commission is fairly epitomized in the brief of the Powell River Company. After reciting my comments concerning the necessity for long-range financing as a concomitant of long-range planning and the interdepartmental competition for available funds (quoted above), the brief continues:—†

* Transcript, p. 11362.
† Exhibit 232, pp. 44-45.
"Time has served only to emphasize the validity of the Commissioner's prediction.

"In view of ever larger public demands on government for social services, highways, hospitals, and education, it would be unrealistic and unwise to expect any marked improvement in this situation from the Governments of the future.

"In spite of the facts of the situation which have been apparent over the years, some people advocate not only keeping present Crown forests under direct management of the Forest Service, but in addition advocate that all present temporary tenures be turned over to the Forest Service for management as soon as possible, thus increasing materially the present impossible load they are attempting to carry.

"The Forestry Commission recommended by Chief Justice Sloan in the 1945 report, we believe, could have solved many problems provided:—

"(1) Personnel of sufficient stature had been appointed.

"(2) The Commission had been 'empowered to collect all direct forest revenue and to expend all or that part thereof as may be necessary to finance adequately its operation.'

"(3) The Commission had been given authority to develop forest policies, including other forms of tenure, which might prove desirable.

"In fact, if the above conditions were met, we would be in favour of the appointment of such a Commission.

"There is no reason to assume that the administrative powers of the Forest Service would be curtailed in any way. On the contrary, the Service would be strengthened.

"Presumably the Forest Service, on transfer to the Forestry Commission, could be removed from civil service categories, as in the case of the B.C. Power Commission, the Workmen's Compensation Board and the Public Utilities Commission. This would permit foresters and engineers to be paid at the prevailing rate for experienced professional men, reducing the present steady drain through resignations."

The logging branch of the industry, as represented by the Truck Loggers' Association, had these comments to make:— *

"It is our belief that a Forest Commission, with funds on which they could rely for years in advance, is the only way by which a long-range business such as forest administration can possibly be given good management.

"Under the present administration the Forest Service has to participate in the annual 'scramble' to get the funds it requires, against the competition of all other Governmental Departments. Some of these other Departments no doubt offer more immediately interesting pro-

* Exhibit 76, p. 20 et seq.
grammes to the Department of Finance, such as roads, schools, and various social benefits. These items, no doubt, bear a lot of weight with the Legislature because of their popular appeal to the electors. It is of small wonder that the Chief Forester in his evidence before the present Commission constantly referred to insufficient staff and lack of funds. A professional forester, trained to think in long periods of years, and unflagging attention during that time, must wonder whether the present system of management can lead to anything but complete disaster. The results in the past 30 years point definitely in that direction. As the Chief Forester stated in his evidence before the present Commission, "Neither staff nor appropriations were ever adequate to handle the job assigned." This is a long period, under several Governments—quite long enough to show that the Departmental system cannot work effectively in this business.

"We strongly support the appointment of a Forest Commission as recommended by the Commissioner in his 1945 Report, preferably to consist of five members."

The Interior Lumber Manufacturers' Association said:*

"In your 1945 report on The Forest Resources of British Columbia, in that portion dealing with Future Forest Administration you state, 'It is my opinion that a Forest Commission should be created.' We are fully in accord with this opinion and regret that it has not been implemented.

"The reasons which you gave as necessitating the formation of a Forest Commission hold as good today as they did when stated in 1945 but, if anything, to a more intensive degree.

"We are in full accord with your proposals, contained in the 1945 report on the Forest Resources of British Columbia, as to the financing of the Forest Commission. It is our opinion that far too much emphasis is being placed on obtaining maximum government revenues from the forests, with a minimum of revenue being returned to the forests."

Other witnesses took a more qualified view. An example of this is found in the brief presented by MacMillan & Bloedel Limited. It reads in part as follows:—†

"The value of the asset which the Forest Service administers will increase vastly in future years if these devoted and qualified men succeed, as it appears they can, in their plans to maintain a permanent Forest crop.

"All they need is support from Public.

"There has been no volume of complaint against the professional competence or integrity of the Forest Service. We British Columbians before changing its status or the form of administration should be sure of three things:—

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* Exhibit 72, pp. 6, 10.
† Exhibit 206, p. 68 et seq.
"(a) Why are we proposing a change?

"(b) How can inexperienced men improve the professional administration of specialized assets of immense value?

"(c) Are we running any risk that our vast and phenomenally rich heritage of Crown timber will be dissipated under the possible combinations and permutations of the proposed new form of practically autonomous administration?

"If the Forest Service cannot succeed in two necessary objectives—

"(a) get a large-enough appropriation yearly to protect, manage, and provide business administration for the Forests;

"(b) build and retain a large-enough professional and other staff for its duties;

the Commission idea may then be worth examining. This would be on the assumption that the supporters of the Commission were justified in believing that the Commission would succeed where the Legislature had failed to support the Forest Service with sufficient appropriations and freedom to employ a large-enough staff and set high-enough standards of pay.

"A Commission might be justifiable:

"(i) if the Commission did not depend upon the Legislature for appropriation but could retain by statutory power a large-enough fixed share of the annual Forest Service revenue—large enough to do the work recommended by the Forest Service. Probably a minimum of 65 per cent of Forest revenues should be retained for several decades to maintain the long-term productivity of the Forest; this is about 120 per cent more than the legislature now allows to Forest Service from boom-time Government revenues;

"(ii) if the Commission could decide the size of professional staff needed, and the rates of pay required to retain enough good, trained men, in competition with other employment opportunities for the same men in the private business world of British Columbia. This the Legislature up to date has refused to do.

"If the Legislature would not yield these powers to the Commission, we cannot see that the Commission would be even as useful as a 'fifth wheel.'"

On the other hand, a number of witnesses opposed the idea. An instance of this point of view is found in the evidence of Mr. Walter Koerner, of the Alaska Pine and Cellulose Company. He said:—*

"One of the important questions is whether our forest laws and policies should be administered by the Government and Civil Service

* Transcript, p. 12267.
as at present, or by a commission such as you recommended, Mr. Commissioner, in 1945.

"I believe such a commission would have been beneficial at that time. However, under present circumstances, I believe the wise choice is a well-manned, professional Forest Service guided by an experienced Deputy Minister and Chief Forester and a Minister responsible to the electorate."

During a discussion of this subject with Mr. W. F. Veitch, of the Taxation Branch of the Department of Finance, when he was being examined as a witness, I asked him for his views on the matter of financing Forest Service administration through a form of Commission control. I may say at this point that I was much impressed and assisted by the competent manner in which he gave his evidence and the grasp he displayed of the whole field of taxation.

At a later stage of the Inquiry he answered my query and said in part:—*

"At the heart of this matter is the question whether the administrative agency responsible to the Legislature should be a separate Commission, such as the B.C. Power Commission, or should remain a Government department, subject to direction of a Minister. What form of administrative agency with what kind of revenue and expenditure powers should handle the day-to-day administration of forest resources, that produce directly and indirectly possibly 40 per cent of Provincial income?"

"If asked to advise on this matter, I would say that democratic political considerations would receive more weight than economic and financial ones. Major business depressions of the 1932 to 1935 variety, which led to large-scale cuts in Forest Branch expenditures—and which, to some degree, no doubt influenced the evidence to and recommendations by your earlier Commission—are less likely to be as severe in the future."

"It should also be noted that drastic cuts in Provincial expenditures in 1932 to 1935 were not limited to the Forest Service, but included those on education, highways, and other natural resources. It appears axiomatic that in a period of severe economic depression that desirable expenditures on natural resources must give way to essential expenditures on social assistance to ensure the maintenance of human resources."

"Legislative expenditure authorizations, in the long run, are based on the assumption that severe economic depressions, such as in the 1930's, are short-run dips that are replaced by long periods of an expanding economy. They are temporary aberrations which we hope that economic planning will largely mitigate; when and if they reoccur the Legislature will have to improvise for their duration."

"Evidence given before this Commission has been controversial, and not one session of the Legislature passes, or is likely to pass, without

* Exhibit 143n.
heated and reasoned discussion of our major natural resource. The forests are of such consequence to a high employment and income that they should be under the constant surveillance of the Legislature. It is noted that other natural resources (i.e., water, mineral, natural-gas, and petroleum resources) are, at present, under similar Ministerial direction. Would a recommendation for a Forestry Commission logically suggest a similar agency for other natural resources?

"If separate Commissions are to be established for each natural resource, with revenues specifically earmarked for that purpose and with the residual to be paid into Consolidated Revenue, logic might also suggest similar Commissions to cover education, administration of justice, essential highways and social welfare services. Consolidated Revenue would then be reduced to a 'pothole' in place of a 'reservoir' of Provincial funds. One of the most important functions of our Legislature—that of exercising judgment from year to year as to appropriate amounts of public moneys to various services—would be substantially crippled. The Legislature would be prone—over a short period of time—to abolish all Commissions and return to annual appropriations from Consolidated Revenue.

"In theory, a Commission form of administration is directly responsible to the Legislature in the same manner that a Minister of the Crown in charge of a department is responsible to the Legislature. Nevertheless, there is a tendency, with a Commission form of administration, whether intentional or not, to transfer part of policy responsibilities to the semi-autonomous agency. We live in an age of specialists. Ministers or Commissioners are dependent, in large part, upon advice of technical officials. It seems essential that a Minister, who is a member of the Legislature, should exercise a non-technical judgment in selecting the best policy for the forests and people of the Province.

"On page 149 of your 1945 Report, one witness is quoted as stating 'forest policy is put in bondage to the system of Treasury control.' With deference, this statement appears to indicate that the witness is not conversant with the facts. Treasury Board comprises four Ministers of the Crown, with the Minister of Finance as Chairman. Treasury Board is a committee of the Executive Council 'in all matters relating to finance, revenue, expenditures, or public accounts, which are referred to it by the Executive Council, or to which the Board thinks it necessary to call to the attention of the Executive Council.' Treasury Board comprises elected members of the Legislature. All members are from the Executive Council; Executive Council, in turn, is responsible to the Legislature. Treasury Board has no authority to change departmental estimates of a Minister. Such decisions are the sole discretion of Executive Council.
“One of the important functions of the Legislature is to exercise final judgment from year to year as to the best manner in which public moneys should be expended.

“No Legislature can anticipate what will be the essential requirements in future years for the competing Provincial services. This legislative discretion remains one of the more essential responsibilities of our elected representatives.

“The administration of forest resources is of such consequence in the economic and political life of the Province that it should remain in a department under a responsible Minister.

“A system of annual appropriations, with statutory minima forestry expenditure estimates, together with percentages of growing annual forest revenues, and a blank cheque for catastrophic expenditures, should provide appropriate long-term forest financing.

“Sustained forestry costs on management licences and tree-farms are allowed in most cases as an expense before computation of Crown stumpage and property taxes. Such private expenses are adjuncts to government expenditure on forest management that are likely to increase and may reduce the need for similar government appropriations.

“Earmarking of all forest revenues to a Forest Commission would not be consistent with our Provincial democratic institutions and would negate the essential annual financial discretion of the Legislature.”

In view of the comment by Mr. Veitch that the statement I quoted in 1945 from an identified witness, “forest policy is put in bondage to the system of Treasury control . . . appears to indicate that the witness is not conversant with facts,” I feel I should now disclose that the witness was the late Dr. George F. Drummond, at that time Professor of Economics at the University of British Columbia. That quotation was excerpted from the following passage in his testimony, to be found at pages 7511 and 7512 of the 1944-45 transcript:

“Treasury control has been salutary and necessary but it has disadvantages of its own. It is best suited to the short view, to the balancing of the annual budget, to the apportionment of financial resources on the basis of commitments and short-term priorities and to a scrutiny of items of expenditure. When the functions of government were simple and the services which the departments rendered of a routine character this year-to-year concept of financial responsibility was adequate. This simplicity has passed away. It is not solely due to the extension of government responsibility for regulation in fields hitherto unimportant, but chiefly to the increasing complexity of our economic and social system. Some economists frankly suggest that the annual budget should be scrapped and that in its place a budget based on, say, five-year estimates of income and expenditure should be adopted. These estimates on an annual basis have no reliability since fluctuations in business activity
cause wide temporal variations in receipts and expenditures. If govern-
ment disbursements are accordingly based on the variations in receipts,
the effect is for the government spending to intensify the fluctuations of
business rather than to modify them. Good years should be set against
lean years and, in fact, government expenditures should increase during
the lean years rather than otherwise. Hence annual budgets are a hin-
drance to good financing and an intensification of the business cycle. Be
that as it may, the technique of the annual budget when applied to the
maintenance of our forest resources has certainly many disadvantages.
Above all, forest policy must be a long-range policy with planning for
generations ahead, whatever may be the vagaries of business activity
or the exigencies of short-term financing. Annual budgeting for forestry
is a financial anachronism.

“All is grist to the Treasury mill. Receipts from forest taxation are
treated as regular income. The relation of forest income to the deple-
tion or replenishment of forest resources is not the Treasury’s concern
as such. The only concern of the Treasury is the annual appropriation
that may be voted or allotted to the Forestry Branch; it becomes just
another departmental commitment. Forest policy is put in bondage to
the system of Treasury control. This is not to say that appropriations
for the needs of the Forestry Branch may not have been adequate; that
is not the point. The point is that this is the wrong way to handle the
finances of a long-range forest policy.

“The inference from the recognition of our forest industry as a
public utility is that it should have a budget of its own, a budget that is
independent of the Treasury’s departmental appropriations. This can
only be done by setting up a specialized administrative unit, such as a
Commission of Forest Industries.”

Notwithstanding the impressive number of important witnesses in favour
of setting up a Forest Commission, the general opinion of Industry at large
would not sustain a recommendation of that kind to-day. In view, then, of
this lack of unanimity and my own feeling that developments in the inter-
vening years have passed the point where the efficient functioning of such
a Commission could have had the most beneficial results, I do not think there
is much to be gained by suggesting that my 1945 recommendation be now
implemented. Then, too, it has been made abundantly clear over the years
since then that succeeding Governments are reluctant to liquidate their
own prerogatives by delegating to an independent Commission the controls
I thought in 1945 such a Commission should exercise over our forest
resource.

ADVISORY BOARDS

There was almost a unanimity of opinion expressed by witnesses who,
although not prepared to accept the controlling direction of a Forest Com-
mission, considered there was a real need for some form or organization