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Forty-seventh Meeting of the Arctic Circle

The forty-seventh meeting of the Arctic Circle was held in the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street, on Wednesday December 2. The President, Superintendent Henry Larsen, was in the Chair and introduced the speaker, Mr. Alan Loughrey. Mr. Loughrey spoke on "Wildlife and Eskimo in Southampton Island" and illustrated his lecture with films.

Editorial Note

On 1 October 1952 Mr. N.O. Christensen, Kontorchef (Deputy Governor) in Greenland, spoke to the Circle on the Greenland Administration. Lectures given at our meetings are generally described briefly in the Circular, but we felt that knowledge of the problems faced by the Greenland Administration was of such value in consideration of similar problems in the Canadian Arctic that his paper should be published in full.

Some features of the history of the Greenland Administration.
By N.O. Christensen

I know that there is great concern for the welfare of the Eskimo in Canada today and I have, therefore, chosen tonight to tell you something about the democratic institutions in Greenland, that is the institutions through which the Greenlanders themselves take part in the government of their own country. In my opinion these have contributed perhaps more than anything else to bring the Greenlanders to where they are today.

Mid nineteenth century

Without going too far back into the history of the Danish colonization of Greenland, I will mention the situation as it was in the middle of the nineteenth century. At this time the old Eskimo culture was rapidly changing under the impact of the new Danish colonization which, from a slow start in 1721, was quickly gaining momentum. The first years after the beginning of the Danish colonization caused great damage - disease took a heavy toll among

the primitive and fairly small, scattered Eskimo population, and some districts were completely deserted. After 1782 a more orderly colonization began, but further progress was interrupted by the Napoleonic Wars.

Since Denmark was at war with England the connection between Denmark and Greenland was partly cut off during these years, and the British Navy captured many of the Danish supply ships on their way to Greenland. Bad times prevailed both in Greenland and in Denmark, and in these critical years Denmark went bankrupt.

Later, new intellectual movements swept over Denmark and new prosperity was felt there as well as in Greenland. The period from about 1825 to 1855 was a progressive one. The population in Greenland, which in the year 1800 was around 6,000, increased to nearly 10,000 in 1855. These figures refer to the west coast only, from Melville Bay to Cape Farewell, where most of the population lives.

The output of the Greenland hunters increased considerably, and part of this output was sold to the Royal Greenland Trading Company, which until 1950 held a trade monopoly in the country. The population depended mainly on the sea mammals, particularly the seals. The old Eskimo hunting methods were still employed but were improved by the use of firearms and in more backward areas by the use of nets for catching seals under the ice.

At the same time as this increase in production, the value of the main Greenland products, particularly blubber, rose on the world market and, therefore, the Royal Greenland Trading Company prospered. By statute all profits from the monopoly trade had to be used for the benefit of the Greenlanders, and so increasing wealth came to the Greenland community.

This increase in prosperity, however, led to a concentration of population at the main settlements, where the representative of the Royal Greenland Trading Company and the missionary lived. Since this concentration was against the interest of the trader the government began establishing outposts in order to get as much skin and blubber as possible. These trading outposts were usually managed by Danes who frequently married Greenland women and today many of the best families in Greenland descend from such mixed marriages. Although the government succeeded in getting more skin and blubber, the effect of the trading outposts on the general health and welfare of the Greenlanders was unfortunate. Since the trading outposts were closer to where they lived, the Greenlanders were tempted to sell more of their products than they could actually spare, and to acquire more European goods. The result was that even before the production as a whole increased, the consumption of the natural Greenland food decreased owing to the greater use of store goods.

So, in spite of the increasing production, the increasing prices, and the apparent prosperity of the Greenlanders, the situation around the middle of the nineteenth century was not good. The concentration of population in the larger settlements, with their poor living conditions, had a bad influence on the mentality of the population which had lost much of its old self-confidence. In fact, the progress which was perceptible up to 1855 came to an end. In the years from 1850 to 1860 the population remained unchanged and from 1860 to 1870 it even decreased. Disease killed many Greenlanders; life expectancy was very low. Death from starvation was not unknown and the dwellings of most Greenlanders were very bad and unhealthy. The Danish establishments in Greenland at that time were so primitive that no real help could be given in cases of disease or when the hunting failed.

At this time an outstanding man, Dr. H.G. Rink, came to Greenland and in a few years made himself thoroughly familiar with Greenland. In 1855 he was appointed "Inspector" in South Greenland which meant that he became supreme local administrative officer of the southern part of the west coast. Rink is perhaps, after Hans Egede, the man who has meant most to Greenland. Originally a scientist, a geologist, and later a government official in the Danish West Indies, he took a great interest in the problems of Greenland and the Greenlanders. His two-volume work concerning the general conditions in Greenland is still of great interest and value.

He saw that many of the unfavourable conditions in the country were due to the fact that the population had lost its old Eskimo culture with its unwritten legal system and social customs; as a result, the Greenlanders had lost interest in their own affairs and thereby their self-reliance.

Together with a few other civil servants in Godthaab he formed a plan designed to give the Greenlanders a share in the administration of their own affairs. The plan was to establish institutions which were in close connection with the Greenland settlements and their inhabitants. Such institutions, of course, would have a much more intimate understanding of local problems than the changing traders could have. In this way it was hoped that in collaboration with the Danes the natives might obtain some control over their own affairs, insofar as they were thought to be able to grasp them. It was hoped, furthermore, that the Greenlanders' interest in their own common problems could be revived and that they could get a new social understanding to replace the lost one. Rink and his followers particularly wanted to make the Greenlanders take part in administering public relief. This had until then been managed by the Royal Greenland Trading Company alone.

Dr. Rink succeeded in getting the support of the Directorate in Denmark and as a result local committees were established (Boards of Guardians) which for some forty years were the Greenlanders' only

part in public management. Twelve of these committees were established in western Greenland just after 1862. They consisted of the Minister as chairman, the Danish Trade post manager, the district medical officer, if there was one, and the trading post assistant, together with a number of Greenlanders elected by the local population.

The local committees occupied a very important position. They were responsible for providing relief and local housing loans in their own districts. The Greenland members of the committees had the further responsibility of keeping order in their own small communities and acting as leaders and examples for their fellow countrymen. The committees provided very good training in social management for the Greenlanders who were members and helped them to a wider outlook and further independence. Also very important was the cooperation between the Danes and the Greenlanders in all public matters. Until the present day the fundamental idea of small committees had been to improve industry and to create political and economic knowledge through Danish-Greenlandic cooperation.

The committees were financed by a fund set aside by the Royal Greenland Trading Company. This fund was fixed at 20 per cent of the total sum paid to the hunters each year for their products. As a matter of fact this meant that the Greenlanders got 20 per cent less for their products than they would otherwise have done, or in other words they paid a tax of 20 per cent of their income. The committee used the money for relief to needy families and they could moreover make loans so that hunters could acquire more expensive tools such as rifles, nets, and small boats. It was their obligation, if necessary, to make loans in order to provide better housing in the community. It must be remembered that the Greenlanders have always lived in houses during the wintertime, originally made of stone and turf. The new system made it possible for them to use wood for their homes, at least as an inside lining, which was a great improvement. If at the end of the year there was money left in the fund, it was paid out again to the hunters in proportion to what they had sold to the Royal Greenland Trading Company. In this way the amount of money in any fund depended on the production in the district as a whole and the more a man sold to the Trading Company the more money he would get back at the end of the year. The system encouraged the hunters and worked quite well for many years.

Late nineteenth century

In spite of improved conditions in several respects, both cultural and social, there were no real economic improvements during the last part of the nineteenth century. This was caused largely by falling prices and decreasing interest in the outer world for Greenland's main product - animal oil. Competition came from the cheap vegetable and mineral oils. The Greenlanders gradually left the old Greenland industries and depended more on day labour and

relief and consequently on the store and European goods. As mentioned, the population decreased until 1870 but afterwards there was a slow increase to about 11,000 in the year 1900 - half of the present population. As a result of the falling prices of the Greenland products on the world market the Greenland Trading Company was run at an increasing loss. In order to reduce expenses many Greenlanders were employed in public services.

The bad economy, however, could not stop cultural progress. Around the year 1900 nearly everybody in western Greenland was literate and all were Christians. Participation in self-government in the committees and better education had in nearly every place awakened men to the possibilities of their country and of their particular area, and had created leaders who to a certain extent were able to guide their fellow countrymen and to bring about the important cooperation with the Danes. Many of these men now entered the service of the Trading Company and the administration and so gained an improved standing in their own community.

Early twentieth century

In the first years of the new century the Danish public showed an increasing interest in Greenland affairs. Greenland matters were publicly debated at meetings and in newspapers by leading personalities in the Greenland administration and other interested persons. It was believed that the time had come to give the Greenlanders still more responsibility in their own administration and to let them take part in public affairs without assistance from the Danes. With the establishment of the Municipal and Provincial councils in 1908 Greenland entered into a second phase of self-government. More than sixty Municipal Councils were established in western Greenland, each of them consisting of from 3 to 5 members, all elected. The Danish officials were not automatically members of these councils as they had been of the old committees, and were very rarely elected. The Municipal Councils had four yearly sessions and could decide to meet whenever they wished. They had to keep a minute book, a copy of which was sent to the chief government official of the province.

The Municipal Councils got their funds in the same way as the old committees and their duties were to give out relief and to submit small loans for such things as tools and boats. In addition they played an important part in the administration of justice, which was something new. The councils carried out preliminary investigations in minor crimes, and could levy small fines if the law-breaker agreed to have his case settled that way; they undertook division of deceased persons' estates to a certain extent; they were in charge of the maintenance of law and order; and performed many other public tasks. Disposal of municipal funds and all the other duties remained under the close supervision of the Danish Inspector.

The two Provincial Councils, one for North Greenland and one for South Greenland, were also founded in 1908 and the members were elected, not directly by the population, but indirectly, by the chairmen of the Municipal Councils, the Danish government officials, and a few others. The Chief Danish government official of the province (Inspector or later the Landsfoged) was chairman of the Provincial Council.

The main duties of the Provincial Councils were to contribute to the legislation by giving advice and suggestions to the Colonial Government in Denmark. This part of self-government was entirely new; it was established because the Greenlanders' advice was wanted when laws and rules were to be drafted for the whole country.

The Municipal and Provincial councils worked in nearly the same form until 1950.

A third kind of council should also be mentioned briefly. From 1925 to 1950 fourteen District Councils (Sysselraad) consisting of the Chairmen of the Municipal Councils in the district, the local members of the Provincial Council, usually only one, and the Danish civil servants, were responsible for a special loan-fund, mainly for house-building, for special social functions, and a few other things.

With the establishment of the small Municipal Councils a new legal system was started, but there was still a long way to go to repair the damage previously done. The Municipal Councils took an active part in many public and social matters, which helped to give the Greenlanders self-respect and self-assurance. Discussions with Danish government officials on an equal basis was not the least important here. Danish officials on inspection journeys always contacted the local members of the council and many important connections and friendships between Danes and Greenlanders were formed this way.

The two Provincial Councils gave to the best and most capable men knowledge of the government of the country as a whole. Better education had resulted in better capabilities of the individual members of the councils, and many Greenland members were efficient and highly educated. The councils were consulted on many important public matters. Royal Commissions concerning Greenland matters were established in 1921 and 1939, and Greenlanders appointed by the Provincial Councils were members of these Commissions. It is easy to imagine the pride and emotions of the first Greenlanders to negotiate on an equal footing with the members of the Danish Parliament.

There were also marked changes in economy during this period. In 1906 sheep farming started in the most southern part of the country. The well known changes in the climate caused huge quantities of codfish to enter Greenland waters and the fishing industry, started about 1920 on a small scale in the southern part of the country, soon

became the most important industry. This new industry created a completely new situation. It is remarkable that not until these last twenty-five years, when the fishing industry really has become important, did the interests of education, public health, and economy coincide. A population depending mostly on hunting must live in scattered communities. The fishermen, on the other hand, have to sell their fish and the fish has to be salted or frozen, which is done more economically in big plants in a few places. Consequently economy, education, and public health will benefit by concentration in fewer and bigger settlements.

Post Second World War

The thirties saw a rapid development in Greenland sheep farming and fishing. During the Second World War when the connection between Greenland and Denmark was cut, the Greenlanders became more and more aware of the outside world. The two Provincial Councils for the first time had joint sessions, the first one shortly after the German occupation of Denmark. As Greenland was cut off from the German-controlled Danish government, its administration entered into close cooperation with the free Danish Embassy in Washington. This course of politics - most important not only to Greenland, but also to Denmark - was agreed upon by the Provincial Councils.

After the war the trading monopoly was attacked both in Greenland and Denmark. A Royal Commission, with members of the Danish Parliament, Greenland representatives, and representatives of the Greenland Administration as members, was established in 1948. The result of this has been that the old government trading monopoly has been given up and that a new legal system has been established. Until lately Greenlanders and Danes in Greenland were under different legal systems, which caused much trouble and dissatisfaction because of the feeling of inequality on the part of the Greenlanders. Under the new system everybody is equal. One National Council for the whole country and thirteen Municipal Councils - the latter replacing the former Municipal and District councils - are elected directly by the people.

I have tried to describe the development of the Greenlanders' own participation in government and I have tried to show that, through the 90 years this system has worked, it has achieved its aim in restoring the Greenlanders' self-respect and in giving them a necessary social and legal system to replace the lost old one, and that it has played an important part in developing a better future for the coming generations.

In the economic field the Greenlanders have, unfortunately, not come as far as they have politically. The monopoly trade equalized the effect of the price fluctuations of the world market and so succeeded in keeping the standard of living on such a level that the economy of Greenland, assisted by income from the cryolite mine, was self-sufficient. This was only possible through the principle of the completely closed country. Nobody could enter into Greenland to trade or have anything to do with the Greenlanders without authorization from the Danish government. It was possible to live happily under such a system without knowing anything about the outside world and about the ordinary economic principles that rule the world and the community. As a matter of fact, we have failed, I think, in not letting the Greenlanders get more knowledge of, and responsibility for, their own economic affairs.

The average Greenlander is ignorant of the economic principles by which the prices that he has to pay for his goods are determined - to say nothing of the actual prices of the products and the goods in Denmark. Even many of the Danes in Greenland do not know much about these things. The result of this ignorance is that the Greenlander understands little of the economic basis of his existence, or even about the relation between what he produces and what he can buy. For instance, attempts to encourage private trading among the Greenlanders have nearly always been unsuccessful and the Royal Greenland Trading Company had to do all the trading in the country between the north and the south.

Today trade is free, but are the Greenlanders now equal to the task? They are now supposed to take an active part in the trade, and not merely look on passively while the trading is taken over by private Danish profit-seeking traders. Time will show.

The general policy of the Danish government has always been to further the Greenlanders' independence. Politically the Greenlanders really have come far. It will probably be necessary in the future also to aim at developing the independence and initiative of the Greenlanders in economic affairs.

In 1953, since this was written, the Danish Constitution became operative for Greenland. Greenland now elects two members to the Danish Parliament, and the final result of nearly one hundred years of political evolution has been reached.

Subscriptions for 1954

Members are reminded that their subscriptions for 1954 ($2.00 for Ottawa members, or $3.00 for combined membership for husband and wife, and $1.00 for out-of-town members, other than institutions) were due on January 1, and are payable to the Treasurer, Mrs. A.G. Sangster, 504 Golden Avenue, Ottawa.

Owing to currency regulations it is not always convenient for members of the Arctic Circle residing in Europe to pay their subscriptions to the club in Ottawa direct. Through the courtesy of the Director, the Scott Polar Research Institute will now receive the subscriptions of members from the United Kingdom and from the Continent of Europe and will transmit them to Canada from time to time. European members should forward their 1954 subscriptions (5/-) to the Director, Scott Polar Research Institute, Cambridge, England and mark them "Arctic Circle Subscription".

Change of Address

Members are earnestly requested to advise the Treasurer, Mrs. A.G. Sangster, 504 Golden Avenue, Ottawa, promptly of any change of address.

Numbers of the Circular published during 1953

In 1953 only five numbers of Volume 6 of the Circular were published, the last dated November 1953. An index and list of contents will be distributed with one of the 1954 numbers. It is hoped that publication will become more regular during 1954.

Editorial Note

The Editor would welcome contributions from those who are at present in the Arctic or have information about work in the Arctic. All material for the Circular should be sent to

Mrs. Graham Rowley,
10 Maple Lane,
Ottawa, Ont.

Please note change of address

Authorized as Second Class Mail, Post Office Department, Ottawa

THE ARCTIC CIRCULAR

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Annual General Meeting

The Annual General Meeting of the Arctic Circle was held in the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street, on Wednesday 6 January 1954. The President, Superintendent Henry Larsen, was in the Chair and opened the meeting by calling on Colonel A.G. Sangster, in the absence of the Treasurer, to read the financial statement, which was then approved by the meeting. During the year the Club's finances had improved, but there was a slight drop in numbers of out-of-town members. At the start of the seventh year of the Club's existence there were 182 Ottawa members and 246 out-of-town members, making a total of 428 compared with 464 at the Annual General Meeting in 1953.

The President then asked the meeting to vote for Officers and Committee members. In accordance with the Constitution the following Officers and members of the Committee resigned: the President, Superintendent Henry Larsen; the Vice-President, Mr. A.D. McLean; the Secretary, Mr. A. Stevenson; Committee members, Mr. Gordon Corcoran, Mr. T.H. Manning, Mr. G.W. Rowley, Col. A.G. Sangster, Mr. J.A. Wilson, and Mr. J.C. Wyatt. Of these only Mr. Stevenson was eligible for re-election. To fill these vacancies the Committee proposed the following members, who were elected unanimously by the meeting: President, Mr. A.D. McLean; Vice-President, Mr. J.C. Wyatt; Secretary, Mr. A. Stevenson; Committee members, Mr. W. Mair, Mr. H.A.J. Phillips, Superintendent Henry Larsen, Mrs. T.H. Manning, W/C D.A. MacLulich, and Mr. J.A. Houston. The Officers and Committee members for 1954 are as follows:

President:	Mr. A.D. McLean
Vice-President:	Mr. J.C. Wyatt
Secretary:	Mr. A. Stevenson
Publications Secretary:	Mr. S.J. Murphy
Treasurer:	Mrs. A.G. Sangster
Editor:	Mrs. G.W. Rowley

Committee members:

Mr. D'Arcy Charles	Dr. C.S. Lord
Mr. Frank Davies	Mr. W. Mair
Miss Moira Dunbar	Mr. H.A.J. Phillips
Mr. J.A. Houston	Dr. D.C. Rose

W/C D.A. MacLulich
Mrs. T.H. Manning
Superintendent Henry Larsen
Rev. Father Gontran Laviolette, O.M.I.
Dr. V. Solman
Mr. W.B. Smith
Mr. J.A. Warwick

Following the election of Officers and Committee members the retiring President, Superintendent Larsen, thanked the Officers and members of the Committee who had assisted him during the two years he had held office. In the absence of the new President, Mr. J.C. Wyatt, Vice-President, then took the Chair. The Vice-President thanked the auditors, Dr. George Hooper and Mr. W.K.W. Baldwin, and the meeting reappointed them for 1954. He also expressed the gratitude of the Club to Lt. Col. R.C.D. Laughton for the use of the R.C.A.S.C. Mess and Major F.A. Jacques for making the arrangements at the Mess, and to the Scott Polar Research Institute for handling the subscriptions from European members.

At the conclusion of the Club business two films were shown. The first, "Kumak - the sleepy hunter", was a single-frame animation film, in colour, made with Eskimo puppets by Miss Alma Duncan and Miss Audrey McLaren, two members of the Circle. The film, which has not yet been released to the public in Canada, was introduced by Miss Duncan.

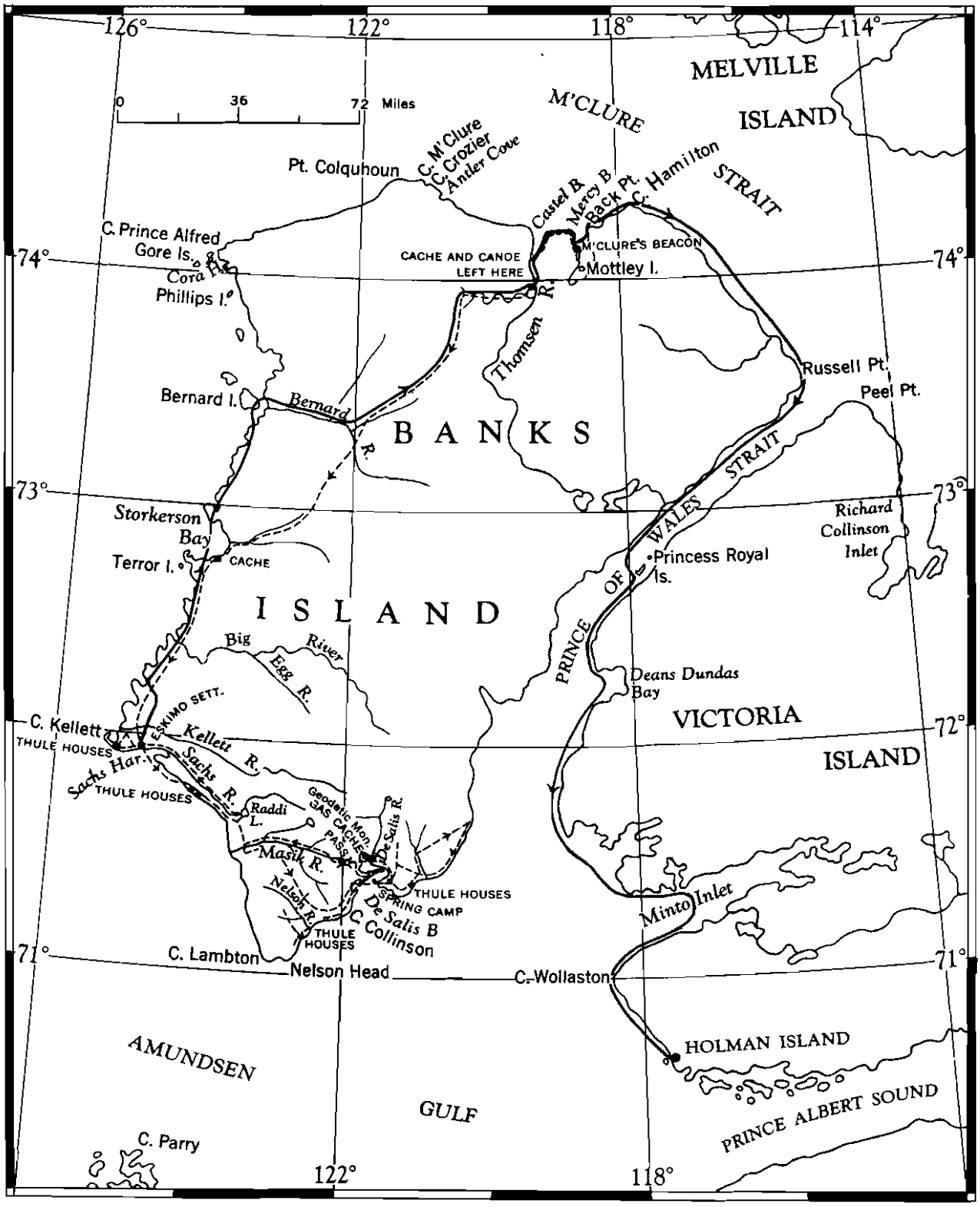
The second film showed some scenes of Aklavik, and was introduced by Mr. G.W. Rowley, who spoke briefly on the decision to move this settlement to a better site.

Defence Research Board's 1953 Banks Island Expedition. By T.H. Manning

In 1952 ice conditions and an early freeze-up obliged Andrew Macpherson and myself to abandon an attempt to circumnavigate Banks Island by canoe and to walk back overland to Sachs Harbour. Our equipment and supplies were left cached about 12 miles up the Thomsen River near the north coast of the island.[1] The Defence Research Board, under whose auspices the expedition was conducted, decided that an attempt should be made to complete the work and bring out the equipment the following summer. As Macpherson was unable to accompany me in 1953, his place was taken by Capt. I.M. Sparrow, R.E.

Arrangements were made through Mr. L.B. Post, A/Sub-District Administrator at Aklavik, who visited Sachs Harbour in April, for the Eskimo to mark out a landing strip on a sandbar about 2 miles west of Sachs Harbour. On May 10 we landed there on wheels in an R.C.A.F. Dakota piloted by F/O D.H. McNeill.

1. For an account of this trip see Arctic Circular, Vol. 6 (1952) pp. 24-30.


126°
122°
118°
114°
MELVILLE
ISLAND
0 36 72 Miles
M'CLURE
STRAIT
Pt. Colquhoun
C. M'Clure
C. Crozier
Antler Cove
Castel B.
Mercy B.
Back Pt.
C. Hamilton
C. Prince Alfred
Gore Is.
Cora H.
Phillips I.
74°
CACHE AND CANOE
LEFT HERE
M'CLURE'S BEACON
Mottley I.
Thomsen R.
Russell Pt.
Peel Pt.
Bernard I.
Bernard R.
BANKS
ISLAND
73°
Storkerson Bay
Terror I.
CACHE
WALES
PRINCE OF
STRAIT
Princess Royal Is.
Richard Collinson Inlet
Big River
Egg R.
Deans Dundas Bay
VICTORIA
ISLAND
72°
C. Kellett
THULE HOUSES
ESKIMO SETT.
Kellett R.
Sachs R.
Sachs Har.
THULE HOUSES
Raddi L.
Geodetic Mon.
SAS CACHE
De Salis R.
PASS
C. Masik R.
Nelson R.
SPRING CAMP
THULE HOUSES
De Salis B.
C. Collinson
THULE HOUSES
Minto Inlet
71°
C. Lambton
Nelson Head
C. Wollaston
HOLMAN ISLAND
AMUNDSEN
GULF
PRINCE ALBERT SOUND
C. Parry
122°
118°

As conditions appeared to indicate an early break-up, arrangements were made immediately for Sparrow and two Eskimo to take supplies up by dog team to our cache on the Thomsen River and to bring back specimens and equipment which would not be required for the continuation of the canoe trip.

While this party was away, some other Eskimo helped me to move our camp to Cape Kellett. While awaiting break-up the birds and mammals of this area were studied and collected, and two Eskimo houses were excavated. These were typical Thule houses like those dug the previous summer. A physiographical study of the limited snow-free area on the southern side of the Cape Kellett - Sachs Harbour ridge was also carried out.

On May 30 Sparrow and his Eskimo returned from the Thomsen River after a successful trip, and reported that the canoe and equipment had survived the winter without damage.

Contrary to the early indications, break-up was exceptionally late, and it was clearly impracticable to begin our walk up to the Thomsen River until June 28, eleven days later than we started our walk to Sachs Harbour in the preceding year. Even this date proved too early, and after two days the slush-filled, icy-bottomed streams forced us to abandon our plan of walking straight overland, and we made our way down to the west coast where we could get around the rivers and streams by going out on the sea ice. Dr. E.O. Höhn, who had come in on the same aircraft in order to study birds, walked with us as far as the Big River, where he turned inland to try to reach the Snow Goose colony on the Egg River. We continued up the coast, and crossed Storkerson Bay on the ice. The Bernard River had cut a channel out as far as Bernard Island, and to get by it we had to cross over part of the island.

It was July 9 when we started up the Bernard valley. Near the coast there were still many patches of snow, even on the flat land, and the small lakes had only a little water around the edge, although the ice on them was too rotten to walk over. After one day's walk inland conditions rapidly improved, and it was soon evident that the snow had gone distinctly earlier there than it had towards the south-east of the island. The streams and rivers were now much lower than they had been at the full run-off, but the main northern branch of the Bernard was still almost waist-deep where we crossed. We reached our cache on the Thomsen River on July 15.

On this walk we had used three pack dogs which made travelling a great luxury compared to the previous year when we had had to carry all our own supplies and camping gear. The dogs caused very little trouble, although after the first few days it was apparent that an average of 8 to 8½ hours walking per day was their limit on a long journey.

On July 18 we moved down the Thomsen River and crossed to the northeast point of Castel Bay. Castel Bay was completely free of ice, and indeed the ice was farther off shore from the northeast point than it had been at any time during our previous stay, but this was only because the comparatively warm river and bay water had cut a channel out seaward into the still unbroken winter ice of M'Clure Strait. I believe M'Clure Strait ice first broke up off Castel Bay and started to move on July 31. On August 4 we reached Mercy Bay, but were blocked at the northwest point until August 9, when we managed to start a slow process of edging around the bay on the high tides inside the grounded ice. We reached Back Point on August 12, when we were again completely blocked. On August 22 an easterly wind took the ice out opposite our camp, and we were able to make a few more miles. Next day we passed Cape Hamilton, but were soon blocked again. There was then 3 or 4 inches of snow on the land, and we had to cut our way in to shore through the young ice which covered the little lagoons inside the heavy pack.

On August 28 a strong easterly wind moved the pack out just far enough for us to edge rather precariously along the coast amongst a lot of brash ice lying between the heavy pack and the vertical ice-foot which was here almost unbroken. Scree slopes topped by cliffs up to about 900 feet lay behind this ice-foot, giving the land a remarkably forbidding appearance on a gloomy day. Finally we got into a position where it was clearly unsafe to continue, and had to return about 2 miles to a spot we had noted near a valley where the shallower water enabled us to get shelter inside the grounded pack. After a few hours sleep we woke to find a comparatively wide lead had opened along the shore, and by the next night we were around Russell Point. We crossed Prince of Wales Strait via the Princess Royal Islands on September 1, and after some delay caused by bad weather, arrived at Holman Island on September 11.

We immediately made arrangements to be picked up by an Associated Airways Norseman which took us to Yellowknife, and we were back in Ottawa on September 15.

During the summer notes were made on the coast traversed, and air photographs were compared with ground features both along the coast and on our overland walk. About 350 ground photographs were taken to show topographical detail. One hundred and ninety-two bird and 212 mammal specimens were obtained for the National Museum of Canada as well as artifacts from the Cape Kellett houses. We also collected geological and plant specimens.

In 1952 Macpherson and I saw a lone Muskox in the valley of the Thomsen River, and we had hoped that last year we might see others or some signs of them. We were not fortunate enough to do this, but it is quite possible that sizeable herds may exist in the deep valleys

of the northern part of the island. Bears were probably keeping out on the ice, and we saw only one, just south of Russell Point. Caribou were moderately numerous, but as in 1952 fawns were scarce. Indeed, last year we saw none. We saw a few wolves, but they always kept well out of range. Lemmings were on the increase, and the foxes appeared to have large litters.

Minister and Deputy Minister of the Department of Resources and Development

On 17 September 1953 Mr. Robert Winters, who had been Minister of Resources and Development since 18 January 1950, became Minister of Public Works and Mr. Jean Lesage was appointed Minister of Resources and Development (now Northern Affairs and National Resources).

Major-General H.A. Young, Deputy Minister of the department and Commissioner of the Northwest Territories, accompanied Mr. Winters to Public Works and Mr. R.G. Robertson, at that time Assistant Secretary to the Cabinet, was appointed to succeed him.

The Department of Northern Affairs and National Resources

On 8 December 1953 the Prime Minister introduced a bill in the Canadian House of Commons to change the name of the Department of Resources and Development to the Department of Northern Affairs and National Resources, and to give the department wider powers in the north. Mr. St. Laurent explained that these measures reflected the greatly increased interest in the Canadian north and the belief that the area was on the threshold of a period of accelerated development. The major new responsibilities given to the department were the coordination of federal government activities in the Northwest Territories and the Yukon Territory and the fostering, through scientific investigation and technology, of knowledge of the Canadian north and of the means of dealing with conditions related to its further development. The bill received Royal Assent and came into force on December 16. Northern matters, which have been handled in turn by the Departments of the Interior, Mines and Resources, and Resources and Development, are now the responsibility of the Department of Northern Affairs and National Resources.

The new act had been foreshadowed by the re-establishment early in 1953 of the Advisory Committee on Northern Development, a committee of the senior civil servants from those government departments concerned in northern matters, and the provision of a permanent secretariat for the committee and its sub-committees. Mr. G.W. Rowley, formerly head of the Arctic Section of the Defence Research Board, was appointed Secretary and Co-ordinator of the committee.

The Northern Administration and Lands Branch

There have been a number of changes within the Department of Resources and Development in the past three or four years. Following the retirement of Mr. R.A. Gibson, Director, Lands, Parks and Forests Branch, on 16 May 1951, the department was reorganized and the Northern Administration and Lands Branch was formed. Mr. G.E.B. Sinclair was appointed Director and held this position until he retired on 23 January 1953, being succeeded by Mr. F.J.G. Cunningham.

The Northern Administration and Lands Branch at first consisted of two divisions, the Northern Administration Division and the Lands Division. On 24 November 1952 an Eskimo Research Section was set up and Mr. J.G. Wright, who had been chief of the Northern Administration Division, was appointed to head it. Owing to ill health Mr. Wright retired on 30 September 1953, before the organization of the section was complete.

Partly as a result of the new act defining the responsibilities of the Department of Northern Affairs and National Resources a further reorganization has taken place within the Northern Administration and Lands Branch. The Lands Division has remained unchanged but an Arctic Division has been formed which both replaces the Eskimo Research Section and takes over a number of the functions of the Northern Administration Division. The Northern Administration Division has been renamed the Territorial Division and is concerned with the many responsibilities connected with the Mackenzie District.

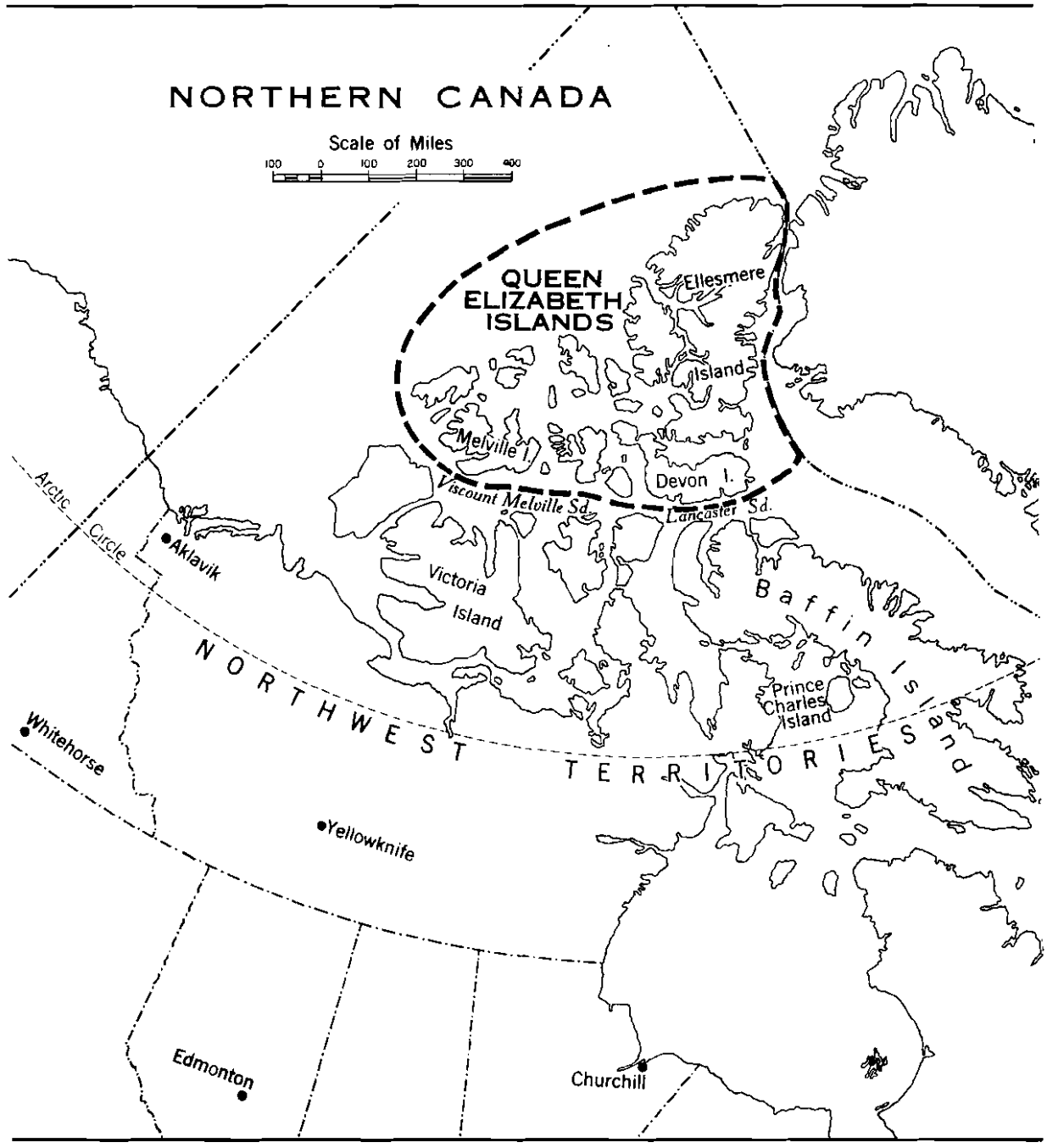
Mr. B.G. Sivertz is Chief of the Arctic Division and Mr. Fred Fraser of the Territorial Division. Mr. LeCapelain remains as Chief of the Lands Division, a post which he has held since 1 May 1951.

The Queen Elizabeth Islands

On 5 February 1954 the Minister of Northern Affairs and National Resources announced in the House of Commons, that Her Majesty the Queen had been graciously pleased to allow her name to be given to the group of islands in the Canadian Arctic which lies north of Lancaster and Viscount Melville sounds.

These islands form the northern part of the Canadian Arctic Archipelago, and have a total area of approximately 160,000 square miles, or over 4 per cent of Canada.

Geographically the group is made up of ice-capped mountains and high plateau in the east, in Devon, Ellesmere, and Axel Heiberg islands; falling to very low-lying terrain in the west, in Prince Patrick, Mackenzie King, Borden, and the Ringnes islands. Up the centre, in a great arc facing the Arctic Ocean, runs a folded belt which forms a physiographic region and thus gives unity to the group.


NORTHERN CANADA
Scale of Miles
100 0 100 200 300 400
QUEEN ELIZABETH ISLANDS
Ellesmere Island
Melville I.
Devon I.
Viscount Melville Sd.
Lancaster Sd.
Arctic Circle
Aklavik
Victoria Island
Baffin Island
Prince Charles Island
NORTHWEST TERRITORIES
Whitehorse
Yellowknife
Edmonton
Churchill

This belt embraces the eastern part of Melville Island and all the Bathurst group and Cornwallis Island, and runs north through the Grinnell Peninsula of Devon Island to include all Axel Heiberg Island and most of Ellesmere Island, where it forms the highest mountains in Canada outside of the western Cordillera. The exact height of these has not yet been established but they are believed to run between 9,000 and 10,000 feet. There are indications that there may be oil associated with the folded belt.

The exploration of the Queen Elizabeth Islands began only thirteen years after the death of the first Elizabeth, when William Baffin sailed to the head of Baffin Bay and saw both Devon and Ellesmere islands. He did not however name them, being more interested in straits than islands, and for some reason his discoveries were not followed up for two hundred years, when John Ross sailed into the entrance of Lancaster Sound and named North Devon, now Devon Island. The following year Parry sailed right through Lancaster Sound and as far west as Melville Island, discovering and naming Cornwallis and Bathurst islands on the way. After this voyage the trend of discovery was to the south of Lancaster Sound, and it was not until the long and thorough search, starting in 1848, that followed the loss of the Franklin expedition, that further work was done in this area. In this period most of the coasts of the islands bordering Lancaster and Viscount Melville sounds were charted, and Prince Patrick Island and some smaller islands were discovered.

Ellesmere Island was named by Captain Inglefield during the Franklin Search, or at least the name was given to part of the south-east of the island and has since been adopted for the whole. Starting in 1853 this island came in for much attention, though more as a stepping stone towards the north pole than for its own sake. The east and north coasts were charted by expeditions under the Americans - Kane, Hayes, and Hall, by a British naval expedition led by Nares, who was the first to sail a ship to the northeast corner of the island, and finally by Greely and by Peary, who used the north coast as a base on two of his polar expeditions, in 1906 and 1909.

In the meantime a Norwegian expedition under Otto Sverdrup, using Nansen's famous ship the Fram, was adding large areas to the map in 1898-1902. This expedition mapped the south and west coasts of Ellesmere Island, much of the north coast of Devon Island, and discovered and mapped Axel Heiberg Island and the Ringnes Islands. The remaining islands of the Queen Elizabeth group were discovered by Stefansson's Canadian Arctic Expedition in 1913-18. Borden Island (now Borden and Mackenzie King islands) and Meighen Island were added to the map, the position and extent of the Findlay Group and King Christian Island were determined, and the charting of the west coast of Prince Patrick Island was completed. After this there remained only the filling in of details, some of which, chiefly in Ellesmere Island, was done by various expeditions, notably those of MacMillan and Shackleton,

and some by R.C.M.P. patrols from posts at Craig Harbour and Bache Peninsula, Ellesmere Island, and Dundas Harbour, Devon Island. Most of the corrections to the original maps however were the result of flying operations. The most interesting were the discovery that Stefansson's Borden Island was actually two islands and that the northwest arm of Bathurst Island was made up of four separate islands.

The R.C.M.P. posts at Craig (open 1923-7, 1933-40, and 1951-), Bache (1926-33), and Dundas Harbour (1924-33 and 1945-51), and a Hudson's Bay Company post maintained for a short period at Dundas Harbour (1934-6) were the only posts established in the Queen Elizabeth Islands prior to 1947, when the first joint Canadian/U.S. weather stations were set up at Eureka and Resolute. Now there are five stations, Isachsen and Mould Bay being added in 1948 and Alert in 1950. The R.C.M.P. at present have three posts in the area, at Resolute, and at Craig Harbour and Alexandra Fiord in Ellesmere Island.

The Mint Julep Glaciological Project

In the spring of 1953 the American Geographical Society, with the support of the Arctic, Desert, Tropic Information Center and Northeast Air Command of the U.S.A.F., established a glaciological research station at 6,000 feet on the Greenland Ice Cap about 100 miles southeast of Søndre Strømfjord. The project was sponsored by the Arctic, Desert, Tropic Information Center, and Lt Colonel Donald A. Shaw of the Center made the initial reconnaissance and served in the dual capacity of project and liaison officer. The scientific program was under the auspices of the American Geographical Society and was directed by Dr. Leonard R. Wilson, University of Massachusetts. Construction of the station and support facilities were under the direction of Mr. John H. Nelles, formerly of the Engineering Research and Development Laboratories of the U.S. Corps of Engineers and now with the Snow, Ice and Permafrost Research Establishment.

A party of 17 scientists and support personnel occupied the station from May through August 1953. Research activities were directed toward the surface and subsurface features of the ice cap in the vicinity of the firn line. Special studies were made of the topography, hydrology, physical properties of the snow, strength and composition of the ice, and the weather.

The scientific staff included Dr. G. William Holmes, ADTIC scientific representative, who carried out hydrological studies and assisted Mr. Karl Hendrickson, University of Massachusetts, in the topographical survey. Ice engineering was directed by Mr. Kenneth Linell, with field studies carried out by Mr. Henry Stevens, Mr. Edwin Blackey, and Mr. Raymond McInnes of the Arctic Construction and Frost Effects Laboratory, Corps of U.S. Engineers. Mr. Robert Schuster of

the Snow, Ice and Permafrost Research Establishment, and Mr. Edward LaChapelle, American Geographical Society, were responsible for snow and ablation studies. Other personnel were: Herman Gottesman, American Geographical Society, photographer; A 1/C Ronald Hudgins, Northeast Air Command, meteorologist; and Mr. Herbert Drury, American Geographical Society, field assistant.

The Northeast Air Command supported the expedition. Through the efforts of Major George Jacobi, project officer for Headquarters Northeast Air Command, provisions were made for adequate living accommodations and facilities for repair, communications, and laboratory studies. Two weasels made extensive field work possible. Flight, communications, weather, and housekeeping personnel were assigned to the project from Søndre Strøm Air Base.

The final report on the scientific results of the Mint Julep Project is now in preparation and will be released through the Arctic, Desert, Tropic Information Center, Maxwell Air Force Base, Alabama.

Canadian Weatherfax System

On 28 August 1953 the Honourable Lionel Chevrier, Minister of Transport, inaugurated the Canadian Weatherfax System at Montreal Airport, Dorval, Que. This system permits weather maps, drawn by the Central Analysis Office at Dorval, to be transmitted by land-wire and wireless, within a few minutes, to R.C.A.F. stations across the country. When the system is in full operation there will be transmitted, every six hours, a complete series of weather maps and associated charts and diagrams. The maps will cover all levels, from the surface to 50,000 feet, and will be received simultaneously by all stations in Canada. The system can be broken down into regional networks so that each of the main district forecast offices (Vancouver, Edmonton, Winnipeg, Malton, Dorval, and Moncton) will be able to send supplementary material of regional significance to stations in their districts.

Of particular interest is the means by which the weather maps are sent to Frobisher. The signals being fed to the landline Weatherfax system across Canada go straight on to transmitters in Montreal for transmission to Goose Bay. At Goose Bay they are transposed and put on another radio transmitter and are relayed on the circuit already established to Frobisher. Thus Frobisher receives the charts at the same time as Vancouver, Moncton, and Goose Bay.

The first use of facsimile equipment in the transmission of weather data in Canada was made during the latter part of the Second World War when meteorological maps were transmitted from Dorval to Ottawa. This service was discontinued after the war but subsequently

the R.C.A.F. and the Department of Transport combined in operational tests and development of equipment to meet Canadian requirements. Two operational tests were established: one consisted of setting up a landline facsimile network out of Air Defence Command Headquarters at St. Hubert to provide meteorological maps and charts to the Fighter Bases at Chatham, Bagotville, Uplands, and North Bay; the second consisted of a radio facsimile circuit from Goose Bay to Frobisher. Both tests were extremely successful. Plans were therefore developed jointly by the R.C.A.F. and the Department of Transport for a national weather facsimile system to meet the needs of the rapidly expanding operational and training commitments of the R.C.A.F. Canadian National Telegraphs and Canadian Pacific Telegraphs proposed to develop a plan jointly and provide equipment which would be leased to the Government. After a period of intense engineering activity and a world-wide search for the best type of equipment, it was decided that that built by the Muirhead Company of England was the most suitable. Various improvements in the automatic features of the equipment were incorporated in the production model, with the result that the Canadian Weatherfax System is the first fully automatic system of its kind in the world.

Presentation of Coronation Medals to Eskimo

On 1 December 1953 the Hon. Jean Lesage, Minister of Resources and Development, announced that twenty Eskimo have been awarded the Coronation Medal. The medals will be flown to the Arctic and presented by officers of the R.C.M. Police. A list of those honoured is given below:

Charles Joseph Smith, Disc No. W3-472, Reindeer Station, Aklavik	Elected chief of the Eskimo in the Aklavik area. An employee at the Reindeer Station.
Fred Carpenter, Disc No. W3-240, Banks Island	A hunter and leader of the Eskimo group at Banks Island.
Peter Natit, Disc No. W3-930, Cambridge Bay	Outside foreman at the Air Base at Cambridge Bay.
Ikey Bolt, Disc No. W2-524, Coppermine	Employee of the school and nursing station at Coppermine, and a leader of the Eskimo community there.

Angulalik, Disc No. E4-3, Perry River	The only independent Eskimo trader.
Takolik, Disc No. E5-23, Spence Bay	A hunter and leader of the Fort Ross group attached to Spence Bay.
Tootoo, Disc No. E1-394, Fort Churchill	Outside foreman at the Military Base at Fort Churchill.
Davidee, Disc No. E7-54, Lake Harbour	Ships' pilot at Lake Harbour.
Simonie, Disc No. E7-551, Frobisher Bay	Carpenter at the Air Base at Frobisher Bay. Attended the Coronation Naval Review.
Ameroo, Disc No. E2-109, Baker Lake	A hunter and leader of the people in the Baker Lake area.
Johnny, Disc No. E9-1469, Povungnituk	A hunter and leader in the Povungnituk area.
Kingwatchiak, Disc No. E7-911, Cape Dorset	Probably the oldest Eskimo at Cape Dorset.
Hullingo, Disc No. E9-991, Ivuyivik	A hunter and capable leader in the Ivuyivik area.
Keelabuk, Disc No. E6-18, Pangnirtung	A hunter and leader. Employed by the Hudson's Bay Company and acts as Ships' pilot.
Tommy Ashevak, Disc No. E8-590, Port Burwell	A hunter and leader of a group of Eskimo, who have remained at Port Burwell.
Ned Gordon, Disc No. E8-182, Fort Chimo	Pilot for the Koksoak River. Catechist and native leader at Fort Chimo.

William Saunders, Disc No. E8-90, Fort Chimo	One of the oldest Eskimo at Fort Chimo and a leader in his area.
Harry Gibbons, Disc No. E3-779, Coral Harbour	A hunter and leader among the Southampton Islanders. He moved to the mainland in 1953, and has since died from a heart attack.
Idlout, Disc No. E5-766, Pond Inlet	A hunter and leader among the Pond Inlet Eskimo.
Lucassie, Disc No. E9-61, Belcher Islands	A native leader and trader of the isolated group on the Belcher Islands.

Subscriptions for 1954

Members are reminded that their subscriptions for 1954 ($2.00 for Ottawa members, or $3.00 for combined membership for husband and wife, and $1.00 for out-of-town members, other than institutions) are payable to the Treasurer, Mrs. A.G. Sangster, 504 Golden Avenue, Ottawa.

Owing to currency regulations it is not always convenient for members of the Arctic Circle residing in Europe to pay their subscriptions to the club in Ottawa direct. Through the courtesy of the Director, the Scott Polar Research Institute will now receive the subscriptions of members from the United Kingdom and from the Continent of Europe and will transmit them to Canada from time to time. European members should forward their 1954 subscriptions (5/-) to the Director, Scott Polar Research Institute, Cambridge, England and mark them "Arctic Circle Subscription".

Change of Address

Members are earnestly requested to advise the Treasurer, Mrs. A.G. Sangster, 504 Golden Avenue, Ottawa, promptly of any change of address.

Editorial Note

The Editor would welcome contributions from those who are at present in the Arctic or have information about work in the Arctic. All material for the Circular should be sent to:

Mrs. Graham Rowley, (Note change of address)
10 Maple Lane,
Ottawa, Ont.

Authorized as Second Class Mail, Post Office Department, Ottawa

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Forty-ninth Meeting of the Arctic Circle

The forty-ninth meeting of the Arctic Circle was held in the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street, on Wednesday February 3. Mr. Frank Davies was in the Chair and introduced the speaker, Dr. K.B. Fenton. Dr. Fenton spoke on "Australian scientific stations on Macquarie and Heard islands in the Antarctic" and illustrated his talk with a colour film.

Special Meeting

By courtesy of the Embassy of the U.S.S.R., the Russian colour film, "Life in the Arctic", was shown at a special meeting of the Arctic Circle held on February 17 at the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street. This film, which runs for approximately 75 minutes, has an English commentary and deals mainly with marine life and mammals in the Soviet Arctic.

Australia and the Antarctic. By K.B. Fenton

Australia's antarctic territory consists of a quadrant of the Antarctic Continent bounded by longitudes 160°E. and 45°E. (except for the small French sector, Adélie Land), as well as Heard and Macquarie islands. To look after her interests in this vast area, the Commonwealth Government set up in 1947 the Antarctic Division of the Department of External Affairs, the Director of which is Mr. P.G. Law.

In the summer of 1947-8, scientific bases were established on Macquarie and Heard islands, and these have been kept in continuous operation. During the summer of 1953-4, a party landed on the coast of MacRobertson Land and is at present building the camp which is to be known as Mawson.

In early antarctic expeditions the main scientific interest was in biology and geology. However, in recent years there has been a change of emphasis with the physical sciences playing a prominent part. The scientific programme on the two island stations includes a study of the aurora australis, cosmic rays, the ionosphere, the

earth's magnetism, seismology, as well as meteorology and a small amount of biological work. A similar programme is planned for the base at Mawson. Because of the long-term nature of much of this work, the stations are operated on a continuous basis, the tour of duty of each party being approximately one year.

The meteorological reports, which are despatched by radio to Australia every three hours, have had a marked effect on the reliability of weather forecasts. Valuable results from other scientific investigations have already been obtained, and the stations may confidently be expected to produce significant contributions during the International Geophysical Year in 1957.

The Antarctic Division has sent the Arctic Circle some of their publications on the antarctic stations, and these are listed towards the end of this number.

Activities of the Geological Survey of Canada in the Arctic Islands, 1947 - 1953.* By Y.O. Fortier≠

From the summer of 1947 to the fall of 1953 the Geological Survey of Canada carried out 18 seasonal projects in the arctic islands. These were as follows:

Year	Geologists I/C	Areas	Projects
1947	Y.O. Fortier	Western islands	(Attached to Polco 1947)
1948	W.A. Deer	Pond Inlet	(Maintained in the field by the G.S.C.)
1949	Y.O. Fortier	Southern Baffin Island	Systematic reconnaissance
	C.A. Burns	Foxe Basin	(Appointed to Nauja expedition)
1950	Y.O. Fortier and R. Thorsteinsson	Cornwallis Island	Systematic reconnaissance (T.A. Harwood, D.R.B., attached to G.S.C. party)
	V.K. Prest	Ellesmere Island	(Appointed to Summer Sea Supply Mission 1950)
	W.L. Davison	Lake Harbour and southern Baffin Island	Detail investigation Systematic reconnaissance

* Published by permission of the Deputy Minister, Department of Mines and Technical Surveys.

≠ Geological Survey of Canada.

Year	Geologists I/C	Areas	Projects
1950	K.E. Eade and G.C. Riley	Clyde	(Attached to Arctic Institute Baffin Island 1950 expedition)
1951	R. Thorsteinsson	Cornwallis Island	Systematic reconnaissance
	W.L. Davison	Lake Harbour and southern Baffin Island	Detail investigation Systematic reconnaissance
	G.C. Riley	Cumberland Sound	Systematic reconnaissance
1952	Y.O. Fortier and R.G. Blackadar	Foxe Peninsula	Systematic reconnaissance
	R. Thorsteinsson	Cornwallis Island	Systematic reconnaissance
	W.W. Heywood	Isachsen	Systematic reconnaissance and investigation of special structures
1953	R. Thorsteinsson	Cornwallis Island	Systematic reconnaissance
	W.L. Davison	Southern Baffin Island	Systematic reconnaissance
	R.G. Blackadar	Northern Ellesmere Island	Joint project with D.R.B.
	W.W. Heywood	Isachsen	Systematic reconnaissance and detail investigation

All geologists on these projects were, and still are, employed by the Department of Mines and Technical Surveys, with the exception of C.A. Burns and K.E. Eade, who have left the Geological Survey, and W.A. Deer from England, formerly at Cambridge University and now at Manchester. The Geological Survey participation in the Pond Inlet project led by Dr. Deer was limited to maintenance in the field. Of the 17 other projects, 12 were self-contained "expeditions" fully organized, equipped, and manned by the Geological Survey, 3 involved geological teams attached to undertakings sponsored by other governmental branches (Polco 1947, the Nauja expedition, and Summer Sea Supply Mission 1950), and 2 were joint undertakings, (Arctic Institute Baffin Island 1950 and D.R.B. 1953 northern Ellesmere expeditions), to the extent that the Geological Survey not only contributed funds or paid part of the expenses but also supplied geologists.

Polco 1947

In 1947 Y.O. Fortier and his assistant, H.R. Steacy, became by accident members of Polco 1947 (a joint undertaking of the Dominion Observatory and the R.C.A.F.). The geological party had planned to fly to Pond Inlet in the Canso carrying the Polco party, and to return south in the Nascopie. After the loss of the ship, it was decided to attach the geologists to the Polco party for the summer. The project then became one of aerial reconnaissance with ground observations made during the few hours spent at landing places. Technically, little could be contributed beyond general observations.

These included the following: the moraines of western King William Island and of northeastern Victoria Island are fluted in a northwesterly direction; the plain of Palaeozoic limestone on eastern Victoria Island extends at least to Greely Haven; the structural trend of the Precambrian rocks of northern Boothia Peninsula is northeasterly; lakes are abundant in the southern half of Prince of Wales Island and in other islands to the south, whereas they are scarce in the northern half of the island; there is a fundamental correlation between types of topography and types and structures of bedrock in that part of the Archipelago. The results of that project were published by Fortier (1948).

Pond Inlet 1948

W.A. Deer went to Pond Inlet to seek for the western extension of the belt of Tertiary volcanic rocks that presumably extends from northern Scotland through Iceland and eastern and western Greenland to Baffin Island. No Tertiary rocks were found. An account of Deer's work was published in the Arctic Circular (1949).

Southern Baffin Island 1949-53

1. In 1949 Fortier started a programme of geological reconnaissance of the coasts of southern Baffin Island. His party, which included seven student assistants, was flown to Frobisher Bay in early June and a base camp was established there. Fortier divided his party into small groups and, with the help of two young Eskimo and some pack dogs, they explored the geology, sometimes making traverses up to 100 miles long. In early August the party and its dogs took to the sea in two Peterhead boats chartered from Lake Harbour. Each Peterhead was manned by three Eskimo, with the legendary Anawak, skipper of the Nanook II, and the enterprising Davidee at the helm of his own Peterhead. The "fleet" separated at Noble Inlet, near the southeastern tip of Baffin Island, and the two boats cruised westerly, Davidee along the north shore of Hudson Strait, and Anawak along the south shore of Frobisher Bay. The westerly progress of the cruises was

coordinated by portable (2.7 watt) radios so that not only could the geology be studied along the coasts, but also teams, each made up of a geologist, a young Eskimo, and 3 or 4 dogs, could travel from one Peterhead to the other across the peninsula separating the strait from the bay. In all, four teams made the crossing, two in each direction. The crossings, over distances of up to 75 miles, were carefully planned on air photographs, and lasted 5 to 7 days; constant geological mapping was carried out. The last crossing was made from near the head of Frobisher Bay to Lake Harbour and all operations were stopped by September 10.

All formations surveyed were highly metamorphosed Precambrian with the exception of areas of Ordovician strata along the Jordan River. It was found that Silliman's Fossil Mount, of international palaeontological repute, was but one of a number of Ordovician outliers. The Precambrian formations resemble in some aspects those of the Grenville sub-province (for instance the Ottawa Valley) of the Canadian Shield, but they also have, at least at first sight, features common with assemblages found in Ceylon, Uganda, Germany, Scandinavia, and western Greenland. These features include widely distributed granular rocks ranging from basic to mafic, with hypersthene pyroxene occurring in all types. Such rocks are now being studied in order to classify them either as members of a charnockite-norite sequence or as units belonging to the granulite metamorphic facies, and to determine whether all such petrographic units are the results of similar conditions of formation. The prevalent structural trend is northeasterly, but the traverse made across the peninsula to Lake Harbour revealed that departures from that trend do occur. Lake Harbour seemed to be a most suitable locality to study the stratigraphy, petrography, metamorphism, and structural complexity of the gneisses of southern Baffin Island in greater detail.

2. In the middle of May 1950 W.L. Davison, who had accompanied Fortier in 1949, flew with three student assistants to Frobisher Bay, and then travelled by dog team to Lake Harbour. His plans included detailed work in that area, mapping at a scale of 1 inch to $\frac{1}{2}$ mile, and, as soon as the navigation season opened, to continue the systematic geological exploration of the coasts of southern Baffin, again using the same two Peterheads as in 1949. He was able to investigate the north shore of Frobisher Bay, and the west shore of Davis Strait to Cape St. David at latitude 64°N. Among the interesting places visited was the site of Martin Frobisher's "gold" mining venture in Countess of Warwick Sound.

3. 1951 saw Davison, assisted by R.G. Blackadar, again doing detailed work at Lake Harbour in the spring and early summer and, later on in the season, continuing coastal exploration as far west as longitude 74° on the north shore of Hudson Strait. Davison gathered sufficient material in the Lake Harbour region for a doctoral thesis, to be presented at Edinburgh University.

4. In 1951 G.C. Riley also continued the systematic coastal exploration of the southern part of Baffin Island, examining Cumberland Sound from about Pangnirtung Fiord westerly and southeasterly to link with Davison's 1950 work at Cape St. David. Riley was flown in mid-May to Pangnirtung and afterwards travelled by dog team, canoe, and a small boat chartered locally. Like his predecessor, L.J. Weeks in 1927, Riley recorded only highly metamorphosed Precambrian formations, with prevalent structures trending northwesterly. His findings will be included in a doctoral thesis, to be presented at McGill University.

5. Y.O. Fortier and R.G. Blackadar sailed in July 1952, in the M.V. Rupertsland from Montreal to Lake Harbour. They then cruised along the whole of the Hudson Strait coast of Baffin Island in an Eskimo Peterhead boat, going up Foxe Channel as far north as Nuwata. They made a complete geological traverse from Chorkbak Inlet to Nuwata. Fortier also went on a canoe trip with an Eskimo companion northwesterly from this inlet to the Kommanik River, thence south to the head of Andrew Gordon Bay.

The Precambrian rocks of the southwestern part of Foxe Peninsula are less metamorphosed, and the formations of quartzite and amphibole schists are of greater thicknesses, than in the east. Bands of crystalline white limestone, both in this area and between Lake Harbour and Amadjuak Lake, are striking elements of the landscape although minor parts of stratigraphic sections. As in most other regions of southern Baffin Island, the majority of areas of meta-sedimentary strata grade into gneisses passing into truly homogeneous granites; however, locally there are sharp contacts between country rocks and bodies of granites so that granitists and magmatists could meet there as in an arena. The structural trend is northwesterly, but with some arching; a large area of quartzite between King Charles Cape and Schooner Harbour appears as a monocline that originally dipped south gently, but that was arched with a south-facing concavity so that the resulting crenulations of the inner part of the arch appear as so many folds plunging southerly. The folds are isoclinal with northeasterly dipping axes between Andrew Gordon Bay and Finnie Bay, while to the north they are bounded by marked topographical linears; they are gradually more opened southwesterly. Such a structural picture is in keeping with findings in Frobisher Bay.

6. In the summer of 1953 W.L. Davison studied gaps left in previous seasons along Hudson Strait, and examined in further detail occurrences of minerals of economic interest.

Southern Baffin Island, at this stage of geological exploration, appears as a region which may supply the types of ores found in the southern part of the Shield in Ontario and Quebec. Shipments of graphite, mica, and garnet, have been made in the past. It is not improbable that prospecting might locate deposits of magnetic iron

ores, quartz crystals, and ornamental stones such as coloured marble and lapis lazuli. Local deposits of stratified basic schists provide natives with "soapstone" for carvings.

The last major Pleistocene ice movement was generally southerly. One ice lobe is well recorded in the western part of Foxe Peninsula. Alpine glaciation has left obvious scars in Frobisher Bay, where two small ice caps persist, the outlets of one still reaching the sea.

"Nauja" expedition 1949

C.A. Burns was a member of the cruise of the Nauja to the new islands in Foxe Basin led by T.H. Manning (1950). His findings, outlined in G.S.C. Paper 52-25, were the definite location of Silurian strata in situ in the region of Foxe Basin, the occurrence of crystalline limestone on the east coast of Melville Peninsula, suggesting a northwesterly extension of the Precambrian sub-province of southern Baffin Island, and finally the observation of greywacke near Piling, which is the first time such sedimentary strata have been recorded on Baffin Island.

Cornwallis Island 1950-3

In the summer of 1950 the Geological Survey began field investigation of the Parry Islands Folded Belt or former mountain ranges. So far, these studies have centred around Cornwallis Island and "Little Cornwallis Island".

In 1950 Y.O. Fortier and Ray Thorsteinsson together with T.A. Harwood (1951) of the Defence Research Board made a canoe journey around Cornwallis Island. The investigation was subsequently carried on by Thorsteinsson for three successive summers. In 1951 he made detailed studies of some of the areas visited the previous year. In 1952 and 1953 he crossed by canoe from Cornwallis Island to "Little Cornwallis Island", where he and his crew were probably the first white men to set foot on the small island. In 1953 he walked across part of Cornwallis Island, using food caches established in the spring with the help of personnel and a Bombardier oversnow vehicle from the ionospheric station at Resolute Bay. Cornwallis Island abounds with messages and notes left in cairns, as many parties searching for Franklin were based on the island or in the vicinity. Thus in 1950 Fortier found a canister lying on the beach at Decision Point, which contained a note left in 1851 by a party under Penny; in 1853 a second note had been added by a party under Pullen, and a third event, recorded in the canister, was the shooting of a number of .22 rifle bullets through the metallic container, which explains the poor preservation of its contents when found by Fortier. In 1952 Thorsteinsson found a note signed and left by Sir John Ross on Prospect Hill, near Assistance Bay, after wintering in the bay. The

same summer, in a creek discharging into Barlow Inlet, he found a bottle with a note signed by Shellabear, a member of Penny's expedition who was later with Pullen. Finally, in the summer of 1953, Thorsteinsson found a note at Cape Rescue, wrapped in copies of orders to Belcher, Inglefield, and the officer in charge at Cape Beechey. The note has not yet been deciphered, but the orders had apparently been carried in H.M.S. Phoenix.

The geology of Cornwallis Island has proved most interesting. Its Ordovician-Silurian-Devonian section amounts to over 18,000 feet of strata in part folded. The Silurian is by far the thickest. Both the Silurian and Ordovician exhibit facies development. The graptolitic northern Silurian facies and a southern shelley Silurian facies are in part separated by a reefy facies. Some of the Devonian strata are coarsely clastic. Thorsteinsson is making a special study of the astonishingly prolific graptolite collections from the Silurian for a doctoral thesis, and is having much success in correlating the zones with those in the United Kingdom Silurian section and elsewhere.

The lower 500 feet of the Ordovician strata include gypsum beds 200 feet in aggregate thickness. Petroliferous matter is common. Stained limestone and dolomite assay by distillation a few gallons of petroleum per ton. Marine strata, some 500 feet thick in the lower quarter of the stratigraphic section, are petroliferous to the point of burning on exposure to a flame. Pods of native asphalt occur on the northern coast of Cornwallis Island. Poorly consolidated strata, about 2,000 feet thick, presumed to be of Tertiary age, contain seams of lignite as thick as 5 feet. The great volume of sedimentary strata, their hydrocarbon content, the porosity of some formations, the facies development through much of the stratigraphic section, and the folded structures are all favourable factors for the accumulation of oil or gas in pools.

This project has already resulted in one publication on the Parry Islands Fold Belt by Fortier and Thorsteinsson (1953).

Summer Sea Supply Mission 1950

V.K. Prest accompanied the Summer Sea Supply Mission of 1950 as a Canadian scientific observer in order to make a reconnaissance survey of the geology of the east coast of Ellesmere Island. His results have been published in Paper 52-32 of the Geological Survey of Canada, in which he gives a detailed account of the appearance of rock formations and structures along the coast. The folded structures trend uniformly northeast along the coast between Cape Baird and Cape Lawrence and a large fault is possibly indicated parallel to Kennedy Channel.

Clyde 1950

K.E. Eade and G.C. Riley represented the Geological Survey on the expedition of the Arctic Institute to Baffin Island in 1950. They did general reconnaissance mapping of the fiord region northwest, west, and south of River Clyde. Eade has made a petrographic study of the granitic gneisses of the area as a doctoral thesis.

Isachsen 1952-3

In the spring of 1952 W.W. Heywood was sent to Isachsen to start a programme of systematic survey of the geology of the northern arctic islands and, more immediately, to investigate circular structures detected on air photographs. The existence of such structures was well known and I.C. Brown, of the Geological Survey, had published a paper in the American Journal of Science (1951) on such structures as are shown in air photographs.

Heywood made his base at the weather station at Isachsen, travelling in on the spring airlift and returning on the fall airlift. In 1952 he worked alone and gradually carried his survey farther away from the base. Eventually, when his work had progressed far enough, he attempted to reach one of the circular structures, but found that late in the season he sank knee-deep into the mud at every step. It was evident that if the circular structures nearest Isachsen station were to be examined, it would have to be early in the year. Therefore, in the spring of 1953, Heywood, accompanied by D.W. Bolyard, laid supply caches before the ground had thawed, and was successful in reaching a circular structure, after covering a distance of 35 miles in a straight line from the weather station. The structure was still snow-covered, and the few specimens they obtained led them to erroneous conclusions as to its make-up. Later, when the ground was bare of snow, they returned, and spent twelve days studying the geology of this circular hill, which rises 600 feet above the surrounding plain. The hill in places has an alpine appearance; at other points it looks like badlands, and in others is a plateau. Its more highly dissected area has valleys 600 feet deep. Heywood found that the hill was the inner part or core of a dome structure and consisted mainly of gypsum and anhydrite. The core is surrounded by 2 to 5 miles of upwarped strata which, in its upward migration, it has not only warped but also pierced, so that technically the Isachsen Dome is a piercement dome. Further, Heywood measured 5,000 feet of Lower Cretaceous or younger strata through which the core has moved, and found limestone blocks within the gypsum and anhydrite containing poorly preserved fossils, probably of Silurian or Devonian age. The vertical distance the core travelled suggests that the structure, located in a region of unfolded strata, originated through the movement of salt so that it may be a piercement salt dome, such as are associated with the Texas-Louisiana oil fields. The salt of salt domes is usually topped by a cap containing gypsum and anhydrite.

A less spectacular, but none the less important contribution of Heywood, was the finding of Lower Cretaceous strata. The fauna he collected at Isachsen, together with those collected by Pierre Gadbois and J.C. Troelson at Eureka, and by S.D. MacDonald at Mould Bay have been identified by J.A. Jeletzky, of the Geological Survey, as Lower Cretaceous. The Lower Cretaceous occurrence possibly extends across Banks Island to Darnley Bay and Aklavik according to fossils identified by Jeletzky and collected, among others, by T.H. Manning in southern Banks Island and by J.R. MacKay at Darnley Bay. This extensive distribution of Lower Cretaceous, unknown in the Archipelago a few years ago, now appears as a major geological feature of the islands.

Northern Ellesmere Island 1953

R.G. Blackadar [illegible] Geological Survey on the Defence Research Board's Northern Ellesmere Island 1953 Project led by Geoffrey Hattersley-Smith. [illegible] to Thule and there picked up two Eskimo and [illegible] dogs, [illegible] them to Alert by air. Fortunately, Blackadar had [illegible] enough Eskimo while working in southern Baffin Island [illegible] converse with the two Greenlanders. During the summer [illegible] Alert to Cape Columbia on the north coast of Ellesmere Island.

Blackadar was [illegible] of the classic geology areas of the Archipelago - the [illegible] Islands. Captain Feilden made observations and collected specimens in that region while a member of the British expedition under Nares (1875-6), which later enabled him and the geologist De Rance to record for the first time that strata had been folded in the northeastern part of the Archipelago. A structural sketch they presented has been the object of speculation as to whether an unconformity or a major fault lies within the late Carboniferous or Permian. Blackadar found evidence suggesting such an unconformity, but could not date it more exactly. He also found that the orogenic history of the region was a complex one. A major discovery is that the lowly metamorphosed Cape Rawson beds are overlain unconformably by Middle Silurian limestone. In the area of Cape Columbia Blackadar found highly metamorphosed rocks, such as garnet gneisses, and granitic dyke-rocks. Feilden and Peary had reported metamorphosed rocks on that coast, which Schuchert thought to be part of an ancient borderland, but which Troelson thinks may be the locus of a eugeosyncline. These hypotheses still remain to be tested, but Blackadar's observations now permit us to judge the degree of metamorphism and deformation of strata in northernmost Ellesmere Island.

The assemblage of rock formations of northern Ellesmere is unique in the Archipelago. It varies from migmatite and gabbro to red sandstones and conglomerates, among others. It may assist a correlation of the islands with the mainland of northern Ellesmere Island if rock debris found on those islands proves to be of the northern Ellesmere type.

A less spectacular, but none the less important contribution of Heywood, was the finding of Lower Cretaceous strata. The fauna he collected at Isachsen, together with those collected by Pierre Gadbois and J.C. Troelsen at Eureka, and by D.D. MacDonald at Mould Bay have been identified by J.A. Jeletzky, of the Geological Survey, as Lower Cretaceous. The Lower Cretaceous occurrence possibly extends across Banks Island to Darnley Bay and Aklavik acccording to fossils identified by Jeletzky and collected, among others, by T.H. Manning in southern Banks Island and by J.R. MacKay at Darnley Bay. This extensive distribution of Lower Cretaceous, unknown in the Archipelago a few years ago, now appears as a major geological feature of the islands.

Northern Ellesmere Island 1953

R. G. Blackadar represented the Geological Survey on the Defence Research Board's Northern Ellesmere Ice Shelf 1953 Project led by Geoffrey Hattersley-Smith. The party was flown to Thule and there picked up two Eskimo and their dogs, who accompanied them to Alert by air. Fortunately Blackadar had learned enough Eskimo while working in southern Baffin Island to be able to converse with the two Greenlanders. During the summer the party sledged from the meteorological station of Alert to as far west as Cape Columbia on the north coast of Ellesmere Island.

Blackadar was able to visit one of the classic geology areas of the Archipelago – the Feilden Peninsula. Captain Feilden made observations and collected specimens in that region while a member of the British expedition under Nares (1875-6), which later enabled him and the geologist De Rance to record for the first time that strata had been folded in the northeastern part of the Archipelago. S structural sketch they presented has been the object of speculation as to whether an uncomformity or a major fault lies within the late Carboniferous or Permian. Blackadar found evidence suggesting such an unconformity, but could not date it more exactly. He also found that the orogenic history of the region was a complex one. A major discovery is that the lowly metamorphosed Cape Rawson beds are overlain uncomformably by Middle Silurian limestone. In the area of Cape Columbia Blackadar found highly metamorphosed rocks, such as garnet gneisses, and granitic dyke-rocks. Feilden and Peary had reported metamorphosed rocks on that coast, which Schuchert thought to be part of an ancient borderland, but which Troelsen thinks may be the locus of a eugeosyncline. These hypotheses still remain to be tested, but Blackadar's observations now permit us to judge the degree of metamorphism and deformation of strata in northernmost Ellesmere Island.

The assemblage of rock formations of northern Ellesmere is unique in the Archipelago. It varies from pegmatite and gabbro to red sandstone and conglomerates, among others. It may assist a correlation of ice islands with the ice shelf of northern Ellesmere Island if rock debris found on these islands proves to be of the Ellesmere type.

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Police patrols to Axel Heiberg and Devon islands

The following account of police sledge patrols in 1953, made by the Craig Harbour detachment to study game and travelling conditions in western Ellesmere, northeastern Axel Heiberg, and northern Devon islands, is based on the official R.C.M.P. reports.

On April 11 Constable A.C. Fryer and Special Constable Kyak left Craig Harbour driving teams of twelve and ten dogs respectively. Along Jones Sound they encountered some of the worst travelling conditions of the trip, but reached Goose Fiord on the 16th, where Sverdrup's party in the Fram had spent the winters of 1900-2. Bear tracks were numerous along the sound and one female bear with two one-year-old cubs were killed for dog food. The overland crossing to Norwegian Bay proved easy and another bear was shot.

On April 18 the first muskoxen, a herd of 12, were spotted sleeping in a small valley near Little Bear Cape on Bjorne Peninsula. Travelling conditions were very good all the way up Eureka Sound, except near Depot Point where winds off the Axel Heiberg ice cap had spread dirt all over the ice. In late July of the same year a party led by George Jacobsen was able to land a Canso aircraft on the lake near the head of Mokka Fiord, a few miles from Depot Point. Lakes far to the south were still ice-covered, and it is likely that this dirt hastened the melting of the lake ice.

The patrol reached Eureka weather station in Slidre Fiord on April 23. On the 28th they headed northwest to Flat Sound in very good travelling conditions and crossed over the neck of Schei Peninsula searching for game. Rough ice in Nansen Sound slowed progress and, as dog food was short, the patrol turned south to Butter Porridge Point, named for the feast to celebrate the farthest north reached by Sverdrup and Schei in 1901. Heavy polar ice jammed between Axel Heiberg and Fosheim Peninsula made poor travelling, but the patrol returned to the weather station on May 1, where they remained until May 5. On a trip up Slidre Fiord 8 muskoxen were seen on the northern side and 19 on the southern side of the fiord, and fresh wolf tracks were numerous.

On the return journey travelling was good as far south as Baumann Fiord, where the snow became very soft in the hot sun. On May 13 the party started on the overland crossing between Stenkul and Starnes fiords, but in poor weather the route was missed and they came out to the sea at Makinson Inlet. This necessitated crossing the ice cap to Glacier Bay, a dangerous and difficult journey owing to the many crevasses, but Craig Harbour was reached early on the morning of May 21.

The total distance covered was 1,158 miles. On the whole patrol only 58 muskoxen were seen, all on Ellesmere Island; old tracks in the Flat Sound area were the only signs on Axel Heiberg Island, where the animals were presumably all inland on the high plateau. No caribou were observed, but there were fresh tracks on the sea ice in Baumann Fiord, in Eureka Sound opposite Raanes Peninsula, and also at the end of Makinson Inlet. Wolf tracks were seen all along Eureka Sound, and were especially abundant in Baumann Fiord. Bears were fairly plentiful south of Stor Island and tracks were common, but no signs were found to the north.

The route followed by Fryer and Kyak was much the same as that of Sverdrup and Schei, who set out from the Fram's winter quarters on 8 April 1901, and explored the east coast of Axel Heiberg as far north as Butter Porridge Point. In 1902 the same party completed the exploration of the east coast of the island, nearly reaching Sverdrup and Fosheim's farthest up the west coast in April 1900.

The best known of the police patrols in this area is the remarkable journey made by Corporal Stallworthy in 1932. On March 20 Corporal Stallworthy and Constable R.W. Hamilton set out from the old post at Bache Peninsula, east Ellesmere Island, to search for the missing Krüger expedition. After the overland crossing to Bay Fiord, the party separated, and Corporal Stallworthy continued up the east coast of Axel Heiberg, reaching Schei Peninsula on April 5. He then sledged round the entire island, and returned to Bache Peninsula on May 23.

On 5 June 1953 Corporal Fryer and Special Constable Kyak made another sledge patrol along Jones Sound to Cape Sparbo in northeastern Devon Island. Inland from the cape 44 muskoxen were seen, mostly in small groups, but only old signs of caribou were observed. Flocks of geese were feeding on the lakes. Many seals were sleeping on the sea ice in Broe Bay and two were killed. On the return trip a small walrus was shot and a large bear was killed after a vicious fight with the dogs, in which 4 dogs were hurt. The party reached Craig Harbour on the morning of June 11.

Eskimo Bulletin

As part of its general educational program for Eskimo, the Department of Northern Affairs and National Resources has been issuing periodic bulletins in English and Eskimo, which are being distributed in the Canadian Arctic, and to Eskimo in hospitals and institutions in the south.

The main purpose of the bulletins is to provide the Eskimo with reading matter on a variety of subjects that may be of assistance and interest to them. It is hoped that they will be encouraged to study the English text and to develop and improve their knowledge of the English language. English/Eskimo vocabularies are therefore being included in some of the bulletins. These should help both Eskimo and others to become acquainted with the two languages.

The Eskimo translations are being made by Mr. M.L. Manning of the Arctic Division, and are written in both syllabics and Roman script. The Baffin Island dialect is being used, and it is hoped that this dialect will ultimately be adopted for the Eskimo language throughout Canada, thus overcoming the dialectal and spelling difficulties which have been common in the past. It is expected, too, that the Eastern Arctic Eskimo will quickly learn to read and write in Roman script and thus make it possible to dispense with the use of syllabics.

Bulletins are multilithed and include line drawings and photographs; they are prepared in loose-leaf form, and binders are being supplied to each Eskimo family so that their copies may be filed and referred to as required. So far the following bulletins have been issued:

Vol. 1, No. 1: Introductory number. May 1953, 6 pp.

Vol. 1, No. 2: Handicrafts. June 1953, 5 pp.

Vol. 1, No. 3: The Engine. Nov. 1953, 10 pp.

Vol. 1, No. 4: Eskimo-English vocabulary and grammar. Jan. 1954, 34 pp.

Vol. 1, No. 5: Continuation of Eskimo-English vocabulary and grammar. April 1954, 20 pp.

Antarctic publications

The Antarctic Division of the Australian Department of External Affairs has sent the Arctic Circle copies of the following reports published by the Australian Antarctic Research Expedition:

Series C, Vol. 1, 'Terrestrial Magnetism':
"Magnetic observations at Heard, Kerguelen and Macquarie islands, 1947-51" by F. Jacka, 30 pp.

Series D, Vol. 1, 'Meteorology':
"Heard and Macquarie islands, 1948" by W.J. Gibbs, A.V. Gotley, and A.R. Martin, Part 1a, Results, 109 pp; Part 1b, Analysed charts, 61 pp; Part 1c, Discussion, 67 pp.

Interim Report 2:
"Hourly measurements of ionospheric characteristics, Macquarie Island, 1950" by D.S. Cohen, 81 pp.

Interim Report 3:
"The status of the Leopard Seal at Heard Island and Macquarie Island, 1948-50" by A.M. Gwynn, 33 pp.

Interim Report 4:
"Notes on the Fur Seals at Macquarie Island and Heard Island" by A.M. Gwynn, 16 pp.

Interim Report 5:
"Observations on the aurora australis, Macquarie Island, May 1950-April 1952" by N.R. Parsons and K.B. Fenton, 338 pp.

Interim Report 6:
"Hourly measurements of ionospheric characteristics, Macquarie Island, 1951" by Z.R. Jeffrey, 220 pp.

The Expéditions Polaires Françaises has also sent us a report by their Expédition Antarctique:

Rapports Préliminaires 14, Série Scientifique:
"Expédition en Terre Adélie 1949-1951" by members of the expedition, 91 pp.

Members of the Circle wishing to borrow any of these publications should write to the Editor, Mrs. G.W. Rowley, 10 Maple Lane, Ottawa, Ont.

Subscriptions for 1954

Members are reminded that their subscriptions for 1954 ($2.00 for Ottawa members, or $3.00 for combined membership for husband and wife, and $1.00 for out-of-town members, other than institutions, are payable to the Treasurer, Mrs. A.G. Sangster, 504 Golden Avenue, Ottawa.

Owing to currency regulations it is not always convenient for members of the Arctic Circle residing in Europe to pay their subscriptions to the club in Ottawa direct. Through the courtesy of the Director, the Scott Polar Research Institute will now receive the subscriptions of members from the United Kingdom and from the Continent of Europe and will transmit them to Canada from time to time. European members should forward their 1954 subscriptions (5/-) to the Director, Scott Polar Research Institute, Cambridge, England and mark them "Arctic Circle Subscription".

Editorial Note

The Editor would welcome contributions from those who are at present in the Arctic or have information about work in the Arctic. All material for the Circular should be sent to:

Mrs. Graham Rowley, (Note change of address)
10 Maple Lane,
Ottawa, Ont.

Authorized as Second Class Mail, Post Office Department, Ottawa

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Fiftieth Meeting of the Arctic Circle

The fiftieth meeting of the Arctic Circle was held in the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street, on Wednesday March 3. The President, Mr. A. D. McLean was in the Chair and introduced the speaker, Mr. George Jacobsen, President of the Tower Company, who described "A reconnaissance trip in Axel Heiberg Island, during 1953". Mr. Jacobsen illustrated his talk with a kodachrome film.

Fifty-first Meeting of the Arctic Circle

The fifty-first meeting of the Arctic Circle was held in the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street, on Wednesday April 7. The President, Mr. A. D. McLean, was in the Chair. The Reverend Father Gontran Laviolette, O.M.I. introduced the colour film "The Cross over the Arctic" which had been made for the Roman Catholic Church by Fox Studios of Hollywood.

Fifty-second Meeting of the Arctic Circle

The fifty-second meeting of the Arctic Circle was held in the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street, on Wednesday May 5. The President, Mr. A. D. McLean, was in the Chair and introduced the speaker, Mr. P. D. Baird, Director of the Arctic Institute's Montreal Office, who described the work of "The Arctic Institute's 1953 Baffin Island expedition". Mr. Baird illustrated his talk with a kodachrome film.

Fifty-third Meeting of the Arctic Circle

The fifty-third meeting of the Arctic Circle was held in the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street, on Wednesday October 6. The President, Mr. A. D. McLean, was in the Chair, and introduced the speaker, Mr. J. A. Houston, Arctic Division, Department of Northern Affairs, who gave a talk on "Contemporary Eskimo art".

Fifty-fourth Meeting of the Arctic Circle

The fifty-fourth meeting of the Arctic Circle was held in the 1st Corps Troops R.C.A.S.C. Mess, 278 Sparks Street, on Wednesday November 3. Dr. V.E.F. Solman was in the Chair, and introduced the speaker, Mr. W. W. Mair, Chief, Canadian Wildlife Service. Mr. Mair

spoke on "Predators and their control in the Canadian Arctic". Mr. Mair's talk is published in this number of the Circular.

The wolf and predator control in the Canadian Arctic. By W. W. Mair

Throughout the centuries, the wolf has made a deep impression upon the minds of men. To some it has epitomized strength and courage; in most it has aroused fear and hatred. Thus today, as in the past, the cry from all sides is for its complete destruction.

The wildlife biologist, with his interest in wildlife for its own sake as well as from the point of view of wise use, must search this problem thoroughly. He must learn the facts and present them with complete impartiality, for he is concerned, not with the enhancement of controversial issues but with the development of sound wildlife management.

Unfortunately, for most of us it is difficult to view the wolf situation in the Arctic with complete detachment. One way or another we are subject to influence or prejudice, depending on our relationship to the Arctic. Data on predators and predator-prey relationships are for the most part lacking for the north. Thus, we are conditioned in our thinking largely by declarations of personal opinion. It is suggested, however, that the wolf in our north presents no really new problem, and we may interpret with confidence our situation in the light of experience elsewhere, both past and present.

The geographical distribution of the wolf is possibly more extensive than that of any other land mammal. In North America it has ranged from mid-Mexico to the northern extremes of the Arctic. It still exists in northern Mexico, sparsely in the western United States, including Minnesota, Wisconsin, and Michigan, in Alaska, and in the territories and every province, except the Maritimes, in Canada. In historical times the wolf has probably always been present in the north. Adolph Murie (1944) reports that fossil remains are found in the Pleistocene fauna of Alaska and that wolves have probably persisted since that time. Cowan (1947) mentions that in July 1945 he picked up a fossilized tooth of the dire-wolf among some gravel lying near the middle of the Castleguard Icefield in Banff National Park which had weathered from the higher peaks.

Some of the earliest records of wolf pelt returns in the north come from the Mackenzie River district for the years 1860 to 1893, inclusive. These figures from the Hudson's Bay Company's Fur Trade Returns in the Provincial Archives, Victoria, B.C. (Table 1) give records of the following posts: Fort Yukon, Fort McPherson

(Peel's River), Fort Good Hope, Fort Norman, Fort Liard, Fort Nelson, Fort Providence, Fort Rae, Fort Simpson, and Fort Resolution.

Two points are of particular interest in these early fur trade records. The first is that even in those times, when, as far as I know, no bounties were paid in Canada, wolves were taken by trappers as a matter of course - presumably in numbers relating to their frequency. The second point is that the wolf population apparently increased from the early 1860's to a high in the 1870's, and again receded somewhat by the early 1890's. Without figures for numbers of trappers and fur prices, it may seem presumptuous to make this statement, and to suggest that the same situation existed in the Yukon. However, this assumption is borne out in part by the fact that in Alaska wolves were known to be abundant during the years 1877-81. Adolph Murie (1944) records that after this period of abundance they still remained in considerable numbers up to the early 1900's. An old resident states that between 1898 and 1903 wolves were abundant in the Stewart River area.

Some time after 1908 the wolf population in Alaska began to drop. In the Mount McKinley area no wolf tracks were seen in 1916-17, and in 1920 and 1921 travellers in the interior of Alaska reported wolves scarce or absent. In spite of plentiful food this condition continued until about 1925. In 1925 wolves were reported to be on the increase and by 1928 they were plentiful in the Mount McKinley National Park area. There is no indication of any large fluctuation in the park population between 1928 and 1941, and it is believed this situation paralleled the general trend throughout interior Alaska. Comparison of these data with data from British Columbia and from the Northwest Territories shows a remarkable similarity in population fluctuations and it is felt safe to assume that the same general controls must have existed throughout the entire area. Wolves have generally been numerous during the last ten years but have shown indication, in some areas at least, of having passed their peak again. It is therefore suggested that wolf numbers fluctuate in response to factors outside man's influence.

In attempting to interpret these population trends, cognizance must be taken of the many natural controls in effect. Adolph Murie (1944, p. 15), writing from Alaskan experience, states: "The most probable cause of a drastic decimation of the wolves is disease. Mange, distemper, and rabies are some of the diseases which may affect them." Mange was noted in northern British Columbia in the years 1937-9, at a time when there was a slight decrease in wolf numbers. Within the last two years, 1952-3, rabies struck heavily in the northwest, and fox encephalitis was definitely diagnosed in some dogs in the District of Mackenzie; both these diseases may be presumed

TABLE 1

SOME WOLF PELT RETURNS FROM THE MACKENZIE RIVER DISTRICT FOR THE YEARS 1860 to 1893, INCLUSIVE

	Fort Yukon	Fort McPherson	Fort Good Hope	Fort Norman	Fort Liard	Fort Nelson	Fort Providence	Fort Rae	Fort Simpson	Fort Resolution
1860					4					
1861	2		9	1	1				1	
1862	3						2	30	2	7
1863	6		7	8	8		2	12		3
1864		1	4	2	1			13		3
1865	1	1	8	6	2	3		15	1	4
1866	2		12	4	2	14		18	3	7
1867	1	1	6	8	5	7	12	36	11	25
1868	2	2	7	8	1	4	14	14	4	7
1869	1	2	9	15	6	6	5	26	9	25
1870	1	1	9	6	3		5	17	5	9
1871	2	3	15	15	14	12	3	35	6	17
1872		4	8	18	21	3	2	39	5	28
1873		2	10	6	2	6	3	16	10	9
1874			23	12	31	10	1	44	3	10
1875		2	19	37	53	9	1	33	4	6
1876		3	22	33	43	6	1	22	9	15
1877	12	5	21	46	6	6	4	40	17	18
1878	29	5	15	20	4	8	8	14		
1879	7	6	20	5	6	7	10	27	4	
1880	11	3	23	10	1	8	4	22	2	
1881	8	10	23	24	4	3	7	20	9	
1882	12	17	32	6	1	4	1	36	6	
1883	4	20	22	10		2		7	1	
1884	8	7	14	8		3	1	15	4	
1885	9	14	6	2	1			16	2	
1886		18	7	10	4	8	9	11	8	
1887		11	9	3	1	2	12	8	2	
1888		10	5			2		5		
1889		11	1			3		19		
1890		6	2	4	1	3		19		
1891		1	1	2	1	5		3		
1892		3	2	4				2		
1893		3	5					15		

to be a cause of losses among wolves.

Mr. W. Fuller, of the Canadian Wildlife Service, in his wolf studies in Wood Buffalo Park during the winter of 1951-2, found a young to adult ratio of 1 to 4 instead of 3 to 1 as would be expected where litters average about 6 pups. It must be presumed that these wolf populations were suffering a 90 per cent lost of young in the first six months. Thus, it would take one pair of wolves four years to raise a replacement pair to sexual maturity. In a stable population one quarter of the adult population would be lost each year. Going further with his studies, Fuller worked out a tentative system for detecting a depressed wolf population. Thus, examination of the carcasses taken in the first year of poisoning in a remote sector near Great Slave Lake indicated an already depressed wolf population - probably due to rabies. Certainly there are a number of controlling factors, including starvation, which serve to hold wolves, with their inherent capacity to increase, within relatively restricted population bounds.

Much has been written regarding the tremendous packs of wolves that roam across the countryside, spreading fear among men and beasts alike. In a survey of the wolf situation made in British Columbia I was unable to produce a clear-cut record of more than 19 wolves in one pack; this pack was all taken at one poison station. A rumour of 24 wolves taken in one pack was recorded but not verified. In a paper presented to the Fifth Alaskan Science Conference at Anchorage, Mr. Maurice W. Kelly, District Agent for Alaska with the Predator and Rodent Control Branch of the United States Fish and Wildlife Service, reported that of a sample of 395 wolves recorded during control operations, pairs made up the greatest percentage, singles next, and packs the least. Only three packs of 12 were actually seen, and one report of a pack of 14 (recorded from tracks) was unconfirmed. It would therefore appear that large packs are the exception.

Similarly, there has been overstatement regarding the reaction of prey species to the presence of wolves. Wolves do pursue prey, which they sometimes eat alive. However, the suggestion that this pursuit causes fear and panic among large herds of prey species is not borne out. Wolves have been seen to walk or trot through herds of caribou and flocks of sheep without these showing any concern other than to move out of the way. Certainly the animal or animals singled out for pursuit must feel panic, but it is not necessarily communicated to the rest.

Much, too, has been written regarding danger to humans from wolves. A survey of the literature reveals perhaps twenty accounts of attacks on humans by wolves in North America. Only two of these

appear well authenticated, although other accounts may be valid. Some of these attacks may have been occasioned by rabies in the "furious" stage where all normal fears are eclipsed. In any event, the evidence would indicate that the wolf, however provoked, is not a serious menace to man.

In considering the wolf in relation to wildlife management we must ask if wolf control is necessary or desirable in the north, and if it is how much control should be undertaken. I would say without hesitation that the reaction of the majority of people would be to say that the only good wolf is a dead one. On the other hand there have been extremists who have advocated no control and who have talked loosely of the "balance of nature". The feelings of most wildlife administrators and biologists have been summed up by Latham in his 1951 report to the Pennsylvania Game Commission (p. 27): "In the study of predators, one fact stands out above all others and that is that the most destructive predators may under certain conditions be decidedly beneficial . . ." Most wildlife biologists today agree that predator control has a valid place in management, and decry the use of the term "balance of nature".

The problem in predator control, then, is to know when and how much. To borrow from an old saying - too rarely is the wolf all black or all white - he is grey. We do know that, in areas where human pressures have led to decline or even towards near extinction of wildlife populations, wolf control may play a vital part in removing wastage and in reversing the trend. But frequently, however, we do not know if the wolf is, in fact, the decisive element in causing a depressed prey population, or if range and disease, or human pressures, for example, are the critical factors. Moreover, if and when wolf control reverses the trend, the prey may soon reach numbers not only permitting but demanding relaxation of predator control measures.

For example, in 1948 the population of the Nelchina caribou herd in Alaska was 4 - 5,000. Extensive predator control was undertaken and by 1954 the caribou population reached about 15,000. The annual increase is about 25 per cent, or 3,700 animals. The annual kill, however, is only around 700. The range is known to be fully populated; in fact over-grazing is already serious. Yet public opinion does not permit cessation of the predator control effort. It is questionable if predators could sufficiently reduce the present caribou population in the area materially to alter this critical condition, but combined with maximum human hunting effort they might ameliorate the situation. Unless such measures are taken, only ultimate range deterioration and collapse of the caribou herd can be foreseen. The range may be expected to take 15 to 20 years to recover.

This situation in Alaska, is, of course, a gross example of the dangers inherent when populations are released from natural controls, and numerous less spectacular instances have been recorded. It is safe to say that many wildlife ills produced by unwise or unthinking predator control have never been recognized as such.

Thus, while we recognize the need for some wolf control to meet problems of caribou decline and of fur loss to the native populations, we must be certain we are prepared to observe and meet any new problems that may arise from our actions. Otherwise the cure might be worse than the malady. The penalty for error may be the loss of the precious margin in a land of marginal existence.

The method of control which should be employed to effect the desired reversal of population trend, or to protect special human interests, is a matter of controversy second only to that surrounding the desirability of control. The popular answer to this question is "pay bounties". Wolf bounties appear to have been in existence for at least 2,700 years, and have been variously employed on this continent since 1630, when the first recorded bounty law was adopted in Massachusetts. It all seems so simple! Pay a bounty and the people will get out and kill wolves. But it is interesting to observe that in the more than 300 years that bounties have been paid on this continent, no one has ever factually recorded that the system was or is by itself effective. The literature is full, however, of accounts of the inefficiency and inadequacy of bounties.

In 1944 Stanley P. Young estimated that well over one hundred million dollars had been spent on bounties in North America, and certainly much of this was spent for wolves. In Canada, Saskatchewan paid over $100,000 in wolf bounties in a ten-year period, and was then forced to a system of government control operations. British Columbia paid well over $250,000 in wolf bounties from 1909 to 1949, without apparent influence on the wolf population; in 1949 a Predator Control Branch was organized, employing ten professional hunters, and there is now effective control. In the Northwest Territories wolf bounties were paid for a number of years (Table 2), but were discontinued because they were not successful.

A common defence for the ineffectiveness of bounties is that the bounty is too low. Bounty returns from many different areas indicate that an increase in bounty does bring about some increase in kill. But as the wolf populations lessen and animals become hard to get, bounty effort drops off. It then again becomes necessary to increase the bounty substantially, at which point a further proportion of animals is removed and again effort lags. At the same time it is questionable if the additional take with each increase

TABLE 2

WOLVES TAKEN AND BOUNTIES PAID IN THE NORTHWEST TERRITORIES 1922-48

Year	No. Wolves Taken	Bounty
1922	335	$20.00
1923	388	
1924	323	
1925	422	
1926	918	
1927	1129	$30.00 per pelt, conditional on surrender of pelt to the Crown.
1928	1149	
1929	1225	
1930	1457	
1931	1923	
1932	1358	In April 1932 bounty reduced to $20.00 per pelt, conditional on surrender of pelt to the Crown.
1933	1396	$20.00 per pelt, conditional on surrender of pelt to the Crown. Bounty discontinued 1 Aug. 1933.
1934	550	None
1935	701	
1936	1010	In July 1936 bounty of $5.00 per wolf killed, pelt returned to claimant.
1937	1106	
1938	1392	In July 1938 bounty raised to $10.00 per adult wolf and $5.00 per pup killed.
1939	1008	
1940	928	Payment ceased on February 29.
1941	557	
1942	453	
1943	553	None
1944	531	
1945	826	
1946	917	
1947	688	
1948	290	(Returns incomplete)

in bounty is commensurate with the increase in cost. In British Columbia in 1938 a $10.00 bounty drew 915 scalps; the wolf population was on the increase. In 1939, with the bounty raised to $15.00, a total of 1,159 pelts was taken. Assuming that the 1938 take would have been maintained in any event in 1939, the extra 244 pelts taken in 1939 cost $8,235 or $33.75 per pelt. Similarly, in 1947, when the bounty was raised twice, the increased take over 1946 cost $72.62 per pelt. In 1948, with the bounty now $40.00 in some areas, the increase cost $155.65 per pelt. Naturally these figures are not entirely accurate as they do not take into consideration outside economic influences and population fluctuations. They do serve to indicate the need for caution in accepting at face value the facts and figures purporting to support bounties.

There are a great many weaknesses of the bounty system, particularly for wolves, and the following are a few of the major considerations:

(1) The whole bounty system is based on the fallacy that the people will get out and take wolves. People will not get out and take wolves because few people have the skill to take them. One wolf has survived for several years on Southampton Island in spite of efforts to remove it. Furthermore, many Indians will not kill wolves because of tribal beliefs. I am not informed whether they will present one for bounty if they find it dead.

(2) Bounties do not remove wolves from an area of special concern, but remove animals taken by chance, or design, wherever contact with humans is most probable.

(3) Bounties do not reduce numbers of wolves to a point where depredations cease. There is very good reason to suggest that the system has rarely if ever taken the annual increase - although at any one time it may have lessened immediate game loss, it may also have fostered long-term wolf depredation by limiting the natural controls that are associated with high population density.

(4) Bounty hunters may, if wolf pelts are valuable, wait until pelts are prime before hunting, and so leave the animals to their depredations the remainder of the year.

(5) Bounty hunting does not lend itself to control for management purposes, e.g., it does not provide a means of meeting an emergency, such as a rabies epizootic.

(6) People generally dislike wolves so heartily that they

will not miss an opportunity to kill one; this combined with the profit from sale of pelts brings about a considerable kill regardless of bounty. Yet at the present time in the Northwest Territories wolf furs are more valuable than some fine furs and there has been no indication of any remarkable upswing in wolf take; this tends to confirm the belief that wolf take, in general, is largely a function of population and opportunities for contact. To carry my point a step farther, if people already kill 5,000 wolves for their pelts a bounty must allow for 5,001 before the system is effective, and the cost of the extra wolf is high.

(7) The bounty system lends itself to, and in fact promotes, fraud.

This last point merits some enlargement. Many and varied have been the schemes worked out to beat the government. More than one pet police dog or sleigh dog has disappeared to reappear as a wolf for bounty; dogs' ears, coyotes' ears, half ears or half hides, pieces of fur sewn to look like ears, and so forth have been presented. Then there are other schemes such as releasing females from traps to raise more young, leaving the female and one young at each den so the female will den there year after year, raising wolves in captivity to provide an annual crop of pups for bounty, and running pelts from one area to another to obtain the best bounty. Perhaps the most unsporting proposition has been the occasional case where the bounty agent has been working in with the bounty hunters.

In recent discussions on the desirability of bounty legislation for the Northwest Territories this question of fraud has been raised. It has been stated that the Eskimo are so fundamentally honest we need have no fear of malpractice. I subscribe to the honesty of the Eskimo. However, it was stated at the recent Alaskan Science Conference that they have, or may develop, the same ideas of right and wrong as we do. If this is so, I suggest it is wisdom to help them remain honest by not presenting temptation - particularly through a system of questionable efficacy. It has been further suggested that the bounty would be a big help to our native peoples who have so little. As I pointed out, it is a fallacy to suggest that everyone will go out and get wolves. It is only necessary to look at wolf traps to know that the Eskimo are not going to be packing many of them around; wolf snares require special skill, and poison is undesirable as a control agent in the hands of the public. Thus, firearms remain the main tool to be used. In addition, since taking wolves is a specialized skill, in general only the good hunters who are already doing well would benefit materially from a bounty; the poor would remain so.

There is one further objection to bounties which I personally hold. It is a basic right or privilege of our way of life to "kill our own snakes". There is, I think, an objection on principle to any scheme calculated to pay people to protect their own livelihood. We do, however, have a responsibility to provide a means of protection for those who have not the skill to protect themselves, and to extend such to areas which cannot properly be held the responsibility of any individual or group.

The professional government predatory animal hunter system has proved its worth both in Canada and in the United States for the control essential for both wildlife management and the protection of private interests. A modification of this system has resulted in the first adequate wolf control in British Columbia, Saskatchewan, and Manitoba. Here, by the use of aircraft and poison baits progress has been made. Costs are high, but not out of reason for the results obtained. In Manitoba, control work in the northern half of the province cost just over $7.00 per wolf in 1952; in 1953 it cost $10.00, perhaps because of a lesser number of wolves as indicated in many areas covered for the second time. In the Northwest Territories the cost would naturally be very much greater. The Department of Northern Affairs and National Resources has already used this technique with success southeast of Great Slave Lake, and is planning a major research project and predator control effort on the wintering grounds of the Rae caribou herd during the winter 1954-5. We are certain the same system will work throughout much of the District of Mackenzie.

One secret of the success of the government control system is that it permits the use of poisons. These latter, strychnine, cyanide and sodium fluoroacetate or 1080 have proved to be the most effective agents of control yet devised. They continue to work day in, day out, while the hunter goes on about his business. But they must be put in skilled hands only, or losses to fur and other wildlife will almost certainly be acute. The experiences of early years, when indescriminate poisoning eliminated much of the fur, are not forgotten by many old-timers and any move to repeat that history would be strongly resisted.

The Barren Grounds present a different problem from that of the wooded areas. Here the white fox occupies essentially the same range as the wolf. Nonetheless, I am convinced that present techniques can be adopted for such conditions, and new techniques can be developed. Poison baits could no longer be bombed in from the air, but they could be placed under hides or stones and ice. This would make them difficult of access to white foxes but easy of access to wolves. Certainly, determined professionals will develop suitable techniques - all they need is the opportunity.

I see possibilities in employing one or more of the best hunters and trappers in each Eskimo settlement or area as professional predatory animal hunters. Such a system would not be cheap, and might be difficult to set in motion because of problems in providing adequate training. But a system that employs high-calibre men and enables them to maintain a sense of achievement and position in a white man's economy offers more, in my opinion, than bounties paid out as a thinly disguised form of relief.

In conclusion, I do not deny that wolves eat species we need or that they cause, on occasion, damage to our interests. I believe that wolf control is an integral part of wildlife management, and that it is a means to an end, not an end in itself. Therefore, let us control wolves in a professional, businesslike manner, not haphazardly. And above all, let us remember that wolves, like all other creatures on this earth, are here not because they want to be but because they are an evolutionary integral part of the world as we know it. It will be a sad day for Canada when the last wolf, or last any other species for that matter, is to be seen only in a zoo or museum.

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Northern activities of the Geodetic Survey, 1954

During 1954, one member of the Geodetic Survey staff accompanied the United States-Canadian Beaufort Sea expedition to Banks Island, and two triangulation parties and one astronomic party were operating in Labrador. In addition, the Shoran section of the Geodetic Survey aided in the reduction of results for an extensive mapping project in Labrador.

The Geodetic Survey representative on the Beaufort Sea expedition was W. D. Forrester, of the astronomic section. Exceptionally fine weather during early August enabled him to make four position determinations on Banks Island: at Cape Kellett, Cape Prince Alfred, Mercy Bay, and Rodd Head. Ball's method of equal altitudes was used

for all observations, but because of the long hours of daylight only about ten stars could be observed at each station. During late August and September cloud and fog prevented further astronomic work. The results of the astronomic observations were used to determine the ship's position in the course of hydrographic charting, and they are also being used as control for aerial mapping in the area. In addition to the results of astronomic observations, an interesting series of coloured photographs was taken.

A herd of about 25 muskoxen was seen near Mercy Bay, and numerous signs of muskoxen and caribou were noted, both on Banks Island and at three landings on the north shore of Victoria Island between Barnard Point and Hadley Bay. A polar bear visited the observing station at Cape Kellett, and came within about 75 feet of the observer. When seen, the bear was investigating the tail section of the helicopter; he left quickly when aware he had been discovered. At Rodd Head, a school of about 20 white whales was frolicking near shore.

The work in Labrador consisted of the extension of existing triangulation networks. In recent years, an arc of triangulation has been extended from Seven Islands on the Gulf of St. Lawrence, to Fort Chimo, on Ungava Bay. This scheme passes through the mining area of Knob Lake. From this north-south arc, a second arc has been projected eastward towards the Labrador coast, following the valley of the Hamilton River. In 1954 this Hamilton River net was extended to the vicinity of Goose Bay. Another triangulation net, extending northward from the Gulf of St. Lawrence along the valley of the Natashquan River, was continued to a junction with the Hamilton River net in the vicinity of Dominion Lake. Members of the Geodetic Survey staff engaged in these operations included J. V. Thompson, A. J. Shama, L. A. Gale, and D. St. Helene. G. A. Corcoran and C. Lawrie were working in the same area, engaged in astronomic observations. The results of the astronomic observations are used as control for the observed angles of the triangulation. Further control was provided by the precise measurement of a "base line"; several of the officers named above took part in the measurement of this line.

In general, the forest cover in the area consists of black spruce and balsam, though some southern slopes are covered with birch and a scattering of trembling aspen. Animal life was not plentiful, though a great many porcupine were seen, and a considerable number of beaver, also a few caribou, otter, lynx, and fox. There were numerous traces of black bear in some localities. Geese, ducks, and partridge were seen occasionally, but were very scarce. Rain or showers occurred, on the average, every second day from June to September.

New hostel at Chesterfield Inlet. By Rev. G. Laviolette, O.M.I.

The nomadic life led by most Eskimo precludes their attendance at ordinary day schools in much of the Arctic. To solve this problem in the Chesterfield Inlet area, the Oblate Fathers have undertaken to build a hostel, which will be run by the Grey Nuns of Nicolet, so that children from outlying settlements can attend the new federal day school. The federal school was completed in 1951, and it is planned to double its capacity by 1956 to accommodate 120 children. The school term of eight months, which runs from August 15 to April 15, is an experiment and has been chosen to meet the wishes of the Eskimo parents and to coincide with good flying weather for transporting the children.

The first group of twenty-five children from Eskimo Point, Baker Lake, Gjoa Haven, Pelly Bay, and Repulse Bay, who have been brought to Chesterfield to attend the day school, are living in the old mission house until the new building is ready. The new hostel will be opened on 15 August, 1955, and the mission expects that there will be 72 boarders, some coming from as far away as Igloolik, 800 miles northeast of Chesterfield. At present a subsidy of $2.50 per day is paid by the Department of Northern Affairs for all children boarding at the mission.

The plans for the new hostel, which is being built by the Roman Catholic Church at a cost of $200,000, were prepared by H. O. Leicester, former chief architect of the Department of Northern Affairs, and Rev. G. Laviolette, O.M.I., and the final working drawings were made by C. E. Lessard of Quebec City. Several unusual features have been incorporated in the building to meet local climatic and terrain conditions. The hostel is now being completed on a site 100 yards to the northwest of the federal school. The building is 110 feet long, 88 feet wide, and 3 storeys high, and rests on a concrete foundation. A pressurized hot water system, using fuel oil, heats the building, and a large diesel plant supplies electric power.

On the ground floor are located the bakery, laundry, drying room, store rooms, manual training room, Eskimo reception room, refrigerator rooms, general work shops, sewage tanks, heating plant, boiler room, and water tanks. The boiler room and fuel-oil tank room are completely fire-proof.

The water and sewage systems are of special interest. Blocks of ice cut from a nearby freshwater lake are hoisted into reservoirs of a total capacity of 34,000 gallons, where they are melted by steam heads, thereby overcoming the difficult problem of providing a constant and ample water supply, so necessary for fire

protection. The sewage system consists of two receiving tanks of 6,000 gallons each. One is kept for soapy water which is re-used in the winter to flush the toilets; the other tank is treated with chemicals, and emptied regularly by a pipe-line during the summer and by a tractor-drawn sled-tank which is dumped on the sea ice some distance away from the shore during the winter.

The accommodation on the first floor comprises a staff room, staff dining room, kitchen and pantry, pupils' dining room, a dressing room for the boys, a large play room, a boys' dormitory and bathroom with space for 36 pupils, and the supervisor's and engineer's rooms.

The second floor arrangement contains similar quarters for the girls. In addition there are seven staff rooms, a common sewing room, and a small chapel.

The hostel has been erected by lay members of the Oblate Order, with extensive local Eskimo help. The building, which is finished with green insul-siding and has window and door trims and cornices of aluminum, is an imposing addition to the settlement at Chesterfield.

Police patrols from Spence Bay and Cambridge Bay

In the course of the winter of 1952-3 several interesting sledge patrols were made in the Western Arctic by members of the R.C.M.P. The following account of two of these trips is based on the official R.C.M.P. reports.

The longer patrol, made by Cst. G. K. Sargent of the Spence Bay detachment, covered about 1,060 miles and lasted from 22 January to 29 March 1953. The principal localities visited were Gjoa Haven and Terror Bay on King William Island and Back River and Sherman Inlet on the mainland. Travelling conditions were good with the exception of soft snow encountered in Chantrey Inlet and inland from the mouth of Back River. Most of the families with whom the patrol came in contact had adequate, and in some cases, abundant, supplies of seal and caribou meat. Cst. Sargent, accompanied by several natives, travelled about 25 miles inland from the junction of the Back and Mistake rivers in order to visit native camps in the interior. A similar inland trip was made south of Sherman Inlet. A severe sickness, thought to be a form of pneumonia, prostrated many of the dogs used by the patrol and it was necessary to destroy several of them. The patrol was successfully completed on 29 March.

Cst. C. T. Ingalls of the Cambridge Bay detachment visited Perry River post and Bathurst Inlet between 14 December, 1952 and 19 January, 1953. Although rough sea ice between Cambridge Bay and

Perry River hampered the progress of the party, they were able to spend Christmas at Perry River. In order to reach Bathurst Inlet the patrol journeyed inland along a river which empties into Queen Maud Gulf west of White Bear Point, and by crossing overland from one north-flowing river to another, they eventually came to one which flows into Bathurst Inlet and reached the post ten days after leaving Perry River. About 130 miles of the 350-mile trip between Perry River and Bathurst Inlet was overland travelling. On the return trip the same route was followed until the sea was reached whence the patrol journeyed northwest on the sea ice and reached Cambridge Bay on January 19, having covered 805 miles and made two investigations in a little over one month.

Army exercises in the north, 1953-4

The following are the most important army exercises carried out in the north since the beginning of 1953:

Exercise Bull Dog was a joint Army-Air Force exercise which took place near Fort Churchill between 15 February and 1 March 1953. The exercise entailed the launching of an airborne assault to reduce the "enemy" lodgement. Edmonton was used as the main base for operations and Fort Churchill as the advanced base. One infantry company of the 1st Battalion le Royal 22e Regiment played the role of the "enemy" force. The 1st Battalion, The Royal Canadian Regiment and airborne support elements formed the assault force.

Exercise Loup Garou, an Army-Air Force winter training exercise, was held in the area of Seven Islands, Quebec, from 18 February to 1 March 1954. The scheme exercised the 1st Battalion le Royal 22e Regiment and supporting arms in winter airborne operations, command staffs in joint planning, and the R.C.A.F. in the role of tactical air support, as well as air and ground crews under severe winter conditions. A company of the 2nd Battalion, The Royal Canadian Regiment was used as the "enemy". Aircraft from five regular and two auxiliary Air Force squadrons took part in the exercise.

Exercise Bull Dog II, a joint Army-Air Force exercise, was carried out in the general area of Fort Churchill, from 1 to 14 December 1954. The aims were to exercise the 1st Battalion, The Royal Canadian Regiment and supporting arms in the conduct of a mobile-striking-force operation in winter, the R.C.A.F. in aerial reconnaissance and transport air support, and staffs and headquarters in carrying out roles of this nature. The "enemy" was a company of the 1st Battalion le Royal 22e Regiment. The advanced base for the exercise was Fort Churchill. A five-day delay was imposed on the paradrop of the 1st Battalion, The Royal Canadian Regiment because of high ground winds and high wind-

chill factor, but the drop was finally carried out successfully.

The Arctic Circular

During 1954 only four numbers of the Arctic Circular have been published. The next number, now in preparation, will be dated 1955. It is hoped that between four and six numbers will be published during 1955. The Circular is entirely produced by members in their spare time and it is therefore not possible to maintain a regular schedule. The Index to Volume 6 is now completed and should be mailed to subscribers with the first number for 1955. An Index to Volume 7 will be prepared as soon as possible.

Subscriptions for 1955

Members are reminded that their subscriptions for 1955 ($2.00 for Ottawa members, or $3.00 for combined membership for husband and wife, and $1.00 for out-of-town members, other than institutions), are payable to the Treasurer, Mr. H. M. Cox, Apt. 104, 196 Metcalfe Street, Ottawa.

Owing to currency regulations it is not always convenient for members of the Arctic Circle residing in Europe to pay their subscriptions to the club in Ottawa direct. Through the courtesy of the Director, the Scott Polar Research Institute will now receive the subscriptions of members from the United Kingdom and from the Continent of Europe and will transmit them to Canada from time to time. European members should forward their 1955 subscriptions (5/-) to the Director, Scott Polar Research Institute, Cambridge, England and mark them "Arctic Circle Subscription".

Editorial Note

The Editor would welcome contributions from those who are at present in the Arctic or have information about work in the Arctic. All material for the Circular should be sent to:

Mrs. Graham Rowley, (Note change of address)
10 Maple Lane,
Ottawa, Ont.

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