THE DEW LINE STORY

for Mr. G. O. Ekstedt

Western Electric Company

Western Electric Company
INCORPORATED
DEFENSE PROJECTS DIVISION
220 CHURCH STREET, NEW YORK 13, N. Y.
WORTH 4-5400

E. BURKE
VICE-PRESIDENT

May 1, 1958

Mr. G. O. Ekstedt
3806A Botanical
St. Louis 10, Missouri

Dear Mr. Ekstedt:

The DEW Line story told on the following pages is a story you helped write as a member of the Bell System team responsible for the planning and construction of this history-making project. It is a pleasure to present this booklet to you in recognition of the hard work and dedication to the job that enabled us to complete the project in the very short time of 32 months.

As you know, the system was finished on schedule and turned over to the Air Force on July 31, 1957. Two weeks later, on August 13, Mr. H. D. Lohman and I had the privilege of representing you at a ceremony at Point Barrow, Alaska, which formally commissioned the system for operation. The high spot of that ceremony was the presentation of a certificate, prepared by the Air Force and signed by its Secretary, which commended Western Electric and its employees in glowing terms for the job we did on the DEW Line. One of my most satisfying duties in connection with our defense work was to accept the commendation in your behalf. I wish that all who had a part in this work could have been present to hear the words of praise we received.

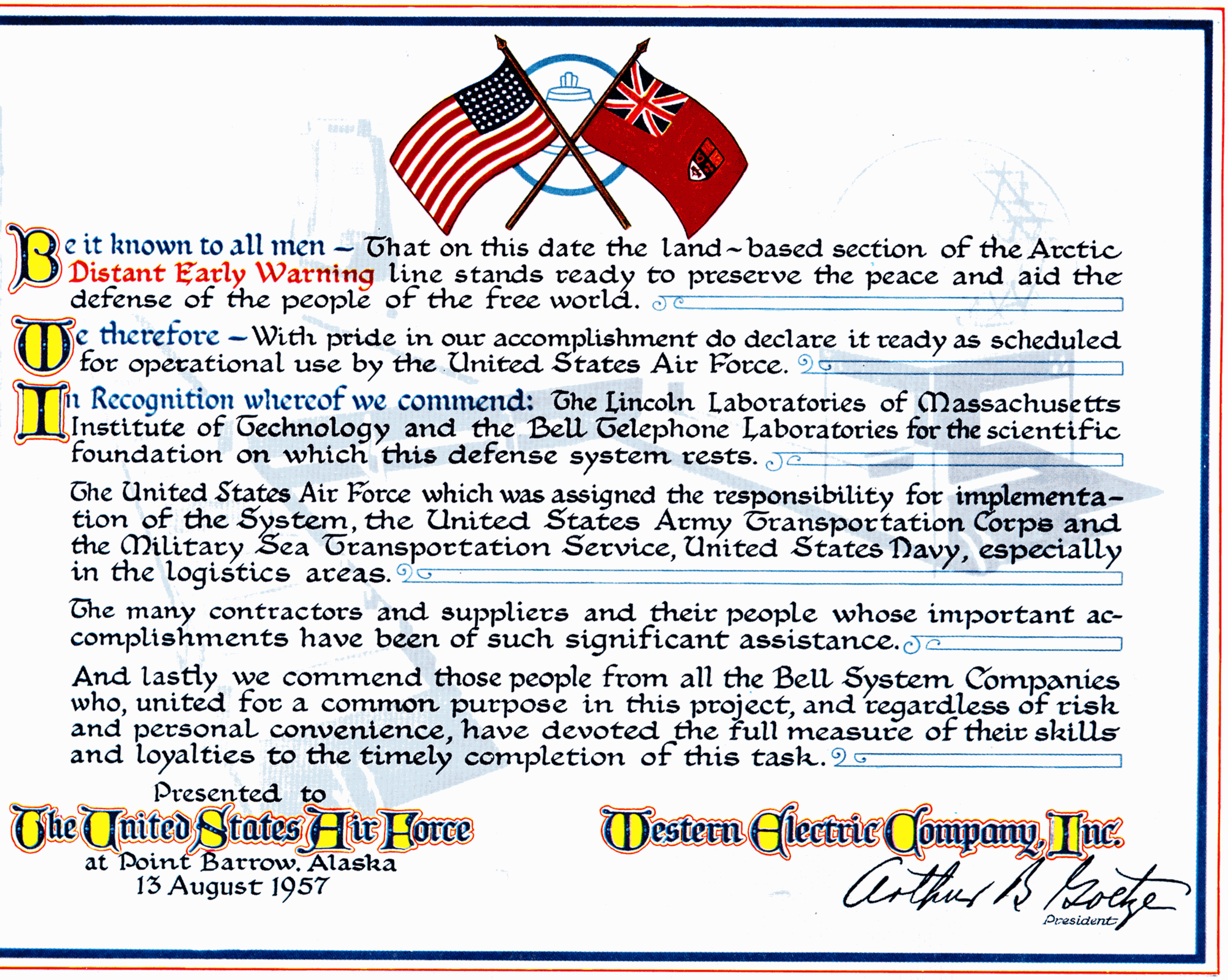
After taking a tour of the DEW Line, a prominent editor wrote: "Nowhere has man undertaken so difficult a construction job." Only those who have been intimately associated with the project can know the full extent of the difficulties our people overcame, the hardships they endured and the intense effort they applied to build these electronic outposts in the unexplored Arctic. May I add my own words of thanks and praise to all who had a part in it. It was a grand job by a fine team, and it has been a pleasure to work with you.

Included in the following pages is a copy of the certificate of appreciation presented to us by the Air Force, a certificate we presented to the Air Force commemorating completion of the project, some photographs of typical sites and scenes and descriptive material. I hope you will enjoy having this material to add to your personal recollections of an unusual and rewarding experience.

Yours sincerely,

W. E. Burke

W. E. BURKE
Vice President



Be it known to all men – That on this date the land-based section of the Arctic Distant Early Warning line stands ready to preserve the peace and aid the defense of the people of the free world.

We therefore – With pride in our accomplishment do declare it ready as scheduled for operational use by the United States Air Force.

In Recognition whereof we commend: The Lincoln Laboratories of Massachusetts Institute of Technology and the Bell Telephone Laboratories for the scientific foundation on which this defense system rests.

The United States Air Force which was assigned the responsibility for implementation of the System, the United States Army Transportation Corps and the Military Sea Transportation Service, United States Navy, especially in the logistics areas.

The many contractors and suppliers and their people whose important accomplishments have been of such significant assistance.

And lastly we commend those people from all the Bell System Companies who, united for a common purpose in this project, and regardless of risk and personal convenience, have devoted the full measure of their skills and loyalties to the timely completion of this task.

Presented to
The United States Air Force
at Point Barrow, Alaska
13 August 1957

Western Electric Company, Inc.
Arthur A. Roetge
President

Certificate commemorating completion of the DEW Line presented to the Air Force by Western Electric. The Line was completed and officially turned over to the Air Force on July 31, 1957, and the ceremony was held at Point Barrow on August 13.

United States Air Force
In Appreciation
to

THE WESTERN ELECTRIC COMPANY

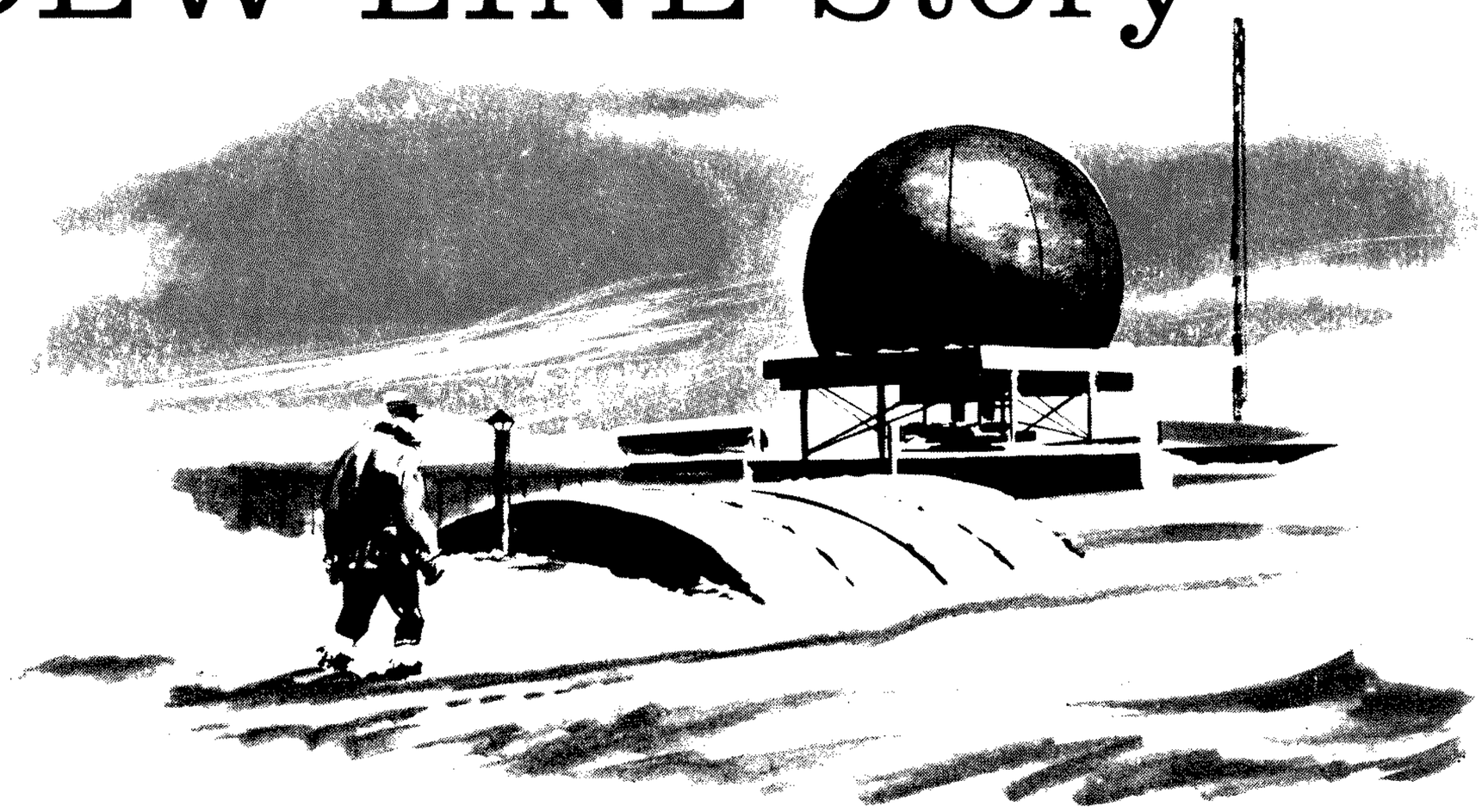
for meritorious service to the United States Air Force from the Fall of 1953 to 31 July 1957 in discharging its total responsibility for the implementation of the land based segment of the Distant Early Warning Line across the frozen Arctic tundra at the northernmost limits of the North American Continent. The energy, enthusiasm, imagination, meticulous planning and efficiency of execution consistently exhibited by the personnel of the Western Electric Company were vital factors in the successful completion of a project of utmost significance to the defense of the North American Continent. The selfless and distinctive contribution of the Western Electric Company has earned it the sincere gratitude of the United States Air Force.

CHIEF OF STAFF

SECRETARY OF THE AIR FORCE

The Merit Award presented to Western Electric by the Air Force, in appreciation of the Company's contribution in the establishment of the DEW Line.

The DEW LINE Story



The DEW Line Story in Brief

The DEW Line—short for Distant Early Warning Line—is an integrated chain of more than 50 radar and communication stations stretching 3,000 miles from the northwest coast of Alaska to the eastern shore of Baffin Island opposite Greenland. It is within the Arctic Circle over its entire length, and for much of the distance crosses country hitherto unexplored.

The purpose of the DEW Line is to provide the United States and Canada with the earliest possible warning of the approach of airborne objects over the polar region. Its advantage—the extra time it gives us to rally our defenses could mean the difference between successful defense and national disaster.

The DEW Line grew out of a detailed study made by a group of the nation's foremost scientists in 1952—the Summer Study Group at the Massachusetts Institute of Technology. The subject of their study was the vulnerability of the U. S. and Canada to air attack, and their recommendation was that a Distant Early Warning Line be built across our Arctic border as rapidly as possible.

Soon afterward, Robert A. Lovett, who was Secretary of Defense, asked Cleo F. Craig, then President of A. T. and T., if the Bell System would undertake the job of building the Line. Mr. Lovett stated that the Department of Defense had selected the Bell System for this undertaking because of its "unique qualifications," and he strongly urged that the assignment be accepted.

The assignment was accepted, and the responsibility for the over-all management of the design and construction of the Line was given to Western Electric. Immediately Western started recruiting a team to do the job from the Bell Telephone Companies, the Long Lines Department of A. T. and T., Bell Laboratories and from Western Electric's own divisions. Before the job was completed, men with the necessary knowledge, skills and experience were drawn from Bell telephone companies in every state in the U. S. Much of the responsibility was delegated under close supervision to a vast number of subcontractors, suppliers, and U. S. military units. It has been estimated that by the time the DEW Line was completed, some 25,000 people had been engaged directly in planning and building it.

The initial contract with the Air Force provided for the design and construction of a small experimental system to determine at the beginning whether the idea was practicable. The designs of communication and radar detection equipment available at the time were

known to be unsuited to the weather and atmospheric conditions encountered in the Arctic.

Prototypes of several stations were designed and built in Alaska and in a rural section of Illinois in 1953. While few of the original designs for either buildings or equipment were retained, the trial installations did prove that the DEW Line was feasible, and furnished a background of information that led to the final improved designs of all facilities and final plans for manpower, transportation and supply.

With the experimental phase completed successfully, the Air Force asked Western Electric to proceed as rapidly as possible with the construction of the entire DEW Line. This was in December 1954, before the route to be followed in the eastern section had even been determined.

A target date for completing the Line and having it in operation was set for July 31, 1957. This provided only two short Arctic summers totaling about six months in which to work under passable conditions. The bulk of the work would have to be completed in the long, dark, cold Arctic winters.

From a standing start in December 1954, many thousands of people with countless skills were recruited, transported to the polar regions, housed, fed, and supplied with tools, machines and materials in order to construct physical facilities—buildings, roads, tanks,

The scenery is breath-taking at this DEW station at the rugged eastern end of the Line.

A pair of Eskimos fish through the ice in the shadow of one station's radar antenna tower.

towers, antennas, airfields and hangars—at some of the most isolated spots in North America.

Siting crews covered the area—first from the air and then on the ground—to locate by scientific means the best sites for the main, auxiliary and intermediate stations. These hardy men lived and worked under the most primitive conditions. They covered vast distances by plane, "snowmobile" and dog sled, working in blinding snowstorms with temperatures so low that ordinary thermometers could not measure them. But they completed their part of the job on schedule and set the stage for the small army of men and machines that followed.

Military and civilian airlifts, huge sealifts during the short summers, cat trains and barges distributed vast cargoes the length of the Line to build the permanent settlements needed at each site. In all, *460,000 tons* of materials were moved from the U. S. and Canada to the Arctic by air, land and water.

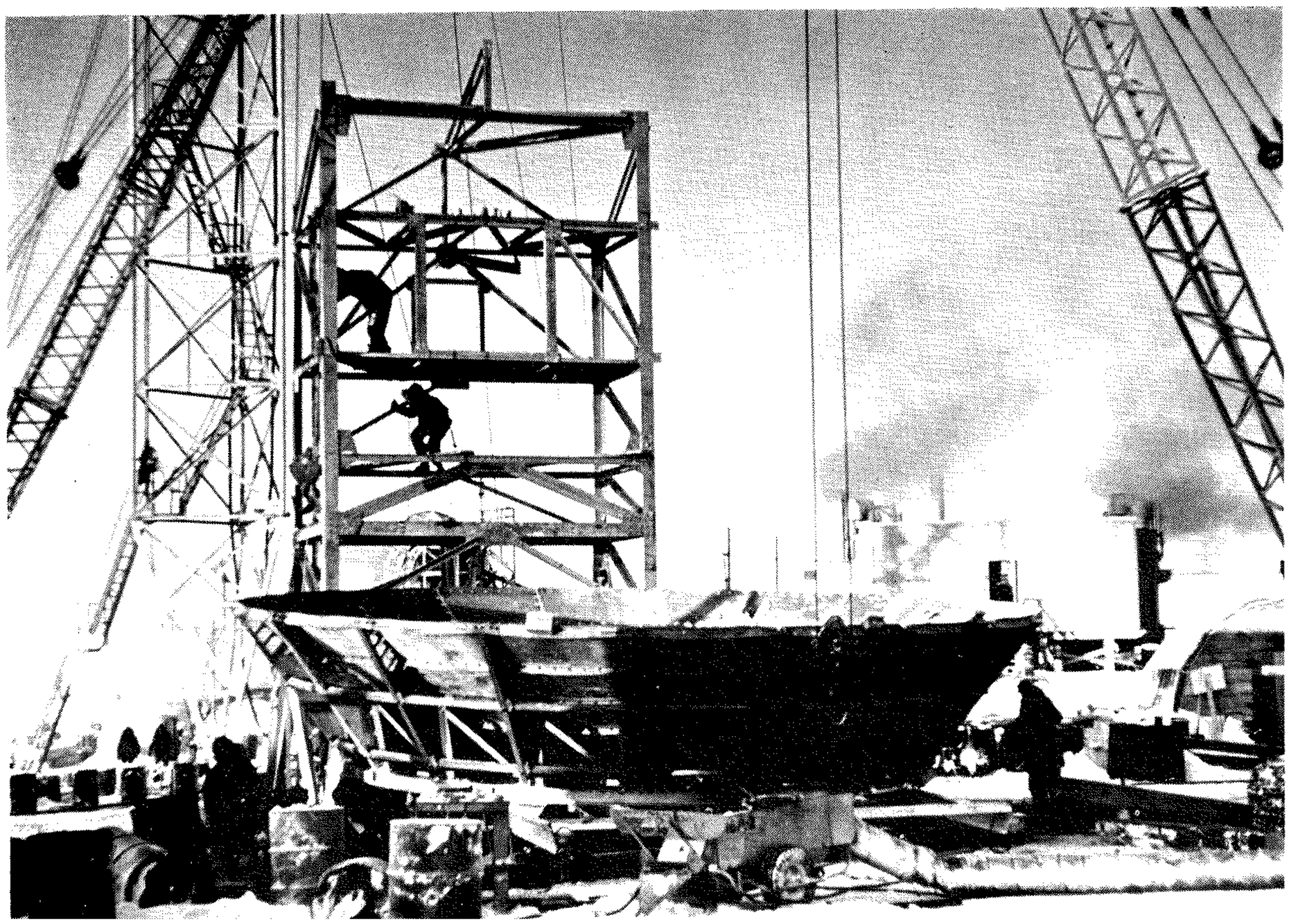
As the stacks of materials at the station sites mounted, construction went ahead rapidly. Subcontractors with a flair for tackling difficult construction projects handled the bulk of this work under Western Electric direction. Prodigious quantities of gravel were produced and moved. Concrete was poured in the middle of the Arctic winters, buildings were constructed, electricity, heat and water provided, huge steel antenna towers were erected,

airstrips and hangars were built. To get an idea of what was accomplished, look at it this way. In transportation and construction effort, building the DEW Line was roughly equivalent to the job of taking 2000 Statues of Liberty dismantled into reasonable sized units, moving them from New York Harbor to dozens of spots inside the Arctic Circle, and putting them together again in darkness, blizzards and sub-zero cold.

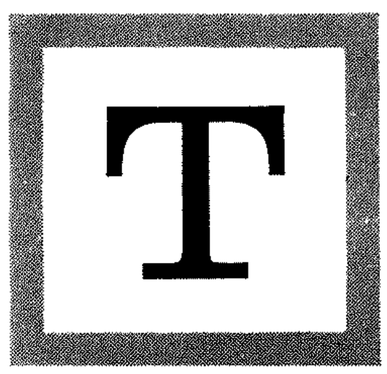
After the building came the installation of radar and communications equipment; then the thorough and time-consuming testing of each unit individually and of the system as an integrated whole—both handled by Western Electric technical people.

Finally all was ready, and on July 31, 1957—just two years and eight months after the decision to build the Distant Early Warning Line was made—Western Electric turned over to the Air Force on schedule a complete, operating radar system across the top of North America, with its own dependable communications network.

Subcontractors experienced in the North did the construction work under Western Electric direction. Here steelwork to support one of the circular "dish" antennas reaches skyward.



Geography



he DEW Line extends east and west at roughly the 69th parallel. On the average, it is about 200 miles north of the Arctic Circle and 1400 miles from the North Pole.

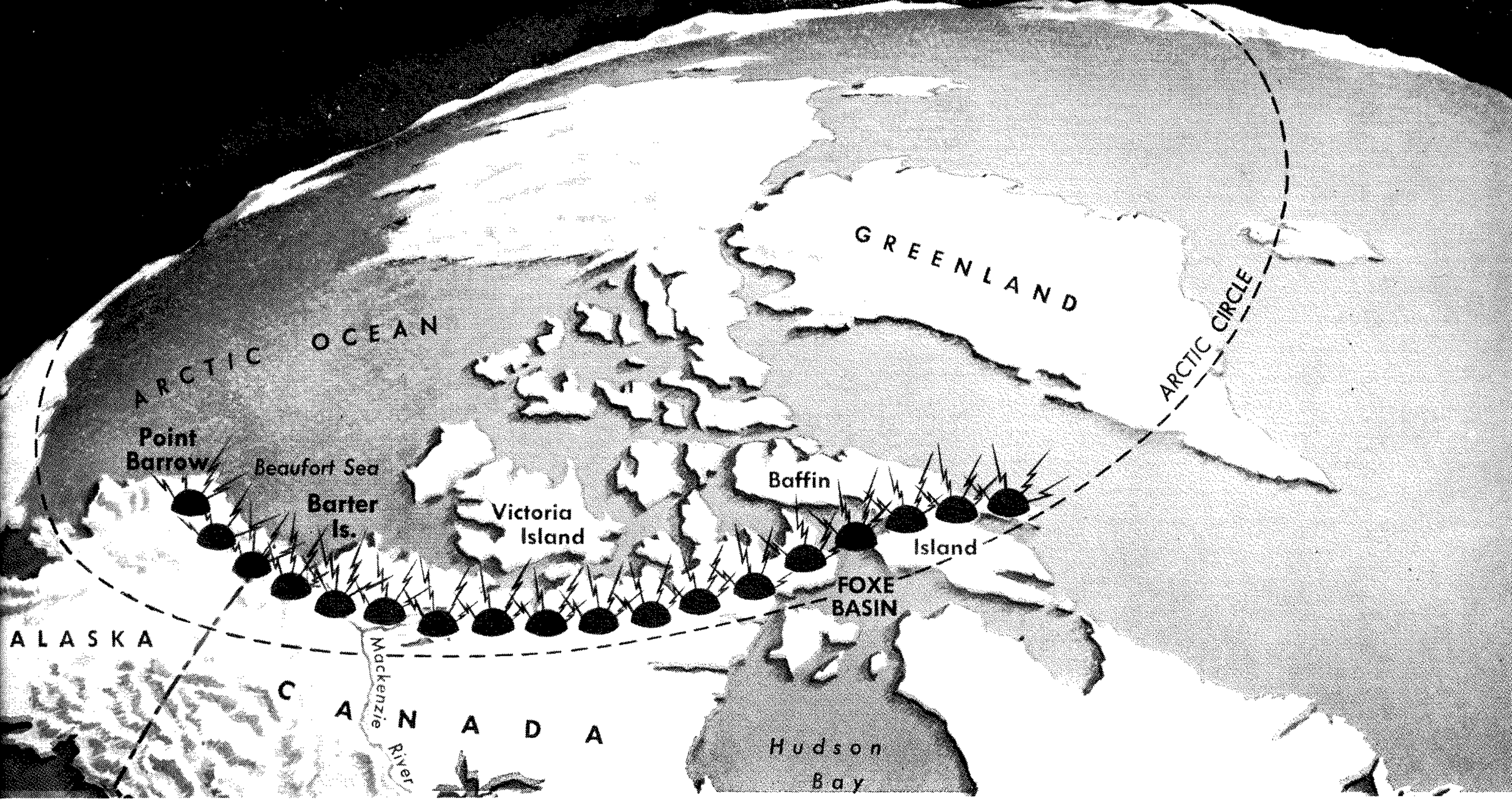
Its western end is anchored on the northern coast of Alaska. With only a handful of widely-separated towns (Point Barrow, the largest, has a normal population of about 1000 Eskimos), it is a remote and desolate section. But in comparison with the area along the DEW Line to the east, it is densely populated and highly developed. Once you leave the Mackenzie River and head east, you find only an occasional Royal Canadian Mounted Police post and Hudson's Bay store, plus a few settlements of migrant Eskimos. For all practical purposes, the 2000 miles between the Mackenzie and Baffin Island are uninhabited.

In Alaska and western Canada, the Line crosses flat, treeless tundra along the shores of the Arctic Ocean. It is soggy muskeg during the short warm period; then for nine months of the year it lies covered with so much ice and snow that it's hard to tell where the land ends and the sea begins. It makes little difference, anyway, for the thick sea ice is practically as solid and substantial as the earth itself.

As you follow the DEW Line across Canada, the farther east you go the more forbidding the country becomes. It starts out being rugged and treacherous and ends up on the east coast of Baffin Island, a nightmare of precipitous mountains and rocky gorges.

The area along the DEW Line may be desolate, but it is steeped in the history of Arctic exploration. Some station sites had never been seen from the ground by white men before the siting crews arrived. But at other locations our siting engineers had for company the spirits of some of history's greatest explorers. One site is within walking distance of the spot where Sir John Franklin perished in 1847 during his ill-fated expedition to find the Northwest Passage; another looks down on the remains of a ship abandoned by Roald Amundsen in the early 1900's. And more recently, it was near Point Barrow that Wiley Post and Will Rogers died in an airplane crash in 1935.

The seasons along the DEW Line are the same as we know them in the States, but quite different in length. By New York or Chicago standards, winter along the DEW Line would last from October through May. Spring would be June and July, autumn would be August and September, and there would be little or no summer. For three months of the year—December through February—the sun is never seen. The only difference between day and night is a glow of light that appears in the south at noon, and soon

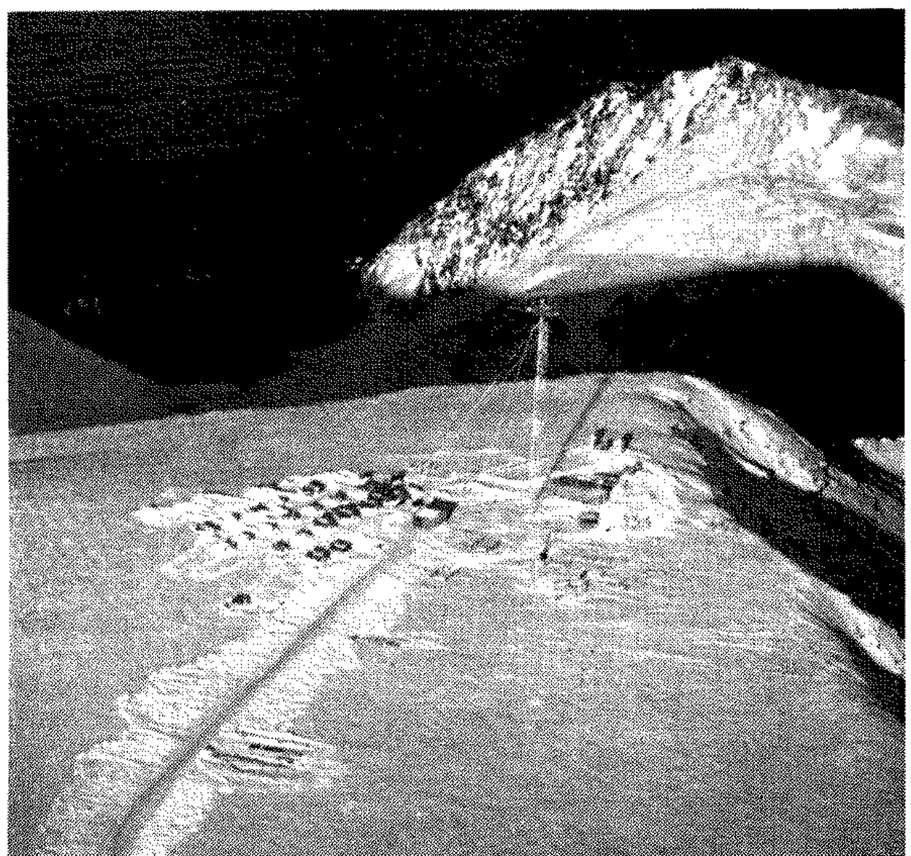


disappears. On the other hand, in June and July you don't need 20/20 vision to read a newspaper outdoors at midnight.

In the winter most stateside thermometers would be useless—they don't go low enough. Temperatures usually range between 40° and 50° below zero, but 60° and 65° below are not uncommon. The record low recorded at one site was a frigid 86° below zero. In summer the mercury rises to the 60° level, but seldom higher.

But it isn't only the cold and never-ending darkness that make winter on the DEW Line such a cruel, uncompromising foe. Combine these with howling 100-mile-an-hour winds and snow constantly on the move in the teeth of the king-sized blizzards that are commonplace, and you have a force to be reckoned with. Men on the DEW Line learned quickly that you can't fight the Arctic. You've got to learn to respect it, to live with it, to rock with its punches. That's the way the DEW Line was built.

Baffin Island is a nightmare of precipitous peaks and rocky gorges. This station is perched in a precarious spot overlooking the frozen Arctic.



Drifting snow blown by 100-mile-an-hour winds is a constant menace. This tent, used by men working on the permanent quarters, is nearly covered.

The People

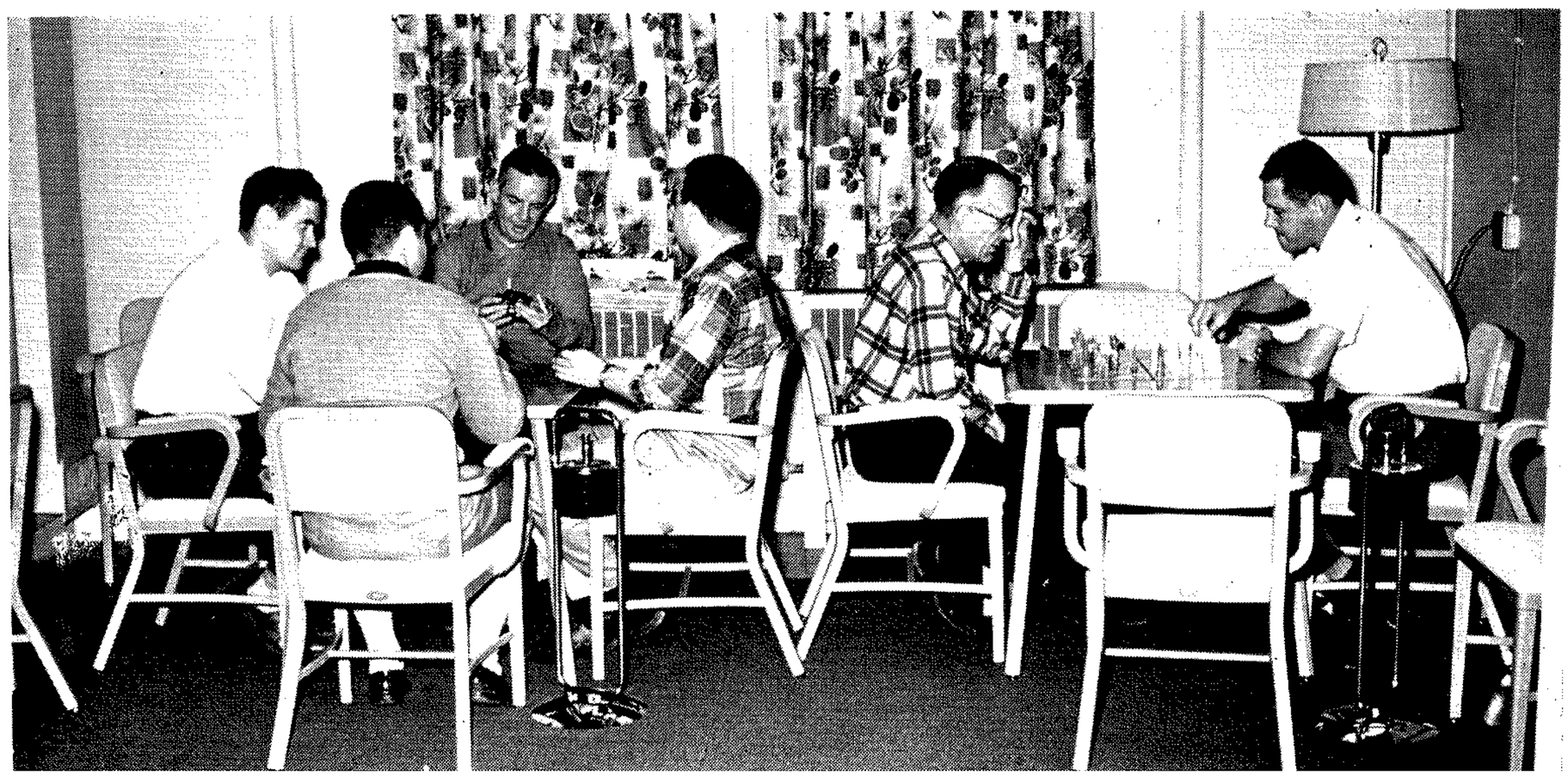
If you were to make a list of the hundreds of different skills and professions needed to keep a good sized city functioning, chances are you would find them all represented in the 25,000 people who had a direct hand in building the DEW Line.

The key roles were played by Bell System people. Western Electric, Bell Telephone Laboratories, nineteen Bell telephone companies and the Long Lines Department of A. T. & T. in the U. S. and the Bell Telephone Company of Canada contributed some of their best men to make up a Bell System team 2,000 strong. These men carried the brunt of the planning and supervision in the Arctic, at project headquarters in New York and at locations from Seattle to Winston-Salem.

In this group were experts in science, engineering, manufacturing, personnel, purchasing, warehousing, materials handling, transportation, construction, installation, testing and establishment of operating methods. The ability of the Bell System to recruit such a talented team in a short time, and our common experience in meeting emergencies in the telephone business caused by fire, flood and storm, are two of the "unique qualifications" cited by Defense Secretary Lovett when he asked the Bell System to undertake the DEW Line job.

Construction work needed to build housing, air strips, hangars, antennas and towers was done by subcontractors. In all, over 7,000 bulldozer operators, carpenters, masons, plumbers, welders, riggers, electricians and other tradesmen from the U. S. and Canada worked at breakneck speed under conditions so difficult it is a wonder the job was completed in such a short time.

Far from home, these Dewliners are taking it easy in the lounge at one of the stations.



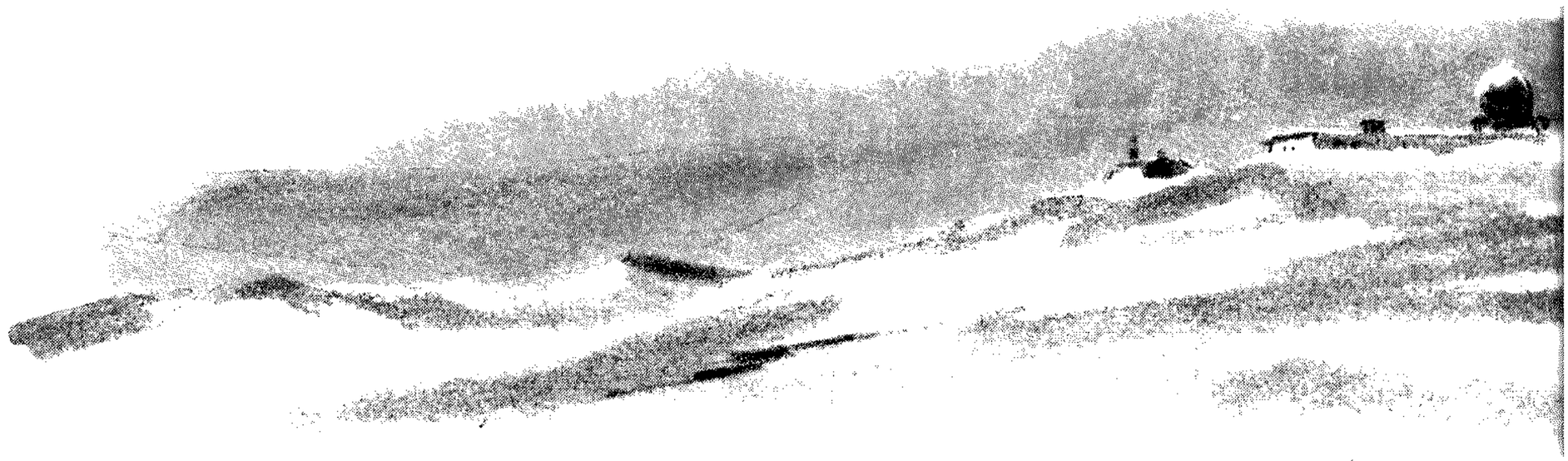
Some of the 7,200 construction workers attached to the project rig a reflecting screen, a complicated array of copper wires which reflects communication signals.

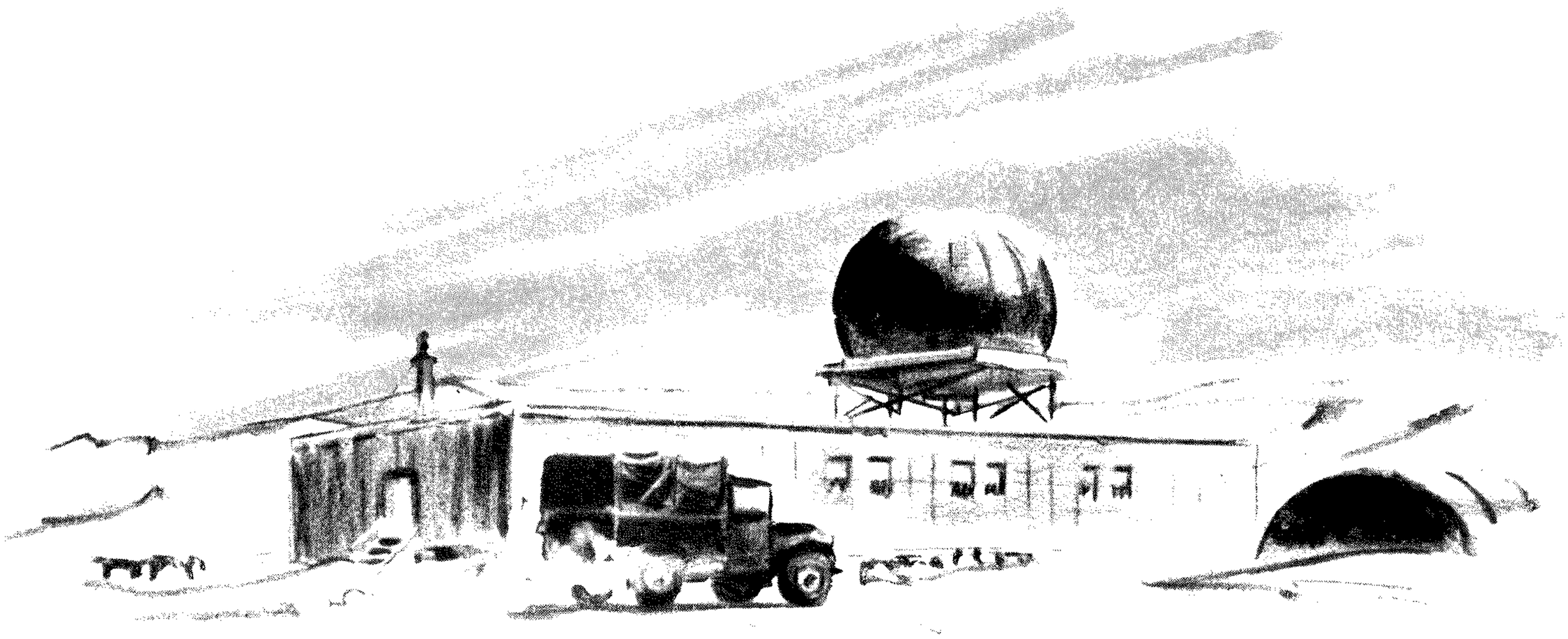
Who ever heard of baseball inside the Arctic Circle with the thermometer well below zero? These fellows didn't let the cold and snow stop their game.

The native Eskimos provided their share of workers on the Line, too. Although baffled at first by modern machines and construction methods, they were quick to catch on. Whether driving dog teams or bulldozers, they proved conscientious and dependable.

To U. S. military and naval units fell much of the job of transporting mountains of supplies to the northern sites. More than 3,000 Army Transportation Corps soldiers were given special training to prepare them for the job of unloading ships in the Arctic. They accompanied the convoys provided by the U. S. Navy and raced time during the few weeks the ice was open to land supplies at dozens of spots on the Arctic Ocean shore during the summers of 1955, 1956 and 1957.

Scores of commercial pilots, flying everything from bush planes to four-engine ships, were the backbone of one of the greatest airlift operations in history. Helping them were U. S. Air Force crews of the giant "Globemasters" and "Flying Boxcars." Together they provided the only means of access to many of the stations during the winter.



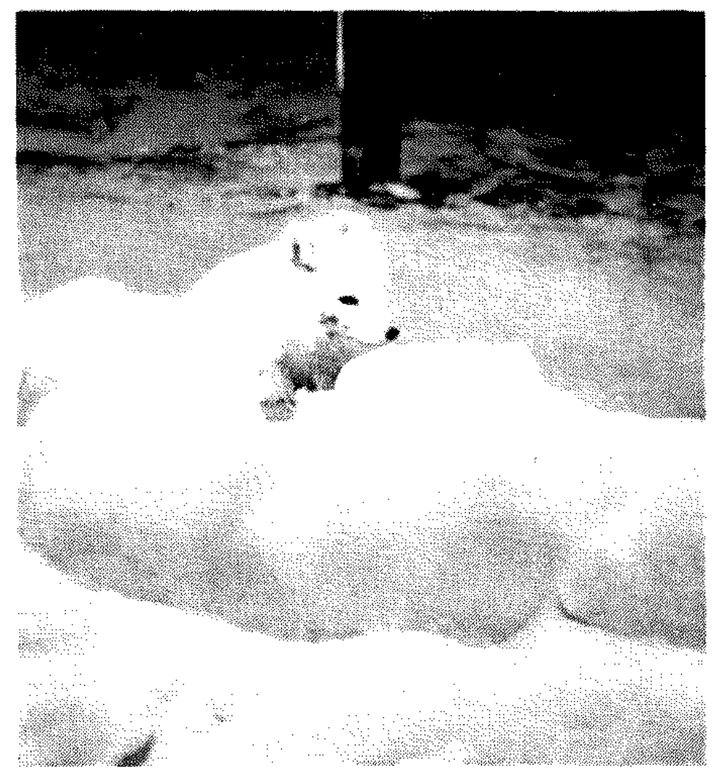


This is what the well-dressed Dewliner wears in cold weather. Starting with "long-johns," he adds several layers of relatively light clothing, and then completes the ensemble with a parka, "bunny boots" (or sometimes mukluks), and heavy Arctic gloves.

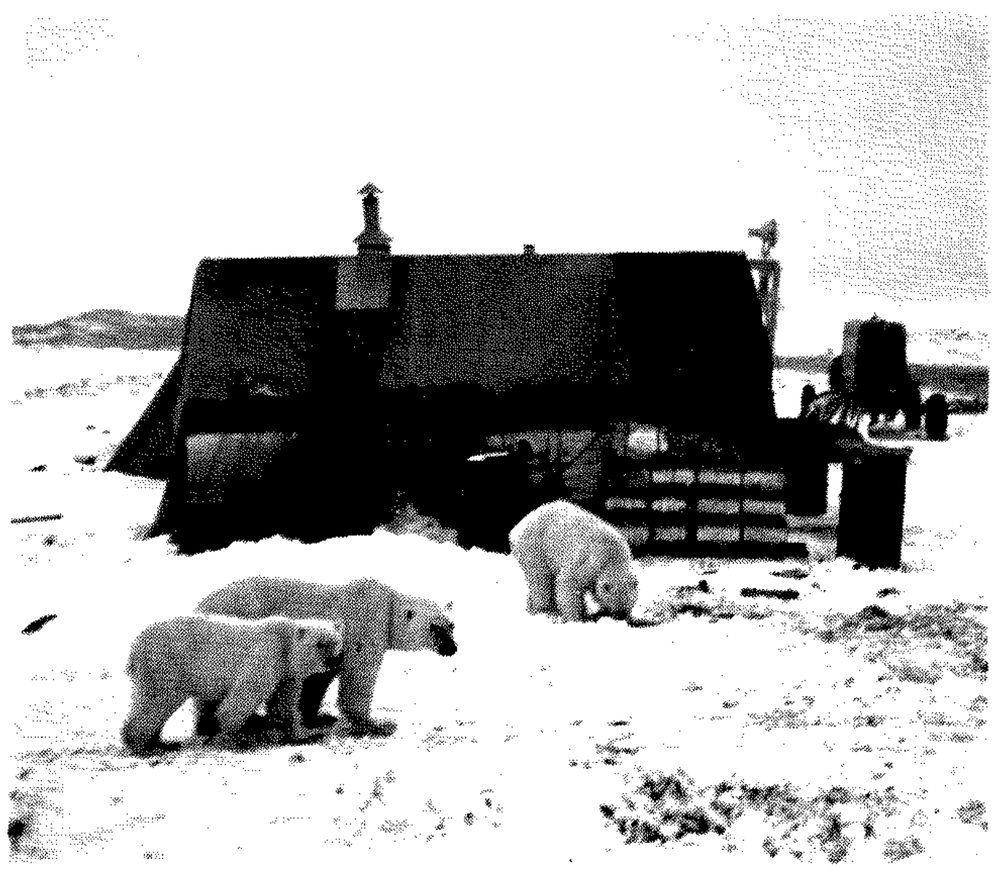
SEEING THINGS—*When one station was under construction a member of the surveying crew, returning to his tent from the airstrip at dusk, was certain he was being followed. Every time he turned around in the white haze of powdery, blowing snow he saw a small black globe in the air a foot or so off the ground. At last he could stand it no longer and bolted for his tent. As he burst inside, he glanced over his shoulder just long enough to see that the mysterious object was still there. In a few words he blurted out to his tent mates what had happened. They laughed.*

"That's only Eddie," one of them said. "He's probably hungry. Come on, I'll introduce you."

A few minutes later the two were outside feeding a very friendly and very hungry Arctic fox, so pure white against the haze and snow that only his shiny black nose had been visible.



Life on the Line



THE THREE BEARS—*In this modern fable we have Mamma Bear, Papa Bear and Baby Bear. Instead of little Goldilocks we have a group of riggers hard at work on a construction project. It was a foggy day and what should appear suddenly and without warning in their midst but a family of three hungry and curious polar bears. It was every man for himself as the riggers beat an inglorious retreat. In full possession of the battlefield, the bear family discovered a broken can of red lead paint and proceeded to have their lunch. And that is the story of how three bears at one DEW Line station all earned the nickname of "Rudolph."*

REAL COOL—*When the mercury was 50° below zero and lower, Dewliners enjoyed staging a demonstration to impress new arrivals. Someone would come outside with a glass of water and throw it in the air. Instantly there would be a report like a firecracker. The water would disappear in a cloud of vapor and from the cloud small ice crystals would fall to the snow. It wasn't a trick, but the natural result of the extreme cold and low humidity.*

SLIGHT MISUNDERSTANDING

An Air Force officer wanted to check the depth of polar sea ice at an airstrip to see if it was thick enough for heavy planes to land. An Eskimo working at the station went along with him to chop the hole. When the job was done, the Eskimo sat down beside the hole while the officer made his measurements. When this was done, the officer indicated that he wanted another hole chopped a short distance away. The Eskimo didn't budge, but stared in utter disbelief. The officer walked over to the new spot he had selected, but still the Eskimo didn't move. The misunderstanding was finally cleared up when it was explained to the officer that the Eskimo just couldn't understand why anyone would bother to chop a hole through that much ice without stopping to fish for awhile.

"Better get yourself a piece of fish line and a hook and jiggle it up and down in the water for a bit if you expect him to cut another hole," the officer was advised.

A Typical Station

The only part of the DEW Line you can see are the ground stations. It is a "line" only in the sense that overlapping radar beams projected from these stations form a continuous and invisible screen, miles high, which detects airborne objects the instant they come within range.

The stations are of three types—main stations, auxiliary stations and intermediate stations. The main stations are the largest. Each one is a complete, self-contained community, set in the middle of nowhere.

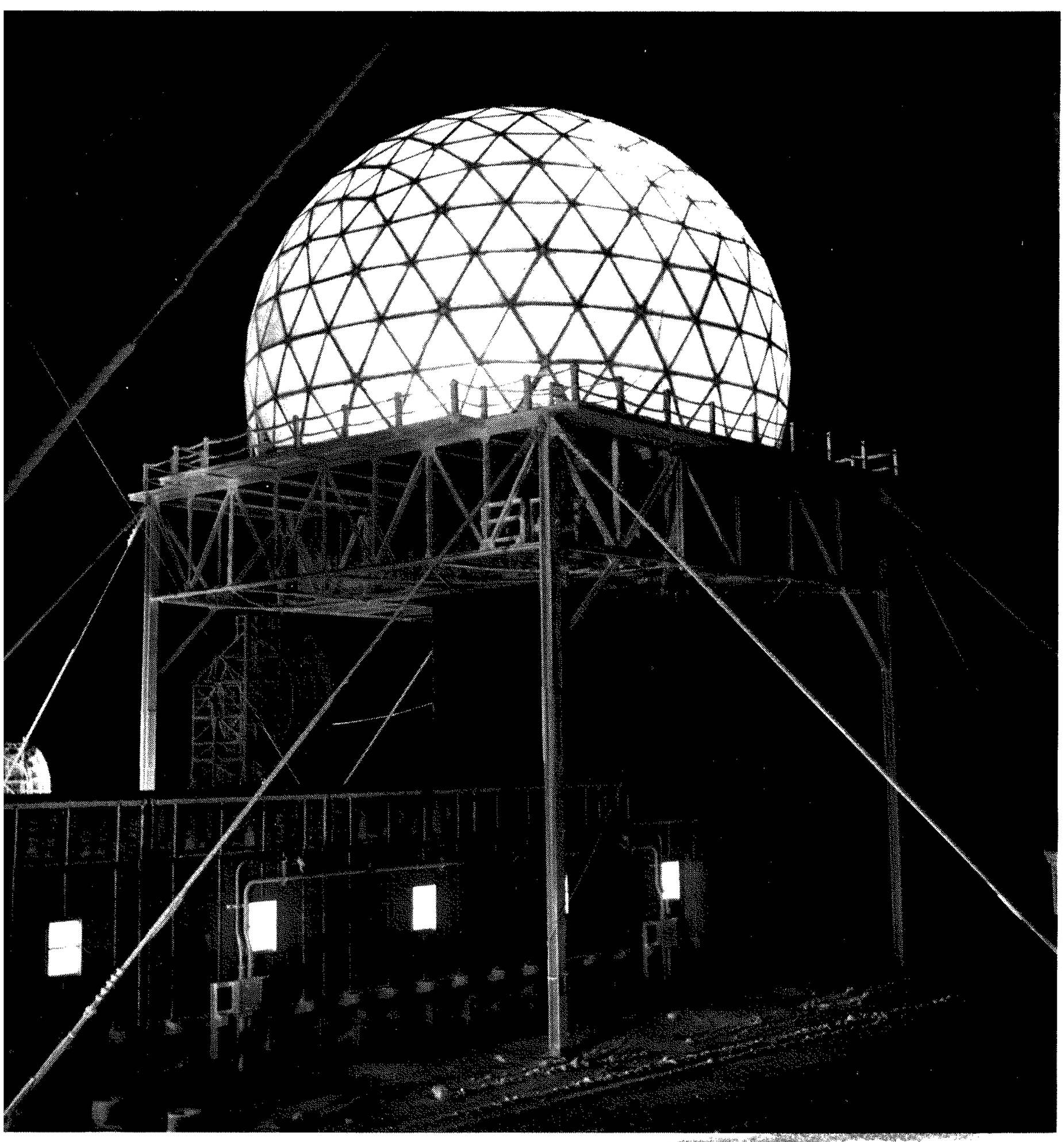
Like any well-planned community in the U. S., each main station has its own electricity, water service, heating facilities, homes, work buildings, recreation areas and roads. But there the similarity ends. The Arctic has dictated what the buildings look like, how they are built and even in what direction they face.

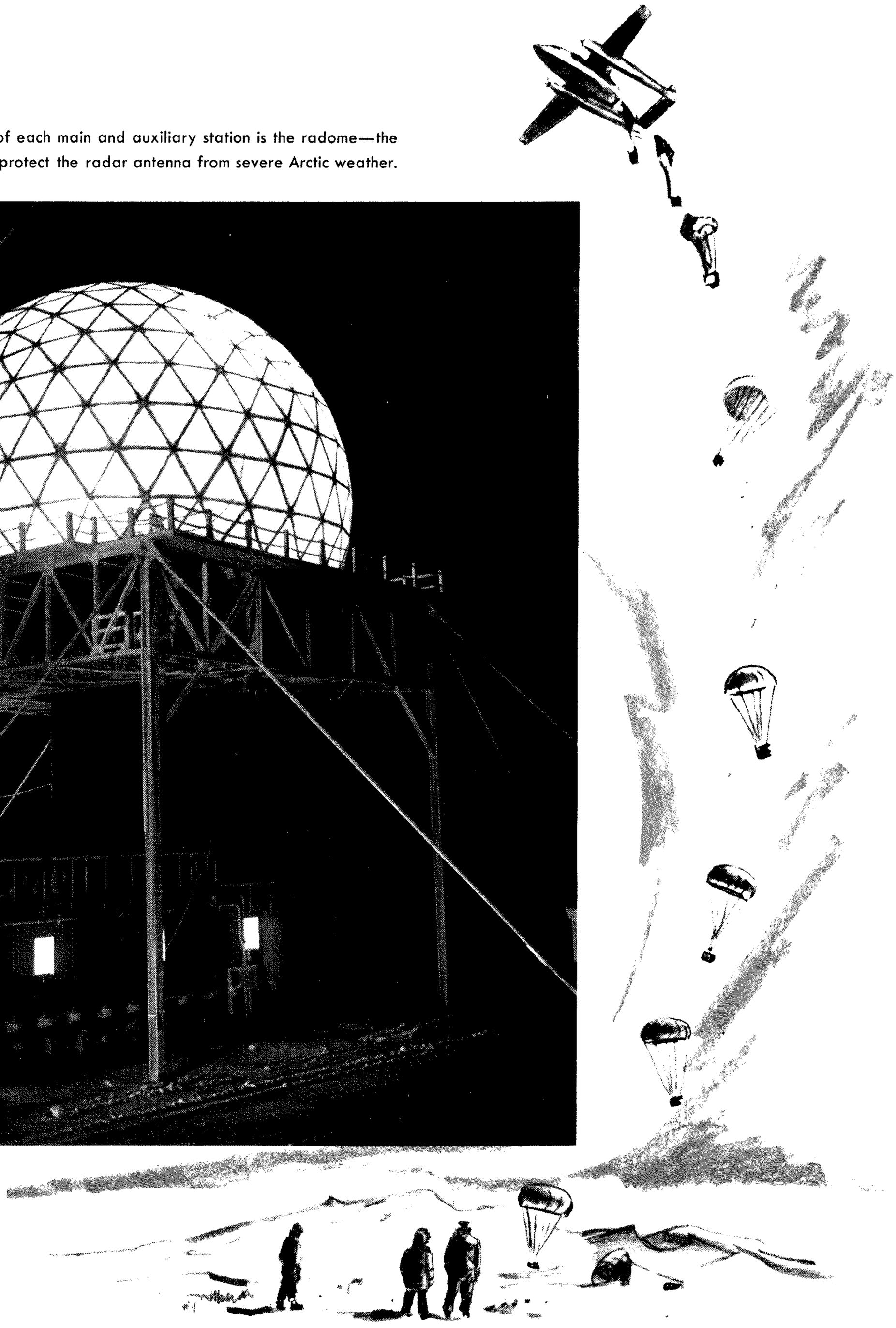
Instead of a group of separate buildings, the typical main station is essentially two long, low buildings connected by an enclosed overhead bridge, forming the letter "H." At one end, set on steel stilts, is the radome—a weather-tight dome covering the radar antenna. Nearby are the huge "reflectors" that provide radio communication with the outside world.

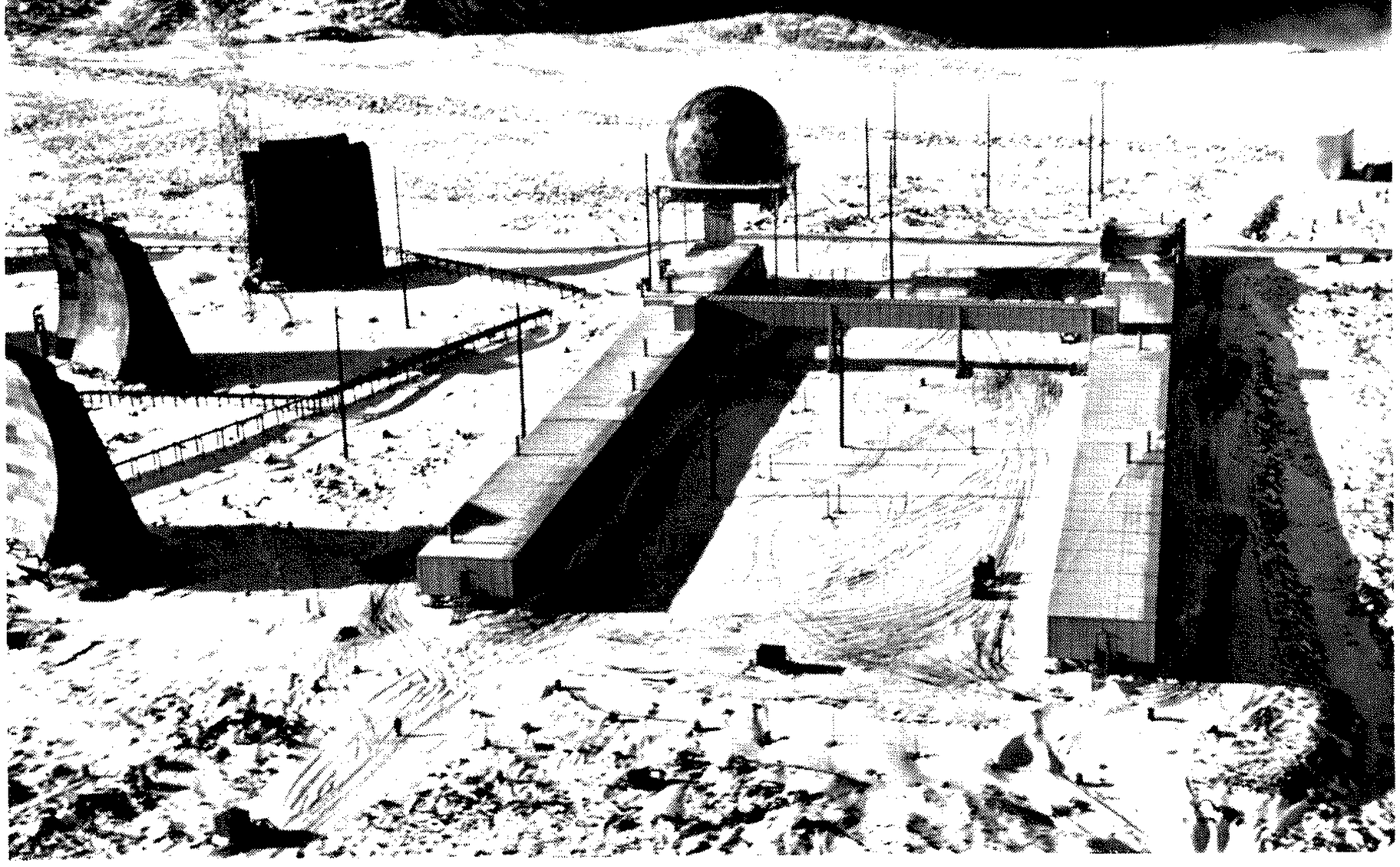
Living quarters, recreation facilities, radar and radio equipment and power and heating plants are all within the main buildings. The construction and transportation of these buildings show how ingenuity can outwit the Arctic. For stations at the western end of the line, buildings at a deactivated Navy camp in Point Barrow were converted into workshops where prefabricated panels, fully insulated, were put together to form modular building units 28 feet long, 16 feet wide and 10 feet high. These modules were put on sleds and drawn to station sites hundreds of miles away by powerful tractors.

Each main station has its own airstrip—as close to the buildings as safety regulations and the terrain permit. Service buildings, garages, connecting roads, storage tanks and perhaps an aircraft hangar complete the community.

A distinguishing feature of each main and auxiliary station is the radome—the plastic covering used to protect the radar antenna from severe Arctic weather.





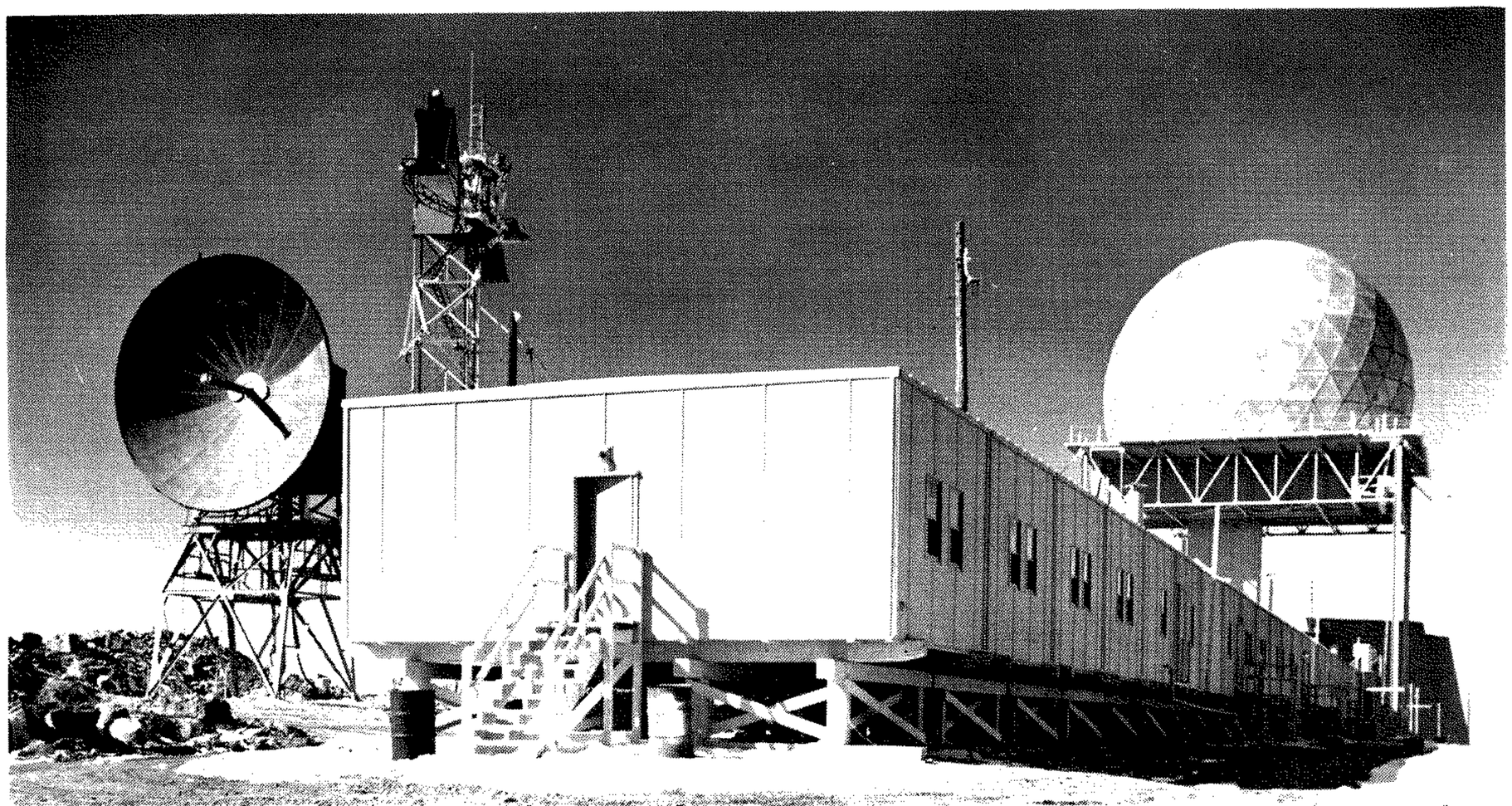


Each main station consists of two long, narrow buildings connected by an elevated bridge. Nearby are antennas, towers, garages and other outbuildings, and an airstrip. Some stations also have hangars for maintenance of aircraft.

If the ground were frozen solid the year round, the construction job would have been far easier. Unfortunately, in warmer weather the top few feet of earth thaw and become a swampy bog, unable to support buildings or vehicles. As a result roads and airstrips had to be covered with up to six feet of gravel to keep the ground from thawing. Heated buildings had to be set on pilings going down deep into the permanently frozen ground or built on pads of gravel up to 12 feet deep. The main problem was to find the gravel. Often it had to be trucked for miles or produced by crushing rock.

Drifting snow was a constant menace. Siting engineers and advance parties learned this the hard way when their tents disappeared beneath the snow in a few hours. So the permanent "H" shaped buildings at the main stations were always pointed into the prevailing winds and their bridges built high off the ground.

Auxiliary stations have a single long building for radar and communications equipment and living quarters. The building below is set on heavy pilings going down deep into the permafrost—the permanently frozen ground of the Arctic.



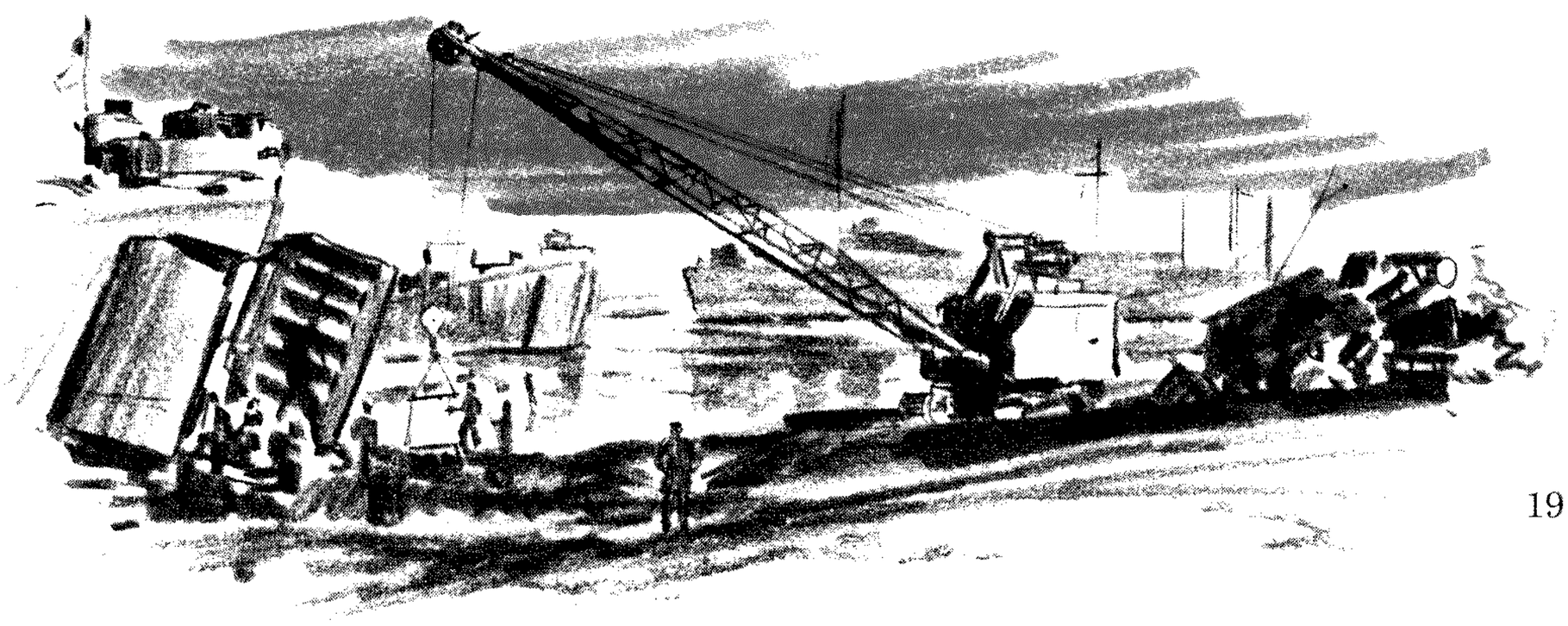
Logistics

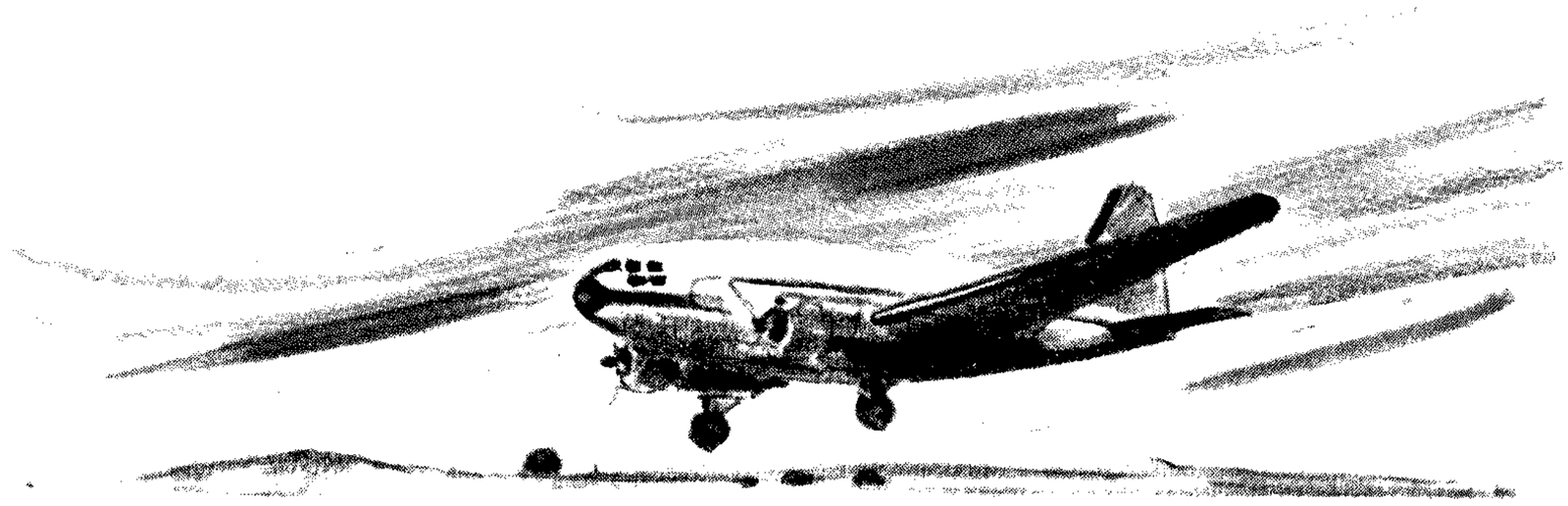
Logistics, a word borrowed from military terminology, is used to describe the operations involved in moving large forces of men and supplying them with all the things they need. The logistics of DEW Line construction can be told only in superlatives.

The sealifts provided by the Navy, and the job of moving the machines, fuel oil and supplies from ships to shore to DEW Line sites done by Army personnel was one of the largest projects of its kind in history. The airlift carried on continuously by commercial and Air Force planes was the largest commercial operation ever attempted.

Purchasing the needed materials required 113,000 purchase orders. Everything from safety pins to giant rock crushers had to be located, ordered and expedited. In many cases deliveries had to be immediate because the sealifts could not wait.

In moving men and materials, the Arctic was not overpowered in one gigantic operation. It was conquered by degrees. Transportation overland to most station sites in Canada was out of the question. So small advance parties were set down in the Arctic void by light planes fitted with skis instead of wheels. In some cases they had only shovels for tools, but by dint of back-breaking labor they cleared enough snow from the ice so planes with regular landing gear could get down. These planes brought small tractors, because men alone were no match for the fast-piling snow. Small tractors made it possible to open the airstrips long enough for larger planes carrying larger tractors to land. With these it was possible to build the long and substantial airstrips required by large freight planes. Only then could the airlift begin in earnest.





A giant Globemaster opens its metal jaws to disgorge some heavy freight for the building of the DEW Line.

The sealift was a moving drama in two acts and a final scene. These were a year apart and had to be timed as nicely as a coast-to-coast TV show because the Arctic Ocean ice opens up for only a few weeks in the summer. The large convoys had to get in, unload their cargoes and get out on a split-second schedule or face a long winter trapped in the frozen north.

To the sturdy icebreakers that led the way, "open water" meant any ice they could smash and crash their way through, and they had to do just that time after time. When the 1955 sealift was completed, 129,000 tons of cargo had been laid down by the ships in what proved to be one of the most severe ice seasons on record.

The second act of the sealift a year later was easy by comparison. It carried the technical gear, the last of the construction equipment and supplies to run the stations for a full year. On that trip Nature was kind, the weather was better and the polar passages were relatively free of ice. The third sealift in the summer of 1957, which started about the time the Line was completed, was smaller than the preceding ones and was completed by the experienced crews without incident.

Oil for heat, light, power, and transportation is the lifeblood of the Arctic. The big job is getting it there. 818,000 drums like these were moved to DEW Line stations—mostly by sealift.

DEW Line material piled on the docks in Seattle awaiting shipment by sea to the far north. This represents a tiny fraction of the 280,000 tons moved by sealifts operated by the Navy.

Eyes, Ears and Voice

Like Cyclops of old, each DEW Line station has but one eye, but it is keen and sharp and can see for miles through snow and fog. This is its radar, with the antenna overhead and electronic equipment filling a room in the building on the ground.

At main and auxiliary stations, distinctive plastic-covered domes house rotating antennas that warn of approaching airborne objects. At intermediate stations another type of radar fills in the chinks in the electronic fence so that nothing sizeable can sneak through.

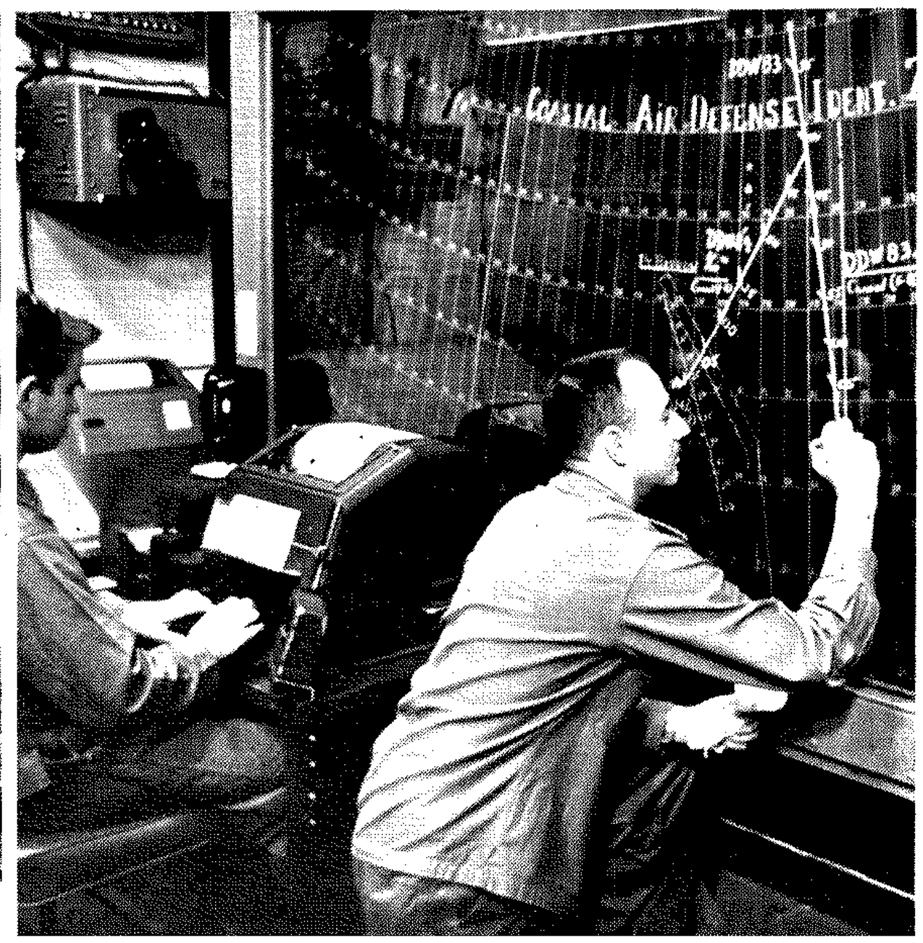
Ordinary radar for spotting planes is of no value unless an operator is watching the "scope." Only a human observer can spot the tiny "blips" of light that tell of approaching aircraft. DEW Line radar is different. It has automatic alarms that do the watching and sound-off when airborne objects come within range.

Without a dependable communications system to warn Canada and the U. S. of approaching danger, the DEW Line would be like Paul Revere without a horse. Radio is the only practical means, but the Arctic is notorious for magnetic storms and other disturbances that disrupt normal radio transmission.

The radio "ears" and "voice" of DEW Line stations is a new and special type that is reliable at all times. Using what is known as "tropospheric scatter" and "ionospheric scatter," this system depends on minute amounts of ultra-high frequency electrical energy

The entire DEW Line station revolves around this man and his radar scope, on which airborne objects within range appear as spots of light.

A plotting board is used to chart the course and speed of airborne objects. Teletype machines like those at left send and receive printed messages.



Within each radome is a rotating radar antenna that looks like a gigantic venetian blind. Moving constantly, it sends out signals and picks up the reflections from airborne objects.

that for some reason do not travel in a straight line as they are supposed to do, but drop back to earth over the horizon. To capture these errant bits of power, mammoth reflectors (or antennas) are required. At some DEW Line stations reflectors are 60 feet high and are shaped like oversize drive-in theatre screens. At others, circular "dishes" 30 feet across do the job. A string of these radio stations across the top of our continent and continuing down to connect with land lines in Canada and the U. S. gives DEW Line stations instant, foolproof communication rearward.

Design and development of the specialized radar and radio gear was a joint undertaking of the Lincoln Laboratories of the Massachusetts Institute of Technology and Bell Telephone Laboratories. Only a small portion of the equipment was manufactured by the Western Electric Company, the bulk of it being produced by a large group of subcontractors.

DEW LINE STATISTICS

1 SURVEYING

Mapping teams traveled more than 1,000,000 miles and reviewed more than 80,000 aerial photos as part of siting and mapping activities.

2 PURCHASE ORDERS

More than 113,000 Purchase Orders were issued to 4,650 supplier companies in the U.S. and Canada, as follows:

	Orders	*Total Amounts*
U.S.	—47,137	$148,849,000
Canada	—66,295	$198,151,000

3 MATERIAL TRANSPORTED

By aircraft	140,400 tons
By naval convoy	281,600 tons
By cat train	17,600 tons
By barge	20,300 tons
	459,900 tons

4 PETROLEUM FUELS, OILS AND LUBRICANTS

75,000,000 gallons of petroleum products were shipped to the Line, enough to fill 9,375 tank cars in a train 65 miles long. Some 43,000,000 gallons of this was shipped in 818,000 drums, which would connect New York to Pittsburgh with a two-foot pipe line.

5 AIRLIFT

Largest commercial airlift operation ever reported, with 45,000 commercial flights in 32 months delivering 120,300 tons over an average distance of 720 miles per flight. Involved were some 50 Canadian and 31 U.S. commercial airlines.

6 CONSTRUCTION

Gravel produced was more than 9,600,000 cubic yards, enough to build two replicas of the Great Pyramid, or a road 18 feet wide and one foot thick from Jacksonville, Fla., to San Diego, Calif.

Airstrips in the Arctic covered 26,700,000 square feet, or 625 acres. 46,000 tons of steel were used—more than enough for a U.S.S. Forrestal. 1,800 piles were sunk an average depth of 12 feet into permafrost. Generating capacity of power equipment installed is 155,000 kilowatt hours per day—enough to supply a city the size of Spokane, Wash.

7 PERSONNEL

If all 4,600 suppliers employed as few as 350 people each, a total of over 1,600,000 people worked on DEW Line products. Three construction companies used a total of more than 20,000 people in two and one-half years on direct work. Peak number actually inside the Arctic at any one time was about 7,500 men.

8 MISCELLANEOUS

22,000 tons of food shipped in 1,000,000 containers in 32 months; 12 acres of bed sheets; 6 acres of rugs; 3 miles of window shades. 100,000 copies of 600 different manuals prepared to cover operation and maintenance of the Line.