



DEPARTMENT OF
NORTHERN AFFAIRS
AND NATIONAL RESOURCES



**ANNUAL
REPORT
FISCAL YEAR
1954-1955**

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and

HUMAN PROBLEMS IN THE CANADIAN NORTH



CANADA

***ANNUAL
REPORT***

***Fiscal Year
1954 - 1955***

Price, 50 cents

**DEPARTMENT OF
Northern Affairs
and
National
Resources**

***and*
Human Problems in the
Canadian North**

*To His Excellency the Right Honourable Vincent Massey, C.H.,
Governor General and Commander-in-Chief of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

The undersigned has the honour to lay before Your Excellency the Annual Report of the Department of Northern Affairs and National Resources for the fiscal year ended March 31, 1955.

Respectfully submitted,

JEAN LESAGE,
*Minister of Northern Affairs and
National Resources.*

*The Honourable Jean Lesage, M.P.,
Minister of Northern Affairs and National Resources,
Ottawa.*

SIR:

I have the honour to submit the Second Annual Report of the Department of Northern Affairs and National Resources which covers the fiscal year ended on the 31st of March, 1955.

The Report is prefaced by an article concerning human problems in the Canadian north, a matter of special interest at the present time.

Your obedient servant,

R. G. ROBERTSON,
Deputy Minister.

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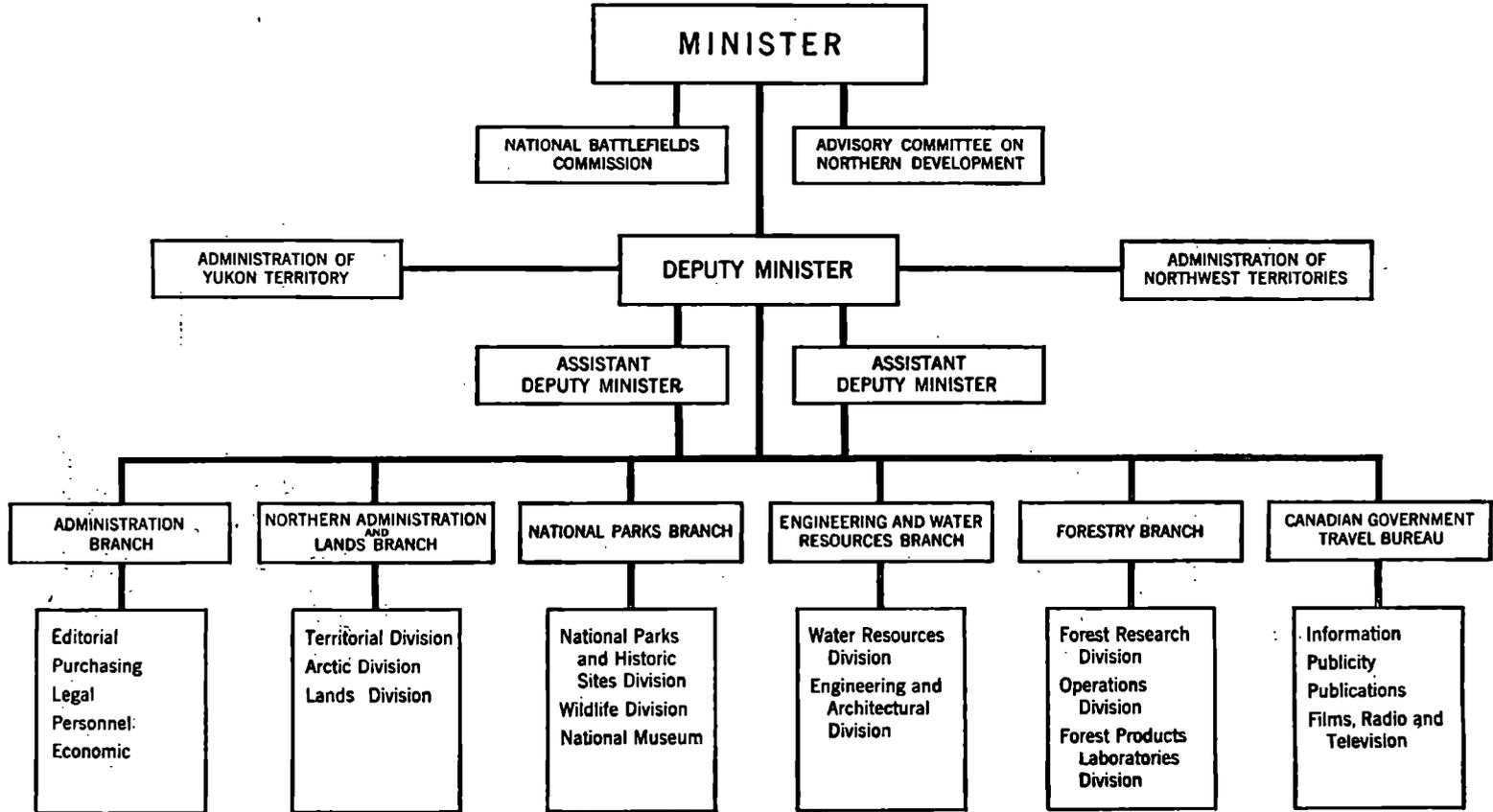
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Inserted at the back of this Report is a map showing the location of national and historic parks; game reserves; highway projects; forestry, water resources, wildlife, engineering and Northern Administration offices and posts, and other centres of departmental activity.

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES



Human Problems in the Canadian North

The People and The Land

The population of Canada's vast northern territories is only some 25,000, or one-sixth of one per cent of the Canadian population. Of these, 16,000 live in the Northwest Territories and the remainder in the Yukon Territory. In the Northwest Territories most of the 5,300 people of white origin and all of the 3,800 Indians live in the District of Mackenzie. More than half of the Eskimo population of 6,900 lives on the mainland in the Districts of Mackenzie and Keewatin and the remainder is scattered along the very long coastlines of the District of Franklin. In the Yukon Territory the population is predominantly of white origin, 7,500 out of a total of 9,100. There are some 1,500 Indians, and on and near Herschel Island in the Arctic Ocean, a few Eskimos. The only other Eskimos in Canada are 1,800 in northern Quebec and about 850 in Labrador. The Indians of the northern territories, however, are only a small part—about 3 per cent—of the total Indian population of Canada.

The white population is mainly concentrated in the larger economic and administrative centres—in Yellowknife, Hay River, Fort Smith, Norman Wells, Port Radium and Aklavik in the District of Mackenzie, and in Whitehorse, Dawson and Mayo in the Yukon. The population of these communities presents a sharp contrast to that of the smaller settlements, which are mainly inhabited by Indians or Eskimos. In many respects the white people in the larger settlements of the north—who have either been attracted to the country by its opportunities or have been born in the region—are faced with problems little different from those of the residents of other parts of Canada. Life in Yellowknife or Whitehorse is very much the same as life in Yorkton, Saskatchewan, or Brandon, Manitoba. There are movies and curling rinks, high schools and kindergartens, church socials and service clubs. There are a few special problems in smaller centres arising out of the vast size and extremely small population of the region—problems of isolation, of lack of radio and newspaper service, of sending children long distances for high school training, and things of that sort. The winters are longer than in the south but the summers, along the Mackenzie River down to the Arctic Ocean, are bright and warm and little different from those of our Prairie Provinces. In the very small communities the white residents are in many instances faced with some of the same social and economic problems that confront the native peoples.

The peculiar and difficult human problems that arise in the north, however, are those of the native Eskimos and Indians, who account for half its total population. The problems of these peoples are as varied as the land they live in and, indeed, are due in large part to environmental factors. With the opening up of the north, their daily lives are changing and they are confronted with a number of economic and social problems, individually and as groups. This process of change affects the Eskimos in the Arctic and the Mackenzie River delta, and the Indians in the Mackenzie River Valley and the Yukon. Improved and increasingly effective health and welfare services, family allowances for the children and other social security payments for the aged, the blind and the disabled in recent years have substantially improved the lot of many of these people.

As a result, population has been growing, increasing the pressure on decreasing or stationary resources of game and fur-bearing animals. Hunting, trapping and fishing still continue to provide the means of livelihood for the greater number of the native people. Of these occupations, only trapping provides them with cash income. Fur trapping during the past few years has been a depressed industry because world prices have fallen seriously. Catches of some animals have gone down, and this has aggravated the difficulties of the native people. Other problems have arisen from the need for the adjustment and integration of the natives as they come into increasing contact with larger numbers of white persons.

Long-term solutions—to provide alternative and supplementary livelihoods—are required. The task is a complex one. It necessitates, among other things, provision of improved educational and vocational training facilities to enable young Eskimos and Indians to prepare themselves for wider employment opportunities while retaining, for a number of these people, their basic traditional skills. As the opportunities for employment in the industries of the north and in defence establishments become more widespread and as educated and trained young people become available, those Eskimos and Indians who wish to enter wage employment should be able to do so in skilled and semi-skilled trades. It will not be good enough for them to remain as untrained and largely uneducated labour engaged in the more menial tasks. These native Canadians will with training be able to develop their abilities and to make their full contribution to the nation's growth and to their own welfare. Integration into the national life and activities will follow progressively.

The Eskimos



All the evidence suggests that the Eskimos and Indians came from Asia, migrating to North America by way of Bering Strait. The Eskimos have lived as semi-nomadic hunters and fishermen for perhaps some 2,000 years in the lands they now occupy. Over the centuries their culture has gone through successive changes. In the hard and rigorous world of the tundra and the barren Arctic coasts, theirs has been a difficult existence, an unceasing struggle

for food, clothing and shelter in a harsh climate. Their cultural evolution has been occasioned by the necessity for survival and by their contacts with other peoples, Indians and whites.

The present Eskimo society combines features of the traditional ways of native life and their adaptation to the external influences of the past hundred years. With little or no organization beyond the family, Eskimos usually hunt, trap and fish in small groups, following the movements of game and the changing seasons. There is a world of snow houses for winter shelter and of tents of seal skins for summer residence, of hunting the seal and walrus for food and fuel (with harpoon, kayak or sled and seal-skin blind, and now with a modern rifle), of caribou and seal-skin clothing sewn by the women, of a division of labour between the men who hunt and the women who tend the home and camp, of certain concepts of and attitudes of life. The group as a social unit imposes duties on each of its members to enable it to survive. These duties have established

particular social relationships, routines, ceremonies and obligations. In the course of the evolution of these social and economic relationships the following Eskimo characteristics have emerged: self-reliance, industry, keen powers of observation, a cheerful disposition, a concept of time different from ours, and a tendency to be uninterested in providing for the future. These native characteristics are basic determinants in the process of adaptation to a new way of life.

The contacts that the Eskimos of Canada have had with white men go back to before the 19th century. Explorers, whalers, and in more recent years, missionaries, fur traders, Royal Canadian Mounted Police, government officials and service personnel all have influenced the lives of the Eskimos. The explorers, who seldom remained long in one place, affected Eskimo life less than the whalers who in the second half of the 19th century returned year after year. The whalers employed Eskimos as crews on their boats in summer and as suppliers of fresh meat and clothing for the winter. While this depleted the game resources and had far-reaching and frequently demoralizing effects on the Eskimo groups concerned they did receive, however, rifles, whaleboats, and practical seafaring knowledge to assist them in their hunting. The establishment of fur trading posts in Eskimo country began as the whaling period drew to a close early in the present century, and fur trading spread to areas untouched by the whalers. The traditional means of obtaining a livelihood underwent a further basic modification. The native hunter who had sought game for food, and fur-bearing animals only for his and his family's clothing, became a trapper as well, and now devoted much of his time in winter to trapping the Arctic white fox. He remained primarily a hunter, however, for he had to hunt to feed his family and his dogs. He sold the furs to obtain goods at the trading posts—steel implements, rifles, cloth, matches, tobacco, tea and other things he learned to value. As these goods became an integral element of Eskimo life, trapping tended to become part of the life of most Eskimo groups. While this new economic situation was emerging new concepts of religion and of law were also introduced, and these too brought changes into the lives of the native peoples. Thus the primitive culture of the Eskimos had already been substantially modified even before facilities for education and medical care were introduced into the north. These did not reach most of these people until the last two decades.



It was not until the Second World War—which made the Canadian Arctic far more accessible than before and brought many Eskimos into contact with large defence undertakings—that the problems of these people were brought forcefully to the attention of the government and of the country as a whole. With the end of the war it was possible to begin an assessment of the Eskimo problem and to initiate a broad plan of Eskimo development. This is not to suggest that official interest in the far north has developed only in the past decade or two. This interest goes back to 1870 when the Hudson's Bay Company ceded to the Crown its territorial rights in Rupert's Land which, together with the Northwest Territories, were then transferred by the United Kingdom to Canada. It is only in the relatively recent past, however, that there

has been a growing awareness on the part of the government and of the people of Canada of their responsibilities to the Eskimos and of the need for a program which will enable them to participate fully in the national life.

In future years the Eskimo will be brought ever more under the influence of our civilization. There is no purpose in arguing whether this is good or bad. It is inevitable. As our civilization encroaches on the Eskimo culture these people must be helped to adjust their lives and thoughts to the changes involved. The need will become quickly apparent in those areas where defence establishments such as the Mid-Canada and Distant Early Warning lines are being located. This adjustment does not have to mean the loss of the Eskimo culture. Moreover, it will have to be related in character, time, and degree to developments in each area. In some places the encroachment of our way of life has as yet been slight. For the people in these areas who can continue successfully in the traditional native way of life—or can follow it more successfully than any alternative livelihood—little change may be necessary or desirable, as long as their relative isolation lasts. The main stream of Eskimo culture, the established pattern of their lives, however, is undergoing constant change. Integration into our industrial society will take time but for many Eskimos it is unavoidable in the long run, unavoidable both because of the attraction of the possibilities presented by our way of life and also because a growing population cannot continue long to secure a livelihood by hunting and trapping.

Geography and history have made the Eskimos of northern Canada part of the population of our country. The nation as a whole therefore has a moral responsibility to assist in the solution of the problems of the changing Eskimo society. Because of the special circumstances—the remote geographical location and the obstacles of language and cultural differences—a measure of special assistance is necessary. The self-sufficient primitive Eskimo is passing. To leave the Eskimo alone would involve his segregation and isolation from the increasing activity in the north. It would involve denial of the humane services modern society can provide. At the same time, to fail to protect him, during this period of change, from contacts and influences which might be injurious to him would be to invite chaos.

The Canadian Eskimos are today in an in-between state; their mode of life is in transition. They have received a few of the benefits of our civilization. For their white fox furs they obtain some of our food, tools and clothing. With the nation as a whole they share family allowances, old age security pensions, old age assistance allowances, blind persons allowances and disabled persons allowances, and when they are indigent, they are provided with relief. But these measures do not meet the much broader needs—and they are immediate needs—of health, education and a sound economy. These are not separate problems. Each is related to the other. It is not enough to cure disease, the cause of disease must be removed; this is largely a matter of education, and the improvement of economic conditions. Education must be provided, but this depends on good health and the needs and opportunities of the economy. A sound economy means a diversified economy not based on white fox trapping alone; new occupations are needed, but if the Eskimos are to undertake these occupations satisfactorily they require better health and more education. In providing health, education and a sound economy the complications are infinite. The area is enormous, the population small, communication extremely difficult.

Health and medical services face special problems imposed by the geography of the north. In recent years a determined attack has been made on disease, particularly tuberculosis, involving local diagnosis with evacuation in most cases for treatment outside. But evacuation is more than an administrative problem; it is a social problem. Doctors and administrators are reluctant to remove patients from their environment but they are also aware of the consequences of attempting to treat advanced tuberculosis in far northern hospitals without the services of specialists and the facilities available in the south. The solution—a compromise between the medical problem and the social problem—is the treatment of disease in its most serious stages in the south with rehabilitation stations in the north. Health and medical services for the Eskimos are the responsibility of the Department of National Health and Welfare. The provision of such services is steadily increasing, and the government recently decided to establish a Northern Health Service within that Department to integrate health and medical services for all the inhabitants of the north.

The present Eskimo economy is a precarious one. For years cash income in most areas has come almost entirely from the white fox, and in the Mackenzie River delta from the muskrat, with their cyclic population and widely fluctuating price. In many places game is declining in abundance and the resources do not adequately and reliably support the present population. At the same time this population is surprisingly youthful and is increasing at a rate which, under the present health and welfare programs, is likely to be maintained or even accelerated. While family allowances and other social security payments have provided a new and important source of income, new means of broadening the Eskimo economy are required.

Some of these new means need not significantly affect their traditional way of life, and may indeed capitalize on its skills. Many projects with this objective are being fostered by the Department of Northern Affairs and National Resources either alone or in co-operation with other organizations. The Department recently established an Eskimo Loan Fund to provide capital to assist individual Eskimos or groups of Eskimos in carrying out approved projects for the improvement of their economy. A number of projects have been made possible already by assistance from the Fund and repayment of these loans has been satisfactory. Stone carvings and other handicrafts are bringing a new income to Eskimos in many areas. These are purchased through the trading posts of the Hudson's Bay Company and marketed by the Company and the Canadian Handicrafts Guild throughout Canada and in other countries. The reception that has been accorded to Eskimo art by discriminating people throughout America and Europe has been remarkable. Steps have been taken to protect this native art from diminution in artistic value, and to ensure as high a return as possible to the Eskimo artist. A measure of success has been obtained in boat-building projects at Lake Harbour on Baffin Island and at Tuktoyaktuk at the edge of the Mackenzie delta, the former sponsored by the Hudson's Bay Company, the latter under mission auspices. On completing their training, the five Eskimo apprentices in the Lake Harbour project will build hunting and fishing craft—Peterhead boats and whaleboats—for their own people. The Department has helped some Eskimo families to move to places where they may win a better livelihood, and this policy may be extended. Entire families from Port Harrison and Pond Inlet have been transferred to Cornwallis and Ellesmere Islands in the Arctic Ocean where they are obtaining a satisfactory livelihood. Food resources are

ample and trapping has proved good. Other families from Port Harrison and Baffin Island are being moved to regions with better game resources. Elsewhere, Eskimo families have been encouraged to extend their hunting and trapping areas; for example, Eskimos from the Aklavik area have been assisted to trap and hunt on Banks Island. There may be other possibilities for providing supplementary means of livelihood in certain areas, and a number of these are being examined; the collection and marketing of eiderdown; tanning of sealskins for use in handicrafts; sewing; furniture making; animal and poultry husbandry and vegetable gardening, as in the Fort Chimo area of Ungava Bay, where experiments with sheep raising, pasture and vegetable plots are under way; commercial fishing for Arctic char and other species; coal mining; and whaling. At the Reindeer Grazing Reserve near the mouth of the Mackenzie River, where reindeer were introduced in 1935, four of the five herds have been recently turned over to Eskimo management, and consideration is being given to extending reindeer herding to new areas.

Employment of Eskimos on a continuing basis on defence installations, on weather and radio stations, on airfields, at radar posts and with mining companies involves a complete break with their traditional ways of life and entails sharp changes both in social organization and in standards of living. These alternative wage employment opportunities are increasing. Already Eskimos are working at defence installations such as the military bases at Churchill and Frobisher Bay, and for mining companies at Ungava Bay and Rankin Inlet. Not only do these projects provide Eskimos with opportunities for useful employment in their own country, but in the long run there should be great advantage to the nation in having them participate in such projects. Through their knowledge of the north the Eskimos will make an important contribution to its development. It is a contribution which they could not make heretofore because the path of national development had not led Canadians to the north. Today, however, for reasons which are political, scientific and strategic, and which are increasingly economic, we are being drawn to the northernmost reaches of our country. The development of these lands will require the assistance of their oldest residents.

The present condition of many Eskimos has resulted from the unco-ordinated activities of many agencies at work in the north. Because their impact on the Eskimo had not previously been given effective consideration, defence establishments set up in the north during the war had varying effects. Some establishments employed no Eskimos; in some a few were employed, usually at menial tasks. The net effect has often been to congregate people into groups that were not able to subsist when the defence activities ceased and it was once more necessary for them to live by hunting and trapping. The game resources of the area may not be able to support the concentration of population and individuals can lose their hunting skills and interests in the space of a few years, leaving little hope for their re-establishment.



The report is often heard throughout the North that the Eskimos are losing their self-reliance, initiative and independence—that there are no leaders in the camps. The government, in providing care for the aged, the blind and the indigent, and in furnishing family allowances and education for the children, has taken over responsibilities which used to be those of relatives. There is nothing to replace these lost responsibilities. Moreover, as the new social order supplants the primitive life of the Eskimos, direction is given by the various white men on the scene. In consequence, the Eskimo inevitably tends to lose initiative both individually and collectively.

It seems clear that an effort to place the direction of local affairs in the hands of the Eskimos is desirable. In this matter much can be learned from the Indian Affairs administrations which in both Canada and the United States have had conspicuous success with band councils and other community activities that centre in the people themselves rather than in superimposed leadership. In Greenland especially the administration has successfully fostered the development of native councils to handle local affairs. The northern service officers who have been appointed recently to the Arctic Division of the Department of Northern Affairs and National Resources are being instructed to encourage the Eskimos to take responsibility for local decisions to as great an extent as possible. What can be done along this line will depend on factors that vary from place to place. In returning local responsibility and authority to the people—particularly in those localities where the traditional social organization is disintegrating—it will doubtless be necessary to proceed from trial to revision.

The Indians



Altogether there are some 5,400 Indians in the District of Mackenzie and the Yukon Territory. They are members of the Athapascan racial group and consist of a number of tribes: the Chipewyans, located between Hudson Bay, the Athabasca River and Great Slave Lake; the Dogribs, between Great Slave Lake and Great Bear Lake; the Slaves, along the Mackenzie River from Great Slave Lake to Fort Norman; the Hare Indians from Fort Norman to the ramparts of the Mackenzie River; and

the Kutchin or Loucheux Indians from Arctic Red River to Fort McPherson and along the Peel and Porcupine Rivers in the northern Yukon Territory. A majority of the Indians along the Yukon River and its tributaries are also members of the Loucheux tribe. The Indians and neighbouring Eskimos traded with each other but also occasionally fought. By the 19th century, however, this warfare had ceased. The tree line formed the boundary between them. The Eskimos lived on the coast and the barrens beyond the limit of trees, the Indians in the bush country. The Indians feared the barrens, to which they were not adapted, and rarely ventured onto them. Only at the mouth of the Mackenzie River did the two groups come together to any extent.

The economy of the northern Indians underwent the change from nomadic hunting and fishing to trapping, hunting and fishing much earlier than that of the Eskimos. Their country was more accessible and the greater number and wide variety of fur bearing animals in the forests encouraged fur traders to centre their attention first on it. In the early 19th century trading posts were established from Fort Chipewyan on Lake Athabasca to Fort McPherson, south of the delta of the Mackenzie River, and the Indians were introduced to our goods. To obtain these goods the natives had to bring their furs to the trading posts. At first they continued their migratory existence.

They were essentially a woodland people. From the northern forests they obtained wood for fuel and shelter and for the snowshoes and toboggans on which they travelled in winter, and bark for the canoes that carried them over the lakes and rivers in summer. Survival depended on the skill of the hunter and the caprice of nature. Since any particular area could provide sufficient food—caribou, moose, beaver, fish—for only a few weeks, the Indians were continually on the move. Bows, arrows and spears, and later rifles, were used in the hunt, and many animals were also snared. Clothing was made from caribou and hare skins and moose hide. Teepees of caribou skin usually provided shelter throughout the year, although some Mackenzie River tribes sometimes covered their tents with spruce bark and built oblong pole lodges in winter. The men were responsible for obtaining food by hunting; the women performed almost every other task, including the care of children. Social life generally was very limited. Life and death were thought to depend on the will of spirits, and a variety of beliefs was held about the hereafter. The struggle for survival was all-preoccupying and little attention was given to the future. In temperament the northern Indians were reserved, tended to be melancholy and seemed to lack adaptability in the face of new problems.

As the influence of the traders and the competition among them increased, the Indians tended to remain for longer periods in the settlements. Unsanitary conditions helped the spread of introduced diseases and the sale of rum contributed to progressive demoralization. In the middle of the 19th century missionaries followed the traders and introduced Christianity and the beginnings of educational and welfare services.

In the centuries before European contact the Indian population seemingly remained largely static. As our civilization encroached upon their lives, smallpox, tuberculosis, influenza, measles, whooping cough and other diseases took their toll, and the Indians declined rapidly in numbers. The attention given in the past thirty years to their health and medical needs, however, has greatly reduced the incidence of disease, particularly tuberculosis. Hospitals have been operated by church missions, the health surveys of the Indian Health Services of the Department of National Health and Welfare have been extended, a central hospital for the treatment of tuberculosis has been established by that department at Edmonton, and clinics have provided regular medical services. In more recent years family allowances have helped to reduce infant mortality, and many Indians have been assisted by social security payments to the aged and blind and by relief for the indigent. Some increase in the Indian population has followed, although it does not at present appear to be growing at as rapid a rate as the Eskimo population.

This growth in population has made it increasingly difficult for the Indian to earn an adequate livelihood from his traditional pursuits, fur trapping and hunting. His income from trapping has declined markedly in late years and game resources have tended to decrease. New opportunities for employment at a more satisfactory remuneration must therefore be made available to him. The young people must be prepared by education for whatever opportunities industry and commerce in the north may offer for wage employment. This in turn requires provision of better elementary education, and, for some, vocational training.



Little more than one hundred years ago our northern Indians were still living in the stone age. The pursuit of a nomadic life over a vast area has made the task of educating them and effecting changes in their economy particularly difficult. Some Indians will continue to remain hunters and trappers and transient labourers in the unskilled labour market. So far Indians have been employed largely as unskilled labourers—at the oil refinery at Norman Wells, in summer construction work, in stevedoring and at the fish-packing plants on Great Slave Lake. As more come to reside permanently in or about established communities, their children will attend school and receive elementary education, and in many cases vocational and apprenticeship training. For those with ability there will be specialized training. Their adaptation to steady employment and stability of residence is at present in its early stages. As the opportunities for employment in mining, construction, lumbering and agriculture increase in the District of Mackenzie and in the Yukon, each succeeding generation will see more Indians fully integrated into our industrial economy and our national life.

The objective of Government policy in promoting the welfare and education of our Indian population is to enable these people to become increasingly self-supporting and independent. Thus, the Indian Affairs Branch of the Department of Citizenship and Immigration has as its broad purpose the achievement of full-fledged citizenship for the Indian. Its program is essentially one of developing human resources, and is designed to help them to contribute to and share in the national growth in full proportion to their heritage. To this end encouragement is being given to Indians, individually and in their bands, to achieve social and economic progress through their own efforts and the fullest development of their abilities. Revised provisions of the Indian Act have encouraged them since 1951 to take an increasing interest in managing their own affairs. Unlike other parts of Canada, the Northwest Territories has no Indian reservations, and the Yukon Territory only a few. The northern Indians, however, receive the special government services available under the Indian Act: education, medical treatment, technical advice, various types of financial assistance to produce a more diversified and stable economy, assistance in the construction of houses, and relief in times of economic difficulty.

New opportunities for their employment in other than the traditional pursuits will open up only gradually. During the transition period the Indian Affairs Branch is attempting to introduce some stability into the

existing Indian economy and to supplement present means of livelihood. In co-operation with the Department of Northern Affairs and National Resources, game conservation and management measures have been introduced and a start made on registering traplines in order to give the Indian trapper greater security. Areas depleted of their fur resources are being restored both to increase fur production and to place it on a sustained yield basis. Indians are also being assisted through the provision of nets, boats and other equipment to secure fish for food and to engage in commercial fishing. Refrigeration facilities have been provided at a number of settlements in the District of Mackenzie to allow the Indian to preserve his surplus game meat and fish for use in periods of scarcity and to reduce the wastage that is at present so grave a problem—both for the Indian himself and for the conservation of the wild life on which he depends. Walk-in refrigerators are located at Fort Resolution, Yellowknife, Fort Providence and Rae. The construction of freezers at other settlements is in prospect. Efforts are also being made to introduce the Indians to other means of livelihood. In communities where suitable agricultural land is available they are being encouraged to grow vegetables for a healthier and more varied diet; in some instances they may also be able to sell produce in the settlements. The Experimental Farms of the Department of Agriculture at Fort Simpson in the Northwest Territories and near Whitehorse in the Yukon Territory are carrying forward investigations into the possibilities for gardening and local farming in both Territories. The Indian Affairs Branch has been engaged in an agricultural land development project at Hay River in the Northwest Territories since 1953, and has been instructing the Indians on the preparation of land and the growing of potatoes. Garden projects are being carried out at various other settlements in the District of Mackenzie, and the provision of farming equipment is planned to promote gardening among the Indians living at a number of settlements in the Yukon.

Education and Training for the Future

The church missions introduced the first educational system among the Eskimos and Indians in the Northwest Territories and among the Indians in the Yukon Territory and for a century have provided the elements of education. It was not until 1946 that the Government of Canada entered the field of education with the provision of federal day schools for Eskimos and Indians. For Eskimo children these schools provide elementary education in localities where the population justifies them, but it has not yet been possible to reach the majority of children who live in small, isolated camps. Residential schools entail long separation from parents and the traditional ways of life, and can result in a student's returning home ill-fitted for that life. Until recently the Indian Affairs Branch of the Department of Citizenship and Immigration administered the educational system of day schools for Indian children in the northern territories. With the object of fully co-ordinating native education in the Northwest Territories, the responsibility for the education of Indian children has been transferred, as of April, 1955, from the Indian Affairs Branch to the Department of Northern Affairs and National Resources, which already was responsible for Eskimo education. This centralized direction and control will result in a uniform and more effectively planned educational system. The Indian Affairs Branch will continue to administer its educational facilities for Indian children in the Yukon Territory.

To meet the problems associated with the provisions of education, the government early in 1955 approved an extensive program for the construction of schools and hostels to provide better education—both grade school and advanced general education and specialized vocational training—for children in the Northwest Territories. This program is designed to prepare native children—both Indian and Eskimo—to meet the changing conditions of their times and to enable them, through knowledge and training, to take advantage of new employment opportunities. Since their nomadic or semi-nomadic lives make it impossible to provide continuity in their education except at centres where residential facilities are provided, the new program includes the provision of hostels. These schools and hostels will be constructed over a six-year period and will be located mainly in the Mackenzie Valley, where the need for them is most urgent. Provision will be made for construction of day schools and hostels at Fort McPherson, Fort Smith, Fort Simpson and Aklavik in the District of Mackenzie and at Frobisher Bay on Baffin Island. Vocational training schools will be established at Aklavik, Yellowknife, and Frobisher Bay in order that children suited for training may be taught skilled and semi-skilled trades. In conjunction with the vocational training school at Yellowknife, a non-denominational hostel also will be constructed and operated by the government. The hostels at the other centres will be built and owned by the government but operated by the missions. A special curriculum is being prepared for all children in the Territories who will not go beyond grade school. It will be designed to fit them for those types of employment that do not require advanced general education or vocational training.



The schools will be attended by the Indian and Eskimo children resident in the hostels as well as by the children, of whatever race, whose homes are in the settlements. It is most important that segregation by race in education be avoided. The mingling of all children—whether Indian, Eskimo, part-blood or white—in common schools in their formative years will have important social and psychological advantages in the north.

Conclusion

Both Eskimos and Indians, because of their temperament, face difficult problems in their adaptation to the economic and social life of our modern society. The developing economic activities of northern Canada create basic problems of adjustments to new ways of life and necessitate marked departures from traditional native customs and attitudes. Some of these problems involve such matters as acquiring and living in a permanent house and learning how to keep it clean, working regular hours for wages, working every day over long periods of time, making the best use of time available for leisure, and changing traditional attitudes toward the future and therefore toward saving and accumulation and the acquisition of property. The social adjustment is difficult. The individual

becomes less dependent on the support and hence on the opinions of his fellows, and this leads to a loosening of tribal ties. As the native people engage more actively in the economic development of the northern territories, they will develop increasingly a sense of personal responsibility, and the solution of these problems of economic and social adaptation will emerge.

The task of implementing a broad plan of Eskimo development will be long and probably expensive. A carefully developed program—and substantial progress has been made on such a program—can, however, transform Canada's Eskimos from a financial liability to a national asset. The results in human terms will be of the highest importance.

Similarly the progress already made in advancing the welfare of our northern Indians has been considerable. There has been a general improvement in their health, their diet is becoming more adequate, and they are slowly responding to the attempts being made to improve their economic status. While much remains to be done, Canada has made a substantial beginning in discharging its responsibilities to them. As they accept increasing responsibility in conducting their own affairs, they will progressively advance towards self-reliance and fuller participation in the life of northern Canada.

Annual Report of the Department of Northern Affairs and National Resources

The Canadian North was an active place during 1954-55, and nearly every department of Government had scientists, engineers, technicians, administrators and observers busy in a region that reached to within several hundred miles of the Pole. It was the duty of this department to co-ordinate these efforts and to promote other measures for the continued economic and political development of the million and a half square miles of the northern territories and the social advancement of the native population.

The search for and development of the mineral resources of the Northwest and Yukon Territories held a commanding position in the economy of the region. The value of gold and silver production was higher; important new discoveries of uranium ores and base metals were reported, and the search for petroleum and gas continued actively. Road construction and maintenance and other construction kept pace with the general activity in the region.

New fields were studied in an effort to broaden and diversify the basis of livelihood of the Eskimos, and increased attention was given to the education and training of both Indians and Eskimos. A new site was selected on the East Channel of the Mackenzie Delta for the Arctic Community of Aklavik, and the expansion of Whitehorse, capital of the Yukon, will be aided by the addition of a new subdivision and construction of a bridge across Yukon River.

Visitor pressure continued to mount in the National Parks and engineers gave prior attention to the maintenance, improvement and extension of transportation, communication, and recreational facilities. There was more than 6 per cent more visitors to National and Historic Parks. Last year's was the lightest forest fire season on record for the parks and smokers and camp-fires were still the chief causes of outbreaks.

Wildlife investigations were conducted in most parts of Canada and included studies of crop depredation by migratory waterfowl on the prairies, of eider ducks in the Arctic, and of the illusive whooping crane and trumpeter swan. Important archaeological discoveries were reported in Northwestern Canada.

Forest industries still occupy a dominant place in the development of our natural resources and in 1954 contributed 35 per cent of the total value of external trade. More forest fires occurred during 1953 than in the previous year and although the area burned over was lower than the ten-year average it was greater than the 1952 figure. Forest inventory work with co-operating provinces is, on the average, three-quarters completed and this year an additional seventeen and a half million trees were planted. The fight against the spruce budworm in New Brunswick added 1,100,000 acres to the area sprayed from the air.

Installed hydro-electric capacity in Canada moved up nearly 12 per cent in a year that saw run-off well above normal. Departmental engineers supervised road building and improvement and other construction in the National Parks and in the northern territories.

Nearly three and a half million visited the National Parks but travel to Canada generally was down slightly from last year's record influx. Long-stay automobile entries were below the two and a half million mark, which represents a little more than 9 per cent of the total border crossings.

The following table gives a summary of revenues and expenditures for the fiscal year:

	Revenues	*Expenditures
<i>Administrative Offices</i>	\$ 11.34	\$ 479,179.72
<i>National Parks Branch</i>		
Branch Administration		61,249.47
National Parks and Historic Sites	1,076,166.29	7,510,028.93
<i>Grant to Jack Miner Migratory</i>		
Bird Foundation		5,000.00
Grant in Aid of the Development of the International Peace Garden in Manitoba		9,999.66
National Battlefields Commission		130,990.10
Canadian Wildlife Service	2,592.89	402,596.53
National Museum	2,392.94	275,227.38
	<u>1,081,152.12</u>	<u>8,395,092.07</u>
<i>Engineering and Water Resources Branch</i>		
Branch Administration		59,588.78
Water Resources Division	61,117.47	1,142,759.13
Engineering and Architectural Division....	257.83	384,580.39
	<u>61,375.30</u>	<u>1,586,928.30</u>
<i>Northern Administration and Lands Branch</i>		
Branch Administration		133,743.46
Lands Division	1,179,032.35	454,936.50
Northern Administration Division	114,174.43	3,509,964.00
	<u>1,293,206.78</u>	<u>4,098,643.96</u>
<i>Forestry Branch</i>		
Branch Administration		108,318.03
Forest Research Division	24,798.57	1,020,861.10
Forestry Operations Division	6,918.94	1,662,721.48
Forest Products Laboratories	2,271.96	583,364.99
Grant to Canadian Forestry Association ...		10,000.00
Grant to Pulp and Paper Research Institute		100,000.00
Eastern Rockies Forest Conservation Board	94.68	609,505.47
	<u>34,084.15</u>	<u>4,094,771.07</u>
<i>Canadian Government Travel Bureau</i>	78.37	1,500,503.15
Totals for Department	<u>\$2,469,908.06</u>	<u>\$20,155,118.27</u>

*Expenditures include Gratuities to Families of Deceased Employees, \$3,563.32.

Northern Administration and Lands Branch

The Northern Administration and Lands Branch administers Eskimo affairs and natural resources in the Yukon and Northwest Territories, and manages certain crown lands and mineral rights in the provinces.

It administers the Northwest Territories under the Northwest Territories Act (R.S.C. 1952). Since there is no territorial civil service, it performs all administrative functions. The Annual Report of the Commissioner of the Northwest Territories appears as Appendix G.

The Branch also administers the Yukon Territory under the Yukon Act (R.S.C. 1952). A territorial civil service under the Commissioner of the Territory performs the administrative functions. The Annual Report of the Commissioner of the Yukon Territory appears as Appendix H.

The Branch has three divisions, Territorial, Lands, and Arctic, and has offices at Ottawa, Edmonton, Fort Smith, Yellowknife, Hay River, Aklavik, Whitehorse, Mayo and Dawson. Summary reports of the work of these divisions follow.

Territorial Division

Territorial Secretariat Section

Administration of the Northwest Territories. The Deputy Minister of Northern Affairs and National Resources is the Commissioner of the Northwest Territories and administers the Territories under instructions from the Governor in Council or the Minister of the Department. There is a Council of five senior civil servants and four elected representatives from the District of Mackenzie that has legislative powers similar to those of the provinces. The last election for elected members of the Council was held in 1954. During the year the Council met twice; once at Yellowknife from June 14th to 16th inclusive, and in Ottawa from January 17th to 27th, inclusive. The Territorial Secretariat Section of the Territorial Division is responsible for the administration of territorial legislation and policies relating to health, welfare, labour, municipal affairs, liquor, professional and business licensing, motor vehicle control, and taxation. As Secretariat to the Council of the Northwest Territories, it is responsible, in collaboration with the Legal Division, for the preparation of proposed legislation, and for the preparation of explanatory notes, references for advice, reports on matters pertaining to the business of Council and financial statements for the Government of the Northwest Territories. The Section also reviews Yukon legislation and administrative policies with a view to achieving uniformity in the two Territories.

Administration of the Yukon Territory. The Yukon Territory is administered by a commissioner who is an officer of the Northern Administration and Lands Branch and is appointed by the Governor in Council. A parallel position held by the same official is that of Comptroller, which is a civil service appointment. The Commissioner acts under instructions from the Governor in Council or the Minister of the Department. The Council of the Yukon Territory, which is wholly elective, has legislative

powers similar to those of a province. They are five members representing five constituencies into which the Territory is divided. The last election was held in August 1952, and the next will be held in 1955.

The seat of government of the Yukon Territory is at Whitehorse where the Council met during the year on three occasions, two being regular meetings and one a special meeting to deal with emergent legislation. The administration offices of the Territorial Government are in the Federal Building in Whitehorse.

Engineering Projects Section

The Engineering Projects Section of the Territorial Division is responsible for the construction and maintenance of roads and public buildings in the Northwest Territories and the Yukon Territory, and for settlement improvement projects and programs in the Northwest Territories and for sanitation and general engineering programs.

The road maintenance program in the Northwest Territories entailed the expenditure of \$105,000, while \$11,000 was expended for the normal maintenance of buildings and other works.

The construction program included two single and two double residences, costing \$134,000; two fire control towers, five cabins, two ice-houses and one abattoir-cooler at a total cost of \$15,600. Improvements to other buildings and works cost \$53,700.

The survey for the relocation of the townsite of Aklavik was completed in 1954 and a new location selected. Planning of the new townsite has progressed and supplies, materials and equipment to the value of \$300,000 have been delivered to the site in preparation for the 1955 program.

Buildings erected in the Yukon Territory cost \$21,000, and \$22,000 was spent on enlarging the sewer and water system servicing the Government houses in Upper Whitehorse. On the survey of a proposed road between Carmacks and Ross River, on the Canol road \$40,000 was expended. The Department paid one-half of the cost of the maintenance of the Whitehorse-Mayo road, approximately \$130,000; contributed \$100,000 towards the cost of the construction of the road between Stewart Crossing and the city of Dawson; expended \$15,000 for the maintenance of the Atlin Road, and \$10,000 for the construction of the Yukon part of a mining road from the Alaska Highway to the British Columbia boundary to serve the property of the Cassiar Asbestos Company.

Preliminary surveys were made of the proposed development of a new subdivision for Whitehorse on the east bank of the Yukon River. The proposal includes the construction of a bridge across the river.

Forests and Game Section

The Forests and Game Section of the Territorial Division is responsible for conserving and protecting the forests in the Yukon and Northwest Territories, for managing Wood Buffalo National Park and for the administration of the game resources of the Northwest Territories on behalf of the Territorial Government. The Section is responsible for the administration of the territorial ordinances respecting game, forest fire protection and fur export.

The warden service in the Northwest Territories is maintained by the Federal Government. It administers the wildlife resources on behalf of the Territorial Government and the forest resources which are a federal responsibility. Under the District Administrator at Fort Smith there is a Superintendent of Game, two chief game wardens situated at Fort Smith and Aklavik, and wardens and patrolmen at Aklavik, Fort McPherson, Fort Good Hope, Fort Norman, Fort Simpson, Hay River, Fort Resolution, Rae, Yellowknife and Fort Smith. A forest engineer is stationed at Fort Smith.

At the last meeting of the Northwest Territories Council the Game Ordinance was amended to permit holders of general hunting and trapping licences in the Northwest Territories to take game for food throughout the year without regard to quota, season or sex. This new regulation will come into effect on the 1st of July, 1955.

The fire suppression and patrolling equipment at the warden stations was improved and additional equipment supplied. Two fire towers were erected in Wood Buffalo National Park where the greatest concentration of commercial timber under the jurisdiction of the Department exists. Additional patrol cabins were constructed. Aircraft under contract were available to the forest officials for the protection of forests from fire. The services of a helicopter were made available for one year on an experimental basis.

During the 1954 fire season small standby suppression crews were stationed at Fort Smith and Yellowknife. At Fort Smith there is also a well-equipped repair depot for fire fighting equipment, motor vehicles and water equipment.

Films, signs, lectures and radio announcements, as well as newspaper advertisements were used in a studied campaign to educate the public and reduce fire hazards. Favourable weather conditions resulted in fewer forest fires than usual, there being fifty-seven fires which burned-over 1,124,480 acres.

The annual slaughter of buffalo in Wood Buffalo National Park was carried out during December, and approximately 800 animals were slaughtered. Most of the meat was sold to packing houses in Alberta, sufficient being retained in the Territories to supply the needs of Indians, Eskimos and others.

There was some improvement in the prices of furs during the year and the economic condition of the hunters and trappers improved accordingly.

Forest resources in the Yukon Territory are a federal responsibility. The Commissioner of the Territory is assisted by a Forest Engineer stationed at Whitehorse, who is in charge of the five wardens at Whitehorse, Dawson, Teslin, Kluane Lake and Mayo. There were fifty-seven fires in the Yukon Territory, an increase over the previous year. A fire prevention campaign was carried on including visits to industrial operations by the warden staff, patrols by air, road and water and an educational program through signs, film publications, newspapers and radio.

Education and Vocational Training Services Section

The Education and Vocational Training Services Section of the Territorial Division is responsible for organizing education and vocational training programs for the Northwest Territories, inspecting all schools in the Territories, and developing community welfare. The education of the Eskimo population of the Northwest Territories and of the coastal region of northern Quebec is also the responsibility of these services. While the education of white children and children of mixed blood is the responsibility of the Territorial Government, the necessary administrative services are provided by this section.

In the field of Eskimo education, the Department operated day schools at Aklavik, Tuktoyaktuk, Coppermine, Coral Harbour, Chesterfield Inlet, Cape Dorset, Port Harrison, and Fort Chimo. At Chesterfield Inlet a hostel to accommodate Eskimo children not resident at the settlement was established in conjunction with the local federal school. It is operated by the Roman Catholic Mission. A school tent hostel to be operated by the Anglican Mission at Coppermine for Eskimo children of the surrounding area was being planned. In the Mackenzie District the Department by special arrangement with the Territorial Government operated day schools for non-Indian children at Fort Smith, Hay River, Fort Resolution and Fort Simpson. Welfare teachers on the staffs of these schools gave leadership to local community activities.

Arrangements were continued for the maintenance and education of Eskimo children in the Church of England and Roman Catholic Residential Schools at Aklavik, Northwest Territories; Fort George, Quebec; and at Moose Factory, Ontario. In the principal settlements of Eskimo territory, part-time schools were operated by missions of the Church of England and the Roman Catholic Church. A part-time school was also conducted by the Canadian Interior Mission at Maguse River. Part-time schools received assistance from the Federal Government in the form of grants and school supplies.

The Department provided two teachers each for the Eskimo patients in Parc Savard Hospital at Quebec City and the Charles Camsell Indian Hospital at Edmonton, Alberta, and one teacher each for Eskimo patients in the Moose Factory Indian Hospital and All Saints' Anglican Hospital at Aklavik.

The curriculum prescribed by the Alberta Department of Education is followed in the schools of the Mackenzie District. In order to maintain instructional standards the schools of the District are inspected periodically by a Superintendent of Schools who has his headquarters at Fort Smith. In the field of vocational training a program of training suitable for the Northwest Territories is being worked out. The work of implementing the details of this program in the Mackenzie District is the responsibility of the Vocational Training Co-Ordinator who also has his headquarters at Fort Smith.

Northern Administration has under consideration a special curriculum for use in Eskimo schools. Inspection services for these schools in the Eastern and Central Arctic and northern Quebec are provided from Ottawa.

Lands Division

The Lands Division administers Crown-owned lands, mineral rights, and timber in the Yukon and Northwest Territories; mineral rights underlying certain lands in the Provinces; and Public Lands brought under the control of the Minister of Northern Affairs and National Resources by the Public Lands Grants Act, 1950. It handles the former Dominion Lands Records and reviews Seed Grain, Fodder and Relief indebtedness. It maintained a Central Office of Record and a Central Registry of Lands administered by Federal Government Departments.

Mining*

Northwest Territories

In the Yellowknife Mining District there was a slight increase in the production of gold and silver in 1954. A higher grade of ore was mined at two of the producing gold mines but the daily tonnage milled did not vary a great deal from that of the previous year. There were three gold, two uranium, one nickel and one lead-zinc mine conducting underground development in addition to a tantalum-columbium open-pit mine. There was an increase in the diamond drilling performed as preliminary development, some being for assessment work as well as delineating ore bodies. There were five areas of staking activity on uranium, copper, base metal and iron showings. The total value of gold and silver produced in the Yellowknife Mining District was \$10,241,011 from the three producing mines. A hot cottrell was installed at one mine in an attempt to recover some of the values dissipated from the roaster. Ore reserves were increased with the location of a new zone and continued lateral development and shaft deepening.

At Great Bear Lake production continued from the main underground workings as well as leaching the old tailings from previous operations. Production figures are not available.

At Hottah Lake and the area easterly from Conjuror Bay there were several new radioactive discoveries and preliminary work was commenced on many of these properties.

A claim staking rush into the Marian Lake and Marian River areas developed in the autumn sparked by the discovery of two separate occurrences of high grade pitchblende.

Three separate occurrences of radioactivity were encountered southeast of Great Slave Lake. Preliminary development was conducted on one of the groups of claims staked.

An iron anomaly was detected in the Arctic and Hudson Bay Mining District and reported by the Department of Mines and Technical Surveys, and several groups of claims were staked at Atzinging Lake.

At Rankin Inlet a complete surface plant was constructed and a shaft sunk to a depth of 331 feet. Underground diamond drilling outlined further ore reserves.

A diamond drilling program and geological reconnaissance was commenced on the Belcher Islands, in an effort to locate the more favourable areas of iron mineralization.

* See Appendix A on "Value of Mineral Production, Northwest Territories" and "Value of Mineral Production, Yukon Territory".

Two exploration companies were active in the Arctic and Hudson Bay Mining District.

Diamond drilling continued at Pine Point and two prospect shafts were sunk in an attempt to determine the most economic method to recover the ore.

A large area of gossan was noted in the Tree River area and preliminary investigation revealed a large copper deposit of marginal grade.

Courses in first aid and mine rescue work were conducted in the Mine Rescue Station at Yellowknife and competitions were held to select the best team of rescue workers.

Yukon Territory

In the Dawson Mining District, three companies operated dredges in the Klondike, Sixtymile, Clear Creek, Henderson—Thistle Creek, and Fortymile Areas. In spite of a dry season and general water shortage almost \$200,000 more gold was produced than in the previous year.

In the Mayo Mining District production continued at a high level. Promising base metal deposits were discovered in the Kathleen Lake Area northwest of Mayo and an entirely new base metal discovery was made in the Rae Lake Area. Two hundred and forty-six new quartz claims were recorded.

In the Whitehorse Mining District exploration and development work continued in the Quill and Vangorda Creek Areas and in the White River Area. An estimated 10,000,000 tons of lead-zinc ore has been proved-up along the Canol Road. New promising showings have been made in the Coal River Area of the Hyland Plateau. A relatively high grade deposit of silver-lead-zinc ore was also found in the Ketz River Area where approximately 400 claims were recorded. A total of 2,903 quartz claims were recorded in the Whitehorse Mining District for the year.

Coal production from the Tantalus-Butte Mine continued and there are sufficient reserves for many years.

Regular safety inspections of all underground workings were made by the Resident Mining Inspector as well as several mineral claim inspections. A mapping service was commenced and an aerial photographic library established.

Oil and Gas in the Northwest Territories and Yukon Territory

Fifty-seven exploratory permits covering an area of 1,646,939 acres were granted and 48 assignments comprising 210½ permits were registered. One public competition was held for the purchase of eight exploratory permits in the Northwest Territories and six permits were granted as a result of the sale. Ten new wells were drilled with nine being abandoned. Thirty-three structural test holes were drilled. Nineteen geological parties were active in the Territories.

Mineral Rights in the Provinces

Eight public competitions were held for the purchase of leases of the petroleum and natural gas rights underlying 88 parcels of land in Alberta, Saskatchewan and Manitoba; with leases being granted on 82 parcels. One public competition was held for the outright sale of the mineral rights underlying eight parcels in Ontario. The Director of Soldier Settlement Board of the Department of Veterans Affairs released to this Department the mineral rights in 86 properties covering some 12,900 acres.

Lands, Timber and Grazing*

Yukon Territory

The volume of land transactions continued to increase. The number of leases in force was approximately 30 per cent higher and more than offsets the decrease in the number of sales completed and agreements of sale executed.

Preliminary surveys in connection with the addition to Whitehorse have been completed.

There was little change in the number of timber permits issued and the quantity of round timber and fuelwood cut. The production of sawn lumber decreased by approximately 19 per cent.

Northwest Territories

The number of land sales completed and agreements of sale executed showed an appreciable increase, although the number of leases in force decreased slightly.

The number of timber permits issued was about the same as last year but the amount of lumber sawn was down by about 15 per cent.

Public Lands in the Provinces*

Every opportunity is taken to obtain revenue from these lands and when no longer required for public purposes, the land is offered for sale. Research continues, particularly in Ordnance and Admiralty land records, to clarify titles before land may be offered for sale.

Central Office of Records

A total of 424 new abstracts of title was brought into the Central Office of records of Federal Lands. The Lands Division now has information on approximately 20,500 parcels of land throughout Canada under the administration of the Federal Government.

Dominion Lands Records

There are more and more inquiries for information about former Dominion Lands in the western provinces. The Federal Government is the custodian of the records under the Natural Resources Agreements. With the finding of oil and the search for strategic materials the value

* See Appendix A on "Land Sales and Privileges, Hay and Timber Permits".

* See Appendix A on "Revenue from Public Lands in the Provinces".

of underrights has increased greatly. The main interest is in the rights conveyed by the Crown in the original grant. Approximately 60,000 files, including 30,000 dealing with mining claims, were examined and segregated.

The homestead entries and applications for Letters Patent in these records are also used as proof of age for Old Age Pension.

Seed Grain, Fodder and Relief Indebtedness*

There are still many accounts outstanding for advances of seed grain, fodder, and other relief made by the Federal Government to homesteaders and early settlers in Western Canada from 1876 to 1926.

The Seed Grain Adjustment Boards made recommendations on 846 accounts; on 451 of these payments were received and the balance was written off. Seven other accounts were paid in full. A total of 3,118 liens were discharged. There were 1,943 Federal and about 3,360 joint Federal-Provincial accounts still outstanding.

Arctic Division

The Arctic Division administers those areas of the Northwest Territories lying north of the tree line, including the Arctic Archipelago, and is also responsible for the administration of Eskimo affairs throughout the Canadian Arctic and Sub-Arctic, with the exception only of matters directly pertaining to health and education. Continuing studies are made of the Eskimo economy and welfare and programs are initiated and developed to meet the rapidly changing conditions in the Arctic. The Division administers the payments of relief, family allowances, old age assistance and security, and blind pensions to Eskimos.

Economic Conditions

Most Eskimo groups still obtain the greater part of their income from trapping the Arctic white fox and muskrats. The peak of the white fox cycle in the Eastern Arctic was reached last year, and during the past year there was a sharp decline in the numbers trapped. In the Western Arctic, however, the peak was not reached until this year, with the result that very large catches were made in most areas. The muskrat catch in the Mackenzie River delta was slightly larger than in the previous year. There has been a slight improvement in the market prices of both white foxes and muskrats, but the levels are still low, particularly in comparison with the greatly increased costs of imported goods that Eskimos have to buy.

Continuing consideration is being given to widening and diversifying the Eskimo economy. Those who prefer to follow the traditional way of life are assisted in moving from marginal areas to places where hunting and trapping conditions are more favourable. Groups moved to Banks, Cornwallis and Ellesmere Islands have been very successful and are so well satisfied that they are anxious to have relatives join them. These and other projects are assisted, when necessary, through the Eskimo Loan Fund.

* See Appendix A on "Seed Grain, Fodder and Relief Indebtedness".

The number of Eskimo men employed on the civilian maintenance staff at Fort Churchill has now been increased to 17, several of whom have been joined by their families.

Handicrafts and other small industries are being steadily expanded. The interest in and demand for Eskimo sculpture and art objects continues to run far ahead of production. The boat-building projects at Lake Harbour in the Eastern Arctic and Tuktoyaktuk in the Western Arctic were very successful and will, as more men are trained and employed, be capable of supplying the ordinary boat requirements of these two areas.

At the roundups in 1954, the total number of reindeer in the five herds was 7,733. Of these, 6,135 were in herds allotted to Eskimos, one of which, all obligations having been met, is now the outright property of the Eskimo owners. The revenue to native herd managers from the sale of reindeer products was over \$24,000. Since the inception of this project in 1935, 11,308 reindeer have been utilized for their meat and skins.

With the co-operation of the Department of Agriculture, surveys were made at Fort Chimo last summer to determine the possibilities of raising field and garden crops and introducing sheep or other domestic livestock and poultry around Fort Chimo and other places in Ungava Bay. The results were encouraging and experiments will be continued.

During the summer representatives from this Division and from Canadian Wildlife Service visited Iceland to study eider duck farming and the methods of collecting and treating eiderdown in that country. Arrangements are being made to try out Icelandic techniques at two places in the Eastern Arctic where there are large concentrations of eider ducks. Investigations are still being made of other small or home industries for the employment of those who may be unable to hunt or to take up other gainful employment.

Employment for a steadily increasing number of Eskimos is being provided by prospecting and mining activities, particularly in Ungava Bay, Keewatin and the Belcher Islands, in construction at the Frobisher Bay base, and in the moving of Aklavik to its new site.

The developments which will have the most far reaching effects throughout the whole of the Arctic, will probably be the construction of the defence lines already under way. Recognizing that the native peoples cannot remain unaffected by these activities, steps have been taken to assist them in taking up employment during the construction period and to prepare themselves, if they so desire, to continue their employment after the lines go into operation.

Provision is being made to educate the younger generation so that they may in turn be prepared to take their place in the further developments that are already taking shape in the Arctic.

Patrols and Inspections

The annual Eastern Arctic Patrol conducted its work at settlements and posts in the Eastern Arctic from the Department of Transport's ship, *C.D. Howe*. Administrators, doctors, scientists and engineers were busy at each of the twenty points of call taking measures for the advancement of the welfare, health, and economy of the natives; for the improvement of maps, charts, and other means of transportation, and for the maintenance of law and order. The *C.D. Howe* later joined the sea

supply mission NORS I, which this year took over from the United States Navy and the Coast Guard the supplying of the stations at Resolute Bay on Cornwallis Island and Eureka on Ellesmere Island. H.M.C.S. *Labrador*, the new naval icebreaker, navigated the Northwest Passage through Lancaster Sound, Barrow Strait, Viscount Melville Sound and Prince of Wales Strait, and returned to Eastern Canada via Vancouver and the Panama Canal.

Places throughout the Arctic other than those serviced by the Eastern Arctic Patrol were visited by air by representatives of the Department at various times during the year.

Biologist of the Canadian Wildlife Service of this Department, working in co-operation with the Department of Fisheries, successfully tagged a number of walrus in Hudson Bay. The Service also continued its studies of land mammals important to the economy, including caribou, musk-ox, white fox, and wolves.

Other Federal Government Activities in the Arctic

Department of Fisheries

The M.V. *Calanus*, working out of Churchill, engaged in marine research in Hudson Bay. Other individuals also carried on research into the numbers and movements of marine animals and fish at various places in the Arctic. The Department of Fisheries is continuing its studies of beluga at Fort Churchill, with a view to determining the migrations, and what effects, if any, the commercial operations at that point may have on the beluga population.

Department of National Health and Welfare

Surveys were continued at many places in the Arctic to detect tuberculosis among the Eskimo population and to isolate and provide treatment for those affected. It is felt that the number of active cases has now probably passed its peak and that the incidence of this disease will decline steadily over the next few years. Apart from a few occurrences of influenza, there were no serious epidemics among the Eskimos during the past year.

Department of Justice

Besides their normal functions of maintaining law and order, the R.C.M. Police carry out many administrative functions for the Department of Northern Affairs and National Resources and other departments in the Arctic. They are particularly concerned with the health and welfare of the Eskimo people at places where there are no other departmental representatives, with the administration of relief, family allowances and old age and blind pensions, and in assisting Eskimos generally to adjust themselves to rapidly changing conditions.

An R.C.M. Police "Otter" patrol plane at Churchill assists in maintaining contact with inland Eskimos in Keewatin District.

Department of Mines and Technical Surveys

Extensive geological, hydrographic and other surveys are being carried out to meet the steadily increasing demand for precise data for those engaged in all phases of Arctic development.

Committee on Eskimo Affairs

This committee, formed in 1952, is comprised of representatives of this department, the Department of National Health and Welfare, the R.C.M. Police, the Roman Catholic and Anglican missions, and the Hudson's Bay Company. Its subcommittee on education met twice during the year to consider problems in the administration of Eskimo affairs.

National Parks Branch

The National Parks Branch has three divisions: the National Parks and Historic Sites Division, the Canadian Wildlife Service, and the National Museum of Canada. Summary reports of the work of these Divisions follow.

National Parks and Historic Sites Division

National Parks*

New attendance records were established at the National Parks of Canada during the fiscal year, when visitors totalled 3,339,287 an increase of 201,562 over the preceding year. Exceptionally wet weather is blamed for declines in attendance in Banff, Jasper and Kootenay Parks. Substantial increases were recorded at Point Pelee Park, Cape Breton Highlands Park and Prince Edward Island National Park.

The principal activities of the Division are the maintenance and operation of the park townsites and park facilities and their development, extension and improvement. A large part of the funds voted by Parliament for park purposes was used to improve and extend roads, bridges, trails, and telephone lines. Improvements and additions were made to townsites, camp-grounds, trailer parks and parking lots, and bathing and playground facilities.

Accommodation for visitors, provided by regulated private enterprise, ranges from bungalow camps and motels to luxurious hotels and lodges. For tourists with trailers or their own camping equipment public camp-grounds offer such conveniences as kitchen shelters, water, electrical connections, camp stoves, tables and barbeque pits. Parking areas and picnic grounds are also provided.

The parks provide a wide variety of opportunities for recreation. The hot springs in Banff, Jasper and Kootenay National Parks are among the most popular features. Golf courses, tennis courts, bowling greens, outdoor theatres, ski slopes and hiking and riding trails are provided in many parks, indicating the scope of attractions available in these national playgrounds.

Conservation projects to preserve the forests and wildlife are undertaken. The 1954 fire season was one of the lightest on record with eighteen forest fires burning only 152 acres. Rainfall was heavier and temperatures were lower than in many years. Fire danger stations were kept in operation during the fire season in Banff, Jasper, Yoho, Waterton Lakes, Prince Albert, Riding Mountain and Cape Breton Highlands National Parks. The fire loss, after making allowance for the salvage of fire killed timber, was \$183. Forest fire protection for the year cost \$265,700. Smokers and camp-fires caused more than half the fires. Lightning was responsible for 17 per cent.

* See Appendix B on "Location, Area, and Comparative Statement of Visitors to the National Parks", "Maintenance of Roads", "Improvement of Trails", "Mileage of Park Roads, Trails and Telephone Lines", "Major Construction in Parks", "Improvements to Townsites", "Additions to Recreational Facilities", "Fire Losses in the National Parks", "Reduction of Mammals", "Statement of Large Mammals in Fenced Enclosures", "Plantings from National Parks Hatcheries", "Fish Plantings from Other Sources".

Entomologists and pathologists of the Department of Agriculture investigated infestations of mistletoe and secondary bark beetles in lodgepole pine stands in Banff; needle scale in fire-killed stands near Radium Hot Springs in Kootenay Park and spruce budworm activities in Fundy and Cape Breton Highlands National Parks. In Jasper National Park control work on dwarf mistletoe and pine needle miner surveys were continued. A permanent entomological field station was completed near Eisenhower Junction in Banff National Park.

Green timber is cut in the National Parks under permit for essential thinnings and forest protection purposes.

Big game populations in the National Parks are reduced when they exceed grazing capacity. Last year 33 white-tailed deer, 342 elk, 50 moose, and 36 buffalo were killed and the meat and hides utilized. Some animals were donated to zoological gardens and others used for re-stocking purposes. The muskrat population at Point Pelee National Park was reduced by 3,805 and at Prince Albert National Park 213 beaver were trapped and pelted.

Fish stocking and plantings were made in many park waters. More than 83,000 people visited the fish hatcheries at Banff, Jasper and Waterton Lakes National Parks, where they saw display panels, fish of different sizes and species in troughs and ponds, and heard lectures by hatchery officers.

National Historic Parks and Sites*

To commemorate outstanding events and persons in Canadian history, the Division operates a special service to restore, preserve and administer the National Historic Parks and many separate Historic Sites. The Historic Sites and Monuments Board, an honorary board of historians representing each province, advises the Minister. Up to the present, 501 sites have been marked or acquired and 234 others recommended by the Board for marking. In the fiscal year 23 sites were marked with monuments or tablets. The boyhood home of the Right Honourable W. L. Mackenzie King at Kitchener, known as "Woodside", was established as a National Historic Park and work was started on the Alexander Graham Bell Museum at Baddeck, N.S.

Canadian Wildlife Service*

The Canadian Wildlife Service administers the Migratory Birds Convention Act in conjunction with the Royal Canadian Mounted Police and in co-operation with provincial game authorities. In 1954 the harvesting of species which had become so plentiful as to cause crop damage problems was encouraged by amendment of the Regulations.

The annual spring and summer survey and a mid-winter inventory of waterfowl populations and breeding conditions were carried out in co-operation with the United States Fish and Wildlife Service, provincial

* See Appendix B on "Members of Historic Sites and Monuments Board", "Major Improvements and Repairs to National Historic Parks and Sites", "Historic Sites Marked and Important Persons Commemorated".

* See Appendix B on "Fisheries Studies by Canadian Wildlife Service", "Bandings of Wild Birds", "Licences and Permits Issued Under the Migratory Birds Convention Act", "Distribution of Wildlife Publications".

game branches, and other agencies, to obtain information necessary for framing hunting regulations. A survey of woodcock populations and spring counts of winnowing snipe were again made in parts of Eastern Canada in co-operation with the Wildlife Management Institute, provincial game departments, Royal Canadian Mounted Police, and unofficial volunteers.

Studies were made of crop depredation problems in the Prairie Provinces; of the eider-down industry of Iceland and of eider duck breeding areas in the Eastern Arctic; of unusual aggregations of black ducks in Nova Scotia; of the food habits and mobility of greater snow goose populations in the Cap Tourmente area of Quebec; of murrens in Newfoundland, including the coast of Labrador, and Ungava; and to facilitate identification of predators on waterfowl nests in New Brunswick.

Several trumpeter swans were obtained from Northern Alberta and sent to the Delta Waterfowl Research Station in Manitoba. A number of whooping cranes were observed in Wood Buffalo National Park.

Administration of bird-banding records and participation in banding programs have been important activities of the Service.

As a result of a partial survey of bird sanctuaries, five sanctuaries were abolished. There are now 86 sanctuaries with a total area of approximately 1,800 square miles.

Scientific research into wildlife problems in the Northwest Territories, Yukon Territory, and the National Parks, included long-term investigations of big game, marine mammals, and fur-bearing animals. Barren-ground caribou studies were extended to the Yukon Territory; Baffin Island, N.W.T., and northern Quebec, in the last case in co-operation with the Quebec Department of Game and Fisheries. Live walrus were tagged successfully for the first time and a method for spray-marking bison from a helicopter was developed.

Three limnologists and a summer assistant studied lakes and streams in the National Parks to discover means of improving sport fishing. The creel census program was continued in all parks, assistance was given in revising fishing regulations, and advice was given on fish culture and other aquatic matters.

National Museum of Canada*

The National Museum of Canada has three main functions; to collect and preserve Canadian material of scientific or economic interest in archaeology, ethnology and natural history; to study the material collected and related subjects; and to present and interpret information about these subjects to the public through exhibits, publications, lectures, and photographs.

Archaeology

Work on the archaeology of the interior of British Columbia was continued, starting at Golden, in the Cranbrook and Creston areas, and north along the Rocky Mountain trench in the valley of the Columbia River, and in the North Thompson valley. In the vicinity of Columbia Lake, pictographs first reported many years ago were re-examined and

* The National Museum issues a separate Annual Report which describes its work in greater detail.

the extent of deterioration observed; a small site on an old lake terrace above the south end of Columbia Lake yielded one small fragment of Indian pottery, probably of Kootenay origin and supports the belief that these people originated on the prairies.

Archaeological sites were found along Hart Highway on both sides of the Rocky Mountains but none in the mountains themselves. Extensive work was done in the Quesnel and Ashcroft areas where a number of sites were discovered.

A large number of kitchen middens were revealed on the east coast of Vancouver Island.

A field party conducted a survey in the Mackenzie Delta, in the area directly west along the Yukon Arctic coastal plain and along the coast to the Alaska boundary. Materials were collected from 28 new Eskimo archaeological sites, nine of which were typically Thule Eskimo. Most important discovery is a huge site on the east bank of the Firth River about 20 miles from the Arctic Ocean with well-preserved bone and artifacts similar to those found at Cape Denbigh, Alaska. The Cape Denbigh complex with its burins and microliths is very obviously related to similar materials in northeastern Siberia.

Archaeological work was carried out in Ontario in Bruce and adjoining counties, in the southern part of the province west of London, in the Rice Lake and other areas. Excavation was continued on the Sheguiandah site on Manitoulin Island.

Archaeological investigations carried out in co-operation with the Smithsonian Institution on Southampton Island in Hudson Bay produced over 40,000 mammal bones and thousands of bird bones.

Ethnology

As part of the project concerning the secularization and social change in French Canada, a survey was made in the village of St-Vallier (Bellechasse) as representative of the agricultural Lower St. Lawrence district. The study of the folklore of Nova Scotia, parts of New Brunswick and Quebec was continued. Tape recordings of Blood, Blackfoot, Cree, Stony and Assiniboine songs and dances were made.

Zoology*

Field investigations were made of mammals, bird fauna, the reptiles, amphibians, marine invertebrates, fossil mammals and molluscs and dinosaurs in various parts of Canada. A report was prepared on the ecological control of barnacles in the Miramichi Estuary.

Specimens were lent and identifications made of mammals, birds, reptiles, amphibians, invertebrates, and fossils.

* See Appendix B on "Zoological Studies by National Museum", "Zoological Collections", "Institutions which Received Information or Specimens from the National Museum".

National Herbarium*

Botanical investigations were conducted in Ontario, Quebec, and France. Much valuable information was obtained through photographs and recorded notes concerning the mosses, ferns, and flowering plants of the districts visited, and large collections were made for the national collections as well as for exchange with other botanical institutions.

More than 16,000 herbarium specimens were received by exchange, donation, from field work or were obtained in exchange for determinations by staff members. A total of 3,367 specimens were sent on loan to other botanical institutions, and 1,155 were borrowed from them. A total of 6,200 specimens of vascular plants were mounted and inserted in the herbarium, bringing the total number in the national collection to 232,716. Twenty-two numbers were added to the file of botanical type specimens, now numbering 1,506. About 150 Canadian or foreign botanists visited the herbarium.

Educational Services*

The Museum loaned material for exhibits in Canada and abroad and distributed information through publications, lectures, photographs, and correspondence. Services to other institutions included the loan of scientific specimens and identification of material. Exhibits in the Museum were improved and extended. Wednesday evening lectures for adults and Saturday morning lectures for children again proved very popular. During July and August a motion picture program "Canada in Colour" was shown every afternoon from Monday to Friday. The Macoun Field Club, three groups of boys and girls interested in natural history, had a successful year. A new feature was the presentation of twenty-four television broadcasts entitled "Let's Go to the Museum". Another new feature was the presentation of three monthly lectures in the French language on Thursday evenings.

* See Appendix B on "Institutions Which Received Information or Specimens from the National Museum" and on "National Museum Lectures".

Engineering and Water Resources Branch

The Engineering and Water Resources Branch deals with international and federal-provincial water problems, surveys the water resources and power resources of Canada, and undertakes hydrometric investigations in all provinces (except Prince Edward Island) and in the Yukon and Northwest Territories.

The Branch provides advisory or consultant services in engineering and architectural matters, and carries out construction projects in a wide field, including mining and development roads.

The Branch is composed of the Administrative Division, Water Resources Division and Engineering and Architectural Division; it also provides certain administrative services to the Northwest Territories Power Commission.

The Director of the Branch is a Member of the Northwest Territories Power Commission and of a number of International Engineering Boards and Boards of Control which were set-up by the International Joint Commission.

Water Resources Division

The main function of the Division is to acquire, analyse, and publish stream-flow and run-off data for all Canada. This information is used in power development, storage, irrigation, drainage, flood warnings and flood control; fisheries research, navigation, domestic water supply, and international waterway problems. In co-operation with the provinces, the Division maintains gauging stations and carries out hydrometric investigations. The Division is directly responsible for hydrometric operations and for the administration of the Dominion Water Power Regulations in the Yukon and Northwest Territories and on public lands. Applications for assistance under the Canada Water Conservation Assistance Act are reviewed and pertinent recommendations are submitted. Studies are made on international waterway problems and engineers of the Division serve on boards and committees and act as technical advisers to the Department of External Affairs and the International Joint Commission. The Division works closely with the U.S. Geological Survey in the operation of international gauging stations. The Division also co-operates with public and private agencies in water-power and water-supply problems and serves as a central repository for hydrometric and water-power information. During the year the staff carried out special investigations, particularly in connection with Lake Ontario and with the Columbia, Niagara, St. Lawrence, and international prairie rivers.

Hydrometric Services*

Stream gauging is an important part of the Division's work. During the year 1,126 gauging stations were maintained and 4,414 stream discharge measurements and 2,185 inspections of gauging stations were made by the technical field staff.

* See Appendix C on "Details of Stream Gauging", "Run-Off Conditions in Canada", "Snow Surveys", and "Glacier Surveys".

At Calgary there is a fully equipped station for the repair and calibration of the stream gauging apparatus. Experiments are made on new instruments. The services are available to other organizations as well as to the Division. A total of 209 meters was rated during 1954.

For Canada as a whole the total run-off for the year was much above normal, with above-median general conditions being recorded in all months of the year, although low river discharges obtained on the east and west coasts in April. The *average* for 22 typical rivers across Canada was 146 per cent of the median flow of these rivers. A number of small communities in the Prairie Provinces suffered flood damages during the summer months. In October, a disastrous flash flood occurred on the Humber River in Toronto, with much loss of life and property damage.

The monthly flow records of 22 typical rivers well-distributed across Canada are computed immediately and issued to the public. They are also provided by airmail to Washington where, early in the following month, by joint arrangement, a monthly summary of stream flow throughout North America is published by the United States Geological Survey.

On certain rivers subject to dangerous floods, continuous records of river stage are obtained and a flood warning service is provided. On the Columbia and Fraser Rivers, river-stage forecasting is valuable during the annual snow melting period. Beginning each May first daily observations from 19 key points are telegraphed to the Vancouver office. From these reports and from current meteorological data a forecast of water levels for the following three days is published. The Vancouver office co-operates with United States authorities in forecasting stages on the lower Columbia River. The Calgary office forecasts stages on the North and South Saskatchewan Rivers and sends the information to Medicine Hat, Saskatoon, and Prince Albert. It also participates in the work of the Bow River Ice Committee in the alleviation of flood hazard on the Bow River. The Winnipeg office forecasts stages on the Winnipeg River and co-operates with the local authorities in Red River flood forecasts.

Annual surveys of the water content of the snow cover are made on typical courses in important drainage basins to estimate the amount of spring run-off. From a more long-term viewpoint, glacier surveys are made at two-year intervals covering five glaciers in British Columbia and six in Alberta.

On the basis of the Division's hydrometric investigations and other data, revisions are made from time to time in the estimates of the water resources of Canada. The current estimate shows resources of 50,705,000 h.p. at ordinary six months flow which will permit an economic installation of about 66,000,000 h.p. During 1954 new hydraulic installations totalled 1,758,450 h.p. bringing the installed capacity of all water power plants in Canada to 16,684,131 h.p. Central electric stations make up 87 per cent of this amount. New plants and extensions under active construction for operation in 1955 are tentatively rated at about 1,000,000 h.p. and others with a total capacity of approximately 2,500,000 h.p. are under preliminary construction or definitely planned. The Division's annual bulletin, *Water Power Resources of Canada* (March 15, 1955) reviews the current water power situation.

Waterway Problems and Water Power Administration*

Members of the Division serve on many international and federal-provincial boards whose purpose is to study problems relating to the control of boundary waters. The western district offices help other federal agencies in engineering and administrative activities. The Division administers the Dominion Water Power Regulations, which were extensively revised in 1954; developments made under their authority are inspected and rentals are collected.

A priority permit, covering the development of power from waters of the southern part of the Yukon River drainage basin and of the Alsek River basin, Yukon Territory, was issued to the Northwest Power Industries Limited on August 18. The company's scheme envisages the ultimate development of approximately 5,000,000 horse-power by storage in the upper Yukon River basin and its diversion through northern British Columbia.

Water Resources Papers are published at irregular intervals, each volume giving hydrometric and run-off data covering one of the four drainage divisions of Canada for two climatic years. The two regular water power bulletins were issued in 1954. Water power articles were revised for the *Canada Year Book* of 1954 and of 1955.

Engineering and Architectural Division*

This Division operates as a servicing unit to other Divisions of the Department and to other departments on request. It furnishes advisory or consultant services and undertakes to supervise or carry out complete execution of construction projects with funds provided by the branches being served.

During the past year, a total of 71 construction projects were undertaken, of which 57 were entirely or mainly by contract. Of these, 43 were carried out in connection with the National Parks Branch construction program; 18 were Northern Administration and Lands Branch projects; five projects commenced on behalf of the Trans-Canada Highway Division, Department of Public Works (formerly of this Department), in the previous year were completed; and one project was undertaken for each of the Departments of Veterans Affairs, Citizenship and Immigration, and National Revenue, as well as one for the Water Resources Division of this Department; and one for the National Battlefields Commission. Total expenditures on all of this work amounted to \$2,613,250.

In addition to actual construction supervision, professional and technical advice was furnished to other divisions in connection with maintenance and construction being carried out, planned or controlled by them. In this respect, over 145 plans were reviewed; 113 cost estimates were provided; sets of plans and bills of materials were supplied in response to approximately 50 requests; and approximately 350 requests were received either in writing or by telephone for other types of professional or technical advice.

* See Appendix C on "Boards on Which Water Resources Division Has Membership", "Developments Under Dominion Water Power Regulations", and "Technical Assistance to Federal Agencies".

* See Appendix C on "Projects Carried Out by Engineering and Architectural Division".

The Division is presently comprised of a head office at Ottawa, and district offices at Banff, Jasper and Moncton. Resident engineers are posted to the headquarters of the 9 larger National Parks where each, as Park Engineer, is responsible to the Park administration in all but professional and technical matters. Similarly, engineers are posted at Fort Smith, N.W.T. and Whitehorse, Y.T., where they serve as Territory engineer in each case, responsible to the District Administrator of the respective Territory. The normal duties of these engineers involve responsibility for maintenance and minor construction. The line of authority on professional and technical matters from Resident Engineers is through the respective District Engineer, and direct in the case of Territory engineers, to Head Office.

Professional and technical staff are normally engaged in field surveys, investigations, inspections, and professional supervision of construction projects; preparation of plans, bills of materials and estimates of cost of roads and bridges, as well as water, power and drainage systems; preparation of plans and specifications for the construction and repair of public and industrial buildings, school, residences and other structures. Normal duties of park and territorial engineers involve responsibility for maintenance and minor construction.

Forestry Branch

The Forestry Branch provides, through research and demonstration, guidance in the adoption of scientific principles in the handling of Canada's forest resources. Use by industry and wastage through fire, insects, and disease are combining to reduce the value of Canada's forest estate. Supplies of merchantable timber are becoming increasingly remote, and logging costs are rising. Composition of the forest is changing. Valuable species are yielding place to inferior varieties. These conditions give rise to many problems of national importance relating to the development, protection, and utilization of Canada's forests; problems which are studied by the Forestry Branch.

The main fields of work of the Branch are forest economics, forest research, and forest products research. In addition to these, the Branch is charged with the administration of federal-provincial agreements under the Canada Forestry Act, including forest inventory and reforestation. It also co-operates in the administration of the budworm spraying operation in the Province of New Brunswick and assists and advises the Department of National Defence in protection and timber disposal on National Defence lands.

To carry out this work, the Forestry Branch, apart from the Administration Section which includes Forest Economics, is organized under three separate divisions, namely, Forest Research Division, Forest Products Research Division, and the Operations Division.

Forest Economics*

The Forest Economics Section carries out research in problems concerning the development of Canada's forests; studies the economic implications of forestry legislation; maintains records of Canadian forest resources; and analyses statistics relating to production and trade in forest products. The Section continued to be represented on an inter-departmental committee concerned with the United Nations Food and Agriculture Organization.

The continued prosperity of the forest industries in 1954, attributable to an increasing world demand for Canadian forest products, is indicated by a rise of six per cent in the value of exports of forest products over 1953. These exports reached a record level of over 35 per cent of the total value of Canada's external trade in 1954. The estimated lumber production of 7,335 million board feet was slightly above the production of 1953, whereas the exports of lumber exceeded those of the previous year by about 20 per cent.

The pulp and paper industry produced 9.6 million tons of wood-pulp, again surpassing its output in any previous year. Most of this pulp was used to produce six million tons of newsprint. This outstanding production of newsprint represented an increase of four per cent over the record reached in 1953.

* See Appendix D on "Annual Forest Depletion", "Forest Industries, Summary of Principal Statistics, 1952".

The rate of utilization of forest products during the past few years has been accelerated. Depletion for 1953 was almost 13 per cent greater than the average depletion for the ten-year period, 1943-52.

The accessible portion of the productive forests of Canada covers an area of 577,000 square miles. The supply of merchantable timber on this area is estimated to be 288,232 million cubic feet, of which approximately 132,000 million cubic feet are located on that portion of the area at present under lease or private ownership. The utilization in 1953 of 3,499 million cubic feet represents 1.2 per cent of the accessible volume, and 2.7 per cent of the merchantable volume on the occupied areas (where the utilization is actually taking place). A comparison of these percentages reveals the high rate of cutting occurring on the occupied forests, but meanwhile the annual growth is not being used on the remainder of the accessible productive forest. This situation emphasizes the necessity for the orderly management of all our commercial forests, if the forest industries are to maintain their dominant position in the development of Canada's natural resources.

The net value of production for all groups of forest industries for 1952 was \$1,932 million, representing 14 per cent of the total net value of production of all Canadian industries. In 1938 the proportion was only 11 per cent.

Studies were made of methods of valuation and the use of interest rates in calculating forest fire risks, on the economic analysis of ground rent, of problems of forest taxation, of methods of evaluating young growth developed by the Ontario Department of Lands and Forests, and on the accuracy of data collected by the Decennial Census respecting fires on farm woodlots.

Forest Research Division*

Forest research necessary to the improvement of forest management practices in Canada is conducted independently or in co-operation with other federal departments, provincial forest authorities, other research agencies, universities, or industrial companies. Research activities include fact-finding surveys to evaluate existing conditions, fundamental studies concerning the characteristics and behaviour of forest species and the influence of different factors of their environment, and applied research to develop practical methods for influencing forest development and improving operating and research techniques.

Within the Forest Research Division there are three Sections concerned respectively with silviculture and management, forest inventories, and forest fire protection, together with five district offices located at Calgary, Alberta; Winnipeg, Manitoba; Valcartier, Quebec; Fredericton, New Brunswick; and St. John's, Newfoundland; and the Ontario Research Unit at Ottawa.

* See Appendix D on "Research Work of Forest Research Division", and "Forest Fire Losses in Canada, 1953".

Silviculture and Management Research

Silviculture deals with the theory and practice of controlling forest establishment, composition, and growth, while forest management is concerned with the application of business and technical principles to the operation of forest properties so as to achieve continuous production, with the net growth and harvest in approximate balance.

The principal tasks within this field of forest research are:

1. Development of a satisfactory system for classifying forests and forest sites.

2. Determination of the silvical characteristics of Canadian tree species, and the ecological relationships of the associations in which they occur.

3. Development of methods of silviculture which are applicable to the more important forest types and to Canadian economic conditions.

4. Development and testing of practical methods for determining the actual and potential growth and yield of forests.

5. Development of improved techniques of reforestation, and of improved strains of tree species suitable to Canadian conditions.

6. Improvement of methods of organizing forest data into plans of regulation and silviculture for forest areas, which will be suitable to different intensities of management.

7. Improvement of research methods, mensuration, techniques, and the design of experiments.

In all districts problems pertaining to forest and forest site classification received particular attention because such work provides the basic framework within which both research and forest management must be conducted. Fundamental ecological studies, tree breeding, and research in tree physiology continued, the major part of this work being conducted at the Petawawa Forest Experiment Station, Chalk River, Ontario.

Tests of silvicultural techniques, with emphasis on regeneration following cutting and fire, were continued in all districts. The increasing interest shown by forest industries and provincial agencies in this type of work is apparent from the many requests received by the Forest Research Division for technical assistance in planning such applied experimentation.

Forest Inventories Research

Advances in air photography have provided the basis for many changes in forest inventory techniques. Tables are being compiled to help the air photograph interpreter prepare preliminary estimates of timber volumes. When detailed information is required, ground sampling continues to be necessary. Investigations of the scale of the photograph as a factor in interpretation were commenced. A comparative study of various inventory methods was continued.

Air photograph interpretation and forest mapping were performed for the forest inventory surveys of the northern territories and Wood Buffalo National Park. The Northern Administration and Lands Branch supplied assistants and equipment for field work.

Provisional forest maps prepared from air photographs covered an area of 11,150 square miles. The field party used maps of 2,500 square miles of this area and of 1,540 square miles prepared the previous year. Maps of 5,390 square miles are to be used by the 1955 field party. The remaining 3,260 square miles cover comparatively remote or unimportant timber. In preparation for 1955, mosaics and base maps of 3,750 square miles were prepared.

Five hundred and two plots were measured, 101 of which were located in an area where estimates of timber to be flooded by a proposed power development are required. The Dominion Bureau of Statistics computed and tabulated the sample plot data.

Provisional forest maps were prepared of 50 square miles in the Kananaskis Forest Experiment Station area, and 150 square miles of the Eastern Rockies Forest Conservation area.

A mosaic showing the forest stands of Camp Gagetown, New Brunswick, and contiguous areas was prepared, covering 650 square miles in all.

Fire Protection Research

Many of the major problems in forest fire research are related to the measurement of fire danger and fire control planning. Most investigations are made at the request of provincial and other forest protection agencies, which often co-operate in the undertakings. All members of the staff of the Section are in Ottawa though most of the technical officers spend about half of each year, the fire season, in the field at forest experiment stations or at temporary fire research stations.

New, simplified, forest fire danger tables were given practical trials by various agencies during the year and good results were obtained. Hazard tables were modified to fit the new danger tables and all components were published in a provisional edition for use next year by agencies east of Saskatchewan. Basic field studies are being continued in Saskatchewan and Alberta.

Forestry Operations Division

The Division administers federal-provincial agreements made under the Canada Forestry Act, and an agreement with the Province of New Brunswick to assist in the aerial spraying against the spruce budworm; maintains an Education Section and a Parks and Northern Territories Section, and under an arrangement with the Department of National Defence it provides for forest fire protection and forest management at Camp Gagetown, N.B.

Provincial Agreements*

Forest Inventories

Under the federal-provincial forestry agreements, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick and Nova Scotia continued their inventories during 1954. This fourth year of the agreements saw steady progress being made toward completion of these inventories which are now, on the average, about three-quarters finished.

* See Appendix D on "Progress in Forest Inventories", "Reforestation Under the Forestry Agreements". "Federal Payments to Provincial Governments Under the Forestry Agreements", "Budworm Spraying—New Brunswick".

The inventories will provide a basis for the administration and management of the forests by the provinces, and will furnish data for a general statement of the forest resources of Canada. Federal assistance covers "reconnaissance" surveys to determine the areas of productive forests and "provincial" surveys to determine the area of different classes of forest and to provide estimates of timber volumes for large areas. Assistance is not extended to "working plan" surveys which provide detailed estimates of timber volumes for small areas.

Inventories in Alberta, Saskatchewan and Manitoba are nearing completion and work is progressing on the revision of earlier data where changes have occurred owing to growth and depletion. In British Columbia and Ontario substantial progress has been made, but since it has been necessary to include in their provincial inventories large areas of productive forest land which were not envisaged as such at the beginning of the agreements, it is not expected that the initial inventory will be completed by March 31, 1956, the end of the present agreements. Nova Scotia and New Brunswick will not complete their inventories within the period of the present agreements as Nova Scotia did not begin its inventory until a later date, and in New Brunswick the severe budworm infestation and other factors have contributed to unavoidable delay.

Reforestation

Under the agreements, the Federal Government pays ten dollars per thousand trees planted, and one dollar per acre seeded by a province on unoccupied Crown land provided that the reforestation program of the province itself is maintained at or above average level of the last three years. The Federal Government also pays one-fifth the cost of establishing and operating new forest nurseries. Prince Edward Island has an agreement covering reforestation only, under which the Federal Government is paying half the cost of the reforestation of waste lands unsuitable for agriculture.

Nearly 48 million trees have now been planted. In 1954-55 Prince Edward Island, Nova Scotia, Ontario, Manitoba, Saskatchewan and British Columbia planted 17,519,000 trees. Saskatchewan also seeded an area of 164 acres. Work was continued on new nurseries in Nova Scotia, Prince Edward Island and Manitoba.

The federal-provincial agreements are administered in the field by the District Forest Officers of the Forestry Branch. Liaison Officers assist at the Calgary, Winnipeg, Ottawa and Fredericton offices.

Aerial Spraying Operation—New Brunswick

The large-scale aerial spraying against the spruce budworm in the northern part of New Brunswick was continued during 1954 with Forest Protection Limited, a Crown Corporation, conducting the operation.

Under agreement with the Province, the Federal Government is paying one-third of the cost up to a maximum of \$3,000,000 between September 13, 1952 and March 31, 1956. The Government of New Brunswick and the forest industries in the area affected are each contributing a third of the cost.

The 1954 operation required two additional airfields bringing the total to eight. Forty-two spraying aircraft and five observation planes were employed. Between June 8th and June 26th approximately 545,000 gallons of D.D.T. insecticide were applied over an area of 1,100,000 acres. The total area now sprayed is approximately 2,600,000 acres.

Studies carried out by forest entomologists of the Department of Agriculture indicate that the spraying has kept alive large areas of forests, has brought about a definite improvement in the condition of the trees, and in general is effective for a period of two years after spraying. If the outbreak continues it may be necessary to respray after about three years.

Education

More than 100,000 pieces of forestry literature were distributed to institutions, groups, and individuals. At the beginning of the forest fire danger season, postage stamp mail from several key cities throughout Canada was cancelled through the co-operation of the Post Office Department with special dies bearing forest fire prevention slogans. The Canada Jay was again used as a symbol on forest protection posters.

The Forestry Branch training films "Fighting Forest Fires with Hand Tools" and "Fighting Forest Fires with Power Pumps" continued to receive wide attention from various government and private organizations. The National Film Board reports the sale of 40 copies of the film on hand tools and 23 copies of the power pumps film to sources outside the Federal Government.

Window displays maintained at the Forestry Branch Head Office, Ottawa, continued to create interest and resulted in a number of requests for information on forestry topics. Over 200 black and white prints and about 150 colour slides were indexed and added to the photographic library; a number of photographs were supplied for use in publications.

National Parks and Northern Territories

This Section helps administer and manage forests in the National Parks, and the Yukon and Northwest Territories and furnishes liaison between Branches of the Department on forestry problems.

At Banff work was continued on fire protection planning, forest surveys, laying out cutting operations and the establishment of a small tree nursery. Co-operation was maintained with the Division of Forest Biology, Department of Agriculture, in studies of forest insects and tree diseases at Banff and Jasper.

Camp Gagetown, N.B.*

By an arrangement with the Department of National Defence, the Forestry Branch is carrying out forest fire protection and forest management on the 430 square mile area of Camp Gagetown, N.B. This area is divided into four forest ranger districts.

Large areas are being cleared for military purposes, and supervision of the resulting slash-burning operations constitutes a major fire control problem, both from the standpoint of protecting the forest within the Camp, and of preventing the spread of fires to adjacent lands. Nineteen of the 24 forest fires that occurred on the Camp in 1954 were attributed to land-clearing fires. However, weather conditions were unusually favourable during most of the season, and only 19 acres of forest were burned. In

* See Appendix D on "Timber and Hay Disposal, Camp Gagetown, N.B., Fiscal Year, 1954-55".

addition these fires covered 126 acres of non-forested land apart from slash designated for burning. Damage was estimated at \$854, and the cost of Forestry Branch services in actual fire suppression was \$2,094.

Although most of the forest on the area is immature a small amount of timber, including Christmas trees, was sold under permit.

Forest Products Laboratories Division*

Activities in all the principal fields of forest products research—with the exception of that pertaining to the manufacture of paper**—were continued at both the Ottawa and Vancouver Laboratories of the Forest Products Laboratories of Canada. There has been particular emphasis on those studies aimed at determining practices and methods for increased economic utilization of the forest harvest.

Research has continued on the determination of the mechanical, physical, and chemical properties of wood, on the use of wood and wood products as engineered material, on the harvesting, conversion, seasoning, and preservation of wood, all aimed at improving the utilization of forest products.

Much wood substance is discarded during the harvesting and conversion processes. Comparison studies and investigations in the fields of primary conversion and of chemical or microbiological transformation have continued to search for methods and outlets for wood substance now being discarded.

Some short-term research projects, mainly requested by industry, were carried out. A very limited number of tests—for which a charge was made—were undertaken for industrial firms, but only when commercial testing facilities were not available. Short-term investigations were carried out to obtain specific technical data required by government departments and agencies, such as National Defence and Central Mortgage and Housing Corporation. Committee work has included representation on the National Building Code, the Canadian Standards Association, and such international associations as the American Society for Testing Materials, American Wood Preservers Association, and the Food and Agriculture Organization of the United Nations.

Close liaison is maintained with other forest products research institutions throughout the world to ensure an exchange of pertinent information and to avoid unnecessary duplication of effort. Such co-operation enables comparison of the properties and qualities of Canadian timbers intended for foreign shipment.

Ottawa Laboratory

Very promising results have been achieved in the development of techniques for the rotary cutting of veneer from logs of curly yellow birch. It is confidently hoped that the findings of Ottawa Laboratory will enable industry to produce high quality veneers from birch logs with a curly grain.

The racking strength of stud wall sections, sheathed with seven different types of sheathing, provided data for use in the setting up of safe performance standards for wood stud walls in house construction.

* See Appendix D on "Main Project Work of Forest Products Laboratories".

** Carried on by the Pulp and Paper Research Institute of Canada, Montreal.

Pulps from sawdust have been prepared from which hand sheets of very remarkable properties have been produced. It appears that a technique can be developed which may have commercial application.

One of the major obstacles to fermentation of cellulose and wood (sawdust) by rumen organisms—the absence of certain nutritional factors needed by the organisms—has been removed. It has been determined that commercially available and cheap fish solubles (by-products of the fish-packing industry) contain the necessary nutrients.

Wood anatomy investigations have explained why Douglas fir from interior British Columbia should be typically difficult to impregnate with preservative, while coastal Douglas fir may be readily treated. Microscopic inter-cellular separations developed in the seasoning process by coast-type wood facilitate penetration by oil-type preservatives. This condition does not apply to interior-type Douglas fir.

Anatomical examination of tested specimens of known strength has provided insight into the effect of compression-wood, tension wood, and other structural characteristics of wood on strength.

Investigations on the use of short-log bolters for the utilization of small, second growth, and defective hardwood trees indicate considerable possibilities for the economic production of furniture stock and short-length lumber from non-commercial hardwood trees.

Studies have been conducted on five representative logging and saw-milling operations (spruce and balsam fir) in Nova Scotia and one in Ontario (jack pine) to investigate the various factors affecting harvesting and conversion; the aim being to provide a method of determining the profitability of harvesting and sawing logs of various diameters and species.

Studies on the kiln-drying of lumber of temperatures above the boiling point of water were concentrated on determination and elimination of causes of an undesirably wide range in final moisture content of the lumber which had characterized previous investigations.

A method for estimating the equilibrium moisture content of air-dried lumber during various seasons of the year and in various districts in Canada was developed. A study was made to determine the possibility of establishing a national standard for yard lumber. Numerous studies are in progress to determine nature of protection afforded by various paint coatings to wood exposed to climatic conditions in various regions of Canada. A technique was developed for the deep staining of walnut veneer used in the manufacture of rifle furniture.

Vancouver Laboratory

Field parties in the southern interior of British Columbia collected data on the effect of log size on volume and grade recovery, on the effect of variables on the efficiency of felling, bucking, and skidding, and on the kind and significance of losses incurred in the seasoning and planing of lumber.

Another party, working in co-operation with the Alberta Forest Service, measured and classified wasted wood residues on two hundred and thirty sample plots in the northern part of Alberta.

Initial investigations on the strength of fire-killed lodgepole pine timber from the foothills of southern Alberta included tests of timbers which have been fire-killed for periods up to forty-five years.

Treatments carried out in an experimental wood preserving retort, designed by laboratory engineers for west coast species, of mountain-type Douglas fir cross-ties and semi-commercial sizes of western hemlock poles may enable wood-treating plants to impregnate these important species more effectively.

Some preliminary studies were initiated of red stain occurring in lodgepole pine in British Columbia.

A simple analytical method for determining taxifolin (dihydroquercetin) in wood was devised and an investigation of the occurrence of this chemical in fir and larch wood was commenced.

Analytical work to determine the distribution of natural preservatives in western red cedar was continued.

New kiln-drying schedules, shrinkage studies and the effect of drying temperatures upon the fluing properties of Douglas fir veneers have been investigated. A small high-temperature kiln was constructed and preliminary runs were made to test the equipment.

1954 Annual Report

Canadian Government Travel Bureau*

The Canadian Government Travel Bureau is the federal agency established to promote travel to and within Canada and the general interests of the tourist industry. It operates branch information offices in the cities of New York and Chicago, and has a representative at the Canadian Consulate-General in Los Angeles. Special assistance is given on travel information by the Consulate-General at San Francisco also.

In 1954 tourists from other countries spent \$300 million in Canada, of which \$278 million came from United States visitors. There were 26,422,565 individual entries into Canada, including the commuter traffic and other repeat visitors, and 2,450,844 long-stay automobile entries. The National Parks of Canada had more than 3,000,000 visitors in 1954.

The Ninth Federal-Provincial Tourist Conference was held at Ottawa on November 29 and 30, 1954. Delegates from federal departments, provincial tourist organizations and the transportation companies attended and advertising and promotion were emphasized during the two-day discussions.

The official opening of the Canadian Government Travel Bureau's new office in Chicago took place in mid-December with the Director welcoming visitors to the ground-floor location in the Builders Building at 157 West Wacker Drive.

The Bureau spent \$965,000 on travel advertising and films. Advertising was placed in some 50 leading United States magazines and about the same number of metropolitan newspapers. Publicity programs included the regular mailings of release material to more than 1,500 media in the United States, Canada, and overseas. In addition, nearly 10,000 black-and-white photographs were distributed, most of them in response to requests. National Parks publicity was handled in addition to Canadian travel promotion.

The Bureau serviced 428,062 individual requests for Canadian travel information, most of them originating in the United States. There were 20,624 inquiries received from overseas countries, and 22,724 from resident Canadians.

The Bureau increased its Canadian travel film libraries in the United States to 120. There were 3,741 prints of 16 mm. sound and colour films in circulation at the end of the year. Showings numbered 57,007 in 1954, a gain of 33 per cent over 1953, and audiences totalled 3,473,946 persons, an increase of 14 per cent. There were 559 bookings of Canadian travel films on television in 1954.

During the summer of 1954 National Film Board photographers carried out picture-taking assignments for the Travel Bureau in both Eastern and Western Canada, providing new still photos in black-and-white and colour for advertising, publicity and publications use. The Bureau's photo library now includes 5,000 colour transparencies and 7,000 black-and-white subjects. A number of useful supplementary photographs were purchased from private sources.

* See Appendix E on "Special Activities of Director".

This was the first complete calendar year in which the former Visual Aids Section and the Information Division worked as a complete unit, handling a total of 130,491 inquiries, involving 11,592 dictated replies.

There were 3,510,220 publications distributed by the Bureau. The Bureau prepares and distributes 71 different publications of its own, including 49 for the National Parks. In addition, publications provided by the provincial tourist organizations, transportation companies and private resort interests are included in the distribution stream.

APPENDICES

Appendix A

1. Value of Mineral Production Northwest Territories

—	1952	1953	1954*	Cumulative Total To Year Ending December 31, 1954
	\$	\$	\$	\$
Gold.....	8,484,601	9,979,356	10,193,131	71,451,474
Silver.....	49,492	53,424	47,880	1,208,399
Lead.....	4,443	—	—	4,933
Copper.....	1,969	—	—	26,607
Crude Petroleum.....	379,160	257,251	297,270	5,094,640
Natural Gas.....	9,698	10,199	10,500	75,954
Tungsten.....	15,472	—	—	53,146
	8,044,835	10,300,230	10,548,781	77,915,153

* Preliminary figures.

N.B.—No figures available for radioactive minerals.

2. Value of Mineral Production Yukon Territory

—	1952	1953	1954*	Cumulative Total To Year Ending December 31, 1954
	\$	\$	\$	\$
Gold.....	2,690,846	2,274,474	2,991,721	237,921,201
Silver.....	3,364,646	5,577,530	5,627,435	44,151,479
Lead.....	2,973,883	4,063,449	4,340,004	21,788,094
Copper.....	—	—	—	2,711,695
Coal.....	139,345	169,736	225,000	1,494,069
Tungsten.....	—	475	—	25,888
Zinc.....	1,932,853	2,156,046	2,757,725	8,950,853
Antimony.....	—	—	—	173
Cadmium.....	284,878	476,852	366,223	1,491,505
	11,386,451	14,738,562	16,308,108	318,534,957

* Preliminary figures.

3. Land Sales and Privileges, Hay and Timber Permits

	Yukon	Northwest Territories
LAND SALES—		
Completed	42	122
New agreements of sale	23 (a)	19 (c)
Agreements of sale in force	122 (b)	57 (d)
(a) Includes 13 agreements for veterans.		
(b) Includes 103 agreements for veterans.		
(c) Includes 7 agreements for veterans.		
(d) Includes 38 agreements for veterans.		
LAND PRIVILEGES—		
New privileges	58	32
Cancellations	15	36
Total and type of privileges in force	187	195
Agricultural leases	6	6
Fur farm leases	1	5
Grazing leases	8 (a)	4 (b)
Licences of occupation	3	8
Permissions to occupy	31	30
Surface leases	116	111
Waterfront leases	22	31
(a) 103 horses maintained.		
(b) 12 cattle and 8 horses maintained.		
HAY PERMITS	6 (c)	1 (d)
(c) 35 tons cut.		
(d) Nil cut.		

TIMBER

Number of Permits issued	Yukon	Northwest Territories
Commercial permits	43	15
Other permits—		
Free permits	9	8
Permits free of dues	15	29
Permits dues paid	210	88
Total permits	277	140

Timber cut	Yukon Territory			Northwest Territories (including Wood Buffalo Park)		
	Lumber	Round Timber	Fuel Wood	Lumber	Round Timber	Fuel Wood
	ft. b.m.	lin. ft.	cords	ft. b.m.	lin. ft.	cords
Commercial permits	3,483,015	2,201,047	867	6,742,593	271,730	198
Other permits—						
Free permits	—	42,400	255	—	3,950	680
Permits free of dues	—	—	1,185	100,000	2,634	2,275
Permits dues paid	—	84,914	5,600}	4,000	24,768	2,908
Total cut	3,483,015	2,328,361	7,896}	6,846,593	303,082	6,061

4. Revenue

	Yukon Territory	Northwest Territories
	\$ cts.	\$ cts.
Lands.....	23,178.86	38,837.21
Timber.....	30,534.28	37,947.47
Grazing and hay.....	14.75	21.01
Land titles.....	1,792.00	375.10
Total.....	55,519.89	77,180.79

5. Seed Grain, Fodder and Relief Indebtedness

SUMMARY

	Principal	Interest	Total
	\$ cts.	\$ cts.	\$ cts.
<i>Debits—</i>			
Amount outstanding, March 31, 1954.....	982,408.84	1,826,037.97	2,808,536.81
Accrued interest April 1, 1954 to March 31, 1955..	—	51,097.02	51,097.02
Total Debits.....	982,498.84	1,877,134.99	2,859,633.83
<i>Credits—</i>			
Net revenue April 1, 1954 to March 31, 1955.....	76,544.34	8,668.53	85,212.87
Amount written off as loss by Orders-in-Council— April 1, 1954 to March 31, 1955.....	97,762.82	320,933.74	418,696.56
Total Credits.....	174,307.16	329,602.27	503,909.43
Amount outstanding March 31, 1955.....	808,191.68	1,547,532.72	2,355,724.40

Province of Manitoba

	Principal	Interest	Total
	\$ cts.	\$ cts.	\$ cts.
<i>Debits—</i>			
Amount outstanding March 31, 1954.....	1,159.52	1,926.25	3,085.77
Accrued interest April 1, 1954 to March 31, 1955...	—	71.42	71.42
Total Debits.....	1,159.52	1,997.67	3,157.19
<i>Credits—</i>			
Net revenue April 1, 1954 to March 31, 1955.....	192.45	92.75	285.20
Amounts written off as loss by Orders-in-Council— April 1, 1954 to March 31, 1955.....	—	264.41	264.41
Total Credits.....	192.45	357.16	549.61
Amount outstanding March 31, 1955.....	967.07	1,640.51	2,607.58

Province of Saskatchewan

	Principal		Interest		Total	
	\$	cts.	\$	cts.	\$	cts.
<i>Debits—</i>						
Amount outstanding March 31, 1954.....	797,478.	27	1,498,495.	68	2,295,973.	95
Accrued interest April 1, 1954 to March 31, 1955...	—		39,846.	91	39,846.	91
Total Debits.....	797,478.	27	1,538,342.	59	2,335,820.	86
<i>Credits—</i>						
Net revenue April 1, 1954 to March 31, 1955.....	69,059.	12	6,725.	19	75,784.	31
Amount written off as loss by Orders-in-Council— April 1, 1954 to March 31, 1955.....	90,634.	85	291,873.	50	382,508.	35
Total Credits.....	159,693.	97	298,598.	69	458,292.	66
Amount outstanding March 31, 1955.....	637,784.	30	1,239,743.	90	1,877,528.	20

Province of Alberta

	Principal		Interest		Total	
	\$	cts.	\$	cts.	\$	cts.
<i>Debits—</i>						
Amount outstanding March 31, 1954.....	183,861.	05	325,016.	04	509,477.	09
Accrued interest April 1, 1954 to March 31, 1955..	—		11,178.	69	11,178.	69
Total Debits.....	183,861.	05	336,794.	73	520,655.	78
<i>Credits—</i>						
Net revenue April 1, 1954 to March 31, 1955.....	7,292.	77	1,850.	59	9,143.	36
Amount written off as loss by Orders-in-Council— April 1, 1954 to March 31, 1955.....	7,127.	97	28,795.	83	35,923.	80
Total Credits.....	14,420.	74	30,646.	42	45,067.	16
Amount outstanding March 31, 1955.....	169,440.	31	306,148.	31	475,588.	62

6. Revenue from Public Lands in the Provinces

Source	Amount
	\$ cts.
Outright sales.....	72,937.60
Agreements of sale—	
Principal.....	26,644.17
Interest.....	2,899.01
Leases.....	2,892.97
Quarrying lease.....	3,000.00
Miscellaneous fees.....	870.60
Total.....	109,244.35

Appendix B

1. Location, Area and Comparative Statement of Visitors to the National Parks for the Period April 1 to March 31

National Parks	Province	Area	1954-55	1953-54	Increase or Decrease
Banff.....	Alta.	2,564 sq. mi.	648,952	661,700	-12,748
Cape Breton Highlands...	N.S.	390 "	123,731	33,610	+90,121
Elk Island.....	Alta.	75 "	152,550	177,482	-24,932
Fundy.....	N.B.	79.5 "	99,346	107,793	-8,447
Georgian Bay Islands.....	Ont.	5.4 "	14,705	14,425	+280
Glacier.....	B.C.	521 "	732	714	+18
Jasper.....	Alta.	4,200 "	116,760	132,063	-15,283
Kootenay.....	B.C.	543 "	222,999	231,281	-8,282
Mount Revelstoke.....	B.C.	100 "	13,535	15,742	-2,207
Point Pelee.....	Ont.	6 "	556,157	445,270	+110,887
Prince Albert.....	Sask.	1,496 "	112,659	118,720	-6,061
Prince Edward Island.....	P.E.I.	7 "	158,984	146,827	+12,157
Riding Mountain.....	Man.	1,148 "	523,027	494,304	+28,723
St. Lawrence Islands.....	Ont.	189 acres	45,213	37,076	+8,137
Waterton Lakes.....	Alta.	204 sq. mi.	219,621	207,533	+12,088
Yoho.....	B.C.	507 "	26,010	32,748	-6,738
Sub-Total.....		11,846.2 sq. mi.	3,035,001	2,857,268	+177,733

National Historic Parks and Sites	Province	Area	1954-55	1953-54	Increase or Decrease
Fort Anne.....	N.S.	31 acres	19,677	19,297	+380
Fort Battleford.....	Sask.	37 "	12,177	11,391	+786
Fort Beauséjour.....	N.B.	81 "	23,245	21,430	+1,815
Fort Chambly.....	P.Q.	2.5 "	70,505	72,320	-1,815
Fort Lennox.....	P.Q.	210 "	11,899	8,829	+3,070
Fortress of Louisbourg.....	N.S.	339.5 "	16,904	20,497	-3,593
Fort Malden.....	Ont.	5 "	17,252	17,418	-166
Fort Wellington.....	Ont.	8.5 "	9,046	8,134	+912
Halifax Citadel.....	N.S.	37 "	102,689	85,395	+17,294
Port Royal Habitation...	N.S.	20.5 "	20,892	15,746	+5,146
Sub-Total.....		772.0 acres	304,286	280,457	+23,829
GRAND TOTAL.....		11,847.4 sq. mi.	3,339,287	3,137,725	+201,562

N.B.—No attendance records available for Wood Buffalo Park, Alta.-N.W.T. (17,300 sq. mi.); Woodside Historic Park, Kitchener, Ont. (11 acres); Prince of Wales's Fort, Churchill, Man. (50 acres); Lower Fort Garry, Man. (13 acres).

2. Maintenance of Roads

National Park	Location	Work
Banff.....	Trans-Canada Highway.....	Clearing of proposed route completed to Lake Louise.
	Mile 7.8-Mile 10.8.....	Gravelled.
	Cascade River Bridge.....	Piling completed.
	Banff-Jasper Highway, Mile 0-Mile 6..	Reconstruction completed to sub-grade level.
	Mile 0-Mile 10.....	Clearing work.

National Park	Location	Work
	Mount Norquay Road, Miles 1 and 2..	Realignment and widened to 26 ft.
	Tunnel Mountain Campground Road..	Widening and realignment.
	Moraine Lake Road.....	Widening and realignment.
	Sundance Canyon Road, Bow River Section.....	Grade raised 2½ ft.; surface gravelled.
Jasper.....	Banff-Jasper Highway, Whirlpool River.....	New bridge constructed.
	Mile 48-3-Mile 56.....	Asphalt surfaced.
	Jasper-Edmonton Highway, Mile 5-Mile 1.....	Asphalt surfaced.
	Miette Hot Springs Road.....	New bridges at Sulphur Creek and Villeneuve Creek completed.
	Mount Edith Cavell Road.....	New viewpoints constructed.
Kootenay.....	Banff-Windermere Highway, Sinclair Canyon.....	10 miles seal-coated; 1,300 ft. guardrail installed.
	Hawk Creek.....	Bridge approaches completed.
Yoho.....	Trans-Canada Highway.....	Clearing work carried out.
	Yoho Valley Road.....	New bridge completed.
Mount Revelstoke.....	Main Park Road, Mile 8.....	Road widened.
	New Access Road.....	Clearing operations.
Waterton Lakes.....	Golf Course.....	New access road.
	Waskesiu Highway.....	900 ft. of guardrail installed.
	Gatehouse.....	Additional traffic lane constructed.
Fundy.....	Highway No. 14.....	New highway signs erected.
		490 ft. of cedar cribwork installed and 8,000 cu. yds. fill added at Church Hill.
	Alma Bridge.....	Bridge replanked; shoulders widened to 8 ft. along road 600 ft. west of bridge.
	Point Wolfe Road.....	300 ft. guardrail erected.
	Springbrook Hill.....	Parking area constructed.
	Herring Cove Road.....	A 46-ft. reinforced concrete culvert was constructed and bridge widened to 33 ft. at Point Wolfe road junction.
	Park Headquarters Area.....	1,122 ft. of steel sheet piling installed to prevent erosion of cliffs facing Bay of Fundy.
Cape Breton Highlands....	Cabot Trail—	
	Ingonish Beach—Neil Harbour....	Road paved.
	Eastern slope of North Mountain....	Gravelled.
	Ingonish Beach.....	Parking lots constructed on both sides entrance.
Point Pelee.....	West shore.....	New parking lot constructed.

3. Improvement to Trails

National Park	Location	Work
Banff.....	Goat Creek.....	4 miles access trail; wooden bridge at Mile 8.
	Horse Trail.....	Extended 4 miles from Bryant Creek to Marvel Pass.
	Johnson Creek.....	1 mile relocated.
Jasper.....	Maligne Lake.....	4 miles fire trail.
	Snake Indian River.....	Fire trail extended 1.5 miles.
	Vine Creek.....	6 miles pony trail.
Kootenay.....	Southward from Mile 16.....	12 miles fire road.
Yoho.....	Otterhead Creek.....	3 miles fire road including 40 ft. and 12 ft. bridges.
	Lake O'Hara.....	Two 40 ft. bridges and one 30 ft. bridge replaced.
Mount Revelstoke.....	Mountain Trail.....	500 ft. of new bridges and corduroy.
Riding Mountain.....	Whirlpool-Riding Mountain Trail.....	11 miles cut.
	Whirlpool-McCreary Trail.....	20 miles cut.
Fundy.....	Shepody Trail.....	Right-of-way cut 3 miles completed.
	Hastings-Point Wolfe Trail.....	3 miles completed.
Cape Breton Highlands...	Green Cove-Old Cabot Trail.....	2 mile fire trail constructed.
Georgian Bay Islands....	Beausoleil Island.....	1 mile of new trails constructed.

4. Mileage of Park Roads, Trails, and Telephone Lines

National Parks	Motor Roads	Secondary Roads	Fire Roads	Trails	Telephone Lines
Banff.....	169.45	.....	121.50	700.75	278.75
Cape Breton Highlands.....	50.80	5.00	27.23	24.65	14.89
Elk Island.....	18.00	.....	.....	20.00	18.50
Fundy.....	21.40	7.00	27.30	26.00	12.00
Glacier.....	.....	.....	25.75	106.50	2.00
Jasper.....	162.50	9.00	84.50	575.50	368.95
Kootenay.....	60.60	.....	46.00	138.00	58.00
Mount Revelstoke.....	18.50	.....	.....	58.25	11.00
Point Pelee.....	6.58	2.50	.....	.....	7.00*
Prince Albert.....	65.70	75.75	.....	268.75	129.00
Prince Edward Island.....	12.00	5.00	.....	3.50	.....
Riding Mountain.....	58.50	50.90	.....	119.00	227.00
Waterton Lakes.....	48.30	13.50	.....	91.00	62.10
Yoho.....	45.00	.....	29.50	256.50	73.00
Total.....	737.33	168.65	361.78	2,388.40	1,262.19

* Owned and operated by Mersea Municipal Telephone System.

5. Major Construction in Parks

National Park	By National Parks Branch	By Private Enterprise
Banff.....	Warden residence in townsite; warden cabin at Howse River; warden lodge at Healy Creek; staff quarters at eastern gateway; kitchen-dining hall at Banff Camp; public service building at Mount Norquay.	(a) <i>Townsite</i> 28—room addition to hotel; extension to business block; restaurant; 8 residences; 7 motel units; restaurant in motel; telephone exchange building (erected by Alberta Government Telephones). (b) <i>Outside townsite</i> 34-room tourist lodge; ski lift at Mount Temple; ski shop at Sunshine Lodge; school at Lake Louise.
Jasper.....	New heating plant at Jasper pool; staff house; staff quarters at Miette Hot Springs; storage shed.	20 cabins at Patricia Lake; 20 cabins at Pocahontas; 2 additional cabins at Sunwapta Falls.
Kootenay.....	Chief Warden's residence; Engineer's residence; Western Entrance building; semi-detached staff residence.	6 cabins at auto bungalow camps. Combined residence staff and administration building at an auto-bungalow camp.
Yoho.....	Work started on new Park administration building; warden cabin; warden's residence; 6 lot trailer park.	
Mount Revelstoke.....	3 tourist cabins.	
Waterton.....	Golf clubhouse; warden's cabin; kitchen shelter; comfort station.	13-unit motel.
Prince Albert.....	Renovation to Engineer's residence; semi-detached staff residence; renovation to gatehouse; renovation of golf clubhouse; 14 portable cabins; 72 lot trailer park; 60 tent campground.	Store and restaurant; 9-unit motel.
Riding Mountain.....	Engineer's residence; vehicle storage building; a barn; 3 combined garage and tool sheds.	3 tourist cabins; riding academy; office building and carport added to bungalow camp; 5 cottages.
Georgian Bay Islands.....	Park administration building; a cook-house; 2 bath-houses; 680 ft. retaining wall; 1,090 ft. flagstone walk.	
Point Pelee.....	Stores building; warden residence; laundry and toilet building; kitchen shelter.	
St. Lawrence Islands.....	Several improvements to picnic facilities, trails and wharfs.	
Prince Edward Island.....	Water pipes installed at Stanhope trailer park; laundry and shower building; 3 kitchen shelters; refreshment booth.	

6. Improvements to Townsites

National Park	Location	Work
Banff	Wolf, Elk, Bear, Lynx and Buffalo Streets	9,300 linear feet of curb and gutter laid.
	Lynx Street	Underground wiring installed.
	Wolf Street	Underground telephone cable (installed by Alberta Government).
	Administration Building	600 feet of stone work in preparation for iron fencing.
	Industrial compound	3,755 linear feet of sewer pipe and septic tank installed; 4,200 linear feet of water pipe laid; gas pipe laid (Western Natural Gas Company).
Jasper	Connaught Drive and Patricia Street	Asphalt surfaced.
Kootenay	Radium Hot Springs	Townsite re-surveyed.
	Parking lot	Sidewalk installed.
	Red Rock camp-ground—Radium Hot Springs Hotel	Seven arch-type street lights installed.
Yoho	Field Townsite	Additional sidewalks constructed.
Prince Albert	Wasquesiu Townsite	Additional sidewalks, curbs and gutters constructed. Work commenced on public parking lot.
	R.C.M.P. Post	Stone and concrete steps and wall constructed.
Riding Mountain	Wasagaming Townsite	Standards and mercury vapour lights erected; additional sidewalks constructed.

7. Additions to Recreational Facilities

National Park	Location	Additions
Banff	Tunnel Mountain camp-ground	3 double shelters.
	Moraine Lake camp-ground	Double shelter.
	Miles 7, 11, 12 and at Baker Creek on T.C.H.	New picnic facilities.
	Mount Temple Chalet	Pomagalski ski tow.
	Sunshine Lodge	Ski shop.
Jasper	Cottonwood Creek camp-ground	2 kitchens; electricity and water extended to kitchen and wash-room units.
	Whistler Mountain	Rope ski tow.

National Park	Location	Additions
Kootenay	Bath-house	77 lockers installed; 55 new benches.
	Vermilion Summit and Sinclair Summit camp-grounds	Kitchen shelters erected.
Yoho	Natural Bridge, Kicking Horse camp-ground, Great Divide picnic grounds	Kitchen shelters erected.
Waterton Lakes	Lost Horse Creek Golf Course	Kitchen shelter constructed. Clubhouse constructed tees; greens and sand traps improved.
Elk Island	Picnic area	4 masonry stoves; several tables set out.
Prince Albert	Golf course	Clubhouse extended to provide space for caddy carts; foot bridge on No. 2 fairway rebuilt; No. 5 fairway lengthened 50 yards.
	Tennis courts	2 courts hard surfaced.
Riding Mountain	Wasagaming Townsite	Riding academy.
Georgian Bay Islands	Picnic shelter at Park headquarters	Stone fireplace, stone benches.
St. Lawrence Islands	Mallorytown Landing	3 double stove fireplaces; 2 diving rafts; additional picnic tables; children's swings.
	Beau Rivage Island	New wharf constructed.
	Stovin Island	Children's swings.
Cape Breton Highlands	Ingonish Beach athletic field	Baseball diamond.
Prince Edward Island	Camp-ground at Clarke's Pond	Area graded; access road completed.

8. Fire Losses in the National Parks

National Park	Number of Fires		Area Burned (Acres)		Cost of Suppression (Dollars)	
	1949-53 Av.	1954	1949-53 Av.	1954	1949-53 Av.	1954
Banff	12.2	6	13.06	60.13	815.65	799.31
Jasper	5.2	2	3.06	.11	318.33	15.02
Glacier	2.4	—	62.31	—	592.48	—
Kootenay	2.0	1	.42	.01	189.25	3.75
Yoho	2.0	—	1.12	—	616.90	—
Revelstoke	1.4	—	1.25	—	287.30	—
Waterton Lakes	1.0	—	.30	—	19.25	—
Elk Island	0.4	—	30.60	—	16.96	—
Prince Albert	2.2	3	5,961.85	90.05	3,573.09	330.03
Riding Mountain	5.0	—	916.45	—	608.66	—
Georgian Bay Islands	0.4	1	—	.01	.31	—
St. Lawrence Islands	1.2	3	.30	1.26	19.13	26.10
Point Pelee	0.2	1	—	.05	—	6.25
Fundy	0.6	1	9.85	spot	521.80	3.00
Prince Edward Island	—	—	—	—	—	—
Cape Breton Highlands	1.8	—	.40	—	17.20	68.45*
Total	38	18	6,940.97	151.62	7,596.31	1,251.91

* Expenditure on Fire outside Park Boundary in co-operation with Provincial Authorities.

9. Reduction of Mammals

National Park	Mammal	Number Killed	Disposal of Meat and Hides
Banff.....	Buffalo.....	6	Hides sold; meat donated to Banff Indian Days Committee.
Jasper.....	Elk.....	137	Meat and hides donated to Indian Affairs Branch.
Elk Island.....	Elk.....	205	Meat and hides donated to Indian Affairs Branch.
	Moose.....	50	
Prince Albert.....	Beaver.....	213	Skins sold at public auction.
	Buffalo.....	3	Meat used at work camp and hides retained.
Riding Mountain.....	Buffalo.....	27	Hides sold; meat used at work camp and some given to Indian Affairs Branch.
Point Pelee.....	Muskrat.....	3,805	Hides sold by tender.
	White-tailed deer.....	8	Meat given to charitable institutions.
Cape Breton Highlands..	White-tailed deer.....	25	Meat and hides donated to Indian Affairs Branch.

10. Statement of Large Mammals in Fenced Enclosures in National Parks, March 31, 1955

	Buffalo	Elk	Moose	Mule Deer	White-tailed Deer	Total
Banff Park Paddock.....	7	—	—	—	—	7
Elk Island Park Paddock.....	1,426	517	310	30	45	2,328
Prince Albert Park Paddock....	8	—	—	—	—	8
Riding Mountain Park Paddock..	25	195	3	—	37	260
Waterton Lakes Park Paddock..	14	—	—	—	—	14
TOTAL.....	1,480	712	313	30	82	2,617

11. Plantings from National Parks Hatcheries During 1954

Species	Banff Park	Jasper Park	Waterton Lakes Park	Yoho Park	Kootenay Park	Total
Rainbow Trout—						
Fingerlings.....	67,710	—	—	7,000	—	74,710
Yearlings.....	—	21,320	—	—	—	21,320
Cutthroat Trout—						
Eyed eggs.....	—	—	—	—	4,000	4,000
Fingerlings.....	18,000	—	—	12,000	3,000	33,000
Eastern Brook Trout—						
Fingerlings.....	39,220	—	—	2,000	6,000	47,220
Yearlings.....	—	11,345	6,000	—	—	17,345
Adults.....	350	—	—	—	—	350
Splake Trout—						
Yearlings.....	70	1,100	—	—	—	1,170
Adults.....	380	—	—	—	100	480
Grayling—						
Yearlings.....	—	1,478	—	—	—	1,478
	125,730	35,243	6,000	21,000	13,100	201,073

12. Fish Plantings from Other Sources

Species	Park	Number	Source
Whitefish eyed eggs.....	Banff.....	5,500,000	Manitoba Dept. of Mines and Natural Resources.
Graylings (yearlings).....	Jasper.....	1,500	Calgary Hatchery.
Salmon (parr).....	Cape Breton Highlands....	22,875	Dept. of Fisheries.
Eastern Brook Trout (yearlings).....	Cape Breton Highlands....	16,000	Dept. of Fisheries.

13. Members of Historic Sites and Monuments Board

Professor Fred Landon, London, Ont., (chairman)
 The Honourable E. Fabre-Surveyor, Montreal, P.Q.
 The Reverend Antoine d'Eschambault, Genthon, Man.
 Professor M. H. Long, Edmonton, Alta.
 Dr. Walter N. Sage, Vancouver, B.C.
 The Honourable Thane A. Campbell, Charlottetown, P.E.I.
 Dr. Wm. Kaye Lamb, Dominion Archivist, Ottawa, Ont.
 C. E. A. Jeffery, St. John's, Nfld.
 Dr. Alfred G. Bailey, Fredericton, N.B.
 Campbell Innes, Battleford, Sask.
 Dr. F. J. Alcock, Chief Curator, National Museum, Ottawa, Ont.
 Dr. Thomas H. Raddall, Halifax, N.S.
 A. J. H. Richardson, National Parks and Historic Sites Division, Ottawa, Ont., (Secretary).

14. Major Improvements and Repairs to National Historic Parks and Sites

National Historic Site	Nature of Work
Fortress of Louisbourg, N.S.....	Floors and windows repaired; 640 linear feet of wall restored at old hospital; bake oven and well excavated.
Halifax Citadel.....	Restoration of Cavalier Building completed; restoration and preservation of wall continued.
Fort Royal, N.S.....	Telephone line relocated to rear of museum; sewer line replaced; new entrance road and gateway constructed; landscaping.
Fort Beauséjour, N.B.....	Deep well pumps installed; garage and warehouse building erected.
Quebec Walls and Fortifications.....	Upper levels of St. Louis Gate Tower repointed and eleven iron gratings installed; work continued on repointing fortification walls; a section of sidewalk and 180 feet of stone wall rebuilt.
Fort Chambly, Que.....	Repairs to walls of fort; entrance driveway asphalted; museum walls redecorated.
Grenville Canal, Grenville, Que.....	Memorial moved to a new location.
Fort Lennox, Ile-aux-Noix, Que.....	New floor in Barracks Building completed; repointing of masonry walls; roofs of several buildings painted.
Murney Tower, Kingston, Ont.....	Section of moat wall rebuilt; stone walls of main room and archways repointed.
Fort Malden, Amherstburg, Ont.....	New roof on the extension of old fort building; new quarters for Custodian in mess hall building; improvements to top floor of Hough House.
Lower Fort Garry, Man.....	Construction of asphalt surfaced parking area.
Fort Battleford, Sask.....	New administration building and custodian's residence constructed; water supply and septic tank installed; three stone entrance pillars erected and bronze tablet affixed to centre pillar.

15. Historic Sites Marked and Important Persons Commemorated

Place	Event or Person
Newfoundland— St. John's.....	Early Transatlantic Flights.
Prince Edward Island— de Sable.....	Franklin Knight Lane.
Nova Scotia— Grand Pré..... Halifax.....	Sir Robert Borden. Captain James Cook.
New Brunswick— Aulac..... Fredericton.....	La Coupe Dry Dock. Julia Catherine Beckwith Hart.
Quebec— L'Assomption..... Montreal.....	Sir Louis A. Jetté. Montreal Curling Club.
Ontario— Wasaga Beach..... Chatham..... Amherstburg..... St. Joseph's Island..... Orillia..... Wingham..... Thamesville.....	Ayling-Reid Flight. David Mills. Wyandot Council House. Ft. St. Joseph Cemetery. Sir Samuel B. Steele. George Agnew Reid. The L. Sherman Barn.
Manitoba— Winnipeg.....	Alexander Ross.
Saskatchewan— Fort Battleford..... Regina.....	Entrance pillars to Historic Park. Haultain-Davin-Ross.
Alberta— Red Deer..... Beaver Lodge..... Peace River.....	Anthony Henday. Dr. W. D. Albright. Reverend John G. Brick.
British Columbia— Castlegar..... Victoria.....	David Thompson. Emily Carr.

16. Fisheries Studies by Canadian Wildlife Service

Region	Investigation
Jasper Park.....	Assessment of game fish populations and biological conditions in heavily fished lakes. Review of fish culture activities.
Waterton Lakes Park.....	Review of fish culture activities. Study of returns of planted fish.
Banff Park.....	Review of fish culture activities. Investigation of loss of fish through turbine.
Kootenay Park.....	Investigation of Dog Lake, with respect to water level.
Wood Buffalo Park.....	Investigation of commercial goldeye fishery.
Riding Mountain Park.....	Transfer of 1,400 lake trout from Clearwater Lake, Man., to Clear Lake. Investigation of introduction of yellow walleye (pickerel).
Cape Breton Highlands Park.....	Reclamation of Freshwater Lake by poisoning. Discussion of plans for salmon research program.
Churchill and Saskatchewan Rivers.....	Assistance in sturgeon investigation.

17. Banding of Wild Birds

Banded in 1954—	
Ducks.....	32,000
Geese.....	1,936
Trumpeter Swans.....	19
Other migratory birds.....	42,317
Total, 1954.....	76,272
Banded to date.....	886,782
Banded and recovered to date.....	80,504

18. Licences and Permits Issued Under the Migratory Birds Convention Act

Nature of Permit or Licence	Number Issued
To collect birds for scientific purposes.....	385
For local control of great black-backed gull.....	17
To take migratory birds for propagation.....	6
To possess migratory birds for propagation.....	759
For bird-banding.....	190
For taxidermy.....	68
Total.....	1,425

19. Distribution of Wildlife Publications

Consolidation of Migratory Birds Convention Act and Regulations.....	11,980
Abstracts of Migratory Bird Regulations.....	55,591
Educational and Instructive Pamphlets.....	66,713

20. Zoological Studies by National Museum

Area	Study
Newfoundland.....	Marine invertebrates.
Prince Edward Island.....	Mammals.
Nova Scotia—	
Cape Breton Island.....	Bird fauna, marine invertebrates, mammals.
New Brunswick—	
Miramichi Estuary.....	Barnacles.
Quebec—	
Gaspé coast.....	Shoreline invertebrates.
Eastern Townships and Lac St. John vicinity.....	Reptiles and amphibians.
Ontario—	
Ottawa area.....	Reptiles and amphibians.
Alberta—	
Red Deer River.....	Dinosaur.
Saskatchewan.....	Fossil mammals.
British Columbia—	
East Kootenay.....	Birds.
Northwest Territories—	
Ellef Ringnes Island.....	Mammals, birds, marine invertebrates.
General:	amphipod crustaceans, fossil mammals and fossil molluscs.

21. Zoological Collections

The following specimens were added: 211 mammals; 565 birds; 1,294 lots of reptiles and amphibians; 13 lots of fishes; 1,232 lots of invertebrates; about 250 determinable fossil invertebrates.

22. Institutions which Received Information or Specimens from the National Museum

(a) Zoological:

Canadian Wildlife Service; Fisheries Research Board of Canada; Geological Survey of Canada; Entomological Division, Department of Agriculture; National Film Board; Canadian Broadcasting Corporation; Nova Scotia Institute of Science; Atlantic Biological Station, St. Andrews, New Brunswick; Quebec Department of Fisheries; Museum of the Province of Quebec; Quebec Society for the Protection of Birds; Provencher Society of Natural History; Collège de Sainte-Anne-de-la-Pocatière, Kamouraska, Que.; Department of Zoology, McGill University; Arctic Institute of North America; Kemptville Agricultural College; Ottawa Field-Naturalists' Club; Ontario Department of Lands and Forests; Royal Ontario Museum of Zoology and Palaeontology; Department of Geology, University of Western Ontario; Manitoba Museum, Winnipeg; Saskatchewan Provincial Museum, Regina; Department of Geology, University of Saskatchewan; Department of Zoology, University of British Columbia; Pacific Biological Station, Nanaimo, B.C.; United States National Museum; American Museum of Natural History, New York; Museum of Comparative Zoology, Harvard University; Department of Zoology, Boston University; Middlebury College, New Hampshire; St. Bonaventure University, New York; Department of Zoology, University of Michigan; Carnegie Museum, Pittsburgh; Bird Research Foundation, Cleveland, Ohio; Department of Zoology, University of Kansas; Department of Geology, University of Nebraska; Department of Geology, University of Wyoming; South Dakota School of Mines; Department of Geology, University of Ferrara, Italy; National Museum, Stockholm, Sweden.

(b) National Herbarium:

Acadia University; Bombay Forest Service, Poona, India; Canadian Wildlife Service; Carleton College, Ottawa; City of Ottawa; Division of Botany and Plant Pathology, Dept. of Agriculture, Ottawa; Ecole d'Agriculture, Rimouski, P.Q.; Forestry Branch, Ottawa; Geographical Branch, Ottawa; Geological Survey of Canada; McGill University; Natural History Museum, Stockholm, Sweden; Natural History Museum, Vienna, Austria; New York Botanical Garden; Ontario Agricultural College, Guelph, Ont.; Ontario Dept. of Lands and Forests; Quebec Provincial Museum; St. Vincent College, Latrobe, Pa.; Stanford University; State College of Washington; University of British Columbia; University of California; University of Manitoba; University of Michigan; University of Paris; University of Toronto; U.S. Dept. of Agriculture; Yale University.

23. National Museum Lectures**(a) Adult Lectures**

- Man with a Thousand Hands, by I. S. Decarie, Montreal.
 And There Was No Night, Neil Douglas, Meriden, Conn.
 The Barren Ground Caribou, by A. W. F. Banfield, M.A., Ph.D.,
 Ottawa.
 80,000,000 Indonesians Seek a Better Living, by Nathan Keyfitz,
 B.A., Ph.D., Ottawa.
 Science in the Wheat Fields, by G. H. Goulden, B.S.A., M.S.A., Ph.D.,
 Ottawa.
 Natural Gas for Canada, by George S. Hume, O.B.E., Ph.D., F.R.S.C.,
 Ottawa.
 The Walls of Jericho, by A. D. Tushingham, B.D., Ph.D., Kingston.
 The Tropical Seas, by T. W. M. Cameron, M.A., Ph.D., D.Sc., F.R.S.C.,
 Montreal.
 Colonial Williamsburg, by His Excellency R. Douglas Stuart, Amba-
 sador of the United States of America to Canada.
 Rambles in England in Coronation Year, by James A. Gibson, M.A.,
 B.Litt., D.Phil. Ottawa.
 Here and There in Canada's Eastern Arctic, by R. G. Blackadar,
 M.A., Ph.D., Ottawa.
 The Canadian Scene in Film, by A. W. Trueman, M.A., D.Litt., L.L.D.,
 Ottawa.
 Wildlife of the Canadian Rockies, by Ian McTaggart Cowan, B.A.,
 Ph.D., F.R.S.C., Vancouver.
 All About Switzerland, by His Excellency Dr. Victor Nef, Minister
 of Switzerland to Canada.
 The Story of the Horse, by Loris S. Russell, M.A., Ph.D., F.R.S.C.,
 Ottawa.
 Ancient Food in Modern Mouths, by R. S. MacNeish, M.A., Ph.D.,
 Ottawa.

(b) Children's Lectures

- The Enchanted Forest—a motion picture.
 Trail Across the Arctic, by Dr. Robert Blackadar, Ottawa.
 Digging Up the Past, by Thomas E. Lee, Ottawa.
 One Little Indian, Here's Hockey, Northwest Passage—motion picture
 program.
 Realm of the Wild, Angotee—motion picture program.
 Animals of All Countries, by Dr. T. W. M. Cameron, M.A., Ph.D.,
 D.Sc., F.R.S.C., Montreal.
 Animal Life in the Arctic, by S. D. MacDonald, Ottawa.
 How to be an Eskimo Artist, by James Houston, Ottawa.
 A Geologist in The Bahamas, by Dr. D. J. MacLaren, Ottawa.
 How to Climb Mountains, by John Wheeler, Ottawa.
 Living Fossils, by Dr. H. H. J. Nesbitt, Ottawa.
 Spring Wild Flowers, by W. K. W. Baldwin, Ottawa.
 Skiing in the Valley of the Saints, Maple Sugar Time, Ti-Jean Goes
 Lumbering, Bronco Busters—special motion picture program.
 Bush Christmas—special motion picture program.
 Our Debt to Different Peoples of Long Ago, by R. S. MacNeish, M.A.,
 Ph.D., Ottawa.

(c) Adult Lectures in French

L'Homme dans l'Ungava, by M. Jacques Rousseau, Des.Sc., Director
of Montreal Botanical Gardens.

Les Iroquois: Leur Passé, leur Présent, by Marcel Rioux, Ottawa.

La Birmanie, vue par un Canadien, by Robert Gauthier, Toronto.

Appendix C

1. Details of Stream Gauging

District Office	Gauging Stations	Discharge Measurements	Co-operating Agencies	Special programs
Vancouver..... (Sub-offices in Kamloops, Nelson, Cranbrook, Prince George, Whitehorse).	370 (228 all year)	1,091	B.C. Water Rights Branch. B.C. Power Commission. Northwest Power Industries Ltd. B.C. Electric Co..... Aluminum Co. of Canada. Bonneville Power Administration.	Columbia River investigations. Fraser River basin studies. Fisheries research. Yukon River investigations.
Calgary.....	211 (48 all year)	1,490	Alberta Water Resources and Irrigation Branch. Saskatchewan Water Rights Branch. Calgary Power Limited. Consolidated Mining and Smelting Company Limited.	International gauging stations on Milk, St. Mary and other prairie rivers.
Winnipeg.....	168 (98 all year)	776	Manitoba Water Resources Branch. Hydro - Electric Power Commission of Ontario	International prairie rivers. Regulation of lakes in Winnipeg River basin.
Ottawa..... (Sub-offices in North Bay, Niagara Falls and Morrisburg).	160 (130 all year)	483	Ontario Hydro-Electric Power Commission. Ontario Department of Planning and Development. Grand River Conservation Commission. Great Lakes Power Company. Abitibi Power and Paper Co.	Niagara River studies and assistance to international boards. St. Lawrence River meterings. Re-rating streams in Toronto area following Hurricane Hazel.
Quebec.....	170 (118 all year)	404	Quebec Streams Commission. Quebec Hydro-Electric Commission. Shawinigan Water and Power Company. Aluminum Co. of Canada. Gatineau Power Company.	Miscellaneous discharge measurements in Ungava Bay drainage. Winter measurements on rivers in lower Gulf of St. Lawrence and in James Bay drainage.
Halifax.....	55 (37 all year)	170	Nova Scotia Power Commission. New Brunswick Electric Power Commission. Newfoundland Department of Natural Resources. British Newfoundland Corporation.	Discharge measurements and establishment of gauging stations in Hamilton River basin.

2. Run-off Conditions in Canada

District	Mean Run-off	Variations in River Flows
British Columbia.....	139 per cent of yearly median on 5 typical rivers.	Run-off below normal in April but new high records frequent from June to January. High records for monthly flows on Fraser in November; on Columbia in July; on Kootenay in July and August; on Skeena in June, July, August, September and January. High records for daily flows in months of November on Fraser River; July on Columbia and Kootenay Rivers; June, July, August and September on Skeena River. New low records for daily flow on Fraser in May and for monthly March flow on the Sproat River.
Eastern slope Rocky Mountains.	156 per cent for two rivers	Run-off was excessive particularly in North Saskatchewan and Athabasca River basins. Some flooding in June and August in vicinity Sindre and Drumheller. New high records on North Saskatchewan for monthly flows in August, November and December and for daily flows in August and September; on Bow River for monthly flows in July and September and daily flows in July.
Southern Alberta and southwestern Saskatchewan.	.....	Wet summer with many streams flowing which normally are dry.
Manitoba.....	355 per cent of median for one river.	New high records for monthly flows of Assiniboine River in each month July to February inclusive and for daily flows in these months excepting September. Manitoba lakes at high levels with Lakes Winnipegosis and Manitoba recording new peak stages. Nelson and Churchill Rivers well above normal.
Northwestern Ontario..	179 per cent of median for one river.	English River flow excessive from April to July and January to March.
James Bay Drainage....	128 per cent for one river.	Missinaibi River excessive in April, October and November but moderately sub-normal for six of remaining months.
Great Lakes.....	138 per cent for four rivers.	New high records for June and October daily flows on North Magnetawan River; for daily and monthly October flows on Saugeen River. Flash floods from Hurricane Hazel in October on streams in Toronto area with much loss of life and property damage.
Quebec.....	112 per cent for four rivers.	Run-off for most part varied from normal to excessive. Monthly October flow of St. François River was record high.
New Brunswick.....	177 per cent for two rivers.	Run-off excessive for most of year. New high records on Saint John River for monthly flows in July, August, September, October and February, and for daily flows in these months excepting October; on Lepreau River for monthly June flow and daily February flow.
Nova Scotia.....	120 per cent for two rivers.	Considerable variation from month to month, ranging from deficient to excessive run-off. No new records.
Newfoundland.....	.....	Not sufficient records for proper comparison.

3. Snow Surveys

District	Location	Co-operating Agency	Snow Cover
Calgary.....	St. Mary River basin (May 1954).	U.S. Geological Survey.	197 per cent of 33-year average.
	Bow River basin (Mar. 1955).	.....	88 per cent of 19-year average.
	Cypress Hills.....	.....	Moderate.
Winnipeg.....	Lake of the Woods basin (Jan., Feb., Mar.)	U.S. Corps of Engineers. Ontario Hydro-Electric Power Commission.	102 per cent of normal.
	Lac Seul.....	Ontario Hydro-Electric Power Commission.	92 per cent of normal.
Ontario.....	North-central region—six courses.	Ontario Hydro-Electric Power Commission.	Close to 18-year average
New Brunswick.	Saint John and Lepreau River basins—9 courses.	N.B. Electric Power Commission.	Water content averaged 8.8 inches.
Nova Scotia....	.....	.....	No snow cover.

4. Glacier Surveys

Region	Number of Glaciers	Average Total Recession 1952-54 Feet	Rate of Ice Flow Feet per Year
Coast Range.....	2	83	15 (1)*
Selkirk Range.....	2	36	2 (1)*
Banff Park.....	3	88	49
Jasper Park.....	2	130	—

* One observation.

5. Boards on Which Water Resources Division Has Membership

Board	Purpose	Details of Operation
NATIONAL		
Canadian Lake of the Woods Control Board.	To supervise water levels.....	Supervised the operation of control structure, compiled records.
Prairie Provinces Water Board.	To study the inter-provincial waterway problems of the three prairie provinces.	Gauging stations were established and maintained.
Dominion - Provincial Board Fraser River Basin.	To study measures of control and use of the water resources of the Fraser River Basin.	Co-operative hydrometric program was carried out.
INTERNATIONAL		
St. Croix River Board of Control.	To supervise water levels.....	Maintained records of levels and inspected control structures.
Lake Memphremagog Board of Control.	To supervise water levels.....	Maintained records of levels.
Lake Champlain Board of Control.....	To supervise water levels.....	Maintained records of levels.

5. Boards on Which Water Resources Division Has Membership— (Cont'd)

Board	Purpose	Details of Operation
<i>INTERNATIONAL—continued</i>		
St. Lawrence River Board of Control.	To supervise control of outflow from Lake Ontario.	Approved plans and specifications for works in International Rapids Section of the St. Lawrence, in so far as those works would affect the levels and flow of the St. Lawrence River and Lake Ontario.
Massena Board of Control.....	To supervise diversion of water from St. Lawrence River by the Massena Power Company.	Inspected control structure, and maintained records.
Niagara Board of Control.....	Supervise water levels and the construction of remedial works at Niagara Falls.	Maintained close check on water levels above falls, approved plans and specifications for remedial works, inspected construction of such works.
International Niagara Committee.	Determine water available for power under Niagara Treaty of 1950.	Compiled records.
Lake Superior Board of Control	To supervise water levels.....	Supervised the operation of control structure, compiled records.
Prairie Portage Board of Control.	To supervise water levels.....	Project has not been completed Board has therefore been inactive.
Rainy Lake Board of Control..	To supervise water levels.....	Supervised the operation of control structures, compiled records.
International Lake of the Woods Control Board.	To supervise water levels.....	Supervised the operation of control structure, compiled records.
Souris River Board of Control.	To determine availability and make allocations of water of the Souris River.	Maintained flow records and records of changes in water licences.
St. Mary and Milk Rivers....	To supervise the division and use of the waters of these rivers.	Maintained and operated gauging stations, compiled records.
Kootenay Lake Board of Control*	To supervise water levels.....	Inspection of structure, supervision of operation of Corra Linn dam.
Columbia River Board of Control.	To supervise water levels.....	Maintained records of water level of Columbia River at International Boundary.
Osoyoos Lake Board of Control	To supervise water levels.....	Inspection of lake, recording of levels.
Saint John River Engineering Board.	To study the water resources of the Saint John River Basin.	Maintained a watching brief on developments in the Saint John River Basin.
Lake Ontario Board of Engineers.	To study factors affecting the levels of Lake Ontario and make recommendations as required under reference of 25 June 1952.	Studied factors affecting the fluctuation of water levels of Lake Ontario, developed several regulation plans, metering operations on St. Lawrence River.

5. Boards on Which Water Resources Division Has Membership— (Cont'd)

Board	Purpose	Details of Operation
<i>INTERNATIONAL—concluded</i>		
Co-ordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data.	To secure international agreement on basic data related to the Great Lakes Drainage Basin.	Agreement was achieved on records of flow of the St. Lawrence River 1860-1952.
Souris-Red Rivers Engineering Board.	To study water resources of Souris-Red Rivers and make recommendations thereon to the International Joint Commission.	Completed report to International Joint Commission on items 1, 2 and 3 of the reference of 12 January 1948.
Sage Creek Engineering Board.	To study water resources of Sage Creek Basin.	Board is inactive at present.
Waterton-Belly Rivers Engineering Board.	To study water resources of Waterton and Belly Rivers and make recommendations to International Joint Commission thereon.	Studies of problems of conservation and apportionment of these waters.
Columbia River Engineering Board.	To study water resources of Columbia Basin in order to develop a plan for ultimate use.	Reconnaissance, topographical and flowage surveys. Dam foundation investigations on Kootenay, Duncan, Elk and Columbia Rivers. Power studies.

6. Developments Under Dominion Water Power Regulations

Development	Licensed	Power Output Kwh—1954	Rental Received	Other Details
Porter Creek (Yukon Hydro Co.).....	Mar., 1952	4,135,408	\$ 361.22	
McIntyre Creek (Yukon Hydro Co.).....	Mar., 1955	—	—	Interim licence issued.
Lake Minnewanka (Calgary Power Ltd.).....	May, 1947	77,877,200	\$10,772.70	—
Ghost (Calgary Power Ltd.)..	May, 1947	172,165,500	(\$23,929.68)	Collected for Indian Affairs.
Yellowknife (Con. Mining and Smelting Co.).....	Dec. 1942	25,950,500	\$ 3,201.62	

7. Technical Assistance to Federal Agencies

Agency	Assistance by Water Resources Division
Lands Division.....	Administration of certain federal lands in British Columbia.
National Parks Branch.....	Supervision of river diversions in Banff National Park. Supervision of building repairs and parking lot construction in Winnipeg.
Pacific Biological Station.....	Special hydrometric program.
Fisheries Research Board.....	Special hydrometric program.
International Pacific Salmon Fish. Comm.....	Special hydrometric program.
Prairie Farm Rehabilitation Administration....	Co-operation in hydrometric operations concerned with irrigation.

8. Projects Carried out by Engineering and Architectural Division For National Parks Branch

National Historic Sites

- Construction of museum building, to house Alexander Graham Bell's relics, Baddeck, N.S.
- Restoration and repairs, Dufferin Terrace, Quebec City.
- Restoration of moat wall and repairs to interior of Murney Tower, Kingston, Ont.
- Repairs to buildings and walls, Lower Fort Garry, Man.
- Construction of combined administration building and custodian's residence, Fort Battleford, Sask.
- Improvements to Historic Site (Battle of Montmorency), Courville, P.Q.
- Continuation of renovation and repairs to Halifax Citadel, Halifax, N.S.
- Repairs to Fortification Walls, Quebec, P.Q.
- Repair and improvement to Martello Tower and grounds, Lancaster, N.B.
- Construction of entrance road gate and landscaping, Port Royal, N.S.

Cape Breton Highlands National Park

- Construction of a consolidated gravel base course and plant mix bituminous surface on 12.9 miles of Cabot Trail Highway, and 6.6 miles of Provincial Highway, N.S. mile 0 (Park boundary) to mile 18.5 of which 5.6 miles in the province plus 1 mile south of mile 0.

Point Pelee National Park

- Construction of storage building at park compound and of a warden's residence.

St. Lawrence Islands National Park

- Construction of a warden's residence and detached one-car garage at Mallorytown Landing. Drilling water well.
- Construction of wharf on Beau Rivage Island.
- Repairs to wharf on Endymion Island.

Fundy National Park

Construction of subgrade and placing consolidated gravel base course on half-mile section No. 14 Highway at northwest corner of Fundy to connect with the relocated No. 14 Highway in the Province.

Banff National Park

Addition to Cave and Basin bath-house consisting of caretaker's living quarters and heating plant.

Reconstruction of Banff-Jasper Highway Mile 0 to 10 from Lake Louise easterly.

Construction of semi-detached residence, supervising engineer's residence and three-car garage.

Completion of survey, Banff-Jasper Highway, Mile 0-20.4 south from Jasper-Banff Boundary and Mile 10-35 from Lake Louise Junction (south end).

Jasper National Park

Replacement of Whirlpool River bridge, Mile 15 from Jasper townsite, Banff-Jasper Highway.

Major repairs and laying asphalt bound base on 6.5 miles in first 20 miles of Banff-Jasper Highway.

Construction of asphalt bound consolidated base course approximately 7.7 miles, Banff-Jasper Highway, Mile 48.3 to 56.0 from Jasper townsite.

Repairs to Jasper townsite streets and to decking and parapet walls of Miette Hot Springs bath-house.

Construction of staff residence, Jasper townsite.

Completion of replacement of Sulphur Creek bridge, Villeneuve Creek Bridge and Miette River bridge.

Supply and installation of an exhaust ventilating system for Quonset Hut No. 40 (garage).

Major repairs to Miette Hot Springs Road.

Kootenay National Park

Construction of a concrete block garage at the maintenance compound area, Radium Hot Springs.

Replacement of Hawk Creek bridge, Mile 20.7 from Eisenhower Junction on Banff-Windermere Highway.

Major repairs to the Banff-Windermere Highway.

Mount Revelstoke National Park

Construction of the sub-grade and gravel surfacing of approximately 1.25 miles of Access Road from City of Revelstoke to park.

Prince Albert National Park

Completion of water supply system (tank and tower).

Riding Mountain National Park

Construction of a residence for park engineer at Wasagaming Townsite.

Seal coating of townsite streets and No. 10 Highway by-pass.

Waterton Lakes National Park

Construction of a two-span structural steel reinforced concrete bridge and highway approaches.

Yoho National Park

Construction of a steel truss bridge over the Kicking Horse River on the Yoho Valley Road, Mile 4.
Completion of Yoho Valley Road.

For Northern Administration and Lands Branch

Northwest Territories

Construction of two semi-detached houses with basement, at Fort Smith; a frame building for use as a warden's residence, at Rae and two, three-bedroom, one-storey houses, at Yellowknife. Heating and plumbing on buildings 15, 16, 17 and 18; additional bedroom for residence on Lot 24, and construction of basements under buildings 15 to 20, inclusive, Fort Smith.
Installation of 2 septic tanks and 4 water pressure systems for buildings 52 to 57, Lot 78, Hay River.
Purchase and installation of 2 blend-air heating systems in 2 wardens' residences on Lot 15, Fort Simpson.
Maintenance of Mackenzie Highway from Alberta boundary north through Hay River Settlement and on to West Channel, approximately 85 miles.

Yukon Territory

Extension of water and sewer mains, Upper Whitehorse, Lot 262 G 804 (Tank Farm Road).
Road location survey from the Whitehorse-Mayo Road near Carmacks to the Canol Road at Ross River Post via Little Salmon Lake Route.
Assistance to Cassiar Asbestos Company for the construction of the Yukon Section of the Cassiar Mine Road, a distance of approximately 2.2 miles from the northern boundary of British Columbia to a point on the Alaska Highway; to Yukon Territorial Government for maintenance of the Mayo-Whitehorse Road, and completion of construction of Stewart River Crossing to Dawson Road.

For Engineering and Water Resources Branch

Yukon Territory

Construction of a semi-detached residence and two-car garage.

For National Battlefields Commission

Construction of a road from St. Denis Street to the Quebec Citadel.

For Department of Veterans Affairs

Preparation of a site, including landscaping, for a Naval Memorial, Citadel Hill, Halifax, N.S.

For Department of Public Works

Trans-Canada Highway Division

Completion of construction of approximately 5.1 miles of road between Miles 4.2 and 10.8, Banff National Park; and of approximately 4 miles of road from West Gate, Easterly, and for construction of Kicking Horse River bridge, Yoho National Park.
Completion of road location survey, Banff and Yoho National Parks.
Maintenance of highway Mile 0 to Mile 6.2, Banff National Park.

For Department of Citizenship and Immigration

Yukon Territory

Construction of a semi-detached residence for Indian Affairs Branch.

For Department of National Revenue

Yukon Territory

Construction of a semi-detached residence and two-car garage.

Appendix D

1. Annual Forest Depletion

	Millions of Cubic Feet of Usable Wood		Percentage of Depletion	
	Period 1943-52	1953*	Period 1943-52	1953
Products Utilized—				
Logs and Bolts.....	1,178	1,398	31.6	33.3
Pulpwood.....	977	1,137	26.3	27.1
Fuelwood.....	767	863	20.6	20.5
Other Products.....	108	101	2.9	2.4
Total.....	3,030	3,499	81.4	83.3
Wastage—				
By Forest Fires.....	191	202	5.1	4.8
By Insects and Disease.....	500	500	13.5	11.9
Total.....	691	702	18.6	16.7
Grand Total.....	3,721	4,201	100.0	100.0

* Preliminary data.

2. Forest Industries

Summary of Principal Statistics, 1952

	Employees	Salaries and Wages	Net Value of Products	Gross Value of Products
	Number	\$	\$	\$
Woods Operations.....	149,318*	488,000,000	661,442,883	815,651,194
Pulp and Paper Industry.....	57,803	225,353,327	584,101,072	1,157,887,657
Lumber Industry.....	60,931	135,540,707	261,325,619	568,023,148
Wood-using Industries.....	69,537	163,890,274	272,829,694	599,606,383
Paper-using Industries.....	25,162	67,328,956	152,116,070	352,261,134
Total.....	362,751	1,080,113,264	1,931,815,338	—

* Man-year basis (300 working days).

3. Research Work of Forest Research Division

Silviculture and Management Section

(Percentage figures indicate the approximate allocation of professional time.)

Forest Classification—10%

Further studies of the relative merits of systems of forest site classification which allot, different degrees of emphasis to physiographic features, minor forest vegetation, and the forest itself; in the Maritimes emphasis has been on the climax concept, in Quebec on lesser vegetation, in Ontario on physiographic features, and in the Prairie Provinces various

combinations of these approaches are being followed. The *Forest Classification for Canada* was revised and preliminary work done on subdividing some of the forest sections into smaller divisions.

Ecology and Silvics—20%

Intensive studies under controlled conditions of the differential responses of seedlings of important tree species to variations in moisture, heat, and light, together with studies of plant physiology, including the absorption of nutrients by trees, at the Petawawa Forest Experiment Station. Ecological studies of the following forest types; white spruce and lodgepole pine in Alberta; spruce—aspens in Manitoba and Saskatchewan; white pine—red pine, and yellow birch—sugar maple, in Ontario and Quebec; spruce—balsam in Quebec and the Maritimes, and heath types in Newfoundland. Preliminary work in the preparation of manuals to assist the recognition of forest plants and tree seedlings.

Applied Silviculture—30%

Cutting experiments in all districts on company lands and on experimental areas administered by the Branch. The principal experiments were with; lodgepole pine near Strachan and Edson, Alta; jack pine and black spruce at Sandilands and Duck Mountain, Man.; spruce—balsam—birch—aspens at Heron Bay, Ont.; yellow birch and hard maple at Manitoulin and Haliburton, Ont.; spruce—balsam—birch at Lake Edward and Lake Kenogami, P.Q.; spruce—fir at Green River, N.B.; old-field white spruce in Nova Scotia and spruce—balsam in Newfoundland. Several districts also made studies of seedbed improvement techniques using scarification and herbicides.

Growth and Yield—15%

Sample plot establishment for yield studies which will result in empirical or normal yield tables for the more important forest conditions in Ontario and Quebec, with special attention given to how these studies will tie in with methods of assessing site productivity. The growth of thicket stands of balsam fir in the Maritimes, and growth studies made in overstocked stands of lodgepole pine in Alberta.

Reforestation and Tree Breeding—15%

Experimental plantings and direct seedings in Newfoundland, the Maritime Provinces, and at all Forest Experiment stations. Tree breeding program at the Petawawa and Acadia Forest Experiment Stations with particular emphasis on the establishment of provenance tests with white spruce, red spruce, red pine, and jack pine; co-operation in tree breeding with industry; much progress made in grafting techniques with conifers.

Forest Management—5%

Study of Provincial and Federal legislation influencing forest management practice; limited technical assistance to industry in the development of management plans.

Mensuration—5%

Promising mathematical functions developed for tree volumes and for growth relationships. Studies in some districts to check the applicability of various mensurational techniques in measuring and forecasting forest growth and development.

*Forest Inventories Section**Preparation of Stand Volume Tables*

Volumetric data for use by the air photo interpreter in making estimates of timber quantities collected in the field in accordance with four determinants: canopy density, average height weighted by volume, cover-type, and site-type. Stand volume tables based on these values and subdivided in accordance with the ratio of canopy density to basal area per acre. Two hundred and seventy-three sample plots measured and the data recorded. It was learned that the ratio of canopy density (C) to basal area per acre (B) ranges from 0.2 in certain black spruce stands to 1.6 in some of the tolerant hardwood stands. Local variations in C/B occur within a single stand and depend on differences in (B) rather than in (C).

Determination of Most Suitable Methods of Air Photography

Measurements of small objects under various conditions of contrast on air photographs of differing scales covering a single area.

Development of Instruments

Dots on the screen of the dot-reading planimeter or "moosehorn", Hilborn model, were moved very slightly to compensate for an almost negligible error caused by obliquity of view. Also a peep-sight of smaller diameter was introduced to "stop down" the view and this proved very satisfactory in minimizing the dispersity of focus between the dots and the tree crowns. The "moosehorn" was developed by the Section for the measurement of canopy density.

Investigation of Forest Survey Techniques

Comparison of inventory sampling methods on an area near Lanark, Ont., using the random method of sampling as the criterion. Data from some 527 sample plots showed no definite difference of trend between random and "selected line" methods of sampling. On the other hand the trend of the data of the subjectively chosen plots was quite divergent. It may be explained that "selected line" methods are based on samples measured on lines drawn between prominent map features in such a way as to cross the stand or stands to be sampled. The plots are not selected by personal judgment but are located at points predetermined from map measurements. In the subjective method the plots are selected by the photo interpreter as representative of the stand.

An experiment based on sample plots measured for the Yukon inventory indicated that very little advantage was obtainable from air photographs of the scale of 1,320 feet to 1 inch as compared to those at 2,900 feet to 1 inch.

Fulfilment of Departmental Survey Requirements

Forest inventories for areas in the Yukon and Northwest Territories, national parks, Indian reserves, and other federally administered lands, or for provincial lands where required.

*Fire Protection Section**Forest Fire Danger Tables*

Field studies at specially selected forest fire research stations in Saskatchewan and Alberta to obtain basic data for use in preparing fire danger tables for the specific areas concerned. Related projects at the Petawawa and Kananaskis Forest Experiment Stations. Successful field trials in four provinces of new, simplified danger tables, designed to enable fire rangers and others to readily compute fire danger conditions.

Weather in Relation to Fire Danger and Fire Behaviour

Effect of weather peculiar to mountainous regions on forest fire behaviour and on fire danger measurements investigated at the Kananaskis Forest Experiment Station. Effect of dew on forest inflammability studied at three field stations. Dew measuring equipment designed.

Fire Season Severity

Further analyses for 3,000 individual forest fires in New Brunswick to test hypotheses, developed in the Section, for arriving at a mathematical solution to some phases of the problem.

Fuel Type Classification

Some preliminary investigations regarding rate of fire spread and difficulty of control factors in relation to cover-type maps at Petawawa Forest Experiment Station.

Increasing Effectiveness of Forest Fire Control

Analysis of field data observed in Manitoba relating to the effect of slash disposal methods on subsequent fire hazard; study of the effects of various herbicides on inflammability; field work in a study of the characteristics of and maintenance practices for various back-pack tanks and hand pumps; effect of field use on the leaching of forestry hose mildew-proofers.

4. Forest-Fire Losses in Canada, 1953

(Exclusive of Yukon and Northwest Territories)

Compared with 10-year Average, 1943-52

Item	Annual Average 1943-1952	Year 1953
Total number of fires.....	5,131	6,440
Total area burned (acres).....	1,534,563	1,358,375
Size of average fire (acres).....	299	211
Saw timber burned (M. ft. b.m.).....	441,433	184,407
Small material (cords).....	1,071,119	1,423,901
Actual cost of fire fighting.....	\$1,774,660	\$3,679,216
Other fire protection costs (1952).....	—	\$15,440,912
Area under protection (square miles).....	—	1,129,751

5. Progress in Forest Inventories

Project Class	Estimated Area to be Covered	Approximate Area Covered			
		Prior to Fed.-Prov. Agreements	Under Fed.-Prov. Agreements Prior to 1954-55	Fiscal Year 1954-55	Total to Date
	sq. mi.	sq. mi.	sq. mi.	sq. mi.	sq. mi.
Ground Control Surveys...	397,000	107,000	198,000	86,000	391,000
Air Photography—					
Small Scale.....	742,000	246,000	325,000	74,000	645,000
Medium Scale.....	465,000	215,000	179,000	31,000	425,000
Total.....	1,207,000	461,000	504,000	105,000	1,070,000
Base Maps—					
Small Scale.....	682,000	74,000	376,000	130,000	580,000
Large Scale.....	355,000	215,000	75,000	26,000	316,000
Total.....	1,037,000	289,000	451,000	156,000	896,000
Field Surveys for Forest Data.....	952,000	157,000	360,000	127,000	650,000
Interpretation of Photographs.....	1,097,000	162,000	449,000	124,000	735,000
Forest Maps.....	1,037,000	84,000	347,000	74,000	505,000
Inventory Reports.....	1,037,000	53,000	443,000	69,000	565,000

6. Reforestation under the Forestry Agreements

Province	Number of Trees Planted		Area Planted		Area Seeded	
	Fiscal Year 1954-55	Total to Date	Fiscal Year 1954-55	Total to Date	Fiscal Year 1954-55	Total to Date
			Acres	Acres	Acres	Acres
Prince Edward Island...	30,000	78,000	30	68	—	—
Nova Scotia.....	99,000	158,000	89	148	—	—
Ontario.....	10,357,000	33,025,000	10,357	33,025	—	6,000
Manitoba.....	700,000	1,992,000	635	1,728	—	—
Saskatchewan.....	129,000	695,000	114	542	164	521
British Columbia.....	6,204,000	11,949,000	8,070	14,160	—	—
Total.....	17,519,000	47,897,000	19,295	49,671	164	6,521

7. Federal Payments to Provincial Governments Under the Forestry Agreements

Province	Forest Inventory		Reforestation		Total Federal Payments	
	Fiscal Year 1954-55	Total to Date	Fiscal Year 1954-55	Total to Date	Fiscal Year 1954-55	Total to Date
	\$	\$	\$	\$	\$	\$
Prince Edward Island.	—	—	14,379	39,030	14,379	39,030
Nova Scotia.....	87,396	112,645	1,068	1,932	88,464	114,577
New Brunswick.....	19,511	64,314	—	—	19,511	64,314
Ontario.....	283,287	1,058,032	103,570	336,249	366,857	1,394,281
Manitoba.....	61,167	238,514	8,915	27,216	70,082	265,730
Saskatchewan.....	40,792	162,656	1,062	6,194	50,854	168,850
Alberta.....	54,670	430,871	—	—	54,670	430,871
British Columbia.....	461,617	1,563,191	62,035	137,181	523,652	1,700,372
Total.....	997,440	3,630,223	191,029	547,802	1,188,469	4,178,025

8. Budworm Spraying—New Brunswick

Distribution of Costs by Projects

(Federal Payments shown in Brackets)

Project	1953-54	1954-55	Total to Date
	(\$1,000,000)	(\$314,271)	(\$1,314,271)
	%	%	%
Airfield Construction and Maintenance....	25	6	21
Operational Building.....	4	4	4
Aircraft Loading Facilities.....	6	3	5
Aircraft Operation.....	22	38	26
Insecticide and Assessment of Spraying....	35	32	34
Administration and Other Expenditures....	8	17	10
Total.....	100	100	100

9. Timber and Hay Disposal, Camp Gagetown, N.B.

Fiscal Year 1954-55

Number of timber permits issued.....	37
Number of hay permits issued.....	30
Total.....	67
Dues received from sale of timber.....	\$4,843
Dues received from sale of hay.....	92
Total.....	\$4,935
<u>Product Sold</u>	<u>Quantity</u>
Christmas trees.....	1,900 bundles
Sawlogs.....	80,900 ft. b.m.
Veneer logs.....	3,400 ft. b.m.
Poles.....	2,083 pieces
Fuelwood.....	310 cords
Hay.....	369 tons

10. Forest Products Laboratories

It is to be noted that the work at Vancouver is mainly concerned with British Columbia and Alberta timbers and forest-based industries.

TIMBER ENGINEERING

Ottawa

Continuing revision as testing progresses of basic data on the mechanical and physical properties of Canadian timbers. Determination of strength variation within different species and its relation to anatomical structure; of the strength of nailed strusses and wall panels constructed from wood products; and of the lateral resistance of nails. Study of the fundamentals of laminated beam and arch construction and the use of laminated timbers in marine construction.

Vancouver

Testing of small clear specimens of various Alberta and British Columbia species to augment data on mechanical and physical properties. Research into the mechanical properties of cottonwood and the strength of mine timbers from Alberta. Analysis of strength data on Douglas fir and western hemlock poles. Selection and testing of Douglas fir from various sites on Vancouver Island to determine the influence of growth site on mechanical properties.

VENEERS, PLYWOOD, AND ADHESIVES*Ottawa*

Investigations to determine the veneer cutting and plywood manufacturing properties of elm and other little-used species, the cutting properties of hardwoods and on temperature, knife angle, and other factors that affect the quality of rotary-cut veneers. Studies to determine the weathering properties of plywood adhesives and the effect of high-temperature drying on the gluing properties of veneers. Investigations on the dielectric properties of wood glues.

Vancouver

Studies of glue-line bonds by accelerated weathering techniques and by panel exposure to climatic conditions to determine bond strength. Investigation aimed at developing a technique for the rapid assessment of the durability of plywood and to determine the bending strength of Douglas fir plywood manufactured by various lay-up systems.

CONTAINERS*Ottawa*

Studies of packing and packaging methods for National Defence and Agriculture. Continuing investigations on the design and strength of crates and boxes manufactured from wood and wood products. Determination of nature and intensity of hazards during handling and transportation of packaged merchandise and of construction design and suitability of various Canadian woods for the manufacture of pallets.

WOOD PRESERVATION*Ottawa*

Studies to determine the suitability as a penta solvent of a new residual petroleum oil of Canadian manufacture for treating railway ties. Treatment of green fence posts (jack pine, spruce, white birch, and poplar) by the diffusion process with various preservatives and placing in service for durability tests. Treatment of exterior-grade plywood with oil-type preservatives to determine the effect of species on treatability. Preliminary work to establish a "laboratory reference preservative" for use in providing an efficiency rating for various preservatives in use or suggested for use. Soil block tests for evaluation of a high-temperature distillate from Saskatchewan petroleum. Continuance of the recording of durability data on test and service installations of posts, poles, and railway ties treated by different methods and with various preservatives. Studies on the modification of the penetration of preservatives into wood by the use of swelling agents.

Vancouver

Studies to determine methods and procedures for the satisfactory conditioning of wood prior to treatment with preservatives. Studies to provide data upon which to base a satisfactory method for impregnating mountain-type Douglas fir with creosote and oil-type preservatives. Investigations on the penetration and absorption of preservatives by western hemlock impregnated under pressure.

PATHOLOGY*Ottawa*

Investigations to determine the effect of blue-staining fungi on the mechanical properties of red pine heartwood. Investigations to determine the effect of fungi on the mechanical properties of wood. Isolation and study of fungi from wood specimens treated with wood preservative, after failure during exposure tests. Studies to determine the effect of moulds in retarding development of decay in birch logs and to determine the nature and effect of brown discoloration in hardwood veneer logs.

Vancouver

Studies to determine the significance of the heartwood stains of lodgepole pine and their effect on durability and mechanical properties. Research into the relative durability of western red cedar heartwood, under accelerated laboratory conditions, on the various factors affecting the durability of wood in service, and into the deterioration of logging residue to obtain data related to its salvage value as pulpwood.

PAINT COATINGS*Ottawa*

Studies to determine the durability of paints and other protective coatings under various climatic conditions, when applied to plywood and hardboards. Investigations to determine, under accelerated laboratory conditions, the effect of wood species on the durability of exterior coatings. Studies on the paintability of yellow cedar, particularly in respect of seasoning, surface preparation, and primers, and of the paintability of creosoted wood, the durability of floor finishes, the causes of tar blistering of paints on various wood species, and the behaviour of paint coatings on treated millwork.

WOOD CHEMISTRY*Ottawa*

Research into the manufacture of various types of structural boards from mill residues from various Canadian species, of the use of various barks as binding agents for structural boards of spruce sawdust, with particular attention to the development of bark pulp with satisfactory drainage qualities. Studies to modify the properties of wood by esterification, covering both sawdust and thin wood strips. Research into multi-stage chlorine dioxide delignification of sawdust from eastern spruce, Douglas fir, and western hemlock for the production of pulps. Studies completed on the fractionation and identification of the hemicellulose components of black spruce.

Vancouver

Research into the chemistry of western red cedar with particular attention to the relation of the extractives known to be responsible for the durability of this species. Studies on the development of a suitable method for determining the taxifolin content in wood and its occurrence in western larch and of the chemical properties of oxyconiferyl alcohol to evaluate their relation to the basic structure of lignin. Development of a chemical method for differentiating the wood of western white spruce and of Engelmann spruce was explored, with negative results.

MICROBIOLOGY*Ottawa*

Research into the decomposition of ligno-cellulose material—with a view to breaking down wood waste to a usable form—by means of anorobic mesophilic bacteria.

LOGGING*Ottawa*

Data from field studies on the amount and nature of logging waste in Eastern Canada analysed and report published. Studies of methods which would result in lessening harvesting losses and increasing recovery from logged areas, and of the effects of tree species and size on harvesting and lumber manufacture, as a means of increasing utilization and obtaining closer integration. Co-operation of Provincial Governments and industry greatly facilitated these studies.

Vancouver

Studies in co-operation with Alberta Forest Service in spruce and lodgepole pine forests of Alberta, by similar techniques to those followed in forest regions studied by the Ottawa Laboratory. Reports prepared on the causes of breakage in logging large timber in the coast region and in logging spruce-balsam in the southern interior of B.C. Research into logging techniques also undertaken in co-operation with B.C. Forest Service on experimental areas.

MILLING*Ottawa*

Investigations of the suitability of short-log bolters for the better utilization of over-mature-defective hardwood trees and small second growth timber. Studies on sawmill waste, with the dual objectives of reducing waste at its source and developing methods for utilization of mill residues in all forms. Investigations on the barking, chipping, and handling of mill waste for producing pulp chips. Investigations for the determination of the influence of sawing variables on the quality and quantity recovery of lumber. Tests to determine power requirements and efficient use of power at the head saw. Various factors affecting the grading of yard lumber were studied and work was done on the preparation of a "National Standard".

Vancouver

Studies at selected mills in the southern interior of B.C. to determine the influence of log size and grade on manufacture and at planing mills to determine the loss in grade and volume of lumber between the green chain and the dry finished product. Investigations continued into the occurrence, nature, and possible utilization of sawmill residues.

SEASONING*Ottawa*

Report prepared on investigation of various piling practices for air-seasoning lumber. Studies of drying rate of green lumber when used in house construction, on the equilibrium moisture content of wood in use

in buildings and when exposed to outside atmospheric conditions. Investigations aimed at improving the standards of commercial drying continued and included a lumber seasoning course on improved techniques. Kiln-drying runs and test piles for air drying provided additional data for several species. Exploratory work into the possibility of satisfactory drying lumber at high kiln temperatures.

Vancouver

Studies of the effect of drying conditions on the absorption of moisture by seasoned wood. Research to determine the factors affecting the shrinkage and swelling of wood. Kiln-drying and air-drying studies to implement data on record for the drying of western Canadian species. Assistance towards improving the standards of commercial drying including a lumber seasoning course on improved techniques. Initiation of research in high-temperature drying.

WOOD STRUCTURE*Ottawa*

Studies for determination of the specific qualities which render individual species particularly suited to special uses. Investigations into a method of determining the fibre saturation point of wood by centrifugal force. Studies of the anatomical structure differences in compression and tension wood in relation to mechanical properties and into discoloration in maple by mineral stain or streak. Studies on the effect of rate of growth on density of wood of spruce and balsam fir and to determine the effect of structural characteristics on the dimensional changes in wood.

Vancouver

Maintenance and addition to a reference collection of commercial world timbers, and identification of characteristics of western Canadian wood species

Appendix E**1. Special Activities of Director**

The Director's special activities during 1954 included appearances at the National Association of Travel Organizations convention in New York, and the American Society of Travel Agents convention in San Francisco; the opening of the New England Hotel and Travel Association show at Boston; an appearance before the Tourist Committee of the Ontario Legislature; an address to the Jefferson Standard Life Insurance Company convention in Quebec City; a speech to the National Newspaper Promotion Association of the United States and Canada, at Montreal; an Imperial Oil Company broadcast from Montreal, urging Canadians to see more of Canada, and a number of addresses in other cities, including Fredericton and Charlottetown.

Appendix F

LIST OF PUBLICATIONS ISSUED 1954-55

Northern Administration and Lands Branch

Flora, Fauna and Geology of the Northwest Territories.

National Parks Branch

Canadian Wildlife Service

Wildlife Management Bulletins

Series 1, Numbers 10A and 10B (2 Vols.): *Preliminary Investigation of the Barren Ground Caribou*. A. W. F. Banfield.

Series 2, Number 7: *Waterfowl and Other Ornithological Investigations in Yukon Territory, Canada, 1950*. J. Dewey Soper.

Technical Articles

Tularemia in Beavers and Muskrats, Waterton Lakes National Park, Alberta, 1952-53. A. W. F. Banfield. *Canadian Journal Zoology*, June, 1954.

The First Premolar and the Canine Tooth in Bison. W. A. Fuller. *Journal of Mammalogy*, August, 1954.

A Sporadic Occurrence of an Alaskan Fur Seal. E. H. McEwen. *Journal of Mammalogy*, August, 1954.

Eelgrass Status and Environmental Relations. David A. Munro (collaboration). *Journal of Wildlife Management*, October, 1954.

Ross's Goose in the Eastern Arctic. Graham Cooch. *Condor*, September-October, 1954.

Notes on the Birds of Jasper National Park, Alberta. A. W. F. Banfield. *Canadian Field-Naturalist*, January-March, 1954.

Trapping of Trumpeter Swans in British Columbia. R. H. Mackay. *Canadian Field-Naturalist*, January-March, 1954.

Les Oies de la Baie James. Louis Lemieux. *Les Carnets*, July, 1954.

Prairie Falcon "Playing" and Notes on Western Grebe in British Columbia. David A. Munro. *The Auk*, July, 1954.

The History of Lake Minnewanka with Reference to the Reaction of Lake Trout to Artificial Changes in Environment. Jean-Paul Cuerrier. *Canadian Fish Culturist*, April, 1954.

This Trout is a Great Fighter. Jean-Paul Cuerrier. *Forest and Outdoors*, May, 1954.

Reprint Papers

From Transactions of the Nineteenth North American Wildlife Conference:

Ducks Need More Than Breeding Grounds. W. Winston Mair.

Facts About Canadian Musk-oxen. J. S. Tener.

Field Observations on Geese in James Bay, with Special Reference to the Blue Goose. Geo. M. Stirrett.

From Proceedings Forty-Fourth Convention of the International

Association of Game, Fish and Conservation Commissioners:

The Canadian Waterfowl Situation. W. Winston Mair.

From Canada Year Book 1954:

The Barren-Ground Caribou.

Miscellaneous

Waterfowl Hunters' Guide. (Revised version of booklet first published in 1953.)

Analysis of Creel Census Cards Received from National Parks during the 1953 Angling Season. (Three pamphlets dealing separately with mountain, prairie, and eastern parks.)

Published jointly by the Wildlife Division and the U.S. Fish and

Wildlife Service:

Waterfowl Populations and Breeding Conditions, Summer, 1953.
Special Scientific Report, Wildlife No. 25.

Waterfowl Populations and Breeding Conditions, Summer, 1954.
Special Scientific Report, Wildlife No. 27.

Investigations of Woodcock, Snipe, and Rails in 1954. Special Scientific Report, Wildlife No. 28.

National Museum

Bulletin No. 130, *The Vanta Kutchin*, Anthropological Series No. 33, by Douglas Leechman, 35 pages, 7 pages of illustrations.

Bulletin No. 132, *Report of the National Museum of Canada, for the Fiscal Year 1952-53*, 313 pages, 19 plates, 24 figures.

Separates:

The Stott mound and village, near Brandon, Manitoba, by Richard S. MacNeish.

The Giant site, Manitoulin Island, by Thomas E. Lee.

Anthropology and folklore, by Marcel Rioux.

Enquête menée dans la Beauce, auprès de maîtres-bûcherons, par Madeleine Doyon.

A new species of Eurypterid from the Devonian of Gaspé, by Loris S. Russell.

Mammalian fauna of the Kishenehn formation, southeastern British Columbia, by Loris S. Russell.

The distribution and spawning seasons of barnacles on the Atlantic Coast of Canada, by E. L. Bousfield.

Birds of Prince Edward Island, by W. Earl Godfrey.

Report on investigations at Mould Bay, Prince Patrick Island, N.W.T., by S. D. MacDonald.

Lichens of Cape Breton Islands, Nova Scotia, by I. Mackenzie Lamb.

Bulletin No. 133, *Description de la Culture de l'île Verte*, N° 35 de la série anthropologique, par Marcel Rioux, 98 pages, 6 figures.

Some Pictographs of Southeastern British Columbia, by Douglas Leechman. Trans. Royal Society of Canada, Sec. II, June, 1954.

Eskimo Sculpture in Soapstone, by Douglas Leechman. Can. Geog. J., September, 1954.

- The Canadian Scene in Christmas Cards*, by Douglas Leechman. Can. Geog. J., December, 1954.
- Carvings by the Eskimo*, by Douglas Leechman. School Arts, February, 1955.
- An Early Archaeological Site near Panuco, Vera Cruz*, by Richard S. MacNeish. Trans. Amer. Philosophical Soc., Vol. 44, Pt. 4, 102 pages, October, 1954.
- Ancient Maize in Mexico*, by Richard S. MacNeish. Archaeology, a publication of the Archaeological Institute of America. In press.
- The Development of Agriculture and the Concomitant Development of Civilization in Meso-America, Tamaulipas, Mexico*, by Richard S. MacNeish. Year Book of the American Philosophical Society for 1954.
- The First Sheguiandah Expedition*, by Thomas E. Lee. American Antiquity, Vol. XX, No. 2.
- The Discovery and Exploration of the Ancient Sheguiandah Site, Manitoulin Island*, by Thomas E. Lee. Fall issue of Inland Seas, Quarterly Journal of the Great Lakes Historical Society, Cleveland.
- Ancient Indian Tribes Once Roamed Manitoulin*, by Thomas E. Lee. Bush News, Vol. III, No. II, October.
- Enquête ethno-linguistique*, by Marcel Rioux. Amerindian Anthropology Research Centre, Ottawa, 1954. (In collaboration with Jacques Rousseau and J. Paul Vinay.)
- Un bilan de l'anthropologie contemporaine*, by Marcel Rioux. Revue de Psychologie des Peuples, Vol. IX, No. 1, 1954.
- Indian Music of Canadian Plain*, recorded and edited by Kenneth Peacock. Ethnic Folkways Library, March, 1955.
- Land Use in the Arctic*, by A. E. Porsild. Can. Geographical J. 48:232-243 (June, 1954); 49:20-31 (July, 1954).
- The Vascular Flora of the North American Arctic*, by A. E. Porsild. Reprinted from Proceedings of the Seventh International Botanical Congress, Stockholm, 1950, pp. 613-614 (1954).
- Flowers and Forests*, by A. E. Porsild. In "North of 55", pp. 107-116 (1954).
- Mosses of Mexico. 1. Species new to the country*, by H. A. Crum. Revue bryologique et lichenologique 23 (3-4):256-264. 1954 (1955).
- Taxonomic Studies in the Funariaceae*, by H. A. Crum and L. E. Anderson. The Bryologist, 58:1-15. Figs. 1-19 (1955).
- Courses in Bryology and Lichenology to be offered during the summer of 1955, by H. A. Crum. The Bryologist 58:78 (1955).
- Additions to the Moss Flora of Kentucky*, by H. A. Crum. Trans. Ky. Acad. Sci. 15:24-26 (1954).
- Evidence of Tooth Structure on the Relationships of the Early Groups of Carnivora*, by Loris S. Russell. Evolution. Vol. 8, No. 3, June, 1954.
- The Eocene-Oligocene Transition as a Time of Major Orogeny in Western North America*, by Loris S. Russell. Trans. Royal Society of Canada, Ser. 3, vol. 48, sec. 4, 1954.
- A New Species of Cephalaspis from the Devonian Gaspé Sandstone at D'Aiguillon*, by Loris S. Russell. Le Naturaliste Canadien, Vol. 81, No. 12, 1954.

- The Dickcissel on the Atlantic Coast of Canada*, by W. Earl Godfrey. *The Auk*, Vol. 71, No. 3, 1954.
- Two Reviews of Literature, by W. Earl Godfrey. *Can. Field-Naturalist*, Vol. 68, No. 1, 1954.
- Four Reviews of Literature, by W. Earl Godfrey. *Bird-Banding*, Vol. 25, Nos. 2 and 3, 1954; and Vol. 26, No. 1, 1955.
- Some Physical Features of the Miramichi Estuary*, by E. L. Bousfield. Mimeographed publication of the Atlantic Oceanographical Group, St. Andrews, N.B., 7th May, 1954.
- One Review of Literature, by E. L. Bousfield. *Can. Geographical J.*, September, 1954.
- Hadrosaurs in Baja, California*, by Wann Langston Jr., and M. H. Oakes. *Geol. Soc. of America, Bulletin*, Vol. 65, 1954.

Engineering and Water Resources Branch

Water Resources Division

Surface Water Supply of Canada

Water Resources Papers

No. 107—*St. Lawrence and Southern Hudson Bay Drainage, 1949-50 and 1950-51* (Bilingual)

No. 109—*Arctic and Western Hudson Bay Drainage, 1949-1950 and 1950-1951*

Water-Power Bulletins

Hydro-Electric Progress in Canada.

Water-Power Resources of Canada.

(Mimeographed in English and in French.)

Forestry Branch

Bulletins and Periodicals

Amendments, 1955, to Forest and Forest Products Statistics, Canada. Annual Report on Active Research Projects, 1953-54. (Forest Research Division.)

Forest Fire Losses in Canada, 1953.

Forest Fire Protection Abstracts, Vol. V.

Canada's Forests, 1955. (French edition: *Les forêts du Canada, 1955.*)

Research and Technical Notes

Thinning in Red and White Pine Stands at Petawawa Forest Experiment Station. L. A. Smithers.

Strip-cutting in a Mixed Pine Stand. J. W. Fraser and J. L. Farrar.

Seeding and Planting of Spruce on Cut-over Lands of the Subalpine Region of Alberta, A. W. Blyth.

Factors Influencing White Spruce Reproduction in Manitoba and Saskatchewan. J. S. Rowe.

An Observation of Weevil Damage in Norway Spruce. M. J. Holst.

Thinning in a White Pine Stand. B. C. Wile.

Miscellaneous Publications

- The Acadia Forest Experiment Station.* C. C. Thomson.
- ABC de la Prévention des Incendies de Forêt.* R. M. Watt.
Réimprimé en 1954. (ABC's of Forest Fire Prevention.)
- List of Publications* (exclusive of publications of the Forest Products Laboratories Division). Revised October, 1954.

Articles

- Condition of Present Forests.* A. Bickerstaff. *Forestry Chronicle*, June, 1954.
- Notes from a Trip to the Southern United States, January, 1953.*
C. Heimburger and M. Holst. *Forestry Chronicle*, March, 1955.
- Breeding for Weevil Resistance in Norway Spruce.* M. J. Holst. *New York Forester*, November, 1954.
- Water Table Level as an Indicator of Drought Conditions.* D. E. Williams. *Forestry Chronicle*, December, 1954.
- Utilization Key to Forest Prosperity.* Statement by the Minister in Canada Lumberman, February, 1955.
- Jack Pine Reproduction.* J. L. Farrar, D. W. Gray and D. Avery. *Woodlands Review*, November, 1954.

Papers

- The Organization of Forest Research.* J. D. B. Harrison, Annual Meeting, Canadian Institute of Forestry, Victoria, B.C., October, 1954.
- Wildlife and Forest Research.* G. C. Cunningham. Eighteenth Federal-Provincial Wildlife Conference. Ottawa, June, 1954.

Reprints of Articles and Papers

- Condition of Present Forests.* A. Bickerstaff. *Forestry Chronicle*, June, 1954.
- Notes from a Trip to the Southern United States, January, 1953.*
C. Heimburger and M. Holst. *Forestry Chronicle*, March, 1955.

Forest Products Laboratories of Canada**Bulletins**

- Bulletin 110—*Dielectric Heating as Applied to the Woodworking Industries.* R. W. Peterson.
- Bulletin 111—*Kiln-drying of B.C. Lumber.* J. H. Jenkins and F. W. Guernsey.
- Bulletin 113—*Streaky Red Heart in Douglas Fir—Its Significance in Relation to Incipient Decay and Strength Properties.*
H. W. Eades and J. B. Alexander.
- Bulletin 114—*Yellow Cedar—Its Characteristics, Properties and Uses.*
R. S. Perry.
- Bulletin 115—*Logging Waste in Eastern Canada.* J. A. Doyle.

Technical Reports

- Program of Work*—June, 1954 to May, 1955.
List of Publications of F. P. L. of Canada.
A Logging and Milling Study on Balsam. C. F. McBride and G. R. W. Nixon.
Genres de séchoirs. Revised and re-issued in French.
Détermination du coefficient d'humidité et emploi de planches-témoins dans le séchage artificiel. Revised and re-issued in French.
Dimensional Changes in Poles Caused by Seasoning. W. J. Smith.
Préservatifs du Bois et leur Application.
Tableau de Marche—diverses essences.
Efforts du bois au séchage et leur détermination.
Piling Lumber for Kiln-Drying.
Hot and Cold Bath Preservative Treatment.
Wood Preservatives and Their Application.

Reprints of Articles and Papers

- A National Standard for Grading Canadian Lumber.* J. H. Jenkins. Reprinted from *Canada Lumberman*, September, 1954.
Study of Logging Waste in Saskatchewan Spruce Operations. J. A. Doyle. Reprinted from *Canada Lumberman*, August, 1954.
Strength Properties of Chlorine Dioxide Pulps from Sawdust. N. Levitin and H. Schwartz. Reprinted from *Pulp and Paper Magazine of Canada*, July, 1954.
The Chemical Nature of the Acetone Extractive of Western Red Cedar. G. M. Barton and J. A. F. Gardner. Reprint of paper presented at Summer Meeting, Technical Section, C.P.P.A., Victoria, June, 1954.
Cord Cubic Volume Relationship of Slabwood and Edgings. G. E. Bell and E. Brooks. Reprinted from *Timber of Canada*, November, 1954.
Logging Study in a Typical Over-Mature Spruce-Balsam Forest of the Southern Interior of B.C. G. R. W. Nixon. Reprinted from *B.C. Lumberman*, January, 1955.
The Furniture Industry in B.C. K. G. Fensom. Reprinted from *F. P. R. S. Journal*, December, 1954.
Toxicity Tests of a Water-Soluble Phenolic Fraction (Thuja-plicin-Free) of Western Red Cedar. J. W. Roff and J. M. Atkinson. Reprinted from *Canadian Journal of Botany*, January, 1954.
Some Aspects of the Influence of Rays on the Shrinkage of Wood. D. C. McIntosh. Reprinted from *Journal of the Forest Products Research Society*, February, 1954.
Determination of the Fibre-Saturation Point of Wood by Centrifuging. E. Perem. Reprinted from *Journal of the Forest Products Research Society*, April, 1954.
Adjustable Sawmilling Gauge. G. W. Andrews. Reprinted from *Timber of Canada*, May, 1954.
Power at the Headsaw. G. W. Andrews. Reprinted from *Timber of Canada*, April, 1954.
Heartwood Extractives in Digester Corrosion. H. MacLean and J. A. F. Gardner. Reprinted from *Pulp and Paper Magazine of Canada*, November, 1953.
The Outlook for High-Temperature Seasoning in Canada. J. L. Ladell. Reprint—Annual Meeting F.P.R.S., May, 1954.

Lumber and Pickets—A Comparison of Recovery by Two Edging Methods. G. W. Andrews. Reprinted from *Timber of Canada*, July, 1954.

Magazine Articles

(Additional to those listed under reprints)

Design of Wooden Boxes. R. S. Millett. *Australian Timber Journal*, January, 1954.

The Ethanolysis of 3-Hydroxyl-1-2-Propanone in Relation to Lignin Chemistry. J. A. F. Gardner. *Canadian Journal of Chemistry*, 32:532-537, 1954.

Timber Research in Canada. J. H. Jenkins. *Timber Trades Journal*, June, 1954.

Test Loading of a Composite Concrete-Timber Deck Bridge. J. B. Alexander. *Wood*, Vol. 19, 1954.

Stress Grading as Related to Mechanical Properties of Wood. W. J. Smith. *Timber Technology*, Vol. 62, July, 1954.

Types of Dry Kilns. R. S. Millett. *Australian Timber Journal*, July, 1954.

Furniture Stock and Turning Squares. W. W. Calvert. *Canadian Woodworker*, October, 1954.

Log Volume and Lumber Output. G. E. Bell and E. Brooks. *Timber of Canada*, November, 1954.

Logging Waste Survey in Saskatchewan. J. A. Doyle. *Prairie Lumberman*, December 1954.

Effect of Rays on Radial Shrinkage of Beech. D. C. McIntosh, F.P.R.S. *Journal*, February, 1955.

Edge-gluing by Dielectric Heating. R. W. Peterson. *Composite Wood (Great Britain)*, January, 1955 and *Canadian Woodworker*, February, 1955.

Increase in Hardwood Lumber Yields with the Short-Log Bolter. W. W. Calvert. *Timber of Canada*, February, 1955.

Sawing Accuracy. G. W. Andrews. *Timber Trades Journal (Great Britain)*, December, 1954.

Possibilities of the Glueline Cleavage Test when Applied to Hardboards. P. L. Northcott. *F.P.R.S. Journal*, February, 1955.

Papers

(Additional to those listed under reprints)

The Importance of Research in Forest Products. J. H. Jenkins. N.S. Biennial Rural and Industrial Conference. Antigonish, July, 1954.

Research into the Sawing of Wood with Circular Headsaws. G. W. Andrews. Annual Meeting, Eastern Canadian Section, Forest Products Research Society, Ottawa, March 14 and 15.

The Chemical Utilization of Western Red Cedar. J. A. F. Gardner. Annual Meeting, Truck Loggers Association, Vancouver.

Lumber Grade Recovery in Southern Interior Mills of B.C. C. F. McBride. Spring Meeting, Northwest Section, F.P.R.S., and Annual Meeting, Interior Lumber Manufacturers Association, Penticton, B.C.

A talk on the utilization work of the Ottawa Laboratory was delivered before the Annual Meeting of the Maritime Lumber Bureau at Amherst, N.S., and a lecture on the physical examination of wood specimens was given to the R.C.M.P. in Vancouver.

Appendix G**Annual Report of the Commissioner of the Northwest Territories—
1954-55***Commissioner*—R. G. ROBERTSON**Council**

The Council met twice, the first session taking place at Yellowknife from June 14 to 16, and the second at Ottawa from January 17 to 27.

At the first session an amendment to the Rules of Council permitting debate on the Commissioner's opening address introduced a new practice which proved most successful. At both sessions members took the opportunity to give their views on many matters of importance to their own constituents and to the Territories as a whole. Nine bills were passed at the first session, most of them being amendments to existing legislation. Seventeen bills were passed at the second session.

Elections

Following the June session, the Council was dissolved, preparatory to the holding of an election on September 7th. This was the first election subsequent to the amendment to the Northwest Territories Act increasing the elected membership on the Council from three to four, and the following were elected:

Mackenzie South	ROBERT PORRITT, Hay River
Mackenzie North	JOHN PARKER, Yellowknife
Mackenzie River	JOHN W. GOODALL, Fort Simpson
Mackenzie Delta	FRANK CARMICHAEL, Aklavik

The following were appointed to the new Council:

L. C. AUDETTE,
Chairman,
Canadian Maritime Commission.
JEAN BOUCHER,
Director, Technical Services Branch,
Department of Citizenship and Immigration.
F. J. G. CUNNINGHAM (Deputy Commissioner),
Director,
Northern Administration and Lands Branch,
Department of Northern Affairs and National Resources.
C. M. DRURY,
Deputy Minister,
Department of National Defence.
L. H. NICHOLSON,
Commissioner,
Royal Canadian Mounted Police.

References for Advice

At the June meeting the Council was asked to consider the desirability of granting liquor privileges to Eskimos. After much discussion the Council recommended that the same liquor privileges be granted to both Indians and Eskimos as are enjoyed by other persons. It was thought that because these racial groups live in close association with one another in some areas which would be affected by any relaxation of the existing prohibition, it would be desirable to treat them both in the same manner. The matter was subsequently discussed with the Department of Citizenship and Immigration, which has jurisdiction over Indian affairs, and that Department did not consider it would be an appropriate time to remove the prohibition in respect of Indians. During the course of its deliberations

on a revision of the Liquor Ordinance at the January session, the problem was again discussed at some length and, although there was a division of opinion amongst the Council members, the majority favoured continuation of the prohibition against use of liquor by Eskimos until such time as Indians may also be granted liquor privileges. Some small relaxation of the previous total prohibition for Eskimos was effected, however, by including in the new Ordinance provision for the Commissioner to grant liquor privileges to any Eskimo who, in his opinion, for the eighteen months immediately preceding his application therefor, has earned his livelihood chiefly by means other than hunting and trapping, and in other respects has ceased permanently to follow the Eskimo mode of life.

At the second session, Council was asked for its views on the desirability of paying a supplementary allowance to persons who are in receipt of any form of statutory assistance for the aged or incapacitated and in case the payment of such an allowance was considered to be desirable, to whom it should be paid, in what amount and whether eligibility should be established by a means test. Payment in 1955-56 of a supplementary allowance of \$10 per month to recipients of old age assistance, old age security, blind persons allowance and disabled persons allowance, would cost the Territorial Government in the neighbourhood of \$50,000. Approximately ninety per cent of the recipients of these forms of assistance are Indians and Eskimos, who are a responsibility of the Federal Government. The Council favoured payment of supplementary allowances in principle and was of the opinion that there should be no racial discrimination in such a program. At the same time it considered that the Territorial Government is unable to assume the added financial responsibility and recommended that supplementary allowances be not paid until some financial adjustment can be made with the Federal Government in respect of the Indian and Eskimo recipients.

Other references for advice during the year had to do with bursaries, scholarships, bottleneck strip seals on liquor bottles and participation in the cost of local improvements by residents of Local Improvement Districts.

Economic Activity

In general, economic activity in the Territories showed some improvement. The mineral industry continued in the lead in terms of dollar production followed by fishing and fur-trapping in that order. Preliminary figures indicate the total value of mineral production in 1954 to have been \$10,549,000, of which gold accounted for \$10,193,000, as compared with \$10,300,000 and \$9,979,000, respectively, in 1953. Production of petroleum is estimated at \$297,000, as compared with \$257,000 during the previous year. Production figures for radio-active minerals are not available. The search for oil and gas continued in the area west of Great Slave Lake, where at March 31, 1955, 11,764,377 acres were under permit. An important discovery of natural gas was made at Rabbit Lake about eighty miles west of Hay River. The main source of interest for individual prospectors was uranium and considerable activity took place in the Marian River area, where one company is preparing to commence mining operations.

After a slump in the year 1953-54, the fishing industry regained the position which it held in 1952-53. The summer and winter catch totalled approximately 7,000,000 pounds with a market value of about \$2,000,000, as compared with 6,000,000 pounds and \$1,700,000 the previous year.

The value of production of the fur-trapping industry for the year ended June 30, 1954, reflected a further decline. The total number of pelts taken, 418,867, was higher than the previous year's total of 388,653, but the take of many of the more valuable fur-bearing species such as white fox, marten, mink, etc., declined, and this coupled with lower prices generally, resulted in the combined value of all pelts being somewhat less than that for the previous year. The value of the total take for the year ended June 30, 1954, was \$758,512.00 and the value for the same period in 1952-53 was \$877,345.00. The outlook for the licence year ending June, 1955, is more encouraging. Indications are that there has been a substantial increase in the take of white fox, beaver, marten and muskrat, also that there has been some increase in prices received for the pelts.

During the debate on the Commissioner's address at both the June and January sessions a number of members emphasized the importance of transportation to the economy of the North. During the year, a lively campaign was waged in the Territories for reduced air rates, both freight and passenger, and for lower water transportation rates. The result was that in September the only scheduled air carrier between the Territories and Alberta effected some reductions in air cargo rates, and shortly after the close of the year substantial reductions in certain water freight rates and in scheduled air passenger rates were announced.

Civil Service

The Department of Northern Affairs and National Resources continued to provide a Civil Service for the Territories, including educational staff. The Territorial Government, however, reimbursed the Federal Government on a per pupil basis for each child other than Indian or Eskimo enrolled in Federal schools, for the salaries of the Superintendent of the Yellowknife Mine Rescue Station, the staff of the Workmen's Compensation Office, Edmonton, the Liquor Superintendent and Accountant at Yellowknife, and for certain other stenographic and clerical assistance. The only full time employees of the Territorial Government were the staffs of the liquor stores at Fort Smith and Yellowknife.

Law and Order

The Royal Canadian Mounted Police maintained law and order throughout the Northwest Territories. The force also carried out many administrative functions at points where no departmental representatives were stationed, enforced territorial ordinances, and enforced certain municipal by-laws in Yellowknife and Hay River.

Workmen's Compensation

The revised Workmen's Compensation scheme which came into force on January 1, 1953, continued to operate successfully. The number of insured employers were 172, a small decrease from the previous year's total of 183.

The number of accidents reported in the calendar year 1954 was somewhat higher than the number reported during the previous year, and there was an increase in compensation payments and medical costs. The figures for the two years are:

	1953	1954	Increase
Non-compensable accidents	374	442	68
Compensable accidents	211	245	34
Compensation payments	\$33,289	\$45,116	\$11,827
Medical and Hospital payments	\$27,333	\$35,277	\$ 7,944

The Government of the Northwest Territories' share of the cost of operating the Edmonton office for the calendar year 1954 amounted to \$5,548.22, and assessments collected amounted to \$13,122.48 with payroll reports outstanding from 17 employers. In view of this the rate of assessment was further reduced, effective January 1, 1955, to $\frac{1}{2}$ of 1 per cent for insured employers and $\frac{1}{10}$ of 1 per cent for exempt employers.

Health

Eleven hospitals were operated in the Northwest Territories during 1953, eight by Missions of the Roman Catholic Church and the Church of England in Canada, one by a mining company at Port Radium, one by an oil company at Norman Wells and one by a locally elected hospital board at Yellowknife. In addition, seven nursing stations were operated, five by Indian Health Services of the Department of National Health and Welfare, one by the Church of England and one by the Pentecostal Assemblies of Canada. For the first time, all hospitals and nursing stations were eligible to receive a grant in aid of operation from the Territorial Government. Payment of the grant was based upon the class of hospital, and the number of patient days spent in it during the previous calendar year, excluding patients for whom the Federal Government, the Territorial Government or a Municipal District paid a per diem rate, and, in the case of company hospitals, persons who were employees of the company.

Under the National Health Grants Program, an eyesight survey was commenced in the Mackenzie District during the latter part of the year. Cancer diagnosis, including transportation, was provided without charge, as were tuberculosis treatment, dental services for children in Yellowknife, Fort Smith and Hay River, and crippled children treatment. A chest X-ray survey was carried out in the summer months in conjunction with the Department of National Health and Welfare and financial assistance was continued for research into parasitic diseases of northern man.

Education

The most important development in the field of education was an announcement by the Federal Government early in 1955 that it had approved an extensive program for the construction of schools and hostels to provide better education for children in the Northwest Territories. In reaching this decision the Federal Government had taken into account the steady increase in the Indian and Eskimo population of the North and the general decline in fur prices which has made it increasingly difficult for the native population to continue to rely entirely on the wildlife resources of the country. Other employment and sources of income must be found and this has made the need for education more important than ever. The nomadic character of Indians and Eskimos makes it impossible to provide any continuity in the education of these peoples except at centres where residential facilities are provided, and the plan therefore includes the construction of hostels.

The construction phase of the program will be spread over six years with the main emphasis on the Mackenzie Valley where the need is most urgent. Schools and hostels will be constructed at Fort McPherson, Fort Smith, Fort Simpson and Aklavik in the Mackenzie District and at Frobisher Bay on Baffin Island. Vocational Training schools will be established at Aklavik, Yellowknife and Frobisher Bay in order that

children who are suited for the training may be taught skilled and semi-skilled occupations and thus be in a position to participate in the increasing economic development of the North.

At Yellowknife a non-denominational hostel will be constructed and operated by the Government in conjunction with the Vocational Training school. The hostels at other points will be built and owned by the Government but operated by the Roman Catholic or Anglican Churches.

A special curriculum is being prepared for Indian, Eskimo and other children in the Territories who are not likely to go beyond grade school. It will be designed to fit such children for the types of employment that are likely to be available in the Territories and which do not require advanced general education or specialized vocational training.

The Government of the Northwest Territories will be expected to share in the cost of this program in proportion to the number of children other than Indians and Eskimos in attendance at the schools. The balance of the cost will be paid by the Federal Government.

Another important development during the year was the completion of an agreement between the Commissioner and the Federal Government whereby the former assumes responsibility for the education of Indian children, commencing April 1, 1955. The effect of the agreement is to centralize the direction and control of educational matters under one agency which, in turn, will result in more efficient planning and a uniform educational program for children of all races in the Territories. The Federal Government will continue to bear the cost of education for Indian children.

During the course of the year other agreements were entered into with the Federal Government respecting Vocational Training, Apprenticeship Training and Citizenship Instruction. Under the terms of these agreements, the Federal Government will grant financial assistance to the Territorial Government in the fields of education indicated.

Three scholarships totalling \$1,200 were provided by the Territorial Government to encourage pupils to continue their education beyond Grade XII, also, three bursaries of \$1,200 each, for vocational training of students from the Territories. At its January session, Council, in considering the appropriation of funds for these purposes for 1955-56, decided that the three scholarships which formerly amounted to \$500, \$400 and \$300 should be replaced by one scholarship each year of \$1,200, payable for not more than four years to the student obtaining the highest mark in the Grade XII examinations; continuation beyond the first year to be subject to satisfactory progress being made by the student.

Liquor

On the first of April, 1954, the arrangement under which the Saskatchewan Liquor Board handled the sale of liquor for the Government of the Northwest Territories was discontinued and the operation of the Territorial liquor business was taken over by a Superintendent of Liquor, with headquarters at Yellowknife, who conducted the business under direction of the Commissioner. Sales of liquor amounted to about 10,622 gallons of spirits, 2,805 gallons of wine, 13,745 gallons of ale and stout and 59,067 gallons of beer. Thirty-nine Class "C" importation permits covered 75 gallons of spirits, 132 gallons of wine and 16,979 gallons of beer.

Game and Fur Export

Warden stations were maintained at twelve of the principal Settlements in the Mackenzie District. In the Coppermine area and in the Districts of Keewatin and Franklin the Royal Canadian Mounted Police acted for the Administration in all matters pertaining to game. The Canadian Wildlife Service maintained five mammalogists in the field and provided technical and scientific advice.

The predator control program, begun in 1952-53, was expanded considerably during 1954-55, with approximately seventy-five per cent more funds being allotted for this purpose than in previous years. In addition to the areas previously covered, a new program was undertaken along a narrow corridor extending from Great Slave Lake to Great Bear Lake. This corridor crosses the North-South migration route of a large, heavily utilized caribou herd, where a high concentration of wolves could be expected.

Returns from licences issued for the year ended June 30, 1954, showed the number of pelts taken to have been 418,867, an increase of 30,214 over the previous year. Most of the increase was due to a larger take of muskrats which rose to 321,760 from the previous year's 250,367. There was also an increase in the take of beaver but the take of many of the more valuable fur-bearing species, such as mink, marten, white fox, etc., dropped off substantially and thus the total value of the pelts for the year ended June 30, 1954, was \$758,512 as compared with \$877,345 for the 1952-53 year.

Welfare

Relief assistance was provided for indigents as required. At March 31, 1955, there were 91 recipients of Old Age Assistance and 18 recipients of Blind Persons Allowance as compared with 64 and 15, respectively, at March 31, 1954.

At the January session the Council passed an Ordinance to provide for allowances to disabled persons. This Ordinance authorized the Commissioner to enter into an agreement with the Federal Government whereby the latter would pay fifty per cent of the cost of allowances of up to \$40 per month to residents of the Territories who are permanently and totally disabled and who qualify under a means test.

When the Disabled Persons Ordinance was debated, members of the Council were critical of it because, due to the peculiar population distribution in the Territories it would result in the Territorial Government subsidizing the Federal Government in the cost of welfare payments to those who are a Federal responsibility, whereas the intent of the Federal legislation is quite reverse. They were critical of the Old Age Assistance and Blind Persons Allowance agreements on the same grounds. According to the 1951 Census the population of the Territories was 16,004, of which Indians and Eskimos who are regarded as a Federal responsibility numbered 10,660 or 66.6 per cent. In contrast to this, Indians and Eskimos were 1.2 per cent of the total population of Canada in 1951 and did not exceed 2.7 per cent of the population of any province. It was estimated that in 1955-56 the total assistance payable by the Territorial Government under agreements with the Federal Government respecting the aged, blind and disabled, would be about \$38,000 and that on the basis of past experience from \$30,000 to \$33,000 of this amount would be paid to Indians and Eskimos.

While the Territorial Government would obviously be better off financially to dispense with the Federal agreements and pay the whole cost of these programs to the white population only, members of the Council considered it would be a serious mistake to differentiate between the racial groups. They, therefore, concluded that the only satisfactory and equitable way out of the difficulty was to approach the Federal Government and request it to amend the terms of the Tax Rental Agreement between the Northwest Territories and Canada so as to compensate the former for the welfare assistance payments which it makes to Indians and Eskimos. The Commissioner agreed to take this matter up with the Federal authorities.

Municipal and Local Improvement Districts

Conditions in the Settlements of Fort Smith and Fort Simpson were considered to warrant participation by owners of property in the cost of local improvements and, therefore, these two Settlements were established as Local Improvement Districts in November, 1954. The initial assessment was carried out by an assessor on loan from the Department of Municipal Affairs of the Province of Alberta and taxes will be levied for the first time in the year 1956-57, based on expenditures in 1955-56.

Taxation

During the course of debate on the Commissioner's address at the January session, mention was made of the small contribution by Crown companies to territorial revenues. The terms of their charters free them from the obligation of paying territorial taxes and it was pointed out that these companies enjoy the same benefits and privileges from the Territorial Government as do private corporations. This matter was subsequently discussed with officers of the various Crown companies operating in the Territories and they all agreed that, commencing April 1, 1955, their companies would voluntarily pay taxes on the same basis as a private company.

Finances

Territorial Revenues for the fiscal year totalled \$1,340,325.31. The principal revenues were:

Liquor receipts	\$ 740,189.09
Liquor profits (for 6 months ending March 31, 1954)	120,084.10
Payments under Tax Rental Agreement	276,999.70
Fuel Oil Tax	21,669.93
Fur Export Tax	62,466.97
Motor Vehicle and Drivers Licences	15,694.58
Business Licences	8,225.22
Payments from Federal Government	38,756.75

Territorial Expenditures for the fiscal year totalled \$1,334,771.48. The principal expenditures were:

Education	\$ 226,918.27
Health	193,653.72
Welfare	73,426.19
Development Services	33,796.81
Grants to Municipalities	20,610.29
Operation of Liquor System	654,021.20

At the end of the fiscal year, the Territorial Government owned buildings having a book value of \$149,991.85, held debentures from the Yellowknife Public School District worth \$64,750.00, held an outstanding

loan owed by the Yellowknife Municipal District of \$9,000.00, and had cash in the Northwest Territories Revenue Account totalling \$928,611.40. Of this last amount \$117,680.00 was being held as a reserve for hospital construction, \$145,532.00 as a reserve for the construction of trunk roads and \$36,240.31 as a reserve for workmen's compensation, leaving a cash surplus free from commitment amounting to \$629,159.09.

The statement of revenue and expenditure for the year as at April 1, 1955, follows:

Credit Balance in Northwest Territories Revenue Account, as at March 31, 1954	\$ 923,057.57
Revenue	1,340,325.31
Expenditure	1,334,771.48
Credit Balance in Northwest Territories Revenue Account at the close of fiscal year 1954-55 ..	928,611.40

Appendix H**Annual Report of the Commissioner of the
Yukon Territory, 1954-55**

Commissioner—W. G. BROWN

I. Administration

The Council, elected in 1952, held three sessions during the fiscal year. The first session was held from June 15 to 17 and 29; the second from November 4 to 22, and the third from March 16 to April 2.

The elected members, each with a three-year term, and the districts they represent, were:

- V. C. Mellor, Dawson (Dawson District)
- A. F. Berry, Mayo (Mayo District)
- A. R. Hayes, Carmacks (Carmacks District) Speaker
- J. L. Phelps, Whitehorse (Whitehorse East)
- F. D. Locke, Whitehorse (Whitehorse West)

The appointed officers are W. D. Robertson, Clerk of the Council, and F. G. Smith, Legal Adviser.

The Territorial administration offices in Whitehorse were moved from temporary quarters to the new Federal Building in November, 1954.

Legislation

The following Ordinances were passed:

Session, June 15-17 and 29, 1954: Empowering the Commissioner to Grant a Franchise to Yukon Electrical Company Limited to Sell and Distribute Electric Energy to the Whitehorse Area, Y.T.; Yukon Loan Ordinance; to amend the Annual Holidays Ordinance;

Session, November 4-22, 1954: Interpretation; Medical Profession; Hotel Keepers; Agisters and Livery Stable Keepers; Limitations of Actions; Bills of Sale; Intestate Succession; Distress; Conditional Sales; Married Women's Property; Arbitration; Dental Profession; Adoption; Woodmen's Lien; Saw Logs Driving; Petroleum Products; Choses in Action; Warehousemen's Lien; Devolution of Real Property; Landlord and Tenants; Insane Persons; Sale of Goods; Archaeological Sites; Exemption; Factors and Agents; Partnerships; Curfew; Motion Pictures; Creditors Relief; Coroners; Marriage, Defamation; Noise Prevention; Repealing Certain Ordinances; Wills; Judicature; Jury, Vital Statistics; to amend the Public Service Ordinance; to amend the Gasoline and Diesel Oil Tax Ordinance; to amend the Municipal Ordinance; to amend the Government Liquor Ordinance; to amend the Workmen's Compensation Ordinance; to amend the Assignments of Book Debts Ordinance;

Session, March 16-April 2, 1955: Protection of Children; Hospital Aid; Fatal Accidents; Reciprocal Enforcement of Maintenance Orders; Evidence; Collection; Vocational Training Agreements; Contributory Negligence; Fur Export; Amusement Tax; Employment Agencies; Pounds; Police Magistrate Courts; Dog; Disabled Persons Allowance; Pharmaceutical Chemists; Fire Investigation; Repealing Certain Ordinances; to authorize the Commissioner to Extend the Boundaries of the City of Whitehorse and to make an Agreement with the City of Whitehorse; to authorize the Commissioner to Lend Money to the City of Whitehorse for the Construction of Municipal

Works; Poll Tax; to authorize the Commissioner to Enter into an Agreement with the City of Whitehorse Respecting the Construction of a Waterworks System and Sewage System in the City of Whitehorse and in the New Subdivision adjacent to such City, and to authorize the Commissioner to Enter into a Contract for the Construction of such Waterworks System and Sewage Systems; respecting the Practice of Professional Engineering; to amend the Government Liquor Ordinance; to amend the Motor Vehicles Ordinance; to amend the Interpretation Ordinance; to amend the Marriage Ordinance; to amend the Motion Picture Ordinance; to amend the Judicature Ordinance; to amend the Gasoline and Diesel Oil Tax Ordinance; to amend the Adoption Ordinance; to amend the Yukon Game Ordinance; to amend the Workmen's Compensation Ordinance; Supply Bill; and Supplementary Supply Bill.

2. Territorial Secretary's Department

Staff—It was found desirable to combine the position of Territorial Agent and Liquor Vendor at Dawson and Mayo, which will result in a substantial saving in the Territorial Secretary's department.

Vital Statistics—A total of 453 births, 110 marriages and 76 deaths were recorded in the Territory. Of these numbers, 378 births, 107 marriages and 62 deaths were recorded for persons of white status, the remainder being for persons of Indian status. Revenue from the issuance of 453 copies of registration certificates totalled \$339.75.

Motor Vehicles—The following licences were issued:

Automobile	1,872
Truck	1,170
Public Service Vehicles	294
Public Service Vehicles—Trailer	73
Private Trailers	181
Taxi	48
Motorcycles	6
Driver's Licences	3,702
Chauffeur's Licences	1,865

Vehicle owners were required to produce certificates of insurance in order to obtain licences, in accordance with the requirements of the Motor Vehicle Ordinance.

Assessment—Under the Taxation Ordinance, the Mayo area was re-assessed and the assessment increased by \$111,323.82. The Carmacks assessment was increased by \$21,026. The rapid growth of Haines Junction, Watson Lake, and the area immediately outside the municipality of Whitehorse necessitates the re-assessment of these areas in 1955.

Boiler Inspections.—The Yukon Boiler Inspector inspected 69 boilers and pressure vessels and interviewed 10 applicants for engineer's certificates. Thirty-six engineer's certificates were renewed and 10 new certificates were issued.

Company Registration—In the fiscal year 9 incorporations and 39 extraterritorial companies were licensed or registered. At the close of the year, there were 161 companies in good standing, of which 72 were incorporated in the Territory. Revenue from registrations totalled \$5,027.75.

Child Welfare—Assistance was granted to 25 orphaned and neglected children who were maintained in schools and other institutions locally and in the provinces at the expense of the Territorial Government. Increased emphasis is being placed on services of a preventive nature. Three children, the responsibility of the British Columbia Government, were maintained

at the Province's expense in a local children's hostel. Maintenance costs for the year which include such items as school tuition, board and room, and in many cases clothing, medical and dental care and transportation, amounted to \$16,691.49.

Social Welfare—Social assistance consisted of such items as fuel, clothing, public utilities services, transportation, burial and medical fees. In addition to the following major items of assistance granted:

Hospitalization—Dawson 38 indigents for total 4,375 days
 Whitehorse . . . 8 indigents for total 214 days
 Provincial . . . 8 indigents for total 136 days

The total expenditure incurred amounted to \$20,600.83.

Monthly Cash Allowance to Indigents

Dawson	37 persons	\$ 13,525.00
Whitehorse . . .	11 persons	2,730.00
Mayo	12 persons	4,100.00
Others	10 persons	1,810.00
	Total . . . 70	\$ 22,165.00

Subsistence—Eighteen indigent persons were granted food and supplies, and clothing in some cases. Ten indigent persons residing in British Columbia and Alberta, who had established residence in the Yukon, received cash assistance from the respective provincial Governments on Territorial authority. The total expenditure incurred amounted to \$13,076.92.

Workmen's Compensation—There were 770 accidents, an increase of almost 67 per cent over 1953. In the completed cases 455 were non-compensable, 237 were compensable. Of 59 uncompleted cases it is believed that most are compensable. There were four fatal accidents. Most accidents occurred in the summer and in the mining industry. Submissions to the Referee numbered 19. Expenditure chargeable to the Yukon Territory was \$6,538.76. Assessment revenue (calendar year) was \$16,409.52.

3. Department of Education

There were 15 schools in operation and the highest number of pupils enrolled was 1,414 and the average daily attendance was 1,113.94. During the school year, 59 full-time teachers and 1 part-time teacher were employed as compared with 51 full-time teachers in 1953-54.

Period April 1, 1954-August 31, 1954.

The poliomyelitis epidemic during the summer of 1953 and the low salary schedule then in force resulted in an unsatisfactory situation during this period. Few teachers' applications were received and some who had been engaged early in the summer asked for releases. One vacancy in the Dawson High School was not filled until April, 1954.

Period September 1, 1954-March 31, 1955. Interim Report.

General—A new salary schedule effective September 1st, 1954, led to an increase in the number of teachers' applications received and no difficulty was experienced in filling all vacancies for elementary teachers. Difficulty was still encountered in attracting male science teachers for Whitehorse and Dawson high schools.

Construction of an extension to the school and a teacherage in Whitehorse was near completion. New schools were completed at Watson Lake "Y" and Mayo.

An additional room at Elsa school was provided by the United Keno Hill Mines Limited. The Territorial Government pays the maintenance costs of this school building. Power for the Carcross school was obtained from the Indian Residential School, and an excellent service has been maintained. A good well and sewage disposal was provided at Teslin school.

Inspections

School inspections were carried out at Carcross; Watson Lake (R.C.A.F. and "Y" Schools); Beaver Lake, Kluane Lake, Haines Junction, Brooks Brook and Swift River (Alaska Highway); Elsa; Keno; Dawson (St. Mary's); Whitehorse (Christ the King); and Elementary-High Schools at Whitehorse, Mayo and Dawson. Good to excellent progress was reported for most of the schools and high praise paid to the work of the teachers.

4. Department of Health

Public Health Nursing—A public health nurse, employed with headquarters at Whitehorse, makes regular visits to all settlements in the Territory. Well-baby clinics are held weekly in Whitehorse. Home visits are made, particularly in outlying areas, and prenatal classes are planned for the forthcoming year.

The nurse visited all schools and 294 children were examined by the nurse and medical health officers. With the assistance of an R.C.A.F. nursing sister in the Whitehorse area, 1,109 school children throughout the Territory were given vision tests.

The public health nurse assisted with the annual X-ray survey and carried out the follow-up program in connection with those persons requiring regular X-rays.

Arrangements were made for nine children and four adults suffering acute or chronic disabilities to receive specialist treatment outside. Welfare problems were investigated on behalf of the Territorial Government and in co-operation with the Children's Aid Society of Southern Yukon.

Tuberculosis Control—The annual chest X-ray survey carried on in conjunction with the Charles Camsell Indian Hospital is of great value in the early location of new cases. During the 1954 survey 5,203 films were taken of persons of white status.

Twenty persons were admitted to sanatoria with active tuberculosis.

Hospitals—Hospitals are operated by the Territorial Government at Whitehorse and Mayo, and by the Sisters of St. Anne at Dawson. Grants to these hospitals totalled \$55,302.68, including \$30,080 to the Whitehorse Hospital; \$7,936.68 to the Mayo Hospital, and \$17,286 to the Dawson Hospital.

The Northern Health Services Division of the Department of National Health and Welfare will build and operate a 120-bed hospital at Whitehorse on behalf of the Territorial Government, the Indian Affairs Branch and the Department of National Defence. Construction work is expected to commence in the summer of 1955. The construction of a 20-bed hospital at Mayo was also considered.

Sanitary Inspections—The sanitary inspector carried out inspections of 219 restaurants, 149 hotels and lodging houses, 94 grocery stores and butcher shops, and 334 other public places.

The general sanitary condition of tourist camps, roadhouses and hotels is good and shows gradual improvement. Sanitary conditions in the City of Whitehorse will be improved by the installation of the proposed new water and sewer systems in the city in 1955.

5. Department of Game

Big Game—A total of 63 non-resident big game licences were issued. One non-resident spring bear licence was taken out and 1,976 resident hunting licences were sold.

Forty-three game guide licences were issued.

The following game was taken during the 1954 season:

	Bear	Grizzly	Caribou	Moose	Sheep	Goat	Coyote	Wolves
Resident								
Hunters	26	16	589	117	28	5	8	27
Registered								
Trappers	27	23	1230	161	15	4	23	35
Non-resident								
Hunters	5	30	40	32	45	3	..	2
Totals	<u>58</u>	<u>69</u>	<u>1859</u>	<u>310</u>	<u>88</u>	<u>12</u>	<u>31</u>	<u>64</u>

Fur-Bearing Animals—Prevailing low fur prices continued to discourage trapline activities and many trappers sought other employment in the mining and construction fields. From the standpoint of conservation, the present low level of trapping activity is giving the fur-bearers an opportunity to increase.

There were 370 individual trapline registrations and 51 group registrations. Some work was done in co-operation with the Indian Affairs Branch, in preparing a beaver propagation program involving the live-trapping and transplanting of beaver from areas with surplus population to other depleted areas where beaver were prevalent in former years.

The following is a summary of the fur-bearing animals taken by trappers in 1954:

Beaver	1,842
Bear, Black or Brown	27
Bear, Grizzly	23
Coyote	23
Fisher	29
Fox, Cross	29
Fox, Red	108
Fox, Silver	3
Fox, White	69
Lynx	483
Mink	481
Marten	647
Muskrat	40,689
Otter	38
Weasel	731
Wolverine	135
Wolf	35
Squirrel	67,345

Predator Control—The wolf poisoning program commenced in 1953 was continued during the year under review. Commencing in March, 1955, approximately 100 lethal stations were established, using 3,000 pounds of bait and 3,500 poison pellets. In addition, a total of nine poison permits have been issued to senior guides and forestry wardens.

Importation of Game—The 50 head of elk liberated in previous years appear to have adapted themselves. Small herds have been observed, including one of 14 seen by an airline pilot in January, 1955. A non-resident hunter was convicted of killing a bull elk. Five buffalo were released in 1951, and six were observed on the west side of Fox Lake by an airline pilot in February, 1955. Another lone bull has been seen in the vicinity of the Experimental Sub-station.

General—Eleven prosecutions for violations of the Game Ordinance were entered, resulting in ten convictions and one dismissal.

6. Department of Public Works

Road Construction

Dawson-Stewart Crossing Road—Construction of this 120-mile all-weather road to connect Dawson with the Whitehorse-Mayo Highway at Stewart Crossing was commenced in 1952 with financial assistance from the Federal Government. Work this year began in June approximately 45 miles west of Stewart Crossing, and the following was accomplished:

Stripping and clearing: approximately 80 acres.

Grading: 40.75 miles.

Gravelling: 45.35 miles. Approximately 54,000 cubic yards were placed.

Ditching: between 3.5 and 4.0 miles of offtake ditches.

Culverts: 60 culverts installed.

Bridges: 2 pile bridges, each with a 30-foot span, were constructed over Clear Creek and Flat Creek.

It is expected that this project will be completed in 1955. Expenditures for the year totalled \$125,146.85.

Road Maintenance

Dawson District

(a) *Dawson-Boundary Road*—65 miles in length.

This road leads west from Dawson and connects with the Taylor Highway at the Alaska Boundary. It was maintained from June 15 to November 1, and was used principally by mining interests and tourists. The ferry located at the Dawson end of the road was improved and handles traffic efficiently.

The traffic over this road is increasingly heavy, and since it is very narrow with steep grades and little ditching, it is proposed to rebuild it during the course of the next three or four years.

(b) *Dawson-Stewart Crossing Road*—approx. 118 miles in length.

Maintenance on the sections of this road which are not under construction consisted largely of glacier control, snow removal, clearing trees and brush from the bluffs along the Klondike River, installation of culverts, and grading. Repairs were made to the McQuesten and Ogilvie bridges.

*Whitehorse District**(a) Atlin Road—29 miles in length.*

This road extends from the Alaska Highway at Mile 866 to Atlin, B.C., a distance of 59 miles, of which 29 miles lie within the Yukon Territory. Maintenance work on the Yukon section consisted principally of glacier control, grading, snow removal, installation of culverts and gravelling.

(b) Tagish Road—32 miles in length.

This road which extends from Mile 1 on the Atlin Road to Carcross was maintained by glacier control, snow removal, installation of culverts, gravelling and blading.

(c) Carcross Road—32 miles in length.

Maintenance work was done on this road from the Alaska Highway at Mile 904.5 to Carcross.

(d) Two Mile Hill—1.75 miles in length.

This access road leads from the Alaska Highway to Lower Whitehorse and considerable amount of work was carried out on its surface and ditches were provided. Sanding was done frequently throughout the winter. It is proposed to eventually reduce the grade and to hard-surface a three-lane route.

(e) Miscellaneous Roads

Maintenance work was carried out to a limited extent on the Miles Canyon-Whitehorse Rapids Road, Fish Lake Road, and the Annie Lake Road.

Mayo District

United Keno Hill Mines Limited, with funds provided by the Territorial Government, maintained the following roads north of Mayo, in accordance with the terms of a contract entered into in 1953: Mayo-Elsa, Duncan Creek, Keno City and Mackeno, and Mayo Dam.

Whitehorse-Mayo Road—255 miles in length.

The United Keno Hill Mines Limited, under contract agreement entered into in 1953, maintained this highway assisted by funds provided by the Federal Government and Territorial Government. Expenditures for the year totalled \$261,000.00.

Buildings*New Construction**(a) Whitehorse School Extension*

Construction of a ten-room addition to the Whitehorse public and high school was approximately 80 per cent completed.

(b) Whitehorse Teacherage

This unit will contain 12 bachelor apartments and construction is almost completed.

(c) Mayo School

A two-room school and teacherage of prefabricated construction was erected at Mayo and opened in December, 1954.

(d) *Watson Lake School*

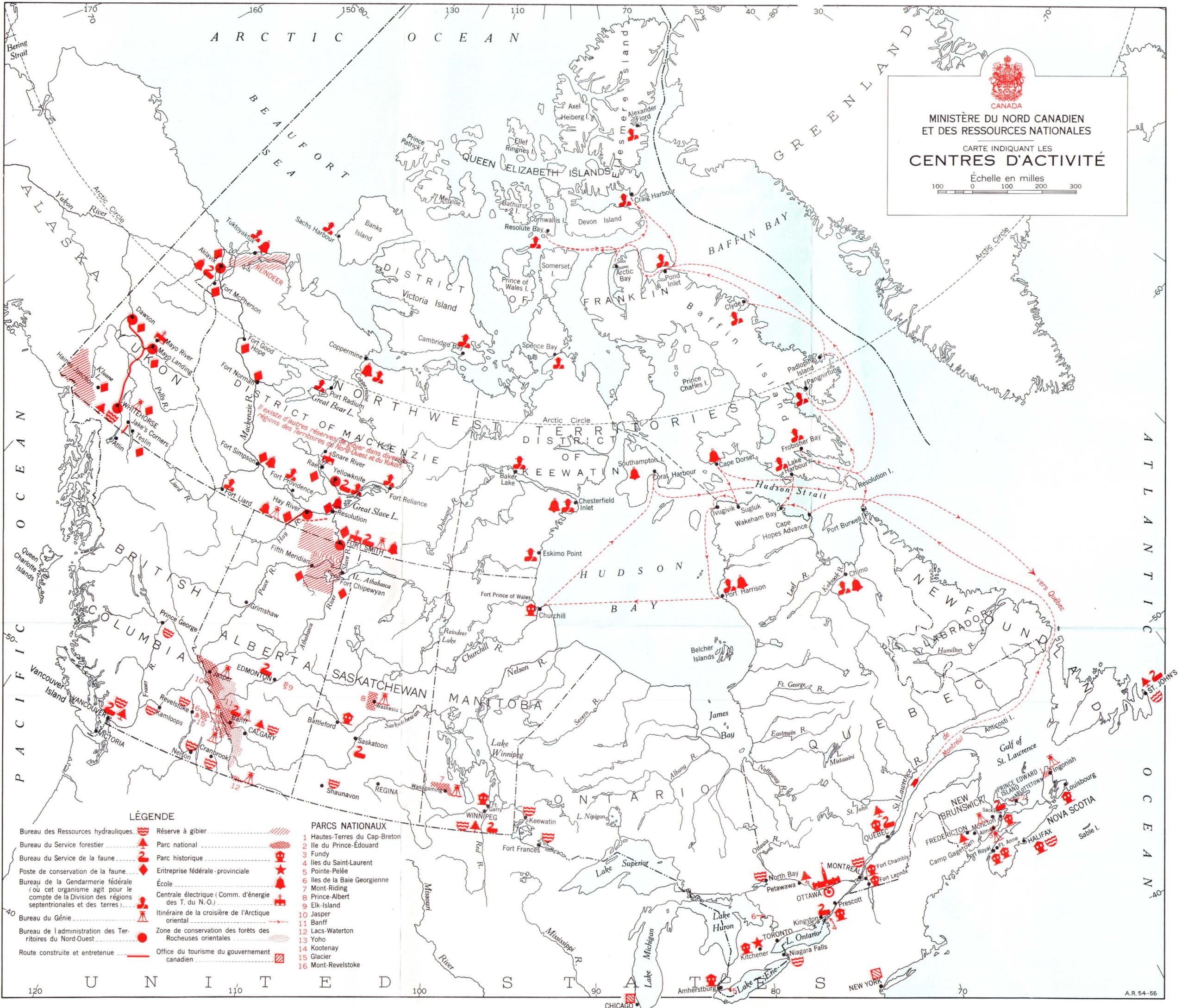
Construction of a one-room school at Watson Lake "Y" was completed and the school opened in September.

(e) *Whitehorse General Hospital*

A tubular fire escape was installed at the west end of the hospital.

Equipment

Several boards of survey were held to examine obsolete and worn-out equipment and to make recommendations for its disposal. Equipment acquired included a new motor grader, two $\frac{1}{2}$ -ton trucks and one 1-ton truck. A schedule of the department's equipment appears in the Territorial Treasurer's report.




CANADA
 MINISTÈRE DU NORD CANADIEN
 ET DES RESSOURCES NATIONALES
 CARTE INDIQUANT LES
CENTRES D'ACTIVITÉ
 Échelle en milles
 100 0 100 200 300

LÉGENDE

- Bureau des Ressources hydrauliques 
- Bureau du Service forestier 
- Bureau du Service de la faune 
- Poste de conservation de la faune 
- Bureau de la Gendarmerie fédérale (ou cet organisme agit pour le compte de la Division des régions septentrionales et des terres) 
- Bureau du Génie 
- Bureau de l'administration des Territoires du Nord-Ouest 
- Route construite et entretenue 
- Réserve à gibier 
- Parc national 
- Parc historique 
- Entreprise fédérale-provinciale 
- École 
- Centrale électrique (Comm. d'énergie des T. du N.O.) 
- Itinéraire de la croisière de l'Arctique oriental 
- Zone de conservation des forêts des Rocheuses orientales 
- Office du tourisme du gouvernement canadien 

PARCS NATIONAUX

- 1 Hautes-Terres du Cap-Breton
- 2 Ile du Prince-Édouard
- 3 Fundy
- 4 Iles du Saint-Laurent
- 5 Pointe-Pelée
- 6 Iles de la Baie Georgienne
- 7 Mont-Riding
- 8 Prince-Albert
- 9 Elk-Island
- 10 Jasper
- 11 Banff
- 12 Lacs-Waterton
- 13 Yoho
- 14 Kootenay
- 15 Glacier
- 16 Mont-Revelstoke

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