

The school works in close co-operation with the 10th Air Search and Rescue Squadron, which is called upon in cases of emergency to drop sledges, dog teams, and drivers by parachute.

It has been found that dog teams are more effective than either helicopter or "Weasel" for rescue work on land, and a number of sledge dogs are kept at the school; the drivers, almost without exception, are enlisted Eskimo holding ranks up to that of sergeant. With these facilities it is claimed that there is no part of Alaska in which rescue operations are impossible.

UNITED STATES AIR FORCE RESCUE FLIGHTS IN GREENLAND, 1947 AND 1948

[Summarized from information in the *National Geographic Magazine*, Vol. 96, No. 4, 1949, p. 525; *The Times* of 20 and 29 December 1948; *Manchester Guardian* of 21 December 1948; and *New York Times* of 29 December 1948.]

In February 1947 a United States B-29 aircraft, known as the *Kee-Bird*, was forced down in Daugaard-Jensens Land in north-west Greenland. A rescue aircraft, piloted by Lieutenant Bobby Joe Cavenar, U.S.A.A.F., was flown from Westover Air Force Base, Massachusetts. A landing was made beside the wrecked machine and the eleven stranded members of the crew were safely removed.

On 9 December 1948 a United States C-47 transport aircraft crashed on the Greenland ice cap some 230 miles south-east of Blue West Eight (Søndre Stromfjord), 7800 ft. above sea-level. The stranded crew of seven built shelters with blocks of snow and communications were established by means of a wireless transmitter salvaged from the aircraft: supplies were dropped by parachute, but on 14 December a B-17 Flying Fortress, with a crew of two, crash-landed while attempting a rescue. Four days later a glider was dropped to the nine stranded men, and a transport aircraft made two unsuccessful attempts to snatch the heavily laden machine from the ice. The wheels of the glider were afterwards removed, and on the third attempt it was lifted clear of the ice. Unfortunately the tow rope parted almost immediately, but a safe landing was made and the five men on board escaped injury. At this time the temperature was -40° F. (-40° C.). Later attempts to lift the glider also failed, and three more airmen were forced to join the stranded party. Finally, a ski-fitted C-47 flown by Lieutenant-Colonel Emil G. Beaudry and Lieutenant Charles W. Blackwell effected a landing on 28 December. The aircraft was fitted with jet-assisted take-off equipment to minimize the hazards of a long take-off from rough snow, and the twelve rescued airmen were taken to Blue West Eight.

IONOSPHERIC STATIONS IN CANADA

[Based on notes in *Arctic Circular*, Vol. 1, No. 1, 1948, p. 3-4; Vol. 2, No. 3, 1949, p. 30-32; No. 5, p. 60-63; No. 6, p. 77; *Arctic Journal of the Arctic Institute of North America*, Vol. 1, No. 2, 1948, p. 137-38.]

Wireless communications in Canada are frequently disrupted by atmospheric disturbances, which cause intermittent fading and even complete inability

to receive long-distance signals. As a result of increased activity in arctic regions it has been found necessary to intensify the investigation of these disturbances in order to predict their occurrence and discover alternative methods of communication during disturbed periods.

At the beginning of 1948 there were six ionospheric stations operating in Canada: at Torbay, near St John's, Newfoundland; Chelsea, near Ottawa, Ontario; Portage La Prairie, Manitoba; Prince Rupert, British Columbia; Churchill, Manitoba; and Clyde Inlet, Baffin Island. The stations at Torbay, Chelsea, Portage La Prairie and Prince Rupert are on what is normally the southern limit of the auroral zone. Clyde Inlet (lat. $70^{\circ} 5' N.$, long. $68^{\circ} 8' W.$) is in the northern zone, and Churchill (lat. $58^{\circ} 8' N.$, long. $94^{\circ} 2' W.$) in the area of maximum auroral disturbance.

In 1947 and 1948 unusual sunspot activity was experienced, the highest recorded for over a century, and there was evidence to suggest that the auroral zone had temporarily shifted some 300 miles southwards. It was therefore decided to expand the programme of observations immediately by setting up three new permanent stations inside the northern auroral zone, at Fort Chimo (lat. $58^{\circ} 2' N.$, long. $68^{\circ} 3' W.$), Baker Lake (lat. $64^{\circ} 3' N.$, long. $96^{\circ} 1' W.$), and Resolute Bay (lat. $75^{\circ} N.$, long. $96^{\circ} 2' W.$), and to cover the exceptional period by the addition of a temporary mobile observatory on the railway between Portage La Prairie and Churchill.

During 1948 the new stations were established by the Radio Division of the Department of Transport and equipped by the Radio Propagation Laboratory of the Defence Research Board, and by January 1949 all three were in regular operation.

The mobile observatory was mounted in a Canadian National Railways sleeping car, and was provided with a Diesel generator compartment, laboratory, kitchen, and living and sleeping rooms. The laboratory was supplied with ionospheric vertical-incidence equipment, a loran receiver, an auroral light-intensity recorder, magnetic recorders for two components of the earth's field, a signal-strength recorder, and a 500 W. manually operated pulse transmitter.

The work of the mobile station, which operated from August 1948 to August 1949, was under the direction of J. H. Meek. Delos Hansen was in charge of the field work between August and December 1948, when he was relieved by C. A. McKerrow. The total complement of the mobile observatory was six. During the period of operation one round trip from Portage La Prairie to Churchill was made every three months, and observations were made at the intermediate stations of The Pas, Wabowden, Pikwitonei, Gillam and Herchmer for one week at a time. The object was to obtain definite information on the contribution of the auroral zone to the attenuation of wireless waves passing through and near the zone at ionospherically normal and disturbed times.

As a result of these efforts it is now possible to give a monthly prediction of useful wireless transmission frequencies and give daily warnings of ionospheric storms. The stations are operated by signals units of the three services and by the Radio Division of the Department of Transport. The Radio Propagation

Laboratory of the Defence Research Board is responsible for the programme of observations and the training of operators.

In the period 1948–49, A. B. Neill was in charge at Clyde Inlet, E. E. Stevens at Baker Lake, R. R. Curtis at Churchill, J. E. C. Leggatte at Fort Chimo, and D. Bower at Resolute Bay. A. B. Neill and three of the staff of the Clyde Inlet station, B. F. McManus, C. D. McKenzie, and W. Groff, were killed on 22 August 1949 when the aircraft which was carrying them southwards crashed between Churchill and Winnipeg.

CONFERENCE ON GLACIOLOGICAL RESEARCH, NEW YORK, 1949

[Summarized from an unpublished report of the American Geographical Society entitled "Conference on glaciological research under the auspices of the Arctic Institute of North America and the American Geographical Society, New York City, 1949".]

This conference, organized by the Arctic Institute of North America and the American Geographical Society, took place in New York on 18 and 19 January 1949. Its purpose was the discussion of various problems and methods of glaciological research. Those present were: Dr Henri Bader, P. D. Baird, Dr Walter H. Bucher, Milton Dobrin, Dr James L. Dyson, William O. Field, Joel Ellis Fisher, Henry S. Hall, Jr., Dr Serge A. Korff, Robert Lange, Dr Richard U. Light, Nelson McClary, Maynard M. Miller, Dr Robert L. Nichols, Mrs Philip Dana Orcutt, Frank Press, Dr Louis L. Ray, Dr M. C. Shelesnyak, Dr Arthur N. Strahler, Andrew Thompson, Dr A. L. Washburn, Walter A. Wood, and J. Lamar Worzel.

On 18 January W. A. Wood gave a lecture on Project "Snow Cornice", describing the establishment of the Seward Glacial Research Station in 1948.¹

On 19 January Dr Bader, formerly of Eidgenössisches Schnee- und Lawinenforschungsinstitut, Weissfluhjoch (the Swiss federal institute for snow and avalanche research), reviewed the problem of the transition of firn to ice, and that of glacier movement, and urged that a physicist should study the dynamics, thermal regime, and thermodynamics of firn snow and ice masses in order to determine how these problems should be approached. He emphasized the need for long-term co-ordinated field, laboratory and theoretical research on easily accessible glaciers. Dr Bucher advocated the application of methods used in modern structural geology to solve the problem of the transformation of firn snow into ice. He pointed out the value of vertical air photography in any analysis of the fracture patterns of glaciers. Dr Dyson then described his investigations on the relatively small and rapidly shrinking glaciers in the Glacier National Park. W. A. Wood summarized the programme of studies to be made at the Seward Glacial Research Station in 1949, and P. D. Baird outlined plans for the study in 1950 of a remnant ice mass, 60 miles long by twenty-five wide, situated in Baffin Island in about lat. 70° N. Finally, W. O. Field gave an account of glaciological investigations in south-eastern Alaska and in Argentine Patagonia, known as the Glacier Study Project of the American Geographical Society.

¹ See the *Polar Record*, Vol. 5, No. 39, 1950, p. 456–58.