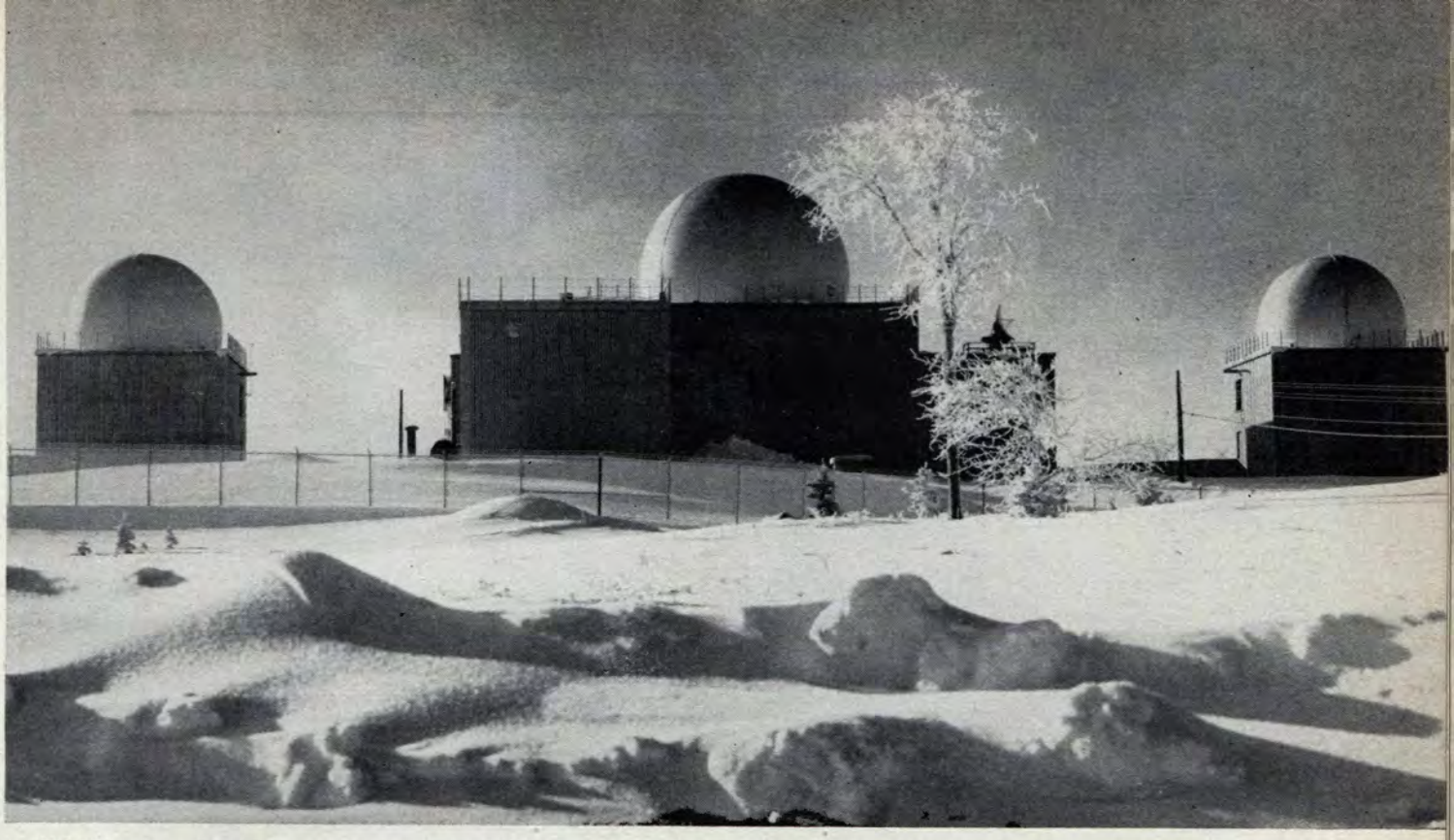

An RCAF radar station looms in a winter wilderness—one link in the electronic fence guarding our northern flank.

How we're building the world's biggest

BURGLAR ALARM

By Charles Corddry

Mr. Corddry lives near Washington, has covered aviation news on the Pentagon beat for seven of the fifteen years he's been with United Press.

ROUGHLY 1,500 miles north of the US-Canadian border, in a frigid snow-swept wilderness that even most Eskimos shun, the United States is building an electronic fence against transpolar bomber attack.

Sometime in 1958, small bands of trained civilian operators and a sprinkling of AF officers are scheduled to take up posts at dozens of stations along a 3,000-mile arc that will close the last major gap in the North American radar warning system.

The Distant Early Warning, or DEW, Line then will be fully operational—eight years, to be sure, after it began to be needed.

Work began on the mammoth construction project early in 1955, when siting and construction teams made their first forays into desolate Arctic reaches, battling snow, high winds, poor visibility, and temperatures down to fifty below.

But only this spring have persons outside the military and construction forces been admitted to the frigid wastelands for a first-hand look. Thirty-one US and Canadian newsmen toured the length of the line, in fair weather and foul, across mountains and tundra, in airplanes and snowmobiles. Within rather strict security limits, you could gather some details on construction progress and on the line's military utility and limitations.

The combination of rotating and non-rotating, or gap-filler, radar outposts stretches from Cape Lisburne, Alaska, within electronic eyesight of Russian territory, to Baffin Island's fjord-marked east coast, generally along the sixty-ninth and seventieth parallels.

As planned, the radar fence will cost at least $400 million to build, entirely financed by the United States under a November 1954 agreement with Canada. Demands for expensive modification and improvement of the warning system soon after it is completed can be forecast with reasonable certainty. Its equipment was designed more than a year ago to detect the types of jet bombers that Russia has today in growing numbers. By the time it is operational, in "approximately two years" by Air Force estimates, military men will be earnestly seeking means of dealing with much higher flying, supersonic bombers and ultimately the intercontinental ballistic missile.

The DEW line was made possible chiefly by two scientific breakthroughs. In 1952 these caused military men to begin to revise earlier pessimistic estimates of the manpower and money requiremnts and near futility of vast radar warning projects. One was the development, at Massachusetts Institute of Technology's Air Force-sponsored Lincoln Labora-

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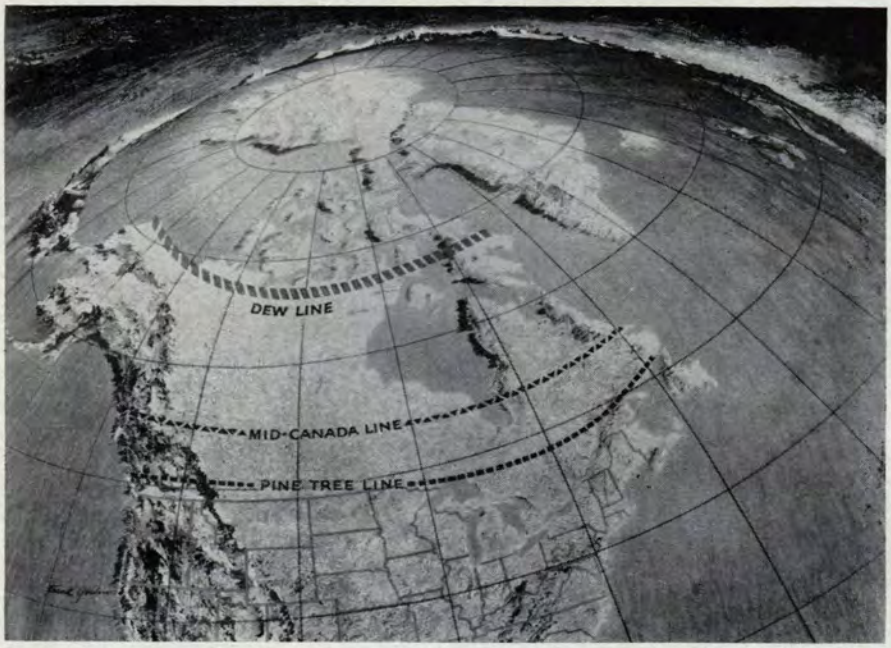

With completion of the DEW line in 1958, three radar lines will guard the US.

Construction workers drill holes for a foundation on a Baffin Island site.

A bulldozer and scraper fight rough terrain at one of the DEW line sites.

tory, of automatic alarm circuits that enable radar to give an audible alarm when a target is picked up. This meant that far fewer men would be needed to man the installations. The second breakthrough was in communications. Reliable long-range communication was assured, free of northern atmospheric interruptions, through use of VHF ionospheric and UHF tropospheric scatter propagation.

The question persistently arose, while traveling along the DEW line and visiting stations in varying degrees of completion, whether this "wonder of the world" would become in the public mind a new Maginot Line, giving a much overdrawn sense of protection. One heard the project likened to the 1,500-mile Great Wall of China, built more than 200 years B.C. to keep out northern barbarians and not always successful.

As Brig. Gen. Dale O. Smith has pointed out in discussing air defense in his book *U.S. Military Doctrine*, "It is technically feasible from the scientific standpoint . . . to kill all flies with a fly swatter; it is not tactically possible to do so." Nor are the American and Canadian air forces under any illusions that the DEW line is an impregnable defense.

Some of the pertinent facts, pro and con, which apply to the line are these:

1. There probably will be fifty to sixty, possibly more, stations of all types providing good overlapping coverage by the rotating radars and coverage of the blind spots between, down perhaps to 1,500-foot altitude, by the gap fillers. The great, plastic radomes are set atop high towers on highest terrain for maximum visibility.

2. DEW line radar, like any other, is limited to line-of-sight, can be jammed and, of course, cannot predict where a bomber is going after it is out of the radar's tracking range. Jamming, as Maj. Gen. James E. Briggs, USAF Assistant Deputy Chief of Staff for Operations, points out, is in itself a pretty good warning. All the anti-jamming devices possible are being installed, providing only that there is no delay in construction.

3. The line should provide three to

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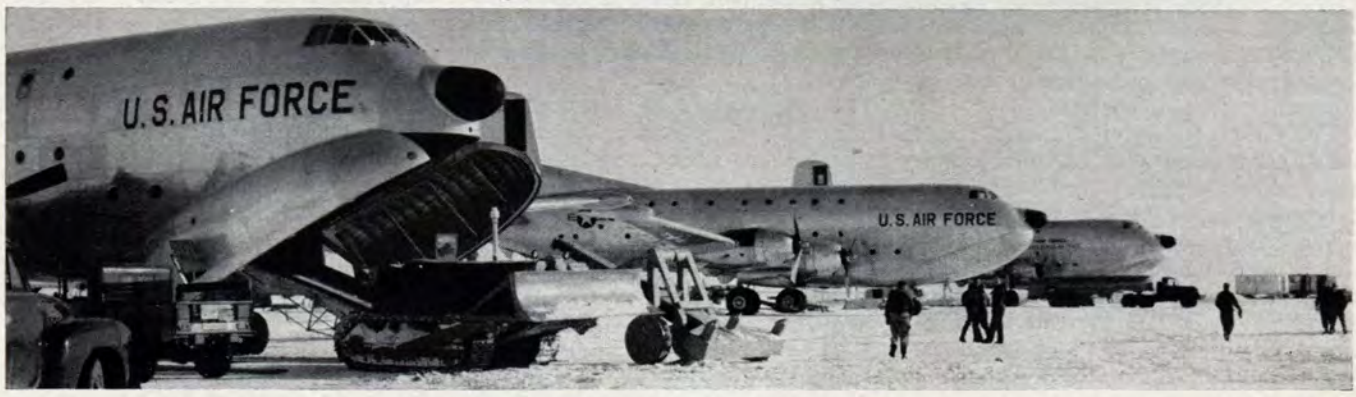
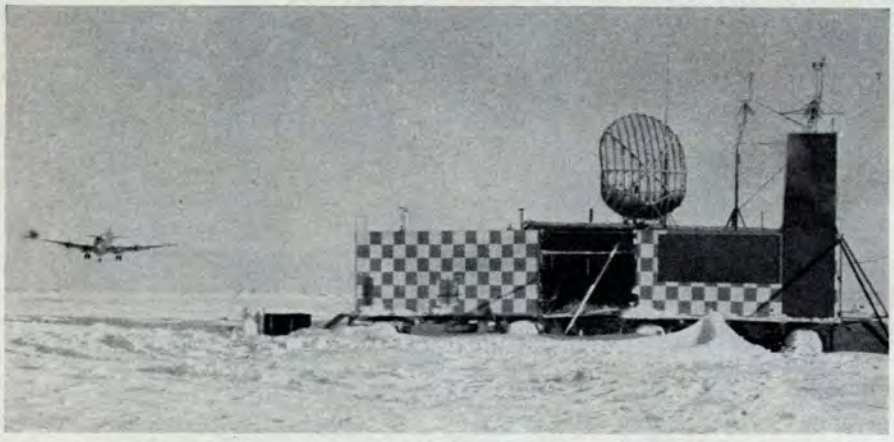


Air Force C-124 transports unload heavy construction equipment for the DEW line at Churchill Airport on Hudson Bay.



A C-124 carrying equipment for the DEW line lands on a snow-covered strip.

six hours' warning of approaching attack and thus give the Strategic Air Command a running start on retaliatory missions. By enabling civil defense agencies to get into action, the line "may save millions of lives," according to the Air Force. Data collected and sifted on the DEW line will be transmitted in a matter of minutes to Alaskan and Northeast Command defenses, US and Canadian Air Defense Commands and installations, and SAC.

4. After penetrating the DEW line, enemy bombers could be "lost" to defenders for an hour and a half or more before they are spotted crossing the Mid-Canada Line, which Canada is building along the fifty-fifth parallel. Present limitations of aircraft range may serve to forestall elaborate zigzag courses, but they must be reckoned with to some extent.

5. The DEW line, as General Briggs points out, is a warning line, not a combat line. But it is a series of Arctic outposts easily expanded if it is later determined to station or service jet fighters or interceptor missiles like the long-range Bomarc there. There are runways—both gravel and ice—hangars, maintenance and repair shops, and limited but improving navigation aids.

No one could say that the United States and Canadian governments moved with overwhelming haste in reaching agreement to build the DEW line, although construction apparently has moved as rapidly as humanly possible since the fundamental decision was taken. There were many considerations involved in the decision; but if expense was one of them, the nation has eventually wound up spending the money anyway.

General Twining, the AF Chief of Staff, said a few weeks ago that "the first nuclear explosion in Russia was a punctuation mark—signalling the end of an era of American safety by isolation." The explosion came in the late summer of 1949 and during the next year the Soviet threat became undeniable so far as airmen and many high civilian officials were concerned. In the protracted military, budgetary, and diplomatic talks that followed, it was finally decided that a radar line in the high Arctic was an urgent new defense need to provide much earlier warning than was then possible.

The Russians had some time to go before their first thermonuclear explosion. But they were stockpiling atomic bombs, had several hundred reciprocating engines, long-range bombers, and were at work on both turboprops and jets. The war came in Korea and no one knew where the Communists might strike next.

In these circumstances was born the first emphatic contradiction of the notion that there is "no defense against the A-bomb," although airmen beat off any contradiction of the real meaning of that notion; namely, that nothing must hamper the build-up of the strategic air force.

The Air Force set up Project Charles and then Project Lincoln and by late 1952 scientists associated with those projects were convinced that a distant early warning system not only was urgently required but entirely feasible. Some of the more optimistic held that such an Arctic line could be in place by 1955.

The government decided, however, to test the DEW concept and some of the "wholly new" equipment involved near Barter Island, Alaska, during 1953. Meanwhile it was agreed with Canada in October 1953 that a Mid-Canada Line was needed, under a policy of pushing the radar defenses outward from prime target areas. Later that year Canada informed the United States that it would proceed with construction of that line, while the United States undertook to extend the warning system by both air and ship on the continent's seaward flanks.

Another year went by before agreement was reached to build the DEW line, the Western Electric Company receiving its contract as prime contractor in December 1954 and getting the first construction sites open, almost miraculously, barely two months later.

Former Canadian Defense Minister Brooke Claxton, who expressed some grave reservations about the immediate seriousness of the Red transpolar threat and early need for a DEW line

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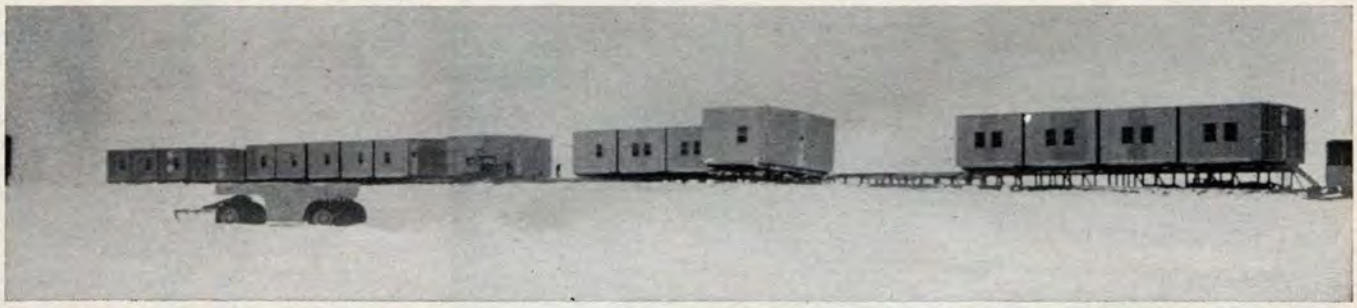
Neither Canada nor the US has acceded to the idea, apparently held fondly by a few scientists, that some sort of almost completely impenetrable air defense could be set up, and should be, even at the expense of diminished emphasis on SAC. Be that as it may, these three scientists have made major contributions to air defense, including the DEW line. And their dedicated persistence is largely responsible for getting a far more effective air defense system built. For this, the whole country is indebted to them, as it is to the entire scientific community for many other things in this age of technological peril. They are, from left: Lloyd Berkner, president, Associated Universities, Inc.; Dr. Albert G. Hill, former director of MIT's Lincoln Laboratory; and Dr. George E. Valley, Jr., associate director of Lincoln Laboratory.



DEW line's basic unit of construction is the module, a building 28 x 16 x 10 feet. Here one is unloaded from a sled.

in private conversations in the summer of 1953, expressed himself this way in a May 1954, statement to Commons:

"The ability of the US to deliver the A- and H-bombs becomes a matter of the most urgent and primary importance in the preservation of peace. That ability must be protected. This consideration brings into focus and gives new emphasis to the whole question of 'continental defense.'"

The DEW line, which conceivably may be manned by as few as 1,200 civilians trained by Federal Electric Corp., an I T & T subsidiary, consists of three types of radar stations:

- "Main" and "Auxiliary" stations both feature rotating radar and differ only in the fact that "Main" stations are equipped for logistic support roles and will be manned by about twice the personnel of an "Auxiliary."
- "Intermediate" stations are the gap fillers, featuring an electronic fence to fill the blind spots between the other two types of station.
- At selected stations, usually "Main" ones, a half dozen or so USAF and RCAF officers will be posted to evaluate data filtered in from across the line and to see that it reaches the high echelons where decisions to commit defense forces must be made.

Newsmen visited each type of station—a gap filler on Baffin Island accessible only by air, an auxiliary in the Gulf of Boothia area northwest of Hudson Bay, and a main site on Victoria Island. They saw, too, the great supply and construction center at Point Barrow where the DEW line prefabs are assembled and moved by sled train to Alaskan sites.

From the tour it was possible to gain some appreciation of the almost incredible difficulties encountered in siting, building, and supplying a 3,000-mile-long line isolated from civilization and holding no necessary building resources except gravel. Everything else, down to the meanest necessities of life, has to be brought in by air and, during the brief two

A module is towed to storage area to await transportation to the DEW line.

While work goes on inside, four modules get heat at the prefab plant.

summer months of relatively open water, by sea.

Without the airplane—the hundreds of commercial and US Eighteenth Air Force transports—this defense against the airplane could not have been built.

In the beginning, siting teams went in by ski-plane and opened camps where nothing much but the bark of the white fox and howl of the wolf was known before. The first men in—there now are more than 4,000 of many nationalities working on the line—cleared air strips, sometimes with the invaluable help of seven-ton tractors dropped by parachute. The air strips usually were carved out on lakes frozen to depths of five to six feet. On these strips, Douglas C-124 Globemasters weighing 168,000 pounds touched down and poured through their clamshell doors the twenty-ton tractors and other heavy equipment with which work could be started in earnest.

Gradually, the construction camps of insulated quonset huts, warehouses fashioned from packing crates, and plastic work tents draped over steel pipe took shape. Roads were hacked out of snow and rock to nearby heights and the permanent buildings began to arise. At one site, newsmen travelled up a five-mile road that wound steeply from the construction camp to the permanent site 1,600 feet

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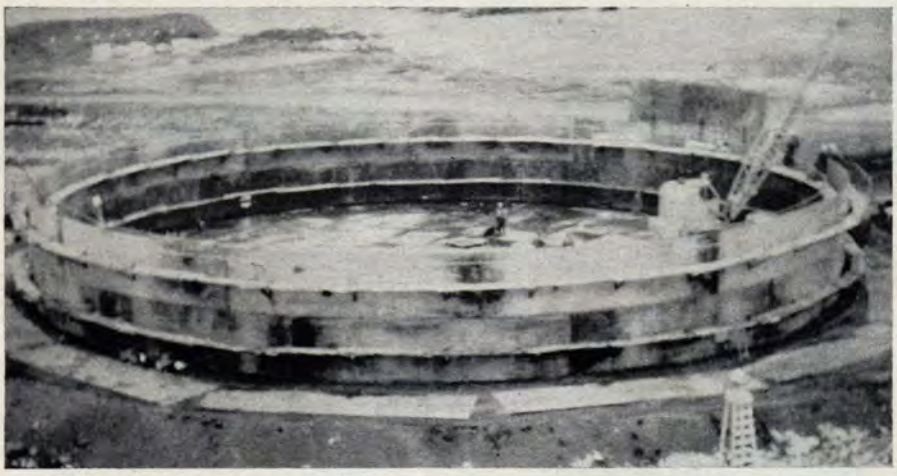
January at a distant early warning (DEW) line site. This is a typical scene of the harsh Arctic weather that the men working on the line have to endure.



Petroleum tank under construction at a DEW line site near the Arctic Circle.

above sea level. It took six months to build the road, and a ceaseless effort to keep it clear.

The basic unit of construction is the module, a building twenty-eight feet wide, sixteen feet long, and ten feet high, made of prefabricated panels. Any number of modules can be joined together in a "train" depending on the size of the site. A "Main" station comprises two 400-foot "trains" joined by an overhead bridge, an "Auxiliary" has one 400-footer, and a gap filler makes out with about a half dozen modules.

The module trains are oriented with the prevailing winds to minimize snowdrifts and are mounted on stilts or gravel pads so their heat will not thaw the permafrost beneath, causing them to settle.

Inside the trains, there are grouped the living quarters, mess, recreation and storage areas, electronic equipment rooms and power plant, heating and water storage areas. Every care has been taken to make life as pleasant as possible for the permanent parties who will man the stations in the desolate northern wastes. Facilities are provided for husband and wife teams, if it should be decided to employ them. There are libraries, small PXs, ham radio operations areas, stainless steel kitchens with electric ranges and automatic dishwashers, and private offices for the site chiefs. All surfaces are covered with fire-retardant paint, and sprinkler systems are built in, for fire is a mighty hazard in the Arctic.

On many of the sites, steel towers now are rising to be topped with the great, mushroom-like radomes which are expected to spot any transpolar attack. Soon Western Electric will begin to install the radar itself and during the long period of testing and instrumentation Federal Electric will begin to bring in for orientation the civilian crews who will man the DEW line.

Part and parcel of this "biggest Arctic operation of all time," as General Briggs calls it, is a transportation effort of immense scope, undertaken by the American and Canadian air forces, navies, armies, and commercial carriers.

When one sees the Arctic slope of Alaska, the vast, snow- and ice-covered flatlands of northern Canada, and the treacherous mountains of Baffinland, transportation statistics cease being dull and take on meaning.

Last year an estimated 181,200 weight tons (Navy figures often are given in measurement tons) moved to DEW line sites over long land, sea, and air supply routes. Of the total, 42,000 tons, or better than twenty-three percent, were airlifted by the USAF and Canadian carriers. The Eighteenth Air Force accounted for 18,000 tons itself, using Fairchild C-119 Flying Boxcars and Douglas C-124 Globemasters.

The US Navy, with a big assist at the eastern end of the line from the Canadian Navy, moved 120,000 tons into the Foxe Basin on the east and around the top of Alaska through the Beaufort Sea on the west. The remainder moved by barge, truck, and caterpillar tractor-drawn sled train, from Seattle to Fairbanks, thence over the mountains by air, down the Mackenzie River and over the snow.

"We didn't tell the pilots and airmen it was impossible so they went ahead and did it," says Maj. Gen. Chester E. McCarty, Eighteenth AF commander. Capt. R. F. Pryce of the Military Sea Transportation Service puts it this way: "The Russians must have been shocked, knowing how little we knew about the Arctic, to see 126 ships go up there and bust the Arctic wide open."

Responsibility for the construction project, which is known simply as Project 572 in official jargon, is vested in the Air Materiel Command, which took over from Air Research and Development Command in March 1955, as actual building got under way.

The Project Office, with representatives from various commands, operates side-by-side with Western Electric Co., the prime contractor, in New York. Western Electric's chief subcontractors are Puget Sound and Drake of Seattle in the Alaska sector, Northern Construction Company of Vancouver in the western Canada sector, and Foundation Company of Montreal in the eastern sector.

To newsmen surveying the immense project, Robert B. Alexander, Western Electric assistant project manager for operations, planning, and training, summed it up: "Nobody said it was going to be easy."—END

Two Eskimos travel by Air Force C-119 to a work site. Last year twenty-three percent of the supplies for the DEW line were airlifted to the sites.