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THE POLAR TIMES



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National Oceanic and Atmospheric Administration

The Polar Times

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MEMBERS OF OPERATION MUSKOK TAKE IN WARM SUN IN A COLD SETTING



Men engaged in the joint American-Canadian Army 3,100-mile trek into the Arctic to test machines and equipment are shown here enjoying a rest. Latter part of their trip was made at night because the warm weather slowed down snowmobiles in the day.

(Canadian Army)

A Glider Lands in the Arctic to Bring Supplies to the 'Muskox' Expedition



Carrying a motor for a disabled snowmobile, as well as other supplies, a glider comes in for a landing on the ice somewhere in Canada's Arctic territory. Eskimos are watching the proceedings



Members of "Exercise Muskox" considering ways of getting this snowmobile out of the ice crack into which it fell as the expedition neared Port Radium, Northwest Territories.

'Musk Ox' Expedition Pushes Deep Into Arctic Wastes

CHURCHILL, Manitoba, Feb. 15. (P).—Forty-seven men composing the moving force of the Canadian Army's "Exercise Musk-ox" began an eighty-one-day overland tour of the Arctic today with the booming of a pair of old cannons here in Hudson Square. R. B. Urquhart, manager for the Hudson's Bay Company in this village of 125 persons, fired the salute as the twelve snow vehicles headed across the ice of the Churchill River to the cheering of onlookers and the barking of startled husky dogs.

A blizzard which delayed the departure twenty-four hours had quieted, and the weather was termed ideal by the force commander, Lieutenant Colonel Patrick Baird. The temperature was 43 degrees below zero, Fahrenheit, but the sky was blue and there was little wind. Five Americans are in the party.

The operation was planned originally as one of a series of exercises to train Allied troops in invasion of enemy-held territory such as Norway and the Kuriles. But now, besides exploring Arctic wastes, the expedition will study meteorology, radio signals, behavior of the magnetic compass, performance of snowmobiles, suitability of various foods and clothing, and feasibility of air supply for ground forces.

Some supplies will be parachuted to the expedition and some carried by ski-equipped planes.

The force will proceed about 900 miles north from here to Cambridge Bay, then 900 miles west to Fort Norman, on the Mackenzie River, and 1,200 miles down the Mackenzie Valley to Edmonton, Alberta. About 2,400 miles of the trip will be over a trackless waste. The trip is comparable in distance to one from New Orleans to Detroit, west to Salt Lake City and deep into southern Texas.

Royal Canadian Air Force planes will drop supplies along the 3,100-mile route, which will take the party near the magnetic pole. Food and fuel already have been dropped at Eskimo Point, 210 miles north of Churchill. A ten-man party with caterpillar tractors and bulldozers was reported nearing Baker Lake, another 300 miles to the north, to build an airstrip so that twin-engined C-47s can land with supplies.

CHURCHILL, Man., Feb. 17 (P).—An American weasel traveling in the Canadian Army's motorized musk-ox exercise broke down as the forty-seven-man force began the second leg of a 3,100-mile Arctic trip.

Eleven snowmobiles moved on

without the lighter vehicle, which limped forty-two miles back to the base at Churchill after temporary repairs had been made.

ESKIMO POINT, Northwest Territories, Feb. 22.—(C.P.)—The 44 officers and men of exercise musk-ox reached this Hudson Bay trading post last night after a straight run of 90 miles along their last stretch of coastline before they head inland.

In this isolated hamlet they found an Anglican mission, a Roman Catholic mission, the trading post, R.C.M.P. post, a school and the homes of a handful of whites and Eskimos.

Baker Lake, March 7 (CP).—Exercise Muskox, forced to reduce its size due to excessive gasoline consumption, moved northward from its temporary base here yesterday and made a 65-mile run northwest to Shultz Lake in the Thelon River chain.

The new force, composed of two divisions of five snowmobiles each instead of the original three-division force, left one vehicle at this outpost, 500 miles north of Churchill, Man., after a three-day stop-over.

Decision to abandon the 11th vehicle was made at a commander's conference to discuss excessive fuel consumption, aspects of the next leg of the journey—expected to be the roughest of the trip—weather prospects and vehicle performance.

The force moved out over territory never before traversed by mechanical means and followed unmapped rivers and lakes which are practically unknown.

Visibility was reported "good" despite a fresh snowfall the previous night, with clear weather and wind limited to five miles an hour.

Trials and Tribulations Face Musk-Ox Exercise

OTTAWA, March 7 — Up at Baker Lake in the Northwest Territories, the Exercise Musk Ox is running into a number of difficulties, not the least of which is a gasoline shortage. The result has been that the number of snowmobiles on this great trek has been cut from 12 to 10.

In the first two weeks of the 81 day hike across the Arctic waste, gasoline consumption is reported to have jumped 100 per cent. As the column gets further and further away from its supply base, the increased consumption has taxed the ability of the R.C.A.F. aircraft to supply enough gasoline. The two Dakota planes being used are finding the weather tough too. They frequently have to fly through snow blowing up to 2,000 feet or higher.

Rough terrain, much worse

Muskox Saves Child's Life

CHURCHILL, Man., March 21—(C.P.)—Even the most careful planning exercised before the Muskox expedition left here on its long Arctic trek failed to take into account all the difficulties which might be experienced, it is shown in a story reaching here of an emergency appendectomy operation performed on an Eskimo child at Perry River, N.W.T.

The story began when the Muskox force pulled into Perry River, 500 miles north of here. There Capt. R. M. Croome of Brandon, Man., was confronted by a worried Eskimo mother who tried to conceal her anxiety behind a placid countenance.

HER child, aged four, was suffering a ruptured appendix with the inevitable peritonitis while simultaneously growing weaker from a pneumonia attack.

While Capt. Croome was equipped for emergency medical work and minor surgery, neither his snowmobile nor the Perry River trading post offered facilities for a major operation. The serious condition of the patient warranted immediate evacuation to a small hospital at Chesterfield Inlet, hundreds of miles away on the Hudson Bay coast. But bad weather had grounded all aircraft in the area for 48 hours.

CAPT. Croome held a strange consultation—by wireless—with medical officers at Churchill and it was decided to operate. Essential equipment was dropped by an R.C.A.F. Dakota next morning, after the weather cleared slightly, and the operation was performed that night.

Later the child and mother were flown to the Eskimo hospital at Aklavik. Latest reports say the child is expected to recover.

than had been expected, is given as the reason for the increased fuel consumption. The unit has also had to travel very slowly. One day the men made 100 miles but for much of the trek the speed has been two miles an hour. When they reached Baker Lake they were five days behind schedule.

The new type of special winter clothing has proved to be too cumbersome for many of the men but those who changed to Eskimo garb—caribou hide with the fur outside—found that the cold caused the hair to break and some of it was getting in the gasoline. It also was getting in the food and even at 40 below that is not pleasant.

Dark polaroid glasses have replaced the fearsome looking red goggles the men were first equipped with, as there were too many headaches.

Attaches Feel 40-Below Cold

Musk-Ox Encounters Frigid Conditions

CHURCHILL, Man., Jan. 29 — (C.P.) — Ahybody who thinks a diplomat attends nothing but pink-tea parties should have visited this freezing Musk-Ox base yesterday.

For two hours, in 40-below-zero temperatures that marked winter's worst efforts here, diplomatic representatives of seven countries stood on a wooded slope a quarter of a mile from camp and watched demonstrations in igloo-building.

The visiting military attaches, part of a 19-member party which arrived yesterday from Winnipeg, swung their arms and stamped their feet as Lieut.-Col. P. D. Baird of Montreal, Musk-Ox commanding officer, sliced rectangular blocks of snow from the slope and moulded them, spiral-fashion, into a snow-hut similar to those that will be used where necessary on operation Musk-Ox.

Lieut.-Col. P. I. Domashev, assistant military attache at the Russian Embassy in Ottawa, lifted a snow block in his arms at a photographer's request.

OTTAWA, Jan. 10 — Eight nations, all of whom maintain missions here in Canada, have been invited to send either their air or military attaches to witness the start of the famous Musk-Ox operation into Canada's northland next month, it was learned here today.

The nations will include the United States, the United Kingdom, the U.S.S.R., Chile, France, Belgium, Peru and Norway. The inclusion of the U.S.S.R. should set at rest rumors which had been prevalent around Ottawa that the Soviet was being kept out of this operation. The invitations are reported to have been made some time ago.

Invited guests will not be asked to spend the whole three months which the trek will take but rather to watch the start and if they wish to attend the ending.

Frostbite

Old Theory Regarding Treatment Debunked

CHURCHILL, Man., Feb. 8.—(C.P.)—The theory that ice or snow applications are a sure cure for frostbite is exploded in R.C.A.F. posters prominently displayed in this Musk-ox base camp.

The poster lists three "don'ts"—don't rub, don't apply ice or snow and don't thaw in hot water or before a fire.

On the positive side, the poster advises this treatment: Thaw frozen part of face or ears with warm hands; thaw frozen hands beneath armpits; after thawing, wrap in sterile bandages and keep clean; dry wet areas carefully.

Nine Tons of Supplies For 'Muskox' Delivered

Churchill, Man., March 11 (CP).—Nine tons of supplies vital to Exercise Muskox have been dropped successfully at Perry River—next objective of the moving force — by Dakota aircraft after a difficult, history-making Arctic flight.

The supplies, undamaged in the operation, will provide the moving force — now in its 22nd day — with sufficient material to carry it to Cambridge Bay, 130 miles across the ice of Queen Maud Gulf.

Six Dakotas participated in the operation, four from this base and two from Yellowknife which arrived within a few minutes of each other despite "almost unbelievable" navigational difficulties.

Proximity of the magnetic pole, about 250 miles from the new base, makes the magnetic compass useless in the area. In addition, available maps of the district are sparsely marked and inaccurate. Perry River Post, marked on the maps as being on the mainland, actually proved to be on an island some distance away. The surrounding land is barren, with no ground marks to assist navigation.

Early spadework for the supply-dropping expedition was done by Sqdn. Ldr. Joe Coombes of Winnipeg, who flew to Perry River in a Norseman, with Flt. Lt. W. K. (Bill) Carr of Fredericton as navigator and Flt. Sgt. S. L. Melbourne of Port Dover and Ottawa as crewman.

Delayed 10 days by adverse weather, they arrived at the base last Friday and enlisted the help of Eskimos to sort the supplies. They marked out a landing zone and messaged Churchill Saturday that the advance party was ready for the supply-dropping flight.

Working in 21-below-zero weather in a 14-mile-an-hour wind, the ground crews got the Dakotas off in 14 minutes for their 700-mile flight to the base. The leading aircraft, piloted by Flt. Lt. W. J. Johnston of Welland, arrived at the scene first and sent out signals enabling the other Dakotas to "home" to the dropping areas.

The 1,400-mile trip was completed in 14 hours.

Pilots of the other aircraft were Flt. Lt. D. Dickson of Hampton, King's County, N.B.; Flt. Lt. J. N. Hall of Winnipeg; Capt. R. D. Stevens, United States Army Air Force; Flt. Lt. L. A. Dodds of Winnipeg, and Flt. Lt. T. B. Tackaberry of Bentley, Alta.

Crosses Arctic Circle

CHURCHILL, Manitoba, March 12 (AP).—The Muskox expedition, about a week behind schedule, crossed the Arctic Circle yesterday and reached a point sixty miles of its next objective—Perry River, a trading post on Queen Maud Gulf.

PERRY RIVER, N. W. T., March 14 (CP).—Eight days behind schedule, the snowmobiles of the Muskox Expedition rumbled into Perry River yesterday, completing the first 800 miles of the 3,100-

mile trek across Canada's arctic wilderness.

CHURCHILL, Manitoba, March 15 (CP).—"Exercise Muskox" is on the move again, speeding over the ice of the Arctic Ocean toward Cambridge Bay, 160 miles from Perry River where a one-day stop was made.

Musk Ox Men Aid Eskimo Child

THE PAS, Man., March 15 (C.P.)—Nanau, a Baker Lake Eskimo woman, and her crippled baby, Kooyak, are viewing the wonders of the white man's world today, bound for Winnipeg where the child will be given medical treatment.

Kooyak, who wears caribou diapers, is just as interested as his mother in the first sight of a two-storey house, the train and automobiles.

The baby is a protege of members of Exercise Musk Ox who discovered his condition during the stop-over at Baker Lake, 525 miles north of Churchill. The child has a club foot, requiring hospital treatment, and he was flown to Churchill in an R.C.A.F. plane to start the train journey to Winnipeg.

Nanau carries her crippled baby in the hood of a magnificent fur parka.

Snowmobiles Penetrate Uninhabitable Arctic Belt

Start 4-Day Venture Into Zone Shunned by Eskimos

CAMBRIDGE BAY, N. W. T., March 19 (CP).—The White Man has plunged into the mythical "Land of the Little Men," a stretch of soil so whipped by constant winds that even the Eskimo avoids it.

Three snowmobiles, thirty-four days and 1,000 miles from Churchill, Manitoba, broke away from the moving force of "Exercise Muskox" yesterday to carry fifteen men on a four-day scientific foray to Denmark Bay. They will buck the elements for 110 miles along the McClintock channel, covering a stretch of coast shunned by natives because of frequent storms and constant, terrible winds.

Out of fear of the elements grew the myth among the Eskimo that the coast is haunted by "the little men." In reality, the fierce circuit of Arctic weather moving along the channel makes it uninhabitable.

Glider Proves Worth In Arctic Circle Test

Drops Supplies to 'Muskox,' Then Is Picked Up Again

NORMAN WELLS, N. W. T., March 31 (AP).—A glider has been launched successfully and picked up north of the Arctic Circle. It was used to drop supplies Friday

at Coppermine, where the mobile force of the Canadian Army's "Exercise Muskox" has arrived at the half-way mark on its 3,100-mile arctic trek. The mobile force left Churchill, Man., Feb. 15.

Piloted by Lieutenant Richard Hopkins, of Sturgis, Mich., and with co-pilot E. W. Smith, of Quebec, the flight was a combined R. C. A. F. and American Air Corps effort.

At Coppermine, 100 miles north of the Arctic Circle, the glider was cut loose. It landed with a new engine for a "Muskox" snowmobile. Thirty-six minutes later the glider was again air-borne, and an uneventful flight was made over the Franklin Mountains to Coppermine.

COPPERMINE, N. W. T., April 1 (CP).—The "Muskox" expedition, nearing the half-way mark on its 3,100-mile Arctic trek, today was moving toward Port Radium, center of Canada's uranium and radium belt and next stopping point some 150 miles southwest of here. The expedition left here yesterday—forty-sixth day of the exercise—and a radio report placed the ten-snowmobile moving force twenty-four miles away by late afternoon.

Anatomical Jigsaw.

The musk ox has the tail of a sheep, kidneys of a goat, spleen of a donkey, bones of an ox, ribs of a bison, hoofs of a caribou.

Arctic Snow in August

Except for Greenland, more than 90 per cent of all Arctic land is snow-free in August.



Dotted Line Shows Course Taken to Arctic Circle by "Expedition Muskox"

Deep Snow Slows Muskox

NORMAN WELLS, N.W.T., April 16 — (C.P.) — Moving in a different formation because of deep snow, the Muskox expedition yesterday was pushing toward Fort Simpson, N.W.T., with less than 1,200 miles of the 3,100-mile Arctic trek from Churchill, Man., to Edmonton still to be completed.

A report reaching here Sunday night placed the force, which left Churchill last Feb. 15, 50 miles along the tractor trail to Fort Simpson, some 290 south of here.

The force commander, Lt.-Col. P. D. Baird of Montreal, sent two vehicles ahead to break trail and the remainder of the 10-machine force followed in two sections of four snowmobiles each.

The moving force left here Sunday, two days behind the schedule designed to end the trip at Edmonton next May 10.

With Musk Ox Moving Force, April 17—(C.P.)—Breakdown has overtaken Expedition Musk Ox again.

The 10 snowmobiles which comprise the force left Norman Wells, N.W.T., Sunday after a two-day stop-over, but were halted after travelling about 50 miles when two vehicles developed engine trouble. The force camped all Monday while two new motors, delivered by an R.C.A.F. Norseman, were installed.

Effective immediately, the 45-man group will move by night and sleep during the day.

Lt.-Col. P. C. Baird of Montreal, officer commanding, said night travel was necessary. Snow conditions become such in sunny hours that travel is rendered slow and heavy. Also, snowmobile cabs become uncomfortably hot and stuffy during the day.

Muskox Bucks Spring Thaw

EDMONTON, April 24—(C.P.)—Beset by spring thaw, a new enemy, the 10 snowmobiles of exercise Muskox's moving force bucked southward Monday towards the British Columbia provincial line and the Alaska highway.

Moving on from Fort Simpson, N.W.T., 960 miles from here, they aimed to reach the highway at Fort Nelson, B.C., some 600 miles from Edmonton, and begin the last major lap of their 3,100-mile Arctic trek that began Feb. 15.

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AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published January and July by the Scott Polar Research Institute, Cambridge, England.

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The moving force, travelling by night to avoid the slush of spring thaw, crossed the Liard River Monday. With temperatures ranging to 54 above in the afternoons, ice in the river was breaking up and the crossing was difficult. Mud was a foot deep on the ramps leading down to the river. A small creek was completely thawed and spilling out over the river ice to add to the crossing hazards.

Up to the present the snowmobiles have been towing sleds to carry trail provisions. These now are being replaced by tracked trailers which are expected to prove more satisfactory for travel over the melting snow and mud.

Meanwhile, the advanced base for the expedition at Norman Wells was closed and its functions transferred to the Yellowknife base.

The Norman Wells camp had been in operation more than a month, keeping the force supplied by air and completing a necessary link in communications. No. 1 air supply unit of the R.C.A.F. commanded by Wing Cmdr. J. G. Showler, moved to Yellowknife from where it will continue air drops of supplies until the moving force reaches Fort Nelson. From then on it will be serviced by motor supply columns running out from the Edmonton base.

FORT NELSON, B. C., April 30 (C.P.).—Lieutenant Colonel P. D. Baird of Montreal led the "Muskox" expedition into town last night, six days behind schedule, and announced a decision to cut short the planned three-day stop-over here and depart tomorrow for Fort St. John, B. C., on the second lap of the 3,100-mile Arctic exercise.

Following the Alaska Highway from here, the ten snowmobiles will have easier going for the final 700 miles of the trek to Edmonton, Alberta. The last twenty-nine-mile stretch covered last night was over a bulldozer trail which had thawed into gummy mud.

AMERICAN OBSERVERS ON CANADIAN EXPEDITION



Before the start of "Exercise Muskox," a 3,100-mile trek across the Far North, going from Churchill, Manitoba, to the top of Denmark Bay in the Arctic and then south towards Edmonton. Left to right, standing: Col. Norman B. Edwards of Diamond, W. V., and Maj. Walter P. Maier-sperger of New York City. Seated: Maj. Albert Jackman, Minneapolis, Minn., and William P. House, Pittsburgh, Pa.



MARTIAN TOUCH—Looking like Men from Mars, Canadian Army troops show various forms of face masks to be used on trip beyond the Arctic circle. Posing in Churchill, Man., men are wearing left to right, plexiglass goggles, canvas face mask, chamois face mask and anti-dust goggles with nose-breather that filters cold air.

Clanked 3,000 Miles in 80 Days, Muskox Home 10 Minutes Early

Edmonton, May 6 (Special).—Operation Muskox rolled along Edmonton's Jasper Ave. this afternoon at 20 miles an hour, the steel treads of its 10 snowmobiles biting a precision pattern into the pavement, to end an 80-day, 3,100-mile journey into the Arctic and back.

With 34-year-old Col. Patrick Douglas Baird, an English-born Scotsman in the lead vehicle, the snowmobiles nipped along the avenue 10 minutes ahead of schedule while thousands watched. Hundreds of children playing hockey from school, were among the observers.

Beaten by the dust of the Alaska Highway and the dirt and gravel roads of Northern Alberta, Muskox made the last 310-mile lap from Grande Prairie by train. The snowmobiles were unloaded at an Edmonton railway station, and then rolled to the Prince of Wales Armouries. There Hon. J. C. Bowen, Alberta Lieutenant-Governor, told the 50 men of the far north tour they had done a marvellous job.

The snowmobile still carried the dust of the Alaska Highway. But the men were clean-shaven and with fresh haircuts. They had taken time out at Grande Prairie to clean up.

While Muskox, as a moving force, has ended, the job isn't over for Col. Baird. He'll spend two weeks in Edmonton writing reports and doing a little figuring on gasoline consumption and other items.

The expedition was a success, said Col. Baird. But the tanned, blue-eyed leader dodged this question: "Did you learn if the Arctic area of Canada is defensible?"

He grinned and answered: "That's a rather difficult question to answer. I think that we had better leave that one alone."

Pipe-smoking Col. Baird, who played poker with the boys during the rest hours in the far north, says the expedition was a success—within the broad outlines of the operation order. The order was to make a half-circle trip through the Arctic, starting at Fort Churchill, and to collect data. How much did Col. Baird lose at the poker sessions?

Another grin, and "I never lose when I play poker." He wouldn't say how much he won.

Charmed by Eskimos

He thinks his men ate about 5,000 calories each a day. "That's because the colder the weather, the more caloric intake one needs," he said. "That's why the Eskimo diet tends to fat. It has a lot of calories. It keeps them warm, too."

And Col. Baird thinks that the Eskimo can teach a lot to the white man.

"The Eskimos are a charming, honest people," he said. "They are good-hearted and friendly. As a matter of fact, we didn't start missing stuff until we reached the white man's area again. Then the first things to disappear were the nylon parachutes which had been used to drop stuff to us. And let me tell you that the Eskimo could have gotten a lot more use out of the parachute silk than the white

man can in wrapping it around some woman's legs."

The Arctic was not new to Baird. He made scientific expeditions to the Eastern Arctic and Greenland in 1934, 1936 and 1938 for the Royal Geographical Society. That time he used dogs. This time "going by snowmobile, was a much more comfortable way."

Parkas Like Nightgowns

Among his scientific findings: Arctic parkas shouldn't have buttons down the front. No matter how many buttons, the wind still gets in. The parka fronts will have to be solid—the whole thing slip-on style like the old-fashioned nightgown.

The colonel said that at "one time or another practically every man on the expedition froze his face. But that has happened at one time or another to every citizen of Edmonton. I'll bet."

One man had the reverse treatment. His face was scalded by boiling water from a radiator. His injury was not serious.

The toughest part of the trip was, over 150 miles of tractor trail north of Great Bear Lake. The trail hadn't been used for two years and there was considerable deadfall. The pathfinder snowmobile travel-

led for 64 hours straight, chopping away trees to clear the way.

And just for the record: The expedition didn't see any Arctic muskox. Once, reported Col. Baird, the crew of an RCAF supply plane saw a couple. But that's all.

"We had a rum ration," the leader told a press conference. "It was up to the medical officer when we got it." And another Baird grin: "But fortunately the medical officer was a drinking man, too, so we got along."

Col. Baird sidestepped questions about the almost hush-hush Loran, a new radar development for plotting positions.

"We don't want much said about that," he declared. "You can say we mostly plotted our position by astro navigation."

Dust Worse Than Snow

Operation Muskox crossed a stretch of ice-covered Arctic Ocean to Victoria Island and travelled another 120 miles across that piece of land.

The snow wasn't too bad on any part of the trip, except when it was carried as a blinding blizzard.

But the dust of the Alaska Highway was worse than the snow. The men had to wear handkerchiefs

about their faces. The snowmobile oil filters gave out.

"The engines are at the rear of the vehicles," Col. Baird explained. "There was so much dust that they need oil filters as big as the engines before that dust could be devoured."

Morale was excellent throughout the trip, said Col. Baird. No one became "bushed."

He likes to tell of a practical joke and another double-take incident which nearly floored a crewman.

A crewman got an owl, shot three months before by a Mountie and frozen solid. He perched the carcass atop a radiator cover. Then he told one of the camera fiends there was a live owl out there. The cameraman spent long minutes sneaking up on the owl, shot a picture from about five feet, and congratulated himself he hadn't frightened the owl. Up where men fight snow and ice, it was a big joke, and the whole camp howled.

On another occasion a crewman beckoned a couple of Eskimos to help him unload a plane. By elaborate sign language he made them understand what he wanted done.

When the job ended, one Eskimo turned to the other and said in English: "What's wrong with this guy. He can't speak English."

Tonight the text of a message from Defence Minister Abbott to Col. Baird was released. It said:

"Congratulations to all who have taken part in Exercise Muskox. This is your day and the people of Canada are thrilled at your achievements."

Welcomed on Muskox Return



In marked contrast to his usually well-groomed appearance, heavily-bearded LT-COL. P. D. BAIRD, of Montreal, officer commanding the moving force of "Exercise Muskox" is welcomed by COL. J. T. WILSON, director of Operational Research of the Canadian Army at Ottawa and deputy director of the northern exercise, on its arrival at Grande Prairie from where it entrained for Edmonton. In the centre, also sporting a beard grown since the start of the nearly 4,000-mile trek at Churchill, Man., last Feb. 14, is COL. NORMAN B. EDWARDS, of Smithtown, Long Island, N.Y., senior U.S. observer with the expedition.

Baird Urges Arctic Force

EDMONTON, May 11—(C.P.)—Canada can make a definite contribution to North American and British Empire defence by maintaining a force in peacetime which can operate in the Arctic and Mountainous terrain, Lt.-Col. P. D. Baird, Montreal, commander of Exercise Musk Ox, said last night in an address at a civic reception tendered the men of Musk Ox.

Col. Baird, who brought his force of 45 men and 10 snowmobiles through a 3,100-mile trek from Churchill, Man., to Fort Nelson, B.C., and then to Edmonton where the 81-day adventure in Canada's extreme weather conditions was brought to a close, reaffirmed earlier statements that the exercise "had no sinister military implications."

Its purposes, he said, were to test out the mobility of machinery and men in the north country, to test air co-operation with forces in the field and "other smaller scientific and intelligence subjects."

"With all the co-operation the army had, all the resources at its command, Musk Ox wasn't such a wonderful achievement, it was comparatively simple."

There are many opportunities in the north, he said, for minerals, global air transport and even agriculture. The horizons are wide in the north, and there you meet one of the finest races in the world, the Eskimo.

The Eskimo can teach the white man a good deal and much of facts on clothing and living on the Musk Ox expedition were based on what had been learned from the Eskimo.

"They have been neglected far too long, he declared, "and this is not due entirely to the administration, but to the general ignorance of the Canadian public.

"It remains for public demand to develop the north country for the sake of those people who need hospitals and schools in greater proportion than in settled parts of the country.

"Development of the north calls for the co-operation of many agencies including the Alberta Government, the armed services and government and private scientific bodies. If Exercise Musk Ox has stirred them up, then it has been a success."

"From a defence point of view we can no longer neglect Canada's northern frontier, and I hope Musk Ox will stimulate Canadian forces to do more winter training in the north, and make a contribution to defence far and above the proportion of Canada's population."

Musk Ox Called Success

WASHINGTON, May 13—(B.U.P.)—The Canadian Musk Ox Expedition to the Arctic proved conclusively that military forces can operate above the Arctic Circle, American military observers said today.

The observers returned from Fort Nelson, where they participated in closing phases of the 81-day trek above the Arctic Circle.

The health of the 50 men who made the rigorous trip was "slightly improved" at the end of the trip over what it was at the

Eskimos Host to Musk-Ox Men



Muskox member admires luxurious white fox pelts.

THOSE luxurious white fox furs which lovely Hollywood stars "drip" were traced to their source by members of Exercise Muskox when they reached the most northern part of their Arctic trek—Cambridge Bay, N.W.T.—a small settlement about 200 miles north of the Arctic Circle.

There the men visited Eskimo families who trap the animals bearing the beautiful and costly white fur pelts, treat the skins and trade them for food and other necessities of life.

One of the Eskimo homes visited turned out to be a very modern frame building rather than the usual igloo. It was equipped with modern furniture, including stove, bed, table and

chairs and there were even up-to-date thermos bottles and a corn broom such as could be found in any city home. Over the stove several fine white fox pelts were hung up on racks to dry.

The visitors were royally received by the Eskimos, who showed them every operation along fur-treatment lines. Some of the Muskox men more familiar with the preparation of food than their brothers, were permitted to use the Eskimos' fine stove and in less time than it takes to tell they whipped up a tasty meal for all.

Exercise Muskox halted at this far-northern settlement for a few days before turning their snowmobiles southward toward the finish line at Edmonton.

start, an Army medical observer said.

The tractor-propelled snowmobiles used in the expedition carried the party over the Arctic wastes without serious breakdown. The snowmobiles received gasoline dropped from Army planes guided to the party by radar and loran systems of navigation.

The men were not exposed directly to 50-degree below zero temperatures because they remained in heated cabs of the snowmobiles, where the temperature did not drop below zero.

An American Army spokesman said the party found the Canadian monopack and U.S. Army "10-in-one" ration well suited to food needs. There is a strong possibility of other such expeditions to the Arctic to test equipment and prepare the North American continent against trans-polar attack, one observer said.

One improvement might be making the snowmobile amphibious because the vehicle encountered difficulties in crossing rivers in the spring break-up. They had to be forded across on rafts.

The men suffered some colds and other minor respiratory infections. A few suffered from frostbite.

SEES MINING AREA IN ARCTIC WASTES

TORONTO, April 18.—Recounting the story of Operation Muskox to the Empire Club today, Col. J. T. Wilson predicted great mining developments in that vast Arctic land, whose three islands "are each larger than the island of Great Britain."

Only a month ago, Col. Wilson, newly appointed head of the geophysics department, University of Toronto, was accompanying Operation Muskox as deputy director.

Col. Wilson talked of the temperature which varied between 40 and 50 below zero; of the Eskimos, intelligent and kindly people; of the vast, unmapped territory through which the operation drove by snowmobile, and of the RCAF planes which flew in whatever supplies were needed within 24 hours. The speaker told of the future value the expedition, will have in building up the Arctic regions.

"The Arctic," Col. Wilson concluded, "is good training ground for leaders in peace and war."

Muskox Trip Aids Civilians

OTTAWA, May 17—(C.P.)—Stressing the civilian aspects of the recent Muskox exercise, Col. J. T. Wilson, Army research director, said here last night at a meeting of the Canadian Geographic Society, that a band of sedimentary rocks "of possible interest" to prospectors were found north of Baker Lake and in the Black River area.

Col. Wilson did not elaborate on the sedimentary rock discovery.

Summing up Col. Wilson said: "As a result of this exercise it will be possible to pass on to civilian agencies a better knowledge of the problems of the Arctic, and how to solve these problems with improved types of clothing, equipment and mechanical vehicles.

"The hunt for improvement is not over but a scratch has been made in our Canadian Arctic to determine its special problems and to attempt a solution of them. The exercise which took place in the heart of Canada proved a splendid lesson in inter-service co-operation with army and air force personnel living and working together developing new techniques, not merely for the service but for the country to use in the development of our north country."

The first films taken on the Muskox expedition were shown by Col. Wilson. The Governor General and Viscountess Alexander attended the lecture of the society, of which the Governor General has accepted the post of honorary patron.

The speaker was thanked by Gen. McNaughton, who said information gained on the expedition will be made available not only for Canada but for all other countries which had Arctic problems.

'Musk-Ox' Causing Army Gear Changes

U. S. Observers Modify Cold Weather Equipment

WASHINGTON, April 14 (AP).—The Canadian Army's current "Musk-ox" Far North expedition has resulted in quick modification of some of the American Army's cold weather equipment, the War Department reported today.

A Quartermaster Corps representative, William P. House, attached to the American observer staff, is making on-the-spot changes in types of American clothing, food and equipment.

Findings are expected to prove valuable to civilians living in extremely cold weather climates as well as to the Army, the War Department said.

Fifteen Yukon-type stoves changed to oil burners on Mr. House's recommendations were sped by air from the Jeffersonville, Ind., quartermaster depot and parachuted to the expedition's camp site 550 miles north of Churchill, Manitoba.

Tests have been made thus far on shelters, heating and cooking appliances, lighting, rations, sleeping gear, footwear, gloves, caps, fuels and lubricants.

Shy Eskimos Good Patients

ROBERVAL, Que., April 18 — (C.P.)— Unable to speak French or English six Eskimo patients — four women and two children — caused a small sensation in Hotel Dieu Hospital last week when they were flown in for treatment from Fort Chimo, some 700 miles north of this Lake St. John town.

Their response to medical treatment, however, was excellent, and hospital authorities said yesterday they were ready for discharge.

The trip was made in one day by a Canadian Pacific Air Lines plane which normally flies between Fort Chimo, Fort Mackenzie and River George, in the northern regions.

The patients, at first very shy and inclined to hide under their bed clothes, were soon able to express themselves after a fashion: They told nurses that the 400 inhabitants of Fort Chimo lived in tents or igloos. Their good habits on matters of hygiene surprised even the hospital authorities.

Survey Set For Labrador

ST. JOHN'S, Nfld., April 30 — (C.P. Cable) — A Newfoundland Government project to make a geological survey of the Labrador territory was announced last night. The survey will begin in June under Prof. G. Vibert Douglas, head of the department of geology at Dalhousie University, Halifax, and Carl Howse, government geologist, who studied under Prof. Douglas.

It was estimated that complete exploration of the resources of Newfoundland's dependency, representing 120,000 square miles of territory, would take years.

Insofar as its resources are concerned, Labrador is one of the few unknown countries of the world.

Prof. Douglas has had wide experience in making similar surveys in Spain, Rhodesia, the Congo and in the Antarctic.

DOG ATE 'MUSK OX' PARTY'S 30,000 VITAMIN TABLETS

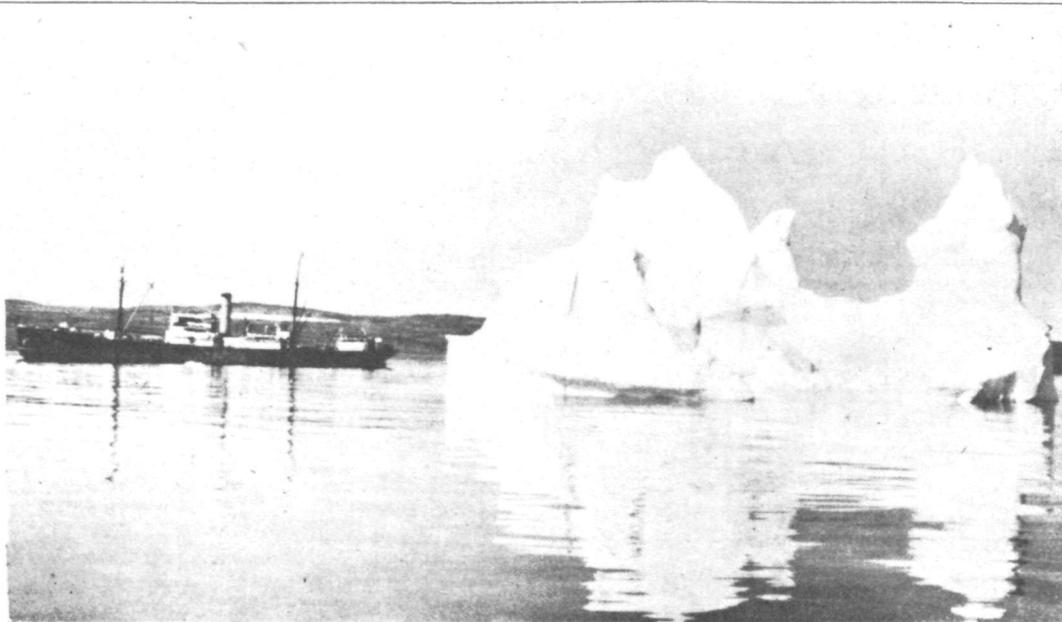
PHILADELPHIA, May 15 (AP)

—It's a good thing that the men of Canada's recently-completed arctic "musk ox operation" had no need for vitamin tablets—because a dog gobbled up their entire supply of 30,000 tablets.

This was related today by Dr. F. H. L. Taylor of Boston, member of a Harvard fatigue laboratory party which assisted Canadian army scientists in making physical fitness tests of the arctic adventures before and after their 84-day, 3200-mile trek over the cold country.

He said the men came through physically okay and that some of them had physical fitness scores "equivalent to those of Harvard athletes."

Just returned from Canada, and here to address the American Col-



R.M.S. "Nascopie" anchored near an iceberg at River Clyde, Baffin Land.

Aklavik Enjoys Muskrat Boom

AKLAVIK, N.W.T., May 18— (C.P.)— This northland settlement near the shore of the Beaufort Sea is experiencing a boom in muskrat skins.

With the season expected to end about June 15, the settlement's four trading posts, its trappers, hunters and even their wives are in the midst of a last-minute rush to produce as many of the valuable skins as possible.

An estimated 65,000 trapped muskrats have been purchased here this year at the ungraded price of \$2.50 a skin. Competition among trading companies is so keen many offered free food and lodging to trappers who would sell them their skins.

Several planes have been chartered to bring in new goods for trade and to rush bales of "rats" to outside markets, including New York.

Aklavik's seasonal "continual daylight"—it is 120 miles north of the Arctic Circle—will keep the trappers on the go as long as their stamina can, last. And the "rats" they bring in will be skinned by their wives and made ready for market.

lege of Physicians' meeting on another subject, Dr. Taylor told a reporter that the vitamin tablets had been provided the musk ox party for use "in an emergency." Regular food was dropped to the expedition from airplanes.

"We learned later," he said, "that when the party was at Baker Lake, about eight days out of Churchill, Manitoba, the starting point, a husky dog owned by an Eskimo in the vicinity raided the vitamin tablet supply and ate it at one sitting!"

Declaring that at last reports, the dog was doing all right, Taylor grinned and said: "He's probably the strongest husky dog in the whole northland."

Arctic Lichens Balk Germs

Arctic lichens produce anti-bacterial substances, much as does the mold from which penicillin is obtained.

Nascopie to Make 'Swan Song' Run Into Arctic This Summer

Tough Old Ship Carried Essentials Of Life to Far North for 25 Years

WHEN the Arctic ship Nascopie pulls out from Montreal this summer on her annual jaunt into Canada's northland, she'll be making her final voyage.

Plans are being completed to replace the 32-year-old stubby nosed ship next year with a new passenger-cargo vessel, and one of Canada's most colorful little ships will pass forever from the maritime scene. The 25 trips into the north with the Eastern Arctic Patrol have taken their toll on Nascopie's tough reinforced hull and it is doubtful she will ever be placed in any other service.

Each year, around by July, Nascopie, loaded to her marks with the essentials of life for the residents of the Arctic, pulled out of Montreal for Hudson's Bay. Some of the trips have been easy, some of them tough. When the ice begins to move out, Canada's northerly citizens keep a sharp lookout for the ship bringing them their first supplies for a year.

For some, however, the Nascopie's arrival was anything but pleasant. It meant imprisonment, and, in some cases . . . death on the gallows. With the ship each year went officials of the R.C.M.P. and seldom there was not a murder charge to be investigated. Swift justice was handed out while the ship was in port and it was not long before the prisoner knew his fate. It usually came on the first day of Nascopie's arrival after the case had ended. Hearings were always held in the ship's tiny saloon.

The Nascopie made an unusual trip in 1940 when she included Greenland among her ports of call. Shortly after Denmark was overrun by the Germans Greenland was cut off from her homeland. Supplies could not be brought in until Canada loaded the Nascopie with food and other goods.

Whether the new ship will carry on the name "Nascopie" is not known, but it is believed, for sentimental reasons, she will. This, however, won't be decided until the ship moves down the ways next year.

S.S. Nascopie Takes Role of Arctic Mailman

AS THE time for the sailing of the Nascopie rolls around again the post office department is busily rounding up the mail that will go north when the ship sails in July. Forty-two northerly points are on the mail agenda this year. Some of it will make the voyage from Montreal while several hundred other bags will join the ship at Churchill on her arrival there.

Meanwhile the Nascopie's full crew is aboard, polishing up the little ship for the time when the passengers will arrive. The new skipper, Capt. James Watters, is also aboard and the only officer among the missing this year will be Capt. R. Smellie, who, true to his word last fall, has decided to remain in retirement at his home in Vancouver.

Captain Watters has been with Captain Smellie for nine years and knows the treacherous waters through which the Nascopie must plow to reach her northerly objectives. Several members of the R.C.M.P. will make the trip again this year.

Arctic Survey Badly Needed

TORONTO, June 25 — (C.P.) — Speaking at the annual dinner of the Chemical Institute of Canada last night, Dr. A. L. Washburn, director of the Arctic Institute of North America, said specific and detailed scientific knowledge of the Arctic was badly needed for proper evaluation of its world role.

He elaborated with the statement "much has been learned by expeditions during the past 100 years, but many of the expeditions merely touched coastlines, leaving interiors still unknown. This is particularly true of the Canadian Arctic islands."

There was almost a complete absence of accurate maps of the Arctic Archipelago, Dr. Washburn said. He declared there should be 26 instead of the six Arctic meteorological stations now operating. "Soviet Russia not only has weather stations but also general scientific laboratories where many types of research are carried on in addition to meteorology. There are almost no stations of this sort in Arctic North America."

MONTREAL, March 11

If Canada had to make snout to defend herself in the North, she would be carrying on a fight in an almost unknown area, for which even accurate maps are lacking.

This is made evident in "Bulletin No. 1" issued today by the Arctic Institute of North America which emphasizes how little is known of the Canadian Arctic and adjacent territory. The bulletin is entitled "A Program of Desirable Scientific Investigation in Arctic North America."

The first bulletin of the institution points out blankly. "This statement shows only too plainly the great amount of research that has yet to be done in the vast areas of the North American Arctic." Later the bulletin says: "satisfactory maps are lacking for all but a small part of the Arctic North America."

The bulletin quotes one authority as pointing out in this connection: "Parts of the Canadian Arctic sector have never been seen even from the air. Small islands remain to be discovered. The limits of the northern continental shelf are not known. The mapping of the whole Arctic region is in an almost unbelievably primitive state. Even on the mainland one of the largest Arctic Rivers, Back River, was surveyed in 1834, travelled in 1855, and has never been completely descended since, while northwest of Hudson Bay, an area about the size of Scotland is blank on the 1943 R.C.A.F. charts except for the statement "gently rolling country rising to 1,000 feet!"

The Arctic Institute is anxious to foster a campaign in an effort to secure a better mapping of the Arctic, as well as obtaining a wide range of other information, all of which would be vitally necessary for a successful defence of the northern part of the continent.

Brigadier Named To Run Alaska Road

OTTAWA, April 23—(C. P.)—Appointment of Brig. Geoffrey Walsh as officer commanding and chief engineer of the Northwest highway system—the Alaska Highway—was announced today by Defence Headquarters.

Dr. N. Polunin Awarded Arctic Institute Grant



Dr. Nicholas Polunin

Dr. Nicholas Polunin, of Oxford University, has been granted \$1,500 by the Arctic Institute of North America for botanical work on Ungava Peninsula, it has been announced by the institute of which Dr. A. L. Washburn is the director.

Dr. Polunin during the course of his several years of field research work, much of which was in the Canadian Eastern Arctic, discovered plants which were obviously not native to the areas in which he was working. This was particularly true of certain parts of Greenland. His botanical knowledge aided him in identifying the plants. They were brought over by the Vikings, who thus left tangible proof of their existence on this side of the Atlantic.

He began his field explorations while still an undergraduate at Oxford and was with the Oxford University Lapland expedition in 1930, later he went to the White Sea, and in 1931 he began his explorations on this continent as a member of the Oxford University Hudson Strait Expedition. He has since been on several expeditions, including trips to the Canadian Eastern Arctic on the S.S. Nascope.

Known as Writer

He is the author of "Botany of the Canadian Eastern Arctic," Part I, which was published by the Canada Department of Mines and Resources, Mines and Geology

2 Fellowships Of \$1500 Given

MONTREAL, May 13

Award of two \$1,500 fellowships by the Arctic Institute of North America, the first to be made by the institute, was announced today at the headquarters of the institute at McGill University. This marks the beginning of international scientific co-operation on North American Arctic and sub-Arctic problems under the auspices of the institute.

The fellowships were awarded to Dr. Margaret Lantis of Washington, D.C., for ethnologic study of the Eskimos on Nunivak Island, Alaska, and to Mr. Harold C. Hanson, of Urbana, Illinois, for wildlife research on the west coast of James Bay, northern Ontario.

Dr. Lantis is a recognized authority on ethnology having spent a year on Nunivak Island from 1939-40. She received her Ph.D. in anthropology from the University of California, and was formerly connected with the Bureau of Agricultural Economics, U.S. Department of Agriculture. She is the author of an important monograph on Alaskan Eskimos published by the American Philosophical Society.

Mr. Hanson received his M.S. from the University of Wisconsin and is now connected with the Illinois Natural History Survey. He served as ornithologist and mammalogist with the Robert A. Bartlett Field Museum Expedition to northern Greenland, and is the author of a number of papers on wildlife subjects. Recently he has been making a study of the Canada Goose on its winter flights south to the Mississippi Valley and the present project is an extension of this study to the breeding grounds. Mr. Hanson has been responsible for much of the information resulting from banding records on Canada Geese initiated by the late Jack Miner.

Branch. He has written Parts II and III, which are on the press, and is engaged in writing Part IV, and a second edition of Part I. He is also the author of two other volumes written during his undergraduate explorations.

Dr. Polunin will leave shortly for further research work in the Canadian Eastern Arctic, lower section, returning in the fall for his sessional work at McGill.

2 Canadians Signally Honored By Royal Geographic Society

LONDON, May 13—(B.U.P.)—The Royal Geographic Society today announced nine awards for 1945-46, including one to the man who disproved an ancient legend about the "Vale of Perpetual Summer" somewhere north of British Columbia, near Alaska. Other awards went to men who discovered an error in the position of the magnetic North Pole, led secret expeditions during the war and developed radar for air surveys. Dr. Charles Camsell, Deputy Minister of Mines and Resources in Canada, was awarded the Founders' Medal for 1945 for his contributions to geology and geographical science, which included debunking the Yukon sourdough fable of a "tropical valley" in North British Columbia. Dr. Cam-

sell helped with the mapping of 25,000 square miles of Canada, including the area where the steam-heated valley was supposed to be.

Sub-inspector Henry A. Larsen, of the Royal Canadian Mounted Police, won the Patrons' Medal for leading schooner expeditions through the Northwest Passage.

The Founders' Medal for 1946 went to Brigadier Edward A. Glennie, director of a geographical survey in India. Lieut. Col. C.A. Hart won the Murchison grant for 1946 for his work on the application of radar to mapping.

Wing Commander D. C. McKiley was awarded the Gill Memorial for 1946 for leading an RAF expedition in a flight around the earth which fixed the true position of the North Magnetic Pole.

ENVOY TELLS PLANS FOR CANADIAN ARCTIC

The importance of the Canadian Northland in international strategy, resources and communications was described Feb. 7 by Lester B. Pearson, Canadian Ambassador to the United States, in an address before the Rotary Club of New York.

Telling of Canada's plans for developing the north country, he made clear that Canada would "adopt no dog in the manger attitude."

"We want to work not only with the United States," he said, "but with all the Arctic countries, Denmark, Norway and the Soviet Union, in exploiting the peaceful possibilities of the northern hemisphere. Particularly is this true of the U.S.S.R., which is, I think, far ahead of the rest of the world in Arctic developments, and which, we do not forget, is our northern neighbor."

The Ambassador disclosed that a large share of the uranium used in the United States for the wartime development of atomic energy came from a mine far inside the Arctic Circle and 1,500 miles from the end of the railway. The use of air transport and the expeditions of Canadian scientists, he said, should result in a gradually expanding production of the ore.

Mr. Pearson said his country faced the future with confidence but with the knowledge that isolation is impossible. "Our real danger," he continued, "and this is the danger for all middle and small powers, is that the Big Three, the titans, may not be able to work together, and that in the resulting disputes we will be dragged in."

GRANTS ARE OFFERED FOR STUDY IN ARCTIC

A plan for extensive scientific study of the North American Arctic is being furthered by the Arctic Institute of North America, with a membership of scientists and explorers in the United States, Canada, Alaska, Greenland, Labrador and Newfoundland.

In a bulletin outlining the program, the institute points to the immediate need for detailed mapping and meteorological work. Individualized research projects in such fields as archaeology, botany, ethnology, forestry, geology, geophysics, oceanography, wild life and zoology will be sponsored directly by the institute.

The institute does not expect to maintain a large permanent research staff. "Rather it is felt, that with its present financial resources," the bulletin says, "the research functions of the institute can be more effectively and economically discharged by facilitating grants for Arctic studies to scientists normally employed by universities and other institutions."

The institute is offering two research fellowships of \$1,500 each for work that must include field investigations in Alaska, northern Canada, Labrador, Newfoundland or Greenland. The fellowships are open to "anyone who has demonstrated his ability to carry out research work of superior quality in some field of science." The institute's headquarters is at 805 Sherbrooke Street West, Montreal.

Says America's First Migrants Arrived 15,000 Years Ago

By Science Service.

WASHINGTON, Jan. 21. — America's first wave of immigrants arrived something like 15,000 or 20,000 years ago, states Dr. F. H. H. Roberts Jr., Smithsonian Institution anthropologist. That was at the close of the last great Ice Age; before that the road had been blocked by impassable glaciers for at least another 20,000 years, and it is considered highly improbable that human beings were traveling in this direction as much as 40,000 years ago.

The successive waves of migrants from Asia moved along two great main routes after they reached Alaska. Dr. Roberts has decided on the basis of finds of their stone implements and the

bones of the now extinct animals they hunted. One of these routes went eastward to the Mackenzie River, then southward into the Plains region east of the Rockies. An alternate course of this same Plains route was by way of the upper Yukon and its tributaries, the Liard and Peace river valleys. This was the first great migration track.

The second, which opened a little afterwards, led southward along the Fraser River and out onto the Great Basin plateau, west of the Rockies. Eventually descendants of the people who followed this western track made their way into Arizona, southern California and probably northern Mexico.

North American Glaciers

A glacial map of North America that will fit in any small home library, if you don't unroll it, has been published as Special Paper No. 60 by the Geological Society of America.

It represents the first attempt at representing the Pleistocene glacial features in great detail and on a large scale. Earlier maps have been published, but not with the accuracy achieved here, nor so convenient a scale for showing details. Colors are used to distinguish between areas believed to have been covered by the several glaciations usually referred to as "The Great Glacier." Existing glaciers, so far as the scale of the map permits, are shown for comparison with areas formerly covered. A complete bibliography with references to the literature listed by provinces and states, accompanies the map.

New Magnetic Field Found; Called Aid to Polar Flying

Moscow, Mar. 27 (AP)—The newspaper Evening Moscow said today a second magnetic field had been discovered in the Arctic by Soviet magnetic specialist Prof. B. P. Orlov. The field is located on the northern shore of the American continent, Orlov said.

The scientist said the new discovery, aside from its scientific implications, presented great practical possibilities, including the development of polar flying

Russia Plans 3 Explorations

MOSCOW, March 28 (Delayed). (UP)—Rear Admiral N. N. Zubov, head of the State Oceanographic Institute, announced today in the newspaper Trud that three expeditions were being prepared for exploration of the northern Pacific, the northwestern Atlantic and sub-Antarctica. General Zubov said the first expedition would study trade routes and the great fishing banks of the northern Pacific and the second would study meteorological conditions in the Atlantic. He did not identify the purpose of the third expedition.

Mammoths' Cemetery

Soviet Scientists Find Treasure Trove in Siberia

MOSCOW, April 27 (AP)—Soviet archaeologists have reported an important find of mammoth bones and tusks in the Magadan district of Far Eastern Siberia.

The discovery came about when a group of observers descending the Zyryanka River on a cutter noticed two enormous tusks half-buried in frozen earth of the high river bank. Examination showed the location was a veritable cemetery of mammoths, well preserved by the cold for thousands of years.

U. S. Weather Station In Greenland Approved

Washington, June 28 (UP)—Denmark has agreed to let the U. S. Weather Bureau establish a civilian weather station in the northwestern part of Greenland, it was learned today.

The station will be operated by civilians, has nothing to do with postwar military bases or arrangements and has no connection with the 1941 agreement under which the U. S. obtained rights to build bases in Greenland.

2,000,000 Fur Seals on Way to Bering Sea Once Again Are Watched by Coast Guard

SEATTLE, May 5 (UP)—More than 2,000,000 fur seals cavorted in waters off the Northwest Washington and British Columbia coasts today on their annual migration to the breeding grounds on the fog-enshrouded Pribilof Islands in the Bering Sea.

Every year the seals start from Southern California and Mexican waters for the Pribilofs in February. In the past the Coast Guard convoyed them for protection against poachers.

During the five war years the animals had to shift for themselves, but the Coast Guard is back on the job now.

The seals were discovered when Gerissam Pribilof found the storm-

Russia to Make Survey Of Central Arctic Region

By The North American Newspaper Alliance.

MOSCOW, March 20 (Delayed)—An air expedition into the Arctic is planned by the Soviet Union, according to Prof. Vladimir Vize, corresponding member of the Academy of Sciences of the U.S.S.R. and member of the American Geographical Society.

Professor Vize said that the expedition would make an oceanographic and geophysical survey of the unexplored part of the Central Arctic. He added that the Arctic Research Institute was planning the design of drifting, automatic radio-meteorological stations that would aid in organizing a constant meteorological service in the entire Central Arctic.

"Drifting stations will be set up or dropped at definite points in such a way that approximately two years after the setting up on ice of the first stations, the entire Central Arctic will be covered with a network of such stations.

"We shall make extensive use of air-photo surveys for exploring the ice. We shall also devote great attention to the further study of the Arctic seas along which the Northern Sea Route now lies."

Russian Arctic Shipping

Special Fleet for All-Weather Service Planned for 1950

The Soviet Union is planning to operate a fleet of ships in the Arctic the year around by 1950, the Moscow radio said April 28. Specially equipped transports based at modernized Arctic ports will provide all-weather service, according to the broadcast, reported by the National Broadcasting Company.

Survey ships assigned to chart a 60,000-square-mile area already have put out from Russian ports, Moscow said, adding that new-type ice breakers are being designed to prevent the winter freeze from halting shipping in the far north.

VEGETABLES IN ARCTIC

Windbreaks and Bonfires Help Russian Farmers Out

Soviet gold prospectors of the Far East dwell in the heart of the taiga and tundra wastes, 1,000 kilometers from the nearest settlements. Some years ago, when it was discovered that there was a vitamin deficiency in their diet, the Government set up special farms to raise vegetables.

Many difficulties confronted the pioneers, the Russian Information Bureau relates. It was generally believed that no produce could be raised in the Arctic since the soil thawed only in June and the severe frosts began in August. Agronomists solved the problem of growing potatoes and other vegetables in the open.

In Kolyma Region today there are numerous truck farms. The large Elgen State Farm, whose hothouses and cucumber frames cover more than 20 square kilometers, has crops of 2.8 to 3.2 tons of potatoes and 12 to 14 tons of cabbage per acre.

Not so long ago a housewife planted several potatoes outside her cottage. They did well and eventually yielded a small harvest. In the following year many miners planted potato seed brought by plane. But no sooner did the first sprouts appear than the bitter winds of the North descended upon them.

Windbreaks of brushwood piled up against poles were erected. When these proved insufficient the farmers solved their problem by starting a series of bonfires along the northern fringe of their gardens. Later the Arctic sun, shining for several months, completed the growth of potatoes, cabbage and turnips.

Reds to Send Expeditions To 'Open' Polar Sea Route

540 Parties to Set Up Radar Stations and Beacons

LONDON, June 28 (UP)—Russia will send out 540 hydrographic expeditions in the next five years to all Russian northern waters to establish new lighthouses, radio beacons and radar stations, in order to convert the open sea Polar route into a smoothly functioning shipping lane, the Moscow radio said today. In the expeditions will be 170 ships and 200 planes, and forty bases and laboratories will be opened.

Other Moscow broadcasts told of the perfection of a three-dimensional motion picture.

STORE TEETH NEEDED

Washington (A. P.)—"Store food" is raising havoc with the teeth of Eskimos in Alaska. Dr. Oscar Mikkelsen, dental supervisor of the Office of Indian Affairs, says "observations in Alaska prove that the diet of very primitive Eskimos, almost completely cut off from white communities, was infinitely more conducive to keeping good teeth than the diets of Eskimos who have adopted 'store food.'"

Expedition Expected To Uncover Valuable Facts on Antarctica

By the Associated Press

Whether Antarctica is one continuous land mass underneath its icy surface or divided in two parts may be revealed by an American expedition to that area late this year.

Numerous other important discoveries are hoped for by this expedition which, in an age highly conscious of the military importance of cold weather areas, plans more than a year's stay in the South Polar region.

Leader Is Veteran Explorer.

Leader of the South Polar expedition—a private enterprise—will be Comdr. Finn Ronne, USNR, veteran of two South Polar expeditions and second in command at East base on the United States Antarctic Service Expedition of 1939-1941.

Comdr. Ronne said he hoped the findings of the expedition would determine whether Antarctica is one continent, as hitherto generally assumed, or whether the waters of Weddell Sea on the American side connect with Ross Sea south of New Zealand.

The voyage will be made in a 183-foot wooden vessel, a type chosen because of sturdy construction and resiliency against ice pressure. A surplus ship, it would be on loan from the Navy.

For field operations the 20-man expedition will use two or three airplanes, a snow-mobile of Army type and sledge dog teams.

To Stay 12 to 18 Months.

During its stay of from 12 to 18 months the expedition will make geological, meteorological and biological observations and gather data on terrestrial magnetism, cosmic radiation and performance of electronic equipment.

The expedition will concentrate its activities in an unexplored area between longitudes 35 to 80 degrees west of Greenwich, and from latitude 73 degrees south to the Pole.

Polar fauna ranging from sea-leopards to the bird known as the blue-eyed shag will be studied and collections will be made for museums and biological organizations. Tests to indicate the possible existence of mineral resources, such as oil, in the sedimentary rocks, also may be undertaken.

On shipboard, traveling south members of the expedition will serve as crew.

FALKLAND ISLANDS—Dependencies—Replacing the unpopular overprints on regular Falkland Islands stamps is a new set for Falkland Islands Dependencies and slated to be used in Graham Land, South Georgia, South Orkneys and South Shetlands.



The stamps all have a polar map showing the position of the islands as compared to the south pole. In an oval to the upper right is a likeness of King George VI. Values and colors are: 4d., green and black; 1d., purple and black; 2d., carmine and black; 3d., ultra-marine and black; 4d., purple and black; 6d., yellow-orange and black; 9d., brown and black, and 1sh., purple and black.

Atom Bombing of Antarctic Urged By Rickenbacker to Get Minerals

Further exploration of the vast uncharted areas of Antarctica and the use of the atomic bomb to plumb the rich mineral deposits of the icecaps there was proposed Jan. 30 by Capt. Eddie Rickenbacker as a valuable peacetime application of atomic energy.

In an address to executives and sales representatives of the Longines-Wittnauer Watch Company, at a luncheon in the Waldorf-Astoria Hotel, the aviation executive and war flier announced that he had submitted an outline of his plans to officials of the Army, Navy and Coast Guard.

Explaining that he did not propose the bombing of "the Antarctic icecap into fragments," he said:

"All I propose is that we make peacetime creative use of war-born scientific and aviation advances by trying to make long-range aviation and hard-hitting atomic explosive force serve as keys to unlock the icy doors that withhold from human knowledge the potential riches of the Antarctic Continent."

Captain Rickenbacker referred to earlier expeditions to the Antarctic, pointing out that the ex-

plorers reported the presence of such metals as gold, iron and copper as well as coal deposits and the possibility of oil.

He referred to the lands already charted in behalf of the United States and noted that "our Government would have a great opportunity to put both the flying and technical skills of its military services, such as the Army, Navy or Coast Guard, singly or combined, to work in making a survey of the Antarctic continent, leading up to the selection of sites for bombing the ice-shelf that extends for millions of square miles beyond the South Polar plateau as well as bombing of the South Polar plateau itself."

The routes he outlined consisted of non-stop flights across the Antarctic continent from South America to Tasmania, a distance of 5,592 miles; from Tasmania to South Africa, skirting the polar plateau for 6,500 miles; or along a curving route from Africa to South America, for a distance of 5,900 miles. He added that none of these was too great in view of recent flights from Japan and Guam to Washington.

Australia Revives Whaling

SYDNEY, Australia—Australia which once operated the Empire's biggest whaling port, is again to take its place among the chief whaling nations of the world.

A company, with Australian capital, will start whaling from Hobart, capital of the island state of Tasmania, and Sydney. It has already ordered a factory ship from Britain.

The company proposes to begin operations with eight chasers working from the factory ship, based on Hobart in the winter, and the western Antarctic in the summer. It considers that prospects of reviving the industry are good, largely because the war enforced a close season in the Antarctic.

Whaling began in Australia in 1791, but the last whaling trip out of an Australian port was made from Hobart in 1899.

Norwegians operated on the West Australian coast during the First Great War, and a Norwegian pioneered big-scale whaling in the Ross Sea in the 1920s. Since then, Norwegians and Japanese have been operating huge fleets of chasers in the Antarctic, but there has been no Australian participation.

In the early days of the industry, the Australian coast was whaled by big British, American, French and Australian fleets, and Hobart was the greatest whaling port in the Empire. Hobart's fleet of 40 deep-sea whalers worked from the Antarctic up to the Behring Sea and into the Arctic Ocean.

Sydney was the second largest whaling port in the Empire, and whalers from this port were the first Europeans to land in Japan. They landed in 1828, long before the American Commodore Perry. Whaling, in fact, then supported half the colony of New South Wales.

The early whalers of Australia were colorful characters, whose stories tell of murder, piracy, brawling and the orgies of drinking. Many of them set up isolated stations in parts of Tasmania and South Australia long before the areas were officially settled.

Corvettes to Join Whaling Fleet

Canberra.—One post-war purpose to which a number of Australian naval corvettes may be put is that of "chasers" in Australia's whaling fleet. Post-war Reconstruction Minister John Dedman says that eight chasers will be required under the present Commonwealth plans for Australia to take part in the whaling activity. A 20,000-ton mother ship has been ordered from Great Britain and is expected in Australia for the 1947 whaling season.

Islands' Population Gets Annual Change

Buenos Aires (A. P.)—The entire population of the South Orkney Islands, southernmost inhabited land in the world, is being changed—all nine persons. The islands, belonging to Argentina, are just above the Antarctic Circle and their only population is the crew of a Government meteorological station. This is changed annually when a Government ship takes the new crew to the islands and brings back the old one.

Allies to Divide Whale-Oil Ships

OSLO, Norway, April 15 (Reuters)—Britain is to get the United States, one of the three German floating whale-oil factories set up in Norwegian waters during the occupation, it was learned here April 9.

The second factory, Wikinger, will go to the Soviet Union, and the third, the Walter Rau, will be retained by Norway. The Walter Rau is at present in a British port in need of extensive repairs, and as Norwegian shipyards are overburdened with work, the Norwegian Minister of Commerce is negotiating with the British Government for the repairs to be done in England, so that the vessel may be ready for the next whaling season.

A fourth German fish-oil factory was sunk in the Commando raid on the Lofoten Islands on March 4, 1941, and was one of the main objectives of the raid.

PLANES TO AID WHALERS

Specially Fitted Craft to Go With British Antarctic Group

LONDON, Feb. 19 (Delayed)—British whalers operating in the Antarctic later this year will be helped by amphibian planes. Two aircraft specially modified for this experiment will be catapulted from the deck of a factory ship that will be fitted with hoists to lift the aircraft aboard after they have alighted alongside on the conclusion of spotting or weather-reporting missions.

The flying part of the expedition will be entrusted to Royal Air Force pilots who carried out many of the most difficult high-speed tests on the Meteor aircraft with which the new world air speed record was set. An indication of the importance given to whale oil as an additional source of fats for Britain is provided by the building of a new factory ship to take part in the new whaling expedition.

Norway Sells Whale Oil To British Purchasers

LONDON, April 18 (Reuters)—Norwegian whaling companies have reported the sale to Great Britain of 17,400 tons of whale oil at \$270 a ton, according to the Norwegian Information Office here.

Exhibit Whaling Ship Model

A model of a modern whaling ship, complete in every detail, has been placed on exhibition by the Marine Museum of the City of New York, 1220 Fifth Avenue. Vessels of this type are commonly referred to as "whaling factories," due to the fact that machinery performs all operations from hauling the whale through an opening in the stern to processing every part of the animal.

Tokyo Rations Whale Meat

TOKYO, March 13 (UP)—Sixty tons of whale meat, the first brought into the capital since the end of the war, went on the market today under rationing.

Midway's Cruise Shows Carrier Warfare Feasible in Sub-Arctic

Reveals Combat From Ship Easier Than From Island in Extreme Cold Areas

By Emmet Crozier

New York Herald Tribune

Back from "Operation Frostbite," the mighty carrier Midway sailed March 28 into the warm sunshine of New York Harbor after a four-week voyage of testing men and equipment in the iceberg zone of the Atlantic Ocean, between Labrador and Greenland.

When the expedition steamed northeast out of Hampton Roads on March 1 the Navy's knowledge of carrier operation under severe winter conditions was almost a blank page. Eight years ago the old Ranger made some cold-weather tests off the Aleutians. But airplanes and carriers have changed since then. Flight-deck equipment, arresting gear, catapults—the whole complicated business of launching and recovering planes has changed, too. A whole new class of carriers has come and gone and a rather large war has been fought since the Ranger wrestled with williwaws and cold fogs south of Bering Strait.

Now the blank page has been filled in. Navy notebooks on the Midway are crammed with facts and figures, temperature readings, pressures, engineering studies and studies in human behavior. What happens when a Navy fighter plane stands all night on an icy, wind-swept flight deck, exposed to sleet and snow? How long will it take to start the engine when flight quarters sounds at dawn?

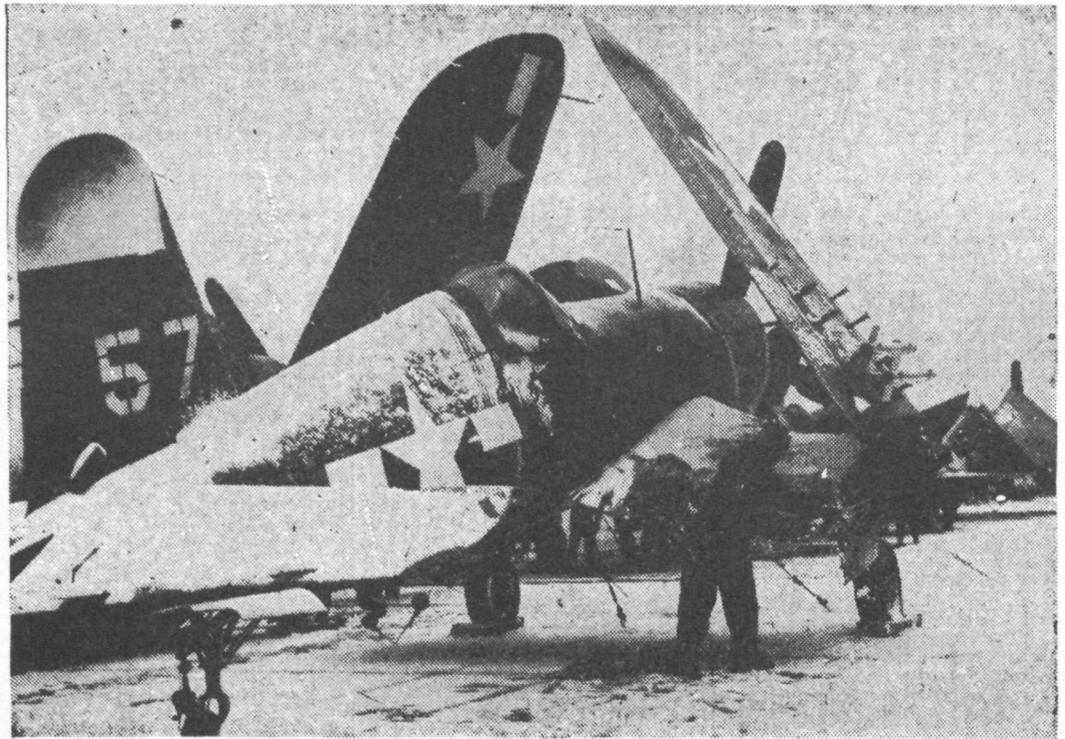
Answers to these questions and hundreds of others are to be found in the voluminous reports of "Operation Frostbite." Several months must elapse before the notebooks are sifted and checked and the data are reduced to a comprehensive report.

Less Technical Results

Meanwhile from this correspondent's non-technical notebook some results of the Midway expedition are apparent. First, the Navy cruise demonstrated that it is possible to wage carrier warfare effectively in sub-Arctic regions. Second, it is far easier to wage war from a carrier deck in cold regions than from an air base on land.

Operations are slowed from 20 to 30 per cent in sub-Arctic weather. Hands incased in heavy mittens and gloves are not as dexterous and nimble at making engine adjustments. It takes ten or fifteen minutes longer to put on heavy underwear, bulky socks, face masks and parkas than to slip into the simple light clothing worn in Pacific operations.

Making allowance for all the handicaps, and for some problems yet unsolved, it may be stated categorically that the Navy is ready to meet any tasks that may be set for it in the far North, as well as in more temperate climates.



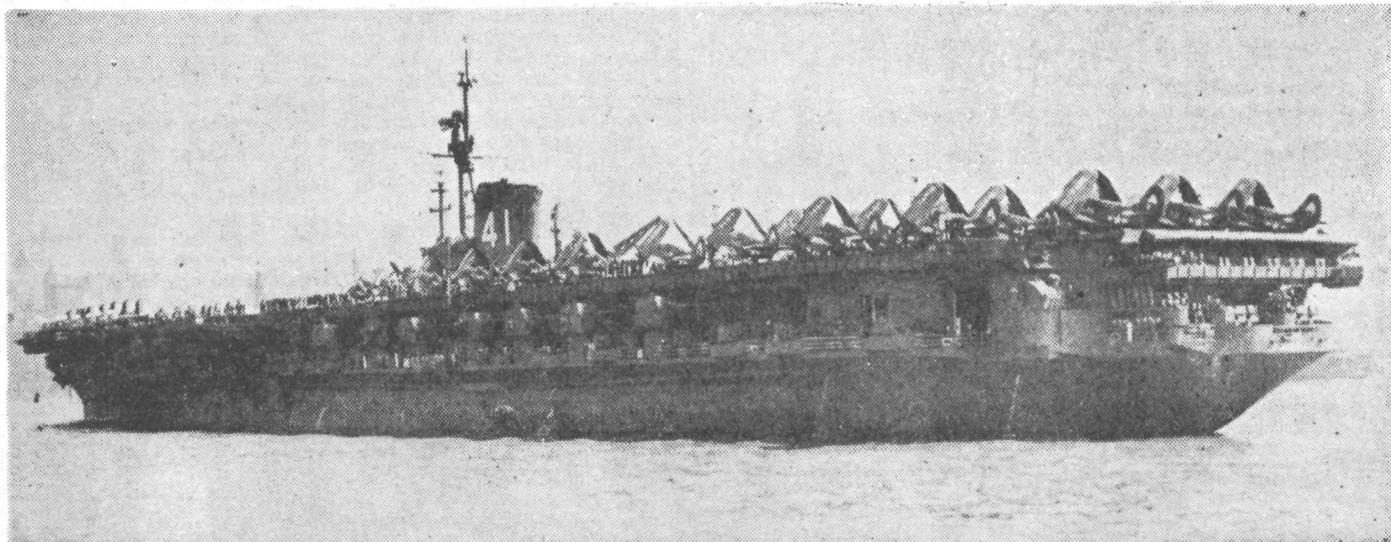
Above: Plane handler sweeps snow from gull wings of Corsair fighter aboard carrier Midway following storm in Labrador Sea during Navy's "Operation Frostbite." Map of operation, to test carrier's performance in Arctic seas, shows route of carrier.

By an odd chance the Midway's exercises in Labrador Sea came at a time when Russia was involved in some noisy and confused developments in the field of international relations. The Labrador Sea does not at any point impinge on Russian boundaries but a few journalists and commentators saw in the Midway's voyage a warning to Russia, arranged by the Navy in co-operation with the State Department. The implication seemed to be that the United States Navy was ready for action in the cold latitude of Russia's home waters, and that (in conjunction with Operation Musk-ox) our military preparation and thinking were directed against a potential northern foe.

If this was indeed the higher strategy devised in Washington, the officers and men on the Midway had little interest in it. There was no indication, in ward-room conversation, that any ulterior purpose lay behind the journey into the higher latitudes. Admiral Casady held three press conferences; he and members of his staff talked informally with the seven newspaper correspondents on board at various times. Not once in the hearing of this correspondent was there any discussion of a prospective war with Russia, nor was there any discussion of Russia's navy or air force. There was not the slightest hint that "Operation Frostbite" was a warning to Stalin that the United States will stand for no nonsense from the Soviets.



THE MIDWAY AS SHE RETURNS FROM COLD WEATHER TESTS



The giant carrier moves up the bay after completing "Operation Frostbite" maneuvers in the northwest Atlantic

There was, on the other hand, during the long voyage through the sub-Arctic seas, considerable discussion of the United Nations Organization, its aims and purposes, and the United States Navy as a career.

Seaworthiness Proved

The Midway is beyond question the most powerful fighting machine in existence. By the Navy's conservative standards of nautical measurement she is rated at 45,000 net tons, compared with 27,000 tons for the Essex class, or CV-9's.

Fully loaded, and with her full complement of 140 planes, the Midway displaces 60,000 tons. Much of this additional weight, as compared with the Essex class carriers, is represented in the heavily armored flight deck, and in the increased anti-aircraft batteries. So much additional weight has been piled on above the water line, in fact, that some Navy engineers viewed with misgivings the prospect of taking on several thousand tons of ice in heavy Arctic weather.

It was feared that severe icing conditions, comparable to the ice coatings acquired by fishing boats in mid-winter off the Grand Banks, would prove too much of a load for the Midway and cause her to list. As it turned out, the weather was not severe enough to test the Midway's equilibrium under heavy ice, but the manner in which she rode the heavy seas between Labrador and Greenland testifies to her inherent stability.

The vulnerable spot on the Midway, as on Essex Class carriers, was the flexible steel roll curtains on the hangar deck level. These buckled and gave way twice under the pounding of high waves. When it became necessary to close these openings with heavy angle irons, welded to the ship's frame, the deck edge elevator was rendered useless, and one of the most important means of transferring planes between the hangar deck and flight deck was cut off.

Although momentarily spectacular, this mishap was not serious.

Carrier Midway Back From Arctic Finds Navy Effective in Frigid Zone

NEW YORK, March 30 (AP)—The maneuvers of the giant aircraft carrier Midway in northern latitudes, which ended when the ship dropped anchor here March 28, has convinced Rear Admiral John H. Cassady that naval vessels can operate successfully in frigid zones.

The Admiral, who headed the maneuvers designated as "Operation Frostbite," declared:

"We found there are no mechanical reasons to prevent us from operating in cold waters. Radar is very effective against icebergs and we learned we could operate 90 per cent of the time in northern latitudes."

The 45,000-ton carrier, sister ship of the Franklin D. Roosevelt, encountered one iceberg estimated

to weigh 100,000 tons, Admiral Cassady said.

One conclusion reached by the Admiral was that the Navy has not yet devised proper clothing to protect personnel in frigid waters.

"We still do not have anything to take care of the face, hands and feet," he said.

The Admiral said one of his recommendations to meet the problem would be fur-lined arctic.

A sharp increase in appetites was another effect of the cold weather noted by Admiral Cassady.

The Midway and its accompanying destroyers left here March 2. They encountered severe storms with the wind reaching velocities up to 72 miles an hour on the trip, but suffered only superficial damage.

Arctic Wilds Replace Siberia As Homeland of the Eskimo

THERE are now twice as many Eskimos in the Canadian Arctic as there are in northeastern Siberia, the land from which they came, according to A. E. Porsild, chief botanist of the National Museum, Ottawa.

Mr. Porsild, who has lived among the Eskimos and who speaks their language, estimated in an interview here that there are approximately 48,000 Eskimos, of whom 3,000 are in Siberia, 18,000 in Alaska, 7,000 in the Canadian Arctic and 20,000 in Greenland.

It is now clearly established, he said in an interview here, that the Eskimos came from Siberia by way of a land connection, which is now a submerged plateau between northern Russia and Alaska. The Eskimos, who are not fighters, retreated, he said, before warlike nomads. They got as far west as Eastern Greenland,

where today they are most numerous.

"Eskimos," he said, "should not be treated as wards of the Canadian Government. They should rather be given full citizenship. They have shown a much greater adaptability than the Indians, to whom they are first cousins. Their average intelligence quotient is the equal of that of the white man.

"They suffered the ravages of disease upon first contact with the white man but are making a splendid recovery. Their greatest need today is for full-fledged school educational system, administered by the Government. I believe that the Eskimo, properly handled, would become a very useful citizen of the Dominion. They are acclimatized to the north and there is no reason why this country should not take advantage of this fact, and also that the Eskimos are highly intelligent, in making plans for the development of our Northland."

NAVY TO TEST ARCTIC AGAIN, SAYS CASSADY

CHICAGO, April 5—The Navy, which sent the aircraft carrier Midway and three destroyers on a nineteen-day test cruise in subarctic waters of the Atlantic last month, intends to conduct similar operations on the Atlantic and Pacific with a larger group of ships next winter, Rear Admiral John H. Cassady, who led "Operation Frostbite," said here today.

The admiral spoke at the Chicago Club.

He said that the United States could not afford to permit an unfriendly power to set up Arctic beachheads from which guided missiles could be launched.

"Operation Frostbite" taught the Navy several lessons, Admiral Cassady said. One of these was the need for more radio positioning stations in the Far North, where, he said, magnetic compasses go haywire and ships cannot depend on visibility for celestial navigation. The positioning radio stations include master and servant stations which send signals whereby a ship can fix its position accurately he stated.

2 KINDS OF ICE IN OCEAN

Mass Formed From Sea Water Not Salty, Says Scientist

LA JOLLA, Calif.—Two types of ice are found in the sea, regular sea ice frozen from sea water, and icebergs which are broken-off pieces of glaciers formed from fresh water, according to Dr. Harald U. Sverdrup, director of the Scripps Institution of Oceanography on the La Jolla campus of the University of California.

Sea ice, says Dr. Sverdrup, is broken up by winds and currents and is called drift ice, while drift ice that has been jammed together by the wind and forms a more or less continuous cover of rugged ice is known as pack ice. Explorers have found that when the summer sun melts the upper portions of sea ice, the water can be used for drinking and cooking. Sea ice which has survived an Arctic summer is free of salt.

Significance of Arctic Air Route To National Security Is Stressed

Gen. Arnold's View Supported on Basis of Facts of Geography, Flying Weather and Distances Between World's Population Centers

By Gill Robb Wilson
New York Herald Tribune

General H. H. Arnold, commanding Army Air Forces, recently referred to the significance of the Arctic in American defense plans. Some who can never forgive either General Arnold or American air power for disturbing their intellectual complacency, immediately put the veteran airman over the barrel, as guilty of fantasy.

Let us look into this matter of Arctic influence on national security.

As background, we note that nine-tenths of all humanity lives north of the equator, and that two-thirds of all land on the globe lies in the Northern Hemisphere. The location of practically all high prized industrial sections is above 30 degrees north latitude.

By study of the adjacent polar projection map, we verify that the lines of shortest distance connecting the majority of world population and industry traverse some portion of the area within the Arctic Circle. The Arctic is seen to be a center piece rather than a frontier in the perspective of air-age geography. This being the case, if we were looking through the eyes of a man responsible for national security, we would see the Arctic as a sentry box rather than an ice box.

Old Thesis to Airmen

To American airmen, the thesis of the Arctic as a future highway for commerce and gateway for possible aggression against American sovereignty, is almost as old as the airplane itself. Sprawled on the tiger skin rugs of Billy Mitchell's study, scribbling on tablecloths at the Army and Navy Club, battling the breeze in the hangar shade at a hundred airports, or listening to Steffanson, Dick Byrd, Dean Smith, Thor Solberg, Wilkinson, Neville, Floyd Bennet, Bert Balchen and a handful of others over the stretch of years, every old airman foresaw the Arctic as a place of challenge when the chips would be down on future American security. And so it proved.

Arctic distances, as can be seen by the map, are well within the range of modern aircraft, even though no intermediate landing fields are provided yet, as they will be for increased safety and economy. Aircraft operation in low temperatures offers special problems but these are little more difficult of solution than "winterizing" of our automobiles by using lighter oils for lubrication, anti-freeze for engine cooling and pre-heating for easier starting. Navigation, once a headache within the Arctic, has yielded to revolutionary new types of instrument.

The great problem of the Arctic is weather, and not until we are abreast of polar weather can we

make up our minds concerning the significance of the area to American commerce and security.

Perhaps a word of layman analysis on the causes of "weather" will be of aid. We must picture the atmosphere in motion, and observe how and why great masses of air move around the surface of the globe. First we note that the earth is most intensely heated at low latitudes near the equator, where the rays of the sun fall strongest and most directly. Conversely, for opposite reasons, the earth is least intensely heated at the poles. However, the sun's heat energy, received in unequal amounts by equatorial and polar regions, tends to distribute itself more equally. Thus we have warm air from low

latitudes moving toward the pole and cold air from high latitudes moving toward the equator.

Air which comes from over ocean areas is moist, and from over land areas dry. Accordingly we have four general kinds of air: cold, dry air; cold, moist air; hot, dry air, and hot, moist air. What happens when these various kinds of air meet is "weather."

The worst weather, as will be easily realized, is neither at the equator nor at the pole, but over those marginal areas where the approaching cold and warm air masses make contact, to form what weather men term a "front," as the cold air pushes under the warm moist air, thus creating storm and precipitation. Greenland, Iceland, the Aleutians, and kindred areas being marginal to the Arctic thereby achieve their justifiable reputations for bad weather—the worst on earth.

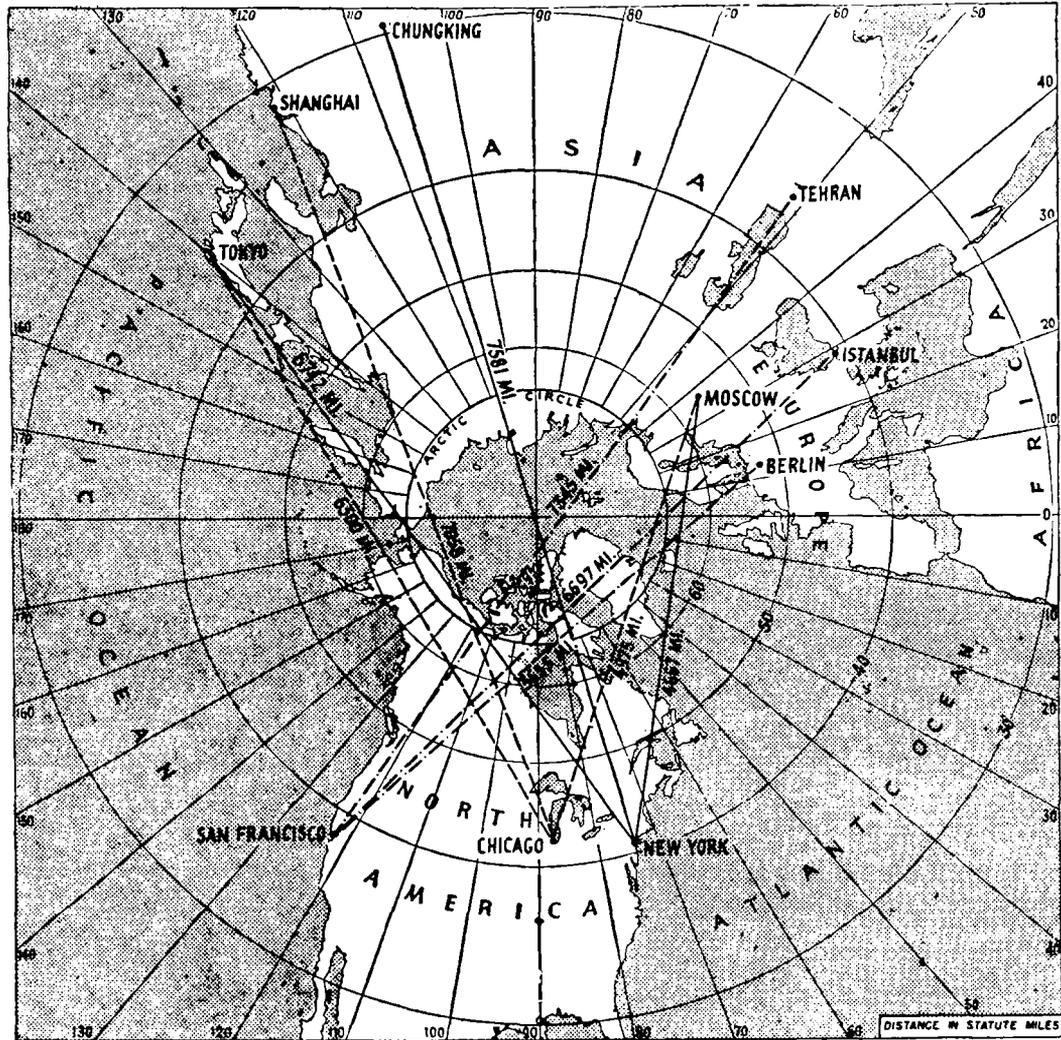
The far North has neither so much storm and snow, nor even so great cold, as have the marginal Arctic areas. Meteorologists have told me that at the North Pole the temperature cannot fall below minus 60 degrees, and while this is not sun-stroke temperature, it still shows a favorable low mean as compared to Verkhoyansk in Siberia, 1,500 miles south of the pole, which has recorded minus 90 degrees, or Havre, Mont., which had a minus 68 degree mark. The coldest place in the Arctic is the

interior of Greenland, but even Greenland runs a poor second to certain areas of Canada, nor can the Greenland Chamber of Commerce point with scorn to some areas of the northern United States.

Arctic Flying Easier

The point now to be made is that these marginal areas have been flown consistently by the American air forces throughout the war years. If the marginal Arctic areas can be conquered from a weather standpoint, the Arctic itself can be more easily conquered. And if the Arctic can be flown by Americans it can be flown by any one else. Therefore the Arctic is an additional possible approach to aggression against the United States.

A glance at Army Air Forces' war-time experience in flying marginal Arctic lands is revealing. The code name of this war flying was "Operation Bolero," and its purpose, to hop all types of aircraft as quickly as possible to England. Short-range fighters as well as long-range bombers had to be flown across the Atlantic. The route via Greenland and Iceland alone was possible for limited-range aircraft. This meant bucking the worst weather on earth. Forecasting had to be good and to cover a vast area. By the summer of 1942 thirty-eight weather stations and a communications system had been set up. Eleven sta-



Polar projection map showing shortest distances between several key cities of the world are over Arctic regions.

tions were in Labrador, seventeen in Greenland, eight in Iceland and two in the Faroes, southeast of Iceland. British, Canadian and five United States naval vessels joined in the project.

In seven months 662 United States combat aircraft were flown across the marginal Arctic route. From then on, the A. A. F. continued to beat weather in its own back yard. Full figures cannot be used for security reasons, but samples will serve our purpose. In the last half of 1943 more than 1,000 tons of cargo and 4,000 key personnel were ferried via the far north Atlantic. Within six hours on July 4, 1944, 143 B-17s left Goose Bay, Iceland, for England. Turning to marginal weather areas on the other side of the North American continent we find that 8,000 combat planes were ferried northward through Canada to Fairbanks and Nome, Alaska, whence Russian ferry pilots flew them over the Siberian tundra.

Many Weather Stations

When war ended the British-Russian-American forces were operating seventy-eight weather stations north of 55 degrees latitude. The accompanying weather station map has been compiled to show the approximate locations of these and the reader will note that of all three, Russia had by no means the easiest task, but has done a phenomenally fine job. The map indicates how necessarily wide is weather reporting coverage and how much is yet to be covered.

Work must continue in the post-war years. An Arctic proving station for air forces has been established at Fairbanks from where the distance to the pole is but 1,735 miles, an easy round trip for a B-29.

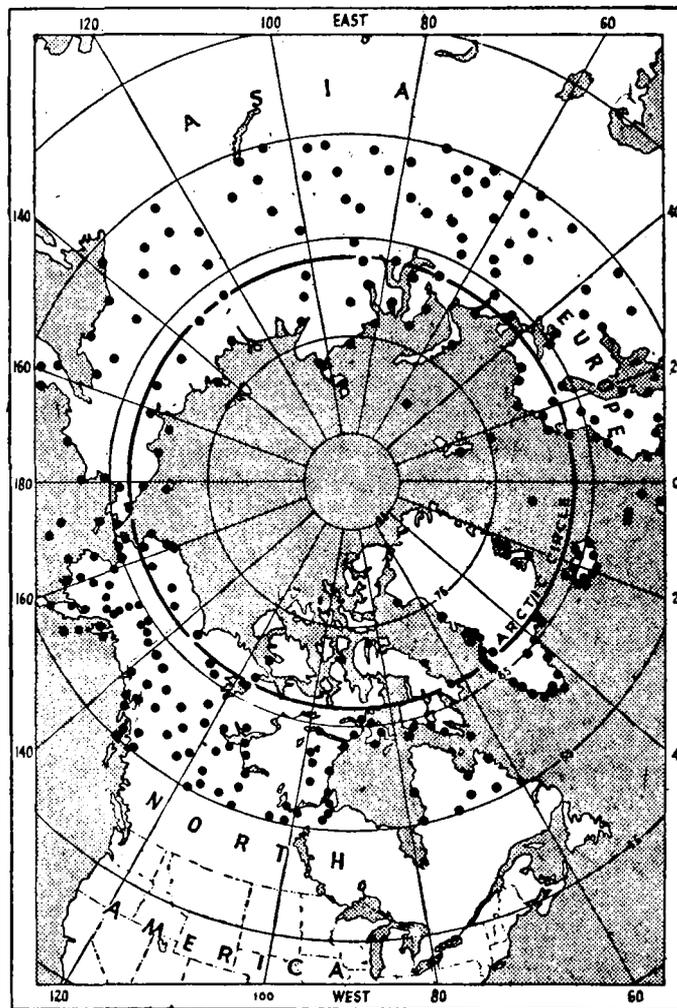
Conquest of the Arctic is an essential of national security. It is an air-force job because the Arctic is a broad aerial highway of good weather between the majority of the earth's populations. And as a last datum to show how good is that Arctic highway, we point out that over the pole the atmosphere is but 20,000 feet in depth in contrast to a 35,000-foot depth over New York, and 55,000 at the equator. The inference is obvious. Above 20,000 to 30,000 feet over the top of the world an aircraft flies above all storm, ice, cloud formation, or other hazards of "weather" flying.

Arctic Weather Bill Signed

WASHINGTON, Feb. 12 (AP).—President Truman today signed legislation providing for expansion of weather observation facilities in the Arctic region of North America. The measure provides for establishment of an unstated number of observation stations at a cost of about \$200,000 each. In 1940 the United States had three stations in the Arctic while Russia had 137 and other foreign nations a total of ninety-six.

Red Snow.

Occasionally red snow falls in the Arctic—the coloring is caused by minute particles in the atmosphere.



Herald Tribune maps
Black dots indicate weather stations operated above 55 degrees north latitude by Britain, Russia, Canada and the United States

Arctic Ocean Sea Route Called Significant

By Gill Robb Wilson
New York Herald Tribune

In the humble judgment of the writer, the most significant event since the invention of the airplane may well prove to be development of the northern sea route from Dutch Harbor, through Bering Strait and across the Arctic Ocean, to Murmansk. If this passage, historically sought for three centuries, proves of as great service to peaceful commerce as it now promises, it will affect the long-range history of civilization more than any contemporary event, including the two great wars, even overshadowing such epic route changes as accomplished by the Panama and Suez Canals.

During the war the sea-borne lend-lease aid of the United States went to Russia via three routes—from the east coast over the North Atlantic to Murmansk; from the west coast over the North Pacific to Vladivostok; from the east coast via the Mediterranean, Red Sea and Persian Gulf to Basra. But 8,000 airplanes flew from Fairbanks and Nome to Russia via Siberia. When ships sail from Dutch Harbor to Murmansk, trading at intermediate sea ports on the Siberian Arctic shore, and

when roads run, as they will, from the United States and Siberia to ferry slips on the Bering Strait, we will have a brand-new world in process.

To Bring Trade to Siberia

A sea passageway from Dutch Harbor to Murmansk will bring international sea trade to the great rivers of Siberia—the Lena, Yenisei and Ob—and the consequent development of Siberia, with its wealth of timber, minerals, oil, coal, fur and fish, will add the equivalent of another industrially developed continent to human history. Furthermore the United States will be the next-door neighbor of this newcomer in the world of business and industry and such may be the effect that the balance of American finance and politics eventually will swing from the northeastern to the northwestern United States.

In 1937 the Soviet launched a meteorological expedition on the north polar cap and for many months data of great value were radioed back by the scientists. On the strength of what was learned about polar weather, Russia announced her intention to attempt

Views Reds Ahead In Arctic Warfare

By the United Press.

ABOARD THE CARRIER MIDWAY, at Sea, March 4.—Capt. Clifford J. McGregor, Washington, D. C., Arctic explorer who has spent 15 years in the Far North, said today that Russia is farther advanced than any other nation in Arctic warfare.

Capt. McGregor discussed the principles of Arctic warfare that are under exploration in the Navy's frostbite expedition into the sub-Arctic. The expedition, led by the 45,000-ton carrier Midway, is out to find the worst weather available to test new sub-zero weather gear.

Capt. McGregor said Russia has perfected weapons and equipment capable of operation when other countries think it is too cold for movement.

He cited Soviet ice-breaking machines capable of smashing through ice seven feet thick. The Russians have developed oils and grease which allow them to operate land and air equipment at sub-freezing temperatures, he added.

several flights from Moscow to the American west coast.

Intrigued by the possibility of what this could mean to aviation in the United States, I went to the Northwest and was in Portland, across the river from Vancouver Barracks, when Russian airmen Chkalov, Baydukov and Belyakov set their single-engined ANT down on the landing strip of that military post.

No Arctic Equipment

"You are more interested in what equipment we do not carry than in what we have," smiled one of the Russian airmen as we went over the ANT with avid curiosity. That was true. The ANT was a flying gas tank, but as for special equipment to face extreme weather conditions, she carried nothing more than temperate-zone aircraft.

The conclusion therefore is that should marine commerce create on the other side of the polar cap a mighty industrial power fronting on the Arctic Ocean it automatically will create a vast new field for air commerce, since flying conditions will not mitigate against such development.

The airplane can be depended upon to snatch every weather secret from the Arctic and to ride herd on the safety of Arctic shipping even as on shipping elsewhere. The United States can undertake nothing more significant to herself or to the world than an alliance with Russia and that great trader John Bull, which guarantees that development of the northern reaches of the world shall be joint projects of friendship and peace. If not, the next war might be, inconceivable though it may sound, for possession of the North Pole.

M'MILLAN SAILS FOR FAR NORTH

Two Women Are Members of His Arctic Party.

Boothbay Harbor, Me., June 29 (A. P.).—The schooner Bowdoin hoists anchor today for the far North, carrying Donald B. MacMillan, the explorer, two women and a company of scientists, naturalists and business men on four missions—one a guest—for an elusive bird.

The primary objective of the crafts nineteenth voyage into icy waters with a company of fifteen is a search for the "Kumlien gull" and other ornithological secrets, sponsored by the Colorado Museum of Natural History.

Baffin Land's Frobisher Bay is the ultimate destination of the trip, which will end at Portsmouth, N. H., August 8—ice and wind permitting.

En route, more than 500 soundings will be taken from the eighty-foot, oak-hulled Bowdoin, to be plotted in new charts drawn while Commander MacMillan served in the United States Hydrographic Office during world war II.

A third mission will be to carry home to Jacobsheven Colony, Greenland, pretty Helga Knudsen, daughter of Aage Knudsen, the colony's district manager. Miss Knudsen, who was graduated with honors last February from Oberlin College, escaped from German-occupied Copenhagen with aid of groundwork laid by MacMillan. Since then she has been the MacMillans' ward.

The second woman aboard is Mrs. MacMillan, making her fourth trip to iceberg-studded waters.

The desolate nesting haunts of arctic birds will be hunted by Dr. Alfred M. Bailey, director of the Colorado Museum, and Robert Grayce of Boston's Audubon Society. MacMillan reported sighting on an earlier trip breeding grounds of a bird he believes might have been the Kumlien gull, which some ornithologists say does not exist.

Sealing Ship Eagle Leaves for Arctic

ST. JOHN'S, Newfoundland, March 7 (Reuters)—The veteran wooden sealing ship Eagle left here today for the Arctic ice floes where it will open the first sealing since the war.

Built in 1902 the 677-ton Eagle is the only survivor of a famous sealing fleet which in the heyday of seal fishing brought the value of the industry to almost \$1,000,000.

Army Honors Polar Explorer



Brig. General Georges F. Doriot, Chief of the Military Planning Division, Office of The Quartermaster General, congratulates Major Paul A. Siple upon presenting him the Legion of Merit.

Paul Siple's Climatology Work Earns Legion of Merit Award

WASHINGTON—Major Paul A. Siple, under whose direction plans for clothing United States troops under every climatic condition in the world were worked out, has been awarded a Legion of Merit for his activities in this connection.

Major Siple will be remembered as the Boy Scout who, in 1928-30 was the youngest member of Admiral Richard E. Byrd's first Antarctic expedition. He joined the Quartermaster Corps as a civilian expert on cold climate clothing and equipment in 1942, and was commissioned a captain in the fall of the same year, advancing to major in the spring of 1943.

Cold-Weather Clothing

Major Siple is chief of the Climatology and Environmental Protection Section, Research and Development Branch, Office of the Quartermaster General, and his work has contributed to development of the efficient Army cold-weather clothing, built around the "layering principle," as well as to studies which were translated into maps showing the temperature ranges and other climatic conditions in virtually every part of the earth.

These maps have enabled not only the Army but other Government agencies to estimate clothing and fuel needs wherever our troops may be stationed.

Major Siple's citation for the Legion of Merit, which was presented by Brig. General Georges

F. Doriot, Chief of the Military Planning Division, Office of The Quartermaster General, reads:

"Major Siple serving with the Research and Development Branch, Military Planning Division, Office of The Quartermaster General, from July 31, 1942, to September 30, 1945, rendered outstanding service. Major Siple coordinated for the first time the several fields of scientific investigation concerning clothing selection. His creative imagination envisioned that such a synthesis would aid immeasurably in helping the combat soldier to fight the hazards of a global war.

"The vision and foresight of his planning resulted in a revolutionary concept of military clothing for all conditions of warfare in all climates and a re-designing of all items of combat clothing issued to the Armed Forces.

"His analytical and exhaustive findings were written in terms that were of inestimable assistance to theater commanders, and made momentous contribution to the welfare and morale of every combat soldier. Major Siple's devotion to duty was in the highest tradition of the military service and his achievements reflect the highest credit upon himself and the Quartermaster Corps."

Before going with the first Byrd expedition, Major Siple was chosen after long and arduous tests by Boy Scout officials from among 600,000 Boy Scouts. He

was in charge of the biological and zoological work of the expedition, bringing back specimens of penguins and seals for the American Museum of Natural History. He was also a member of Admiral Byrd's second Antarctic Expedition, in 1933-35, as head of the biological department and member of the Admiral's personal staff.

Erected Byrd's Tiny Hut

On the latter expedition, he was in charge of erecting and equipping the hut in which the Admiral lived alone four-and-a-half months in 1934.

In June, 1939, he received the doctor of philosophy degree in geography from Clark University, Worcester, Mass., where from 1939 to 1942 he was a research associate.

During this period he served as geographer with the Division of Territories and Island Possessions, Interior Department, assigned to the U. S. Antarctic Expedition as leader of the West Base at Little America. He was in charge of geographical research and map projects, for the U. S. Antarctic Service.

Among First to Enter Japan

In 1945, in connection with his duties at the Office of the Quartermaster General, he served as technical observer in the American, European and Pacific Theaters, studying the adequacy of winter clothing. He entered Japan with the first occupation forces in September, 1945.

Major Siple is a fellow of the American Geographic Society, and is a member of the National Council and Camping Committee, of the Boy Scouts of America.

In 1935, Major Siple was elected first President of the American Polar Society, whose headquarters are at the American Museum of Natural History in New York. He served five years as President of this group comprising persons in all parts of the world who have a common interest in the polar regions. He was awarded Congressional Polar Medals in 1930, 1935 and 1945.

He has written a number of books and articles on his travels and explorations and in connection with his climatological and geographical work.

In 1931, he wrote "A Boy Scout With Byrd," now in its 16th edition in English and reprinted in five other languages, and said to be the "best seller" in its class. His second book, "Exploring at Home" was published in 1932. His experiences on the second Byrd Antarctic Expedition are recorded in his book, "Scout to Explorer."

Murmansk Mostly Northerly

The 900-mile Russian line to Murmansk is the world's northernmost railroad.

Russia Exploits Land of Frost

By Edmund Stevens

The Christian Science Monitor

MOSCOW, April 20—A major contribution to the fund of human knowledge has been made by Soviet natural scientists investigating properties of "eternal frost," a term used to describe the layer of perpetually frozen soil that underlies 45 per cent of the Soviet Union's broad land expanse.

The study of this feature has great practical import inasmuch as the frontier of settlement in the Soviet Union today is northward just as it is in Canada. The march of civilization into the fastness of this northern region, and the exploitation of vast still-untapped natural resources, hinge on solution of many problems peculiar to permanently frozen ground on which cities and factories as well as roads and railways must be built, and even agriculture developed, on a scale that keeps up with requirements of a growing population.

A beginning in the study of the frost was made by the Russians early in the 19th century, but intensive investigation backed by the resources of the Soviet State dates from 1930, when an Institute was established as a subsidiary of the U. S. S. R. Academy of Sciences for investigation of the frost.

One of the first tasks undertaken by the Institute was mapping extent and depth of the frost layer. Starting on shores of the White Sea near the Mouth of the Mezen River, they traced its boundary to the confluence of the Usa River with the Pechora River and thence into Siberia passing slightly north of the junction of the Rytsh River with the Ob. The boundary then swings sharply southward, and cutting south of the city of Krasnoyarsk, it crosses the Soviet border into Outer Mongolia, re-entering Soviet territory near the town of Svobody. It passes through the City of Blagoveschensk, bisects Birobidjan, and reaches the Pacific Coast at the mouth of the Amur River. It embraces the northern half of Kamchatka and all of the Chukotsk Peninsula.

History of Belt

The thickness of the frost layer varies from 500 meters on the Arctic Coast to a few score meters at the southern edge. In Yakutia it is 200 meters thick. At Verkhoyansk, which has the unenviable reputation as the world's coldest spot, where the mercury drops to 90 degrees below zero Fahrenheit, it is 300 meters thick.

The soil was frozen to great depths during the glacial age when the entire region was covered by a great continental icecap some 30,000 years ago. In this connection a Soviet biologist investigating traces of Fauna in deeper layers of frozen soil at the Institute's experimental station at Skovorodino in northern Siberia, discovered, under microscope, eggs of hitherto unknown crustaceoid organisms imbedded in one of his frozen samples. When thawed out, the eggs soon hatched into living organisms, which in turn multiplied, thus resuming a life cycle interrupted

Russia Getting Warmer Through Arctic Change

By The United Press.

MOSCOW, Feb. 10—The Geophysical Institute of the Soviet Academy of Sciences announced today that recent studies had disclosed an appreciable increase in Arctic temperature, affecting the climate of the entire Soviet Union, particularly European Russia.

The institute's report said that since the beginning of this century there had been a gradual disintegration of icebergs in the Arctic seas and a faster movement southward.

The observation of 1,000 Soviet weather stations showed an intensified circulation of warm air masses to the north balanced by cold air moving south, the net result being a rise in temperature.

In Yakutsk, in eastern Siberia, the world's coldest spot, the average temperature during the last three years has been one-half degree higher. Moscow's winters have been less severe this century than the last and the summers cooler.

for tens of thousands of years.

Major practical problems which researchers and engineers are called on to solve arose from the circumstance that when buildings or roads are constructed on frozen ground they act as heat conductors, thawing the surrounding frozen soil, which results in subsidence. Another complication occurs when surface soil, which has thawed during summer, starts to freeze. Ground and water imprisoned between the upper and lower frost layers tend to build up pressure till it buckles the upper frozen crust at some point, often with considerable destructive force, washing out roads and houses, and flooding low-lying areas.

At present two methods of building foundations have been evolved. One which is used in northern areas is designed to prevent thawing of frozen soil by proper insulation. The other, used along southern edges of the frost layer, is that of thawing out ground completely.

Typical of the first method is construction of the Yakutsk electric power station. Seventy-two concrete piles were sunk into the frozen soil to a depth of 4½ meters. The building itself stands on these piles off the ground so that no warmth is transmitted.

At first, difficulties were experienced with the water supply. Native inhabitants and early settlers met their requirements by melting snow or ice, which obviously was inadequate for industry or new towns.

The answer was found in drilling artesian wells straight through the frozen layer, often to great depths. Sometimes water

had to be pumped, but elsewhere, as on upper reaches of the Kilyma in Yakutsk, water gushed forth under strong subterranean pressure. At several places in the Arctic as on Cape Chaplin in Providence Bay hot mineral springs have been tapped.

The opening of the Soviet Far North has received powerful impetus in recent years from discoveries of rich mineral wealth, including oil, coal, and deposits of many metals. In wartime a new coal field was opened up in the northern Urals, along the lower reaches of the Pechora River, and was linked with Central Russia by a railway running to Kotlas across the so-called Komi Autonomous Republic, thus helping to make up for temporary loss of the Donbas coal. Additional coal deposits have been located near Cape Navarin, as well as coal and mineral deposits in Yakutia.

Cities and towns have grown up near newly discovered deposits. Thus in Verkhoyansk, where the Yana River often freezes solid, there now stands the new town of Ege Haya, which in Yakutsk language means Bear Mountain, with a population of 15,000.

Another new city of the Far North is Norilsk, which boasts a water supply, electricity, modern apartment houses, clubs, and theaters—all built on the same principle as Yakutsk's electric power station.

Agriculture in North

Much energy is devoted to development of agriculture in the frozen soil regions, so that new cities and settlements may have their own food supply. Frost-resisting varieties of wheat, oats, barley, sugar beets, and many other crops are grown successfully now inside the Arctic circle. Crops sown the last week in June are ready for harvesting around Aug.

Frozen Earth Near Pole Receding, Soviet Finds

North American Newspaper Alliance.

MOSCOW, Jan. 10—The belt of permanently frozen earth lying near the top of the world is slowly receding, if findings reported here are general. In the Archangel region, for example, the southern boundary of the frozen belt has moved almost 100 kilometers [60 miles] farther north during the past ninety-six years.

Although the gain is minute—a fraction of a degree of heat in a century—this discovery has great economic possibilities. The city of Yakutsk, in Siberia, for example, has for years derived its water supply in an expensive and inconvenient manner from a near-by river. Water has now been found at a depth of about 400 yards, where there is no ice, and wells are being sunk.

BERING STRAITS TUBE 'DREAM' OF REDS

London, Feb. 1 (A.P.).—Robert Magidoff, NBC commentator, said over the Moscow radio today that Russian scientists were "dreaming" of a Bering Straits tunnel to connect the Soviet mainland with Alaska.

The broadcast said that the Soviet scientists hope it will become a reality in the not too distant future and envision "chains of motor cars streaming back and forth." The commentator said the sponsor of the idea was Vladimir Obratov, an academician whom he listed as Russia's leading railway expert.

Russia Operates Arctic Flights

LONDON, April 8 — (B.U.P.)—Planes have been taking off from Moscow for the Arctic regions almost daily since the latter part of March, radio Moscow said last night.

The broadcast said a new airline was now being established to link remote stations on Kara Sea islands in the eastern Barents Sea. Another airroute flight just completed covered more than 15,000 miles along Arctic stations on the mainland, the radio said.

Other flights now underway include trips of hydrographical and geological expeditions into unexplored northern districts of Siberia. Planes are also carrying supplies, mail and literature to Arctic stations the broadcast said.

Siberian Hog Evolved

A new breed of hogs adapted to life in the Arctic has been evolved by the Siberian Livestock Research Institute.

15. During this period they have the benefit of the uninterrupted sunshine of the Arctic summer day. A wide variety of vegetables including onions, turnips, lettuce, cabbage, and spinach also grow luxuriantly during the intensive summer period. Best results are obtained by starting vegetable seeds in window boxes indoors or under glass a month ahead of time, transplanting outdoors around June 15.

All told, the cultivated area of the Far North has increased from 137,000 acres in 1926 to 832,000 in 1943. Today watermelons and cantaloupes grow in remote Yakutia.

During wartime, towns in the Far North fully met their own food requirements and even managed to ship considerable quantities of fats and meat to main cities of the Soviet Union.

Work so far accomplished toward conquest of the vast frontier land of the frost is a mere beginning compared to what lies directly ahead. The new five-year plan, which is at once the mainspring and the co-ordinator of Soviet national life, has assigned enormous means to developing resources, to building new industries and cities, roads, and railways in what seems destined to become in due course a new empire of the north, and one of this planet's richest regions.

CAPT. BOB BARTLETT, EXPLORER, 70, DIES

Pilot of Peary's Ship in North Pole Expedition Had Saved MacMillan. Lost 4 Years

Capt. Robert A. (Bob) Bartlett, Arctic explorer, died April 28 in the Harkness Pavilion, Columbia-Presbyterian Medical Center, of cardiac and kidney ailments. His age was 70. He resided at Hawthorne, Brigus, Nfld., and the Murray Hill Hotel here.

He leaves two brothers, Will L. of Brigus, and Lewis of St. John's, Nfld., and four sisters, Mrs. W. R. Dove, Mrs. F. W. Angel and Miss Emma B. and Miss Eleanor Bartlett, all of Hawthorne, Brigus.

An Arctic Commuter

Capt. Bob Bartlett commuted to the Arctic as if it were his suburban home. He got a foothold on the deceptive ledge of public attention with Peary. Down the years, he maintained his repute by a series of story-book adventures.

He was born at Brigus on Aug. 15, 1875. His father was Capt. William Bartlett, who bequeathed to him the sturdy seafaring tradition, and incidentally sent him to Bishop Field College at St. John's. His enrollment read Robert Abram Bartlett.

The family wouldn't have minded had he gone into business; there was no outer compulsion to follow the sea. But young Bob shipped on a Brazil-bound trader right after graduation. He rose fast, and by the time he was 22 made his first voyage to the Far North on Peary's Windward, then commanded by his uncle, Samuel Bartlett.

Four years later, he was helping the discoverer of the North Pole in the construction of the Roosevelt, the craft which was to take them eventually on the historic trip. The ship was named for the then President, Theodore Roosevelt, who was intensely interested in polar attempts. The story goes that Peary offered its command to the youth's uncle, but the latter said:

"I'm too old for such work. Take Bob along. He'll make good."

Peary agreed, and the Roosevelt headed toward that April day when her master was to wire his dramatic "Stars and Stripes nailed to North Pole." Captain Bartlett's role in the achievement, uniformly hailed, was clouded by infinite discussions over why Peary did not allow him to make the final lap, shared with the commander only by Matt Henson, Negro personal attendant, and four Eskimos.

The explorer subsequently praised Captain Bartlett for his "magnificent handling" of the ship to her base on the Arctic coast, and explained that he had been sent back over the ice with the last supporting party as the "only man with me at the time who could positively insure the return of the party to land." As it was, the Newfoundlander reached 87 degrees 12 minutes north.

"Though he naturally was disappointed," Peary continued, "at not having reached the eighty-eighth parallel, he had every reason to be proud, not only of his work in general but that he had surpassed the Italian record by a degree and a quarter."

Steadfast Champion of Peary

And Captain Bartlett, who steadfastly upheld Peary during the subsequent rival claim of Frederick Cook, wrote a quarter of a century later on the moot point. He said:

"It was reported that he (Peary) said he wanted to be the only white man at the Pole. I do not think he ever said that. It is much more reasonable to believe that to have taken us and the others further might have brought disaster by exhausting his food. He had learned his lesson on his former trip when he had to turn back for lack of victuals.

"And I think there was another reason. I think on this last journey he had made up his mind that he would reach the Pole or he would not come back. It was North Pole or bust with him. And I think he wanted me to get back so that if he did not return there would be the record of his having gone past this last camp, further north than any one else had gone."

Captain Bartlett was the last man to say good-bye to Peary, who headed for a doubtful finale after calling, "Good luck, Bartlett. Take care of yourself and mind the young ice!"

On April 11, 1911, Captain Bartlett became an American citizen. In the meantime he had received the gold medal of the National Geographic Society and had accompanied his chief to London, where a replica of the special medal of the British Royal Geographic Society was awarded to him. His fame grew, and it was in no way diminished by his steadfast loyalty to the man who had gone further.

Then, in the winter of 1913-14, he was the central figure in an Arctic disaster which came close to cutting short his career. Vilhjalmur Stefansson led an expedition through Bering Straits with the Canadian whaler Karluk as flagship. On Dec. 18, 1913, news reached Seattle that, though Stefansson and others were safe at Point Barrow, most northerly point of Alaska, Captain Bartlett, his crew and several scientists had been lost when the vessel was carried away by ice.

For five months there was no word. Captain Bartlett was regarded as lost. Then, on May 23, he turned up safe at St. Michael, Alaska.

Stefansson's group left the ship on Sept. 20, fifteen miles off the mouth of the Colville River. Three days later the ice clamped down on the Karluk. Gales followed. The vessel was doomed, but there was no telling how long she would resist the nutcracker-like pressure around her. Captain Bartlett calmly directed the unloading of cargo. When the Karluk yielded to the enormous power of ice, and sank in thirty-eight fathoms at 4:30 P. M. on Jan. 11, 1914, everything that would be needed in the unpredictably long fight against cold and starvation had been borne to the surrounding floe.

First he led seventeen men, an Eskimo woman and her two chil-



CAPT. BOB BARTLETT

dren to Wrangel Island, north of Siberia, about 125 miles from the spot where the Karluk was crushed. Then, with only a handful of others, he began the long trek to Siberia, and down the rim of East Cape. It was 100 miles of ice, and it was hard on even the veteran dogs—all but four of whom died—but Bartlett fought his way on. They received invaluable aid from Baron Kleist, reached Emma Harbor in the middle of May, sped across to Alaska in the whaler Herman, and made plans at once for the rescue of the party still on Wrangel.

Ever since, though it is doubtful whether his exploits have matched the post-Karluk saga, Captain Bartlett had kept up uniquely his record as an Arctic commuter. With brief intervals as boss stevedore ("just to learn something of what other men are doing") and as commander of non-exploring vessels, he stuck pretty close to his last as master seaman of the little-known North. He was quite literally one of the most active members of the Explorers Club.

Brought MacMillan to Safety

He was commended by Secretary of the Navy Josephus Daniels in 1918 for taking the large tug Favorite through the ice from Quebec to Boston. A year earlier, with the sealer Neptune, he had found Donald B. MacMillan, gone since 1913, and brought him to safety. Macmillan had been on an expedition to Crocker Land and lost his ship, Diana.

A superintendent of marine transportation during the first World War, Captain Bartlett attained in 1920 the rank of lieutenant commander in the United States Naval Reserves. He won the Charles P. Daly Medal in 1925.

Another important trip, the first of several on his own 120-ton schooner Effie M. Morrissey, began in June, 1926. One feature was a battle with a walrus herd; Bartlett killed the leading bull with a single lance-thrust. A somewhat lighter diversion was the lassoing of two polar bears by Carl Dunrud of Sweetgrass, Mont., a tenderfoot as far as Arctic investigation went. The major revelation of this voyage was made by its leader, George Palmer Putnam, on Sept. 24. He wired from Cape Breton Island the

news that Ross G. Marvin, leader of the next to last supporting party sent back by Peary seventeen years before, had not been drowned as was supposed, but had been murdered by an Eskimo.

In 1928, Captain Bartlett piloted the Stoll-McCracken expedition, which discovered mummies of stone age men on the Aleutian Islands. In 1930 came the Greenland East Coast Expedition. In 1932, at Cape York, the 60-foot Peary memorial shaft was completed, the cornerstone being laid by Captain Bartlett, who had been chosen for the honor by Peary's widow. Summer after summer, Captain Bob would point the Morrissey north again, and it was rarely that he and his student-crew did not bring back in the autumn a fine story.

Captain Bartlett returned from his sixteenth annual cruise to Arctic waters in October, 1941. His vessel, the Effie M. Morrissey, carried a special expedition to gather data relating to radio transmission. The previous year he also made a cruise in the same area, with eleven college students as paying guest-crewmen.

On May 25, 1945, Captain Bartlett and Comdr. MacMillan received at Boston the Peary Polar Expedition Medal. The citations accompanying the award, which commemorated the Peary expedition of 1908-1909, stressed "outstanding service to the Government of the United States in the field of science and for the cause of polar exploration" and "exceptional fortitude, superb seamanship and fearless determination on the important and difficult mission."

Captain Bartlett's Funeral Here Is Attended by 700

Seven hundred persons, including many fellow-explorers of the Arctic, attended May 1 a funeral service at Christ Church, Methodist, Park Avenue and Sixtieth Street, for Capt. Robert A. (Bob) Bartlett. The mourners included Matt Henson, the Negro steward of Peary's ship, who was with Peary at the North Pole.

CAPTAIN BARTLETT BURIED

Thousands Gather in Brigus for Funeral of Explorer

ST. JOHN'S, Nfld., May 9 (Canadian Press)—Thousands of residents of Newfoundland converged on Brigus, thirty-five miles south of St. John's, yesterday to pay tribute to the memory of Capt. Robert A. (Bob) Bartlett, the famed Arctic explorer, for whom a funeral service was held in the Methodist Church of the village.

The body was borne to the graveside by members of the crew of Captain Bartlett's renowned schooner Effie Morrissey, in which he had sailed time and again on Arctic expeditions. A retired minister and friend of the explorer, the Rev. G. Boughton, conducted the services at the church and graveside, and bells of churches of all denominations tolled a requiem as the funeral cortege moved through the village to the cemetery.

DR. H. E. WETHERILL, PEARY ARCTIC AIDE

Delivered Child to Admiral's
Wife on 1893 Expedition—
Surgeon, Inventor Dies

PHILADELPHIA, March 8—Dr. Henry Emerson Wetherill, noted surgeon and inventor who delivered Mrs. Robert E. Peary's first child, a daughter, during Admiral Peary's Arctic expedition in 1893, was found dead today in his home at near-by Valley Forge Park. His age was 75 years.

W. J. Rushong, coroner of Montgomery County, said death had occurred about three days ago and was due to natural causes. A bachelor, Dr. Wetherill had lived alone on the estate for nearly half-a-century after a career that took him to China at the time of the Boxer Rebellion, to Panama for the Yellow Fever experiments, to the Philippines in the Spanish-American War, and to the Arctic with Admiral Peary.

Dr. Wetherill maintained laboratories in his home, where he was active in scientific research. His inventions included a hydroscope, for the measurement of body moisture, which he believed a better indication of disease than body temperature.

He also devised a "vest-pocket typewriter," a tiny calculating machine, and a number of surgical appliances, some of which came into use in the profession.

A son of the late William H. Wetherill, Philadelphia paint manufacturer, Dr. Wetherill was graduated from the University of Pennsylvania Medical College. He volunteered to accompany Admiral Peary's expedition and was with Admiral and Mrs. Peary as a member of their small expedition into Greenland. In September, 1893, according to relatives, Dr. Wetherill was attending physician at the birth of the Peary's first child, Marie Ahnighito, now Mrs. Edward P. Stafford, at a camp in the arctic.

In 1894 Dr. Wetherill is said to have amputated several of the explorer's toes when his feet were frozen. When Admiral Peary set off on the expedition which finally located the North Pole in 1909, Dr. Wetherill sought financial backing for a rival expedition which never materialized. In 1909, after announcement of Admiral Peary's triumph, Dr. Wetherill planned an expedition to the South Pole, but it, too, failed to get under way.

Mother of Peary Aid Is Dead at 102

Waterbury, Conn., April 19 (A. P.).—Mrs. Selena A. Lee, who would have been 103 years old on Tuesday, died at the home here of her grandson, Robert Peary Lee, yesterday.

She was the mother of the late Hugh J. Lee, companion of Admiral Robert Peary on several arctic expeditions.

Mrs. Lee was born in Middletown, Conn., on April 23, 1843.

General Brainard, Last Survivor Of Greely Expedition, Dies at 89

On 1881-'84 Trip to Arctic
Reached Point Farthest
North of Any Until Then

New York Herald Tribune
WASHINGTON, March 22.—Brigadier General David L. Brainard, eighty-nine, U. S. A. (retired), last surviving member of General A. W. Greely's Lady Franklin Bay Arctic Expedition of 1881-'84, died here tonight in Walter Reed General Hospital. He had been living here at the Hotel Shoreham. Surviving are his wife, Mrs. Sarah Brainard, and a daughter, Mrs. Donald McVickar, of New York City. Burial will be in Arlington National Cemetery.

Held Record for 13 Years

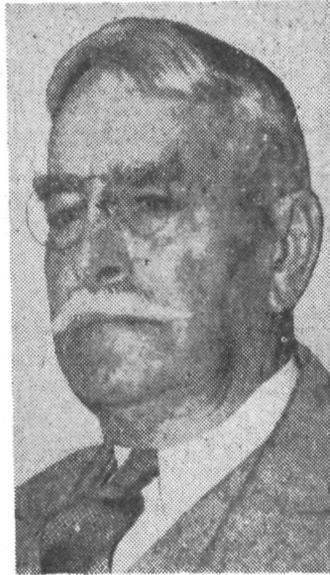
General Brainard, who served ten years in the army before he was commissioned, was co-holder for thirteen years of the record for the farthest points north reached by man. On May 13, 1882, while he was a first sergeant, he and Lieutenant James B. Lockwood reached a point on the north coast of Greenland at latitude 83 degrees, 24 minutes and 30 seconds. Their record stood until 1895, when it was surpassed by Nansen in the Arctic Sea in the Eastern Hemisphere.

The Greely Expedition was formed as a result of international polar conferences at Hamburg, Germany, in 1879 and Berne, Switzerland, in 1880. The United States joined with Great Britain, Norway, Sweden, The Netherlands, Russia, Germany, Denmark and Austria in establishing a ring of widely separated outposts, all within the Arctic Circle, to record a complete series of meteorological and magnetic observations simultaneously.

In August, 1881, the expedition set up a base at Fort Conger on Lady Franklin Bay, 1,000 miles north of the Arctic Circle and 250 miles north of the last Eskimo settlement. While Sergeant Brainard and Lieutenant Lockwood were making their record trek to the north, General Greely continued with his scientific observations.

Passed Terrible Winter.

Although the expedition of twenty-five men had a two-year supply of food, inability of supply ships to get through the ice packs made the winter of 1882-'83 one of terrible privation. In the fall of 1883 they withdrew southward and established a new camp at Camp Sabine. When the party was rescued by the U. S. S. Thetis, under the command of Commander (later admiral) W. S. Schley, on June 22, 1884, only



Brigadier General David L. Brainard

seven of the original members remained alive.

During the last seventy days before the rescue, Sergeant Brainard had charge of distributing the scant remaining rations. He was credited with prolonging the life of the survivors in those seventy days by catching shrimps and sea lice and enforcing their equitable sharing. They went without any food whatsoever in the last forty-one hours before relief.

Enlisted at 19

A native of Norway, N. Y., General Brainard enlisted in the 2d U. S. Cavalry when he was nineteen and fought in the Sioux, Nez Perce and Bannock campaigns of 1877-'78. He was wounded in the face and right hand while fighting the Sioux at Little Muddy Creek, Mont., on May 7, 1877. He transferred to the Signal Corps just before the Greely Expedition was organized.

Two years after his return from the Arctic General Brainard was commissioned a second lieutenant of cavalry by President Cleveland, in recognition of his "distinguished and meritorious services" with the expedition. He was promoted to brigadier general in October, 1917, and was retired in July, 1918.

The Back Grant of the Royal Geographical Society was awarded to him in 1885 for his Arctic work. His other awards included the Explorer's Medal of the Explorers Club of New York (1929), the Charles P. Daly Gold Medal of the American Geographical Society (1926), and the Purple Heart (1933). On his eightieth birthday, Dec. 21, 1936, he was made an honorary member of the American Polar Society.

ROBERT D. PERRY

BRUNSWICK, Me., March 25 (A. P.)—Robert D. Perry, who had made Arctic exploratory trips with

both Rear Admiral Robert E. Peary, discoverer of the North Pole, and Dr. Frederick Cook, died in his home here today. His age was 81.

3 ARMY TASK FORCES TO TEST ARCTIC ROUTE

WASHINGTON, June 8 (A. P.)—The Army underscored its interest in the Arctic short route between Europe and America today with an announcement that special task forces will make new tests in Alaska and the Aleutians this winter of tactics, weapons and equipment for sub-zero weather.

Some 4,500 ground troops, who will begin assembling next month, will test tanks, self-propelled guns, radar, clothing and other items of military gear "under all possible winter combat conditions."

The Air Forces disclosed earlier that a squadron of converted B-29 long range bombers had been assigned to Alaska to make frequent weather flights over the Arctic, termed by ranking military men the world's most strategic stretch of geography in an age of atom bombs and 10,000-mile planes.

Task Force "Frigid," one of the ground force units, will operate seven months from Oct. 1 until next April 30 from Fairbanks, Alaska, where temperature as low as 66 below zero have been recorded. "Williwaw" force will base at Adak in the Aleutians where fogs are frequent and freakish storms blow.

A third task force, "Frost," will test equipment under more temperate climate conditions at Camp McCoy, Wis., where it will assemble in July.

Task force "Frigid," along with men of "Williwaw" will assemble soon at Fort Ord, Calif., for special training.

VOICE HEARD 20 MILES

Range Increased by Arctic Cold,
Atmospheric Tests Show

LOS ANGELES—In the cold, clear air of the Arctic the sound of the human voice may be heard up to twenty miles, while in the hot, dry California desert speech becomes inaudible in a few hundred feet, according to Dr. Vern O. Knudsen, Professor of Physics on the Los Angeles campus of the University of California.

Dr. Knudsen and his assistants are conducting research at the present time to determine the influence of atmospheric conditions on sound—such as fog, smoke and pollen in the air. Fog has been found to absorb considerable sound, especially that of high pitch.

Such experiments may be put to use in a practical way in the designing of large auditoriums and radio studios, installing public address systems, testing of acoustical materials for homes and offices and operation of sound signaling and sound ranging equipment by the Army and Navy, a university bulletin explains.

Danes Plan Greenland Force

COPENHAGEN, Denmark, March 28—A separate naval command for Greenland will come into force Monday. The new command's headquarters will be at Godthaab, on the west coast. A preliminary force will sail from Copenhagen on a coast guard cruiser to carry out geodetic surveys and coastal inspection.

ALASKANS SPURNED MOUNTAIN OF JADE

Greatest Supply of the Stone in World, Ignored by Gold Hunters, Is Rediscovered

ANCHORAGE, Alaska (NANA)—The man was talking about jade—about a mountain of jade. He had seen it, a delicate blue, rising 1,000 feet through the filmy fog of the thawing tundra on the rolling lowlands. He had stood at its base. He had carried away a big jade nugget. Now he caressed in his palm a few cuttings from that same giant gem.

He talked easily and vividly about the mountain in the Kobuk, in a part of Alaska a world to itself—Eskimo land. Two hundred miles along the Arctic Ocean north of Nome, 200 miles up the Kobuk, then some 20 miles up the Shungnak River and there it stands—a whole mountain of jade, not all priceless by any means, but mostly jade of a sort.

The man is Maj. M. R. Marston, out of Nome. The mountain of jade fascinated him when he heard of it in Nome in 1941. He says the Eskimos have known about jade and Jade Mountain for thousands of years. Quite a few white men knew about it, too. One of them was a man named Lloyd, now 86, a gold prospector. He knew about the jade forty-six years ago, but he was a gold man. He wasn't interested in jade. Only reluctantly did he lead the major to the mountain for \$20.

The major strapped one big nugget on his back, not realizing what the treasure weighed.

"I carried it five miles to the village of Kobuk and put it on the post office scale," he said. "It weighed 164 pounds!"

The major sent Joe Sun, leader of the Eskimos in the jade area, to stake out claims to insure a supply for what the major thought would be their new industry. Never in the history of the world had jade been found in such quantity before, Major Marston said. It had been found as placer deposits in Wyoming, Burma and Mexico. China gets her raw jade elsewhere, he says.

"I got the Department of Indian Affairs interested in the Kobuk deposits," he related. "They sent Bill Spratling, the great silver trinkets man from Mexico, to go into the area to see if he thought the Eskimo carvers could commercialize it.

"I gave him twenty-five pounds of gem jade in Nome. I've given away about 360 pounds all together. The gem jade is along the rivers and between asbestos strata. Jade Mountain itself hasn't been prospected."

The Department of Mines of the Territory of Alaska, in a written report, said that gem or semi-precious jade is present. A single small boulder brought from there in 1944 by Eskil Anderson, who wrote the report, furnished material for jade jewelry and for large cut and polished specimens of singular beauty.

"But, major, what about Joe Sun and the claims he was to stake out?" your correspondent asked.

HEAT TALK LEAVES ESKIMOS COLD

Kotzebue, Alaska, Feb. 20 (A. P.).—With the temperature at 40 below zero, Eskimos sit around L. S. Vincent's radio receiver and hear direct from Hawaii that it's 80 above in "Hula Land."

But, says Vincent, an amateur radioman, the Eskimos don't believe it.

"Hell," the major exploded, "the next time I saw Joe I asked him that question, and he said, 'We staked one. That last us for life.'"

The white man was not so unselfish. Major Marston says that Jim Robbins, operator of the big gold and asbestos mines, the Arctic Exploration Company, at Candle, went in and staked out a thousand claims.

"I don't blame Robbins," Major Marston continued. "He's a business man. I heard he sold some jade to the Wyoming Jade Association for \$28 a pound—better than \$1 an ounce."

NAVY TO PRESS OIL SEARCH

Lets Private Contracts for Exploring of Alaska Reserve

WASHINGTON, Jan. 12 (AP)—The Navy has awarded a \$1,000,000 contract for continuing exploration of the naval petroleum reserve in Alaska this year. The contract was awarded jointly to Hoover, Curtice & Ruby, Inc., of New York, as mining and petroleum engineering construction managers, and to C. F. Lytle Company and the Green Construction Company of Des Moines, Iowa, general contractors.

Work on the Alaskan reserves was started by Navy Seabees in the spring of 1944. The end of the war and the demobilization program, the Navy indicated, made necessary the substitution of a civilian contract.

Navy explorations have covered the Eastern third of the reserve. A test well being drilled at Umiat Mountain has passed through five oil-bearing sands, none of commercial value.

The Navy estimates that the survey will be finished in 1950, at a total cost of \$11,500,000.

Canada to Guard Alaska Road

OTTAWA, March 21 (AP)—A Canadian Army unit will take over the Alaskan Highway from the United States Army in a ceremony at Whitehorse, Yukon, April 3. Defense Minister Douglas Abbott told the House of Commons Tuesday that there was no possibility that the highway would be open to civilian traffic in the near future.

Canada Takes Over Alean

WASHINGTON, April 2—The State Department announced today that at a ceremony at Whitehorse, in the Yukon, tomorrow, Canada will formally take over from the United States the Alaska Highway; air fields on the Northwest Staging Route; the telephone system from Edmonton to the Alaska border, and other Northwest defense projects.

U. S. PUBLISHES BOOK IN ALEUT

Natives of Far North Get Bilingual Dictionary.

Washington.—"Tumanin Adac'aman akuxtinxin inin kungin; as san amcug'asadag'ta."

Most of you, of course, will not recognize this immediately as the beginning of the Lord's Prayer. If you can't read it, there's no reason to feel particularly inferior. It's in Aleut.

A literal translation is: "For-us father who thou art heavens on them; thy name it-to-be-exceedingly praised."

There are about 6,000 American citizens of the Far North who speak Aleut. On January 15 the Interior Department issued the first Aleut-English dictionary, and the Aleut-speaking people will receive a new alphabet, using characters similar to those in English.

The Aleuts inhabit the Pribilof Islands, the Alaska Peninsula and, of course, the Aleutians. They have been under American sovereignty for seventy-eight years—since 1867, when Alaska was purchased from Russia for \$7,200,000.

As can be imagined, conversation with these Bering Sea citizens has been difficult. For after one has succeeded in reaching them, the peculiarities of their Eskimoid dialect are such as to make Aleut virtually a separate language. This, says the Interior Department, is a result of the Aleuts being isolated for many years on sub-Arctic islands.

The Aleuts themselves have had some language difficulties. While under Russia they had to learn Russian. When converted to Christianity they were required to learn Old Slavonic, the language of the Russian Orthodox Church. Now, with a new dictionary, they can start learning English. With a new alphabet they can brush up on Aleut.

The dictionary is the product of two men—Ivan Veniaminov, who later became Innokenti, the Metropolitan Archbishop of Moscow, and Richard H. Geoghegan, a Dublin-born authority on languages.

Veniaminov, born in 1797, was sent to Unalaska in 1823 as a missionary. His efforts to put the native tongues into writing resulting in his publishing of a "Dictionary of the Aleut-Fox Language" in 1834. This is the volume which has just been translated into English.

Geoghegan was a distinguished Oxford scholar who eventually ended up in Alaska as an officer of the United States District Court. At the time of his death in 1943 he was credited with having a deep knowledge of more

than 200 languages and dialects. Geoghegan did the early editing of the dictionary. When he died Miss Frederick Martin of New York, an associate, completed the job.

The new Aleut alphabet has eighteen characters similar in appearance to those in English but pronounced quite differently. The "x" for example is pronounced like a hard "ch." Two characters, "ng" and an "s" with a gabled roof over it, are so difficult to explain that only an Aleut student would be interested.

Railway to Alaska Studied

Army Plan Proposes Terminus Within Sight of Siberia

SEATTLE, May 8 (AP)—The Seattle district United States Army Engineers have disclosed that a survey was made during the war for a railway line between Prince George, B. C., and Teller, Alaska, which would make possible shipment of goods to a port within sight of the Siberian coastline across the Bering Strait.

Reports have been made previously on the survey of the 1,440 miles between Prince George and Fairbanks, Alaska, but the engineers said this was the first announcement of the 730-mile survey from Fairbanks to Teller.

Plans for the railway proposed construction of a large port at Teller for trans-shipment of goods across the strait to an extension of the Trans-Siberian Railway.

Eskimos Revealed As Ideal Parents

By Science Service.

WASHINGTON, June 4.—Eskimos do a better job of bringing up their children than most Americans, according to Dr. Margaret Lantis, an anthropologist who was recently awarded a fellowship by the Arctic Institute, Montreal, Canada.

Dr. Lantis, who spent a year with the isolated Eskimos of Nunivak Island, of the coast of Alaska 400 miles north of the Aleutians, reports the Eskimos give a great deal of affection to their children.

"Physical punishment in their education is almost completely unknown, and as a result the average individual among them is better adjusted and more balanced than among us," Dr. Lantis declared.

Some Plants Grow Faster in Arctic

Some plants, such as cabbages, grow faster and bigger in parts of the Arctic than they do in the temperate zone or the tropics, according to the Encyclopædia Britannica. A possible explanation is that the daylight is continuous during the Arctic summer, providing more growing time; at Fort Yukon, Alaska, on a day that varies from 65 to 95 degrees Fahrenheit there would be as much growing time as in two ordinary days in the tropics.

Army Plans Air Games in Arctic As Navy and Canada Test Arms

WASHINGTON, March 6—The United States Army Air Forces, which is cooperating, by request, with the Canadian Army in the "Exercise Muskox," is keenly interested in extending its own knowledge about Arctic operations, and plans expansion of tactical research in Alaska during the coming year, it was learned tonight.

The Air Force's interest in cold weather operations dates back a number of years before the war. In 1935 it carried out experiments at Concord, Mass., and elsewhere in the United States and, in 1938, built a cold weather experimental station at Ladd Field, Fairbanks, Alaska.

The first actual tests of any consequence at Ladd Field, according to Air Force records, took place during the 1941-42 season.

During the war, however, tactical experiments had to be curtailed because of more pressing requirements and the activities in Alaska were centered mostly on testing of cold weather equipment, sent up from the Wright Field, Ohio, and Elgin Field, Fla., proving grounds.

Now, however, more attention is being paid to the Ladd Field unit, and, it was learned, facilities will be expanded in the Alaska area shortly, with emphasis on tactical—or operating—problems.

Such activities would be under the jurisdiction of the Air Force's

A-3—or organization, training and operations—section, now commanded by Maj. Gen. Pat Partridge.

Air Force concentration on Arctic problems would mean that at least three Allied military arms are interested in the field. The Canadians now are staging their "Exercise Muskox" in the frozen regions of Western Canada. The United States Navy has sent the 45,000-ton super-carrier Midway to the Arctic to test operations under Arctic conditions, and has announced that it would stage a full-scale Arctic maneuver, involving ships of all types, some time next year.

The Air Force has furnished, at request of the Canadian Army, three C-47 cargo carriers to assist in "Exercise Muskox." It also has provided six gliders equipped for cold-weather operations, and has sent twenty-two men, under command of Lieut. Col. Edward G. Butler, to operate this equipment.

The United States personnel, however, are working completely under direction of the Royal Canadian Air Force. It was emphasized that this is wholly a Canadian project and not a joint undertaking.

There also are some four or five Army ground force observers accompanying the expedition. The only other participation of United States personnel is assistance from a small number of ground communications specialists, reportedly not more than twenty-five in number.

Arctic Now Strategic Area

Arctic regions have been pro-

jected into the spotlight as the operating area of current land and sea expeditions that have been undertaken by the United States and Canada.

That these regions are of major importance to the defense of both the United States and Canada was clearly stated by Gen. H. H. Arnold, former Commander in Chief of the United States Army Air Forces, when he declared on Dec. 5 in Washington that the North Pole areas would be the strategic center of the next war.

As pointed out by a Canadian correspondent of The Times of London in discussing "Expedition Muskox," the use of long-range weapons and the increased range of aircraft have changed the strategic shape of the world. In particular the Arctic regions, formerly so difficult of access, have in a sense become the world's aerial crossroads.

This development affects Canada, in view of the vast territories lying beyond the Arctic Circle. Flanked on the east by the Atlantic, on the west by the Pacific, on the south by the great friendly American nation, with an invisible and unguarded frontier between them, and on the north by the Arctic, she has in the past been hedged off from war, though taking part in great wars.

All this is now changed. Yet hitherto, militarily speaking, she has been almost completely ignorant of the possibilities of her North West Territories.

Two Tests Made During War

During the war the Canadian forces carried out two semi-tactical exercises with skeleton brigade groups. "Operation Eskimo" was a test in the conditions of dry cold, in the northern prairies of Saskatchewan. The other, "Operation Polar Bear," was on the contrary carried out in those of wet cold, the heavy snow of the mountains of British Columbia.

Neither of these expeditions penetrated far north, and even "Eskimo" was entirely within the timber-line. Both produced a great deal of valuable information, as did a smaller one known as "Lemming," primarily a test of vehicles.

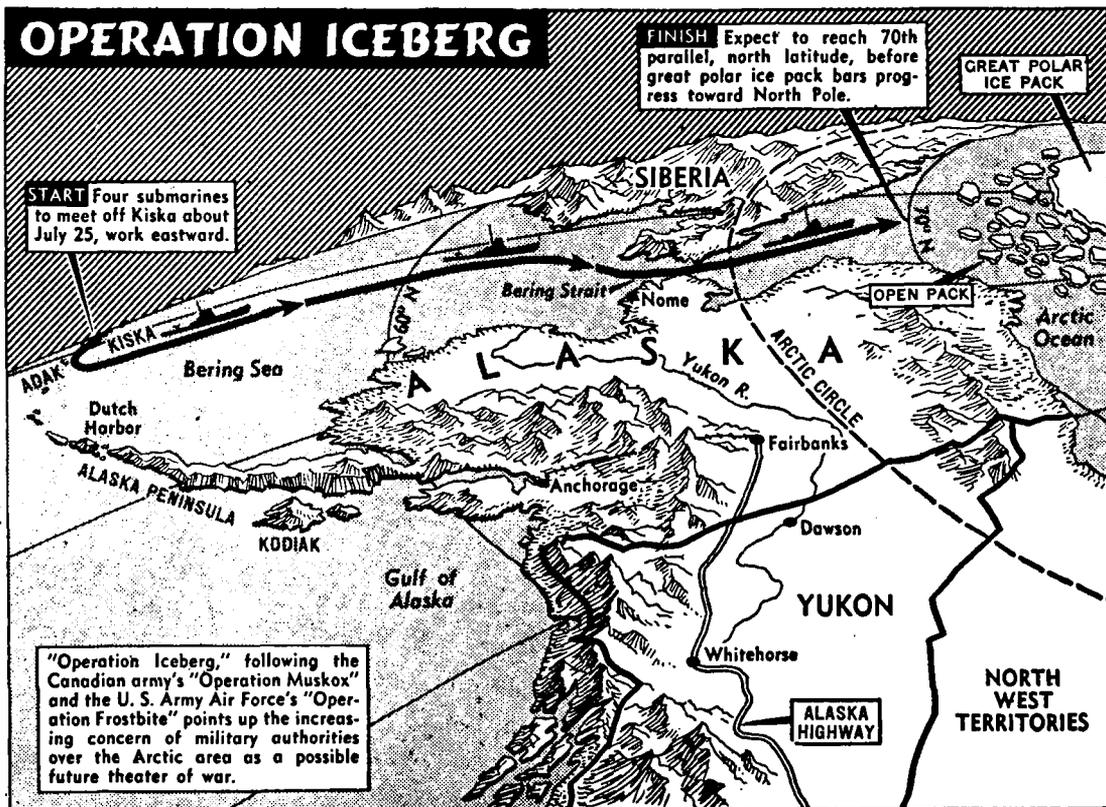
The new operation, "Expedition Muskox," is on a small scale compared with "Eskimo" and "Polar Bear," but it is to go much farther north. The extent of these Arctic lands may be realized from the fact that when the expedition reaches its most northerly point there will still lie between it and the Pole nearly 1,000 miles of big islands.

As an illustration of how little known the country is, it may be said that north of Baker Lake, which lies 150 miles south of the Arctic Circle—and 350 miles farther south than places in Norway where strawberries grow in summer—there is no survey except on the Back River, which the moving force will cross. This river was mapped by Admiral Sir George Back in 1834, and since his time there has been only one recorded journey along its course.

Sick Eskimo Flown 3,000 Miles by RCAF

WINNIPEG, Feb. 6—(B.U.P.)—A Royal Canadian Air Force Norseman plane landed here yesterday to complete a 3,000 mile mercy flight from Cape Dorset, on Baffin Island in the Northwest Territories.

Passengers aboard the aircraft were Pete Pitseulak, head man at the Cape Dorset Eskimo settlement, who is suffering a serious kidney ailment and for whom the flight was staged, and Father Bazin, a missionary priest who is paying his first visit to the "outside" in 17 years.



SUBMARINE TEST PLANNED

'Operation Iceberg' Will Take Place in Arctic Waters

HONOLULU, June 24—"Operation Iceberg," paralleling the Army Air Forces recent "Operate Frostbite" will be staged by the Navy next month as four submarines of the Pacific Fleet invade the polar ice pack, The Honolulu Advertiser said today.

The operation is intended to test American submarines for operations anywhere in Arctic waters. It is scheduled to take place in the ice-packed Chukchi Sea between Siberia and Alaska. It will be commanded by Comdr L. P. Rampage of Honolulu, chief of Submarine Division 52 at Pearl Harbor.

Sub Tries Out Arctic

HONOLULU, June 26.—The U. S. submarine Becuna is probing Arctic ice packs between Siberia and Alaska gathering data for July's Operation Iceberg, in which four underwater craft will explore the hazards of Arctic maneuvers. A Naval spokesman emphasized today that the Becuna's cruise is not an isolated experiment but the first phase of preparations for any eventuality.

Coast Guard Resumes its Peace-Time War on Icebergs

New Coast Guard Cutters Will Employ War Devices, Including Radar and Loran, and Will Be Aided by Aircraft, in Locating Bergs in Sea Routes

By Kenyon Kilbon
New York Herald Tribune

March 2

Early this month two small Coast Guard cutters will reach Argentia, Newfoundland. A base headquarters will be established, near a war-built airfield accommodating a handful of Coast Guard planes, and the International Ice Patrol will resume its peace-time work of guarding North Atlantic traffic from the iceberg menace.

At the beginning of each spring, in war or peace, the glaciers of western Greenland begin to disintegrate where they meet the waters of Davis Strait and Baffin Bay, sending tremendous masses of ice out into the West Greenland current. The ice drifts off, mingling with the sea ice in the narrow waters between Greenland and Baffin Land. Slowly it moves southward into the Labrador Current, which carries it even farther south into the ocean routes traveled by shipping between the great ports of Europe and North America.

From early March until the end of June, the waters off the Grand Banks of Newfoundland may, in some years, be thronged with icebergs, fragments of bergs known as growlers, and pieces of the sea ice too large to melt before they enter the warmer current of the Gulf Stream. It was in April of 1912, during the danger season, when the proud Titanic, on her first voyage, was ripped open by an iceberg and sank with a loss of more than 1,500 lives.

Later that year, the International Conference for the Safety of Life at Sea was convened in London, and steps were taken to organize an ice patrol on an international basis. The United States agreed to supply two ships and to manage the patrolling of the iceberg zone in the shipping lanes during the spring season, and each of the contracting parties, including ten other nations, agreed to bear a share of the cost in proportion to its shipping tonnage.

The United States Revenue Cutter Service, later the Coast Guard, inaugurated the patrol in the spring of 1915. Except for an interruption of two years during World War I, the patrol performed its duties each year up to and through the 1941 season, its last tour of duty prior to its suspension during the recent war. And since the Titanic disaster, not a single ship has been lost as the result of collision with floating ice.

The Ice Patrol technique involves constant surveillance of the shipping lanes off the Grand Banks, with the two vessels alternating in shifts of about fifteen days. The patrolling cutter observes the position of icebergs and

growlers entering the area from the north, broadcasting radio warnings to all ships at regular intervals.

When necessary during seasons when more ice than usual menaces the lanes, traffic is moved farther to the south. When an especially large berg is sighted, the cutter follows it for days, until it has melted enough to be considered harmless. Ships passing through the zone play their part in the patrol by sending reports to the cutter, giving position, speed and water temperatures in their areas.

Suspension of the patrol in late 1941 was a mere technicality, for the Coast Guard continued its work on an even greater scale. Commercial shipping vanished during the war years, and the publicized activity of the International Ice Patrol vanished with it, but the Coast Guard was faced with the massive task of assisting the movement of huge convoys through the danger area, shepherding supply vessels to and from Greenland, establishing shore bases there, fighting Nazi submarines and aircraft, and eliminating weather stations which the enemy attempted persistently to set up along the barren, fjorded Greenland coasts.

The work of the Greenland patrol, into which the duties of the ice patrol were absorbed, is a remarkable story in itself, involving bitter fighting up to within a few hundred miles of the North Pole, farther north than American forces ever before had been engaged. There was heroic rescue work among sailors and aviators in distress in the Greenland area, as well as the establishment of airfields, bases and weather stations in Greenland, and maintenance of the ice patrol duties for the benefit of convoys.

One of the leading Coast Guard figures in the formation and command of the Greenland patrol was Rear Admiral Ed H. Smith, one of the world's foremost authorities on currents and ice conditions in the North Atlantic. An experienced oceanographer who is said to have passed his examination for a doctor of philosophy in oceanography with the highest marks ever given at Harvard University, Admiral Smith served for many years on the International Ice Patrol and took part in several expeditions into the Far North. Today he is district Coast Guard officer for the 3d Naval District and captain of the Port of New York.

In an interview at his headquarters last week, Admiral Smith, who is known in the service as "Iceberg" Smith, commented on the war lessons which will be put into peace-time practice with the re-establishment of the International Ice Patrol.

The cutters Tampa and Modoc, which formed the patrol during the years between the two wars,

have now been retired from iceberg duty and their places will be taken in the reborn service by war-built cutters of the Owasco class. This type has a cruising radius of 14,800 nautical miles at eleven knots speed and carries a complement of fifteen officers and 108 men. Several improvements have been added to the patrol now, including radar, loran and aircraft.

Air reconnaissance gave an enormous advantage to the Coast Guard in its ice patrol work during the war, Admiral Smith said. Several types of aircraft were used, including four-engined Liberators carrying radar. One of these planes, he said, made several patrols off the Grand Banks last year, and in one instance was able to do its work even while a dense fog hid the ocean.

Experimental work in detecting icebergs with radar was done by the cutter Modoc after V-E Day, the admiral said. It was discovered, however, that radar echoes from the water prevented detection of low-lying types of ice, although the higher bergs were tracked without difficulty.

Even with radar, he added, alert lookouts still are necessary. Loran, the electronic navigation aid, will be of considerable assistance because of the heavy fogs which frequently cover the Grand Banks area and prevent determination of position by celestial navigation.

The new ice patrol, like its predecessor, will encounter ice of all sizes and shapes. Admiral Smith's prize iceberg was a gigantic affair 250 feet high when it was first spotted moving down into the northern shipping lane. More than a week passed before it had melted down and broken up into innocuous proportions.

A convoy crossing the Atlantic last year was sent a short distance out of its way to avoid a low-lying block-shaped floe that was 3,500 feet long. Floes of this size are rare, however. Now and then, Admiral Smith said, a mass of ice may drift as far south as the latitude of Bermuda before vanishing, but the maximum southern limit ordinarily is about the latitude of Boston, and relatively few bergs last long enough to reach that line.

In addition to their regular duty of plotting the drift of ice and warning trans-Atlantic shipping, the planes and cutters of the ice patrol will carry on with the miscellaneous related tasks of gathering information for navigators, answering distress calls, providing medical assistance when necessary to vessels without doctors and removing obstructions to navigation.

A Coast Guard cutter of the International Ice Patrol, Admiral Smith agreed, is no place for a man who tends toward seasickness or colds in the head. But, he implied, the Coast Guard has the men, the equipment and the experience to do the important job of guarding post-war shipping from the menace of floating ice—and it will be done more efficiently than ever before.



Some 7,500 sizable icebergs break off western Greenland's glaciers annually, an average of 428 floating south of Latitude 48. Map shows how currents mass them in shipping lanes off Newfoundland

Frozen Assets

One of the Problems in Prospecting Arctic and Antarctic Is to Get Below "Permafrost"

By Alfred C. Lane

Professor Emeritus of Geology, Tufts College and

Herbert B. Nichols

Natural Science Editor of
The Christian Science Monitor

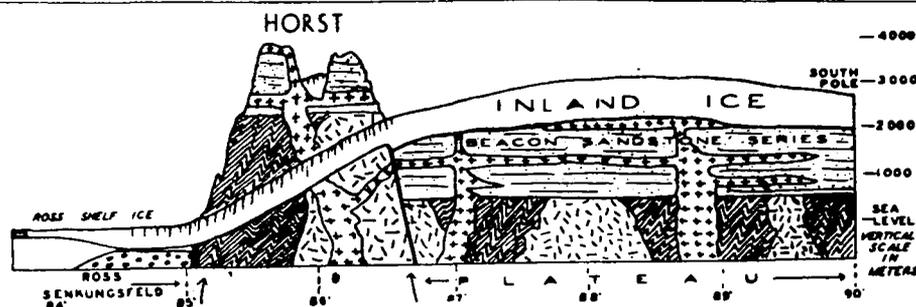
WHEN the Yankee Network built the FM rebroadcast station on Mt. Washington, New Hampshire, the summer of 1941, they drilled through 1,100 feet of rock before they struck water. They capped it, while waiting for pumping equipment, but when the cap was removed no water came. There was a core of ice nearly 300 feet long that had to be thawed out with live steam. To prevent refreezing, the network uses a three-kilowatt heater which barely keeps the water above the freezing point.

In Alaska, Army Engineers wanted to do a bit of oil prospecting and the Army Air Force had several reasons for wanting to establish air bases above the Arctic Circle. This was the shortest air route from our northern borders to the air bases of our ally, Soviet Russia. Obviously the questions that interested the Air Corps and Engineers concerning climate and weather in such out-of-the-way places were legion. But the war was practically over before the Army Air Corps publication, "Climate Atlas for Alaska, Report No. 444," came out. It contains a wealth of information, but the gaps on matters about which nothing is known are numerous.

Now that the United States is no longer at war, support for research into things Arctic will be harder to obtain, but the fact is, here is a field for international co-operation, particularly between Russia, Canada, and the United States, to achieve results of lasting benefit.

Geopoliticians, who draw their maps of the world somewhat differently than most, show us by means of polar projection that the shortest distances between several key cities of the world are over the Arctic. But before these routes can be opened to regular passenger service, a tremendous amount of exploratory research must be conducted. So far, Soviet Russia has led the rest of the world in this work.

In the Antarctic, a vast unknown continent is now divided into sections like the segments of a pie—so big a piece for Father John Bull—so small a piece for Uncle Sam. In conducting research in this vast unknown, it isn't practical to limit the work to such arbitrary international borderlines. What is needed is a working agreement with the other nations in this



Section Across Queen Maud Mountains and Polar Plateau of Antarctica

area. The United States might well purchase the areas owned by others or accept them in part payment of past or present war debts.

You may well ask, why bother with such nebulous assets, actually at the ends of the earth?

There are many reasons. First, we are in an age where research in aeronautics and pioneering in air transport routes is highly desirable. Mankind has taken to the sky to achieve his objectives in a manner even Jules Verne never could have foreseen. It is also an atomic age, where the power locked up in the atom can be turned to peaceful applications still undreamed of.

One of the problems involved in any attempt to prospect Arctic wastes is to get below the ice and below the "permafrost" (permanently frozen ground). Permafrost begins close to the surface in the Arctic and Antarctic, but it is found in temperate regions as well. The surface of the earth may support a thin summer crop of green plants, while underneath there may be hundreds of feet of permanently frozen ground.

Thus it was permafrost that froze the water in the Yankee Network well on Mt. Washington and makes it necessary to use a heater in order to keep it flowing. Permafrost can be encountered and become a serious problem whenever engineers seek to penetrate very far below the earth's surface.

The best available study on permafrost is a military publication prepared by the Geological Survey, United States Department of Interior, for the Military Intelligence Division of the Army. Entitled "Permafrost, or Permanently Frozen Ground and Related Engineering Problems," it is based largely on Russian reports.

In Siberia the ground is permanently frozen for about 600 feet, in Alaska near Point Barrow for some 500 feet, and over much of northern Canada it extends 200 to 300 feet. In the Antarctic, it extends downward at least 600 to 800 feet beneath 3,000 to 4,000 feet of ice, according to reports by L. M. Gould, who has published his findings in several Bulletins of the Geological Society of America. He was geographer and second in command on Byrd's 1928-30 Expedition. The geologic structure shown in his reports is not unfavorable to oil, gas, coal, and other mineral resources.

In fact, it was the possibility of locating gas in the cold regions of the earth that intrigued one of the world's leading gas operators to suggest this whole project for international co-operative research.

Under the ice of Antarctica there is a flat-lying sheet of sandstone not unlike certain Texas strata, broken by faults. There are also highly metamorphic and

folded rocks invaded by granites, more like those of the Canadian shield, from which comes much of Canada's wealth. All this has been amply demonstrated in the reports of Dr. Gould.

Some research has already been accomplished on soil temperatures in the United States by Dr. Charles F. Brooks, director of Blue Hill Meteorological Observatory, and Miss Edith M. Fitton. They find some unusual, but logical, relationships between soil temperatures at varying depths and daily and seasonal changes in air temperature.

In general, there are three sources of energy or heat, capable of affecting the earth's crust. Most important is that which comes from the sun—astronomic. Some is inherent in the earth itself, comes from below, from a once hot globe still cooling off. The third and least important is atomic, from the constant breakdown of radio-active elements. According to Prof. John S. Joly, if there was as much radio-active material in the earth's core as there is near the surface, the earth would not be cooling; it would be heating up. We would be living on the outside of an atomic energy machine which might blow up one of these days.

There is an annual change, too, reflected in soil changes at greater depths. Generally speaking, the heat wave which reflects temperature conditions in the atmosphere over a period of one year is limited to the upper 10 feet of the earth's crust. Waves of longer duration extending back into geologic history, for example, would be effective even deeper. Roughly expressed, any place in the world where the average annual temperature near the surface is below freezing, one can find 30 feet of frozen ground for each degree.

Thus on Mt. Washington, where the mean annual temperature is only 27 degrees, you would expect to find around 150 feet of permafrost. But Mt. Washington is not a flat plain, and long before you reach the 150-foot level you have come across that portion of the earth's crust where the residual effect of past periods of glaciation (during the Pleistocene Period) becomes apparent. It now becomes necessary to take into account the effect of waves that are part of earth's geologic history.

Throughout the world, engineers dig mines and sink wells deep into the earth's interior. At any of these places researchers should be able to gather data highly valuable to the future of permafrost studies. It is a chance for international co-operation, and the more such opportunities we can find to get together with our terrestrial neighbors, the fewer opportunities there will be for misunderstandings and conflict.

As the Navy's Cold-Weather Task Force Experimented in the Sub-Arctic



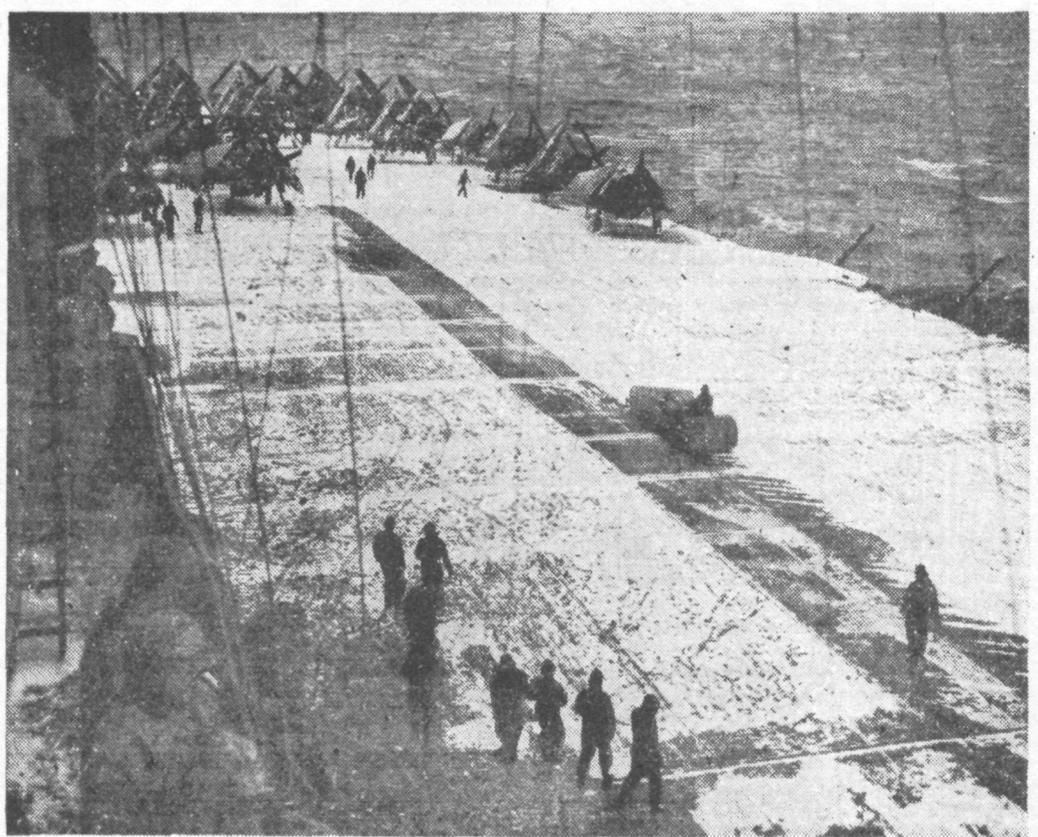
Rear Admiral John H. Cassady, commander of the task force, stands on the bridge above the snow-covered flight deck of the carrier Midway during recent naval experiments off Greenland



Lieutenant Warren F. Paris, whose plane went down off the bow of the Midway due to a faulty catapult, is shown being returned to the carrier via a new life-saving basket, which the Navy has been testing



Crewmen wore garments of rubberized nylon over other clothing, with rubberized feet in sheepskin-lined flight boots.



Strong winds sweep the deck of the Midway in the Labrador Sea as crew men, clad in experimental clothing, use a mechanical combination snow plow and broom to clear the flight surface of snow and ice