"WINTER AND ROUGH WEATHER"

FORT CHURCHILL 1946-1964 IN DEFENCE OF NORTHERN CANADA

by

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We accept this thesis as conforming
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ABSTRACT

This study examines the life and death of a Canadian Army base which existed in the vicinity of Churchill, Manitoba, from 1946 to 1964. It explains how this base, called Fort Churchill, came into being and how it grew from an airfield and a handful of buildings constructed by the United States during World War II to become the home of up to three thousand, five hundred men, women and children living in the most modern accommodation among more than adequate facilities.

It explores why Fort Churchill was created and why its utilization was finally terminated by the Department of National Defence despite sporadic attempts to retain its use for military purposes after the facilities had been handed over to the Department of Public Works in 1964.

Some of the training, tests and experimental work conducted at the Fort is commented upon and rocketry at the base is covered in depth. Emphasis is placed on the high degree of co-operation achieved on a base which brought together the armed services of Canada, the United States and Great Britain along with their scientific support agencies.

Much of the material has been derived from the files of the Public Archives and the Directorate of History of the Department of National Defence in Ottawa. The writings of armed forces personnel and scientists who served at the Fort were consulted. Interviews were held where possible with persons who were instrumental in the life of the station and its eventual demise. Extensive use was made of the record of House of Commons Debates and other Canadian government documents

pertaining to national defence issues.

Major Arguments

1. The activities carried out by the Canadian armed forces in northern Canada prior to World War II were mainly for civilian, rather than military, purposes; thus Canadian service personnel had little training in living, moving and fighting in the Arctic under conditions which might obtain in warfare.

2. Although Canadian soldiers engaged in some fighting in northern Russia at the close of the Great War and had taken part in operations in Arctic areas in World War II, albeit without combat, these experiences were of little value in preparing them for the extended Arctic military activities some authorities anticipated would arise as a result of the Cold War.

3. Post-World War II Canadian defence interest in the Canadian north was triggered by a concern about the expansionist ambitions of the USSR and an even deeper concern about the threat to sovereignty posed by the continuation of any type of American military presence on Canadian territory similar to that which had occurred during the war.

4. Although American pressure had a great deal to do with Canada's decision to establish an experimental and training base in the Arctic after World War II and the United States armed forces played a considerable part in the life of Fort Churchill, their participation was rigidly controlled as to numbers and rank.

The conclusion is that there were ambivalent feelings among Canadian politicians and officials in 1964 as to whether it was really necessary to continue supporting an Arctic experimental and training

base. Experience had shown how expensive supporting such a base had become, and, after a drastic cut in the Defence Department budget, Fort Churchill became a prime target for abandonment. Members in the Canadian military had improved their knowledge of the Arctic as a result of the work conducted at the Fort, and a great deal of the clothing and equipment needed for cold weather combat had been improved. Much remained to be done, but the money and the will to continue were lacking. Hence 1964 ended the halycon days of military activity in the far north.

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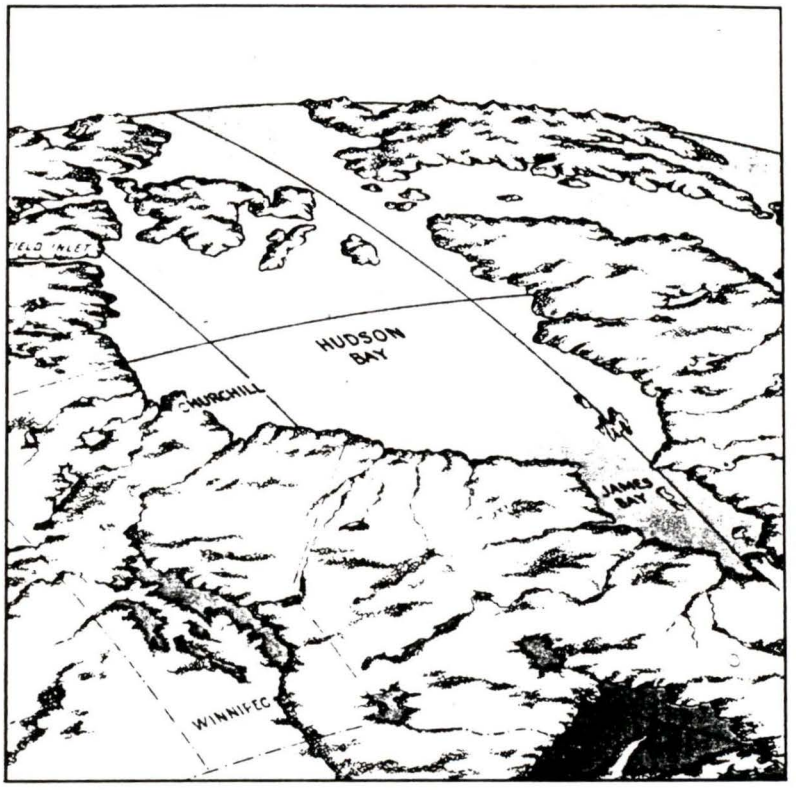
FORT CHURCHILL



Here shall he see no enemy
But winter and rough weather.

William Shakespeare
As You Like It
Act II Scene V

INTRODUCTION

Canada possessed a vast northern territory for nearly one hundred years before coming to grips with the problems which would arise if she had to defend it. It was not until the close of World War II that a compelling interest developed in the defence of the Canadian north. This interest was triggered by American initiatives in the Canadian north during the war, believed by many to be a permanent threat to Canadian sovereignty, and by a deep concern about the perceived expansionist policies of the Union of Soviet Socialist Republics (USSR).

Insofar as the American threat to Canadian sovereignty was concerned, a joint effort in northern defence with the United States offered the best solution, establishing, as it would, a landlord/tenant relationship, whereby Canada could exercise control over American activities on Canadian soil.

Authorities in both Canada and the United States were well aware that the Soviet Union had wide experience in living, moving and fighting in Arctic conditions, whereas Canadian/American Arctic expertise was extremely limited, particularly in matters of defence. Both countries were strongly apprehensive about the Canadian north becoming a point of entry for Soviet land and air forces should an invasion of North America take place.

As a consequence, at a meeting of the Permanent Joint Board on Defence (PJBD) in June 1945, it was decided that Canada and the United States should work closely together in an endeavour to overcome the USSR lead in matters of northern warfare. It was agreed that this could best be done by conducting joint tests of military equipment and tactical

manoeuvres in Arctic areas under very low temperatures. As a major part of this strategy it was decided that Canada would establish a military testing and training base in the vicinity of Churchill, Manitoba, and that the United States would be invited to participate in the activities to take place at this establishment. This testing and training base opened in October 1946 and remained in existence until the spring of 1964.

The part that this base, called Fort Churchill, played in the development of a military presence in the Canadian north is the subject of this thesis. Mention will be made of the sporadic approach Canada has taken to the problem of northern defence. It will be shown that there were always scientists and armed services personnel with the desire to overcome the problems presented by living and moving in an adverse environment, but that long term political will was frequently lacking. This lack of will can be traced to the extreme costliness of conducting military affairs in the high latitudes, and the feeling, shared by many Canadians, that warfare under Arctic conditions was improbable and that preparing for such an eventuality ranked very low in defence priorities. When Fort Churchill dropped from control of the Department of National Defence in 1964, the then Minister, Paul Hellyer, had agreed with his cabinet colleagues to restrict annual spending in his Department to 1.5 billion dollars. Despite drastic cuts in personnel and cutbacks in the Canadian commitment to the North Atlantic Treaty Organization, this budget did not contain sufficient dollars to allow keeping an expensive installation such as Fort Churchill in operation.

It is impossible to write about the military in northern Canada without some mention of the part played by the armed forces of the United States. In the main this thesis will concentrate on the part played by the Americans in the development and operation of Fort Churchill. The reader will realize that the involvement of the United States in Canada's north goes far beyond the role they assumed at Churchill, but an investigation of those matters is beyond the scope of this story.

CHAPTER ONE

PRELUDE TO FORT CHURCHILL

In 1867, when the provinces of Ontario and Quebec were joined with Nova Scotia and New Brunswick to form the Dominion of Canada, Great Britain continued to exercise control over the rest of what is now Canada including its Arctic and the greater part of its sub-Arctic areas. However, a most prescient observation was made by the Earl of Carnarvon, the British Colonial Secretary of the day, who stated: "In geographical area, the Confederation of the British North American Provinces is even now large--it may become one day second only in extent to the vast territories of Russia."[1]

After a payment by the Canadian government to the Hudson's Bay Company of £300,000, an Imperial Order in Council, dated 23 June 1870, transferred Rupert's Land and the North West Territory to Canada with effect from 15 July 1870. Canada now reached northward to the Arctic Ocean. However, these parcels of land did not include the islands lying north of the Arctic mainland. It was not until 1 September 1880 when another Imperial Order in Council ceded all of Great Britain's North American possessions, excluding Newfoundland, to the Dominion of Canada, that the Arctic Archipelago passed to Canada from under the suzerainty of Great Britain.

Despite the fact that Canada had now been granted possession of the Arctic areas by Great Britain, it was for consideration whether the areas were Britain's to bestow. The United States had been casting

covetous glances at Baffin Island for many years, and American whalers moved throughout the Arctic islands whenever ice conditions permitted. A British Colonial Office memorandum stated: "The object in annexing these territories to Canada is, I apprehend, to prevent the United States from claiming them, and not from the likelihood of their proving of any value to Canada."[2]

The United States was not alone in doubting that the Arctic islands were in fact Canadian territory. The explorer Knud Rasmussen had claimed Ellesmere Island on behalf of the Danish king when he had visited the island just after the Great War. The Norwegians had strong objections to the Canadian claim to the Sverdrup Islands which had been explored by a citizen of their country, Captain Otto Sverdrup, during his 1898 to 1902 expedition. In 1907, Canada formally enunciated the sector theory whereby all lands encompassed by longitudinal lines running from the extremities of mainland coasts to the North Pole should be considered sovereign territory of the country in possession of the mainland. This theory, in effect, claimed that all territory between 60 degrees and 141 degrees west longitude belonged to Canada. It was evident from the claims of Denmark and Norway that some nations did not subscribe to the sector theory, but by 1930, as a result of international negotiations, the major problems were resolved, and most foreign powers recognized the Canadian right of possession to the Arctic islands. International legal opinion to this day, however, indicates that there are still problems in accepting that the application of the sector theory gives Canada full title to the waters lying between the islands of the Arctic Archipelago. As an example of this continuing

debate on Canada's sovereignty over Arctic waters, the United States signed an agreement on 11 January 1988 stating that they would no longer transit the Northwest Passage without seeking Canadian permission, but, as the Canadian Press reported, such an agreement "falls far short of meeting Canadian claims to sovereignty in Arctic waters" and that documents "released by the U.S. Embassy at the signing ceremony indicate Washington has not moved from its refusal to recognize Canadian claims to sovereignty in the waters of the Arctic and the Northwest Passage."[3]

Despite the fact that after the 1930s Americans no longer actively disputed Canada's control of the Arctic land areas, some American officials doubted Canada's desire or ability to spend the necessary money to ensure the defence of this vast territory.[4] These American doubts were well-founded for, from the time that Canada assumed control of the Arctic islands until World War II, successive Canadian governments believed that matters pertaining to the defence of the high Arctic should be given scant attention and that any threat to the area should remain as unpublicized as possible.

Until 1898, when the Yukon Field Force[5] was formed, there was no purely military Canadian presence in the Arctic. The Northwest Mounted Police had sent twenty men to the Yukon when gold was first discovered in 1895, and this force was eventually increased to two hundred and fifty men. When, on 17 August 1896, George Washington Carmack, his native wife Kate and two Amerindian companions, discovered gold on Bonanza Creek, a tributary of the Klondike River, additional help was needed to control the hordes of miners who entered the territory, and the Yukon Field Force was created to assist the police and customs

officers in maintaining law and order. This force, under the command of Lieutenant Colonel T. D. B. Evans, consisted of two hundred and three volunteers drawn from the cavalry, artillery and infantry branches of the permanent force of the Canadian Army.[6] Detachments were sent to Fort Selkirk at the junction of the Pelly and Yukon Rivers and to Dawson. The force was reduced to half its original size in September 1899, and a year later the complete force was withdrawn.[7]

Kenneth Charles Eyre wrote: "The Yukon Field Force must be looked upon as an aberration in the development of the Canadian military establishment. The military presence in the North was as ephemeral as the event which had prompted it . . . none of the soldiers who served in the Yukon ever returned. What experience they had gained was quickly lost to the Militia."[8] Eyre's analysis is true. Whatever lessons the Yukon Field Force learned about operating in northern Canada were lost and would have to be relearned by future generations.

Three Canadian Army Arctic forays took place in Northern Russia.[9] In the first of these over four thousand soldiers of the 16th Canadian Infantry Brigade served in Siberia from October 1918 to May 1919 as part of an Allied intervention in the Russian revolution, but they did not engage in any fighting. As George Stanley has reported, they "confined their activities to coal and water fatigues while they shivered and grumbled in the Gournastai and East Barracks on the outskirts of Vladivostok. . . ."[10]

The two other Arctic military expeditions in which Canada participated in Northern Russia marked the only occasion when formed Canadian troops took part in Arctic combat. Two separate Allied forces

were created in an attempt to bolster up the anti-Bolshevik elements in Russia in the final stages of, and immediately following, the Great War. The two Allied contingents, designated as Force Syren, based on Murmansk, and Force Elope, based on Archangel, contained Canadian detachments.

The smaller of the two Canadian detachments, operating out of Murmansk as part of Force Syren and numbering about 135 men, was usually involved in winter lumbering and construction, railway supervisory duties, ski and snowshoe instruction, building sleds and teaching dog team handling skills. However, they participated in some pitched battles with the Bolsheviks when sent on a mission designed to protect the Murmansk-Petrograd (Leningrad) Railway from the insurgents.

The larger Canadian contingent, consisting of two Royal Canadian Artillery batteries, each equipped with six eighteen-pounder guns, was part of Force Elope, operating out of Archangel. The 497 Canadian gunners in this contingent engaged in extremely bitter fighting under the most unfavourable weather conditions.

The Imperial Order in Council of 1 September 1880 made the establishment of Canada's authority over her newly-acquired territory, now two-fifths of all Canada, of paramount importance. In this endeavour the Northwest Mounted Police played a major role, for, in addition to policing the Klondike, they pushed further north establishing a post on Herschel Island in the Beaufort Sea in August 1903. The task of showing the flag rested with the police for many years as posts were established throughout the Arctic regions from whence they carried out the major portion of the administrative tasks

assumed by the federal government. Police ships (notably the St. Roch, which, between 1940 and 1942, navigated the Northwest Passage from west to east and later became the first ship to circumnavigate North America) were instrumental in supplying the isolated posts and in showing a Canadian presence in northern waters.

In the 1920s, when the Department of the Interior began to show an increased interest in developing the rich potential of northern Canada, they found that communication over the long distances involved was sadly inadequate. If non-government agencies were to be attracted to engage in the development of the Arctic it was axiomatic that some means of communicating with the more settled areas of the country was required. The ideal situation from the government's point of view would have been to have commercial companies establish their own communication systems, but this solution found no favour with profit-oriented companies. To alleviate this situation, the Privy Council in December 1922 granted the newly-created Department of National Defence permission to establish the North West Territories and Yukon Radio System as a unit of the Royal Canadian Corps of Signals.

The first stations were established in October 1923 at Mayo and Dawson. By 1926, with the establishment of a permanent post at Aklavik and a summer station on Herschel Island, the System reached the Arctic coast. Stations in the System were opened and closed as commercial activity dictated. A gold strike here, a silver mine there, a pitchblende discovery somewhere else, caused new stations to be opened; hitherto lucrative seams running out resulted in mine closings and the demise of the local signal stations. When the increase in

northern flying created a requirement for up-to-date weather information, new stations began to appear with the primary function of aiding air navigation, and meteorological readings were passed from all stations. Other government agencies and some commercial enterprises established their own radio outlets, and these became outstations of the System, which, by 1938, was handling a monthly average of nearly five thousand messages, a heavy volume of traffic for such a sparsely settled part of Canada.

Prior to World War II the Department of the Interior (later the Department of Mines and Resources) shouldered the financial costs of operating the System and charged civilian customers a user fee. In 1939, the Canadian Army was made responsible for financing the System, but no money recovered from either civilian or other government agencies for services provided ever found its way back into the army's coffers. During World War II the System became more defence oriented, and its work was mainly in helping to supply communications for those engaged in building the Northwest Staging Route, the Alaska Highway and the Canol Project.

In 1945, discussions as to the future of the System took place, and the Royal Canadian Corps of Signals decided it would continue to operate the nineteen stations then in existence because they provided such an admirable method of on-job training for soldiers in the Corps. This applied not only to the technical skills its operators acquired in making signals equipment function efficiently in high latitudes, but also to the self-reliance it taught men of comparatively junior rank who were charged with the responsibility of maintaining an austere signals

facility in remote corners of the Canadian north. These qualities were to prove invaluable when the Canadian Army was looking for leaders to conduct Arctic exercises in later years.

It was commerce and not defence that brought the System into being; it was finance and not defence that spelled its finish. With a shrinking defence budget, the army was looking for methods of cost-cutting, and an annual expenditure of approximately $1,500,000 on the Northwest Territories and Yukon Radio System was an illogical expense for a branch of government whose use of the System represented only three percent of the traffic. When an accurate analysis was made, it was found that more than ninety percent of all government messages were for business conducted by the Department of Transport, and a cabinet decision in 1957 directed that responsibility for the System should be gradually transferred to that Department.

The Royal Canadian Corps of Signals operated the Northwest Territories and Yukon Radio System[11] for thirty-seven years, from 1923 until 1960. As the volume of traffic grew so did the System, and in 1949, at its peak, the number of stations reached twenty-four. The last of the stations, at Fort Resolution, was transferred to the Department of Transport in March 1960.

The major Canadian Army contribution to life in northern Canada prior to World War II was undoubtedly the Northwest Territories and Yukon Radio System; the army, however, was not the only branch of the service active in the north. The Royal Canadian Air Force (RCAF) and its predecessor, the Canadian Air Force, did a great deal to open up the Canadian north before World War II. This was particularly so in the

aerial photography of remote areas. This photography made a major contribution to the mapping of the Arctic regions. Air Force mercy flights brought the sick and injured to hospital facilities in more settled areas. These activities could only be considered as of peripheral defence value and were carried out with a peaceful, not warlike, purpose. The Royal Canadian Navy (RCN) and its predecessor, the Canadian Naval Service, conducted hydrographic surveys in northern waters prior to World War II, but, like those of its sister services, most navy activities were for civilian rather than military purposes.

The Canadian armed forces did carry out northern operations during the course of World War II[12] but not in Canada. As early as May 1940, Great Britain requested that Canada supply troops to garrison Iceland, and for a short period, commencing in June 1940, elements of 2nd Canadian Division occupied that island. In addition, the Cameron Highlanders of Ottawa, the machine-gun battalion of 3rd Canadian Division, were stationed in Iceland over the winter of 1940-1941.[13]

In August 1941, 29 officers and 498 other ranks of the Canadian Army, accompanied by small detachments of the Norwegian and British armies, landed on Spitzbergen for a two-week period spent in destroying wireless and meteorological stations and fuel supplies to prevent them from falling into the hands of the Germans.[14]

These northern military expeditions outside Canada did little to teach Canadians about fighting in the Arctic. They did, however, point to the inadequacy of Canadian clothing and equipment in coping with cold weather.

The question is why Canadians should expend vast sums of money

on the defence of their northern areas. What is the threat of occupation to Canada's sovereign territory? What good would it do an enemy to seize portions of Canada's Arctic regions? Many opinions were advanced in reply to these questions.

In 1945, Mackenzie King was of the opinion that "if war ever comes between Russian and any part of the British Commonwealth and the United States this country would become a battlefield and everything we value here would be destroyed."[15]

If an enemy party did land, it was held by some that the wretchedness of a dreary winter and an insect-plagued summer would soon drive them out. The chief spokesman for those who adhered to the theory of inaction, allowing Mother Nature to take care of the problem, was Major General Christopher Vokes. His attitude was summed up in the belief that Canada would have great difficulty in locating the lodgement, greater difficulty in transporting the necessary soldiers, arms and equipment to the site, and, if these two difficulties were overcome, still greater difficulty in fighting a pitched battle under Arctic conditions. This simplistic solution to the problem had its critics, however, who pointed out that the fear engendered by a few shells launched at Estevan Point and a few fire bombs from drifting Japanese balloons had tied down two army divisions on the Canadian west coast during World War II.[16] What if the enemy were to obtain a lodgement (regardless of size) on Canadian Arctic territory in the event of war? There were those in the Department of National Defence who believed that the Canadian public would not have allowed one Canadian service man or woman to leave Canada as part of an expeditionary force

in support of her allies as long as a foreign military presence remained on Canadian soil.

There were many theories as to how the dislodgement of an enemy force on the barrens should be achieved. A number of RCAF officers postulated that, given the means of Arctic navigation which would enable the lodgement to be located, the only logical step was to bomb the enemy position out of existence. There were, of course, discussions as to the dimension of any such lodgement and what its task might be. The consensus was that it would be small in size and designed to gather and transmit weather information.

An organization, designated as the Mobile Strike Force (MSF), was developed for the purpose of disposing of any lodgement which might occur. Completely airborne, it was dependent on the RCAF for its transportation into the assault area. The MSF rapidly became an efficient, if somewhat weather-limited, means of coping with perceived threat.

By 1946, some people with wide Arctic experience and a knowledge of world politics believed that there were many threats other than direction invasion of, or lodgement on, Canadian territory. The facts of geography become very evident when one switches from looking at maps based on mercator projection to those based on global projection. Canada had become, as Wilfrid Bovey, head of extra-mural relations at McGill University, first stated in 1947, "the ham in the geopolitical sandwich."[17]

Before the end of the war, piston-engined bombers with ranges of close to 3,000 miles were being produced, and jet aircraft and

rudimentary rocket missiles had come into service. The German deployment in 1944 of the V2, a single-staged rocket, introduced the ballistic missile to modern warfare and put mankind on the threshhold of space. Futurists studying neoteric warfare knew that the day was not far distant when ballistic missiles capable of delivering nuclear warheads with reasonable accuracy would soon be in the hands of the major powers.

James Eayrs has written:

> Within a year of the victory in Europe the Canadian military had begun to plan for the defence of North America. Their appreciation, worked out with their counterparts in Washington, was ready by June 1946. It was not a cheerful document. The oceans and the ice which hitherto made Canada immune, could soon admit bombers, guided missiles, submarines, poisonous gases, deadly bacteria and--in three to five years' time--atomic bombs could be rained upon the nerve centres of its government, the heartlands of its industry, the dormitories of its cities.[18]

An attack over Canada was considered a real possibility. Tony Foster, referring to deteriorating relations between the United States and the USSR in Meeting of Generals, wrote: "Canada held the middle ground in the Cold War between two antagonists. A very real fear existed that Russia would invade the U.S. over the pole."[19]

In 1948, Dr. Omond M. Solandt, then head of the Canadian Defence Research Board, stated: "Today everybody knows it's impossible to fight a war in the Arctic, but we have to prepare for the man who doesn't know it's impossible."[20] It was apparent that an attack by the USSR on the USA either through or over Canada was a military eventuality with which Canadian defence officials might have to cope. Not having the capability of dealing with either contingency, Canada decided that

steps must be taken to train and equip Canadian service personnel for military activity in the Arctic.

Having reached these decisions, National Defence planners realized that considerable modification of military hardware would have to take place to ensure that it would function in Arctic areas. Furthermore, it was abundantly clear that, in anticipation of a possible lodgement, Canadian troops would have to be trained to move and fight in the high latitudes in both winter and summer. The question of locating a base which could serve both experimental and training functions had to be settled. To create such a northern experimental and training station it was first necessary to establish the conditions of climate and terrain Canadian troops were likely to encounter in defending the Canadian Arctic. It then followed that a location must be found with the required conditions and within economical access.

One difficulty in determining a site springs from what really constitutes the Arctic. Although prior to 1946 there were many definitions written and arbitrary boundaries laid down, no one definition or boundary appeared to satisfy all concerned. However, one point on which all students of the north seemed to agree was that the Arctic was not confined to lands lying north of the Arctic Circle. It was understood that many of the areas north of the Circle could be duplicated in climate and topography far to the south of the Circle. In fact, some of the coldest winter temperatures were experienced in portions of North America lying well south of the Circle.

Many complicated systems of combining isotherms and permafrost profiles were tried in an attempt to arrive at a suitable definition,

but in the end there was tacit agreement that any territory lying north of the tree line could be considered to satisfy the term Arctic.

In this connection McGill University geography professor J. B. Bird has written:

> Several boundaries have been suggested for the Arctic but none is more appropriate than the tree line beyond which the microclimate, particularly the snow characteristics, the permafrost, vegetation and man's response to his environment all differ significantly from Subarctic woodlands to the south.[21]

As well as satisfying a southern boundary for purposes of definition, the tree line forms a highly acceptable line of demarcation between the Arctic and sub-Arctic for military purposes. As Bird has said, man's response to the two environments must differ significantly. Therefore, the clothing and equipment required by a soldier operating south of the tree line are in many cases quite different from those required by the same soldier operating on the barren ground north of the tree line.

The tree line is a transition zone rather than an actual line, a zone within which the trees gradually become more stunted until they disappear altogether. In an attempt to find a more climatologically exact definition for a southern boundary of the Arctic it was found that the 10^{o} C. isotherm for the warmest month of the year coincides fairly closely to the northern limit of trees, but the tree line cannot be said to always extend along this isotherm because considerations of soil drainage and local topography influence its position.

An important factor in choosing Churchill as the site for a northern experimental and training establishment was that it lay in this

transition zone. North of the town could be found the true tundra, while to the south there were wooded areas where conditions of living and moving were far different from those experienced on the barrens. It could be said that Churchill was located in an area where boreal forest merged with the tundra in a zone of transition offering the military scientist the opportunity of testing men and machines in the two environments noted by Bird.

Snowfall was also a consideration in the choice of a suitable location for the experimental station because it would be necessary to test a variety of oversnow vehicles in various depths and conditions of snow. Investigation showed that Churchill had an average of 69.1 inches of snow each year and 93 days on which at least one tenth of an inch fell.

A study of the climatic data for Churchill (Figure 1) reveals that the winter temperatures alone are sufficiently severe to present the military scientist with challenge enough, but, when these temperatures are combined with the data on wind, Churchill presents a location which would test the hardihood of the toughest person. Churchill has an annual average wind speed of 14 miles per hour, and extreme speeds of up to 100 miles per hour have been reported. Speeds of 45 to 50 miles an hour are not uncommon.

H. A. Thompson of the Meteorological Service of Canada has written:

> It is hard to imagine more penetrating cold than that reported at Churchill on 25 January 1957 when winds of 50 miles an hour with gusts to 68 miles per hour, accompanied temperatures of -33^{o} F.[22]

Churchill, Man.

Element	Years of Record	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Temperature (°C)														
Mean daily maximum	1943-70	-23.7	-22.5	-15.5	-6.5	1.1	10.6	16.9	15.5	8.7	1.8	-8.2	-17.7	-3.3
Mean daily minimum	1943-70	-31.4	-30.8	-24.9	-15.5	-5.8	1.6	6.9	7.4	2.7	-3.8	-15.7	-25.8	-11.3
Mean daily	1943-70	-27.6	-26.5	-20.2	-10.9	-2.3	6.1	12.0	11.5	5.7	-1.0	-11.9	-21.8	-7.2
Maximum	1943-72	0.0	1.1	5.6	14.4	27.2	31.1	32.8	32.8	27.8	20.6	7.2	2.2	32.8
Minimum	1943-72	-45.0	-45.0	-43.9	-33.3	-21.7	-9.4	-2.2	-0.6	-11.7	-24.4	-36.1	-40.0	-45.0
Precipitation														
Mean total (mm)	1943-70	14.0	13.0	18.3	24.1	28.2	40.1	49.0	57.7	52.1	40.4	40.1	20.1	397.1
Mean snowfall (cm)	1943-70	15.2	13.7	18.0	23.6	18.0	2.8	T	0.0	4.3	26.2	41.7	20.8	184.3
Max precip. in one day (mm)	1943-72	11.7	12.7	17.0	25.4	29.5	32.5	52.3	51.1	42.2	35.8	35.1	21.8	52.3
Mean no. precip. days	1943-70	10	9	10	11	11	9	11	12	14	15	17	12	141
Mean no. snowfall days	1943-70	10	9	10	10	8	1	0	0	3	12	17	12	92
Humidity														
*Mean dewpoint temp. (°C)	1953-72	-31.1	-29.6	-23.2	-13.2	-4.8	2.4	7.4	7.7	2.4	-3.2	-14.2	-25.3	—
Mean relative hum. (%)	1957-66	76	72	78	84	86	81	77	78	82	85	83	79	—
Wind														
Prevailing sector	1955-72	WNW	WNW	WNW	NW	NNW	NNW	NNW	NNW	NNW	NW	NW	WNW	WNW
Mean speed ($m \cdot s^{-1}$)	1955-72	6.9	6.9	6.4	6.6	6.5	6.0	5.6	6.0	7.0	7.2	7.4	6.5	6.6
Bright Sunshine														
Mean duration (hours)	1946-70	78	130	183	196	182	234	285	234	104	63	45	55	1789

Station Location and Information. Although weather observations were taken at Churchill for many years prior to World War II, the data in this table result from observations taken since 1943 at the Churchill Airport, which is located about 6 km southeast of the Canadian National Railway station in flat, swampy country. The coordinates of the observing station are lat. 58°45'N, long. 94°04'W, and the elevation is 35 m above mean sea level.

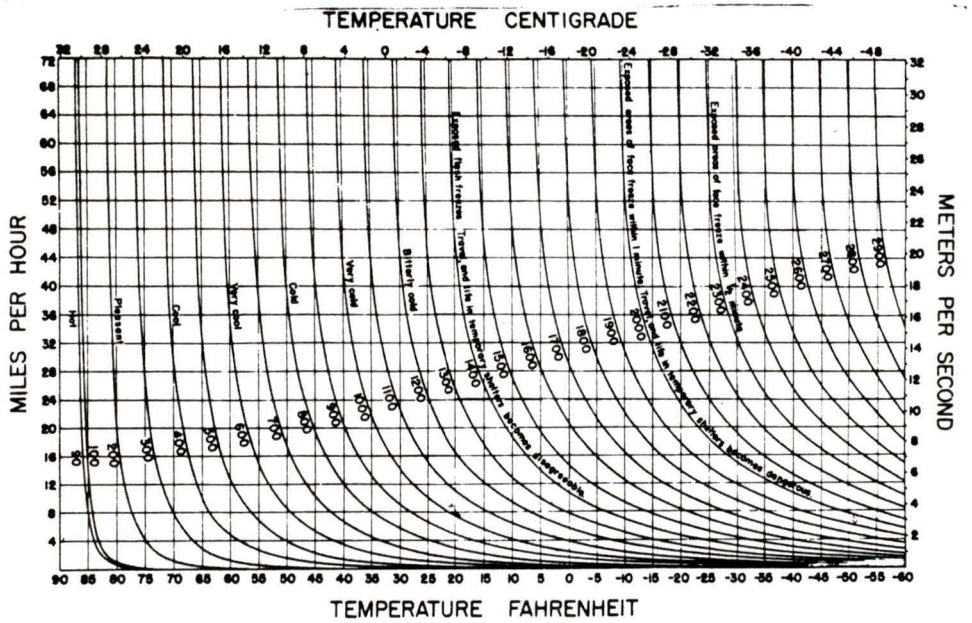
Figure 1

From Climate Canada, 2nd edition (Toronto: John Wiley and Sons, 1974), p. 204. Copyright held by F. Kenneth Hare and Morley K. Thomas.

For many years it had been known that coping with low temperatures in still air presented far less of a problem than that presented by a combination of low temperatures and high winds, but it was not until 1945 that P. A. Siple and C. F. Passel designed a scale for measuring this phenomenon. The index designed by Siple and Passel showed the amount of heat lost per hour by each square metre of a surface heated to 33° C. The temperature of 33° C. was chosen because that was found to be the approximate skin temperature of a comfortably-clothed human being.[23]

This heat loss is designated as windchill and is expressed in units of kilogram calories per square metre per hour as illustrated on

the chart. (Figure 2) With the knowledge of the temperature and wind which exist at Churchill it will be evident from this chart that winter days which rank as "bitterly cold" are very common at Churchill; and there are many days which reach 1400 units on this scale when "exposed flesh freezes."



Nomogram of dry-shade atmospheric cooling. Cooling is expressed in kilogram calories per square meter per hour, for various temperatures, and wind velocities. The cooling rate is based upon a body at a neutral skin temperature of 33°C.(91·4°F.). When dry cooling rate is less than the rate of body heat production, excess heat is removed by vaporization. Under conditions of bright sunshine, cooling is reduced by about 200 calories. Expressions of relative comfort are based upon an individual in a state of inactivity.

Figure 2

From Fort Churchill (Ottawa: Queen's Printer, 1959), p. 21.

Angus M. Gillingham, the sometime senior meteorologist at Churchill, has stated that during the station's existence the highest windchill recorded by his office was 2530 units. This occurred in January 1962 and was the result of a temperature of -38° F. coupled with a wind of 44 miles per hour.[24]

Although climate was the most important factor in the

selection of Churchill, it was only one of several in the view taken by the Directorate of Public Relations of the Canadian Army. In 1956, in a press handout entitled Fort Churchill Round Up, the following appears:

> The factors governing the choice of Fort Churchill as a joint experimental and training station were many:
>
> (a) it is the area most Arctic in nature having year round train accommodation
>
> (b) it has a modern harbour accessible to ocean going transport at least 3 months of the year
>
> (c) it has an airfield which was built as part of the Crimson Staging route
>
> (d) it has a little shelter available as a result of the construction of a United States evacuation hospital
>
> (e) its geographic position places it in an area where both barren and bush lands are available for training
>
> (f) in winter the area is truly Arctic from the meteorological point of view.

An American journalist expressed what he believed was the true reason for the selection of Churchill when he wrote: ". . . mainly Churchill was selected as a test base because it enjoys some of the foulest weather to be found anywhere on the globe."[25] In this the journalist was echoing an opinion of Churchill arrived at by Captain James Knight over two centuries earlier when he said: "I never See such A Misserable Place in my Life."[26]

When Fort Churchill was approaching its final days and the services were searching for a more economical way of continuing cold weather testing, an interesting survey was done by Squadron Leader K. Weinstein, who at that time was commanding the Central Experimental and Proving Establishment Detachment at Fort Churchill. After a

detailed study of all possible cold weather test sites in Canada, a study which included such factors as low temperatures, consistency of cold weather, windchill and number of clear days on which flight testing of aircraft was possible, the report turned to logistical considerations and arrived at the conclusion that "Fort Churchill is the only one of the sites considered which possesses both suitable weather for climatic testing as well as adequate facilities.[27] All the arguments put forth in the existing literature made sense and no doubt offered reasons enough for the choice of Churchill as Canada's Arctic training and experimental base. There was another more compelling reason--the United States' authorities wished to have American troops stationed in the Canadian Arctic.

Notes

1. Quoted by Helen Champion in "The Land and People" in Canada One Hundred 1867-1967 (Ottawa: Queen's Printer, 1967), p. 2.

2. Quoted by J. L. Granatstein in "A Fit of Absence of Mind: Canada's National Interest in the North" in E. J. Dosman, ed., The Arctic in Question (Toronto: Oxford University Press, 1976), p. 14. For a complete discussion of this transfer of suzerainty from Great Britain to Canada see Morris Zaslow, ed., A Century of Canada's Arctic Islands (Ottawa: The Royal Society of Canada, 1981), pp. xiii-xv.

3. Victoria Times-Colonist, 12 January 1988.

4. See Canada Treaty Series 1955, No. 8. Dr. R. J. Sutherland claims that it was not until this agreement to build the Distant Early Warning Line was signed that the United States explicitly recognized Canada's sovereignty over the Arctic areas.

5. For a succinct account of this Force see G. F. G. Stanley, Canada's Soldiers, The Military History of an Unmilitary People (Toronto: Macmillan, 1960), pp. 275-77.

6. Stanley, Canada's Soldiers, p. 275.

7. Ibid., p. 277.

8. Kenneth Charles Eyre, "Custos Borealis," unpublished Ph.D. dissertation, (King's College, University of London, 1981), p. 37.

9. The information on the Canadian involvement in Northern Russia comes mainly from an unpublished paper entitled "Canadians in North Russia," by Major General G. J. J. Edwards.

10. Stanley, Canada's Soldiers, p. 335.

11. For a comprehensive history of the System, see John S. Moir, ed., History of the Royal Canadian Corps of Signals (Ottawa: Corps Committee R.C.C.S., 1962), pp. 276-81.

12. For further details on these operations see C. P. Stacey, Six Years of War (Ottawa: Queen's Printer, 1955), pp. 83-85, 301-7, 492-505.

13. Ibid., pp. 83-85.

14. Ibid., pp. 301-7.

15. As quoted by James Eayrs in In Defence of Canada: Peacemaking and Deterrence (Toronto: University of Toronto Press, 1972), p. 334.

16. See Peter C. Newman, True North: Not Strong and Free (Toronto: McClelland and Stewart, 1983), p. 54, and R. Bruce Scott, Bamfield Years: Recollections (Victoria: Sono Nis Press, 1986), p. 34.

17. Wilfrid Bovey, "Geography in Power Politics," lecture at McGill Geography Summer School, Stanstead, Quebec, 1947.

18. James Eayrs, "Now that Canada's Armed Forces are Nicely Sorted Out What are we Going to do with Them" in Saturday Night, Vol. 84, No. 8, August 1969, pp. 19-24.

19. Tony Foster, Meeting of Generals (Toronto: Methuen, 1986), p. 506.

20. Time, 7 June 1948.

21. J. B. Bird, "The Arctic" in Canada: A Geographical Interpretation (Toronto, Methuen, 1968), p. 508.

22. H. A. Thompson, "The Climate of Hudson Bay" in C. S. Beals, ed., Science, History and Hudson Bay, Vol. I (Ottawa: Department of Mines and Resources, 1968), p. 271.

23. See P. A. Siple and C. F. Passel, "Measurement of Dry Atmospheric Cooling in Sub-freezing Temperatures" in Proceedings of the American Philosophical Society 89, 1945, pp. 177-99. A more realistic method of measuring windchill was designed by R. G. Steadman in 1971 but this method was not available to military planners in 1946 whereas the work of Siple and Passel was well known.

24. Quoted by Strome Galloway, "The Army says Goodbye to the Shining Land" in Canadian Army Journal, Vol. XVIII, No. 1 (Ottawa: Queen's Printer, 1964), p. 44.

25. John Kord Lageman in Collier's, 12 February 1949.

26. James F. Kenney, ed., The Founding of Churchill (Toronto: J. M. Dent, 1932), p. 119.

27. CEPE Cold Weather Trials--Purpose and Choice of Test Site, Appendices A and B to 1905-3 (Det Cmdr) dated 16 January 1964.

CHAPTER TWO

THE AMERICAN INVOLVEMENT

The United States had been fascinated by the potential of Canada's northern areas for many years, and the modern history of Canadian/American relations in this regard is an interesting one. Although the major thrust of American military concern in the Canadian north did not commence until the Permanent Joint Board on Defence (PJBD) came into being in 1940 there had been prior to that time a desire on the part of the Americans to join Alaska to the forty-eight states through Canadian territory.[1] In 1935, the United States passed an act authorizing the expenditure of two million dollars towards the construction of a highway to Alaska through the Province of British Columbia and the Yukon Territory.[2] It would be a mistake to believe that this 1935 initiative was prompted by military necessity for there is extensive evidence that the United States War Department was not in favour of the scheme until Germany attacked the USSR in June 1941. What happened in 1935 was the culmination of many years of lobbying by west coast commercial interests, both Canadian and American, who hoped to open up the north to business ventures and to alleviate severe unemployment problems. Whereas the American business lobby had succeeded in obtaining their government's support, the Canadian federal government would have nothing to do with the enterprise, fearing that it was an American ploy to weaken Canadian independence. It was evident that the Canadian federal authorities, despite disclaimers from the United States War Department, believed that the main use of the highway

would be military, and they had no desire to be tied to the military policies of the United States in the event of that country going to war with Japan.

When Canada agreed that the highway should be built it was after the Japanese attack on Pearl Harbor, and Canada was now at war with Japan. However, the Canadian Prime Minister, Mackenzie King, was never completely at ease with the knowledge of an American-built highway on Canadian soil. He stated that the road "was less intended for protection against the Japanese than as one of the fingers of the hand which America is placing more or less over the whole of the Western Hemisphere."[3] This attitude of King's would seem to run counter to the free and easy friendship and "Harvard Connection" that existed between Franklin Delano Roosevelt and King in the 1930s and the series of meetings, both formal and informal, this friendship generated which eventually led to the formation of the PJBD in 1940.

The story is told that, at a meeting in Quebec City in July 1936, Roosevelt remarked that he had received several inquiries about what action he would take if Japan attacked British Columbia. He replied to the effect that the United States forces would move to prevent the Japanese getting a foothold. This remark was reinforced in August 1938 by a reference Roosevelt made at Queen's University in Kingston, Ontario, when he stated: "I give you my assurance that the people of the U.S. will not stand idly by if domination of Canadian soil is threatened by any other empire."[4] The only <u>quid pro quo</u> King could offer to that came a few days later when he stated that Canadians would never allow a foreign power to use Canada as a base of operations

against the United States.

In 1940, in a small upper New York State town, Roosevelt and King came to an agreement on matters of Western Hemisphere defence. This agreement was translated into the Ogdensburg Declaration and brought into being the PJBD. This organization is still in being forty-nine years later with little prospect of its demise in the near future. There are three very important facets of the PJBD, the first being the word "permanent" in its title. Many wartime arrangements have been made over the course of history, mostly forced on reluctant allies by raw military necessity, but here we have a contract freely entered into by two sovereign nations with a degree of longevity so firmly established that the word "permanent" is incorporated in the title of the consultative body created. It is an interesting footnote to history that Prime Minister King questioned the need to use this word. President Roosevelt insisted on its use because he wished the PJBD to be considered a lasting institution.

Second, history gives us no indication that Prime Minister King had consulted with any of his wartime cabinet before entering into the arrangement. C. P. Stacey wrote: "Mr. King appears to have had no opportunity of consulting his ministerial colleagues before his interview with the President, and it seems likely that he did not know in advance precisely what proposal Roosevelt intended to lay before him."[5] Although Lawrence Martin suggests that King did meet with his Defence Department officials on the morning he departed for Ogdensburg, there is no solid evidence that Mr. King sought military advice before entering into this binding military agreement.[6]

It would be of great interest to be made privy to the private opinions of the chiefs of military staff in the three Canadian services on this matter. Alas, no such record appears to have survived. George Grant wrote: "In 1940 it was necessary for Canada to throw in her lot with continental defence. . . . But it is surprising how little the politicians and officials seem to have realized that this new situation would have to be manipulated with great wisdom if any Canadian independence was to survive."[7]

The third matter, of compelling interest to the military historian, is how an agreement embodied in a simple press release became a binding obligation on both countries. Mohant and Mount described the process thus:

> This agreement received sanction when the United States published the press release in the Department of State Bulletin and later in its Treaties in Force; Canada published it in its Treaty Series. The Ogdensburg Agreement is an example of a formal agreement, informally arrived at. As a press release, it did not require the approval of the U.S. Senate, but it has been accepted as a binding agreement, the equivalent of a treaty, by both governments.[8]

The press release in question read as follows:

> The Prime Minister and the President have discussed the mutual problems of defence in relation to the safety of Canada and the United States.
>
> It has been agreed that a Permanent Joint Board on Defence shall be set up at once by the two countries.
>
> This Permanent Joint Board on Defence shall commence immediate studies relating to sea, land and air problems including personnel and material.
>
> It will consider in the broad sense the defence of the north half of the Western Hemisphere.

> The Permanent Joint Board on Defence will consist of four or five members from each country, most of them from the services. It will meet shortly.

As we have seen, the PJBD's mandate was to initiate studies as to how the northern half of the Western Hemisphere could best be defended. It was in no sense an executive body, and it was made abundantly clear that the Board had no power to implement any action required as a result of their work. Implementation of any action would remain under the control of the governments concerned. However, the work of the PJBD had a profound effect on the decisions taken by Canada and the United States in relation to the establishment of an Arctic military base. After consideration of the factors pertaining to the location of the base, Churchill, Manitoba, on the shores of Hudson Bay was selected.

An examination of the existing evidence indicates that the pressure to establish a post-World War II Arctic base in Canada came not from Canada but from the United States. The diplomatic overtures requesting that United States forces be stationed in northern Canada are covered at some length by James Eayrs in Defence of Canada: Peacemaking and Deterrence,[9] and he makes passing reference to the part played by Fort Churchill in the process of replying to these American initiatives.

Diubaldo and Schienberg, after asserting their belief that Canada's perceptions of the defence of northern Canada and the actions she took in that connection were founded on American assumptions, arrived at the conclusion that:

> There was also a real fear that if Canada did not go along her sovereignty might be endangered by unilateral American actions

> on Canadian soil. As a participant Canada would protect her sovereignty through a landlord-tenant relationship, and perhaps use her good offices to exercise a quiet restraint on the Americans.
>
> Thus Canada's decision to participate in northern defence was essentially political rather than military.[10]

A review of the process leading up to the establishment of Fort Churchill leaves little doubt that certain Canadian officials were hesitant to have a significant American presence at the Fort.

In November 1945, the Americans had pointed out the need for "a continuing basis for joint action of the military forces of Canada and the United States in order to ensure the security of Alaska, Canada, Labrador, Newfoundland and the northern United States." The source of this American initiative was a paper presented by the American Chairman of the PJBD at a meeting of the Board held on 7 November 1945. This information was placed in a memorandum for Cabinet dated 12 December 1945 by R. M. MacDonnel, the Secretary of the Canadian section of the Board, and agreement in principle to this initiative was given by Cabinet on 21 December 1945. No specific mention of Churchill, Manitoba, was made at that time.

Four months later, speaking in connection with co-operation between Canada and the United States on post-World War II defence matters, the Prime Minister informed the House that there would be "general cooperation and exchange of observers in connection with exercises and with the development and tests of material of common interest."[11] It will be noted that no specific reference was made to northern defence matters.

There is ample evidence that the Canadian military planners

may have taken the ball and run with it without the government defining the rules of the game. This of course was not an isolated occasion when the military planners were ahead of their civilian counterparts. There were armed service networks of a strictly environmental nature operating at the time whereby senior officers of the three services of both nations would arrive at mutually advantageous agreements without any serious concern about the question of whether Canadian sovereignty was in jeopardy. Writing of the early bilateral negotiations which eventually led to the creation of NORAD, Joseph T. Jockel states:

> The JCS (American Joint Chiefs of Staff) had every confidence that, left alone, the U.S. and Canadian military together could create and operate an effective joint command. It was the civilians in Ottawa with their nagging insistence on the protection of Canadian sovereignty who, the Chiefs knew, would inevitably get in the way.[12]

It would appear from the open files that the first formal discussions about United States participation in activities at Fort Churchill came as a result of the deliberations of the PJBD in March 1946.[13] These deliberations led to the drafting of a basic agreement[14] for Canadian/American co-operation in testing Arctic equipment at the Fort. However, it was not until four months later that the Canadian Chiefs of Staff finally agreed to both location of, and American participation in, an Arctic test centre. On 9 August 1946 the Chiefs of Staff, after considering an American request with regard to the establishment of a joint Arctic experimental and testing station "at Churchill, or some other suitable location," agreed that "Churchill be selected as the suitable locality for such an experimental station"[15] and directed the Interservice Committee on Winter Warfare (ICWW) to

prepare short- and long-term plans for the station. There is no indication that the matter of numerical representation was addressed. James Eayrs writes:

> Soon after the Joint Services Experimental Station [sic] had been established the Canadian government received from the United States government a request to station 500 U.S. Army personnel at Fort Churchill for cold weather testing during the following winter. The request was refused.[16]

Eayrs believes that the American request to garrison troops at Fort Churchill was one of the two "especially vexatious"[17] requests that the United States government had made to use facilities in the Canadian north. The other was the request to reinforce the American garrison resident at Goose Bay, Labrador.

The short-term plan proposed by the ICWW was approved by the Chiefs of Staff on 20 August 1946,[18] and that body recommended to the Cabinet Defence Committee that the plan be implemented. They also asked that the Cabinet Defence Committee request C. D. Howe to ensure that the existing facilities at Churchill be maintained in their current state until officially taken over by the Canadian Army. This takeover took place on 24 September 1946.[19] The station functioned on this short-term plan throughout the winter of 1946-1947 while a long-term plan was being prepared by the army members of the ICWW, a plan which they presented to the Chiefs of Staff in March 1947.[20]

The United States Corps of Engineers had much to do with the early construction called for in the short-term plan. American aid started in the summer of 1947 when a line company from an Engineer Construction Battalion stationed at Fort Belvoir, Virginia, was sent to

Churchill to help the Canadian Camp Engineer, Major Lloyd Hough, with preliminary work in establishing the new camp. A second line company from the 62nd Engineer Construction Battalion came from Belvoir for the summer of 1948 and were employed in erecting a vehicle workshop. These companies came only for the summer months, but there were always individual American professional engineers in the camp willing to help at any time in solving the multitudinous problems which arose in constructing modern buildings in a hostile environment.[21] Prominent among these American military engineers were Lieutenant Colonel Wayne E. Downing, the first commanding officer of the United States Army Arctic Test Detachment, and his successor, Lieutenant Colonel "Gristy" Trainor. Another outstanding American engineer in the early days was Captain (later Colonel) W. S. "Wild Bill" Crumlish who arrived in July 1947 to carry out permafrost investigations and came back in 1948 to be operations officer in the American Test Detachment.

The Chiefs of Staff Committee continued to keep a sharp lookout on the international aspects of Fort Churchill while the long-term plan was being finalized. They approved a proposal about the appropriate levels of liaison with United States and United Kingdom military personnel on matters of Arctic warfare[22] and a revised security plan[23] for Fort Churchill which included provisions for security matters pertaining to members of the American and British forces. With a view to the future the Chiefs of Staff approved the construction of artillery and rocket ranges at the Fort.[24]

When the long-term plan was agreed to, the Canadian Army issued a document[25] which stated in great detail all matters pertaining

to the administration of Fort Churchill. At a meeting of Defence Council prior to the issuance of this document the Chairman reported that Cabinet had approved American participation in a Joint Services Testing Establishment at Churchill, Manitoba, but cautioned that any United States money spent on the new construction at that base be dealt with in such a way that no Canadian or American could ever say that the United States had acquired a vested interest in the base. He cautioned his colleagues that this matter should be handled with the greatest care and that it must be fully understood that the United States would be free to withdraw at any time equipment purchased with United States funds. The question was then posed whether the expenditure of funds by the Americans for construction purposes was in any way tied to the number of vacancies at the base to be allotted to American personnel. In reply, the Chief of the General Staff (CGS) stated that this matter had been fully discussed at a meeting of the Cabinet Defence Committee and that there was no definite commitment with respect to the number of American personnel employed at any one time on the base.[26]

The question of the extent of American participation in the activities at Churchill was raised again at the Chiefs of Staff Committee four days later where it was emphasized that "Cabinet had approved the proposed expenditure of $350,000 by the United States towards the provision of joint facilities on the understanding that this would confer no special title, rights or privileges."[27] It was understood by Cabinet that the proportion of Americans to Canadians would be in the neighbourhood of three to five but the final decision would be left to the Chiefs of Staff. The debate in the House of

Commons in June 1947 over the Visiting Forces Act brought into focus who should exercise control over the number of United States military personnel resident in Canada. Speaking for the Opposition, Howard Green held that the matter was of such importance that "It is entirely too slipshod to leave it to the general staff." Green went on to say: "In my opinion, it should not even be left to cabinet without parliamentary sanction."[28]

Brooke Claxton, speaking for the government, pointed out that the major project for which American officers and men were stationed on Canadian soil was the testing establishment at Churchill, that their presence there initially had been specifically authorized by Cabinet, and that subsequent changes in the numbers of Americans involved also had come before Cabinet. Claxton said: "But the cabinet does not say, we shall have three captains and two lieutenants and their name shall be John Brown, et cetera. That kind of arrangement and the carrying out of details, are done by the appropriate military officers."[29]

The continuing refusal of the United States to recognize the "Sector Theory" did nothing to relieve the apprehension about unauthorized excursions by American troops into northern Canada. The Minutes of the Cabinet Defence Committee Meeting on 12 August 1947 state:

> General McNaughton observed that in discussions in the Joint Defence Board [sic] there had been an attitude of complete propriety regarding Canadian rights. While the United States had given no recognition to the "Sector Theory" circumstances were such that our claims in the Arctic Archipelago were being progressively strengthened.

Later, there was a certain amount of reluctance to get too firmly entrenched with the United States in the north particularly

because of the cavalier attitude of the United States Air Force (USAF) about mapping and overflights of Canadian territory. Such headlines in American newspapers as "U.S. Air Force Ready to Fly Anywhere, Anytime in Arctic"[30] did not help the situation. In this particular matter the United States invited Canadian observers to accompany subsequent flights after an objection was raised by the Canadian Chairman of the PJBD.

The question of how many Americans were, or should be, at Fort Churchill was a matter that concerned Canadians in high places for many years. As early as January 1948 a brief, stressing the international aspects of the Fort, was requested by Brooke Claxton just prior to attending a conference in Washington. The brief pointed to the ratio between Canadian and American personnel stationed on the base and read in part:

> The joint station established by the United States Army and the Canadian Army at Fort Churchill now has a total strength of 800 United States and Canadian personnel, 183 of this personnel is United States. At this moment, the United States services have six test teams testing at Fort Churchill. These test teams are Engineer, Ordinance, Signal, Transportation and Medical.[31]

It was evident that the Minister wished to be informed on an ongoing basis of the number of American personnel stationed at Fort Churchill.

General Jean Allard, a Canadian member of the PJBD from 1958 to 1961, writes:

> With the Americans . . . when they wanted to have two hundred additional people in Churchill in northern Manitoba in order to carry out certain military experiments in the Arctic, I had to write an explanatory memorandum, approved by the government (which was always--and rightly--sensitive to the quality and extent of the U.S. presence on our territory).[32]

extent of the U.S. presence on our territory).[32]

Strangely enough, although American efforts to get more of their military personnel into Churchill caused concern at the high levels of the Canadian government and military, little or no trouble surfaced at the working levels at the Fort. However, the story of the American armed forces at Fort Churchill would not be complete without some mention of the constant pressure earlier commanders of the Fort were subjected to by endeavours to increase the numbers of Americans authorized to be in residence. These pressures had nothing to do with American attempts to violate Canadian sovereignty although some authorities saw them in that light.

The usual circumstance was that the commander of the American detachment at the Fort would be pressured by Washington to have a specific test carried out on an emergency basis. Knowing that the nine or ten persons on the required test team would pierce the allowable American accommodation ceiling, the American commander would approach the Fort commander stating that if the team could be allowed to come they would be self-contained in every respect and would not be a charge on the Fort's facilities. Such a request from a fellow soldier and a staunch ally was hard to refuse, and there were frequent occasions when for short periods the American head count did rise above the authorized ceiling. Such occurrences did not seem to trouble most of the Canadian service men on the base. However, there were some notable exceptions who swore that Canadian sovereignty was threatened by having any American service personnel at all on Canadian soil.[33]

One of the difficulties of trying to keep American repre-

sentation within the assigned ceiling can be attributed to the fact that more than one test of the same piece of equipment would be scheduled. The fault lay in the virtual autonomy held by some Corps in the United States Army which led to the impossibility of proper co-ordination of test and development activities. There were occasions when two different corps were testing the identical piece of equipment at the same time or were carrying out a test previously carried out by another corps. These overlapping commitments were eventually sorted out, but they were a source of irritation in the early days when accommodation was at a premium.

The question of how much, or how little, publicity should be attached to the creation of Fort Churchill and the activities being carried out by the Americans there was of concern to Defence Council. In view of the USSR claims that a large base housing American and Canadian service men was being created in the Canadian north with warlike intentions towards their country, it was obvious that some information should be made public, but how much and to whom was a moot point. At a meeting of Defence Council on 10 January 1947[34] the Minister of National Defence, Brooke Claxton, asked the CGS, Lieutenant General Charles Foulkes, to address this matter. Foulkes stated that it was true that Fort Churchill was a joint Canada-United States project and that certain cold weather tests of equipment would be conducted there commencing in mid-January. He further stated that there was really nothing new in the way of equipment and that a great many of the items scheduled to undergo test were similar to those used by the United States services under normal climatic conditions. Although reticent

about having anything published relating to the types of testing being carried out he would not object to newspaper reporters being given a conducted tour of the base at a later date. The Minister of National Defence stated that withholding information from the press might give rise to speculation and rumour and directed that the matter be given further consideration. The question was raised once again by the Minister on 15 January 1947[35] when he asked the CGS what progress was being made in producing a publicity policy for Fort Churchill. Foulkes replied that the matter was under active review.

During the first few years of the Fort's life the matter of press visits to the Fort was the subject of frequent discussion at the highest military and political levels. The matter continued to be a thorn in the flesh of every commander throughout the time that the Fort was in being although in the latter years the decisions on press visits were made at lower and more manageable levels of command.[36] The major problem in this connection always appeared to be fear that the Canadian public might learn too much about the American involvement in the base. In addition highly classified activity frequently took place which was difficult to hide from prying members of the fourth estate.

The question of what was the extent of non-Canadian participation in MUSK OX (details of this operation can be found in Chapter Six) and other northern military activities was raised at a meeting of Defence Council on 14 February 1947.[37] In addressing queries raised in the House of Commons in this connection, the Minister of National Defence called attention to the fact that he was under pressure to produce papers on the expedition including the number of foreign

personnel who had participated. He realized that there was opposition to making a full disclosure of this information for security reasons, but an announcement to that effect would result in unreasonable speculation as to what had actually taken place. It was suggested that the Minister might wish to see the members of the various groups in the House of Commons explaining to them the reasons why their questions could not be answered in the House.

The CGS pointed out that answering the questions raised might cause embarrassment because it would divulge not only the number of United States service personnel in the country but also where they were located. However, he suggested that insofar as MUSK OX was concerned he had no objection to Part I of the report on the exercise being placed in the Parliamentary Library. After a wide ranging discussion it was decided that it was not desirable that information regarding the number of personnel resident in Canada from foreign armed services should be provided and that information regarding the findings and cost of MUSK OX must remain classified. However, it was also decided that a copy of Part I of the exercise report would be tabled.

The subject did not die insofar as the presence of United States Armed Forces in Canada was concerned. A prolonged debate took place in the House of Commons on 5 and 6 June 1947 when Bill 253, the Visiting Forces Act, was under discussion. The Bill made provision with respect to the forces of the United States of America when visiting Canada and with respect to the exercise of discipline and the internal administration of such forces. The Bill was read for the third time and passed on division on 9 June 1947. Louis St. Laurent, who was Secretary

of State for External Affairs at the time, was particularly vehement in his denials that large numbers of American soldiers were resident on Canadian soil. He told the House:

> . . . there is a certain group, I can mention this because it has been commented upon and the public here and everywhere know about it--of United States soldiers who are at Churchill engaged with ours in the testing of material under winter conditions. They are less numerous than our own personnel. It is by design and arrangement that they are kept less numerous than our own. That is the way the policy is being carried out. . . . the most important thing that has been done so far is this Churchill exercise. There the situation is that they are less numerous than our own and that is by arrangement. That stipulation was made and it has been observed. That is the policy.[38]

The rhetoric was hot and heavy during this debate, and one parliamentarian who showed a sense of history in such matters was M. J. Coldwell who pointed out that to know what troops or armies are within the borders of one's country, how commanded and what they are doing, was a right of Parliament since the execution of Charles I.[39]

Co-operation between Canadian and American test teams was usually of a high standard, and basic research information was freely exchanged, but it was only on rare occasions that the two countries joined together to select a piece of equipment which would become standard in both nations. This can be traced to what soldiers refer to as the NIH factor. NIH is an acronym for "not invented here," a factor which continues to prevent attempts to standardize military equipment within the western military alliance.

The first joint test was conducted at the Fort during the winter of 1950-1951 and was entitled DID TEST III. This operation, jointly reported upon by the President of the Quartermaster Board of the

United States Army and the Canadian Director of Interservice Development, aimed at standardizing Arctic clothing. The report showed a great measure of agreement on what both countries had learned from the operation, but no standardized garments resulted.

When the Strategic Air Command (SAC) of the United States Air Force sought and got permission to use the airfield at Fort Churchill[40] as a base for their aerial refueling tankers, the KC-97 aircraft, it was necessary for major changes to be made. The first problem was that the runways were far too short to accommodate the giant tankers, and the existing 5,800 foot runway had to be doubled in length. This task and complementary increases to the airport facilities employed 500 construction workers in 1959 and was completed at a cost of $2,441,600. A refueling base without fuel was a non-starter so it was also necessary to construct a tank farm to hold jet fuel at an additional cost of $3,397,000. Three additional barrack blocks were required to house the "ready crews," and these were built, like the other additional facilities, with money supplied by the United States Government. In all, about $7,000,000 was expended in making Fort Churchill suitable for its new role which it assumed in October 1960.[41] These facilities, along with similar facilities at other Canadian bases, were required by SAC in order to carry out their "Strike from the Homeland" concept, known by the code name FULL HOUSE.

The organization created to run the SAC effort at Fort Churchill was designated the 3949th Air Base Squadron. Theirs was not a test or training mission; they had an operational role, and such a role necessitated an elaborate 192-page War Support Plan. It was numbered

WSP 63 and detailed the responsibilities of the various officers and units, both Canadian and American, to support the SAC war mission. It came into effect 1 August 1962 and called for six tankers to be stationed at Fort Churchill with fourteen more to be accommodated in the event of an emergency. Despite the large sums expended in creating facilities to carry out these plans, progress in intercontinental ballistic missile techniques, longer range planes and changing conceptions of warfare soon made the SAC base at Fort Churchill redundant. The base was abandoned in 1963.

Although the United States paid for the construction of the facilities they required, the additional administrative personnel to perform the services demanded by this influx of United States Air Force personnel had to be found from within Canadian Army resources. In 1960, the permanent Canadian Army establishment of the Fort was 571, and the commander requested that this number be increased to 644 to meet the new commitment. The Canadian Army Establishment Committee analysed this request and reduced the figure to 628, a net increase of 57.[42] The requirement to expand the runway necessitated extra land being leased by the Department of National Defence. The question of land ownership and leasing agreements created the need for legal agreements to be signed between the National Harbours Board, the Department of Transport, the Department of National Defence and the Province of Manitoba.[43]

Successive commanders of both countries stationed at Churchill have testified both verbally and in writing to the harmonious relationships which existed between the two countries during their respective tours of duty at the base. The United States organizations stationed in

Fort Churchill over the years expressed their appreciation in a variety of ways for the help proffered by the Canadians who occupied positions of command at the Fort.

An early attempt by the Americans to decorate one of the Fort Commanders with the Legion of Merit was thwarted by the Canadian policy of disallowing her citizens to accept foreign decorations. When informed of this policy, the Adjutant General of the United States Army dispatched a laudatory letter to the Canadian officer concerned expressing the deep appreciation "of the Department of the Army and the United States as a nation"[44] for the services he had rendered.

At a briefing for Operation TOPSIDE in July 1948, Lieutenant Colonel Wayne E. Downing, the senior United States officer on the base, stated:

> I would like to take this opportunity to go on record as stating that the United States forces and all of the technical staff that have been up here are more than satisfied with the wonderful treatment we have received from the Canadian commander and his staff. We couldn't be treated better, I think that if anything we are treated much better than if we were at one of our own posts in the States.[45]

This theme of getting better treatment than on an American base was repeated by the last commander of the United States Army First Arctic Test Detachment, Lieutenant Colonel William Wingfield, when his unit was moved to Fort Wainwright, Alaska, on 1 April 1961. He informed the Fort Churchill commander that he was reluctant to leave because he was confident that his unit would never receive the fine treatment in Alaska that it had received in northern Manitoba.[46]

When the test activity was moved to Alaska the Director of the

United States Corps of Engineers Research and Development Laboratories wrote a letter of appreciation to the General Officer Commanding Western Command in Edmonton referring to the splendid support the test unit had received for the full fourteen years it had been resident at Fort Churchill.[47] It was not the United States Army alone who showered praise on Canadian hospitality at the Fort. The relevant files are loaded with letters of commendation from a host of different American sources. To show that this appreciation continued during the whole time the Fort existed, the following was written by Colonel Strome Galloway, the Commander of the Fort from 1962 to its closure in 1964:

> One of the nicest compliments I received was an illuminated address from the U.S. Office of Aerospace in Washington which read in part:
>
> "The Officers and men of the Office of Aerospace Research salute your leadership and co-operation, vital to the successful operation of the Churchill Research Range. We admire and appreciate your professional competence and high sense of duty."[48]

Even discounting a certain amount of hyperbole which all of the above commendations no doubt contain, it is obvious that the Americans were well served by the authorities at Fort Churchill. Fred Way in 1957 seems to have summed up these relationships as well as anyone when, after writing that Fort Churchill was a place where "the cold overrules every other thought," he went on to describe the Fort as "a bitterly cold but friendly camp where American, British and Canadian servicemen live together in perfect harmony."[49]

Whenever a sour note was sounded about international co-operation at Fort Churchill, the fourth estate seems to have been the cause rather than any animosity between the service men. A case in

point took place when a NIKE HERCULES rocket was fired on 30 January 1959. The press alleged that an American officer, Colonel P. N. Stevens, Chief of the Missile Division of the Air Defence Command, had countermanded the order of the Canadian project officer, Major V. Gay, reference the safety regulations to be obeyed by the newsmen who were covering the event. On investigation it was found that there had been confusion as to the spectator safe distance for this type of blast-off. What was reported as a countermand was in effect a correction which had been arranged with Major Gay by Lieutenant Colonel Larkin, the U.S. project officer.[50]

The question of which flags should be flown at Fort Churchill presented a neat international problem. There were twin flagpoles in the old Crimson Route camp, and early commanders of the Fort decided that both the Red Ensign and the Stars and Stripes would be flown from dawn to dusk on these flagpoles. The wear and tear on the flags in the high winds caused this practice to cease, and the two flags were thereafter flown only on special occasions. In later days only a Canadian flag was flown from the central flag post, American flags being confined to buildings occupied exclusively by American personnel. On enquiring why this was so, thinking that it may have been as a result of an edict from on high, it was learned that "the problem was that the American flags got bigger and bigger and we [the Canadians] could not keep up with them."[51]

Notes

1. For the story of the Alaska Highway, see Kenneth Coates, ed., The Alaska Highway: Papers of the 40th Anniversary Symposium (Vancouver: University of British Columbia Press, 1985).

2. Robin Fisher, "T. D. Pattullo and the British Columbia to Alaska Highway" in ibid., p. 11.

3. W. L. Mackenzie King Diary, 21 March 1942, quoted in J. L. Granatstein, Canada's War: The Politics of the Mackenzie King Government 1939-1945 (Toronto: Oxford University Press, 1975), p. 321.

4. Quoted by Lawrence Martin in The Presidents and the Prime Ministers (Toronto: Doubleday Canada, 1982), p. 127.

5. C. P. Stacey, "The Canadian-American Permanent Joint Board on Defence 1940-1945" in International Journal, No. 9, 1954, pp. 112-13.

6. Martin, The Presidents, p. 133.

7. George Grant, Lament for a Nation: The Defeat of Canadian Nationalism (Toronto: McClelland and Stewart, 1970), p. 50.

8. Edelgard E. Mohant and Graeme S. Mount, An Introduction to Canadian-American Relationships (Toronto: Methuen, 1984), p. 143.

9. James Eayrs, In Defence of Canada: Peacemaking and Deterrence (Toronto: University of Toronto Press, 1972), Chapter 6.

10. R. J. Diubaldo and S. J. S. Scheinberg, A Study of Canadian-American Defence Policy 1945-1975--Northern Issues and Strategic Resources (Ottawa: Operational Research and Analysis Establishment, 1978).

11. Statement made in the House of Commons on defence co-operation with the United States,10 February 1947.

12. Joseph T. Jockel, No Boundaries Upstairs (Vancouver: University of British Columbia Press, 1987), p. 95.

13. PJBD Journal of Discussions and Decisions, 21-22 March 1946.

14. PJBD Document Developments and Tests of Arctic Equipment, 2 April 1946.

15. Minutes, Chiefs of Staff Committee Meeting, 9 August 1946.

16. Eayrs, Defence, p. 355.

17. Ibid., p. 352.

18. Minutes, Chiefs of Staff Committee, 20 August 1946.

19. HQS 9012-568 (AG Co-ord), 24 September 1946.

20. Colonel R. W. Moncel and Colonel W. R. Sawyers were the army members. Their plan was submitted to the Chiefs of Staff Committee under HQS 401-13 (DWD2), 5 March 1947.

21. Letter, Colonel W. S. Crumlish/Tedlie, 25 December 1986.

22. Minutes, Chiefs of Staff Committee, 1 October 1946.

23. Minutes, Chiefs of Staff Committee, 5 November 1946.

24. Ibid.

25. The Combined Experimental and Training Station--Fort Churchill Canadian Army Long Term Planning Notes No. 1 issued under HQS 726-40-17-1, 21 July 1947 signed by Brigadier S. F. Clark on behalf of the Chief of the General Staff.

26. Minutes, Defence Council Meeting, 9 May 1947.

27. Minutes, Chiefs of Staff Committee Meeting, 13 May 1947.

28. Canada, Parliament, House of Commons, Debates, 6 June 1947.

29. Ibid.

30. Washington Post, 20 October 1947.

31. Brief covered by letter from the Defence Secretary, H. L. Cameron, to the Secretary of the Cabinet Defence Committee, E. W. T. Gill, dated 21 January 1948.

32. Jean V. Allard, in co-operation with Serge Bernier, The Memoirs of General Jean V. Allard (Vancouver: University of British Columbia Press, 1988), p. 202.

33. A case in point was the attitude of Captain William Henry Pope, adjutant of the Fort in its early days and author of The Elephant and the Mouse (Toronto: McClelland and Stewart, 1971).

34. Minutes, Meeting of Defence Council, 10 January 1947.

35. Minutes, Meeting of Defence Council, 15 January 1947.

36. Joint Organization Order No. 3 dated 4 January 1963 gave the Commander of the Fort wide powers in dealing with the press.

37. Minutes, Meeting of Defence Council, 14 February 1947.

38. Debates, 6 June 1947.

39. Ibid.

40. A Canadian/American protocol concommitant with the NORAD agreement was signed 20 June 1958.

41. Briefing on Fort Churchill (prepared by Commander for Visitors from NDHQ), 24 January 1960.

42. Minutes, Meeting of Army Establishment Committee, 6-8 June 1960 on file HQ 2142-P1 (AEC), 27 June 1960.

43. PCS 5425-C185, Vol. 1E, 15 July 1957.

44. U.S. Department of the Army file AGPO-AD 093.T13, 21 June 1950.

45. Briefing Operation Top Side on file FC 5-3-2, 6 July 1948.

46. Conversation Colonel R. J. Carson/Tedlie, 25 November 1987.

47. Letter from Director of United States Corps of Engineers, Fort Belvoir, Virginia, to General Officer Commanding Western Command, 1 June 1961.

48. Strome Galloway, The General Who Never Was (Belleville: Mika Publishing Company, 1981), p. 283.

49. DPR-PN 16-57, 19 January 1957.

50. HQS 1360-34/338 and Priority Message 050415Z, February 1959.

51. Conversation Colonel R. J. Carson/Tedlie, 25 November 1987.

CHAPTER THREE

IN THE BEGINNING

Although the history of the Fort Churchill established by the Canadian Department of National Defence on the shore of Hudson Bay at the mouth of the Churchill River (Figure 3) in 1946 is a short one, the general area had a rich military history extending back to the seventeenth century.

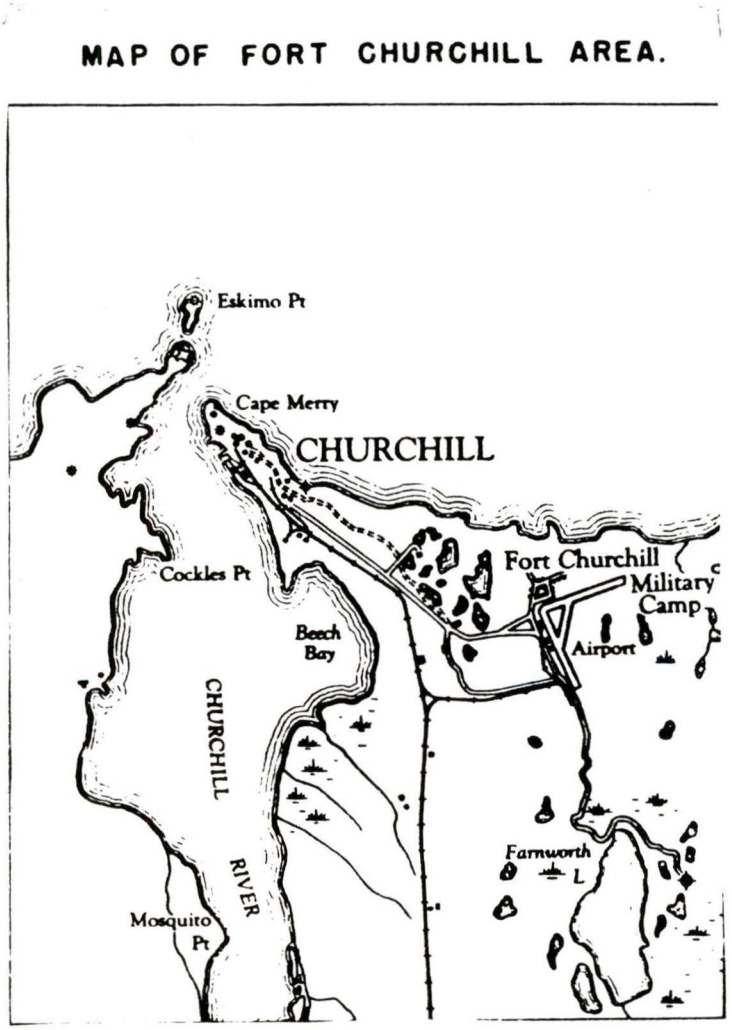


Figure 3

From: Fort Churchill (Ottawa: Queen's Printer, 1959) inside front cover.

The earliest explorers into Hudson Bay were, like most of their ilk, not interested in the Bay per se but were in search of that elusive northwest passage to the riches of Asia. Early maps indicate that Portuguese seamen knew of the Bay's existence as early as the sixteenth century, but it bears the name of Henry Hudson who sailed into the northern inland sea in August 1610. Close on Hudson's heels came Thomas Button in 1612, but neither Hudson nor Button appear to have paid any attention to the natural harbour existing at the mouth of the Churchill River. It was Jens Munck, the natural son of a Danish nobleman, who in 1619 established winter quarters up the river about four and one half miles from the entrance to the harbour. While they did not found a permanent settlement, Munck and the crews of his two ships were the first white men to establish themselves in the area of what later became Churchill, Manitoba.

The Churchill River was named in 1686 by the Deputy Governor of the Hudson's Bay Company (HBC), Captain Abraham, in honour of John Churchill, famous in military history as the first Duke of Marlborough. Aboriginal people had called the river Misinipi, a Cree word for "great water," a descriptive phrase which was applied to many different areas where large bodies of water existed.[1]

The first Fort Churchill was a wooden trading post established by the HBC in 1689. Its history is a short one for it was destroyed by fire the same year it was built. It was not until 1717 that Captain James Knight, the HBC governor of York Factory, ordered a new trading post to be built on the site of the one that had been destroyed.

Sixteen years later, resolved to erect at Churchill a permanent fortification capable of repulsing anticipated attacks from the French, the Company commissioned Richard Norton as chief factor at Churchill and charged him with this task. This time it was to be a stone fortress "built upon plans drawn by English Military Engineers to secure control of Hudson Bay for the Hudson Bay Company [sic] and England."[2] Construction of this new fort commenced in 1733 and was completed in 1771. Unlike the previous ones which occupied the east bank, the new fort was located on the west side of the estuary and was given the name Fort Prince of Wales.[3]

The Fort, when completed, was considered the strongest and most magnificent in the western hemisphere. The reason for a fortification of this nature on this northern site was that Britain and France were struggling for supremacy in the North American fur trade. A route through Hudson Bay was vital to trade between the western part of North America and Europe. Forts in the Churchill area were constructed by the British to guard this route and thus protect this trade. Fort Prince of Wales was constructed of squared stone blocks and gigantic boulders, but, despite this strength, it was not successful in meeting the challenge for which it was built. It was captured by a French fleet under Admiral Jean Francois de Galaup, Count de la Perouse, on 9 August 1782, without a shot being fired. Samuel Hearne, who was governor of the fort at the time, has been strongly criticised by his contemporaries for not putting up a fight to save the fort.[4] On examination it appears that such criticisms are unfounded. The record shows that Hearne had 39 men in his garrison--the French Admiral had 400. The fort boasted 40

guns--La Perouse's ships had 146. In addition, La Perouse had mounted mortars and field artillery pieces on shore within range of the fort. Hearne faced a hopeless task. Discretion was then, as now, the better part of valour.[5]

In the 1930s partial restoration of Fort Prince of Wales was carried out as a "make work" project for the unemployed during the great depression. (A visit to the restored fort was a popular feature on the itinerary of important visitors to Fort Churchill from 1946 to 1964.)

Since Confederation there were Canadians who had been lobbying for a port on Hudson Bay connected by rail to the grain fields of the prairies. Although the first sod on the proposed railway was turned on 9 October 1880, it was not until 1927 that Churchill, Manitoba, was finally selected as the location of the proposed port. From 1880 until the rail eventually reached Churchill on 29 March 1929, the railway to Hudson Bay was one of Canada's most controversial megaprojects. Designed to allow a shorter route from Canada to Europe, one of its early supporters, A. R. C. Selwyn, stated that the effect of such a railroad "would be to connect the finest grain-producing country in the world with the best market in the world."[6] However, there was strong opposition from a variety of quarters to the building of the railroad. Chief among the opponents were officials and stock holders in the Canadian Pacific Railway (CPR) who saw the proposed route to the Bay as a danger to the revenues the CPR derived from bringing grain from the heartland to the east by rail. Because of the political strength of those lobbying against the building of the railway, "the affairs of the Hudson Bay Railway became enmeshed in a web of political intrigue and

financial double-dealing so complex as nearly to defy explanation."[7]

Despite these difficulties and a suspension of construction during the Great War of 1914-1918, the road was completed in 1929. Although it never lived up to the bright promise held for it by its early supporters, it did play a major part in bringing the necessary personnel and supplies to the site where Fort Churchill was being built. It also continued to be the main means of delivering logistical support to the Fort during the years the Fort existed.

The modern military base at Churchill, Manitoba, was originally constructed in the 1940s by the United States as part of the Crimson Route. This route, which was also known as the North East Staging Route, consisted of a series of airfields which would allow short range aircraft to be ferried from North America to Europe.

The story which has long been popular is that the airfields were constructed so that there would be a route which could be used for the speedy evacuation of the heavy casualties expected when the Allied Forces invaded North West Europe. Kenneth Eyre states that he was unable to locate any official documents "that suggest even remotely that this was ever a real purpose of the Crimson Route."[8] (I too have been unable to discover any official information other than that the route was intended for ferrying fighter aircraft to Europe.) However, if one considers the size of the hospital that was constructed at Churchill and the references made to its intended use for battle casualty evacuation by various authors,[9] there is some indication that the Churchill base may have been intended to succour wounded service men and women. Regardless of its intended use, medical evacuation or ferry route, it

was never used for either purpose.

Initially officers of the United States Army Air Force's Ferry Command visited Ottawa on 28 May 1942 to discuss the details of the proposed Crimson Route prior to presenting an official request for permission to use Canadian territory and soliciting Canadian technical assistance and advice for the project. These American officers confirmed "that the project was initiated by a directive from the President, and was given first priority by the War Department."[10] They also stated: "The United States are prepared to pay for the whole or any part of the development, undertake survey and construction and to furnish necessary defences for the route."[11]

On 8 July 1942, the Canadian War Committee agreed that "construction of the aerodrome at Churchill is to be undertaken by the United States, who will be asked to accept responsibility for the provision of such defences as Canada is not in a position to provide and the Canadian staff may deem necessary."[12]

This Crimson Route base at Churchill, the framework on which the modern Fort Churchill was built, had a fitful early life. After a stuttering start in 1942 there were various modifications to the original plan, and many rumours circulated to the effect that the United States was to abandon the Crimson Project in its entirety. However, in July 1943, the decision was taken that all construction at Churchill fifty percent or more completed would be finished in accordance with the original plan. The reason for this decision was said to be "in order that the Crimson Route may be made available for sending planes to Europe if, at a later date, strategic conditions render such a movement

over that route advisable. . . ."[13]

The Crimson Route base at Churchill was included in the overall agreement between Canada and the United States with respect to the post-war disposition of defence projects, installations and facilities built, or provided by, the government of the United States in Canada during World War II. These agreements were suggested by the PJBD as a result of their meeting held on 13 January 1943 and were subsequently ratified by an exchange of notes between the two countries dated 27 January 1943. Despite these agreements, considerable time transpired before they were eventually effected. There was evident reluctance on the part of Canadian authorities to accept the responsibility for northern bases which were known to be expensive to maintain.

In November 1944, the Canadian Chairman of the PJBD reported to the board that "The Canadian Chiefs of Staff in October considered the defence aspects of the Crimson Route. It was agreed that the aerodromes of the Northeast staging route were not important from a defence aspect and that the maintenance of defence forces at The Pas, Churchill and Southampton Island was no longer necessary."[14] Following on this decision by the Chiefs of Staff came a statement from the United States pointing out that they had completed a survey of the Crimson Route airfields with a view to their being taken over by Canada.[15]

In January 1945, with the war winding down, the matter of the Canadian takeover of northern air bases was again discussed by the PJBD, but no decision was reached because "the Canadian Government had not come to any final conclusion about taking over the fields, since problems of maintenance require further study."[16] By August 1945 the

decision had been taken by the Canadian authorities to accept the base at Churchill as a Canadian commitment, but it was the Department of Transport, not the Department of National Defence, who accepted custody of the property. In May 1946, the Secretary of State for External Affairs informed the Canadian Ambassador to Washington that the airfield at Churchill would be maintained in operating condition by the Department of Transport until 1 October 1946.[17] On 24 September 1946, a week before that deadline arrived, the Canadian Army took possession of the property on behalf of the Department of National Defence.[18]

The decision by the Department of National Defence to take over the Crimson Route base from the Department of Transport was not arrived at easily. Some members of the House of Commons, and in particular Robert Simpson, the member from Churchill, Manitoba, were more concerned about the hospital facilities that the Americans had left behind than they were for the base itself. The Minister of Transport, Mr. McIlwraith, was questioned in the House on 20 May 1946[19] as to whether the federal government had taken over the American Military Hospital at Churchill and, if so, what disposition was being made of it. The reply was that the hospital had indeed been taken over, but, because it was surplus to the requirements of the Department of Transport, it was in the process of being reported to Crown Assets Allocation Committee for disposition.

On 17 June 1946, the questioning in the House of Commons switched to the Minister of National Health and Welfare, Brooke Claxton, and he was asked whether the hospital had been taken over by his Department. In reply he stated that it had not been but, on being

questioned as to the hospital's future, he further stated that "I am not familiar with the situation of the United States hospital at Churchill."[20] It is interesting to note that when Mr. Claxton switched portfolios from Health and Welfare to Defence he became familiar with not only the hospital but the base in general and became one of the strongest supporters of its military activities.

Before Fort Churchill became an official unit of the Canadian Army the facilities of the Crimson Route airbase had been utilized for a programme of equipment tests during the summer of 1946. All General Officers Commanding and District Officers Commanding were informed on 19 June 1946 that "Authority has been granted to conduct a programme of equipment tests this summer at Churchill, Manitoba: this programme to be known as the Churchill Project."[21] The letter of authority named the people who would man the project and stated that they would conclude operations by 31 August and be returned to their parent units by 8 September.

Major R. E. Nourse of the Royal Canadian Artillery was named as officer commanding the project. Nourse did not return to his unit at the end of the project but assumed the duties of Administrative Officer when Fort Churchill became an official organization later in September. Nourse was not alone in becoming a longer term Churchill resident. A review of the list of personnel[22] assigned to the original Churchill Project indicates the names of three officers in addition to Nourse who made major contributions to the early life of the newly-created Fort Churchill. Captain B. P. O'Connell of the Royal Canadian Dragoons became the first officer in charge of the training wing; Captain

E. J. Carey of the Royal Canadian Ordinance Corps became the second-in-command of the large ordinance depot which was required when the Fort commenced full-scale operations. Lieutenant H. E. Koehler of the Royal Canadian Corps of Signals became the communication chief for the first three years of the Fort's existence.

The Churchill Project employed seven officers and fifty-four other ranks on administrative duties and six officers, twenty-two other ranks and four civilians on the test teams. In addition, five observers were in attendance from three Army Headquarters organizations. Even in summer it was evident that conducting trials and tests under Arctic conditions required a heavy degree of administrative support. This requirement became even greater when cold weather trials commenced due to the heavy logistical burden caused by having to heat accommodation, mess halls and indoor work spaces. Throughout the use of Churchill as a military base the disproportionate number of personnel employed on administration as opposed to those engaged in training, trials and testing was a constant source of complaint by those charged with the responsibility for personnel establishments in Ottawa. In military terms "the tail to teeth ratio" was always far too high.

Captain (later Lieutenant Colonel) J. A. Cameron, who was charged with conducting the summer tests in 1946 on behalf of the Royal Canadian Armoured Corps and who returned in the winter months of the same year to supervise cold weather testing, has vivid memories of the Churchill Project. He found that the lighter tracked vehicles, if handled with care, could traverse the local terrain in summer, whereas the heavier vehicles such as tanks and tractors were completely

incapable of any off-the-road movement. In winter, all tracked vehicles had a high degree of cross country mobility, but unless the motors were kept running it took considerable time and trouble to start them. Herman Nelson heaters were used to thaw out the engines, and at -40° F without heated cover it sometimes took up to three days to get tanks mobile. Cameron's major criticism of the 1946 activities was the military's reluctance to accept methods which the residents of the town of Churchill and the surrounding territory had found useful in surviving the rigours of northern life. There was a disinclination in the military to follow local practices on such matters as cutting ice for water supply or the erection of snow fencing to protect the roads from drifting snow. Complicated equipment was brought from the south to perform these functions, and in the main this equipment did not work.[23]

There was a confusion of nomenclature throughout Fort Churchill's life as a modern military base. As we have seen, the first military activity in the summer of 1946 was carried out under the title of the Churchill Project, but the name Fort Churchill was adopted in the fall of that year. Thus a new Fort Churchill came into being over 250 years after the original Fort Churchill had been built.

Although the name Fort Churchill was employed to denote all the area used for the military activity in the region, the component parts had names which were many and varied. The term used to describe the Canadian Army component of the Fort was the Combined Experimental and Training Station. The Royal Canadian Air Force called their organization at the Fort the Joint Services Experimental Station (JSES). The original Royal Canadian Naval station at Churchill in 1943 was a

detachment of HMCS Bytown of Ottawa. On 1 December 1950, the detachment was commissioned as HMCNRS Churchill. Later the letters NR (for Naval Radio) were dropped from the unit's designation, and, until its eventual closing in 1965, it was officially known as HMCS Churchill. The scientific work conducted by the Defence Research Board (DRB) was controlled by the Defence Research Northern Laboratory (DRNL).

The United States Army Unit which was stationed at the Fort from 1947 until its withdrawal on 1 June 1961 was first known as the 7099th Area Service Unit, First Arctic Test Detachment, U.S. Army, and later as the U.S. Army Arctic Test Centre. The United States Air Force who managed American activities at the airfield during the time it was used as a SAC refuelling base, was known as the USAF 3949th Air Base Squadron.

When rockets were first launched from Fort Churchill in the early 1950s with the Canadian Army the principal user, the launching and landing areas were referred to as simply the rocket range. When rocketry began to play a prominent part in the United States activities at the Fort, the term Rocket Research Facility (RRF) came into use, and the American presence was controlled by a detachment from the United States Army Ordinance Corps Missile Command. Later when this control became vested in the USAF the name Churchill Research Range was adopted. In 1974, when a fitful attempt was made to revive the base as an Arctic training centre, the unit formed was named Canadian Forces Station Churchill.

Those with an intimate knowledge of the place always used the generic term Fort Churchill to include all the units serving at the

camp, but the plethora of names confused many who wrote about the camp. Some writers attributed all the activities being conducted to one of the units lodging on the base. This is particularly noticeable in an otherwise excellent article[24] on defence operations in Hudson Bay written by Margaret A. Carroll who refers to the overall activity as taking place in the Joint Services Experimental Station which, as noted above, was the name of the original Royal Canadian Air Force unit, a major but not the most important, player in base operations throughout most of the Fort's existence. James Eayrs perpetuates this mistake in citing Carroll in Peacemaking and Deterrence.[25]

Fort Churchill was officially brought into being by a Canadian Army instruction[26] dated 24 September 1946. The instruction confirmed that Lieutenant Colonel D. C. Cameron had been appointed as the Fort's first commander and that the initial personnel establishment was 300 Canadian Army, 134 United States forces, 100 Royal Canadian Air Force and 15 Royal Canadian Navy. The letter stated that personnel posted to the base would serve for a period of two years and should be, as far as possible, unmarried, because no married quarters were available . On 21 July 1947, the length of the tour of duty was changed.[27] By that time some emergency married quarters had been created out of the existing buildings, and key personnel were allowed to be accompanied by their families. Troops in that category continued to be assigned for a two-year tour, but for those not accompanied by their families the tour was reduced to one year. The same order defined the mission of Fort Churchill in the following terms:

The purpose of Fort Churchill is to establish an experimental

and training station for Canadian Services, Defence Research Board (DRB), and the U.S.A. Forces in order to develop the art of warfare in the Canadian Arctic through study, experimentation and training.[28]

Appendix X to the order of 21 July 1947 portrayed a line diagram on how command and control of the station would be exercised. This diagram (Figure 4) represented a staff officer's view of the command structure and was more honoured in the breech than in the occurrence. It was considered by those on the ground to be unduly bureaucratic and restrictive. Note should be taken of the fact that the Royal Canadian Navy's detachment was not placed under the administrative control of the Fort Commander.

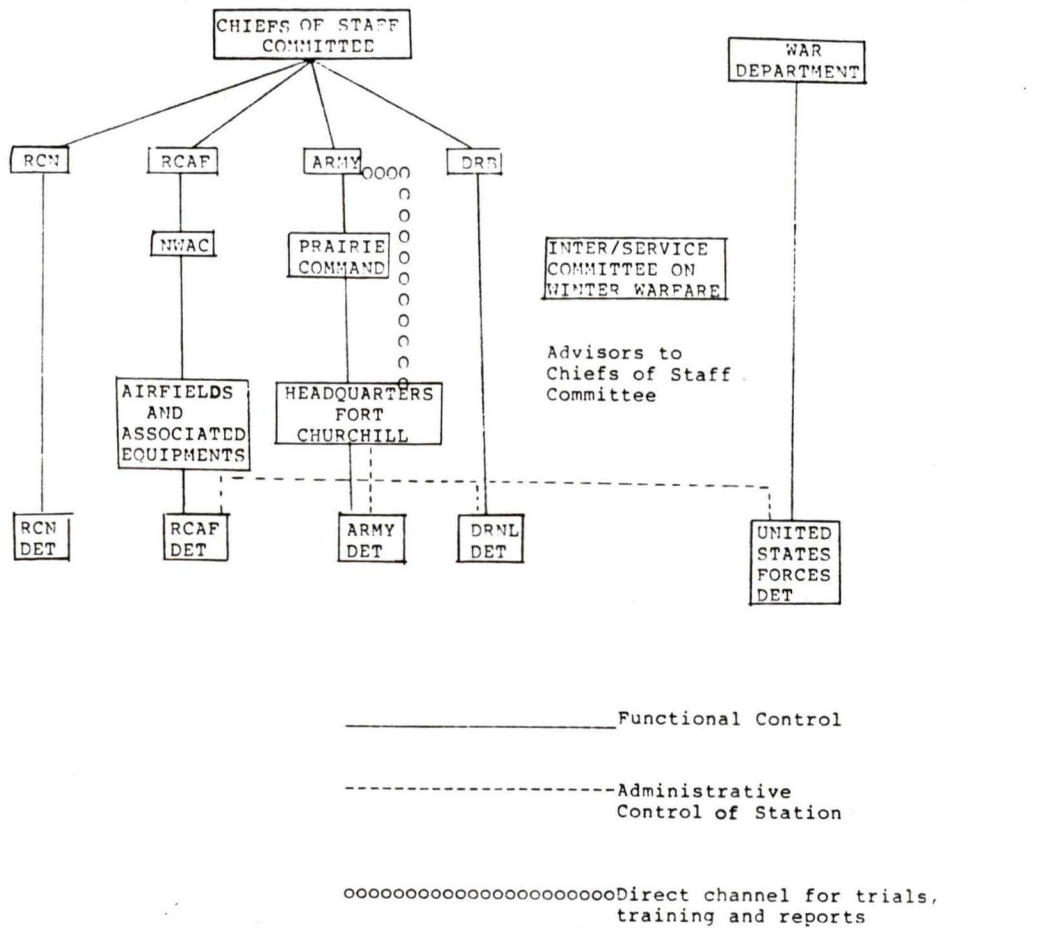


Figure 4

Traditionally the military have always been strong on discipline and powers of command. Thus, when a military unit was brought into being whose permanent members were drawn from all three Canadian armed services and the United States, it was necessary for a series of orders to be promulgated to ensure that good order would be assured and that the power of various officers to command the troops on the base was clearly understood by all concerned.

The Canadian Chiefs of Staff Committee agreed that it would be necessary to issue an order giving reciprocal powers of command between all three services.[29] The United States agreed that they too would issue a like order. The necessary order was issued to the Commanding Officer of the United States Forces in Churchill by the Adjutant General at the War Department in the following terms:

> In order that the United States Forces serving at Fort Churchill may work harmoniously and efficiently with the Canadian Armed Forces, the following is ordered:
>
> > Members of the United States Army Forces serving at Fort Churchill are hereby directed to obey the standing orders of the Canadian Commanding Officer of that station, and in addition thereto, to obey the orders or instructions of officers and non-commissioned officers of the Canadian Forces superior to them in relative rank.
>
> Failure to obey the terms of this order will render the individual offender liable to disciplinary action by proper United States military commanders.[30]

The quid pro quo by the Canadians required more than one order in the pre-integration days of 1947 so each of the three service chiefs issued orders stating that their sailors, soldiers and airmen respectively would obey their seniors in the other two services and also the United States Army.[31]

In all cases it must be noted that powers of discipline and/or punishment were reserved for the armed service to which the offending member belonged. In other words, seniors were empowered to give orders to their juniors regardless of service or nationality, but, if their juniors failed to obey, they had to be handed over to their own organization for punishment. There is no indication in the records that these regulations were ever violated. In fact, once arrangements were made to ensure that personnel with a history of disciplinary problems were not posted to Fort Churchill, the camp had a remarkable record of freedom from even minor offences.

The order of 21 July 1947 contained information as to how personnel could travel from Ottawa to Churchill and supplied schedules of rail and air service.[32] Travel from Ottawa by train took a total of eighty-seven hours and fifty minutes and the return journey took even longer--ninety-seven hours and ten minutes. Despite the slowness of the train, the trip on the Hudson Bay Railway from Winnipeg to Churchill was a fascinating one. Many of the Canadian and American service personnel had their first taste of northern living when they boarded the "Muskeg Express" at Winnipeg.

Although the original instruction of 21 July 1946 stated that Treasury Board approval was being sought to pay a special northern allowance to those who were selected to serve at Churchill, the question of additional recompense got off to a rocky start. In 1947, the Interservice Committee on Financial Regulations (ICFR) objected to northern allowances being paid to service personnel who were posted to Fort Churchill.[33] The reasons for the objection rested on the fact

that, because the Fort was connected to southern Canada by a railroad, it was not truly isolated and that its location at 58 degrees 46 minutes North Latitude did not place it north of the Arctic Circle. It was obvious that the members of this committee had neither travelled on the Hudson Bay Railway nor spent a few days snowed in at the Fort. The members of Defence Council took an altogether different view of the situation and overruled the ICFR, stating that the granting of northern or isolation pay did not come under the purview of the committee, and that this was a matter of armed service policy which would be settled by the service heads.[34]

In the event, an isolation allowance was granted with married personnel, regardless of rank, receiving $87.50 per month and single personnel, $33.60. By the time the Fort came to an end in 1964 these amounts had been raised to $175.00 for married men accompanied by their wives and $100.00 for single personnel. The amount was not excessive, especially in the case of a married man who had to put food on the table for his family. The price of food items at both the Hudson's Bay store in the townsite and the Commissary in the camp, was much greater than that for comparative items in Winnipeg due to shipping charges. It was also necessary to supply a diet of high caloric value as defence against the cold. This, in combination with the increased costs of additional cold weather clothing, soon dissipated the extra allowances received by the married serviceman. However, in pre-medicare days, living in Fort Churchill had a special advantage for military families because all medical expenses were met by the Crown.

The first official report issued about the activities taking

place at Fort Churchill was published by Canadian Army Headquarters under a secret file HQS 726-40-17-7 on 21 July 1947. The report was declassified at my request on 3 September 1987. It outlined the activities which had taken place at the Fort during its first complete winter of operation.

It was stated in the report that due to a shortfall in the accommodation construction programme planned for the preceding summer the personnel establishment laid down in the initial order had to be manned at a lower order. This resulted in a manning of 281 Canadian Army, 30 Royal Canadian Air Force, 50 United States Army, 1 Defence Research Board and 10 Department of Transport personnel. The Royal Canadian Navy manning was not included in this report because their personnel were not accommodated on station. Thus the posted strength of Fort Churchill, excluding the Navy, totalled 372 all ranks.

The report pointed out that newly approved establishment figures based on perceived need called for 356 Canadian Army, 56 Royal Canadian Air Force, 100 United States Army, 10 Department of Transport and 1 Defence Research Board for a total of 523 all ranks exclusive of the Navy. The personnel shortfall of 151 all ranks from this approved establishment had seriously inhibited the work the commander of the Fort wished to accomplish, and some of the trials which had been scheduled were transferred to Shilo, Manitoba, where adequate accommodation was available.

The Canadian Army organization of the Fort was described in the report as consisting of a headquarters and three wings, Training, Planning and Reporting, and Administrative. Headquarters Fort Churchill

was charged with the overall command and control of the Fort and the implementation of operational instructions received from Army Headquarters in Ottawa and administrative instructions issued by HQ Prairie Command in Winnipeg.

The Training Wing's mandate was to conduct Arctic indoctrination courses of two weeks' duration for the members of all trial and test teams operating out of the Fort. The object of this indoctrination training was to familiarize personnel of test teams with the fundamental principles of living out-of-doors under Arctic conditions.[35] In addition, the Training Wing was charged with the responsibility of conducting Arctic Instructors' Qualifying courses of six weeks' duration. The object of these courses was to qualify instructors in basic Arctic training. When qualified, these instructors were capable of organizing and conducting winter warfare exercises at their home stations or preparing formed units for service in Arctic areas. In 1949, these Fort Churchill trained instructors conducted winter indoctrination courses at Valcartier, Petawawa, Shilo and Wainwright for a total of approximately 400 personnel.[36]

The Planning and Reporting Wing had the responsibility for taking action on the requests received from various agencies to test equipment under Arctic conditions. This included arranging technical details of the various tests and trials with the members of the test teams and preparing reports on the results. Effecting liaison with the other wings to ensure that the necessary training and administrative support were made available to the test teams was a further function of the Planning and Reporting Wing.

The Administrative Wing was responsible for supplying the administrative support for all the units stationed at the Fort. This included the provision of dining facilities and sleeping accommodation and the operation of canteens, messes and recreational facilities. The efforts of individual service units charged with performing specific services such as engineering and transport were co-ordinated by the Administrative Wing.

The report pointed out that it was necessary to construct makeshift satellite camps in the vicinity of the Fort to make up for the accommodation shortfall. These camps were used to house United States Army test teams from the Quartermaster, Transportation and Signal Corps.

Although the report stated that the trials and tests conducted were successful, that 79 all ranks, including 17 U.S. Army personnel, had passed the indoctrination course, and that 53 all ranks had successfully completed the instructors' course, it was essentially a downbeat document. In addition to the lack of adequate accommodation and personnel shortages, the report pointed to other areas of inadequacy.

First, the railway spur line from the railhead of the Hudson Bay Railway at Churchill into the Fort was sited in such a way that it was choked by drifting snow for a large portion of the winter thus creating major problems in bringing bulk supplies to the Fort.

Second, the wrong type of soldier was being posted to the various establishment vacancies. The report was not particularly specific on this point, but it became a matter which caused untold problems for the first four years of the Fort's existence. Fort Churchill which, in most cases, drew its other rank general duty

personnel from existing armoured, artillery and infantry units, presented a convenient repository for misfits and malcontents who did not conform to regimental discipline. As a consequence, a disproportionate number of general duty soldiers with long crime sheets (MFM 6) were posted to the Fort. It was evident that some commanding officers and/or their adjutants were using a posting to Churchill as a substitute for further disciplinary action against their miscreants or as a means of relieving the regiment of a disciplinary problem. The situation was corrected, at least from the official point of view, with the publication of Canadian Army Order (CAO) 271-7 Establishments in Northern Canada--Selection and Posting. This order which went through many amendments contained the instruction that "Commanding officers will ensure that members nominated for postings to establishments in Northern Canada are of good character and behaviour, free of obvious personal or family difficulties . . ." and "it is imperative that other ranks who have a record of misconduct or who are thought likely to become military offenders are not [to be] selected for such postings."[37]

Third, another personnel problem was cited but this time not from a disciplinary point of view. The various military tradesmen who had arrived at the Fort were in some cases not trained to a high enough standard to allow them to function independently as they were frequently called upon to do on an isolated station.

Finally, this report pointed to the problems the Royal Canadian Electrical and Mechanical Engineers' detachment at Churchill had due to the lack of a proper workshop. This was a serious deficiency because the equipment sent by rail for testing at the Fort during the winter of

1946-47 arrived at the railhead in appalling condition. Engines and batteries were frozen solid, oil lines had split and frost damage caused "great delays" in getting the scheduled trials and tests underway. Obviously no attempt had been made to prepare the equipment to withstand the Arctic cold it had experienced on its long rail trip. It would appear that, whatever previous experience the Canadian Army had in the north, little or anything had been learned about the effect that extreme cold had on military equipment. Perhaps it would be fairer to say that what had been learned had been soon forgotten. This seems to be a constant in Arctic development undertaken by the military. Much unnecessary effort is expended in re-inventing the wheel.

As a substitute for a proper workshop it had been necessary to rent the Hudson Bay Railway roundhouse situated five miles from the Fort. This was a patently unsatisfactory situation requiring an urgent remedy and the necessary planning, according the workshop top priority in construction, had been put in train.

While the report did not, with one exception, mention trial team personnel by name, the exception was an important one. We are informed that a test of United Kingdom military clothing and equipment was carried out under Canadian Defence Research Board auspices. A team of thirteen Canadian soldiers was placed under the direction of a famous British Arctic explorer, Andrew Croft. At that time a Lieutenant Colonel in the British Army, Croft was the possessor of the Polar Medal awarded for Arctic exploration. In future years he was to be of inestimable help to Canadian scientists and service personnel in their northern endeavours because he was an Arctic traveller of the highest

order who shared his expertise without let or hindrance with those who sought his advice. Croft was a man who was able to see the problem of northern fighting in winter in a pragmatic no-nonsense way which endeared him to Canadian soldiers. At the onset there had been much discussion among the scientific community as to what experiments would have to be carried out and under what conditions of geography these experiments should be conducted. Croft's opinion in this regard was:

> There are only two training techniques to study and learn:
> (a) To live and fight north of the tree line
> (b) To live and fight south of this approximate line.[38]

His advice was followed and much valuable time was saved by adopting this two-pronged approach to both training and research and development.

It is apparent that the first annual report submitted by the Commander of Fort Churchill did not find great approval at Army Headquarters. No doubt it was because it outlined the many problems encountered in the first complete year of the Fort's operation, problems which, in most cases, could be attributed to inadequate work by the planners at Army Headquarters. The report was not put on the general circulation such documents normally received. In a letter under file of HQS 726-40-17-7 (DWD 2) dated 6 February 1948, it was stated that the report would not be circulated, but those seeking information on specific trials or tests could obtain same by applying to the Directorate of Weapons Development.

Notes

1. James F. Kenney, ed., The Founding of Churchill (Toronto: J. M. Dent and Son, 1932), p. 57.

2. From the plaque erected by the Historic Sites and Monuments Board of Canada in 1931 at the ruins of Fort Prince of Wales.

3. The Dictionary of Canadian Biography states that the original name was Prince of Wales's Fort, but the modern style, Fort Prince of Wales, is used throughout this thesis.

4. Gordon Speck, Samuel Hearne and the Northwest Passage (Caldwell, Idaho: The Caxton Printers, 1963), p. 802.

5. See J. A. Davidson, "The Preposterous Fortress of the North" in Canadian Geographical Journal LXI, October 1960, pp. 124-29.

6. Montreal Witness (Montreal: 12 December 1879) cited by Grant McEwan in The Battle for the Bay (Saskatoon: Western Producer Book Service, 1975).

7. Howard A. Fleming, Canada's Arctic Outlet (Westport, 1978), p. 32.

8. Kenneth Charles Eyre, "Custos Borealis" (Ph.D. dissertation, King's College, University of London, 1981), p. 118.

9. For examples see M. F. Coffey, "Human Engineering and Other Recollections" in Defence Research Northern Laboratory 1947-1965 (Ottawa: Report No. DR 179, 1966), p. 59, and J. K. Langeman in Collier's, 12 February 1949.

10. Memorandum from the Deputy Chief of the Air Staff to the Minister for Air dated 20 May 1942.

11. Ibid.

12. Undated memorandum from Colonel J. H. J. Jenkins, Director of Operations and Plans, to Major General M. A. Pope, Canadian Legation, Washington.

13. Memorandum for members of the Permanent Joint Board on Defence (PJBD) from Chairman, American section on File PDB 149-11 dated 29 July 1943.

14. Canadian Army Progress Report to the PJBD under cover of HQS 5199-W-1 FD.63 (DMO+P) dated 4 November 1944.

15. United States Army Progress Report to PJBD dated 16 January 1945.

16. Journal of Discussions and Decisions of PJBD meeting held in Montreal, 22-23 January 1945.

17. Telegram EX 1294 dated 14 May 1946.

18. HQS 9012-568 (AG Co-ord) dated 24 September 1946.

19. Canada, Parliament, House of Commons, Debates [hereafter Debates] 20 May 1946, p. 1673.

20. Debates, 17 June 1946, p. 2578.

21. HQC 9012-12-566-1 (Org 1A) dated 19 June 1946.

22. Ibid., (Appendix A).

23. The information in this paragraph is from an interview Lieutenant Colonel Cameron/Tedlie, 18 October 1988.

24. Margaret A. Carroll, "Defence Operations in Hudson Bay" in Science History and Hudson Bay, Vol. 2, C. S. Beals, ed. (Ottawa: Queen's Printer, 1968), p. 901.

25. James Eayrs, In Defence of Canada, Peacemaking and Deterrence (Toronto: University of Toronto Press, 1972), p. 355.

26. HQS 9012-568 (AG Co-ord) dated 24 September 1946.

27. HQS 726-40-1 (Appendix J) dated 21 July 1947.

28. Ibid.

29. Minutes, Chiefs of Staff Committee Meeting, 7 January 1947.

30. AGAO-C259 dated 5 May 1947 WDGPO signed by Major General Edward F. Witsell, The Adjutant General, War Department, Washington, D.C.

31. Navy: NS 4250-14 Vol. 1 dated 12 March 1947; Army: HQ 142-14-3 FD3 (Adm B2A) dated 19 March 1947; Airforce: S19-66-1 (DPA) dated 7 March 1947.

32. HQS 726-40-17-1 (Annexure 1) dated 21 July 1947.

33. There is an interesting comparison with the attitudes of Canadian bureaucrats in 1919 who "declined to pay the equivalent of the additional daily British Arctic allowance of one shilling for NCOs and sixpence for privates" to Canadian soldiers serving in northern Russia. Here too the decision was eventually reversed but not before ". . . their ineligibility was resented not only in itself; it became a focus for the frustrations and perplexities of men still in combat duty . . ." Ray MacLaren, Canadians in Russia, 1918-1919 (Toronto: Macmillan, 1976), pp. 104-5.

34. Minutes, Defence Council Meeting, 2 July 1947.

35. Report of the Department of National Defence for the Fiscal Year ending March 31, 1947 (Ottawa: King's Printer, 1947), p. 33.

36. Report of the Department of National Defence for the Fiscal Year ending 31 March 1949 (Ottawa: King's Printer, 1949), p. 46.

37. This CAO 271-7 dated 12 June 1961 which is quoted was a supersession of a series of orders on this subject which had previously been published under the same numerical designation.

38. Memorandum Lieutenant Colonel Andrew Croft, Arctic Research

CHAPTER FOUR

A NEW FORT CHURCHILL

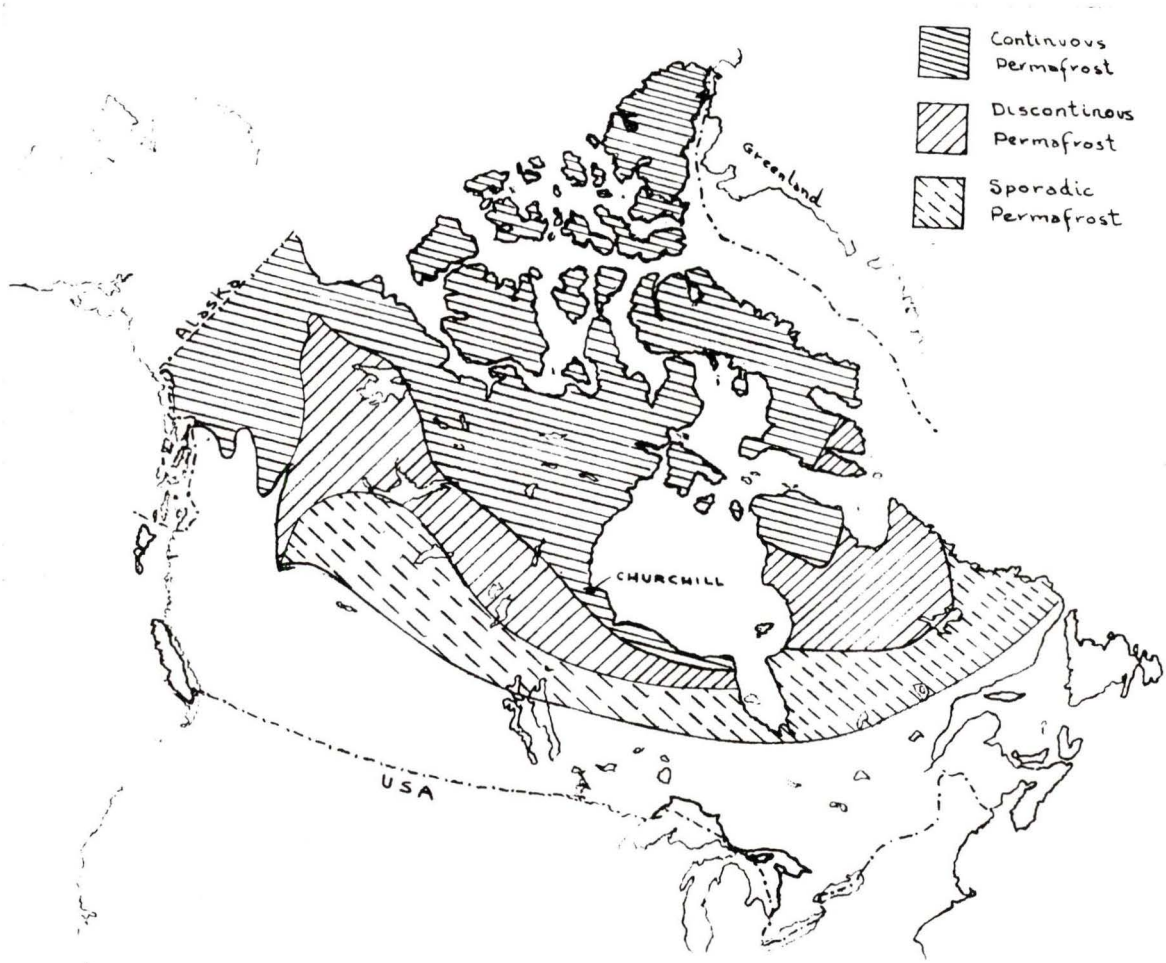
It was readily apparent that the accommodation which had been built for the Crimson Route base at Churchill in wartime was totally inadequate for a peacetime military establishment. Margaret Carroll describes the conditions the Canadian Army discovered on arrival at the base:

> There was no running water; sewage was collected in chemical tanks throughout the camp and trucked away for disposal in the tidewater of Hudson Bay. Individual huts were heated by oil trucked from the townsite, five miles away. . . . Water supply is always a problem in Arctic regions. Shallow lakes freeze to the bottom. Blocks of ice are then cut and either melted down in a central plant or delivered to individuals for melting. These were just a few of the housekeeping problems during the first years of Fort Churchill.[1]

At a meeting between Canadian and American officials in April 1947 with Major General Churchill Mann, the Canadian Vice Chief of the General Staff, in the chair, it was stated that "FORT CHURCHILL is to be a permanent station. Therefore the long-term construction must be based on the provision of permanent installations."[2]

The construction problems involved in building a "permanent station" in a northern area were many, and some of them were unique. Churchill is situated in what is known to scientists as an area of continuous permafrost (Figure 5). This means that in the Churchill area there is only a shallow layer of soil which thaws in the summer. Beneath this active layer the soil is permanently frozen. The problem of building on permafrost and the attendant problem of being unable to

effect utility distribution below ground presented a formidable challenge to the military engineers charged with turning a handful of tarpaper shacks into a camp provided with "permanent installations."



Map drawn by Giles Perodeau

Figure 5

The transfer of all utilities from their main sources to individual buildings was achieved by constructing enclosed insulated conduits called utilidors. Three sides of these conduits were constructed from cement slabs impregnated with eel grass. The fourth side, forming the top of the utilidor, was made of hardwood treated with

copper sulphate. Within these utilidors were all the pipes and cables necessary to deliver the required services plus the sewers to carry away waste. The internal heat in the utilidors, necessary to prevent freezing, was supplied by removing the lagging from the hot water lines at regularly spaced intervals. The heating of the utilidors had one drawback; they became a snug harbour in an otherwise hostile environment for a variety of insects, particularly silverfish. From time to time it was necessary to fumigate the utilidors to free them from these unwelcome guests.

One of the gravest problems facing the military engineers was water supply. Lake Isabel lay within the camp boundaries, and initially it supplied the necessary water to satisfy the needs of the Fort. However, in cold weather even the initial small population put a strain on the lake's capacity to produce because the water had to be drawn from below the ice level. The lake was a shallow one, and the water coming from close to the bottom of the lake had a high content of suspended solids. As the population grew the Lake Isabel supply proved inadequate, and water was then also drawn from the Churchill River. In the winter, to prevent freezing, the water from both lake and river had to be heated and stored in a huge water tower on high ground before being distributed throughout the Fort by gravity feed.

Sewerage presented another problem for, although raw sewage was carried to an outfall into Hudson Bay well beyond the tide line, it was necessary to heat the effluent to ensure its flow in cold weather.

It is difficult to trace the actual progress of the new construction at Fort Churchill because the main Department of National

Defence files entitled "DND 5115-C185 Construction and Maintenance--Fort Churchill," 13 volumes in all, were destroyed.[3] However, progress reports submitted to the PJBD and minutes of various meetings and conferences held in connection with the construction programme as well as the annual historical reports submitted by the Fort authorities give a good idea of what took place. The initial funds set aside to make a start on building this permanent station were extremely modest. The Canadian Army contributed $300,000, the Royal Canadian Air Force $24,000, the Director General of Defence Research (later the Defence Research Board) $75,000 and the United States War Department $350,000 (in United States currency). The United States had agreed to financial participation in the improvement of the station to the extent of this amount as a result of an agreement signed on 28 March 1947 between the two countries.

The minutes of the April 1947 meeting contained an appendix outlining a tentative construction programme for the 1947-48 Fiscal Year calling for an expenditure of $746,500 of the allotted funds.

The programme got under way as planned. A report issued by the Department of Works and Accommodation dated 15 September 1947 stated that 58 carloads of construction material had already arrived at the railhead in Churchill and that 11 additional carloads were in transit. In addition, 200 tons had arrived by sea and 80 tons had been brought in by the Royal Canadian Air Force Air Transport Command. Despite this progress the report stated: "it is now obvious that completion of the 1947 Building Programme is impossible."[4]

The new construction at Fort Churchill did not go unnoticed in

the Soviet Union. Izvestia reported in its issue of 18 February 1947 that Canada was engaged in the "construction of barracks in northern ports."[5] Because no other major defence construction was taking place in the Canadian north at the time, it was obvious that the new construction at the Fort was the target of the Izvestia report.

As if in anticipation of Soviet reactions to activities at Churchill, the Secretary of State for External Affairs broached the subject of whether it would be possible for foreign military attachés to visit the base. The Minister of National Defence replied that plans were in train to allow for such visits.[6] The foreign attachés stationed in Ottawa, including a Soviet major, visited the Fort in the spring of 1947. This action of allowing a Soviet visitor showed a certain amount of political courage on the part of the Liberal government because a previous visit by a Soviet officer to Churchill during Exercise MUSK OX led to the propriety of such a visit being questioned in Parliament. In the debate in reply to the Speech from the Throne on 21 March 1946, John Diefenbaker asked ". . . what is the justification for the government allowing a Russian officer, Major Peter Domishev, to go to Churchill on the MUSK OX expedition, and there to take pictures of our equipment which will be used in the north country in the event of war's ever coming to this land."[7] In allowing a return visit it was obvious that the government was more susceptible to Soviet suspicion than it was to opposition criticism.

One doubts that the Soviet Union ever had fears of any kind about Canadian military intentions in the north. What was behind their propaganda about Canadian warlike intentions was the knowledge that

American troops were resident on Canadian soil. The presence of United States forces in northern Canada was anathema to Soviet authorities. There is a theory held by some that the main reason many requests for a greater American presence at the Fort were turned down was not because of the threat to Canadian sovereignty they posed but because of the fear of Soviet reaction to more Americans in the Canadian north.

The Foundation Company of Canada became the principal contractors for the new construction at Fort Churchill and apparently carried out the work to the Department of National Defence's satisfaction because a review of the existing papers reveals that numerous minutes from the Committee of the Privy Council authorized extension of their work.

The fact that the Foundation Company had received so many contracts did not please His Majesty's Loyal Opposition. Mr. Davie Fulton, the member for Kamloops, stated that, in the year 1952 alone, the Foundation Company had completed $12,755,460.82 worth of work at Fort Churchill--and that their fee had been $516,634. He opined that such a sum was ". . . not small potatoes. Over half a million dollars in fees in connection with contracts awarded to one company in one year's public accounts."[8] Fulton went on to say that it was conceivable that up to 50 million dollars would be spent at the Fort and enquired: "Does this mean that the Foundation Company of Canada, just because it did the first work, is going to get all the contracts there?"[9] The Opposition also applied a certain amount of heat based on the lack of tendering prior to letting these contracts and the fact that they were let on a cost-plus basis. Mr. J. H. Dickey, the Parliamentary Assistant

to the Minister of Defence Production, pointed out that the sum quoted by Mr. Fulton for the year 1952 alone was incorrect and that this sum represented a cumulative total of all the contracts the Foundation Company had undertaken at Fort Churchill since 1948. Dickey also pointed out that various other construction companies had received contracts for work at the Fort.[10]

In 1949, authority was granted for the expenditure of a further sum of $4,133,000 to be spent on new construction at Fort Churchill but, after negotiations between the Minister of National Defence, Brooke Claxton, and the other members of Privy Council, this sum was divided in such a way that $1,533,000 would be spent in fiscal year 1949-50 and $2,600,000 would be carried over into future years.[11]

At this time the plan was to produce accommodation for 2,316 at the Fort, but, at a conference held on 23 September 1949 with the Chief of the General Staff, Lieutenant General Charles Foulkes, in the chair, the decision was taken to cut this accommodation figure back to 1,675 and to terminate construction when that figure was reached because costs of construction and maintenance were running so high. Five days later, on 28 September 1949, a construction conference chaired by the Commander was held at Fort Churchill and attended by engineering teams from Army Headquarters and Headquarters Prairie Command in Winnipeg. Here progress of the new construction to date was intensely reviewed and a future programme agreed upon which would conform to the restricted budget and the reduced accommodation target.

A report[12] submitted to the PJBD by the Canadian Chairman on 21 September 1950 shows that at 15 August 1950 new accommodation was

available for 952 officers and men, including 92 in permanent married quarters. The same report projected that by 31 December 1950, new accommodation for 1,319, including 148 in married quarters, would be available and that that figure would grow to 1,495 by late 1951. The report showed that the appropriate messes, workshops, garages, administration buildings, laboratories, hospital and recreation facilities had been constructed and that a one million gallon petrol oil and lubricant tank farm with a connecting railway spur would be in operation by 15 October 1950. Further, planning had progressed on producing a chapel, a school, a gymnasium, a commissary and a signals operating centre and these buildings would be ready for occupancy by the latter part of 1951.

In November 1951, a further report[13] to the PJBD revealed that all targets had been, or were being, met, but pointed out that, although the camp population had reached a total of 1,998 as of September 1951,[14] there was only permanent accommodation for 1,199. The shortfall of 899 was being met by continuing to use the old tarpaper huts for accommodation, a far from satisfactory situation for the huts were deteriorating rapidly. The authorities were reluctant to divert labour and money from the permanent construction programme to the repair of buildings scheduled for eventual demolition.

At a meeting held on 21 November 1951 it was announced that $1,100,000 would be available for new construction at the Fort during the 1952-1953 Fiscal Year. Great progress was made during this period, and the 1952 annual historical report revealed that 329 permanent married quarters were now ready for occupancy. These married quarters

were modern in every respect, radically different from the converted tarpaper huts of 1947. Also, by the end of 1952 the Fort had added a building which contained, amongst shops run by the regimental institutes, a branch of the Royal Bank of Canada[15] and a T. Eaton Company order office.

The cost of construction in Fort Churchill was far greater than it was in southern Canada. There were various reasons for this increased expense. The wages for construction workers, both labourers and tradesmen, averaged 25 percent more than the prevailing wages in Montreal. The transportation costs were very high on construction materials due to the vast distances they had to travel from the source of supply. One more reason was the additional cost of insulation material and heating equipment required in all buildings to combat the climate.

These higher construction costs can best be realized by comparing the price of the married quarters constructed at Fort Churchill in 1950 with the price of comparable dwellings in the south. The married quarters were built in blocks of four, and these four houses would have cost $50,400 in the south. In Fort Churchill they cost $100,340.[16]

These higher costs did not escape the notice of Parliament. In an exchange with C. D. Howe, the Minister of Trade and Commerce, on 6 May 1953, P. E. Wright, the member for Melfort, had this to say: "At Churchill they built a ten-room school and it cost $583,000. They built a similar ten-room school at Summerside for something a little over $199,000."[17] Wright went on to cite another example: "The same thing

applies to a chapel which they built up there which cost $165,000. The same size chapel was built out in British Columbia for $54,000."[18]

On the following day, 7 May 1953, J. H. Dickey, Howe's Parliamentary Assistant, made no reference to the Prince Edward Island (Summerside) or British Columbia costs implicit in Wright's question but pointed out that the President of Defence Construction Limited had explained that "costs at Churchill were running approximately about twice what they would be expected to be for similar construction in say Montreal or Toronto."[19] There were various reasons for this. "For instance, there was the necessity to provide additional insulation; expenditures to provide water, sewer and electrical service through covered passages rather than by underground services; and things of that kind." Insofar as the comparisons in cost made by Wright were concerned, Dickey pointed out that "it was impossible to deal with such comparisons unless one considered whether it was of comparable construction, when it was built, and matters of that kind."[20]

In these parliamentary exchanges, no mention was made of the additional costs which resulted from the experimental nature of the construction techniques being employed at the Fort. Prior to 1947 Canada had had little experience in large-scale Arctic construction projects, and, as a consequence, the architects and engineers at Churchill had to develop methods theretofore untried. This was initially a costly business for inevitably mistakes were made. However, the experiments proved of lasting value not only in the subsequent construction at the Fort but in other parts of northern Canada. A notable example was Inuvik, the town built on the Mackenzie River delta

in the late 1950s and the early 1960s to replace the old town of Aklavik. Here the system of utilidors and insulating techniques developed in the early days of Fort Churchill was used with great success.

The overall cost of new construction at Fort Churchill was kept under constant review. It was fully realized that construction costs, when coupled with the inordinately heavy heating and general maintenance costs, made Fort Churchill a comparatively expensive drain on the Department of National Defence budget.

In 1951, the camp engineer at Fort Churchill was requested by the Director of Works and Accommodation in Ottawa to prepare an estimate of what the annual engineering costs of operating and maintaining the Fort would be when the projected construction was completed. This estimate, based on approximately three years' experience, showed that annual heating costs alone would be $669,000, and operating the power plants would cost an additional $336,700. In addition, routine maintenance costs would run to $390,000 a year. The total engineering costs for these items was, therefore, $1,395,700, and this did not include the pay and allowances of the Royal Canadian Engineers, thirty-five in number, who were permanently employed at the Fort on these maintenance duties.[21]

In the same report it was estimated that since 1946 the Canadian Army costs for capital construction at the Fort were $10,000,000. It was pointed out that these figures did not include assets taken over from the United States government or capital expenditures by other government agencies.

Six years later, with much more experience to draw on and a much larger sample of construction costs and maintenance fees available for consideration, the Director of the Army Budget prepared a report[22] which reflected the actual cost of construction at the Fort charged to the Canadian Army between 1946 and 12 March 1956. This sum totalled $15,854,968 and was broken down into annual segments as follows:

1946-47	$ 60,450	1951-52	$4,668,444	
1947-48	386,658	1952-53	1,104,698	
1948-49	1,492,526	1953-54	285,030	
1949-50	3,118,360	1954-55	880,939	
1950-51	3,643,380	1955-56	214,483	(to March 12)

These figures were actual amounts expended, but the report also attempted a forecast of future expenditures which showed that the construction planned for the next three years would cost an additional $1,756,600. The report also included a projection of heating and maintenance costs for a ten-year period arriving at a figure of $13,500,000 for heating and $5,270,000 for maintenance.

The Director of the Budget also presented some additional actual annual costs incurred by the army in 1954-55 due to its occupation of Fort Churchill. He pointed out that special northern allowances paid to Canadian soldiers during the year amounted to $212,889 and that the cost of extra rations fed to the troops to supplement their normal issue amounted to $564,276.

It must be remembered that these figures represented only Canadian Army expenditures. The army was the major user, but what about the costs incurred by other branches of the Department of National Defence at the Fort?

For some time there had been in existence a Joint Committee on Fort Churchill Co-ordination (CFCC) consisting of senior officers of the three user services and the Defence Research Board. In 1956, this committee called for an overall review of expenditures made by the Department at Fort Churchill since 1946. They also asked for an estimate of the cost of proposed additional construction at the Fort and a ten-year forecast of fuel and engineering maintenance costs. When these figures were supplied,[23] they revealed that the construction costs incurred by all four Department of National Defence (DND) components in the first ten years of operation was $20,515,450. In addition to the army expenditure, $2,442,217 had been added on behalf of the navy, $1,811,042 on behalf of the air force and $407,233 had been expended by the Defence Research Board.

The proposed additional construction was costed at $6,689,600. The projected ten-year fuel cost was $17,200,000, and maintenance costs for the same period were estimated to be $8,340,000. Figures of this magnitude obviously prompted a long hard look at the future of such an expensive installation because the CFCC directed that a special working party be set up to develop a study from which a new long-term policy statement defining the role and future of Fort Churchill could be created. This working party, under the chairmanship of Colonel William P. Sheriff, met at the Fort in 1956 with all the users and potential users of Fort Churchill. Their final report concluded: "Fort Churchill is increasing in national importance and its existence to support military activities in the Arctic will remain the predominant factor for the foreseeable future."[24] The report pointed out that unless more

construction took place at the Fort serious cutbacks would have to be made in the activities planned by the various users. The policy statement arising out of this report was eventually approved at the 607th meeting of the Chiefs of Staff Committee.[25] The Committee also approved the dissolution of the CFCC, perceiving that it had accomplished the coordination it had been set up to achieve.

The additional construction called for in the working party's report eventually led to modern accommodation being made available to house 2,146 single people. This figure does not include the heads of families or their dependents who lived in married quarters. The actual population of the Fort at any one time after construction was completed "fluctuated between the 3000 and 3500 mark, men, women and children."[26]

The part Fort Churchill played in the construction of the Distant Early Warning (DEW) Line is worthy of mention. Starting in February 1955 the site survey teams commenced arriving at the Fort. They were given space in the Defence Research Northern Laboratory and the use of the photographic laboratory and drafting facilities. Later, a building near the airfield was converted for their exclusive use. It was equipped with the required teletype and telephone facilities plus the necessary copying and drafting equipment which allowed the teams to prepare the final reports on their surveys for presentation to the main contractors. The military staff at the airfield was kept busy looking after the various types of aircraft being used by the survey crews, and it was estimated that, during the height of the construction activity, planes were departing Churchill at the rate of three per hour. The Fort also supplied a reliable communication system for the various ships

operating in Arctic waters in support of building the line. Because these ships were frequently operating in a zone of maximum auroral occurrence they found on many occasions that it was impossible to transmit high frequency traffic from shipboard to their parent organizations in the south. To ensure reliable communications, a special long range frequency was allocated to HMCS Churchill, the Naval Radio Station at the Fort. Messages were then transmitted over this link to the Fort Churchill Radio Station where they could be passed by teletype land line to the south.

The Hudson Bay Railroad also played a major part in the effective use of Churchill as a base for DEW line operations. As T. A. Harwood, an experienced student of the Arctic, observed:

> It is certain that had the rail line and the Department of National Defence facilities at Fort Churchill not been available it would have been extremely difficult to have carried out both the construction and survey of that part of the (DEW) line between King William Island through Baffin Island. In particular it would probably have been almost impossible to have mounted a site survey and consequent construction program in this area which in reality in some places required serious exploration from an area farther south since the aircraft being used, C-46's, were at almost the limit of their range from Churchill. That is--a return flight out to Boothia Peninsula and back to Churchill required a return by Southampton Island for refueling. It was therefore most fortunate that the Department of National Defence and the Defence Research Board facilities were available, for it is without doubt that the site surveys would have been most difficult if not impossible without such facilities being most generously placed in the site surveying and construction companies' hands.[27]

It is impossible to overlook the effect fire had on the life of Fort Churchill. In 1951, when writing the annual report of 18 Works Company, the Royal Canadian Engineer unit stationed at Fort Churchill,

Major J. H. Reeves, the unit's commanding officer, stated: "The greatest fear expressed and unexpressed by people living in the Arctic is that of fire. When sub-zero temperatures are combined with high velocity winds, it is quite understandable how people can cultivate this fear."

While the hospital building was heated from a central plant, the other buildings in the original camp were heated by space heaters. Because these buildings had a minimum amount of insulation, it was necessary to have the space heaters turned up to their highest output to have even a modicum of comfort in the coldest weather. As a consequence, despite the strictest regulations about fire safety, there were frequent disastrous fires in the buildings which had been erected as part of the old Crimson Route base. The fear to which Major Reeves referred was particularly strong amongst the parents of children who were housed in the temporary married quarters created out of these tarpaper covered buildings. It was necessary to have soldiers on duty twenty-four hours a day refueling space heaters and keeping watch on the buildings which contained them. This did not apply to the married quarters alone, for the soldiers and the civilian employees were accommodated in the same type of building with the same heating arrangements. When such arrangements were coupled with the necessity of having a crew engaged solely on the maintenance and repair of the space heaters, one can imagine the sky-rocketing administrative overhead. Without doubt, the original buildings were fire traps, and a great number of them went up in flames.

In his Historical Report of the RCAF (JSES) Churchill Manitoba

1948-49 the unit historian, Flying Officer A. Macmillan, wrote: "The course of events at RCAF (JSES) during the past year has been largely dictated by the Fifth Horseman who has doggedly pursued this unit." The report went on to describe the disastrous fires which had destroyed not only the original accommodation occupied by the mechanical transport section but also the building which had been built to replace it.

The control tower, the meteorological office and the airfield office building had also been completely destroyed by fire during the year under review. It is a high tribute to the quick reaction of Canadian service men that temporary emergency shelters were provided and the airfield was back in operation within three days of the fire. The air force seemed to be especially unlucky insofar as disastrous fires were concerned. The old hangar, inherited from the Americans, was completely destroyed on 25 March 1952. This was a particularly sad occasion because the Fort Churchill Fire Chief was killed while fighting the fire.

The kitchen and adjoining mess hall where all the other rank military men and the civilian contractors took their meals burned to the ground in 1949. Again the Canadian service men, ably assisted by their American colleagues and the civilian work force, showed what can be done by co-operative effort when disaster strikes. Moving into a newly-constructed garage, just about to be handed over to its intended user, the camp engineers set up an emergency kitchen and mess hall capable of serving dinner the same night of the day the old facility was destroyed. Only lunch on the day of the fire was unavailable from a central location, but no one went unfed. The officers' and sergeants' messes

and the occupants of the married quarters opened their doors to the dispossessed.

One of the most active buildings in the Fort, the camp theatre, burned to the ground in February 1951. Fortunately, a new theatre had been completed so the troops were not denied their nightly movie. However, it was a setback; the old camp theatre was to have been converted into a much needed gymnasium.

It was not the old buildings alone that suffered from the curse of fire. On 3 May 1951, the new officers' mess was gutted. The modern rocket range too was not immune for, on 28 February 1961, fire damage occurred the preliminary estimate of which was $840,000.

There are in existence fourteen volumes of files[28] packed with reports of fires both minor and major plus the proceedings of the boards of inquiry convened to investigate them. Presently held in the Public Archives in Ottawa, they make sad reading. Millions of dollars worth of buildings went up in smoke during the seventeen and a half years of the Fort's life.

Tribute should be paid to the military engineers who planned and built Fort Churchill. Although the bulk of the general contracting was handled by civilian firms, and the skill of their architects and engineers is worthy of the highest praise, it was the military engineers who initiated and supervised the project.

Prominent among these pioneers was a member of the Royal Canadian Engineers, Major (later Colonel) Edward Churchill. Major Churchill was the Camp Engineer Officer when the major construction was first undertaken and his ideas and methods prevailed long after he left

that post. Hailed by many as the man chiefly responsible for bringing the construction of EXPO 67 in Montreal to a successful conclusion, he was described by Maclean's Magazine in 1964 as "a ruddy swaggering, sawed-off engineer who helped Montgomery build airports during the Second World War, worked . . . on the construction of the DEW line and in recent years has been the chief construction boss of the Canadian Army."[29]

As previously noted, innovative ideas espoused by military engineers like Edward Churchill and his colleagues were widely copied. H. W. Love, the Director of the Arctic Institute of North America, wrote in 1967: "Isn't it interesting that the Russians have recently built in Siberia the same sort of enclosed town site that we built in Churchill twenty years ago. . . ."[30]

Notes

1. Margaret A. Carroll,"Defence Forces Operations in Hudson Bay" in C. S. Beals, ed., Science History and Hudson Bay, Vol. 2 (Ottawa: Queen's Printer, 1968), p. 909.

2. Minutes issued under HQS 407-15 (DND2) dated 14 April 1947.

3. Treasury Board Minute 561987 dated 12 May 1960.

4. Director of Works and Accommodation (DWA) Progress Report No. 6 dated 15 September 1947. This was one of a series of excellent and informative reports prepared at 15-day intervals by DWA during the 1947 construction season on file HQS 407-15 (DWA4).

5. Cited by James Eayrs, In Defence of Canada: Peacemaking and Deterrence (Toronto: University of Toronto Press, 1972), p. 355.

6. Minutes of Defence Council, 14 February 1947.

7. Canada, Parliament, House of Commons, Debates, (hereafter Debates), 21 March 1946, p. 139.

8. Debates, 7 May 1953, p. 4908.

9. Ibid.

10. Ibid., p. 4919.

11. Privy Council Minute 923 dated 24 February 1949 signed by A. D. P. Heeney, Clerk of the Privy Council.

12. HQTS 1225-PL-17 (DMO&P1) over HQC 5115-185 (Vol. 4).

13. Report to the PJBD on HQTS 1225-P1-17 (DMOP Co-ord) over HQTS 1225-P1-33 (undated) based on information contained in DND HQC 5115-C-185 over HQC 5403-C185 over HQC 5445-25/0 over HQTS 1225-P1-27 (WA 3A) dated 25 October 1951.

14. This figure of 1,998 exceeded the ceiling of 1,675 authorized in September 1949. It included the civilian construction workers housed in temporary accommodation in the Fort there being no accommodation in the town of Churchill. Only 148 United States Army personnel are included in the total figure, a far cry from the 500 spaces originally requested.

15. These were the second set of premises occupied by the Royal Bank of Canada. They had opened a branch in one of the tarpaper shacks in 1949.

16. Study of Costs of Married Quarters at Fort Churchill, Manitoba dated 9 March 1950 on DND file 5115-C185, vol. 14.

17. Debates, 6 May 1953, p. 4888.

18. Ibid.

19. Debates, 7 May 1953, p. 4918.

20. Ibid.

21. Priority Canadian Army teletype message to DWA timedated 152350Z March 1950 paraphrased on DND file HQC 5115-C185 dated 21 March 1950.

22. Appendix A to DND HQS 2000-1975/9 (Budget) dated 12 March 1956.

23. Appendix A to DND HQS 2000-1975/9 (DND2) dated 23 April 1956.

24. Final Report--Joint Working Party on Fort Churchill.

25. DND file HQ 5115-C185 TD6188 dated 28 March 1957.

26. Strome Galloway, "The Army Says Goodbye to the 'Shining Land'" in Canadian Army Journal, XVIII, no. 1, 1964, p. 40.

27. T. A. Harwood, "The Dew Line and Fort Churchill" in Defence Research Northern Laboratory 1947-1965, ed. A. M. Pennie. Ottawa: Report No. DR 179, April 1966, pp. 82-83.

28. See Army Headquarters files 5205-C-185.

29. Harry Brue in Maclean's, 6 June 1964.

30. Letter H. W. Love/Tedlie dated 7 August 1967.

CHAPTER FIVE

HABITATION AND HOSPITALITY

In outlining the Canadian defence programme for 1953-54 the government stated: "Owing to the remoteness from civilian amenities of certain Army installations on site recreation facilities are required such as physical training buildings as well as chapels and school."[1] The recognition of such requirements for the inhabitants of Fort Churchill and its long-term visitors pre-dated this general policy announcement. From its inception in 1946 to its demise in 1964 Fort Churchill had to supply its inhabitants with all the amenities one would expect to find in a town of comparable population plus a good deal more because the people were living there by direction, not choice. True, in 1946, there were certain facilities in the townsite of Churchill, some four and one-half miles from the Fort, but these were limited and not of a standard usually offered to Canadian service personnel in peacetime.

As a consequence, it was necessary to supply a good many services not normally associated with a military camp. A good illustration of this is that the various regimental institutes showed a total revenue of $1,214,844 from 1 January 1953 to 31 December 1953.[2] Some of this was derived from the messes and canteens one finds wherever an army gathers, but included were revenues obtained from the operation of a grocery store, a drug store, a butcher shop, a shoe shop, a theatre, a coffee bar and a bowling alley. In addition to these revenue producing facilities it was found necessary for the Camp authorities to

supply a post office,[3] a hockey arena, a library and a hobby shop. Cub and Brownie Packs, Boy Scout Troops and Girl Guide Companies were organized. Two churches were established, and these religious institutions sponsored the various auxiliary activities found in more settled areas. A radio station, CHFC, was started in 1948 and manned by volunteers from the camp population using a room in a wartime building as a studio. In 1953, new premises were secured, and, in 1959, operation of the station was assumed by the Canadian Broadcasting Corporation.

Schools for the children offering instruction from kindergarten to high school leaving were built and were also used in the evenings for adult education classes. These schools attracted some excellent teachers who enjoyed the novelty of giving instruction to Americans and Canadians, including our native children. The American children whose fathers were stationed at the Fort could hardly wait to write to their friends who remained state-side to tell them that they were attending school in the same class as Inuit, Cree and Chippewyan youngsters. Like the troops, the teachers received northern allowances in addition to their normal salaries, and Fort life presented an ideal chance for single people to save money there being few opportunities to spend the extra wealth. Women teachers were particularly popular in a locality where the female to male population never improved beyond a ratio of 1 to 40.

As previously noted, when the Fort was well established and the construction programme was completed, the average population was in the range of 3,000 to 3,500 men, women and children. These numbers were

far greater than the 500 or so hardy souls that launched the enterprise in 1946. Also the Fort of the 1960s with its modern housing and amenities had become a northern metropolis, a far cry from the array of tarpaper shacks which had been its legacy from the Crimson Route.

From the commencement, the Canadian Army, true to its tradition, endeavoured to bring the amenities of mess life to its officers and their guests. Successive commanders of the Fort found it difficult to convince some of the civilians with officer status that formal dining-in nights and mess dinners were features of military life which must be maintained regardless of geographical location. J. P. Croal, the first Defence Research Board employee at the Fort, wrote: "Mess dinners with the army when entertaining visiting VIPs were usually hilarious events."[4] Croal was right, and a good deal of the hilarity was attributable to the various types of dress one found at the dinner table. In the immediate post-World War II years official mess dress for the Canadian services was in a state of flux, and standard patterns had yet to be decided. As a consequence, it was not uncommon to see at the dinner table everything from a formal tail coat with miniature decorations through pre-war mess kits of various types, to dinner jackets, to lounge suits and blazers and flannels. The one and only truly uniform group were the nursing sisters who invariably appeared in their royal blue uniforms with beautifully starched collars, cuffs and veils.

A perplexing problem which arose from time to time was the question of what constituted appropriate dress in the officers' mess. This was from the start a bone of contention between all civilians and

the military authorities. Despite what some non-military personnel may think of their value, army officers are trained to respect rigid regulations regarding proper dress in an officers' mess. The scientists were in the main loyal supporters of trying to keep the various mess traditions intact. The major problem with this group was a tacit objection to having to wear shirt, tie and jacket to dinner when they had planned an evening's work back in the laboratory or in a snow hut on the tundra. The Fort Churchill Officers' Mess Regulations were very explicit with regard to civilian dress. They read:

> Civilians and officers in civilian clothes will wear a tie and a suitable suit coat, blazer or sports jacket (this does not include such articles of clothing as windbreakers, hunting jackets, logging shirts, sweaters, etc.) at ALL TIMES when in any part of the mess.[5]

It was the custom to keep a box of ties in the mess cloakroom so that those civilians who arrived tieless could obey the regulation before entering the mess. However, some scientists refused to wear them and for this stubborn attitude were forced to eat in the other ranks' mess.[6]

The problems of adhering to Canadian Army tradition caused little trouble with the other Canadian services for their customs were similar. Very few problems were posed by the large number of United States service men who served at Churchill at various times, and the few that were were swiftly corrected. The Royal Toast at dinner was always followed by one to "The President of the United States," except when other nation's representatives were being entertained and the secondary toast became "To the Heads of other States Here Represented."

With other civilians there were problems. Perhaps what Robert

F. Phillips had to say about this matter will give an idea of its dimension.

> To begin with, Fort Churchill, as a Canadian Army installation, had inherent in its make-up a well-defined social stratum and a long history of highly treasured traditions closely patterned after the British Army. With U.S. Military personnel there was no problem, they ate in the mess appropriate to their rank be it Officers', Sergeants' or Other Ranks' Mess. With civilians, and a large number of them at that as the problem was mainly concerned with PAA (Pan American World Airways) employees, the problem became more complex. Especially when many of those civilians were not fully oriented to the military way of life, nor were they particularly aware of any class lines, other than perhaps those artificially created by economic factors.
>
> . . . Besides this type of sociological problem there was another of visiting U.S. and Canadian dignitaries, military and civilian as well as numerous foreign visitors, mostly military but some civilian. In these cases protocol could become as complicated as an embassy dinner in Washington.[7]

It is interesting to note that Phillips' problem was occasioned by PAA employees, for the only complaint on the files about the treatment of civilians at Fort Churchill concerns Mr. F. J. McNulty who was employed as a helicopter pilot by PAA. In a letter to the Deputy Minister of National Defence McNulty complained that on two occasions he had brought guests to the Officers' Mess, and in each case they were insulted by "Canadian Army Officialdom without just cause."[8] He further charged that "it is the policy of the administration of this base to regard civilians as Army chattels to be dealt with as they see fit with no reference to the administrator of the company involved."[9] Apparently such a charge was also communicated by McNulty to the press, and, as a result, two newspaper articles appeared which cast discredit on the administration of the Fort. Because of this notoriety everybody from the staff of the Fort to the Minister of National Defence became

involved in investigating the allegations. In reply to McNulty's charges the Deputy Minister pointed out that his was "the first complaint in a good many years"[10] that he had received about Fort Churchill and took no further action. The McNulty episode was certainly an aberration because the relevant files overflow with letters of thanks from many civilians who found the facilities supplied at the Fort to be of the highest order and the hospitality extended in the best traditions of the north.

A log of visitors to Fort Churchill over the years it existed reads like a Who's Who of Canadian, American and British persons of note with a few dozen notables from other nations to add leavening to the triple alliance. 1954 appears to have been a specially active year for visitors for the Annual Historical Report stated that upwards of 2,500 visitors were hosted that year. These persons were either "just visiting," "just passing through" or were "engaging in tests, trials or winter exercises."[11]

Other Annual Reports separated the "working visitors" from those who just came to look, and hopefully learn. Four examples of the number of visitors in this latter category taken from Annual Historical Reports show the following statistics which serve to illustrate the magnitude of the problem:

February 1948 to January 1949 297
March 1949 to March 1950 215
April 1950 to March 1951 344
April 1951 to February 1952 357

Colonel N. J. W. Smith who commanded the Fort from 1958 to 1960 had this to say about the volume of transients on the base during

his tour of duty:

> This is a stopping place for the RCAF supply route to Resolute and Alert and there are often two or three aircraft here overnight, some with 15 to 20 passengers. Also, groups of Canadian and U.S. personnel proceeding to and from weather stations in the north pass through Churchill.
>
> As an indication of the volume of "visitors and transient" traffic, there were 528 such personnel at Fort Churchill for at least one night during the period (one month) 15 Nov 59 to 15 Dec 59.[12]

Visitors in small groups presented little problem, but when they came en masse, particularly in the early days, they caused a great shuffling around of accommodation amongst the officers living on the station. The only living quarters that were halfway decent were a series of individual rooms in one wing of the original hospital building,[13] and these were normally occupied by senior members of the permanent staff. When people such as the Governor General or senior Ministers of the Crown visited it was necessary to move the permanent residents out to make way for the VIPs. This meant that even the permanent staff of comparatively senior rank had to move into what was called the "Bull Pen." This, a wing of the hospital building, had double bunks in tiny rooms partitioned off from one another by sheets of beaverboard with a length of burlap serving as a door. It was without doubt very primitive living but, for the first two years of the Fort's operation, it was where officers and civilians of officer status had to sleep when they were in camp for tests and trials or just passing through. This in itself was bad enough, but when it was necessary to put officers temporarily in the "Bull Pen," officers who were at the Fort 365 days of the year, the situation was deplorable. Referring to

these visits of VIPs, A. V. Hannam wrote: "I don't think these gentlemen ever realized the amount of trouble and disruption they caused to the work of the camp itself."[14]

Some of the visitors came seeking enlightenment, and countless hours were spent in briefing people in this category. Others came just to say they had been there or because their position in government or the military dictated that they should be there. This latter type caused the most disruption to station life but frequently were the most productive. They gave the commander of the Fort an opportunity to bring to the attention of people in high places the inadequacies of certain facilities without having to go through the rather tortuous bureaucratic network set up at the Ottawa level to deal with the affairs of the Fort.

While the present Monarch has never visited, her Consort has, and Vice-Regal representatives of Elizabeth II and George VI at both the federal and provincial levels were frequently seen at the Fort. The Duke of Edinburgh visited on 11 August 1954 when the Fort was well on the way to becoming the metropolis of the north it eventually became. Much earlier, in September 1948, Viscount Alexander, the then Governor General of Canada, paid a three-day visit when the Fort was in a far more primitive state. His Excellency must have been pleased with what he saw[15] and the arrangements made for his visit, which included some goose and duck hunting, because he returned again in July 1949. With him on this latter visit, he brought Field Marshall Viscount Alanbrooke, Winston Churchill's Chief of the Imperial General Staff during World War II.

In planning a programme for Alanbrooke much stress was put on

the achievements of the military scientists in the three years the Fort had been in operation. This was all in vain, for the interest of this famous man, who was incidentally a renowned amateur ornithologist, was to see the nesting grounds of the Hudsonian Godwit. Fortunately, the Defence Research Board's Northern Laboratory had an ornithologist on their staff who knew the exact location of these grounds, and the visit was a resounding success. When General Georges Vanier was Governor General he, accompanied by Madame Vanier, made an extensive tour of the Fort and the townsite of Churchill in May 1961. Colonel R. J. Carson, who was commander of the Fort at the time, stated that he doubted whether the base had ever hosted such popular and gracious guests.

One of the station's earliest boosters was Brooke Claxton, the Canadian Minister of National Defence in the station's formative years. A great deal of the impetus lent to the new construction at the Fort arose out of a visit he paid in the spring of 1948 when he went into everything the station was doing in meticulous detail. On his return to Ottawa, Claxton wrote to the commander at Fort Churchill stating:

> I have long looked forward to my trip to Fort Churchill and I can assure you that when it came about it exceeded every expectation.
> I don't know that I have ever visited an establishment where the spirit was better or the attitude more constructive.
> The work you are doing is most important and it is great to see it being done so enthusiastically, and so well.[16]

Interviewed by the press on his arrival back at Rockcliffe Airport, after remarking that he had found the base at Churchill to be "most interesting and impressive," Claxton went on to say:

> I have visited most of the service establishments in Canada but this was my first trip to Churchill. Probably the

> officers and men there live under conditions as difficult as those in any sizeable military establishment, yet I have seldom seen a group with greater spirit or a more sensible purpose.[17]

Claxton's enthusiasm for the work being done by the Fort carried over to his giving speeches to various organizations on the great value of the work being performed by the military in the Canadian north.

Claxton was very interested in the integration of the Canadian Armed Forces, long before such action was eventually taken in 1964, and he was anxious that his forces should co-operate with those of the United States consistent with Canada retaining her sovereignty. Thus he found in Fort Churchill, with its mixture of all three armed services and a strong but controlled American presence, an organization deserving his support which he gave unstintingly during the years he remained minister. The Fort was an outstanding success of interservice and international co-operation, and it is my opinion that if a Defence Minister of Claxton's calibre and beliefs had held the defence portfolio in 1964 when the fate of Fort Churchill was being considered it would not have been closed.

Senior Canadian service officers of General and Air Marshal rank were frequent visitors as were senior scientists from the Defence Research Board and the National Research Council. Senior Canadian civil servants were often at the Fort as were their opposite numbers from the United States. The Americans visited in large numbers, including State and War Department officials at the Assistant Secretary level, but it was the United States Army and the United States Air Force who contributed the lion's share of the VIPs who visited the Fort.

Dr. O. M. Solandt, the Chairman of the Defence Research Board, was a regular visitor in the early days of the Fort and a loyal supporter of the scientific investigations taking place. Having been trained as a physiologist, he brought a practical approach to the problems of troop acclimatization, and many useful studies on this matter were among the large volume of work accomplished by the scientists of the DRNL.

The prestigious Imperial Defence College from Great Britain frequently made Fort Churchill a stop on their world tour, and annual visits were paid by the Canadian National Defence College. Canadian staff colleges and groups of scientists from various disciplines were welcomed to the Fort on many occasions. United States orientation tours from all three armed services and research and development agencies arriving at the Fort were common occurrences.

Representative groups from the Canadian Senate and the House of Commons visited the Fort on formal conducted tours and Manitoba politicians, including the Premier, were entertained by the personnel of the Fort on a continuing basis during its existence.

Successive Chiefs of the Air Staff, both Canadian and American, and their immediate subordinates, visited on both formal and informal occasions. When Air Marshal W. A. Curtis was Canadian Chief of Air Staff he brought Marshal of the Royal Air Force, Lord Tedder, an outstanding British airman and General Eisenhower's Deputy in North West Europe in World War II, to the Fort. Both he and Lady Tedder, who accompanied him, showed a great interest in the work being done and expressed pleasure in seeing "the worthy results of co-operation among

the various services."[18]

Because of the international status of the station some of the scientific and training effort was devoted to schemes which had their genesis in the Permanent Joint Board on Defence. As a consequence the Board met at Churchill on various occasions starting in 1947 when Fiorello La Guardia was the American Chairman and Colonel O. M. Biggar was his Canadian opposite number.

The PJBD was not the only bi-national organization to visit the Fort. In October 1961 twenty-six Canadian and American scientists met to conduct an Arctic Research Review. The participants covered a wide spectrum of disciplines and included representatives from numerous Canadian and American government departments with Arctic interests.

In a heart-felt communication from the penultimate to the ultimate commander of the Fort, Colonel R. J. Carson wrote to Colonel Strome Galloway: "There is certainly a lot of 'playing host' to streams of visitors, and this is an important part of your job."[19]

Live entertainment first came to the Fort when a unit from Washington's Volunteer Camp Shows visited over the Christmas season of 1949. This collection of fine entertainers, eight in number and starring Millie Harvey, was a great hit with the troops and brought a real touch of southern civilization to those who could not get home for the festive season. The women in the show dined in the men's mess on Christmas Day where true to tradition the garrison officers served dinner to the men and their guests. A copy of the menu for that occasion was found in the Public Archives in Ottawa, and it reveals that the cooks did everything in their power to ensure that the Churchillians

had a Christmas dinner fit for a king. As the Fort matured and facilities for theatrical performances were made available, Churchill became a frequent stop for American U.S.O. shows. The Annual Historical Report for 1952 shows that troupes of the U.S.O. visited the station on 28 May and again on 4 September.

In 1949, sports activities which, prior to that time, had been sporadic, became more formalized. In the summer a skeet range was constructed. A softball diamond was laid out, and a league was formed leading to spirited competition. Although no formal athletic grounds were available, a track and field meet was held for the troops and another for the school children. In the winter a four-team basketball league was started with the games played in the garrison theatre because no gymnasium was then available. The standard of the basketball floor left much to be desired, but the quality of play was extremely good, many of the American players having played at the university level. An eight-team hockey league came into being in October just as soon as an ice surface became available. Although J. P. Croal reported that "outdoor hockey at -40^{o} F. was an invigorating event,"[20] few games were played at these extremely low temperatures because deep breathing became very hard on the lungs. A compromise was found by dividing the hockey season into two distinct periods. The first part of the schedule took place in October and November, the second half in March and April. In the early days no curling rink was available within the camp, but the National Harbours Board were very generous in allotting ice time on their rink in the townsite of Churchill.

These sporting activities became increasingly sophisticated

over the years as indoor facilities for hockey and curling were built, and a modern gymnasium was constructed. Representative teams from the Fort participated in tournaments in southern Canada with varying degrees of success. The important thing was that the troops and their dependents were being offered the opportunity to engage in a wide variety of sporting activities with facilities similar, and in some cases superior, to those offered in many Canadian towns.

Opportunities to do volunteer work were always available as fund-raising appeals were held on behalf of the Salvation Army, the Canadian Institute for the Blind and other such charitable organizations. There were frequent well-supported Red Cross blood clinics, and an annual Canada Savings Bond drive encouraged all to save their northern allowances.

Band concerts always appeal to military personnel, and both Canadian and American service bands entertained the inhabitants of the Fort over the years, commencing with a visit from the Royal Canadian Air Force North West Air Command Band in 1948. The coming of the summer solstice is always an occasion for celebration in northern communities, and Fort Churchill was no exception. The festivities ranged from a formal June ball in the Officers' Mess to all-night beach parties on the shores of Hudson Bay where some of the more fool-hardy participants engaged in a midnight swim. Hard on the heels of the summer solstice came the celebration jointly honouring American Independence and Canadian Confederation. These early July festivities varied somewhat from year to year but usually included marching bands, decorated floats and the crowning of Miss Fort Churchill.

Despite the attractions of life in Fort Churchill, brought about by making modern amenities available to all its inhabitants, there were ever-present hazards caused by the environment and the threat of fire.

In addition, at certain times of the year, a threat to life and limb was presented by one of Mother Nature's most powerful animals. In the fall of some years as many as one hundred polar bears transit through the Churchill area. In summer the huge beasts go as far south as James Bay, but the trek is to the north when winter is in the air. In their search for seals to eat they proceed north of Churchill after freeze-up so November is usually the time of the densest population in the area. They are attracted to the garbage dumps where they forage for food, and some of them find the pickings so rewarding that they linger behind after the bulk of their companions have departed to the north. When this happens at the present time the International Fund for Animal Welfare tries to arrange for their transport to less populated surroundings, but in the early days of the Fort's existence the hangers-on were a constant menace. To protect the people in the town of Churchill, the Manitoba Government sometimes had to order the bears destroyed, but the usual tactic was to "buzz" them with a helicopter in order to make them move away. Many stories, some of them no doubt stretching the truth, are told about encounters between polar bears and service men and their families.

Some statistics about the Fort's population of polar bears and an interesting look into the psyche of <u>Thalarctus Maritimus</u> has been given by Strome Galloway.

> The polar bear fears nothing, Man included, and it is this which makes him dangerous. He is Monarch of the Frozen North, at least in his own mind, and wise dwellers in his kingdom take heed. During the second six months of 1963 there were 44 polar bears spotted by helicopters in the immediate area. Twenty-five calls reporting polar bears within the fort were made by military personnel or householders and once 17 of the beasts were within the "camp perimeter" at the same time.[21]

Hazards aside, the life at Fort Churchill after the new camp was completed left little to be desired. I have interviewed many people who served at the Fort over the years, and the few complaints I was able to solicit were picayune compared to the approval expressed by most former Churchillians.

Real Laurin, who served at the Fort as an other rank soldier for many years, told me of his impressions of life at the Fort. Mr. Laurin, who was married to a Japanese woman he had met in Tokyo during the Korean War, said that he and his wife found Fort Churchill an ideal place to raise their children. The Laurins believe that the schools were excellent and the recreational facilities of the highest order. An added plus was living in a locality with so little crime. Mr. Laurin said that, despite cold, biting flies and the occasional polar bear, he and his wife had a feeling of security for their family greater than in any other place they had lived.[22]

The Reverend J. A. Davidson, Protestant Padre of the Fort from August 1958 to July 1960, states that his time at Churchill was "one of the high periods of my whole ministry, a ministry which extended over thirty-five years."[23] Dr. Davidson presided over the Chapel of the Good Shepherd, a church with a large and flourishing Sunday School. In addition, he was in charge of the spiritual welfare of the Protestant

members of the Fort and conducted services on the Fort radio station CHFC which was received not only by the Fort's population but also by the surrounding civilian communities. Davidson said it was "a high pressure job and when my posting was up I was glad to leave, but it gave me a wonderful opportunity for service."[24] Perhaps the best testament to life in the Fort was given by one of the Davidson children who, speaking for herself and her siblings, states that "Fort Churchill was the best posting Daddy ever had."[25]

Dianne J. Taylor, who accompanied her husband, a petty officer in the Royal Canadian Navy, to Churchill in 1959, tells a well-balanced story of a service man's wife in that location. Like many other couples who did not have a high enough standing on the point system in vogue for allocation of married quarters on the base, the Taylors were forced to find accommodation in the townsite of Churchill where living conditions were as primitive as they had been at the Fort in the 1940s. Mrs. Taylor writes: "When we got into our PMQ (Permanent Married Quarter) it was lovely. We had hot and cold running water coming out of taps. No honey bucket to take out. I didn't have to carry all my laundry water outside to dump it."[26] After complaining about the very rigid class structure based on rank which she alleged was a feature of PMQ living, Mrs. Taylor concludes: "Still, I really enjoyed the experience of living in Fort Churchill. We were there for two years and would have stayed for a third, but the CO (Commanding Officer) we had believed that anybody that wanted to stay a third year needed to get out. He felt they were bushed."[27]

The Fort Churchill Military Hospital came into being as a unit

of the Royal Canadian Army Medical Corps immediately the Fort was established in 1946. Margaret Carroll points out that it was "the only source of hospital care, indeed any medical care, north of The Pas, Man., some 400 air miles south. It served all those areas within the Northwest Territories and Arctic Islands. . . . In the immediate Churchill area some 9,000 persons, including service personnel, depended on the hospital for medical care."[28]

Starting modestly in 1946 with one doctor and two nursing sisters, the hospital shared a building with the dental clinic, the camp laundry, the camp bakery, officers' living quarters and the camp Officers' Mess. At the height of the Fort's activity there were seven doctors and twenty-one nursing sisters on strength plus a full complement of technicians and ward orderlies for a total of one hundred and thirteen medical personnel. While retaining the original building site, the premises the hospital eventually occupied would have been the envy of the authorities in any small city. The building was completely rebuilt and equipped with the most modern medical equipment.[29]

The care of the base military personnel was only a small part of the hospital's task, with the medical care of the dependents of service men and the host of civilian workers employed by the camp or by contractors working at the Fort being a sizeable addition to the load. The highest proportion of the work, however, came as a result of the responsibility assumed for the hospital care of the native population over a large part of the eastern Arctic. Statistics on patient load varied from year to year, but in 1959, of the 1,553 patients admitted, only 138 were military personnel. In the same year, the people who

visited the hospital to consult a doctor numbered 11,195, of which only 3,377 were service personnel.[30]

When the Royal Canadian Army Medical Corps was incorporated with the medical services of the RCN and RCAF the hospital became a Canadian Armed Forces Medical Service installation and continued to operate as both a civilian and military medical care centre until 1 April 1964 when it became the responsibility of the Department of National Health and Welfare. The final commander of the Fort stated that in the latter years "Less than 15% of its patients were members of the Forces, the vast majority being Eskimos and Indians with the maternity ward and children's ward being the 'peak load' departments."[31]

On a grim note--the commanding officer of the hospital was the official coroner for the district, and the hospital served as a mortuary where the dead frequently had to be held for considerable periods of time before burial could be arranged.

Notes

1. Canada's Defence Programme 1953-54 (Ottawa: Queen's Printer, 1953), p. 31.

2. Annexure 1 to Appendix E to Annual Historical Report--1953 on file FCC 1452-1975/9(G).

3. Report of the Department of National Defence for the Fiscal Year ending 31 March 1948 (Ottawa: King's Printer, 1949), p. 29, states: "A military post office now affords complete postal service to all military and civilian personnel at Fort Churchill."

4. J. P. Croal, "First in the Field" in Defence Research Northern Laboratory 1947-1965, ed. A. M. Pennie (Ottawa: Report No. DR179, April 1966), p. 36.

5. Fort Churchill Officers Mess Constitution and Mess Rules, para. 20.2.

6. Conversation Colonel R. J. Carson/Tedlie, 25 November 1987.

7. Robert F. Phillips, The Churchill Research Range (Washington: Office of Aerospace Research, 1964), p. 58.

8. Memorandum from Chief of the General Staff to the Minister of National Defence dated 10 May 1963 on file HQ 1100-1975/9 TD 3002.

9. Ibid.

10. Letter from Elgin Armstrong, Deputy Minister of National Defence, to W. J. McNulty dated 8 February 1963 on file HQ 1100-1975/9 TD 3002.

11. Appendix J to Fort Churchill Annual Historical Report 1954.

12. Annex 2 to Notes on Joint Organization for Fort Churchill prepared by Commander Fort Churchill, dated 20 January 1960.

13. Various wings of the original hospital building built for the Crimson Route Base were used for non-medical purposes until 1953 when they reverted to a 70 bed hospital.

14. A. V. Hannam, "From the Ground Up" in DRNL 1947-1965, p. 49.

15. Personal letter Viscount Alexander to Commander Fort Churchill dated 22 September 1948 stated in part: "You are all doing a great job of work there of the utmost importance."

16. Personal letter The Honourable Brooke Claxton to commander Fort Churchill dated 26 May 1948.

17. The Globe and Mail, 25 May 1948.

18. Personal letter Chief of the Air Staff to Commander Fort Churchill dated 20 October 1949.

19. Personal and confidential letter, Colonel R. J. Carson to Colonel Strome Galloway, 19 June 1962.

20. J. P. Croal, "First in the Field," p. 36.

21. Strome Galloway, "The Army Says Goodbye to the 'Shining Land'" in Canadian Army Journal, Vol. XVIII, no. 1, 1964, p. 53.

22. Mr. Real Laurin, now a civilian employee of the Department of National Defence is a librarian in the Directorate of History.

23. Conversation Dr. Davidson/Tedlie, 15 November 1988.

24. Ibid.

25. Ibid.

26. Dianne J. Taylor, There's No Wife Like It (Victoria: Braemar Books Limited, 1985), pp. 54-55.

27. Ibid.

28. Margaret A. Carroll in "Defence Forces Operations in Hudson Bay" in C. S. Beals, ed. Science History and Hudson Bay, Vol. 2 (Ottawa: Queen's Printer, 1968), p. 911.

29. Conversation Colonel R. J. Carson/Tedlie 25 November 1987.

30. HQS 1281-1975/9-1 over HQS 1962-1975/9 (DMO&P2) dated 1 February 1960.

31. Galloway, "'Shining Land,'" p. 53.

CHAPTER SIX

EXERCISES AND TESTS

Over the years Churchill was used as a base for a series of exercises designed to find out how the military could function in Arctic areas in both winter and summer. In 1946, before the Fort was formally established, Churchill had been the base from which a highly publicized non-tactical exercise known as MUSK OX was launched. Prior to the exercise proper, those involved in it were subjected to six weeks of advanced environmental training at Churchill to introduce them to the conditions they were likely to experience on the trail.

The exercise was ably executed under the command of a brilliant scientist and soldier, Colonel Pat Baird. While the exercise was, as noted above, non-tactical, the skilled and dedicated soldiers and scientists who participated sought the answers to many perplexing Arctic military problems. The lessons learned on Exercise MUSK OX had much to do with the work undertaken by the soldiers and scientists stationed at Fort Churchill during the first few years of the Fort's existence. The final report on Exercise MUSK OX pointed to the weak areas in northern military capability uncovered by the exercise, in particular the inadequacy of oversnow vehicles, clothing and equipment. The report stated that "the field was much too large to be covered in the time available and in most cases the findings serve to indicate where further study is required."[1] This "further study" led to much of the research the authorities of the Fort were to conduct during the winters of 1947, 1948 and 1949.

The route that Exercise MUSK OX followed was Churchill, Eskimo Point, Baker Lake, Perry River, Cambridge Bay, Denmark Bay, Coppermine, Port Radium, Fort Norman, Fort Simpson, Fort Nelson, Dawson Creek, Edmonton. The trek started on 16 May 1946 and ended on 6 May 1947, with the main body travelling a distance of 3,100 miles, a great deal of it over some of Canada's most desolate land.

A startling statistic emerged from the logistical requirement to support MUSK OX. The normal maintenance requirement for a Canadian Armoured Division in the field during the 1944-1945 campaign in north west Europe amounted to 45.7 pounds per man per day and increased to 90 pounds per man per day during intense fighting; on MUSK OX where no ammunition was expended the figure was 115 pounds per man per day. Thus, right from the start of the Canadian Army's investigation of how to live, move and fight in northern regions, it was learned that it was going to be an expensive business. The vehicles being used all had very high rates of petrol and oil consumption. Use of heating and cooking fuel was much greater than normal, and the fuel had to be transported over long distances local procurement being impossible. What was true of fuel was equally true of food, high consumption and no local procurement. To this had to be added tentage, sleeping bags and Arctic camp stores, all far more numerous and bulky than are required by soldiers in a more temperate climate.

At that time the high costs did little to deter Canada's intent to proceed with northern military investigation. Determined to conquer the perils of fighting in her own northern territory, Canada laid elaborate plans (urged on by her American allies) to carry out the

necessary research, development and training to achieve this result. However, within eighteen years that resolve weakened to the point where only spasmodic attempts to tackle the problem have been made.

Typical of the early tactical exercises carried out at Fort Churchill was Exercise SUN DOG I in the winter of 1949-1950 in which one hundred and sixty-five Canadian soldiers took part. The scenario portrayed an enemy force of approximately fifty parachutists dropping in the general area north of Churchill with the intention of capturing an existing radio installation. The friendly force was a company of infantry from the Royal Canadian Regiment reinforced by engineers and signallers and supported by the RCAF. They were given the task of recapturing the radio facility and destroying the enemy force. The conduct of this exercise was placed in the hands of two very capable infantry majors[2] who later were to play key roles in training Canadian troops in the techniques of winter warfare. In this thirteen day exercise many tactical lessons were learned. These and other lessons were incorporated in subsequent Arctic training manuals prepared on a tri-national basis at Fort Leavenworth, Kansas, in 1951.[3]

The second exercise of this series, SUN DOG II, was held in February 1951. This was a truly joint exercise with the army and the air force playing an equal part. Fort Churchill was used as an advance base with the exercise proper held in the region of Nueltin Lake. The exercise took place under severe conditions of weather and involved Canadian parachutists being dropped into an isolated spot in the North West Territories. It was judged by all who participated as being a huge success, the only problem being a lack of reliable means of

inter-service communication. This led to a certain delay in cleaning up some of the freight which had been transported to the exercise area.

Reports[4] on Canadian defence programmes show that these winter exercises continued for many years, and the techniques of operating in the Arctic were refined as a result. They also gave the scientists interested in developing clothing and equipment for Arctic use an opportunity to test their wares under near operational conditions, and as a consequence giant strides were made in assuring greater safety and comfort for the service man and woman operating in cold climates.

The summer exercises conducted at Fort Churchill were never as extensive as those which took place during the winter months. If it was unlikely that an enemy would ever attack northern Canada, it was considered even more unlikely that such an attack would occur in the summer months. The tundra when frozen presented difficulties enough to the passage of troops, but in the summer the quagmire it presented made travelling next to impossible. As one old Arctic hand was heard to say: "You can train soldiers to do almost anything but even they can't walk on water unless it's frozen."

Despite the difficulties, summer exercises on a small scale were carried out, and the names these exercises bore gives some indication of the other enemy besides the muskeg a soldier must face if he goes north in summer. In addition to subjecting various tracked and wheeled vehicles to extensive mobility trials, a series of exercises bearing the names SHOOFLY and MOSQUITO tested repellents and protective clothing.

These exercises both winter and summer were tactical in

nature, but other trials and tests with no tactical application, although equally important in helping the Canadian soldier to live, move, and if necessary fight, in a hostile environment, were going on at the same time.

Shelter is a high priority when troops move into Arctic areas, and all were taught how to build snow houses and snow caves. Much of this training was done by Inuit instructors,[5] but many army instructors mastered the art. For more permanent shelter new tentage had to be developed because that used in the southern latitudes proved close to useless when erected on the barrens. Two tents, based on designs first conceived by Sir Ernest Shackleton,[6] one with the capacity to house five men, the other ten, were eventually developed, and they provided quite comfortable, although crowded, quarters for the troops. These tents, although adequate for sleeping accommodation, were not the answer for housing signal stations or like installations such as workshops. For this purpose the Canadian military engineers designed and constructed a building which in army nomenclature was designated as Hut, Prefabricated, Arctic Mark I, and subsequently an improved model dubbed Mark II. The trials were conducted on these huts in 1948 through 1950, and a very livable structure was eventually arrived at using an aluminum foil vapour barrier and fibre glass insulation. The design criteria called for a hut in which an inside temperature of 70^{0} F. could be maintained in the lowest outside temperatures experienced in Arctic areas. It also had to be capable of withstanding a wind of 125 miles per hour.

Teams from the Army Survey Establishment visited Fort

Churchill frequently. These teams worked in close co-operation with the RCAF, providing the preliminary ground surveys which established control points for their aerial photography and producing the maps from the photographs obtained. These hardy souls operated in both winter and summer and used a wide variety of devices to traverse the tundra. While often using modern oversnow vehicles and tractor trains, they did not eschew the more primitive modes of travel. In March 1948, a ten-man team left the Fort accompanied by a dog team and an Inuit guide.

The drastic consumption of fuel in a variety of small load capacity oversnow vehicles, used on Exercise MUSK OX and further tested at Fort Churchill, indicated that a more economical means of moving the bulk freight accompanying every military expedition had to be found. Tractor trains had been used by civilian firms in the north for some time. As early as 1928 the Hudson's Bay Company had been operating them as far north as Wager Bay. The Canadian Army, however, had little knowledge of how these trains were operated. After preliminary work on preparing tractors to operate in extreme cold, and testing and modifying a variety of commercially obtainable sleds, trials were held on various combinations of tractor and sled in the immediate vicinity of Fort Churchill in the winter of 1948-1949. After having had the bugs removed, the trains were given a practical test of their ability to carry out Arctic supply missions. The Royal Canadian Army Service Corps agreed to use tractor trains to bring the necessary construction materials and technical equipment from Fort Churchill north west to Ennadai Lake where a wireless station of the North West Territories and Yukon Radio System was being built. This operation took place between

4 January and 7 April 1949 when 236 tons of supplies were delivered to Ennadai, a distance of 470 miles from Churchill. In addition, 2,200 pounds of winter relief food was transported to the inhabitants of Nueltin Lake.

Wanigans, "heated caboose-like hut(s) built on a sled towed by a tractor,"[7] formed part of the trains and were used to house off-duty crews and the mobile signal stations which accompanied the trains. This operation was under command of Captain R. A. D. Kelly and Lieutenant R. M. Day, both of whom showed high degrees of leadership during the arduous journey.

Among the most ambitious projects based on the Fort were those sponsored by the Royal Canadian Corps of Signals, and the skill with which the members of this Corps carried out a variety of tests and exercises was the envy of all. This expertise can be attributed to the lengthy experience Canadian military signalers had in operating the North West Territories and Yukon Radio System where a considerable body of men had learned to live in harmony with an Arctic environment and at the same time operate communications equipment in areas of high auroral disturbance.

Major Frank Riddell of the Corps of Signals was perhaps the most notable character to inhabit Fort Churchill during the early days of its existence. With a wide knowledge of Arctic conditions gained over many years with the System and the ability to attract an interested group of younger soldiers to the cause of improving military communications in the north, Riddell was the ideal officer to be placed in charge of a series of exercises and experiments.

Major Riddell's expertise in Arctic matters did not lie in radio transmission alone. He was an expert dog team musher and seemed to be able to keep mechanical equipment operating in the worst climatic conditions imaginable. His primary means of transportation, a Snowmobile MK1 (Penguin) DND No. 76-919, affectionately known as BETSY, continued to operate when all other mechanical transportation came to a halt. Riddell's death in 1983 at the age of 81 was widely reported in the media. His obituaries in various newspapers stressed the fact that he was one of the four members of the Royal Canadian Corps of Signals who established the first radio station north of the Arctic Circle at Aklavik in 1924. Further, much was made of the fact that Riddell was "generally credited with, but never officially recognized as, the man who killed Albert Johnson,"[8] at Rat River, in the Yukon in 1932.

The signals tests were usually incorporated in exercises based on the Fort but moved considerable distances both on the tundra and through the boreal forest so that both men and equipment could be tested under operational conditions. These exercises, MOCCASIN and SIGLOO by name, were designed in such a way that various technical matters such as wave propagation could be thoroughly investigated and earth constants measured. In addition, a variety of hardware items required for signal operation in Arctic areas, with particular emphasis on batteries, were tested. Wanigans were equipped to perform the functions of wireless stations, technical maintenance shops and cable layers and were subjected to rigorous tests. One of the SIGLOO series tested these vehicles over one hundred and thirty-nine miles of the roughest terrain that could be found in the vicinity of Churchill and proved their

reliability in performing the roles for which they were equipped.

Of vital importance was winter clothing for the troops, and a great deal of effort was expended in trying to develop a type of environmental protection which would allow service personnel to perform normal military duties in extreme cold. One can imagine the problem posed by even a simple military act like pulling the trigger of a rifle or machine gun with a finger encased in sufficient material to prevent immediate freezing. To obtain the same insulating effect on a human finger, the material used must be over twice the thickness of the material used to achieve the same amount of insulation on the human torso. Thus, the protection of the hands presents the clothing designer with prodigious problems particularly when manual dexterity is a prime requirement. After visiting the Fort where he had watched various trial teams in action, a reporter from Time wrote "Even if all the machines ran like clock-work, man in the Arctic will still be inefficient. A rifle will fire, but it takes a man to aim it and press the trigger--and a man wearing four layers of mittens has no trigger finger. Neither can he work small knobs on radio or radar sets."[9]

Weight of the clothing required for protection from extreme temperature was a governing factor in realizing a suitable comfort level for the troops. Because the clothing worn by the Inuit kept them reasonably warm and weighed only nine pounds, there was general agreement that the ideal clothing for soldiers in the Arctic would be that worn by the aboriginal people. Supply in sufficient quantity to equip a large force, however, was considered impossible, and, even if the clothing could be produced, the maintenance of it could not be

achieved. Keeping the skins and hides pliable is a skill which few soldiers would be capable of acquiring.

Prior to 1946, Dr. Paul Siple and Dr. Tom Manning had studied native clothing in depth and analysed what they believed were the keys to the comfort of the costume. The work undertaken at Fort Churchill starting in 1946, under the direction of Dr. Alan H. Woodcock, building on the work of Siple and Manning, tested clothing manufactured from man-made materials designed to duplicate some of the better features of native clothing. This clothing adopted the vapour barrier principle, and the costume was designed to fit loosely so as to ensure that excess perspiration would evaporate and not freeze into icy droplets.

Extensive testing of various suits employing the vapour barrier principle was carried out between 1947 and 1953. At first, the testing was done without elaborate instrumentation, but later tests were very sophisticated with thermocouples attached to various parts of the test subject's anatomy to measure heat loss. In the tests conducted in 1952-1953[10] weather conditions were ideal for experiments on environmental clothing. During the test period the temperature was generally in the -20° F. to -30° F. range with a minimum of -40° F. and a maximum of 0° F. The windchill varied between 1540 and 2490 units. The conditions included cold clear days, windy days with gusts up to 43 MPH and days with blowing snow which on occasion reached blizzard proportions.

The finding of the test team was that, although under certain conditions the suit provided excellent insulation, because of poor design and breakdown of insulation materials the suits were considered

unsatisfactory. Later the project was abandoned in favour of additional research into the "layer" principle of Arctic dress.

Sir Hubert Wilkins, the famed explorer, was a frequent visitor to Fort Churchill while he was employed as a consultant to the United States Quartermaster Corps. Sir Hubert believed that there were certain basic characteristics which should be built into any commercially-produced Arctic clothing. For outer clothing he demanded flexibility, wind resistance, water/snow repellancy and radiation acceptance. Most of these characteristics were incorporated in the clothing which resulted from the work of the scientists at Fort Churchill.

It was possible that far too much time was spent on clothing research and that the Canadian Armed Forces might have copied the clothing used by white traders and trappers with vast northern experience. On investigation it was found that people of that nature did not try to brave the high windchill. When the temperature dropped and the wind blew they sensibly lay up until the worst was over.

While the major activities at the Fort were conducted under the aegis of the Canadians and the Americans, the British also made good use of the facilities at Fort Churchill. Initially it was the opportunity to witness tests of military equipment under Arctic conditions which spurred British interest, and in the winter of 1948-1949 six British Army officers were attached for employment as the Fort Commander saw fit.[11] These officers brought a great deal of expertise with them for all had wide experience in their various disciplines which ranged from medicine to engineering. As will be further explored, the Royal Air Force made profitable use of the detachment of the RCAF Winter

Experimental Establishment stationed at Fort Churchill. However, perhaps the most extensive use of the Fort by the British was when complete units of the British Army came to participate in cold weather training. Strome Galloway states: "Once, two companies of the Royal Scots flew in forty-eight hours out of Aden on the Persian Gulf where the thermometer hovered at 120° Fahrenheit. At the time we were 40° below zero with a wind chill factor giving an equivalent of 60° below. It was quite a change in temperature for the Scots."[12]

The extremes of temperature encountered by the Scots were not unique; many American soldiers at Churchill were from the deep south and found acclimatization very difficult. For example, the first formed body of the United States Corps of Engineers to arrive at Churchill after the Fort was established came from Yuma, Arizona. This unit, the 59th Construction Company, under the command of Captain Gerry Gray, arrived in Churchill with southern gear and initially had to be equipped with Canadian environmental clothing enabling them to commence working on the building of an automotive workshop.[13]

Perhaps whatever gods there be charged with the deployment of military personnel have a twisted sense of humour. In 1948, the Royal Canadian Army Medical Corps' leading expert on tropical medicine was posted as officer commanding Fort Churchill Hospital.[14] Mr. C. Jones, the first superintendent of the DRNL, arrived in the Canadian Arctic from the Indian Army where he was engaged in scientific and technical research. Captain M. E. Carleton-Smith of the British Rifle Brigade came from successive postings in Malaya and Kenya on attachment to Fort Churchill in February 1959.

Many tests and exercises were conducted at Fort Churchill which were designed to increase the capability of Canadian service personnel to live, move and fight under Arctic and sub-Arctic conditions. Numerous scientific experiments necessary to establish what kind of clothing and equipment soldiers would require in the north had been completed. As a result, some military personnel had achieved a high degree of skill in coping with the northern environment and the Canadian Army as a whole had acquired some expertise in northern operations.

Notes

1. Final Report Winter Exercise MUSK OX. Prepared under direction of the Chief of General Staff File IM-2-47 over HQS 9012-564-9.

2. The exercise was under the direction of Major S. B. MacDonald and the company group was commanded by Major C. E. C. MacNeil both of whom headed the instructional staff at Fort Churchill on different occasions.

3. Canada, the United Kingdom and the United States co-operated in producing three basic manuals on Arctic military matters in 1951. Teams from the three countries met at the Command and General Staff College at Fort Leavenworth, Kansas, to write the manuals.

4. For example, see Canada's Defence Programme 1955-56 (Ottawa: Queen's Printer, 1955), p. 12, which refers to Operation BULL DOG II conducted between 1 and 14 December 1954 and designed to accomplish "Operational training for Arctic warfare of the Mobile Striking Force and testing of new equipment and rations."

5. Fort Churchill (Ottawa: Queen's Printer, 1959), p. 14. In this publication two of the Inuit instructors are identified as Jasper Piktauer and Kowatuk.

6. The Canadian soldiers who had fought in Siberia in 1918-19 had used clothing and equipment "designed by Sir Ernest Shackleton who had volunteered to accompany the North Russian Expeditionary Force as an 'expert consultant.'" See Roy MacLaren, Canadians in Russia 1918-1919 (Toronto: Macmillan, 1976), p. 50.

7. Report of the Department of National Defence for Fiscal Year ending 31 March 1949 (Ottawa: King's Printer, 1949), p. 51.

8. Edmonton Journal, 21 March 1984. See also "Heroic Major Killed Mad Trapper in Yukon" in Victoria Times-Colonist, 1-2 April 1984.

9. Time, 7 June 1948.

10. These data from Test Report on Exercise VABAR II 1952-53 prepared by the Canadian Directorate of Interservice Development.

11. Letter dated 30 July 1948 from Director of Weapons Development at the United Kingdom War Office to Commander Fort Churchill. These British officers were: Major P. M. Bennett and Major H. M. Millar, Royal Engineers; Major R. A. Smart, Royal Army Medical Corps; Major P. G. Palmer, Royal Electrical and Mechanical Engineers and Major C. W. Lashmar, Royal Army Service Corps.

12. Strome Galloway, The General Who Never Was (Belleville: Mika Publishing Company, 1981), p. 281.

13. Interview Captain Henry Koehler/Tedlie, 15 August 1987.

14. Major (later Colonel) B. L. P. Brosseau.

CHAPTER SEVEN

RESEARCH AND ROCKETRY

Because of Canada's vast Arctic territories various Canadian and American agencies were engaged in highly important scientific research at Fort Churchill, a gateway to these territories. It was natural that the Canadian Defence Research Board would play a leading role in these international scientific matters pertaining to military operations in northern regions. To this end DRB established the Defence Research Northern Laboratory at Fort Churchill in 1947 and continued to operate that facility until 1965. From the scientists who worked at DRNL on either the permanent staff or in support of a special project came some of the most worthwhile innovative ideas on Arctic living, moving and fighting that Canada has ever produced. The key to the progress made in the scientific field can be traced directly to the fact that a great deal of the research was user oriented. That is not to say that basic research was neglected, but the great bulk of the work accomplished was in the field of operational research where scientist and service man worked as a team in an endeavour to solve the many vexing problems involved in Arctic warfare.

Some difficulties always arise when scientists are forced to work with non-scientists, particularly in northern matters, because of the wide variety of opinions held by people who have lived and worked in Arctic areas. Dr. H. L. Keenleyside, who, in 1948, was appointed chairman of the Arctic Research Advisory Committee in addition to his duties as Deputy Minister of Mines and Resources and Commissioner of the

North West Territories, had this to say about the problem:

> Despite my lack of scientific knowledge, I like to think I was able to contribute at least something to the work of these bodies or to understand, and when necessary to keep out of the way, when the scientists were in agreement. When they were in conflict, which happened rather frequently among Northern experts, I tried to supply a mixture of common sense, experience and, on occasion, banana oil.[1]

In a small way successive commanders of Fort Churchill adopted Dr. Keenleyside's methods, and friction was kept to a minimum. Speaking of the two first commanders of the Fort, J. P. Croal, the first DRB employee on the ground at the Fort, wrote:

> They were patient excellent officers who bent over backwards to help the scientist and in those days they had plenty to do keeping their camp in operation without having to worry about groups of "long hairs." The Army was very wise in its selection of these officers to this early Command.[2]

But harmony only comes when more than one chief joins in the singing, and DRB were also judicious in their choice of superintendents for the DRNL. As a result, Fort Churchill is remembered by scientist and soldier alike as a place where two types of individuals met and worked together for the mutual benefit of both.

When J. P. Croal arrived at Fort Churchill in late August 1947, his task was to conduct permafrost investigations, and he brought with him the necessary drilling machinery. His problem, and it was a problem that plagued everybody in Fort Churchill in the early days, was lack of space to store his equipment. Croal ended up using an old searchlight platform salvaged from the town dump with interior dimensions of 6' x 8' x 8'. This expedient, the first DRNL installation, was a far cry from

the modern laboratory buildings which DRB turned over to the National Research Council (NRC) in 1965 when work at DRNL was discontinued.

The first step towards the sophisticated laboratories which finally appeared was a 13' x 14' hut bearing the trade name of its manufacturer STOUT, a misnomer of the first order, because blowing snow drifted through the cracks of what in essence was a huge packing case with a door. Soon not one but three STOUT huts appeared, and under the guidance of A. V. (Bert) Hannam, a much beloved DRB employee, a working laboratory came into being.

By 1950, the first of the new laboratory buildings was in use, and for the next fifteen years the DRNL played host to a coterie of brilliant international scientists representing an astounding number of disciplines. F. T. Davies, a onetime employee of DRB and a scientist who had worked in both the North and South Polar regions, recalls that: "The early DRNL grew like Topsy--by gradual expansion in old army huts until the new laboratory was built. Its function was closely linked to Army interests--living in the North in cold or wet or fighting mosquitoes.[3]

At the outset DRNL had served as a base for various teams carrying out field research and headed by scientists from various government departments and universities. At the same time, "some important work had been done on environmental psychology, entomology, fuels and lubricants and permafrost investigations."[4] When the new laboratory became available in 1950 a considerable expansion of this scientific effort became possible and soon outgrew the new laboratory. An additional laboratory building was completed in 1952, and DRNL was

reorganized into four sections. An administrative section administered the various programmes and acted as the liaison link between DRNL and HQ Fort Churchill. The three other sections dealt in physical sciences, biological sciences and operational research respectively.

It was in the operational research analysis of northern military exercises that the scientists and the soldiers were most closely integrated at the Fort. C. E. Law, who headed up the operational research section from January 1952 to December 1954, had been an officer in the Canadian Army in World War II. He immediately struck up a strong rapport with the soldiers who were assigned to work with the DRNL staff on the various operational research projects designed to improve northern operations, training and equipment.

M. F. Coffey, who was also a veteran of the Canadian Army, worked closely with Law and reported:

> It was during the period 1950-52 that the so-called "interface" between the scientist and the Serviceman began to be apparent. Up to this time the Services knew that Defence Research was going on, and the scientists knew there were Service problems, but the marriage between the two points of view, in the Arctic especially, had not taken place.[5]

Coffey, who was to replace Law at the end of 1954 as head of the operational research and human resources studies which were being conducted at the Fort, has also stated:

> For the first time in the Canadian Arctic, tests were administered in the field during operations as studies of morale, fatigue and impairment, effects of stove fumes, night vision, tent heating, watchkeeping in the cold, were conducted.[6]

The work of Law and Coffey was highly regarded by the service men who

worked with them. Many of the recommendations arising out of their work were soon included in the training programmes carried out at the Fort, and were later incorporated into a publication entitled The Soldier's Arctic Manual.

Over the years scientists from the National Research Council representing a diversity of disciplines were frequent visitors to Fort Churchill where they worked on a variety of scientific projects with their fellow scientists from the Defence Research Board. It was, however, in the early days that NRC made a major contribution to northern aviation.

In 1947, the Chiefs of Staff Committee[7] approved a request from NRC to install and operate an engine test house at a location in Fort Churchill to be decided upon by the Commander of the Fort. This facility was designed to provide a means of testing a large number of different jet and gas turbine engines in extreme cold for long periods of time. Results of international importance were achieved with this work, but those poor unfortunates whose homes were in the immediate vicinity of the test house spent many sleepless nights when full scale trials were being conducted.

Canada's Defence Programme 1952-1953 stated:

> Another important project in connection with military activities in the northland has been the study of insect pest control. Mosquitoes and black flies represent a real obstacle to living and working in northern regions during the summer months.[8]

A number of the entomologists who worked on this project at the Fort in the summers of its early days were from the Canadian Department

of Agriculture, and they were accompanied by their fellow scientists from the same department in the United States. They were joined by faculty members of Canadian and American universities accompanied by their graduate students. All of these entomologists were engaged in trying to devise means of protecting service personnel from voracious biting insects. Their efforts certainly improved the situation. Better repellants were produced, and means of area infestation suppression were devised, but for most of the old Churchill hands there was always a preference for the cold weather when mosquitoes, black flies and other biting pests were absent from the Fort. To give some idea of the intensity of the infestation in the area, it is reported that a party of entomologists with wide international experience, headed by Dr. C. R. Twinn of the Canadian Department of Agriculture, found the intensity of the attack of biting flies to be "higher than any of the party had encountered anywhere else in the world"[9] and on an exposed forearm from wrist to elbow "counts of 250 bites per minute were recorded."[10]

There were undoubtedly rough spots on the road to scientific truth in the combined efforts of service man and scientist at the Fort from 1947 to 1965, but in most cases the rough going was caused by ignorance of the true conditions at Churchill shown by middle management at Ottawa. The road was smoothed by on the ground co-operation between service man and scientist. On balance it must be said that a fine working spirit emerged between the two, and long lasting friendships were forged.

Dr. J. A. Easterbrook, a psychologist at DRNL in the 1950s

engaged in operational research, was extremely well qualified to assess the overall effect of the work which was accomplished. He had been a navigator in the RCAF and had qualified as a paratrooper in the Canadian Army, a dual qualification which he put to good use while acting as an observer with the Canadian Mobile Strike Force during their northern exercises. Easterbrook wrote: "In 1948 and 1949 . . . both individually and institutionally, Canadians were ignorant about the north country and how to conduct military operations in it. In the Fort Churchill venture we reduced that ignorance."[11]

F. T. Davies of DRB writes: "With the development of geophysical research interests . . . DRNL facilities changed over to support of auroral and upper atmosphere physics programs."[12] The rocketry which formed a major part of this geophysical research at the Fort became the focus of attention for the scientific world.

As previously noted (Chapter Two), the Chiefs of Staff Committee had given approval as early as 1947 for a rocket range to be built at Fort Churchill sometime in the future.[13] On 7 July 1954, the Chief of the General Staff informed the Minister of National Defence that it was the Canadian Army's intention to cold test ten missiles with conventional warheads at Churchill during January and February 1955. On 22 July 1954, a Minute from the Treasury Board authorized an expenditure of $112,000 to be spent on the construction of a rocket range at Bird Cove, seven miles from the main camp.

As early as 1954 the Upper Atmosphere Rocket Research Panel of the United States had targeted Fort Churchill as a potential site for International Geophysical Year (IGY) activities and created a special

committee who visited Fort Churchill from the fourteenth to the twentieth of November of that year. This committee presented a favourable report on the facilities in being and the base's growth potential for rocketry.[14]

During the winter of 1954-1955 Operation FROST JET was conducted at the range during the course of which tests on the NIKE I guided missile system were carried out on behalf of the United States Army. Robert F. Phillips pointed out: "In 1954, three years before the Soviet Union's first Sputnik began circling the earth, the Arctic skies above Fort Churchill were being pierced with various types of rockets."[15]

The International Geophysical Year was described by Dr. Lloyd V. Berkner, the President of the International Council of Scientific Unions, as "perhaps the most ambitious and at the same time the most successful co-operative enterprise ever undertaken by man."[16] This "year," commencing in July 1957 and lasting for eighteen months, teamed together 5,000 experts from sixty-seven nations and fourteen fields of research to investigate the earth from pole to pole and from the ocean floor to outer space.

Officials of the Canadian National Research Council called the IGY "the most extraordinary scientific adventure ever taken" and emphasized that during the project "Canada will play a big part in the study of the aurora."[17] Fort Churchill, due to its geographical location, was considered to be the ideal place to conduct these studies. NRC announced that "about seventy-five rockets will be launched at the multi-million-dollar site at Fort Churchill,"[18] and pointed out that the

project was part of a United States programme of upper atmosphere research which would include rocket launchings in the Pacific and the Antarctic.

It was not rocketry alone that occupied the scientists stationed at Fort Churchill during the IGY. Activities in connection with nine of the fourteen IGY disciplines were conducted at the Fort.[19] These included scientific investigation in meteorology, geomagnetism, oceanography and nuclear radiation. However, it was rocketry that garnered the most publicity and kept Churchill before the eyes of those interested in geophysics.

A. E. Cooney, officer in charge of the DRNL at the time, reported that:

> The rocket programme was by far the most colorful and spectacular program with which DRNL was daily associated. It brought to Fort Churchill countless distinguished visitors and newspaper, radio and TV staffs. . . . The number of visiting dignitaries reached a zenith on one particular day. An overnight group were sent on their way via aircraft at 10.30 a.m. A second group flew in for a luncheon at noon and a third group arrived for a mess function that evening. Endurance was perhaps as essential as intelligence.[20]

In that last sentence Cooney summed up the sentiments of many who served at the Fort not only during the IGY but in the years that preceded and followed that momentous scientific event.

Prior to the seventy-five rockets being fired in support of the actual IGY investigations, it was necessary in the fall of 1956 to test the rocket launching facilities and the instrumentation of the rocket range. Six rockets, AEROBEE and NIKE-CAJUN, were packed with ballistic instrumentation and fired with highly satisfactory results.[21] This

preliminary work and the bulk of the money expended on putting the rocket range in condition to carry out the IGY tests was supplied by the government of the United States. The work was reported in Bulletin No. 2101[22] issued by the Public Information Office of the Military District of Washington in the following terms:

> Launching facilities were built for the AEROBEE-HI and CAJUN rockets with their attendant telemetry and communications installations scattered over 150 square miles of arctic tundra. The AEROBEE-HI launching site is the only known enclosed rocket launcher in the world.

In this, as in many other American excursions into the Canadian north, there were precautions taken to ensure that the American presence was not a permanent one. External Affairs noted:

> Ownership of all removable property brought into Canada or purchased in Canada in connection with the IGY programme shall remain in the United States; the United States shall have the unrestricted right of removing or disposing of all such property within a reasonable time after conclusion of the programme, after which any property not disposed of will revert to Canada.[23]

It is of interest that no such legal agreement or Order in Council existed for the other facilities built by the Americans at Fort Churchill. In 1947, when the Canadian Army was taking on charge various buildings built and paid for by the United States, the Canadian legal authorities reported that there was ". . . no record of agreement, exchange of notes, or other document specifically relating to the ownership of this property."[24] Undaunted by this amazing lack of legal documentation, the Deputy Minister of National Defence approved the transfer of the structures to Canadian ownership on 12 June 1958.[25]

Because of the international aspects of the IGY the number of

United States personnel at the Fort did not create the usual discussion as to American overpopulation of the Canadian north, and the American requirement for 622 additional personnel spaces for 1956 and 200 for 1957 and 1958 was met.

It would be incorrect to assume that the IGY rocketry at Churchill was an all-American show. Howard Somers and Maurice Corbeil from the Canadian Armament Research and Development Establishment at Valcartier provided the expertise in instrumentation and electronics. Major Mark Holmes of the Royal Canadian Artillery, who had previously trained at White Sands, New Mexico, effected Canadian liaison to the project. The DRNL staff members assisted in carrying out electronic measurements and telemetering as well as contributing to other associated activities. In addition, the facilities of the laboratory were made available as a headquarters for the project as well as for the preliminary test firings conducted in the fall of 1956. The staff of DRNL was also responsible for conducting the survey of the satellite sites which were required to support the IGY work. All of this Canadian support was under the supervision of Albert E. Cooney, the Superintendent of DRNL.

Work on the site from which the IGY rockets were to be launched and on the outlying recording stations required for the test commenced in 1955 and was completed in time for the test firings in October 1956.

The newssheet published by the United States detachment permanently stationed at Fort Churchill had this to say when the IGY rocket tests came to a close:

In spite of Arctic winters, mosquitoes, polar bears and fire

> the IGY Rocket Project completed a highly successful probe of the upper atmosphere over Fort Churchill. With the ending of IGY, scientists, technicians and support personnel at the Fort Churchill Rocket Project ended its upper atmosphere research on 5 December . . . at least for the time being.[26]

"At least for the time being" was a very perceptive phrase for the closure of the rocket range was of very short duration.

The authorities at Fort Churchill also predicted that the end of the IGY would not spell finish to rocketry at the Fort. A Press Visitors Handbook published in January 1959 contains the following paragraph:

> Scientists of many nations recently completed research of the upper atmosphere under a programme of the IGY Committee. The Defence Research Board was the Canadian sponsor with the Army providing engineer personnel for the large scale operations. Fort Churchill was chosen as the site for the programme as it could provide all the administrative facilities necessary and it is probable that many other programmes will be based there in years to come.

The information obtained at Churchill during the IGY was of such superior quality and of such benefit to upper atmospheric research programmes of vital interest to both Canada and the United States that a decision was jointly taken to have the rocket research facility re-open in August 1959. The chief responsibility was vested in the United States Army Missile Command who chose its facility at White Sands Missile Range in New Mexico to be the office of primary interest in this new endeavour. The aim of the continuance of the facility was to provide rocket and missile range administrative services to a series of authorized users. These users included the following American organizations:

National Aeronautics and Space Administration (NASA)
United States Air Force
Advanced Research Projects Agency
United States Navy
Continental Army Command
United States Army Signal Corps

The Canadian user would be the Canadian Army, and that organization was charged with the responsibility for range safety and control. The U.S. Army Ordinance Corps charged with the maintenance of the facility was allotted $1,300,000 for the first year's operation but recovered $650,000 from NASA as their share of maintenance expense.

From 5 September 1959, when two rockets were fired, until February 1961, when a disastrous fire destroyed a large portion of the facility, the range was in constant use. The firings which took place were extensive. The Canadian Director of Artillery pointed out that the programme planned for 1959-1960 alone included 150 launchings by the United States, 10 launchings of propulsion test vehicles by DRB and a series of joint Canadian/American cold weather launchings to test the HAWK and LACROSSE missiles. At a meeting held in Washington on 22 June 1959, this planned programme was firmed up leading to 189 specific rockets and missiles being fired.[27] An interesting film entitled Fort Churchill--Springboard for Science covering some of these firings and a general review of the rocket facilities at the Fort was produced by the authorities of White Sands Proving Grounds.

Even an elongated year of eighteen months did not seem to satisfy the IGY's thirst for more information on the complicated aspects of the upper atmosphere. During the International Rocket Week which took place from 16 November 1959 to 22 November 1959, five more rockets

were launched from Fort Churchill as part of the IGY Co-operative Programme. The thirst for knowledge of magnetic fields, ionospheric tides and ion densities on the part of world scientists kept the Churchill Rocket Range a centre of world scientific attention long after the IGY had come to an end.

The U.S. Army handed over their obligations at the rocket range on 1 July 1962 because it had decided to move its Arctic test facility to the Ladd Air Force Base in Alaska which the U.S. Army had acquired from the United States Air Force. After long and arduous negotiations the USAF assumed the responsibilities at the Fort Churchill Rocket Range previously carried by the U.S. Army.[28]

After the disastrous fire on 28 February 1961, protracted negotiations took place between Canadian and American authorities as to the rocket range's future. The fire had destroyed the generator building and the storage buildings for diesel fuel and helium as well as the structures in which the AEROBEE missiles were assembled and prepared for launching. The on-site mess hall was completely destroyed as was the launch control building. Fortunately, the fire was brought under control before it spread to the AEROBEE launch tower and the NIKE-CAJUN facilities. There were lengthy discussions as to whether the facility which had been destroyed by fire should be repaired or an altogether new facility constructed on another site. Although the consensus favoured the latter course, the question of cost intervened, and the decision was taken to restore the original area and add a new launch complex.

While Canadian officials were keen to have the facility brought back into operation they constantly expressed the opinion that Canada

would be unable to finance the restoration; nor would she be in a position to operate the facility at the level of activity required to support its planned use. Although the estimated utilization of the range indicated that at least one quarter of the launchings anticipated would be of Canadian origin, there was great reluctance to spend Canadian funds on the restoration, care and maintenance of the facility.

The continuing Canadian use of the rocket range was acknowledged by a 1961 government statement which read:

> Two launchings at Fort Churchill, Manitoba, marked the first firings of a rocket named BLACK BRANT II being developed by the Canadian Armament and Development Establishment in Valcartier, Quebec. The BLACK BRANT II is a Canadian developed rocket designed to achieve relatively high altitudes to further upper atmospheric investigations by the Board (Defence Research Board) and by other scientific agencies.[29]

A ceremonial takeover of the new facilities was conducted in a swirling snowstorm on 1 November 1962, and the range was now firmly in the hands of the USAF. Unlike its predecessor, the U.S. Army, which had used military personnel to conduct the necessary operational work on the range, the USAF let this function to contract. This action was not taken without a good deal of soul-searching because a report prepared by the Americans had stated "that the Canadian Commander of Fort Churchill expressed a preference for military control of the U.S. operation at Churchill."[30] NASA's representatives showed a strong disinclination to take over running the range, although they agreed that they would be willing to pay a share of the cost on a pro rata basis.[31] In the event it was decided that the USAF would place a staff of fifteen to twenty military personnel permanently at Fort Churchill. These personnel,

under command of Lieutenant Colonel Jerry F. Flicek, were posted to a newly-formed unit called USAF Office of Aerospace Research, Detachment #2, Fort Churchill, Canada, which was charged with the overall supervision of the range activities.

All range operations were let by contract to Pan American World Airways after more than fifty companies had expressed an interest in supplying the service. Of these companies, twelve submitted firm proposals, but PAA's bid was considered the best from the point of view of both technical ability to perform and cost. When the contractors took over the operation of the rocket range some difficulties were experienced due to their irresponsible attitude towards the climate. All military personnel were subjected to an Arctic indoctrination course prior to serving on the various teams operating out of the Fort, and, although attempts were made to have civilians undergo like indoctrination, the large influx of contractor's personnel caused a loss of control over this most necessary precautionary measure. Much time and effort was expended in dealing with the consequences suffered by unindoctrinated personnel.[32] The PAA contract had a buoyant effect on the local economy for, of the two hundred and ten employees eventually hired by PAA, seventy-five percent were Canadians.

The takeover of the rocket range by the USAF had required an intergovernmental agreement which was formalized by an exchange of correspondence on 14 June 1960. This correspondence authorized "the making of supplementary arrangements or administrative agreements between authorized agencies of the two governments for the purpose of carrying out the intent of the agreement."[33] The "authorized agencies"

in connection with the transfer of the operational use of the range to the USAF was that body and the Canadian Army. On 23 April 1963, an administrative and financial agreement was signed by General Curtis E. Lemay, Chief of Staff of the USAF, and Lieutenant General Geoffrey Walsh, Chief of the General Staff of the Canadian Army. This agreement laid out in meticulous detail the responsibilities of the two parties including the financial arrangements for repayment by the United States to Canada for services supplied by the host country.

The rocket range at Churchill which continued to exist even after Fort Churchill disappeared was covered by another inter-governmental agreement between Canada and the United States. This agreement called for the establishment of an Operational Coordinating Group consisting of representatives of both nations including the United States Department of Defense, NASA, the Canadian Army and DRB. As the name implies, its chief function was to co-ordinate the use of the Rocket Research Facility, but its mandate stretched to encompass recommending "procedures and policies with respect to public relations; channels of communication; responsibilities for financing, manning safety, construction; and any additional matters relating to the operation of the Rocket Range Facility."[34]

Like the United States Ordinance Corps the USAF eventually shed themselves of the range responsibility. It then became the joint responsibility of the American NASA and the Canadian NRC. With NASA as the principal user this change caused speculation that Churchill might become another Cape Canaveral. In fact the Winnipeg Tribune used a reference to the Cape in an article headlined "Fort Churchill--New

Canaveral at Churchill." The story which appeared in the 10 January 1963 issue of the paper read:

> The climate is different but this northwest military base may become "a second Cape Canaveral" and may be the launching point for the world's first orbital flights. For years rockets have blasted from here into the aurora borealis on testing and weather data missions. But a vast expansion program is reported to be in progress and officials predict that liquid-propelled missiles of the giant Atlas type will be fired from pads in Churchill.

The Canadian developed Black Brant rocket, a rocket designed especially for high altitude investigation, was frequently fired at the rocket range both during and after the period Fort Churchill was under control of the Canadian Army. The 23 January 1965 edition of the Winnipeg Free Press reported that on the previous day a Black Brant had been fired 450 miles into space. It further stated that this was one of many Black Brants being fired and that each cost $50,000.

In 1966, two years after Fort Churchill had ceased operations, it was reported[35] that more than 40 universities and colleges had used the range facilities and that up to 2,000 scientists had conducted 900 experiments during the year. The report further stated that the annual budget had been $4,400,000 split between NASA and NRC.

There was more than one problem raised by the press about rocketry at Fort Churchill.[36] The major theme of press reports was a query as to whether the Canadians were in charge of what was going on or had they abrogated all responsibility and handed it over to the Americans. This was a valid question for the press to raise; a major part of the visible work was being performed by Americans both military and civilian. However, after 1950 Canada never allowed the Americans to

station an officer permanently in Churchill superior or equal in rank to the Canadian Commander of the Fort, and the control of range safety was always under a Canadian officer.

A more vexatious press initiative was questioning whether the warheads on the rockets at Churchill were capable of containing atomic devices. These queries were bound to have occurred for it was evident to the trained observer that some of the rockets were nuclear capable even though in the mode they were being used the warheads were packed with high altitude instrumentation and not nuclear devices.

The major American operations at the range ceased on 30 June 1970, when NASA completed their experimental work. Up until that time the range had been employing 210 persons and had an annual operating budget of $5,000,000.[37] The cessation of this activity was another in a series of crippling blows to the economy of the region. When it was first mooted that NASA was to curtail their research programme at Churchill, Mr. Robert Simpson, the Member of Parliament for the area, was quick to point out the problem such a move would cause to employment in his constituency. During the autumn of 1969 he made several interventions[38] in the House of Commons in an attempt to have the government try to forestall NASA's withdrawal.

Despite the discontinuance of NASA's major support of the programme in 1970, it was not until 1985 that the Canadian government finally decided that the range was no longer required for high altitude investigation and rocketry at Churchill came to an end.

An interesting footnote to the story of rocket activity at Churchill concerns the habituation of the local population to the blast-

offs. Major C. E. C. MacNeil reported that "there was a time when some people would stay up to watch from a considerable distance while a rocket soared through the night. There's been so many rockets fired that I suppose they've just lost interest. Even the kids couldn't care less about a launching now."[39]

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33. HQS 2001-C185/39-1 (DMO&P 1A) 2 May 1963.

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CHAPTER EIGHT

"BROTHERS IN ARMS"

The Canadian Army, by virtue of being charged with the overall administration of Fort Churchill, became the principal participant in the military activities centred on the Fort. However, the other two armed services, the Royal Canadian Navy and the Royal Canadian Air Force, played prominent roles in the life and work of the community. This chapter will deal briefly with the northern involvement of these two organizations and the activities they carried out in and from Fort Churchill.

The history of the Royal Canadian Navy's involvement at Churchill, Manitoba, predated that of the Canadian Army and continued for a short while after the army's interest waned.

In 1935, a naval representative had sailed on the Hudson's Bay Company ship, RMS Nascopie to Churchill. One of the missions assigned this representative was to assess the suitability of Churchill "as a supply base or as a port of entry for troops or munitions."[1]

In 1943, the Canadian Navy established a radio station in a nondescript building in the townsite of Churchill and continued to operate in that location until a magnificent 29 foot high structure, designated HMCS Churchill, with an estimated value of close to six million dollars, came into being in 1950.

The old station in the townsite was manned by a total of seven sailors headed by a Communications Petty Officer, but when HMCS Churchill was at the height of its activity in the 1960s it was manned

by 190 all ranks.

The new building was built on a site midway between the Fort and the townsite of Churchill on 512.7 acres of land leased from the National Harbours Board. Whereas the main camp at Fort Churchill was built on solid rock and on a heavily gravelled esker, the navy installation was constructed on a quagmire of treacherous muskeg. The techniques employed by the Foundation Company of Canada, who were the prime contractors for the job, were virtually untested before construction started. There were many skeptics among the old northern hands when it was learned that the permafrost which lay beneath the muskeg was to be disturbed so that concrete footings could be established in the frozen ground. It was believed that the building could not be maintained on a level once the permafrost underlying it was disturbed. This consequence was avoided by allowing the permafrost around the footings to return to its permanently frozen state before the building proper was commenced. This necessitated the complete removal of snow from the site throughout the winter of 1949 and the spring of 1950. To allow the snow to act as an insulation barrier would have precluded the freezing so necessary to the building's stability. Large quantities of gravel and moss were placed adjacent to the footings replacing the muskeg to ensure the permanency of the frozen soil. As a precaution thermocouples were planted at various levels to indicate if any thawing of the permafrost was taking place so that immediate action could be taken to rectify this situation if it did occur. Further, to ensure that the permanency of the permafrost was not affected by heat escaping from the floor of the building, heavy insulation and a vapour

barrier were incorporated in the structure's flooring. Fortunately the experiment worked and the building remained remarkably stable throughout its active life.[2]

Some of the work carried on by the navy at Churchill was of a highly classified nature, but the ship also formed an important link in radio, teletype and landline communications servicing a wide collection of users. Although the navy interest in Churchill hung on longer than that of either the army or the air force, it too came to an end, and the navy installations were turned over to Crown Assets Disposal Corporation in 1968.

The Royal Canadian Navy, although possessed of a marvellous record of wartime accomplishments in the North Atlantic in winter and a series of remarkable achievements in convoying merchant ships to Murmansk, did not in peacetime have an affinity for Canadian northern waters. As a seasoned mariner said, the idea was "to sail out of Halifax and turn right."[3] This reluctance on the part of the Canadian Navy to operate in northern Canadian waters must have been a source of embarrassment to some Canadian sailors because amongst the ranks of their junior officers[4] there was a great deal of expertise in northern travel.

When Vilhjalmur Stefansson, the famous Arctic explorer, was soliciting contributions to his proposed Arctic Encyclopedia in 1947 he wrote to the Canadian authorities asking if Canada would contribute articles on Canadian military accomplishments in the Arctic. This request was considered by the Chiefs of Staff Committee, and, whereas the respective chiefs of the army and air force agreed that their

services would prepare appropriate material, the Chief of the Naval Staff, Vice Admiral Rastus Reid, declined. He stated that the Canadian Navy had no experience in the Canadian north and suggested that Dr. Stefansson get in touch with the Royal Navy for they had an historic interest in that part of the world.[5]

The first ships of the Royal Canadian Navy to sail into Hudson Bay were the destroyers HMCS Nootka and HMCS Haida in 1948.[6] The aim of this cruise was to familiarize members of the navy with a long neglected look at the waters of northern Canada. The two destroyers had acted as escorts to the Canadian aircraft carrier HMCS Magnificent as far north as Wakeham Bay on Hudson Strait. From there the Magnificent returned to Halifax, and the destroyers entered Hudson Bay and paid a visit to Churchill. The visit was a huge success from Fort Churchill's point of view. Tri-service sporting events were conducted, special dinners were held in all the messes, and escorted tours of the Fort took place to familiarize the sailors with the scientific and training activities taking place at the base. Because the ships' visit coincided with a visit from the Governor General, Viscount Alexander, it gave him an opportunity to see all three of his Canadian armed services in a gala mood.

In an endeavour to obtain more information about this expedition Rear Admiral A. H. G. Storrs was interviewed. Storrs, then a Commander, was the captain of HMCS Nootka at the time of her voyage into Hudson Bay in 1948. The admiral advised that there were two major reasons for mounting the expedition. First, there was "the realization in the years after World War II that the Canadian Navy, although the navy of a nation

with extensive northern elements, had no real knowledge of her northern waters."[7] This fact led to a determination that the navy must acquaint itself with the problems of operating in Arctic waters.

A second reason was put forward by Storrs. He stated: "The decision to send the ships up to Hudson Bay was also influenced by the fact that in the early years after the war the question of Canadian sovereignty became a matter for consideration and discussion at Naval Headquarters. At that time, if I recall rightly, there was talk of the Sector Theory of Canadian sovereignty in the high Arctic, challenged and not accepted by the United States."[8] The expedition was by way of showing a Canadian presence in Arctic waters.

When questioned as to the results of the expedition Storrs was of the opinion that it had been successful in familiarizing a few naval people with climatic conditions and navigation in that part of the world. However, this was of marginal value because no transfer ice was encountered. Storrs stated that "this was just as well since neither of the two destroyers were ice strengthened at all and the destroyers had relatively thin skins and would have been very vulnerable to encounters with ice."[9]

A more positive result of the expedition, according to Storrs, was the impact it had on the design of future ships. It was decided that all new Canadian vessels should have an increased capability of operating in northern waters. As a consequence the specifications for the St. Laurent class destroyers called for a limited degree of ice strengthening in the bow area.

There was a short period when there seemed to be a new interest

in northern cruising for the navy, but it was short-lived. HMCS Labrador was launched at Sorel, Quebec, in December 1951 and commissioned in 1954.[10] A six thousand ton ship with an icebreaking capability, she successfully transitted the Northwest Passage.[11] She was skippered in turn by two very able northern sailors, Captain O. C. S. Robertson and Captain T. H. Pullen, but in 1957 was taken out of naval service and turned over to the Department of Transport.

Rear Admiral Storrs was a member of the Canadian Naval Board when the decision was taken to turn HMCS Labrador over to the Department of Transport. He states "that the primary reason for the decision was lack of funds."[12] At that time there was a squeeze on National Defence spending and the navy had to accept their share of the cutback. Storrs further states:

> . . . that the decision was whether to retain the Labrador and pay off other ships or get rid of the Labrador. The Naval Board finally decided that since the accepted roles of the Royal Canadian Navy in the NATO alliance were the protection of shipping from submarine attack on the sea lanes of the North Atlantic and the protection of our own coasts from forays by submarines, and that, as of that time, it was considered highly unlikely that any naval operations would take place in Arctic waters that priority must be given to the anti-submarine role. In view of financial expedience it meant that the Labrador's role was relatively, and I stress the word relatively, minor. So as something had to go we concluded that it was Labrador's role and the Labrador.[13]

In 1974, the Chief of the Defence Staff, General J. A. Dextraze, issued instructions that not less than two Royal Canadian Navy ships should exercise in Hudson Bay for a minimum of two weeks each year.[14] Armed Forces Day at Churchill, Manitoba, was celebrated on 17 August 1974 with HMCS Preserver, HMCS Saguenay, and HMCS Assiniboine in the

northern port. Among the distinguished guests at Churchill for this occasion were His Honour W. J. McKeag, the Lieutenant Governor of Manitoba, and James Richardson, the Minister of National Defence. Despite the 1974 initiative, Captain Pullen, the last naval skipper of HMCS Labrador, testifying in front of a Parliamentary Committee in 1982, stated "In my view the Department of National Defence is almost totally unaware of our maritime concerns in the Arctic."[15]

The Executive Order issued by the Department of National Defence in 1947[16] excluded the Royal Canadian Navy Detachment from the administrative control of the Fort Commander. This, of course, could be justified on paper by the fact that in 1947 the navy signals establishment was situated in the town of Churchill. The services provided by the camp headquarters, however, were readily available to the naval station, and the Chief Petty Officer in charge of the station used them as he saw fit.

Because the navy had been in Churchill prior to the army's arrival, and because the nature of their work in most respects was far removed from the other military activities in the area, early liaison between the navy and the other services on Churchill matters was less than satisfactory at the Ottawa level of command. A great many of the difficulties in Churchill between the navy and the other services were caused by decisions at the Ottawa level. Fortunately, many of the problems caused in this way were smoothed over at the working level in Churchill providing the senior naval hand and the Commander of the Fort were able to strike up a friendly relationship, a situation which existed much of the time.

From the outset the Canadian Navy had no desire to get too closely aligned with the other two services at Churchill. They wished to remain apart and fought an unsuccessful strenuous rearguard action to prevent having the sailors and their wives live in the same group of married quarters as the other inhabitants of the Fort. After 1950, when the detachment moved from the townsite of Churchill into their new quarters closer to the Fort, the problem arose of what constituted sailors' work and the contribution they should make towards keeping the station and its immediate environs in the state of orderliness demanded by the Fort Commander. Colonel R. J. Carson, who commanded Fort Churchill from 1960 to 1962, recalls that when Governor General Vanier and Madame Vanier visited the Fort in 1961, it was necessary to "pull rank" on the naval commander in order to have him allow his sailors to participate in an area cleanup prior to the vice-regal visit.[17]

Although the naval radio station was on its own for all operational matters and had in-house messing facilities for its normal personnel establishment, it was completely dependent on the army for a host of administrative services. The army supplied all victuals, petrol, oil and lubricants to the naval station. They also administered the married quarters occupied by the sailors accompanied by dependents. Medical and dental needs were army responsibilities, as were schools, churches and most of the recreational and social facilities. The navy was not unappreciative of the services rendered by the army, and the work of the Commander of the Fort in support of the naval personnel was recognized officially by the Chief of the Naval Staff in 1950.[18]

On balance it is true to say that the experiment of integrating a naval element into a much larger other armed services community worked reasonably well, but any student of the integration process at Fort Churchill should have known full well that the navy would most certainly be odd man out when an overall integration of the armed forces was attempted in 1964.

Whereas Canadian Army Nursing Sisters had been stationed at the Fort from the outset, the Navy ran an all-male ship until ten members of the Women's Royal Canadian Naval Service arrived in November 1953.

The Royal Canadian Air Force interest in the north during the life of Fort Churchill exceeded greatly that of the Royal Canadian Navy. It is true that the operation of aircraft in the cruel climatic conditions of the Canadian north first fell to the bush pilots who, by a series of ad hoc measures, had been successful in keeping their aircraft flying in the harsh and windy atmosphere of the high Arctic. However, these measures, although adequate for an individual plane, were not satisfactory for the large scale cold weather operations which the Royal Canadian Air Force envisioned as necessary in the post-World War II era.

The Royal Canadian Air Force unit at Fort Churchill, called the Joint Services Experimental Station, was brought into being under command of Squadron Leader Jim Coyne in October 1946. The unit was initially responsible to Northwest Air Command in Edmonton[19] for the complete operation of the airfield that had been inherited at the time of the takeover of the American Crimson Route base. The JSES responsibilities included acting as the divisional point of control for all aircraft flying in and out of the area, air to ground signal

facilities and the operation of a point-to-point signal chain. A major additional responsibility was the maintenance of, and snow clearing from, the runways at the Fort.

At the beginning the JSES had a detachment at Baker Lake some 400 miles north west of the Fort, and the commanding officer of the JSES was responsible for the personnel stationed at that isolated post as well as the maintenance of the airstrip at that location. The Baker Lake commitment was dropped in August 1949, at which time the JSES assumed the same responsibilities for the air facilities at Coral Harbour on Southampton Island. In addition, the caches of aircraft fuels and lubricants at emergency sites around Hudson Bay were the responsibility of the Fort Churchill based unit.

Originally the unit held two Norseman aircraft on its strength. These planes were used for search and rescue work over wide areas of Arctic and sub-Arctic terrain. They were flown by a succession of highly trained and dedicated pilots, not only on their primary mission of search and rescue but also in support of the numerous exercises carried out by the army.

The Winter Experimental Establishment (WEE) was the Royal Canadian Air Force organization charged with the overall responsibility for cold weather testing of aircraft. This unit over the years garnered a deserved international reputation as one of the world's leading repositories of Arctic flying "know how." The unit first came into being in 1943 and carried out work in Kapuskasing and Gimli under the name of No. 1 Winter Experimental and Training Flight before becoming, in 1945, the Winter Experimental Establishment, a part of the post-war

structure of the RCAF.[20] During its lifetime which extended until the summer of 1951 when it became the Central Experimental and Proving Establishment Climatic Detachment, it used various northern bases as locales for cold weather testing. Churchill was one of the unit's main test areas from 1946 until 1949 and again from 1952 throughout the fifties. A series of Canadian and British aircraft and the occasional American visitor were subjected to the piercing cold and windswept terrain of northern Manitoba. As Frank Phripp, who joined WEE Flight in August 1946, tells us: "The aircraft on test were: Lincoln, Lancaster, Halifax, Dakota, Mosquito, Meteor, Firefly, Spitfire, Seafire and Vampire. A USAAF B-29 and an RAF York also looked in to sample the cold."[21] All components of the various Canadian aircraft were tested to ensure that they could withstand cold down to -57° C. which was the RCAF requirement. The British standard was less rigid, calling for only -40° C. as the extreme lower limit.

It was not aircraft alone or their component parts which were tested by the WEE. Over the years there were intensive experiments with ground handling equipment, and the developing and testing of various types of Arctic survival kits were features of the work carried out. This latter activity entailed a number of Canadian aviators, prominent among them being Flight Lieutenant Dick Hurst and Flight Lieutenant Frank Harris, who spent countless nights on the barrens testing a wide variety of survival equipment including clothing. Hurst wrote:

> . . . experiments of sleeping out-of-doors in winter conditions at Fort Churchill were conducted from late December to mid-March each year to test different types of clothing and equipment. Outsiders feared for our sanity as we rejoiced at the forecast of lower temperatures and wild wind and blowing snow

> conditions that gave rise to a new measure of human misery--wind chill factor.[22]

Hurst was the developer of the Arctic Survival Kit, a strong metal box which could be converted into a toboggan. It contained the basic necessities required for the survival of downed crews in the Canadian north and was carried by all RCAF aircraft operating in that part of the world.

WEE Flight attracted some extremely colourful characters to carry out its experimental, and sometimes dangerous, work. Although the bulk of the work was undertaken by military personnel, numerous American, British and Canadian technical representatives from various aircraft manufacturing companies and the British Ministry of Supply were attached to the test teams and were instrumental in having factory modifications performed on new aircraft and aircraft components before delivery to the user. The data collected by these technical representatives, when analyzed, allowed the designers of aircraft to ensure that the systems they designed allowed for proper functioning under the most severe cold weather conditions.

While in the winter months the Churchill airfield was used as an advanced base for the WEE, in the summer it was used by the RCAF Photo Wings charged with photographic operations in the Arctic. The quantum improvement in aerial photography techniques which had occurred during World War II, due to the efforts of the RCAF and the National Research Council, made it possible for much more sophisticated air photography of the Arctic to take place. Thus, immediately the war came to an end, the RCAF was charged with the task of photographing all the unmapped areas

of the Canadian north. This was primarily a defence commitment, but the users of the new material were both federal and provincial governments as well as civilian entrepreneurs endeavouring to open up the north. It is also of interest that when the RCAF ceased this photographic work it was carried out by civilian contractors. For geodetic control of aerial photography the system known as SHORAN, an acronym for short range aid to navigation, was used. Arctic survey work using this technique was done by No. 408 Photographic Squadron of the RCAF commencing in 1949. Fort Churchill was the base for these operations. From Churchill forward stations were established in various parts of the Arctic, but Churchill remained the major base for this important survey work until it was completed in 1957.

One of the important functions of the JSES was search and rescue. Some of the exploits of the pilots engaged in these activities at Fort Churchill became the stuff of which legends are made. These rescue flights were common occurrences, and a recital of them all would make a fascinating history in itself. Two examples drawn from the JSES Historical Report of 1948-1949 will serve to indicate the type of activity involved. The first of these drew international attention due to the fact that an American and a British subject were on the downed plane, and the search and rescue was conducted by a combined team of Canadian and American pilots. Captain Benjamin Custer of the U.S. Navy and Captain Sir Robert Stirling-Hamilton of the Royal Navy left Fort Churchill on 12 September 1948 on a Beechcraft. Their plane made a forced landing between Churchill and The Pas, and thirteen days transpired before a successful rescue was accomplished. The co-

operation between the two air forces and the army component at Fort Churchill was highly commended by all connected with the operation, dubbed Operation ATTACHÉ, that being the occupation of the downed naval officers.

A more spectacular rescue is described in the same report. An RCAF Dakota aircraft was forced to land on an ice-floe in Hudson Bay during a flight from Coral Harbour to Fort Churchill on 21 January 1948. The plane came down at 2.30 a.m., and the wreck was sighted at 11.00 a.m. the same morning by Flight Lieutenant Norman "Sharpy" Keene flying his Norseman aircraft on a search mission for the overdue Dakota. After a thorough reconnaissance of the ice-floe Keene decided that he could land on it in his ski equipped plane. This he did making two trips between the ice-floe and Fort Churchill in the course of which he was able to fly the survivors back to safety with no loss of life. Again co-operation between the army and the air force was highly commended in this daring rescue known as Operation MOORE, so called because it was the surname of the captain of the downed aircraft.

It was not only experimental work and search and rescue operations that made the JSES such an important cog in the overall Fort Churchill machine. In conjunction with the navy and the army, the JSES supplied communications with large areas of the Canadian north and operated an air to ground and ground to air radio link. This latter facility provided the long range communications so necessary for the extensive Arctic flying which was being carried out by Air Transport Command.

Margaret Carroll pointed to the value of the RCAF unit at Fort

Churchill for both civilian and military aviation when she wrote:

> With its extensive meteorological, air traffic control, radio and radar navigational aids, Churchill was a welcome haven for both military and civilian crews returning from the Arctic, as the nearest similarly equipped airfield was at Thule, Greenland.[23]

The airmen who passed through Fort Churchill carrying out the numerous and varied missions supported by the JSES have many memories, some sacred, but most profane, of life at the Fort. Because so many of them were transients, and accommodation initially was limited, the conditions they were subjected to were in many cases primitive, a far cry from the customary comfort of RCAF bases in more settled areas of Canada.

There were many "first impressions" expressed by Canadian service personnel who arrived at Fort Churchill in the winter of 1946-1947, but perhaps the most humorous, and at the same time factual description comes from the memory of Jock Christie, one of the armament non-commissioned officers of the WEE detachment.

> Churchill in those days was a story all by itself. I shall never forget my introduction to that place, with its tarpaper shacks, central heating consisting of one small heater in the centre of the floor, and of all things, <u>outside plumbing</u>--but located <u>indoors</u>. I still recall the notice which stated above the toilets "Please use agitator after use," but no matter how hard you tried you could not budge the damn thing. Once every two weeks or so the steam jenny would arrive and proceed to pump steam down the pit to thaw what rhymed with it. The ensuing smell permeated everything in the barracks including the occupants. When the stuff in the pit was considered to be of right consistency, the honey wagon would come and suck the pit empty. Then in a few more days the barracks would be bearable again.[24]

Notes

1. Margaret A. Carroll, "Defence Forces Operations in Hudson Bay" in Science, History and Hudson Bay, Vol. 2, ed. C. S. Beals (Ottawa: Queen's Printer, 1968), p. 927.

2. The information in this paragraph is derived from a Royal Canadian Navy document entitled HMCS Churchill dated January 1961 and from my personal observations. For a more detailed description of the technique employed see Roger E. Brown, Permafrost in Canada (Toronto: University of Toronto Press, 1970), p. 179.

3. Conversation Captain Colin Shaw/Tedlie, 28 October 1987.

4. For example Lieutenant Tom Manning and Lieutenant Commander J. P. Croal.

5. Minutes, Chiefs of Staff Committee, 3 June 1947.

6. Report of the Department of National Defence for the Fiscal Year ending 31 March 1949 (Ottawa: King's Printer, 1949), p. 9, states "In a 1948 summer cruise Canadian warships entered Hudson Bay waters for the first time."

7. Conversations Rear Admiral Storrs/Tedlie, 17 October 1988.

8. Ibid.

9. Ibid.

10. Canada's Defence Programme 1952-53 (Ottawa: Queen's Printer, 1952), p. 18.

11. Peter C. Newman, True North Not Strong and Free (Toronto: McClelland and Stewart, 1983), p. 154.

12. Conversations Rear Admiral Storrs/Tedlie, 17 October 1988.

13. Ibid.

14. Department of National Defence Press Release dated 22 February 1974.

15. Cited by Newman, True North, p. 154.

16. HQS 726-40-17-1 dated 21 July 1947.

17. Conversation Colonel Carson/Tedlie, 25 November 1987.

18. Letter Vice Admiral H. T. W. Grant to Lieutenant General Charles Foulkes on file NSS 1700-189/165 (Staff) dated 1 February 1950.

19. By 1952 Air Transport Command had become the principal user of the airfield and the RCAF activities at Fort Churchill came under that Command.

20. RCAF Operational Order No. 1015 dated 25 September 1945.

21. Frank Phripp in Sixty Years: The RCAF and CF Air Command 1924-1984 ed. Larry Milberry (Toronto: CANAV Books, 1924), p. 224.

22. Dick Hurst in Sixty Years, p. 231.

23. Carroll, "Defence Forces," p. 922.

24. Quoted by Frank Phripp in Sixty Years, pp. 223-24.

CHAPTER NINE

THE END OF AN ERA

On 31 January 1963, a USAF briefing team met with RCAF and Canadian Army officers to discuss in a most confidential manner the withdrawal of the SAC base at Churchill. The Canadians were told that the U.S. State Department was in the process of sending a memo to the Canadian Secretary of State for External Affairs concerning this matter. The Canadian Army members at the meeting, Colonel Cowan and Lieutenant Colonel Lafferty, reported that they were informed that the rundown would commence 1 July 1963 and was estimated for conclusion on 1 October 1963.[1]

Obviously the SAC withdrawal had been anticipated by the Canadian General Staff because a signal Ops 1 dated 4 January 1963 had requested the General Officer Commanding Western Command, Major General John Rockingham, to make a preliminary assessment of the army implications which would result from the shutdown of the SAC refueling facility. This assessment was forwarded to the Vice Chief of the General Staff on 22 January 1963.[2] It pointed out the problems of security which would be created unless an adequate caretaker staff was allotted to look after the abandoned facilities.

Despite the secrecy surrounding the closing out of the SAC base at Fort Churchill, it was not long before the media got wind of the move. In a story by Fred Cleverly, datelined Fort Churchill, in the final edition of the Winnipeg Free Press of 5 February 1963, Cleverly

held that the secrecy surrounding the closure was "more politics than policy," quoting as his source "unnamed servicemen at this northern base."

His story stated that high level talks about the closure were being conducted between Canadian and United States officials, but the Canadian government was reluctant to make the matter public because their "problem will be to reconcile the large scale lay-off of civilian employees with the Canadian government's frequently announced plans for greater development in the north." He did not lay all the blame for the secrecy ploy on the Department of National Defence. Cleverly held that "When the Canadians first learned of the proposal of the SAC base at Churchill, strong pressure came from Canada's Department of Northern Affairs--responsible for northern development--to keep the matter quiet." If this closure of a small portion of Fort Churchill caused such media reaction, it is easy to understand the major reaction which occurred when the whole base was closed.

As if to forestall speculation about facilities closure at Fort Churchill, a Statement of Policy on Fort Churchill had been issued on 4 January 1963. This document which covered a new Joint Organization Order for the Fort was approved by the Chiefs of Staff Committee and contains a definite statement in its first sentence reading "The Department of National Defence will continue to maintain a joint-service station at Fort Churchill."

On 6 May 1963, the Chief of the Air Staff (CAS), Air Marshal C. R. Dunlap, advised the Chief of the General Staff, Lieutenant General Geoffrey Walsh, that the Royal Canadian Air Force was considering ending

their responsibilities at Fort Churchill and handing command and control of the airfield to the Department of Transport.[3] Dunlap requested that a meeting of interested staffs be held to examine the problem.

On the same date as the CAS was advising the CGS of the proposed RCAF pullout from Fort Churchill Airfield, the Air Officer Commanding Air Transport Command, Air Commodore R. J. Lane, was writing to his Chief about the reduced requirement for military control of the Churchill Airfield. Lane stated:

> with long range capability and increased capability of the C130 B aircraft it became apparent that logistic airlift in support of Resolute Bay, Alert and other locations in the Arctic could be carried out from Station Namao (Edmonton), thereby downgrading the value of Fort Churchill to Air Transport Command.[4]

Lane further stated that the only requirement his command had for the airfield was as a weather alternate or for flights required for logistic support of the army. He concluded by stating that "Air Transport Command is operating the airfield at Fort Churchill largely for the benefit of civilian aircraft." Intrigued by the fact that Lane's letter to his chief bore the same date as the one his chief had sent to the CGS, I interviewed Lane (now a retired Lieutenant General) on 9 and 10 November 1987. Lane stated:

> Because of cuts in Department of National Defence spending the RCAF was under severe pressure to reduce its overall establishment, and Fort Churchill was too low on Air Transport Command's priorities to warrant retention. The letter I wrote was in corroboration of previous general discussions we had on reductions throughout the RCAF.

The last sentence of Lane's letter, of course, implied that the Department of Transport should shoulder the responsibility for running the airfield. Negotiations started to have this transfer come about, but before the transfer took place it was necessary to study the long term military requirement for the airfield. Because over the years the Central Proving and Experimental Establishment (CEPE) had been a constant user of the field, that organization was consulted. Other than cold weather testing of the CH 113--the Labrador/Voyageur Helicopter, and the CT 114--the Tutor jet trainer, scheduled to take place at Fort Churchill from 12 November 1963 to 15 March 1964, the CEPE authorities could foresee no further use of the facility.[5] Negotiations between the RCAF and DOT continued, and on 6 February 1964 a meeting to arrange the modalities of the transfer was held between the responsible officials of both organizations.

A guarded position on this whole matter of airfield takeover was taken by the CGS and his representatives in order to ensure that the withdrawal of the air force would not result in additional responsibilities having to be assumed by the army. This was necessary, he stated "In view of current discussions and studies on future commitments."[6]

On 11 October 1963,[7] the Assistant Deputy Minister of National Defence informed the Chiefs of Staff and other Canadian users of the facilities at Fort Churchill that agreement in principle had been reached by the Advisory Committee on Northern Development for government departments, other than National Defence, to assume the responsibility for the operation of Fort Churchill.

In reply to this memorandum the CGS, who obviously had not been consulted before it was written, informed the Assistant Deputy Minister that he had "already proposed to the Minister of National Defence that the Canadian Army turn over its responsibilities at Fort Churchill to other government departments. The Minister of National Defence has not as yet agreed to this proposal."[8] The CGS then went on to outline some of the problems involved in the handover and specifically stated: "It would be important to make clear the continuing interest of the Canadian Army in Fort Churchill as a possible advanced base for operations and/or exercises." This thought of retaining use of the base for military purposes was reiterated in subsequent letters concerning the handover of responsibilities.

Despite the fact that all the correspondence in connection with the proposed change of responsibility was classified as "confidential" at least and in many cases "secret," all these high level discussions and preliminary plans were bound to lead to rumours. This was particularly so because large personnel transfers would have to take place, and those officers charged with the posting of military members from one station to another were anxious to ensure that a minimum disruption to family life would occur during the rundown of military personnel. It was necessary for these officers to do a great deal of preliminary planning, and more and more people became party to the proposed transfer of responsibility as messages were exchanged regarding anticipated personnel movements.

These information leaks quite rightly were disturbing to Major General Rockingham whose command was charged with the administration of

the base. Rockingham sent a personal signal to the CGS on 15 November 1963 asking for clarification of the rumours he was hearing. He stated: "I have heard no official word on any change in status at Churchill and find that these messages from Army Headquarters create difficulty in running the operation."[9] In reply, the CGS stated that "there has been no change in the status at Churchill. However, it is essential that contingency planning be done now. At the same time I must re-emphasize the need to avoid any publicity on this matter until a decision is reached."[10]

The Minister of National Defence, Paul Hellyer, was obviously concerned about the date on which the base closure would take place. On 31 October 1963, he noted from "an answer given to a Parliamentary enquiry by the Army" that the proposed date of the handover to other departments of government would be 31 March 1964. In a memorandum[11] to his Associate Minister, Lucien Cardin, and others he asked that the possibility of delaying the closeout of the base by three months be explored. The investigation apparently bore no fruit as the transfer took place as previously planned.

On 4 December 1963, the Cabinet agreed "to transfer from the Department of National Defence to various departments responsibility for the operation, administration, control and management of the present defence establishment known as Fort Churchill, in the Province of Manitoba."[12] This agreement did not include HMCS Churchill, the Navy signal station, which continued to operate independent of the main camp. The Department of Public Works would assume control, management and administration of all real property of Her Majesty the Queen in right of

Canada forming part of Fort Churchill. Airfield operation and maintenance, flying control and meteorology forecasting would be carried out by the Department of Transport. The Department of Northern Affairs and National Resources took over operation of the schools on an interim basis pending negotiations being completed between that department and the Province of Manitoba towards having the latter assume this responsibility. Finally the Department of National Health and Welfare would take over the provision of the medical, hospital and health services previously provided by the Department of National Defence.

The transfer of responsibilities took place on 1 April 1964.[13] At that date the Department of National Defence transferred all its responsibilities and functions, excepting those "of a purely military nature," to the various departments named in the Cabinet agreement. Those functions "of a purely military nature" were defined as those actions necessary to run down the military control of the base in accordance with instructions issued by the Quarter Master General, Major General R. P. Rothschild.[14]

This rundown was to be completed not later than 31 August 1964 when the various Canadian Army units stationed on the base would be reduced to nil strength and made dormant. In addition, sub-units of major units whose headquarters were in Winnipeg and Edmonton were deleted from the existing establishments in the same time frame.[15]

The death of a major military installation in Canada has wide ranging effects on the economy of the geographical area in which the base is located. As was to be expected, questions were raised in the House of Commons immediately the member for Churchill, Robert Simpson,

got wind of the proposed closure. The Minister of National Defence, Paul Hellyer, stonewalled these questions first on 23 October 1963[16] and again on 3 and 4 December 1963,[17] when Gordon Churchill was endeavouring to determine the veracity of newspaper articles which spoke of "informed sources" as being the basis of their reports.

On 5 December 1963, Hellyer told the House: "We intend to withdraw personnel from Fort Churchill, Manitoba, in 1964 at which time administrative responsibility will be taken over by other government departments."[18] This announcement caused Douglas Harkness to comment that:

> so far as the Army and RCAF are concerned this appears to me to herald the end of cold weather training and research and I regret the move from that point of view. I think we have made a distinct contribution to the entire NATO alliance by maintaining the facilities at Fort Churchill, particularly for research under cold weather conditions and to determine what military personnel and equipment can do under these cold weather conditions. I feel that the closing of this installation is probably a very shortsighted policy in view of the great amount that is still to be learned, and needs to be learned, so far as operating under extremely cold weather conditions is concerned.[19]

Robert Simpson, whose constituency was most affected by the base closure, made a plea for reconsideration of the decision in a speech in the House the following day.[20] He pointed out, not only the tremendous effect the closure would have on the economic life of the region, but the fact that hospital, medical and search and rescue facilities would no longer be available to his constituents.

Despite these parliamentary complaints, as we have seen, the base's life was terminated. In an endeavour to determine why, three people intimately concerned with Fort Churchill's demise were inter-

viewed. Elgin Armstrong, Deputy Minister of National Defence at the time of closure, stated:

> We were given a projected figure that we would have to meet to satisfy the requirements of a greatly reduced new budget. To come down to this projected figure it was decided that work required in relation to Arctic warfare could be done efficiently without continuing to operate Fort Churchill, a highly expensive base.[21]

Lieutenant General Geoffrey Walsh was CGS when the base closed. He said:

> The Canadian Army was no longer the principal user of the base. Everybody under the sun was using it in a variety of ways, but the major costs of running Fort Churchill were borne by the Canadian Army. It was a most expensive base to run, and we were being forced to cut back due to heavy financial restrictions being imposed by the government. I was sorry to see it go because we lost some worthwhile tasks. In a way it was like the North West Highway System for it too was a charge against the Army budget when its use had become strictly civilian. Fort Churchill would never have been closed if we could have afforded to keep it open.[22]

The third opinion sought was that of Colonel Strome Galloway who was the last commander of Fort Churchill. His opinion was "It was all a question of economics, we couldn't afford it anymore."[23]

Because all of these knowledgeable authorities quote economic necessity as the reason for the abandonment of Canada's premier northern experimental and training establishment, there is no doubt that lack of money was the paramount reason. However, I believe that there were other factors which militated against the continuation of Fort Churchill in the form it had assumed by 1964.

When a Canadian soldier of 1964 participated in Arctic exercises in winter his chances of comfortable survival were greatly

enhanced over those of his colleagues of 1946. There was still room for refinement, but most of the problems had been isolated and overcome.

There was also a negative advantage which had accumulated over the life of the Fort. The Canadian Army now knew the limitations for participation in Arctic warfare. They had tested man's capacity and had found the upper level of endurance of a normal soldier properly trained and properly equipped for fighting in Arctic areas. All but the least realistic planners were now able to accept what that wise old soldier, Major General George Pearkes, had told the House of Commons in 1955 when he said: "It is fantastic to think that large armies could be landed on the Arctic shores of Canada and advance through the barren lands of the great north."[24]

The Canadian armed forces now felt confident that they could deal with any small scale enemy invasion that could possibly take place in northern Canada, and that was the only type of invasion considered feasible. This major change in strategic thinking made the training of large scale formations in the skills of Arctic warfare an unprofitable enterprise.

Although the protection of Canadian sovereignty remained a hot issue with Canadian nationalists, the Government of Canada in 1964 seems to have considered the Canadian north immune from encroachment for the White Paper on Defence published in that year made no mention of the north. Either they believed that the threat to sovereignty had lessened or "Manifest Destiny" fears had subsided, for, by 1964, the United States military presence did not generate as much printer's ink as had previously been the case.

Although defence of the north was not mentioned in the 1964 White Paper, it did contain one phrase referred to by Desmond Morton as an almost overlooked one which had a peripheral effect on the Churchill closure. It was a one line promise of "a single unified defence force."[25]

It is not within the compass of this thesis to dwell on the overall effect of the attempt of the government to integrate, and later unify, the armed forces of Canada. However, in 1964, there was so much woolly thinking taking place in Canadian defence circles amongst the politicians, the senior public servants and many of the senior serving officers that it is not surprising that the implications of no longer having an Arctic training and research centre were not thought through.

It is interesting to note that Fort Churchill's last commander, Strome Galloway, decided to ensure the base would close with a "bang not a whimper." Harry Mardon, writing in the 18 April 1964 edition of the Financial Post described the scene in these words: "The handover ceremony on the wind-chilled parade ground was highlighted by lowering the army's flag from the flagstaff, then Colonel Galloway unveiled a bronze plaque that will be a permanent reminder of the military occupation."[26] While the base was being run down Colonel Galloway felt quite rightly that his position was becoming untenable. The disappearing base was no command for an officer of his seniority and experience. After making the point that, after the spring of 1964, an officer in the rank of major would be sufficient to preside over the final withdrawal and liquidation of the army's interest, he informed his Area Commander in Winnipeg as follows:

> The military powers exercised by the Commander, Fort Churchill, and the special nature of his appointment, whereby he is the apex of not only a triservice station, but also an international station and isolated community as well, make any automatic downgrading of his [the Commander's] position most undesirable from a Canadian Army prestige point of view. In addition from a personal standpoint his continuing presence as little more than an empty tabard would be far from enjoyable.[27]

The Winnipeg Free Press reported that the military withdrawal was conducted in a precipitous manner. An article written by W. E. Senior in a Saturday edition of 22 January 1965 stated that:

> So great was the haste with which the military pulled out, after roughly fifteen years of occupation, that somewhere in the rush records and maps and charts and reports and inventories have become mislaid, making difficult indeed the takeover by civilian agencies such as the Churchill Hospital Board. . . . Accurate figures--or for that matter even "rough figures"--of the costs involved in the annual operation of many services in the former military establishment are virtually unobtainable as a result. Hurriedly given assurances by the military that it would not abandon its hospital (four doctors, 120 staff) until an adequate civilian medical staff was assured proved to be an empty promise indeed. The military pulled out leaving behind one civilian doctor, one cleaner and a skeleton staff of a dozen or two.

Brigadier Harry Sterne, who was at that time commander of Manitoba Area, the headquarters directly responsible for the administration of the base during its final days, was incensed by the report and denied its allegations. He took the matter up with Brigadier R. S. Malone, the publisher of the Free Press. The results of the meeting are not known but a minute on the file covering the incident noted by the Minister of National Defence states "Doubt whether Brig Malone will do anything about it."

Notes

1. HQS 2001-1975/9 TD 3003 (DMO&P) dated 23 January 1963.

2. WCS 2111-2/WC TD 21C(GOC) dated 22 January 1963.

3. RCAF S-895-100-8/49 Vol. 3 (CAS) dated 6 May 1963.

4. Air Transport Command S895-102 (AOC) dated 6 May 1963.

5. Minutes of a meeting held on 15 October 1963 on file S-895-100-8/9.

6. HQC 2001-1975/9 TD 3130 dated 19 August 1963.

7. Confidential memorandum dated 11 October 1963 from Assistant Deputy Minister of National Defence addressed to Chief of Naval Staff, Chief of General Staff, Chief of Air Staff, Chairman Defence Research Board and the Surgeon General.

8. HQC 2001-1975/9 TD 3269 (DMO&P 1B) dated 4 November 1963.

9. Signal from General Officer Commanding Western Command to Chief of the General Staff P151545Z November 1963.

10. Signal CPS 423 from Chief of General Staff to General Officer Commanding Western Command 182130Z November 1963.

11. Memorandum "Re: Fort Churchill" signed by Paul F. Hellyer dated 31 October 1963.

12. Memorandum to His Excellency the Governor General in Council submitted by the Associate Minister of National Defence, Lucien Cardin, dated 26 February 1964.

13. SD Letter No. 65/19 dated 31 March 1964 and Headquarters Western Command WCC 2001-1975(Q) dated 1 April 1964.

14. HQ 2001-1975/9 (Q) TD 4044 dated 20 March 1964.

15. SD1 Letter No. 64/19 dated 31 March 1964.

16. Canada, Parliament, House of Commons, Debates [hereafter Debates] 23 October 1963, p. 3922.

17. Debates, 3 and 4 December 1963, pp. 5367 and 5426.

18. Debates, 5 December 1963, p. 5456.

19. Ibid., p. 5483.

20. Debates, 6 December 1963, pp. 5578-79.

21. Conversation Elgin Armstrong/Tedlie, 2 September 1987.

22. Conversation Lieutenant General Walsh/Tedlie, 20 September 1987.

23. Conversation Colonel Galloway/Tedlie, 3 September 1987.

24. Debates, 16 June 1955, p. 4870.

25. Desmond Morton in The Canadian Encyclopedia, Vol. 1, ed. James A. Marsh (Edmonton: Hurtig Publishers, 1985), p. 93.

26. Financial Post, 18 April 1964.

27. FCC 2000-1975/9 (COMD) dated 8 January 1964.

EPILOGUE

It was not long after the official closure of Fort Churchill in 1964 that the now integrated Canadian services found a continuing need for a substitute facility located in the same general geographical area. The major requirement was for a base to support elements of the newly created Mobile Command while they engaged in northern exercises.

A series of exercises reminiscent of the SUNDOG series of the late 1940s and early 1950s were conducted so that company and squadron groups of the Defence of Canada Force could garner experience operating in cold climates. It was also necessary to exercise elements of the ground forces who were then allotted to NATO for employment in northern Norway in the event of an emergency.

These exercises, called NEW VIKING, were conducted using Churchill's facilities, now under control of the Department of Public Works, as a base. This required that an ad hoc administration staff be provided while the exercises were in progress, and by December 1968, a total of ninety-nine service men were employed in this endeavour.

Early in 1974 the Winnipeg Free Press reported that the Minister of National Defence, James Richardson, had announced that Churchill would again become a base for the Canadian Armed Forces.[1] The minister stated that it would become the site for an Arctic training centre designed to train 1,200 men annually on a regular programme and a similar number several times a year on special exercise. Thus, in 1974, a unit named Canadian Forces Station (CFS) Churchill was formed and given the roles of conducting Arctic training and providing limited

support for northern exercises. This new unit was a component of the Regular Force and was allocated to Mobile Command.[2] After eighteen months this unit was transferred from Mobile Command to Air Command.[3]

Unlike Fort Churchill, which came to an end with a certain amount of dignity, CFS Churchill had an agonizing demise. The attempts to keep some military presence in Churchill after 1964 were sorry ones.

In the unit's Annual Historical Report for 1977 the Commanding Officer reported that "the demands or usage requirements of the Forces dwindled to the point whereby the facilities or support was used only for very minor exercises, summer Cadet Course and one Advanced Winter Warfare Instructors' Course."[4] The report revealed that three officers and twenty-six other ranks were on the strength of the unit.

The next year's report presented an even more dismal picture. It contained the following remarks: "Although the official role of the station has remained that of training in Winter Warfare there have been no courses nor has any training been done by the station or in its area" and later that the unit "is no longer capable of supporting training of any kind."[5] Despite this completely negative report on activities, the same report revealed that one officer and twenty other ranks remained on the unit strength.

The following year brought forth an annual report contained in a signal dated 7 November 1980.[6] It told a sad tale but proved that the author, Captain G. P. Loverock, had a sense of humour. Excerpts from the signal follow:

> This station has existed through 1978/1979/1980 with no role or task and has managed to achieve same.
>
> As directed by NDHQ (National Defence Headquarters) and

> AIRCOMHQS (Air Command Headquarters) CFS Churchill was closed without notice, publicity or fanfare in July 1980. The last service person and all equipment left by rail on 19 July 80.
>
> The tardiness of this report is regretted however in the requirements of security of DND (Department of National Defence) intentions ref closure and the haste of executing same the CO (Commanding Officer) neglected to submit it at the appointed time.

Despite the fact that no military personnel remained in Churchill after July 1980, the unit named CFS Churchill was not officially disbanded until 12 August 1981.[7]

The press reaction to this second military pullout was, as was to be expected, a negative one. The Montreal Gazette under the heading "Churchill Suffers a Series of Blows" wrote of the high hopes once held for the Churchill area and traced the disappointments the area had undergone over the years going back to 1912 when it was planned that, as "Roblin City" it would become "one of the largest cities in North America." Whoever wrote the article knew that the handwriting had been on the wall for a military presence at Churchill for some time. It stated: "For the last few years a once prominent Canadian Forces presence in the town has been melting away with the last traces removed this week when 25 personnel left."[8]

The Winnipeg Free Press in an editorial headed "Closing the Door," presented a thoughtful view of the event. This editorial read:

> The decision to remove the last few forces members from the northern base makes economic sense, particularly when those remaining at the base have had no real tasks for several years.
>
> However, the removal seems to close the door on any chance of reversing the major wrong decision regarding the military at Churchill--the decision to downgrade the base and to phase out Arctic training there--that was taken 15 years ago. Canada's defence forces have a priority task to maintain

> the sovereignty of this nation. Considering the vast northern borders, it would seem to make sense that Canada needs a base at which to train its ground troops for northern service.[9]

Many documents pertaining to the military base closures which have occurred in Canada during the past two decades, including official correspondence, arguments used and reactions both political and military, are not open sources. Thus, we can only speculate why CFS Churchill came to an end. The evidence in the historical records which are open and the reaction of the press clearly indicate a deteriorating lack of interest on the part of the Canadian government in northern defence commencing in 1964. This lack of interest led to the eventual phasing out of all military activity at Churchill in 1980.

With new governments come new ideas regardless of their political stripe. It was during a Liberal government under Mackenzie King that Fort Churchill came into being, and it was under the Liberal government of Pearson that Fort Churchill was abandoned. One can conclude that different governments held vastly different views on the use of, and necessity for, a northern military base.

In 1987, it appeared that the view held by the Progressive Conservative Government of Canada on northern defence was in line with the view of the Liberal government of 1946. The long awaited White Paper on Defence stated:

> We will also establish a northern training centre in the 1990s to ensure that forces for the defence of Canada are maintained at an appropriate level of combat readiness. We are seeking a location that comprises all the essential elements for our military purposes and for support of sea, land and air training in Arctic conditions. The selection of the site for the centre will take into account the views of native peoples, existing facilities and local land uses.[10]

There was little chance that Churchill would be selected for such a northern training station by a Progressive Conservative government. During their nine-month mandate in 1979 and early 1980 action could have been taken to keep the station from slipping into oblivion had they been so minded. Alan MacKinnon, Minister of National Defence for that short period, recalls that he was approached by his officials asking if he had any objection to removing "the thirteen or so remaining servicemen at Churchill?" His response, as he reported it to me, was: "as the station did not seem to have any particular role any more, I could see no valid reason for these military personnel to be retained there."[11]

On February 1988, Perrin Beatty, the Minister of National Defence, stated that the new Arctic training centre announced in the 1987 White Paper would be established at Nanisivik on Baffin Island. "The centre, to be in operation by 1992 or 1993 will probably occupy the current site of Nanisivik Mines, expected to cease operations near the windswept shore of Arctic Bay in five years."[12]

The new base is said to be part of a government plan ". . . to bolster northern forces, and assert Canadian sovereignty in the sparsely populated North."[13] While it will most certainly do the former, it is naive to believe that a single base in the eastern Arctic will achieve a level of credibility which will convince the world that Canada does indeed intend to exercise control over her northern area. Perhaps when coupled with frequent overflights by the air force and submarine patrols by the navy, if the necessary submarines should become available, a

modicum of control will be achieved, but, until many permanent settlements of the type planned for Nanisivik are established, Canada's dedication to Arctic sovereignty will remain suspect.

Remembering that Fort Churchill met its demise due mainly to the expense involved in its operation it will be interesting to see with what enthusiasm the Treasury Board greets the costs of operating Nanisivik when they become known. Writing in the The Canadian Encyclopedia, Annelies Pool states that Nanisivik is in an area which has "never been inhabited by Inuit and is devoid of wildlife, while vegetation is scarce."[14] If Canadian troops are to be maintained in such a dreary land they will have to be rotated frequently and recreational facilities of a high standard will have to be supplied. This will be a costly operation.

If the Government of Canada is truly wed to a policy of having a permanent significant military presence in the Canadian Arctic, and is willing to accept the high costs involved in such a policy, Nanisivik may only be one of a number of military bases in the Canadian north. However, when a definitive history of Canadian involvement in her own northern regions is written it will be difficult for the historian to escape the fact that the base called for in the 1987 White Paper, a base "that comprises all the essential elements for our military purposes and for support of sea, land and air training in Arctic conditions" is a fair description of the installation that existed at Churchill, Manitoba, from 1946 to 1964.

Notes

1. Winnipeg Free Press, 2 February 1974.

2. Canadian Forces Operation Order 3-7 dated 1 April 1974.

3. 1901-1578 TD 5245 (CDS) dated 24 September 1975, approved by the Minister of National Defence, 2 October 1975.

4. CFS Churchill 1326-1 dated 11 October 1978.

5. CFS Churchill 132-1 (CO) dated 8 June 1979.

6. DND signal Adm 644 of 071740Z November 1980 from CFB DEBERT to Director of History, Ottawa.

7. DND Signal DMCO 308 of 191520Z August 1981.

8. Montreal Gazette, Tuesday 26 August 1980.

9. Winnipeg Free Press, Tuesday 12 August 1980.

10. Challenge and Commitment: A Defence Policy for Canada (Ottawa, June 1987), p. 60.

11. Conversation Alan MacKinnon/Tedlie, 1 January 1988.

12. Victoria Times Colonist, 5 February 1988.

13. Ibid.

14. The Canadian Encyclopedia, Vol. II (Edmonton: Hurtig Publishers, 1985), p. 1192.

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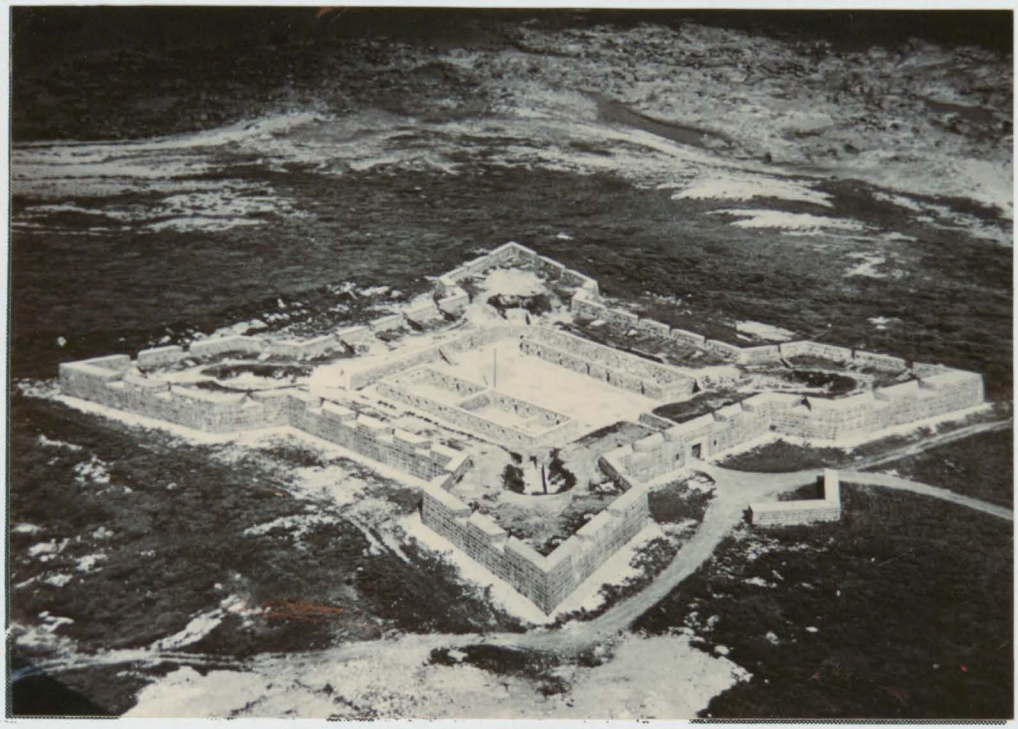

1. Fort Prince of Wales from the air.
(Personal collection)

2. Fort Churchill from the air in 1948. Buildings constructed in 1947 and 1948 are at extreme right and top centre of the photograph.
(Official Photograph, First Arctic Test Detachment, U.S. Army)

3. Fort Churchill from the air in 1962. No substantial development took place after this date. (R. J. Carson Collection)

4. Reading left to right. Top Row: Lieutenant Colonel D. C. Cameron 1946-1948; Lieutenant Colonel A. J. Tedlie, 1948-1950; Colonel J. B. Allen 1950; Colonel D. S. Forbes, 1950-1951. Middle row: Colonel H. A. Millen, 1951-1954; Colonel J. M. Houghton, 1954-1955. Bottom row: Colonel D. G. Ketcheson 1955-1958; Colonel N. J. W. Smith, 1958-1960; Colonel R. J. Carson, 1960-1962; Colonel A. S. A. Galloway, 1962-1964. (Individual Photos by Canadian Army Public Relations. Mounting by A. S. A. Galloway)

5. Lieutenant Colonel D. C. Cameron, first Commander of Fort Churchill. (Personal Collection)

6. Lieutenant Colonel Wayne S. Downing, first commanding officer of the United States Army First Arctic Test Detachment, Fort Churchill. (Personal Collection)

7. Interior of typical ward at Fort Churchill Station Hospital--1948. (Personal Collection)

8. Fort Churchill school's first classroom--1947. (Personal Collection)

9. The first Defence Research Board laboratory at Fort Churchill--1948. Constructed from three STOUT huts. (Personal Collection)

10. A wanigan--a caboose-like structure on a sledge being shown to visitors prior to a tractor train departure from Fort Churchill--January 1949. (Personal Collection)

11. In September 1948 Governor General Field Marshal Lord Alexander of Tunis inspects the honour guard at Churchill, Manitoba, railway station accompanied by the guard commander Captain D. F. Ryan, the Adjutant at Fort Churchill. (Royal Canadian Naval Photograph #NK 298)

12. Brooke Claxton, Minister of National Defence, presents Warrant Officer M. J. (Paddy) Fallon, Fort Churchill's first Garrison Sergeant Major, with a copy of a history of the Canadian army--May 1948.
(Canadian Army Public Relations Photo PC-1097)

13. Remembrance Day parade at Fort Churchill, November 11, 1948. (Personal Collection)

14. Polar bears foraging in Fort Churchill's garbage dump. (R. J. Carson Collection)

15. Reading left to right: Captain Benjamin Custer, U.S. Navy; Lieutenant Commander Tony Pickard, Royal Canadian Navy; Captain Sir Robert Stirling-Hamilton, Royal Navy; and Commander Tony Storrs, Royal Canadian Navy, in Fort Churchill Officers Mess, September 1948. Pickard and Storrs commanded the first two ships of the Royal Canadian Navy to sail into Hudson Bay. Custer and Stirling-Hamilton were two of the survivors from a search and rescue mission for a downed aircraft described in the text as Operation Attaché. The picture on the wall is of John Churchill, the first Duke of Marlborough (1650-1722), after whom the Fort was named. The picture was a gift to Fort Churchill from Winston Churchill in the spring of 1948. (Personal Collection)

16. Military nurses on the first international Arctic indoctrination course held for females at Fort Churchill in 1949. Back row, left to right: Lieutenant J. M. Strang, Macklin, Saskatchewan; Lieutenant J. I. MacDonald, Meota, Saskatchewan; Captain E. B. Pense, Kingston, Ontario; Captain R. M. Stoltz, Dayton, Ohio; Captain F. P. Thorp, Phoenix, Arizona. Front row, left to right: Lieutenant Colonel A. J. Tedlie, Commander Fort Churchill and Major S. B. McDonald, the officer in charge of the training wing at the Fort.
(Canadian Army Public Relations Photo PC-1593)

17. Rocket firing at Fort Churchill--1963.
(R. J. Carson Collection)

18. Entertainers from Washington's Volunteer Camp Shows perform for the troops and their dependents--Christmas 1949.
(Personal Collection)

19. Governor General George Vanier and Mrs. Vanier with a group of soldiers of the Royal 22nd Regiment outside the Fort Churchill Roman Catholic Chapel--May 1961. (D.R.N.L. Photo, Churchill, Manitoba)

20. Interior view of the Protestant Chapel at Fort Churchill. (D.R.N.L. Photo 1390-2, Churchill, Manitoba)

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"Man in the Arctic" with Ward S. Ryan in Canadian Army Journal, Vol. 1, Nos. 9 and 10, January and February 1948.

"The Canadians in Indo China," with J. M. Delamere and D.N.D. Deane-Freeman in The Snowy Owl, Christmas 1955

"Dangerous Commitment" in Canadian Army Journal, Vol. XVI, No. 3, 1962

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29 March 1990
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