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The Establishment of Alert, N.W.T., Canada

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ABSTRACT. The Joint Arctic Weather Stations of Canada and the United States were built in the Queen Elizabeth Islands of northern Canada. The Eureka and Resolute stations were established in 1947 and another two, Mould Bay and Isachsen, in 1948. In the summer of 1948 the U.S. icebreakers *Edisto* and *Eastwind* reached Dumbbell Bay on the north coast of Ellesmere Island, where a cache was deposited for a fifth Canadian station, Alert. This station was established by air from Thule in April 1950. Unlike earlier satellite stations, the eight regular station personnel were supplemented by four extra men to aid in construction of the buildings and a gravel airstrip. During the spring a message left at Cape Sheridan by Peary in 1907 was found and evidence, including an unreported marker, of the 1875-76 British Admiralty Expedition was discovered. Equipment failures and supply problems later on caused construction delays, which were relieved by air drops. One of these led to the crash of an RCAF Lancaster and the death of all aboard. An RCAF Canso sent to investigate was damaged during an attempted takeoff but was repaired when the *Eastwind* arrived with support and badly needed equipment. Completion of the station proceeded rapidly after this, and it became operational in September 1950. As an important Cold War listening post on the northern rim of the continent, its population of specialists grew to more than 200.

Key words: Alert, N.W.T., Joint Arctic Weather Stations, Ellesmere Island, Cold War

RÉSUMÉ. Les Stations Météorologiques Communs Arctiques du Canada et les Etats-Unis ont été construits sur les Iles de la Reine Elizabeth dans le nord canadien. Les postes d'Eureka et de Resolute ont été établis en 1947 et deux autres postes, Mould Bay et Isachsen, ont été construit en 1948. Durant l'été de 1948, deux brise-glaces américains, l'*Edisto* et l'*Eastwind* ont atteint la Baie Dumbbell sur la côte nord de l'Ile Ellesmere où a été deposé une cache pour Alert, le cinquième poste canadien. Ce poste a été établis par avion de Thulé en avril 1950. Les premiers postes isolés ont eu moins d'ouvriers qu'Alert qui a eu huit hommes puis quatre hommes supplémentaires pour aider a la construction des bâtiments et d'une piste d'atterrissage en gravier. Au printemps on a trouvé un message, deposé au Cap de Sheridan en 1907 par le Commandant Peary, de même que des evidences, dont un petit monument, de l'expédition de l'Amirauté Britannique de 1875 à 1876. Plus tard, des bris de l'équipement et des problèmes d'approvisionnement ont retardés la construction dont les matériaux ont été livrés par parachutage. A l'endroit où l'on faisait descendre les provisions par parachute, un avion Lancaster de l'ARC s'est écrasé, tuant tout l'équipage à bord. Un hydravion à coque Canso de l'ARC envoyé pour faire des recherches a été endommagé lors du décollage, mais il a été possible de faire des réparations lorsque l'*Eastwind* est arrivé avec les ressources et l'equipement dont on avait grand besoin au poste. Ensuite, il a été possible de compléter rapidement la construction du poste, qui est devenue fonctionnel en septembre 1950.

Mots clés: Alert, T.-O., Les Stations Météorologiques Communs Arctiques, l'Ile Ellesmere

Резюме. Две совместные арктические метеорологические станции -"Еврика" и "Резолют" были установлены на островах Святой Елизаветы в 1947г.. В 1948 г. были установлены еще две станции - "Молд Бай" и "Исаксен". Летом 1948г. американские ледоколы достигли бухту ДОМБЕЛЛА на северном берегу острова Эллсмэр, где был оставлен запас провианта для пятой канадской станции - "Алёрт". Эта станция была установлена с воздуха в 1950г.. В отличии от ранних станций-сателлитов, к 8 регулярным работникам станции добавили 4 человека с целью помочь в постройке здания и гравельной лётной полосы. Весной 1951г. были найдены послание, оставленное Пири на мысе Шеридан в 1907 г.,а также свидетельства экспедиции Английского Адмиралтейства в 1875-76гг., включающие несообщённый указатель. Поломки оборудования и проблемы снабжения вызвали задержки в строительстве. Эти трудности были частично облегчены с помощью авиации. Один из самолётов потерпел аварию и все на его борту погибли. Самолёт, который был послан расследовать эту аварию, также поучил повреждение во время взлёта но был отремонтирован, когда ледокол "Иствинд" прибыл с поддержкой и необходимым оборудованием. После этого создание станции быстро завершилось, и она начала работу в сентябре 1951г.

Ключевые слова: совместные арктические метеорологические станции; Эллсмэр остров.
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INTRODUCTION

Between 1946 and 1950 a network of joint Canadian-United States arctic weather stations (Eureka, Resolute, Mould Bay, Isachsen and Alert) was built on the Queen Elizabeth Islands of northern Canada (Fig. 1). Since then time has clouded many of the details about this program. As one who participated in the building of Alert, it is my purpose here to summarize briefly the origin of the Joint Arctic Weather Stations (JAWS) and to present an abbreviated account of the establishment of Alert. With regard to the latter, the topics dealt with seemed at the time to be very important to us.

DEVELOPMENT OF A NETWORK OF ARCTIC WEATHER STATIONS

The concept of a network of North American weather stations, although not new, became reality largely because of the efforts of Charles J. Hubbard. As early as 1944, he was

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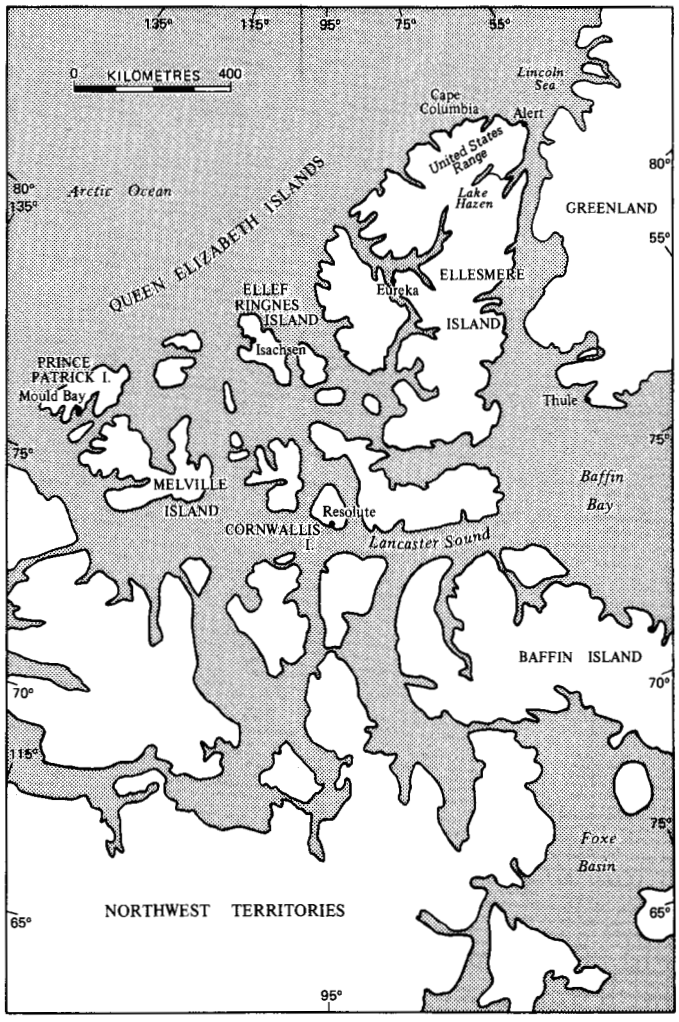

FIG. 1. The Joint Arctic Weather Stations (JAWS).

recommending to government leaders and others in the United States that there was a need for a system of weather stations stretching from Banks Island in Canada's Western Arctic to northernmost Greenland (National Weather Service, 1977). Initially, he suggested that there should be two main stations accessible by sea, Thule in Greenland and Winter Harbour on Melville Island, and as many as eight smaller "satellite" stations. The latter would be set up within an 800 km radius of the main stations and would be serviced by air. Sites would be chosen by aerial reconnaissance, and their establishment would depend largely on techniques developed during World War II for setting up outposts and beachheads.

The first indication to the public that this might happen was a report by the Associated Press in Washington, D.C., on 17 September 1945 (The Polar Times, 1945); it stated that legislation to establish weather stations in the arctic regions of the Western Hemisphere in cooperation with other governments had been approved by the U.S. Senate's Commerce Committee. The bill's author was Senator Brewster, of Maine, and it became law on 12 February 1946. The text of the legislation (79th Congress, 1946) is brief:

An Act

Concerning the establishment of meteorological observation stations in the Arctic region of the Western Hemisphere, for the purpose of improving the weather forecasting service within the United States and on the civil international air transport routes from the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That in order to improve the weather forecasting service of the United States and to promote safety and efficiency in civil air navigation to the highest possible degree, the Chief of the Weather Bureau, under the direction of the Secretary of Commerce, shall in addition to his other functions and duties, take such action as may be necessary in the development of an international basic meteorological reporting network in the Arctic region of the Western Hemisphere, including the establishment, operation, and maintenance of such reporting stations in cooperation with the State Department and other United States governmental departments and agencies, with the meteorological services of foreign countries and with persons engaged in air commerce.

Sec. 2. There are hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this act.

On 28 June 1946 United Press dispatches (The Polar Times, 1946a) stated that Denmark had agreed to let the United States Weather Bureau (USWB) establish a civilian weather station in the northwestern part of Greenland and that this station would be a civilian unit having no connection with the 1941 agreement under which the United States obtained rights to build military bases in Greenland.

About a week after this announcement, a five-ship U.S. naval task force (Operation "Nanook") led by the U.S. Coast Guard icebreaker *Northwind* left Boston and proceeded to Thule, Greenland, where a gravel airstrip was built and a joint U.S.-Danish weather station established. During this operation a naval PBM flying boat made a reconnaissance flight along Ellesmere Island's northern coast, where Alert was built four years later. Later in the summer, using this aircraft as a guide, the task force penetrated Lancaster Sound, the *Northwind* reaching Melville Island, the proposed site for the other permanent station (The Polar Times, 1946b).

Discussion between Canadian and United States representatives began in Ottawa on 18 May 1946. The U.S. wished to start the Canadian project at the same time as the Danish one, but the implications and scope of what was envisaged required more time for examination by Canadian authorities. On 23 November 1946 the Interdepartmental Meteorological Committee submitted a recommendation in support of the project to the Cabinet Defence Committee. On 28 January 1947 Cabinet gave its approval for a Joint Arctic Programme with the U.S. (Meteorological Division and U.S. Weather Bureau, 1953).

In the following spring, on 4 March 1947, C.D. Howe announced that the Canadian Government planned to establish nine arctic weather stations within the next three years (Canada, 1947; The Polar Record, 1947). These stations were to be erected with the assistance of the USWB, which would supply the transportation necessary for their establishment and half of the staff, food and technical equipment. An essential aspect of this program would be maintenance of the stations for a minimum period of five years in order to

evaluate their worth and the advisability of continuing or expanding the network. Two stations were to be put in operation during the summer of 1947.

The planning, establishment and operation of these stations became the responsibility of Hubbard, who had become director of the Arctic Operations Project of the USWB, and D.C. Archibald, of the Meteorological Branch of the Department of Transport (DOT) of Canada.

In April 1947, men and equipment were flown from Thule to Slidre Fiord, in southwestern Ellesmere Island, for the construction of the Eureka satellite weather station. Later, in the summer, an attempt was made by U.S. Naval Task Force 68 to reach Winter Harbour, so that a station could be built there. However, heavy ice and damage to one of the escorting icebreakers prevented this, and a more accessible site, Resolute Bay, was chosen. From here in the spring of 1948 reconnaissance flights were made to select sites for two "satellite" weather stations, following which Mould Bay, on Prince Patrick Island, and Isachsen, on Ellef Ringnes Island, were established by air (The Polar Record, 1950; Arctic Circular, 1948a,b,c, 1949).

Stations like Thule and Resolute were located on coasts expected to be open during the summer, so that the bulk of their supplies as well as those for the satellite stations could be brought by sea. Satellite stations were also on coasts, but in more remote areas with more hazardous shipping conditions. Icebreakers (with little cargo space) could be expected to reach them, but not cargo ships. The original plan called for the satellite stations to be maintained by airlift in the spring and parachute drop during the rest of the year. During this early period of reconnaissance and construction officials of the Government of Canada were participants, but the U.S. Navy and Coast Guard provided the shipping and icebreaker support. Air support for landing advance parties and pioneer crews at the satellite stations in the spring and for hauling freight or making air drops was supplied principally by the U.S. Air Force.

Advance parties were employed during the establishment of satellite stations. Their job was to clear a runway on the sea ice with light earth-moving equipment, so that cargo aircraft could land with the freight and supplies necessary for construction and operation of the station. The actual construction was usually done by the staff that was to operate the station.

It became evident that the usefulness of runways on the ice was dependent on the rate of surface deterioration late in the spring. Also, in years when the ice did not clear out, rafting or freezing-in of old floes might occur where the runway ought to be located. It also became clear that landings were desirable in the autumn during the period between open water and freeze-up to effect personnel changes and to deliver needed supplies before the ice could support aircraft. Early attempts to build airstrips on land were unsatisfactory because permafrost damaged them so severely. Consequently, the construction and maintenance of effective land airstrips became a matter of high priority.

The personnel sent to these stations were selected as carefully as possible. The meteorological services of both countries provided the weathermen and radiomen. Cooks, mechanics and temporary employees for the spring and/or summer were hired as needed. Parity in terms of nation of origin was supposed to be applied to these assignments, but trade-offs in skills occurred if qualified men were not available. In northern Canada, the official-in-charge (OIC) of the station was a Canadian and the executive officer was an American. They had the great responsibility, especially during the building of a station, to see that construction goals were met, because the brevity of the summer working period was seldom appreciated by those without previous arctic experience. In setting up the satellite stations, uncertainties about site conditions, the length of the construction season and the unpredictability of the weather were sometimes compounded by logistic or equipment problems and the occasional inadequacies of personnel. Stress was inevitable but tended to disappear once the station became operational and people settled into a more regular, predictable routine. Alert was no exception.

SELECTION OF A SITE FOR ALERT

In the summer of 1948, following the spring establishment of Mould Bay and Isachsen stations, an attempt was made to send icebreakers via Robeson Channel to Cape Columbia, the northernmost point of Ellesmere Island. A cache was to be put ashore there to be used the following spring to build a runway on the sea ice for an airlift of the many tons of supplies, equipment and materials needed for what, it had been decided, would be the final satellite weather station (The Polar Record, 1950).

Two icebreakers, the *Edisto* (USN) and *Eastwind* (USCG), left Thule, Greenland, on 30 July (The Polar Record, 1950). The following day, the *Eastwind* lost its forward propeller and fell behind the *Edisto*. On 2 August the *Edisto* anchored off Cape Sheridan, where Peary had wintered with his ship, the *Roosevelt*, during his last two attempts to reach the North Pole (Peary, 1907, 1910), and near Floeberg Beach, where Sir George S. Nares wintered with HMS *Alert* during the British Arctic Expedition of 1875-76 (Admiralty, 1877; Nares, 1878).

Heavy ice conditions made it impractical to proceed farther along the coast toward Cape Columbia, and so the area around Cape Sheridan was reconnoitered by helicopter to find a substitute site. It was known from the earlier reconnaissance flight along this coast that most of the terrain between here and Cape Columbia was not well suited for a weather station. However, a good location was found a few kilometres to the northwest between Dumbbell Bay and the Dumbbell Lakes (Fig. 2).

The *Edisto* followed a lead along the coast to Dumbbell Bay and while en route lost its port propeller in a field of loose pack ice. While the *Edisto* lay at anchor in Dumbbell Bay, Hubbard and W.I. Griffith, the representative of the Canadian Meteorological Division, examined the area and selected the future site for the station (Griffith, 1950).

This area was especially suitable for a weather station because: 1) it was accessible by sea (limited to icebreakers as conditions permitted); 2) nearby lakes could serve as a source of fresh water for the station and as a potential site for a winter airstrip if the ice on Dumbbell Bay proved to be too rough; 3) part of Cape Belknap was level enough for the construction of a land airstrip; and 4) inland, the landscape had a relatively low relief and was distant enough from the mountains of the northern part of the United States Range so that the latter would not interfere unnecessarily with the meteorological role of the station (Griffith, 1950).

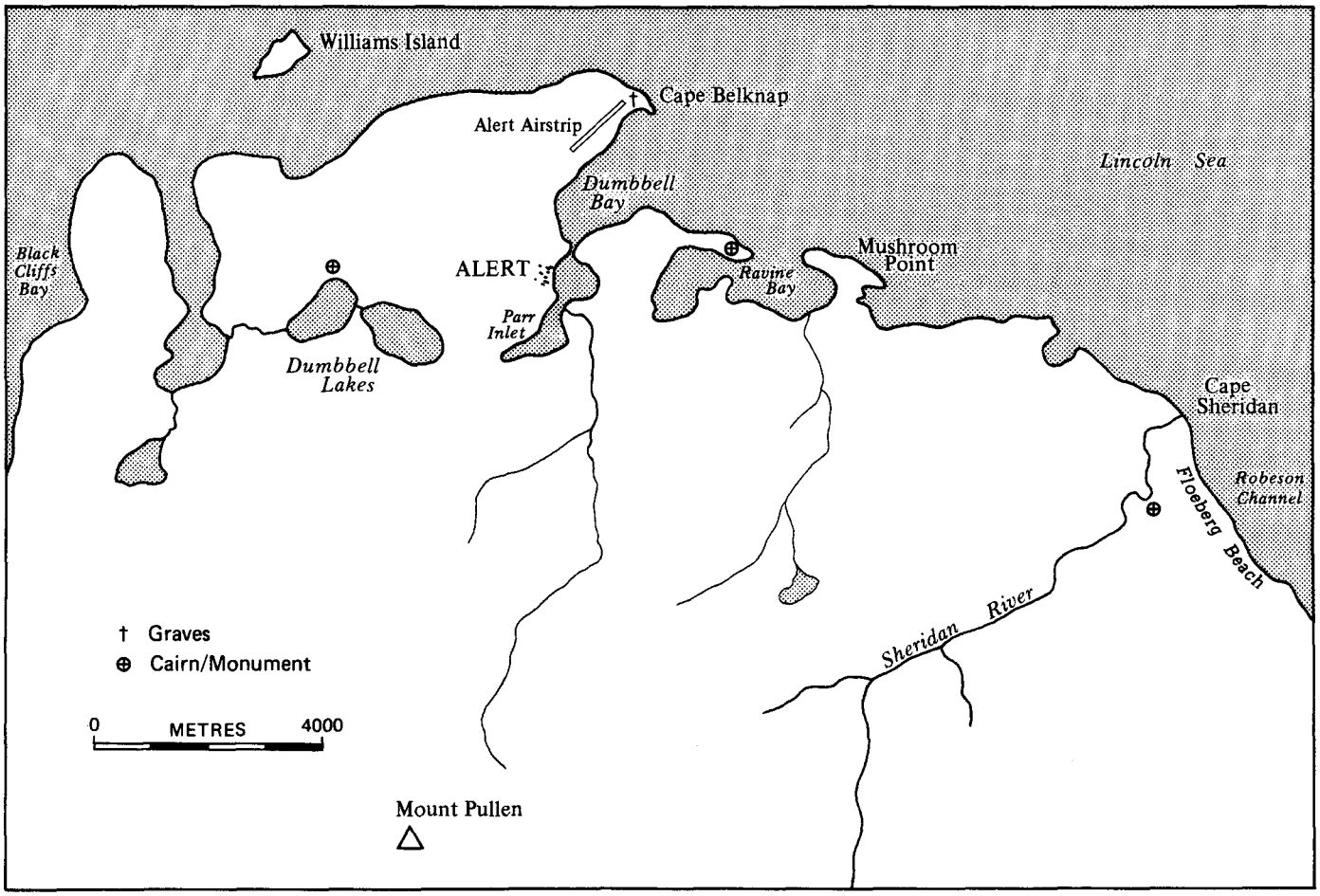

FIG. 2. The northeastern coast of Ellesmere Island, 1950.

The decision having been made, supplies and equipment for the cache were ferried ashore to a point of land on the western side of the entrance to the lagoon of Dumbbell Bay.

By this time the *Eastwind* had arrived, but a sudden change in the wind threatened to drive the ice pack on shore and trap the vessels. The icebreakers were forced to retreat to Robeson Channel before unloading could be completed and before the shore crew could be returned to the ships. Several men were brought back by helicopter, but fog appeared, and 17 others (including Hubbard) had to be left behind. They were taken off by helicopter 36 hours later, when the *Eastwind* returned but was prevented by ice from entering the bay (Griffith, 1950).

On 5 August, the remainder of the supplies for the cache was transferred from the *Edisto* to the *Eastwind*, which landed them at Dumbbell Bay when the ice eased the next day. The cache included a T-9 bulldozer for clearing the snow off the bay ice to make a runway, an aircraft engine heater for preheating the tractor engine, 12 drums of fuel, cargo sleds, a Jamesway hut and other supplies. The *Eastwind* then rejoined the *Edisto* in Robeson Channel (Griffith, 1950; U.S. Weather Bureau, 1950).

NAMING THE STATION

A name for the station had not yet been chosen. Equipment destined for it was labelled "Cape Columbia," but this was obviously no longer an appropriate name, the cape being almost 100 km to the west, and so it was sometimes referred to as the North Ellesmere Station. On 17 November 1948, the chief of the U.S. Weather Bureau, F.W. Reichelderfer, began correspondence with Andrew Thompson, controller of the Meteorological Division, DOT, to name the station. He suggested two names, Alert, after the vessel that, under the command of Captain George Nares of the British Arctic Expedition of 1875-76, was the first ship to reach these shores, and Belknap, the name of the naturalist surgeon of HMS *Alert* and the person after whom the cape on which the station would be placed had been named (Reichelderfer, 1948).

Both these names were submitted to the Board of Geographical Names in Ottawa for a decision. On 6 January 1949, the name Alert was adopted (Interdepartmental Meteorological Committee, 1949).

PREPARATION FOR THE ESTABLISHMENT OF ALERT

Detailed planning for the new station began in the autumn of 1948. The logistic constraints and cost of maintaining staff at the station made it necessary to keep the number of staff as low as possible. At that time it was thought that six men could operate these stations. However, because of the pressure to have airstrips for autumn (and ideally year-round) use at all of the stations, consideration was given initially in the case of Alert to starting with a crew of eight, two of whom would be

taken out at the end of the first summer. As at the other stations, it was intended that there would be an equal number of Canadian and U.S. personnel (Meteorological Division, 1949).

By February 1949 personnel had been identified and decisions were being made about details such as radio communication frequencies, amateur radio call sign, stores and parts (Shouse, 1949; Reichelderfer, 1949a; Archibald, 1949). However, on 28 February, the installation of Alert by spring airlift was postponed (Thompson, 1949a), owing to an anticipated shortage of cargo aircraft.

Late in the spring it was still intended that if an icebreaker could be made available, an attempt would be made after the resupply of Resolute to deliver the bulk of the fuel requirements to Cape Belknap (Thompson, 1949b). This would reduce airlift tonnage for the spring of 1950. However, the sea lift was not completed until the end of August, too late in the navigation season to send an icebreaker into these waters.

By the end of 1949 there were 321 tons of supplies and materials stored in the open at Thule waiting to go to Alert. Nearly two-thirds of this was drum stock (i.e., diesel oil and gasoline), sufficient to operate Alert for two years. To keep within the scheduled limit of 295 tons for the spring airlift to Alert, it was planned that any excess would be delivered in the summer by icebreaker (Reichelderfer, 1949b).

The airlift was scheduled to start early in April 1950, after continuous daylight began. Hence, many of the final arrangements were made in the preceding November and December to insure that suppliers and cooperating government departments could meet their obligations. It was also necessary to check that vital items were at their collection points, and if not, to ensure that they would arrive in time. In some instances one-of-a-kind equipment had already gone astray or needed replacement because of damage. For example, parts of the prefabricated buildings destined for Alert had been transported in error to Eureka and needed to be replaced. Equipment not already at Thule (including a small towed grader) but due to go to Alert in the spring airlift had to be available to be flown to Thule before the airlift began in March (Thompson, 1950a). Other items, such as a new experimental 3.7 m diameter fibreglass shelter for rawindsonde equipment, were to go all the way by sea, while some, like the station barometer, would be hand carried by one of the meteorological personnel (Reichelderfer, 1950).

Other matters had to be arranged as well, such as establishing a post office at Alert, as at the other joint stations in Canada. It was even suggested by Andrew Thompson (1949b, 1950b) that, since it would be the northernmost post office in the British Empire, and presumably the most northerly in the world, a special stamp might be issued. This, however, was not done.

PERSONNEL FOR ALERT

Some of the men who had been identified for assignment to Alert in 1949 were not available for 1950. It was noted at the end of January 1950 that, although the DOT would be supplying a carpenter, there was some doubt that they would be able to locate a mechanic for the summer, "... as this type of personnel is exceedingly scarce in Canada . . ." (Thompson, 1950c). The previous year, after extensive advertisement, only one had been obtained.

In keeping with policy changes regarding satellite stations, it was anticipated that there would now be eight rather than six men on permanent staff at Alert; four of these would be rawindsonde observers, two would be radio operators (one of whom would also be qualified as a radio technician), one a cook and one a mechanic. In addition there would be four temporary employees, a carpenter and a three-man airstrip construction and maintenance crew (Reichelderfer, 1950). This would be the largest crew to be used in the construction of a satellite station. The man in charge was to be Leo Lafranchise, a DOT employee who had previous experience in setting up weather stations elsewhere in arctic Canada.

In alphabetical order, the twelve who built Alert were: Clifton, Charles J, executive officer/rawindsonde observer (U.S.); Dow, Selwyn M., radio operator (Can.); George, Woodrow W., cook (U.S.); Griggs, Sam, mechanic (U.S.); Johnson, J. Peter, Jr., airstrip mechanic (U.S.); Lafranchise, J. Leo, official-in-charge/rawindsonde observer (Can.); McCormick, Elwood J., airstrip mechanic (U.S.); Morgan, Willis G., senior airstrip mechanic (U.S.); Scovil, James, carpenter (Can.); Toole, Griffith A., rawindsonde observer (Can.); Whiteman, Stanley, radio technician/operator (U.S.); and Zahary, George, rawindsonde observer (Can.).

THE ADVANCE PARTY

Personnel assigned to Alert from elsewhere in the Canadian Arctic went to Thule from Resolute Bay; the others flew north via Goose Bay and Frobisher Bay. By 3 April they had all arrived at Thule.

Meanwhile, preparations were being made to send in an advance party to prepare a runway on the ice of Dumbbell Bay. On Easter Sunday, 9 April, this party, under the direction of Lafranchise and including Clifton, Morgan, Whiteman and a USAF observer, Major A. Creo, left Thule aboard a USAF ski-wheel C-47 aircraft piloted by Captain Vincent. A C-54 transport under the command of Lt. Colonel Leisey, the USAF project commander, flew cover and made parachute and free drops of fuel and equipment.

The snow-covered surface of Dumbbell Bay had been packed by the wind into ridges, which made the landing very rough. The temperature was –46°C; the cache on the small peninsula midway along the western side of the bay was drifted in and needed to be dug out. A lightweight dog sled had been brought to man-haul a reliable engine preheater (in case the one at the cache proved unserviceable), tent, meat, radio, batteries for radio and tractor, emergency supplies and an aircraft altimeter. The sled collapsed from the weight of its load and manhandling in deep snow. Under bitter conditions, the Jamesway hut (4.9 m^2) was set up on top of a knoll, a short distance from where it had lain in the cache. A weather balloon was filled with helium and sent up, with a wire attached to serve as an aircraft beacon antenna; bunks were set up inside the Jamesway and an oil space heater was installed and started. Meanwhile, Morgan dug out the T-9, and after preheating it, got it going. A runway was laid out up the middle of the bay to the narrows, and except for Whiteman, who kept a continuous radio watch in a tent heated by a small coal stove, the others began to clear snow around the clock from the runway surface. By 14 April the runway was 1000 m long, but the fuel supply for the tractor was down to one

barrel. It was another four days, however, before aircraft could bring more fuel, because of delays in the airlift to Eureka.

THE AIRLIFT

Budget constraints had led to most of the tractors purchased for the satellite stations being secondhand, including the T-9 at Alert. But, a new D-2 bulldozer (with a cab — a luxury because protection for drivers had not been a consideration in earlier purchases) and a new Weasel (a small, open, tracked cargo carrier) were to go to Alert. They were used by Griggs and Johnson to haul cargo and provide a taxi service between the station and the airstrip for the station personnel and the rest of the Alert crew who were loading aircraft during –35°C weather. Severe wind storms off the ice cap eliminated visibility and created extreme wind-chill conditions, which interrupted the airlift to Eureka and delayed the one to Alert.

The first aircraft to land on the Dumbbell Bay ice strip was a C-54 under the command of Captain M. Buls on 18 April. It brought fuel and the second radio man, Dow. Hubbard and Archibald were also on this flight and, with Lafranchise, determined where the buildings and permanent airstrip would be located. Major Creo returned to Thule on this aircraft.

In anticipation of the arrival of other members of the crew, a second Jamesway was set up for sleeping quarters on 21 April (Fig. 3). The original Jamesway became kitchen, dining room, radio room and operations centre after the coal stove was moved to it from the tent. Later this day another C-54 brought Johnson and a load of diesel oil in drums.

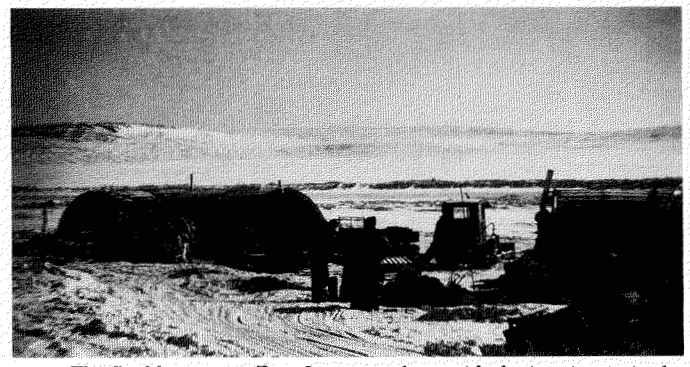

FIG. 3. The final bay camp. Four Jamesway huts with the ice airstrip in the background.

A few hours later, a C-82 aircraft made a single trip to bring the D-2 bulldozer. Owing to the limited space, the bulldozer blade had been taken off the D-2 and set in the rear of the aircraft behind the tractor. It had to be manhandled onto the T-9 to be carried away before the D-2 could be driven off. The crew of the aircraft celebrated the success of this special mission, a first in these latitudes, by being photographed with their aircraft, and then, after being refuelled, set off for Thule. They were weathered out of there and their alternate destinations and had to continue all the way to Goose Bay.

There were now six men in camp, and around-the-clock work on the ice runway began again to provide a safety margin for the USAF's C-54s and an RCAF North Star, which would be carrying maximum loads.

The monotony of pushing snow to lengthen the runway ended as the frequency of aircraft arrivals began to increase, and once the runway was ready, aircraft flew around the clock, weather permitting. An unloading port had been cleared on the ice beside the runway to keep the latter clear when aircraft were on the ground. As soon as an aircraft had taxied into the unloading area, the two tractors, each towing one or more cargo sleds, maneuvered into position so that the cargo could be manhandled, slid or rolled down a ladder-like ramp of 10 cm^2 x 10 cm^2 timbers and placed directly on a sled. Some of the sleds, of course, also had to arrive by air. If the load was fuel in drums, the entire load could be on the ice in 2-3 minutes, the air crew not even bothering to turn off their starboard engines.

The North Star had a special portable ramp, which enabled small vehicles to be driven into the aircraft. It was used to deliver an earth scraper for airfield construction (Fig. 4) and the weasel, which had to have its flotation units cut off before it could fit inside.

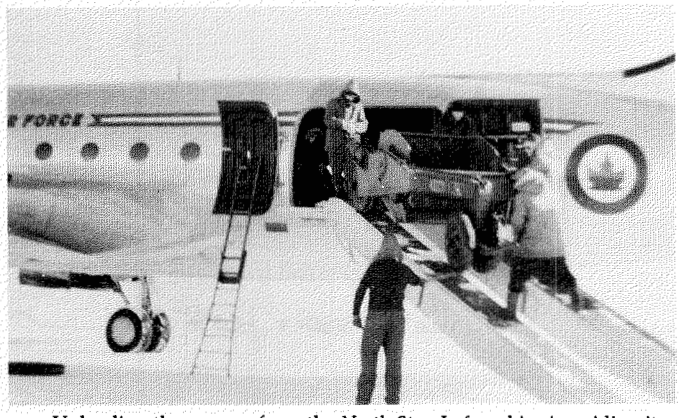

FIG. 4. Unloading the scraper from the *North Star*. Lafranchise is guiding it; Clifton is to his left.

Initially, the loads from the caches at Thule reflected a schedule of priorities that had been set up for the goods going to Alert. However, after the first few flights, it tended to be ignored, and the aircraft were loaded with whatever cargo could be put aboard quickly to keep turnaround time to a minimum. On average 20-30 tons were delivered each day, with the bulk of supplies and equipment arriving in the last week. Food, stoves, panels for prefabricated buildings, spare parts, meteorological equipment, radio towers, furniture and lumber were delivered. Upon arrival they were placed in piles according to category. Whenever there was a lull in the airlift, they were hauled away from the bay and up the hill to the plain where the station was to be built. There they were distributed into caches, which were well separated in keeping with guidelines developed after a nearly disastrous fire at one of the other satellite stations.

Although the airlift routine eventually became numbing, there were some light moments. On a fine sunny day, after towing a load to the station site, it was easy to be tempted into riding a cargo sled down the hill. Not all of the sleds had rigid drawbars, and so they had to be cut free of the tractors when going downhill to prevent sliding forward into the tractor tracks. The fun came when one would get going too fast and tip over, flinging off its passengers into the snow. During the

busiest period, it was a toss-up whether it would be sleep or food that would be snatched between aircraft arrivals. Lack of sleep led to some amusing moments, such as when a crate from an aircraft would be carried to a sled to be hauled away but confused with another one already on the sled and be taken back to the aircraft!

Food was taken more or less continuously, because there were not enough eating utensils for everybody. There was a large supply of frozen meat, "C" and "5-in-1" and other military rations, and during the first couple of weeks many meals consisted of steak, canned fruit, canned fruit juice and coffee, each man preparing his own. A welcome treat was a chocolate cake sent up by a military cook at Thule when one of the Alert crew had a birthday.

Any change in the routine became a topic of conservation, and the appearance of wildlife was an event everybody enjoyed. Three arctic white foxes joined the camp almost immediately and soon became pets. On 18 April a gull appeared out of the blowing snow; the next day a snowy owl was seen and a week later the first snow bunting. There were several ptarmigan chases, but the wily creatures always stayed just beyond reach, frequently leaving their pursuer sprawled full length in the snow. On 1 May the crew of an aircraft going through its preflight check at one end of the runway spotted the first wolf. Later they were seen singly or in pairs every couple of weeks.

On 30 April, the first mail was sent from Alert. Lafranchise, who had been sworn in at Resolute Bay as Alert's postmaster, supervised the hand cancelling in the Jamesway of the large number of envelopes sent by philatelists to mark the opening of the world's most northerly post office. Later he swore in Zahary as assistant postmaster.

The airlift ended on 2 May after 308 tons had been delivered (U.S. Weather Bureau, 1950). The last aircraft brought the rest of the crew and then noisily buzzed the camp as it headed south. The new arrivals moved into a third Jamesway hut that had been set up for them; the balloon holding up the aircraft beacon antenna was shot down; stillness settled on the camp and everybody had their first uninterrupted sleep since the beginning of the airlift.

That evening, looking for something different to do, six of the crew made their way toward Cape Sheridan in the weasel. The route crossed Ravine Bay and the neck of Mushroom Point to a deep ravine about 1 km from two cairns visible on top of Cape Sheridan. From here they proceeded on foot, climbing the hill to a cairn surmounted by a wooden cross (Fig. 5). There, above the polar ice pack at about midnight, an old powdered egg tin containing a message left by Peary in 1907 (Fig. 6) was found behind a rock on the side of the cairn. For a moment, this discovery, more than any map, created a sense of the remoteness of this coast that none of them had felt before.

After descending to the shore, the party proceeded to another cairn, a memorial to Ross G. Marvin, who died during Peary's 1907 expedition. The cross on top of this cairn was down; the guy wires to support it were still intact, and so it was replaced in its original position. The trip back to camp was without incident. The discovery of Peary's message was reported to the authorities, and the document was retrieved in August by a Canadian official. In time it was sent to the museum of the U.S. Naval Academy.

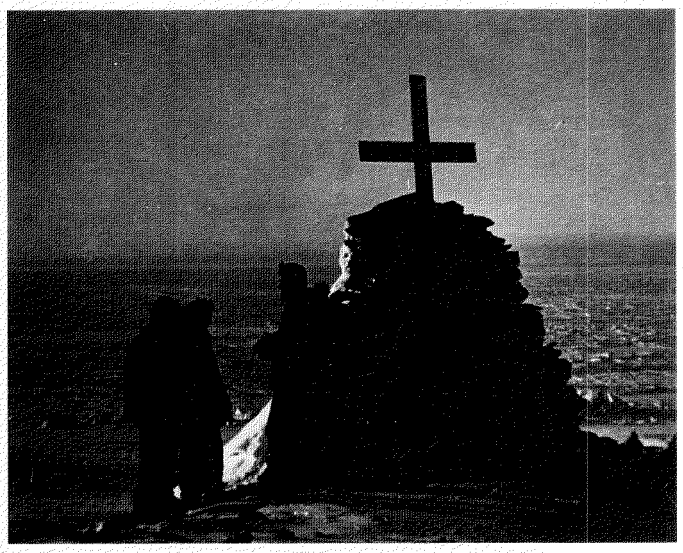

FIG. 5. The Roosevelt Cairn constructed at Cape Sheridan in 1907 by Commander R.E. Peary.

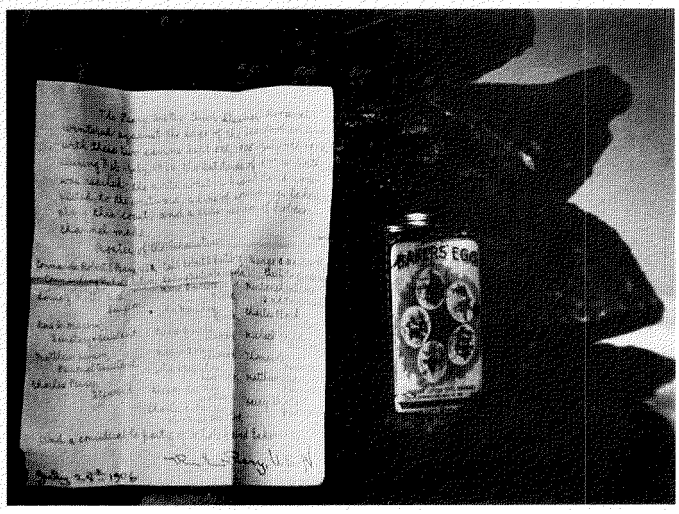

FIG. 6. Message left in the Roosevelt cairn by Commander R.E. Peary in 1907.

SETTLING IN

There were now twelve men on station. Lafranchise set up a camp routine, established construction priorities and set daily schedules. Twelve-hour days were the norm, but Saturday evenings and Sundays were free time. Initially, everybody, aside from the cook, turned his hand to whatever manual tasks had to be done. Later, after most of the heavy labour and basic construction had been completed, those with technical skills needed for normal operation of the station spent proportionately more of their time setting up equipment or preparing facilities for those jobs.

On 4 May, the first working day after the airlift, the snow at the station site on top of the hill was bulldozed away so that the buildings could be staked out and work begun immediately on them. The vehicles, which had been subject to extremely heavy use, had to be serviced. Men were assigned to secure the caches, locate basic supplies and bring them to camp. Fuel, prefabricated building sections and other equipment still on the bay ice had to be hauled up to the station site. Most of this work was completed by the end of the first week.

Meanwhile, officials in Washington and Toronto had been corresponding for several months to decide if the buildings at Alert should be mounted on oil drums or posts to reduce the effects of permafrost. Unaware of the controversy, the OIC had already decided that, in accordance with the design specifications of the Jacobsen buildings being erected, posts would be used. A gasoline-powered jackhammer and a steam jenny had been supplied to assist with construction in permafrost; the latter turned the fine-grained soil into mud, which quickly refroze in the low air temperatures and made the soil more difficult to work. The jackhammer proved to be more satisfactory, but on the day the operations building foundation was completed (11 May) its connecting rod broke, and because the spare parts kit had not arrived on station, post-hole digging for the living quarters went more slowly. Fortunately, bedrock was close to the surface, and it seemed unlikely that permafrost would be a severe problem. Nevertheless, samples of the soil were taken so that its frost heave susceptibility could be determined by laboratory analysis in the south.

In spite of efforts to get everything necessary on site, parts of buildings, the airborne grader, the hot water tank for the station washing machine, plumbing materials, paint, the station barber kit and cartridges for the Canadian rifles, among other things, had not arrived. Most items were not known to be missing until they were needed and could not be found in the caches. Improvisation frequently became necessary.

For sanitary reasons it was no longer feasible to depend on snow in the vicinity of the bay camp for water. So, periodically, a group would take one of the tractors and a sled to the mouth of the bay, where small floes of multi-year ice had frozen in. Pickaxes provided an abundant supply of ice from these floes for fresh, soft water. Later, when the sea ice was no longer safe for travel, water was drawn from one of the Dumbbell Lakes southwest of the camp. A hole was drilled through the ice, and to save having to do this every time water was needed, it was filled with gasoline, which would be burned off so that water could be pumped out of it. It was a simple but effective system and served until the lake ice melted in the summer.

The crew still lived in the bay camp, but on 11 May, with construction proceeding steadily at the main station and the hauling of supplies completed, a tent was set up near what would become the south end of the gravel airstrip on Cape Belknap. Along with a cache of fuel and some food, this became known variously as Little Alert or North Alert, the satellite of the satellite. During the airlift Hubbard and Lafranchise had examined the cape and set up snow cairns about 1400 m apart to mark the axis of the runway. The snow cover made it impossible to know how much filling or cutting would be required to make a serviceable airstrip, and so snow removal began so that the ground would begin to thaw and make the surface workable as soon as possible. Morgan began to plough snow at the south end of the strip, and Johnson and McCormick collected soil samples and surveyed a line to determine grades.

From the airstrip the operations building, bright orange in colour, could be seen rising against the sky to the south. By the middle of May it was up, and the foundation for the living quarters begun.

The air temperature rose above freezing for the first time on 13 May. During fine weather mirages were common. Clear skies tended to alternate every week or so with several days of fog, banks of which could be seen moving landward as much as a day and a half before reaching the coast. About this time an Air Rescue aircraft from Alaska with Colonel Bernt Balchen aboard made a low-level pass over the station while on a tour of the satellite weather stations.

During this period a steady stream of requests was being received. What was the thickness of the ice beneath the runway on the bay, the temperature of the sea water, the thickness of ice on the Dumbbell Lakes? What was the elevation of hills and mountains west of Alert (to aid in determining the effects on meteorological analysis)? What was the snow depth and cover on land and bay ice? Were auroral observations being made? (Since there were 24 hours of daylight, this request drew local comment.) Certification of work hours, specifications for items requested, and details about construction were all required. Even though the legitimacy of such requests was accepted, they could be irritating when answers required the detailing of people to get the information and interrupted efforts to meet the main priority — to get the station built and functioning.

Such requests were not one way. in addition to a steady stream of small (almost daily) orders for parts and materials lost or damaged in transit, there were numerous items related to personnel, ranging from future employment to the renewal of Whiteman's radio licences. The latter provided an example of Hubbard's ability to cut red tape when he wired two days later that it had been done.

THE FIRST AIR DROP

On 10 June a USAF C-54 bringing mail and supplies to the satellite weather stations made an air drop at Eureka and then flew on to Alert with the intention of landing on the bay ice to deliver a grader for levelling the new airstrip, a new radio and lumber, as well as mail. By the time it arrived, the clear weather had disappeared. The aircraft let down over the sea to get below the cloud deck, but because of poor visibility over the land, the pilot aborted the landing and returned south. He might have felt less frustrated had he known that one of the station crew had had a very vivid dream of an aircraft crashing while landing and that some of the crew believed the change in weather was an act of God to prevent a crash.

The surface of the ice airstrip was beginning to melt, but later in the day, as the temperature rose, it began to deteriorate very rapidly, and a decision was made to declare it unserviceable. Two days later the aircraft returned and made an air drop (Fig. 7). The ceiling was much the same as during the attempted landing, and even though the aircraft was occasionally visible through the overcast, the drop had to be made by radio (i.e., when the aircraft could be seen through the cloud or heard overhead, the station radio operator would inform the aircraft and the cargo chutes would be pushed out). In spite of this, most of the chutes dropped close to the bay camp and were brought in with the weasel. The load of the only chute that failed to open contained mail and Morgan's camera, which did not survive the impact. Within minutes the mail was distributed, and there was absolute silence in camp — a rare situation.

FIG. 7. 12 June 1950, airdrop. Bay camp and condemned ice airstrip in middle background.

LIFE AT THE AIRSTRIP AND MAIN CAMP

During the middle of June the weather was unsettled. On the 15th, the first rain of the season began to fall but soon changed to heavy snow. The airstrip crew sought multi-year ice for fresh water that day. Pools of water now surrounded the floes, so that one could no longer get close enough to use a pick easily. On the way back McCormick fell into a seal hole covered by fresh snow but was unharmed. The usual track up the hill could not be followed owing to deterioration of the snow pack, and so a new route was tried. Getting the tractor and sled over and through the old floes and ice ridges in the shoal areas without turning over or getting stuck proved a challenge that gave some appreciation of the difficulties faced by those 19th-century explorers who had man-hauled along this same stretch of coast.

Water for human consumption at the airstrip was a very precious commodity at this time because of the great effort required to cut, haul and melt the ice. Around the airstrip, however, seepage from melting snow was becoming a nuisance. Snow had been cleared from 450 m of the airstrip site, and the surface was being built up to grade. Between the work area and the snow banks on either side of the strip, shallow ditches had been bulldozed to divert any marginal meltwater. On a Sunday evening, 25 June, after bringing the crew back from the main camp, Lafranchise discovered that water was beginning to spread across the airstrip. Much of the night was spent improving and extending the ditching system to keep the soil on the runway from becoming too wet to work with the heavy equipment. Fortunately, this peak runoff period only lasted about a week, and by early July more than half the snow cover was gone.

During the third week of June weather was poor, and work at the main camp shifted largely to inside jobs. By this time the operations building had been finished and partitions were going up inside the building with the living quarters.

The mess hall was in the operations building, and the cook organized the kitchen and dining facilities with everybody's enthusiastic support. The first meal in the new facility was on 16 June. The space, light, proper furniture and separation of functions in the eating and lounge areas of the operations building, although simple and basic, provided a much appreciated luxury compared with the cramped quarters of the previous two months. There was even a small library, the contents of which suggested somebody had ordered several metres of books from a secondhand bookstore.

Water for use at the main station was now hauled from the lake in a tank trailer and pumped into tanks in the operations building. Early in July, when the ice on the lake was getting weak, the water detail went through the ice with the weasel. Fortunately they were close to shore, and the weasel was out of service for only a short time. It was another reminder that in that environment nothing should be taken for granted.

Power lines were installed for both a 32 volt DC system to be operated from storage batteries charged by a gasoline-powered generator and an AC system for the rawindsonde equipment, which was run off a one-cylinder diesel generating unit. The radio and weather instruments were set up and a darkroom was built. Crates of stores, furnishings, office and technical materials had to be unpacked. As shelves were added through the summer, order replaced chaos. A number of items, such as typewriters, were found to need repair or replacement when they were uncrated, suggesting that inventories in the south had been improved at the expense of remote facilities like Alert.

By 21 June, the sleeping quarters were finished (although unpainted) and, with the exception of the airstrip crew, the men moved their personal gear from the old camp in the evenings during the week. The change was good for everybody's morale.

After the move from the bay was complete, one of the Jamesways at the old camp was dismantled and towed up to the airstrip, where McCormick and Johnson set it up. Like those at the main camp, the three airstrip indigents found this extra space a boon. The new structure became known as the North Alert Diner.

Cooking at the airstrip had been done on old pocket gasoline pressure stoves, but now the coal stove that had been in the old camp could be used, and stores that had to be left out in the elements and so became increasingly damp or wet during the thaw could be protected.

The extra building had an added advantage, too, in that it separated "social" activities from the sleeping quarters. Even before the addition of the "Diner," North Alert had become a popular watering hole, and a gathering could be expected Saturday nights and occasionally other nights of the week, thanks to a small but effective still that had been set up there. Needless to say, the smell of the mash, made of dehydrated potatoes, corn meal, sugar, yeast and water, permeated everything in the hut, and the reduction of inventory, when the hut also served as a dormitory, was conducive to long walks by anybody wanting peace and quiet.

It was fortunate that the rate of production was nowhere near the potential demand. However, it sharpened memories about old recipes for canned and dried fruit, and for those in the "know" at the main station a doctored fruit punch was available at meal time. The OIC's, however, was always unadulterated. Most thought this to be a harmless joke on the OIC, but once production approached demand, the temptation became too great for one person, and what initially had been amusing became a problem. The OIC put an abrupt stop to the production of both the home brew and moonshine. They were not missed.

FIG. 8. Grafitti from 1876 — boulder on the beach near Ravine Bay.

Except for the trip to Cape Sheridan, only Clifton and Johnson went farther afield than the airstrip or the lakes where the station water was obtained. On 24 June, they made their way eastward on the sea ice along the coast. Commander Markham, of the British Arctic Expedition, had camped on 25 September and 13 October 1875 near Ravine Bay with his sledging party, and near that spot a boulder was found on which "HMS ALERT 1876" had been chiselled (Fig. 8). Whether or not this was done by one of the sledging parties or somebody else from HMS *Alert* is not known. It is not referred to in any of the expedition's or subsequent records, but it serves in its long, unobserved anonymity as a fitting marker for the accomplishments of those early explorers. Farther along, the remains of a camp were found on Mushroom Point. There was a small, three-sided fireplace with bits of broken bottles, pottery, wood and fabric scattered by solifluction.

Excursions across the sea ice ended, however, when conditions became too risky. The pack ice had remained silent and apparently immobile through May, but on 6 June a lead opened east of Cape Sheridan. It closed and reopened several times, getting larger until the first week of July, when the Lincoln Sea could be seen to be clear as far as Cape Sheridan. Leads had begun to appear off Cape Belknap, and there was a great deal of water on the ice. Because of this, Clifton and Johnson, on the first weekend in July, walked southward to Mt. Pullen, where they found a small cairn on the summit (Fig. 9), built possibly as a survey marker by a party from HMS *Alert*. The snow pack by this time was becoming soft for walking, and the melt runoff was making stream crossings increasingly difficult, so this trip became the last one to explore the area near the station. Later, after the land dried out, there was little time, although some of the party had discussed the possibility of going farther afield. Another small cairn was found one evening above the Dumbbell Lakes by Scovil and Toole (Fig. 10). Its origin is also unknown.

Work at the main camp progressed steadily and, in general, smoothly. During the last week in June, the garage was started. It, too, required a foundation of posts as well as a pad of earth to form a raised floor. It was finally finished in mid-July after a hoist was installed and work benches and a crib for the generator were built. In the meantime, a 300 m ground wire had been laid in a ditch and covered, and before the end

FIG. 9. Clifton examining cairn on the summit of Mt. Pullen.

of the month a Quonset hut for unheated storage and a shelter for pilot balloon meteorological observations were completed.

Whenever heavy work, hauling, excavation, lifting or earth moving had to be done, one or more of the airstrip crew were sent to help. As much as possible, however, both tractors were kept working out on the cape.

Construction of the airstrip progressed slowly, but by early July 500 m of the runway had been brought up to grade but still needed to be levelled. Where the mat-like growth of low but sparse tundra vegetation had been cleared of snow, plants such as purple saxifrage began to bloom early in June. Where construction was being done, especially at the airstrip, this thin cover was destroyed. After the snow melted, the

FIG. 10. Cairn above Dumbbell Lakes.

airstrip surface dried, and dust storms occurred whenever there was a strong wind. In one instance, a cloud of fine soil, estimated to be more than 150 m high, whirled off across the pack ice. Even when the wind was calm, the tractors generated enough dust to make it impossible to see across the runway. Needless to say, the airstrip crew, whose water supply was a fuel drum of water and who bathed in a hand basin, quickly became the dirtiest and most unkempt members on the station and took a lot of kidding whenever they appeared at the main camp.

COMPLICATIONS

The tractors used on the airstrip had limited bulldozing capacity. About the middle of June the scraper was modified to overcome an irritating tendency to tip over; it was then hooked up to the T-9, and although its load was small, it was faster than bulldozing. The D-2 could be used only for the latter. By the end of the month, the scraper's hydraulic system had failed, but Morgan was able to fabricate one from plumbing parts. A few days later its towing system collapsed, and he managed to jury rig that as well. The scraper remained in action until the middle of July, when its tires finally gave out. Four days later, however, it was operable again after an air drop of needed materials and supplies was made by a C-54 from Thule.

By this time, both the bulldozers were showing the strain of constant use under maximum load conditions and minimal maintenance. The T-9 (named Betsy) had, from the very beginning, an insatiable thirst for nearly six litres of oil a day. Completion of the garage and hoist at the main station made it possible to pull the engine and verify that it had a cracked block caused by the radiator having been filled with the wrong antifreeze mixture when it was shipped to Dumbbell Bay in 1948. When the engine was lowered back into the tractor, one of its spark plugs struck the frame and broke off. There were no spare spark plugs.

This happened on 22 July. To make things worse, the D-2 was having problems with its fuel system. Work on the airstrip came to a standstill. Morgan manufactured a spark plug by taking the base of the broken one, inserting a piece of baling wire for the centre post and hammering two wedges of wood made from a broom handle into the base to hold the wire in place. The engine actually ran for a few minutes until the wood began to burn, ending the experiment.

Undaunted, McCormick, on 29 July, pirated a smaller spark plug belonging to the station washing machine engine and tapped the base of the now charred plug to take the smaller one. This time the engine kept running, and work on the airstrip began again.

A running account of these problems had been passed by radio to Thule, where Hubbard and J. Glenn Dyer, his deputy, were directing the summer resupply to the other satellite stations. The spare parts for Alert's vehicles were at Thule and were tracked down so that they could be airdropped to Alert from an RCAF Lancaster that was at Thule for ice reconnaissance purposes.

The Lancaster arrived over Alert shortly after noon on 31 July. It flew over the airstrip, presumably checking on the progress there, then turned so that it approached the station from the east to make a drop. Immediately over the station the parachute appeared, but it fouled the elevator of the aircraft,

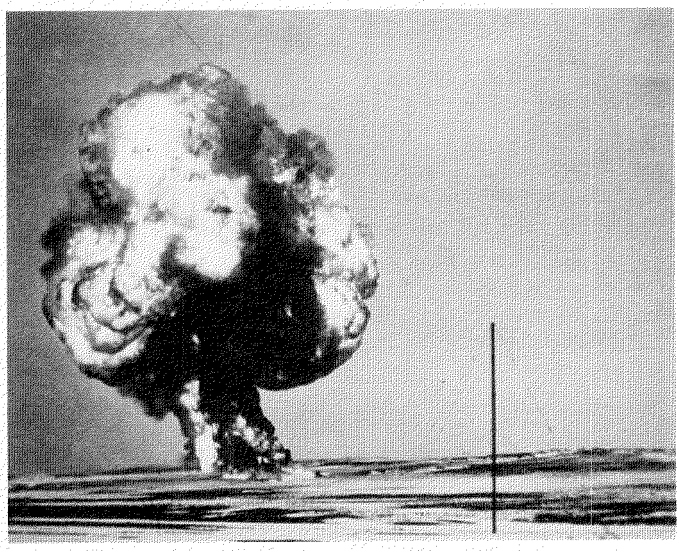

FIG. 11. Lancaster aircraft crashing during air drop.

so that the Lancaster dove into the ground, exploding about 450 m west of the station (Fig. 11).

For a moment everybody was shocked into immobility. Then they started running toward the column of smoke from which flames, flares and other minor explosions were now coming. Johnson took the weasel from the garage, picked up Griggs and went on ahead, but there were no survivors.

The main fire burned for an hour, and parts smouldered for hours. Meanwhile, the weather deteriorated and it began to snow. After several hours, permission was granted by the RCMP at Resolute Bay to cover the bodies, after which snow fences were set up around the remains to keep the foxes away. Pending a decision by the authorities about an investigation, a constant guard was set on the crash site, where a large packing case and a small coal stove were set up on a cargo sled for shelter. The crew were dismayed to learn that Hubbard had been one of those aboard. In addition, there was a Canadian ice observer, Dr. D.W. Kirk, and seven RCAF crew members (W/C D.T. French, DFC; F/L L.M. MacLean; F/L J.F.L. Swinton; F/O T.D. Martin; F.O. J.F.L. Dube; F/O J.E. McCutcheon; and LAC R.L. Sprance).

The next day, in spite of poor weather, a second Lancaster made a number of sweeps across the station to examine the crash. Its ice report indicated that the ice was navigable to within 450 km of Alert, but from there on navigation would be difficult, if not impossible. It was also noted that the bay and one of the lakes were sufficiently open for a flying boat to land (Dagg, 1950).

Meanwhile, the needed spark plugs were discovered among the charred remnants of the parachute load container. They were installed in the tractor, and work on the runway began again.

The weather stayed poor, and a fine, steady, cold rain dampened not only the ground but morale on the station, especially on 3 August when further problems with the scraper brought work at the airstrip more or less to a standstill again and led to a general feeling of frustration and impotence. Later in the day, a message was received advising that an RCAF Canso flying boat would arrive the next day. An

investigation would be made, and then it would return to Greenwood, Nova Scotia, with victims of the crash. Hubbard's family, meanwhile, had requested that he be interred at Alert.

The next day the weather was still poor, with a heavy overcast. The Canso, F/O M. Pearson commanding, let down over the sea, came out of the overcast 15-30 m above the ice, turned and came in over Dumbbell Bay, where the ceiling was more than 100 m. There was still a small amount of ice in the bay, but it posed no difficulty. After landing, the Canso drifted offshore until Scovil and Johnson went out in the station rowboat and learned that the visitors hoped to leave in a couple of hours if the investigation could be completed quickly. Then, rather than anchor and use the small rowboat (there were 10 aboard — crew, doctor, medical orderly and investigating officer), it was decided, after getting Lafranchise's advice, to beach the aircraft. Griggs hauled it out of the water as far as he could with the D-2, leaving the forward section in the water.

A short time later it was discovered that the starter on the starboard engine of the Canso was out of commission. It was also becoming apparent that the weather was closing in completely, and that more ice was beginning to move into the bay. A Jamesway hut that had been erected at the main station as an emergency cache was turned over to the visitors to serve as quarters for those who did not stay with the aircraft. The investigating officer examined the crash and took statements from witnesses. The doctor and medical orderly identified the bodies and prepared them for transport to the south. Caskets had been prepared, but because the spare lumber in camp had been used to replace missing parts of the largely prefabricated buildings, it became necessary in part to substitute crates in which some of the high-pressure hydrogen-making equipment had been shipped.

The starter on the aircraft was repaired, and the visitors planned to leave the next morning (5 August). However, fog and ice in the bay made this impossible.

Meanwhile the icebreakers *Edisto* and *Eastwind*, which were supporting the summer resupply mission, had left Thule for Alert. However, the *Edisto* was damaged in the ice and had to return to Thule. The *Eastwind* continued on and by the morning of 6 August was about 65 km east of the station.

In the interim, Clifton, Toole, Morgan, Zahary and Johnson had dug a grave for Hubbard. The site, near the northern end of the airstrip, overlooked Cape Belknap, Harlow Spit and the Arctic Ocean.

Early in the morning of 7 August the weather began to improve, and preparations were made to get the Canso away. Arrangements had been made for Scovil, the carpenter, to leave with it, and he and his gear were loaded aboard, along with the bodies of the Canadians who had been aboard the Lancaster. McCormick then helped the Canso get free of the beach with the T-9. The ice, which had moved into the bay, had eased, leaving a broad, open corridor parallel to the shore. To make takeoff easier, the heavily loaded Canso churned around to roughen the surface of the water, but while doing this the wind shifted, so that the takeoff run was with the wind rather than into it, as intended. By the time the aircraft began to free itself from the water, it could be seen from the shore that if it did get off, it would strike about 3 m above the water on the bay narrows. At the very last moment the engines were cut and the wheels dropped. The Canso surged deep into the water, plunged through some loose ice and lunged partway up onto the shore.

Just as it was decided that nobody had been hurt in the sudden deceleration, a helicopter arrived from the *Eastwind*, which had reached Cape Sheridan and was awaiting improved ice conditions before moving along the coast to the station. Later in the afternoon Sub-Inspector J.D. Lee, RCMP, Dyer, J.W. Burton (the Canadian representative on the sea lift) and Hubbard's nephew, C.J. Hubbard II, who had been working on the summer resupply mission, arrived in the *Eastwind*'s helicopter to complete the investigations and to assist with the decisions that had to be made.

The weather improved, and wind and ice cooperated so that the *Eastwind* could make its way into outer Dumbbell Bay, where its landing craft began to discharge cargo. Among the many sorely needed items were another T-9 bulldozer, a large cable-operated scraper with a capacity several times that of the one that had been worn out, and a towed grader.

The time that had elapsed since the crash and the difficulties faced in getting the bodies out forced a decision to bury the Canadians. Accordingly, the ground beside the grave dug for Hubbard was opened, and a joint military funeral was held at this most northerly cemetery late on 7 August (Fig. 12). A year later a monument and plaque were erected over Hubbard's grave.

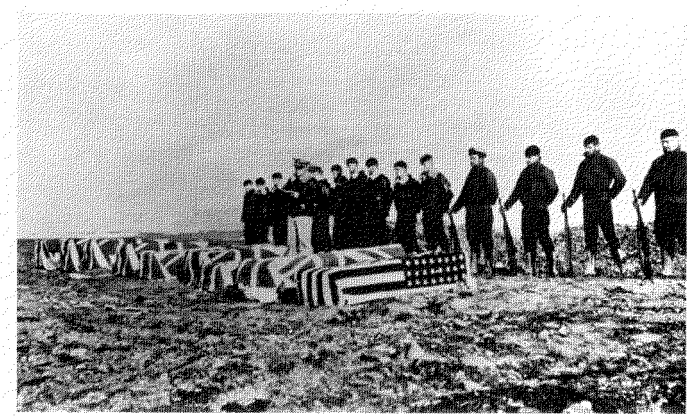

FIG. 12. Military funeral of crash victims performed by crew of USCG *Eastwind*. (Photo by J.L. Lafranchise.)

While those events were happening, the Canso had been hauled completely out of the water. It was thought that the damage it sustained could not be fixed before spring. However, with the arrival of the *Eastwind* and its repair facilities, the Canso was patched up, and late on the 10th it got away safely, taking Scovil with it.

The wind changed on the 11th, and the *Eastwind* had to break off unloading cargo and head back for Thule before the ice closed in again. It was intended that a building of experimental design should be erected at Alert, and a specialist had been sent along on the icebreaker to do this. However, only parts of the building had been put ashore, and so he left with the ship. However, C. Twombly, a USWB instrument technician, joined the station group and in the following weeks installed and calibrated the meteorological recording equipment. Except for the experimental building parts and 300 bags of coal that could not be transferred to shore in time, the Alert sea lift was finished.

AFTERMATH

The new equipment for the airstrip made a major difference in the rate of construction progress, and by 19 August Lafranchise could report that 900 m of the runway were complete and on 24 August that 1350 m of it were serviceable with a hard, dry, smooth surface (Lafranchise, 1950a,b). In effect, this ended the possibility of isolation for Alert, since this airstrip, unlike some of the ones at other satellite stations at that time, was suitable for year-round use.

FIG. 13. The nearly completed weather station.

All during the excitement of the events of the summer and the pressures to get the station finished before freeze-up, synoptic weather observations were being made three times a day, having started 1 July. The dome-like rawindsonde shelter was finished during the third week in August, and with most of the station construction completed (Fig. 13) and the upper-air measuring and recording systems beginning to function properly, little more than the proper storage of food, supplies and equipment remained to be done.

By early September, there was new snow, and the pack ice, although mobile, had closed and could be heard grinding and cracking around Cape Joseph Henry, where a large ice foot was building up. In the bay a thin cover of ice had formed.

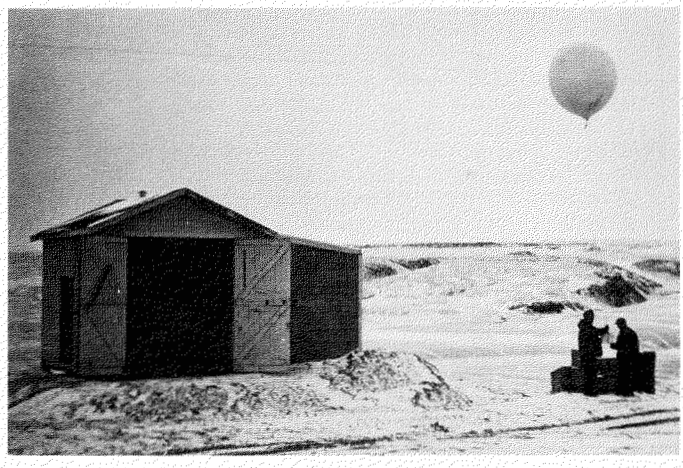

FIG. 14. The first rawinsonde flight from Alert.

Work became increasingly routine, and rawindsonde observations began on 11 September (Fig. 14). The temporary personnel were ready to leave, and several of the regular staff had requested to be relieved when replacements could be found rather than stay on until the following spring. On 8 September, a USAF C-54, Captain Donahue commanding, made the first landing on the airstrip. Johnson returned to Thule with this aircraft. On the 14th the first of three flights brought in new supplies and the coal and experimental building parts left over from the sea lift. Twombly and McCormick, who had injured a foot, went south at this time. Another flight was expected in October to replace personnel, and so Morgan stayed on in case there should be sufficient snowfall to make it necessary to clear the runway.

The experimental building was finished a week later, the rawindsonde observations having been stopped so that the job could be done as quickly as possible. Rawindsonde flights were increased to two each day and pilot balloon observations were started as well. Ice was cut and stored by the buildings to be used for water during the winter. The foxes had settled under the Quonset hut, and wolves began to visit the compound, only to be chased away. A 115-km-per-hour wind on 25 September flattened a Jamesway hut set up at the lakes for emergency shelter and blew the sea ice, but not the bay ice, away from the coast for a few days. Radio communications were good, and Whiteman made many "ham" contacts (Clifton, 1950). On 18 October, Clifton, Whiteman, Morgan, Lafranchise and Dow left on an aircraft that brought in replacement personnel.

POSTSCRIPT

The weather is still reported from Alert. However, the settlement has grown considerably. Alert's location, closer to Moscow than to Ottawa and closer to mainland Soviet Union than to Frobisher Bay (Iqaluit) gave it an obvious Cold War value. This led in 1956 to the assignment of an RCAF communications team, which was replaced by the Army when Canadian Forces Station Alert was established in 1958 (Baril, 1980). As an important Cold War listening post on the northern rim of the continent, its population of specialists grew to more than 200. Scheduled military flights reduced its isolation, and by 1980 it had acquired a proper water system (consumption had grown to more than 70 000 L per day), an FM station, a gymnasium and facilities for curling, bowling and other leisure activities (Baril, 1980).

The change in Alert's function undoubtedly reduced the role that it might otherwise have played in the opening up of northern Ellesmere Island. Extensive research by government and university scientists began in the 1950s. This was followed by resource exploration and in 1986 the opening of Ellesmere National Park. The park strengthens Canada's claim to sovereignty over this area and is beginning to attract tourists to the splendour of the United States Range and fragile landscapes not far from Alert. What was once one of the most inaccessible corners of the world has reached a stage of development almost inconceivable a few decades ago.

Alert was the first modern player in these events. Like many other frontier settlements established for one purpose and becoming something else, little remains of its original character or flavour. The graves and airstrip are, however, a reminder of its origins.

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Leo Lafranchise cheerfully and openly offered his perceptions of the events described here and, after reading an early draft, made a number of pertinent suggestions and criticisms. He also made his photographic record and diary of the post-crash period available. It is not exaggerating to say that, if he had not been in charge, it is unlikely that the station would have been completed before the threat of winter.

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