

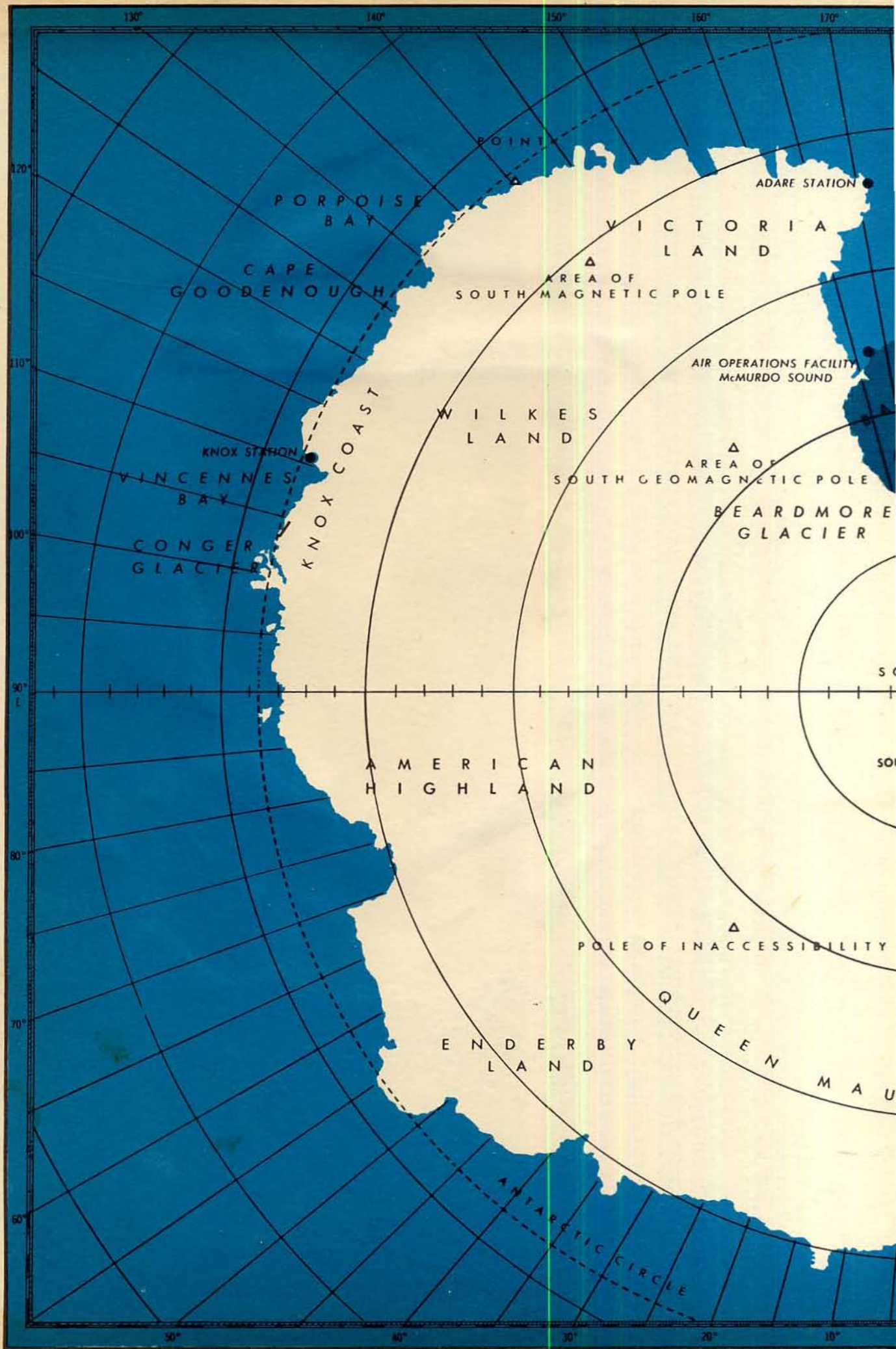


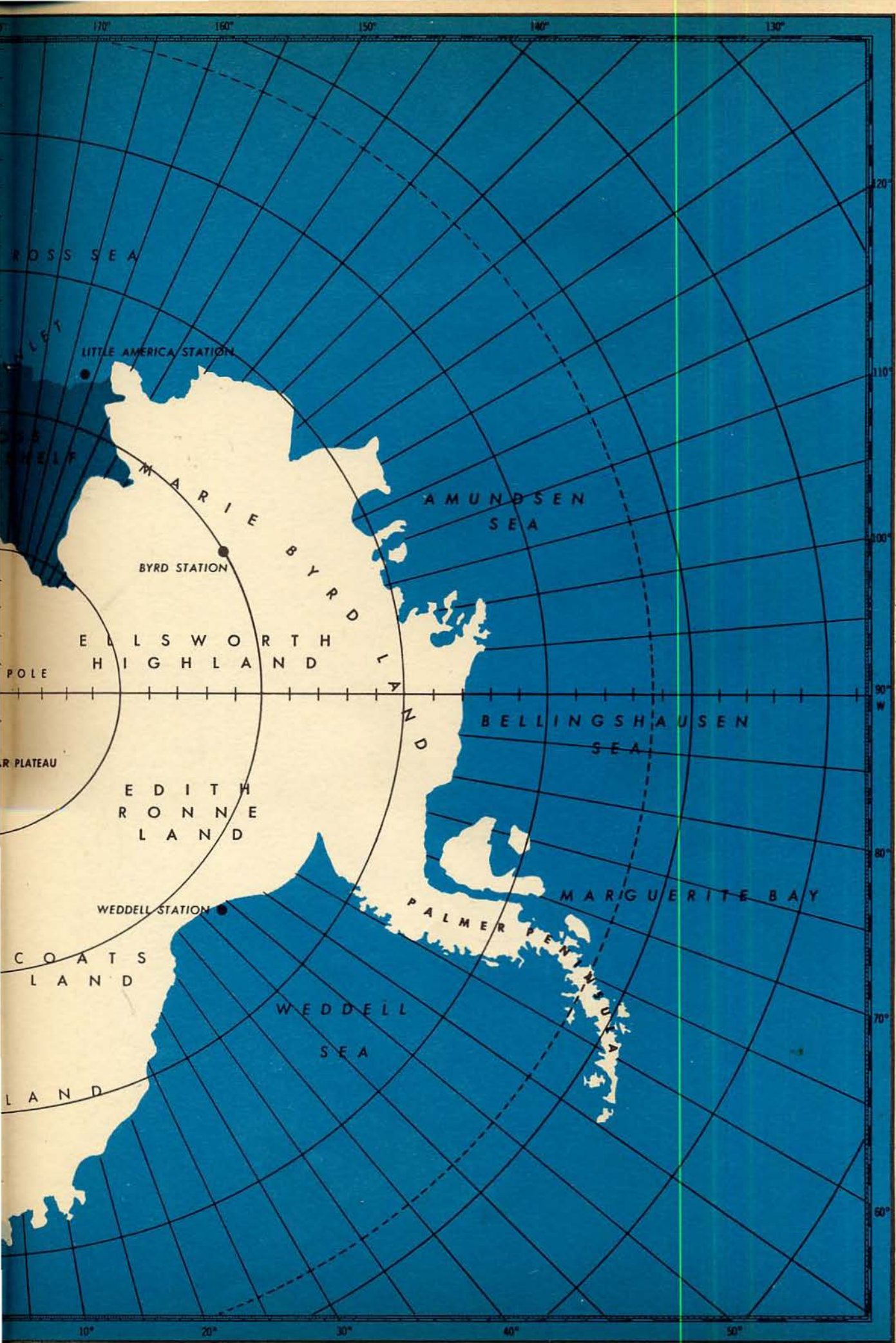
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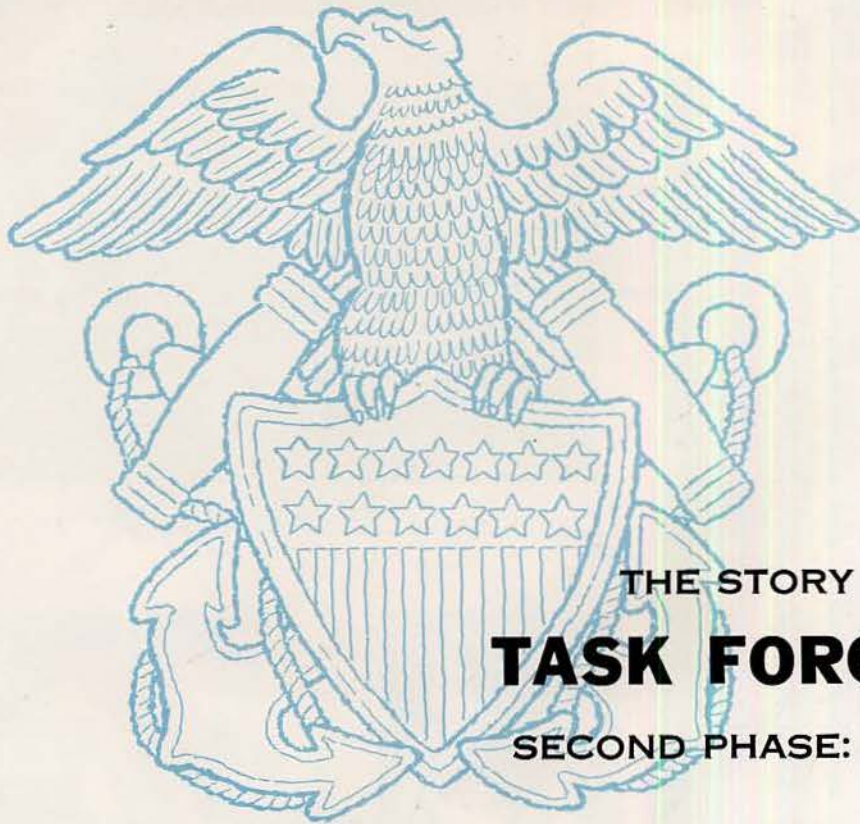
DEEP FREEZE III

TASK FORCE 43

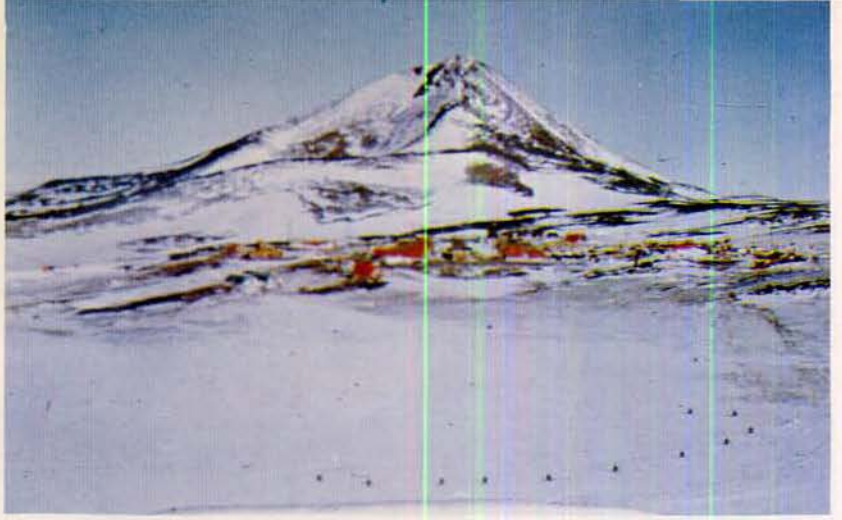
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THE STORY OF  
**TASK FORCE 43**  
SECOND PHASE: 1956-57



# Operation





# DEEP FREEZE

**1956-57**

THE CHRONICLE OF TASK FORCE 43  
AND ITS SERVICE TO SCIENCE  
IN THE SECOND PHASE OF A PROJECT  
OF FOUR YEARS' DURATION

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PAOLI, PENNSYLVANIA

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of the United States Navy*

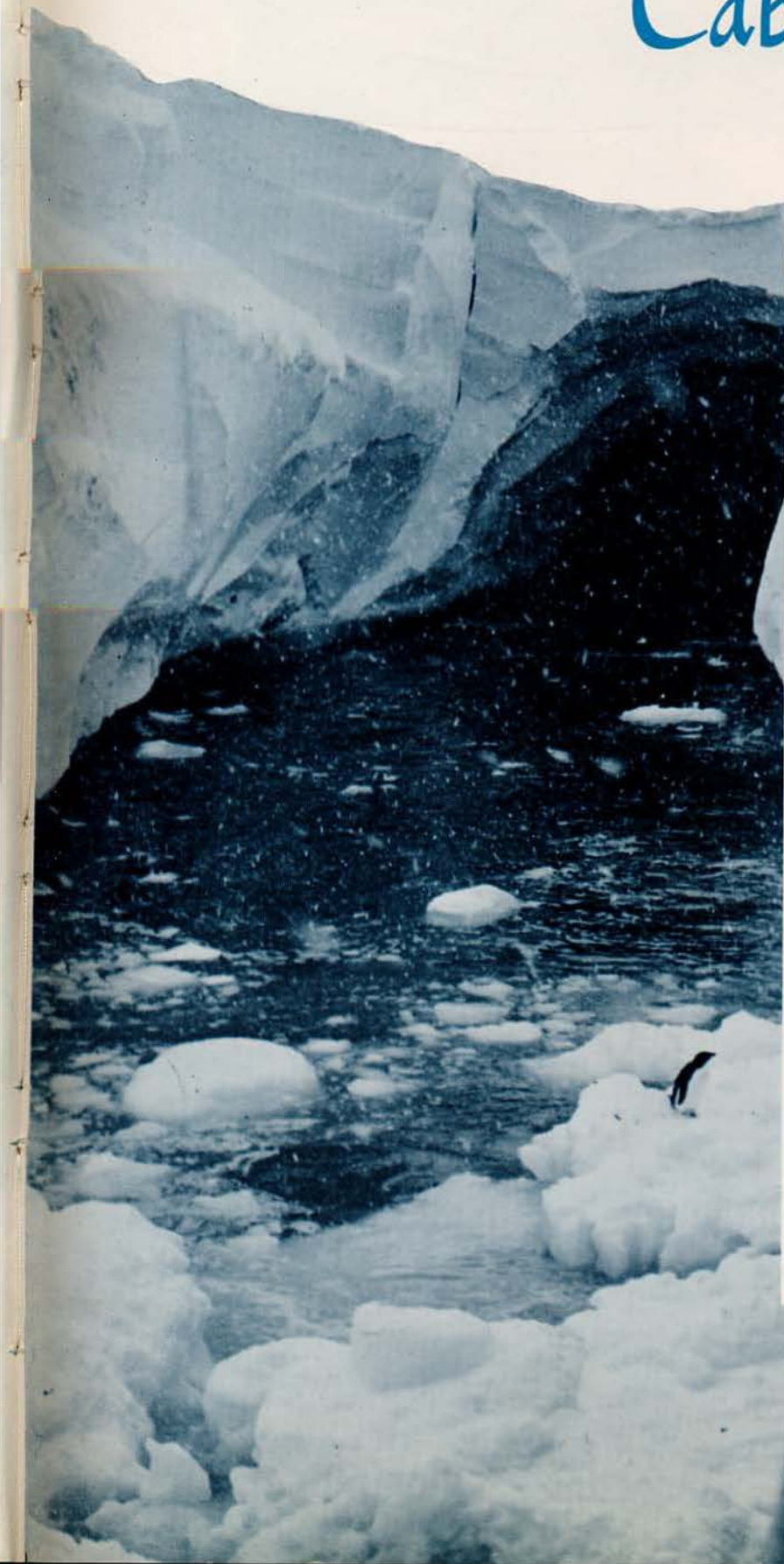
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# OPERATION DEEPFREEZE

Second Phase: 1956-57

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Resume of **OPERATION**

SURFACE UNIT—

SCHEDULE

PHASE I (1955-56)

PHASE II (1956-57)

PHASE III (1957-58)

PHASE IV (1958-59)

AIR UNITS—



## DEEP FREEZE II

**4 ICEBREAKERS:** USS ATKA (AGB-3); USS GLACIER (AGB-4);  
USS STATEN ISLAND (AGB-5); USCGC NORTHWIND (WAGB-282).

**5 CARGO SHIPS:** USS ARNEB (AKA-56); USS WYANDOT (AKA-92);  
USNS GREENVILLE VICTORY (TAK-239);  
USNS PVT. JOHN R. TOWLE; USNS PVT. J. F. MERRELL.

**1 SEAPLANE TENDER:** USS CURTISS (AV-7).

**1 DESTROYER ESCORT:** USS BROUGH (DE-148).

**1 OILER:** USS NESPELEN (AOG-55).

**VX-6:** 2 R5D "Skymasters;" 4 R4D "Skytrains;"  
1 P2V2 "Neptune;" 4 P2V7 "Neptunes."  
UC-1 "Otters;" Helicopters.

**U.S. AIR FORCE:** 8 C-124 "Globemasters."

Total Complement..... **3,525**



*The late Admiral Richard E. Byrd, Antarctic veteran, as best remembered.*

*Unveiling memorial cross and plaque  
at Little America V for Max Kiel, CD2, USN,  
who died during Operation Deep Freeze I.*

# Dedicated to



*RADM George J. Dufek, USN,  
Commander U.S. Naval Support Force  
Antarctica (Task Force 43).  
Admiral Dufek, in command of  
Operation Deep Freeze I and II,  
began his Antarctic life in 1939  
as navigator with the Third  
Byrd Expedition. Since then  
he has ranged from pole to pole  
taking command in Arctic and  
Antarctic Navy expeditions.  
Admiral Dufek will also be in  
command of the next phase—  
Operation Deep Freeze III.*



# **THOSE WHO LEFT US...**

...the eight who died in

**OPERATION DEEP FREEZE I and II,**

the "Admiral of Antarctica,"

**...and to the 5,322 who came back.**

"I DO NOT MINIMIZE THE SCIENTIFIC GAINS OF SUCH EXPEDITIONS, BUT THE HUMAN VALUES ARE SO IMMEDIATE AND SO UNIVERSAL IN THEIR EFFECT THAT IT MAY WELL BE THAT THEY TRANSCEND THE SCIENTIFIC SERVICE... GREAT EXPLORERS DO NOT MERELY ADD TO THE SUM OF HUMAN KNOWLEDGE, BUT ALSO THEY ADD IMMENSELY TO THE SUM OF HUMAN INSPIRATION."

Address of Herbert Hoover, President of the United States, presenting National Geographic Society's Special Gold Medal of Honor to RADM Richard E. Byrd, USN, June 20, 1930.

# FOREWORD



# ONE GRAND SPLASH

## SECOND PHASE, RAISON D'ETRE OF ENTIRE OPERATION

### FOR WHOM THE 'BEES TOILED

Dr. Herfried C. Hoinkes, meteorologist of Innsbruck, Austria, is measuring solar radiation (left). He and his brothers in science have been set up in business at the seven bases through the courtesy of USN specialists. The Seabees come in for a special accolade as the creators of "house beautiful," Antarctic Acres.

THIS IS THE saga of *Operation Deep Freeze II*. (Its prelude, *Operation Deep Freeze I*, was chronicled in an earlier volume.) This is the heart of the matter, the big reason for the whole thing. This is *it*.

Scientists the world over desired to make a concerted study of the factors that rule the earth. Past studies had been made on a comparatively modest scale but this time they wanted to make one grand splash—from pole to pole with some forty nations taking part.

July 1957 to December 1958 was reckoned as the ideal period of earth science study since that would be the period of greatest cosmic activity.

A large part of America's share in the pie (and in the responsibility) was the erection of seven bases in the Antarctic: one at the Geographic South Pole, one on the Ross Ice Shelf at Kainan Bay, one (an air base) at McMurdo Sound, one on the Knox Coast, one in Marie Byrd Land at 80° South, 120° West, one on the Weddell Sea, and a shared base with New Zealand at Cape Hallett, where our IGY scientists could work.

Building the bases was the Navy's job.

USS *ATKA*, a Wind Class icebreaker, made a solitaire reconnaissance in the Antarctic summer of 1954-55. She located a site for Little America V.

Eighteen hundred men in seven ships, an air squadron, and a Seabee battalion went south for *Operation Deep Freeze I* in 1955-56. They built bases at Little America and McMurdo Sound and cached fuel and supplies there for building bases at the South Pole and in Marie Byrd Land.

Under Rear Admiral George J. Dufek, Commander of Task Force 43, 3,525 men in a force of twelve ships, two air squadrons (one Navy and one Air Force), segments of three Construction Battalions, a cargo-handling battalion split among three ships, an underwater demolition team, a helicopter detachment divided between four ice breakers, a crack Army-Navy trailblazing party, and a team of Marine Corps assault fuel experts took to the air and the seas in the autumn of 1956.

Their destination was Antarctica, the seventh continent. Their goal was to finish the job of building windproof, coldproof bases for use by scientists during the International Geophysical Year, 1957-58.

This is the story of their job, their perils, their accomplishments. This is adventure in the 20th Century.



THE PRESIDENT OF THE UNITED STATES  
 takes pleasure in presenting the Distinguished Service Medal to  
 REAR ADMIRAL GEORGE J. DUFER, UNITED STATES NAVY (Retired)  
 for service as set forth in the following citation:

For exceptionally meritorious service to the government of the United States in a duty of great responsibility as Commander, U. S. Naval Support Force, Antarctica during Operations Deep Freeze I and II from 1 February 1955 to 22 March 1957. Throughout this period, Rear Admiral Dufek carried out his responsibilities with outstanding leadership and professional skill. Directly responsible for the preparation of plans and the operations of Deep Freeze I and II which culminated in the establishment of seven widely dispersed bases constructed to support the Antarctic program of the U. S. National Committee for the International Geophysical Year, he was instrumental in large measure in solving the numerous complex and unprecedented problems incident to the fulfillment of these bases. Rear Admiral Dufek's sound judgement, resourcefulness and inspiring devotion to the fulfillment of these vital operations reflect the highest credit upon himself and were in keeping with the finest traditions of the U. S. Naval Service."

Signed for the President

Thomas S. Gates  
 Secretary of the Navy

# The Winter Night

## FIRST TF43 WINTERING-OVER PARTY

**W**ITH BASES built and manned at Little America and McMurdo Sound, USS *GLACIER* sailed northward from Antarctica at the end of *Operation Deep Freeze I*. Aboard the powerful icebreaker was Rear Admiral George Dufek, Commander of Task Force 43, who had supervised the freezing-in of two fuel barges at McMurdo Sound to increase that base's readiness to handle flights in *Operation Deep Freeze II*. The admiral had said farewell to 93 Americans at McMurdo Sound and to 73 at Little America before *GLACIER* began her counter-clockwise cruise of the Antarctic continent looking for further base sites on the Knox Coast and the Weddell Sea.

It was March of 1956. Wintering-over had begun. But the workload precluded reminiscing at either base. Interiors of buildings had to be completed, supplies had to be retrieved from the snow, tired tractors needed maintenance after a strenuous unloading schedule, routine had to be set and responsibilities assigned for the long winter night fast approaching.

Ships had unloaded 500 tons of supplies at McMurdo for building a base at the South Pole and a similar amount at Little America to be used in building Byrd Station in Marie Byrd Land. Long, hard, cold man-hours were spent sorting and packaging these mountains of supplies. At McMurdo each item had to be packaged for airdrop at the South Pole. At Little America each piece must be loaded on sleds which tractors would drag 647 miles over the ice to 80° South, 120° West.

Abetting the physical energy required to find and pack the items was the mental strain of attention to detail, for planners knew by experience that there are no nail kegs, no corner stores, no means of make-shift once the builders arrived in Antarctica's barren

heartland to erect their bases. If they didn't carry their provisions with them they would do without.

Lights were rigged at each base against the day the sun would drop below the horizon—April 21—to remain hidden until August 21. These lights proved satisfactory at hilly McMurdo Sound but a complete nuisance at level Little America where their glow cast harsh shadows over the snow and confused men seeking spare parts buried under tons of snow.

Between February and October Little America recorded 154 inches of snowfall. Coupled with snow drifting unimpeded over the featureless Ross Ice Barrier, it covered or nearly covered all buildings before the four-month night ended.

Lowest temperature was recorded August 9 at Little America—minus 78 degrees Fahrenheit. McMurdo's low of minus 58, registered a day earlier, was in fact

*(Continued on page 16)*

COONSKIN CAP, CHIN BEAVER PROCLAIM THE VETERAN.



♦ VICE PRESIDENT Richard M. Nixon presents the Distinguished Service Medal to Admiral George Dufek as Thomas S. Gates, Secretary of the Navy (center) looks on.



### STUDY IN CONTRASTS

From the lazy warmth of the lush tropics to the blustery chill of McMurdo Sound was only a matter of a few hours' flying time. Air Force C-124 Globemaster (right) pauses to refuel at Nandi in the Fiji Islands. Then on to Christchurch, New Zealand and points south. The first mammoth cargo liner, commanded by Colonel Crosswell of the 18th Air Force, set down on the ice at McMurdo with 46,500 pounds of cargo in mid-October to debut the greatest air-lift drama in the annals of polar exploration.



THE MAIN DRAG AT McMURDO SOUND LOOKING TOWARD OBSERVATION HILL. ADMIRAL'S FLAG IN FOREGROUND.





POLE-BOUND "QUE SERA SERA" BEING WARMED UP BY PRE-HEATER JUST BEFORE HISTORIC FIRST LANDING.



**A NATURAL DEEP FREEZE**  
 Antarctic cold worked mightily against the "lucky seven" who became the first Americans to set foot on the South Pole. (The story of the return take-off of the *Que Sera Sera* is a "hairy" one!) But the polar cold works for you sometimes. Witness the natural refrigeration provided the food storage at Little America V. A Navy man (at left) breaks out supplies in the food storage tunnel for transfer to the thaw-out room. These double-duty tunnels acted as safe passageways between buildings and as protected warehouses for supplies.

## WINTER NIGHT CONTINUED

deceptive. Meteorologists have worked out a rule-of-thumb estimate that one degree of cooling results from one knot of wind. So a temperature of minus 50, fanned by 40-knot winds of nearly constant duration at McMurdo Sound was tantamount to minus-90-degree weather as men worked in the open.

The two bases faced different problems during the winter night but they had one common denominator for grief—snow.

At Little America unloading operations had been rushed when the bay ice unloading platform began to break up in January 1956. As a result, sleds were loaded at shipside, rushed to the barrier and unloaded pellmell in an effort to avoid losing cargo through breaking bay ice. While no cargo was lost through the ice the jumbled cargo at the offloading point was to cause grief throughout the long night. Electronic tubes were mixed with potatoes and panels. Electric wire was mixed with lumber and hair tonic. Byrd Station materials were blended with Little America operating supplies.

Before everything could be located and segregated the snows fell. Some items, like the mail-cancelling machine for Byrd Station, were recovered from be-

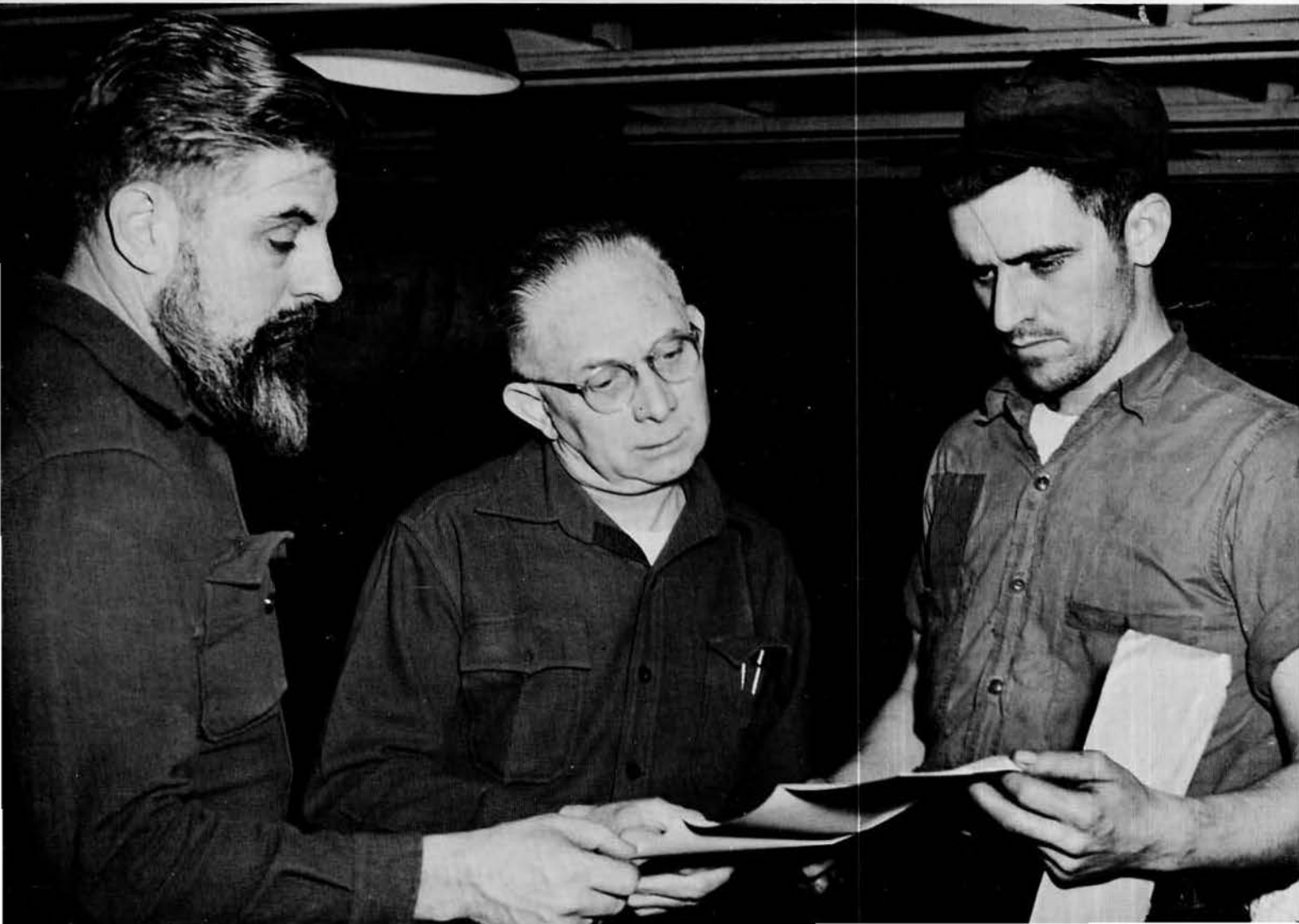
neath 16 feet of snow as late as October 1956. Other items will never be found. Among these are metal objects which, by their very nature, burrow themselves deeper and deeper into the 800-foot-thick ice barrier.

While many men searched for and segregated supplies, others got the 19-house city called Little America V completed, with an interlocking tunnel made of chicken wire and burlap connecting every building. Meantime two buildings comprising Kiel Field were put together, completed, and snowed under so that radars, radio antennas, and GCA antennas were all that showed above the snow when daylight returned.

By the time the thermometer read minus 78 there was little need for outdoor work at Little America. Tractors could be pulled inside (almost) the garage for maintenance before the long jaunt to Marie Byrd Land. Sleds with cargo for Byrd Station had been so loaded that four sleds carried four buildings, another carried utilities, five others carried fuel and other essentials which could be put to immediate use on arrival. Wannigans for cooking, eating, and sleeping occupied two of the twelve sleds.

Now, time to wait for trailblazers to arrive and locate a safe trail from Little America to Byrd Station.

OINC GRAHAM AND CDR WHITNEY (LEFT AND CENTER) CONFER ON CONSTRUCTION DETAIL AT LITTLE AMERICA.



# Little America V Digs In:



RACE against time finds MCB swinging hammers to raise interconnecting tunnels that will serve also as storage



"warehouses." Balky SnoCat gets preheating treatment for one last sortie into a twilight snowstorm at LA-V.



ROLLING in the barrel; bringing in fuel oil from snowy tunnel cache. Right, building a wannigan on a one-ton



sled during the long winter night. These units were used by the trail party that went deep into Marie Byrd Land.



TIME OUT for talk (left) to home folks through ham radio contact, for spiritual revival (center) with Holy Com-



munion, for social enjoyment (right) during buffet lunch celebrating Bastille Day in honor of French expedition.

## WINTER NIGHT CONTINUED

McMurdo's winter jobs were twofold. One crew bundled packets and pallets for airdrop while the remaining men worked to construct an airstrip on bay ice.

They had to build a 6,000-foot airstrip capable of landing 90-ton wheeled aircraft and they had to have it ready by October 15, 1956 when the first plane was due from New Zealand.

Weekly soundings of the bay-ice depth had been made. When the bay ice reached safe depth tractors began a process of leveling and crews began to flood the strip with sea water to give it a glazed smoothness. This flooding was experimental—and the experiment didn't work. Planners realized as late as January 19 that they were compounding their problems by flooding for, while the ice froze on top, it remained slushy below creating a veritable deathtrap for Navy R5D's and Air Force Globemasters.

So, with countless man-hours wasted, the flooded strip was abandoned and every available man was assigned to one of two 12-hour shifts to scrape loose snow off the 12-foot-thick bay ice of what had formerly been classed as an auxiliary airstrip.

Working in minus 50-degree temperatures fanned by almost constant winds, crews could stand but 20 minutes' exposure before they required relief. Surgical face masks permitted men to work up to 56 minutes but they were in short supply.

Just when daylight was in sight—the 225 by 6,000-foot strip scraped bare down to blue sea ice—a blizzard dumped 8 feet of snow onto the strip. But 100,000 man-hours later, the strip was ready for the first plane.

### MORALE UP THERE

Throughout the winter night morale remained high, due principally to the hard work schedule and recreational aids.

Every man had an opportunity to talk to Stateside relatives by amateur radio. Movies were shown regularly. Parties at each base gave men a chance to get a new grasp on life. Chaplains held regular services.

Medical problems were few: a broken finger or leg here, a case of frostbite there, but almost no colds were treated during the winter after the ships left.

CHAPLAIN JOHN C. CONDIT LECTURES TO REGULAR STUDY GROUP IN LIBRARY AT WILLIAMS AIROPPAC.



# McMurdo Closes Shutters:



WAOF OINC LCDR David W. Canham scratches a hasty signature to a memo in his office then hurries outside (left)



to check bay ice for cracks. Constant vigilance during the long winter night paid off when the skytrains arrived.



WINTER chores ranged all the way from babying the 100 kw power and light generator, preparing airdrop cargo



for the pole come summer, to weighing in the residents of Schloss von Dogheim. (Calorie counters down there!)



LEISURE time was really appreciated here, too. Ham contacts Stateside, once-new periodicals, and homemade



variety shows broke up the backbreaking grind into more bearable periods. And then there were always movies.





# On Stage

## SHIPS, PLANES, AND MEN "SCRAMBLE"

**W**HILE 166 AMERICANS weathered the Antarctic winter night, Stateside gears were grinding. Directives originating at the staff level in Washington were flashed to the supply assembly point in Davisville, Rhode Island, to the Navy air arm at Quonset Point, to the Air Force arm at Greenville, to the Seabee Center at Davisville, to the ships on both coasts and to the various bureaus and departments of government.

Sprawling Davisville, home of the Seabees Atlantic, felt the weight of more than 30,000 tons of *Deep Freeze II* cargo that would be converted into Antarctic science bases. A supply crew received, inspected, marked, and stored cargo arriving by rail, road, sea, and air.

Men who would build and man the Antarctic bases marched and rode past these mountains of supplies as they conditioned their minds and their bodies for the chore of base building and the boredom that lay ahead.

They assembled and re-assembled prefabricated buildings in Rhode Island's summer sun. They went on boondock expeditions in the swamps, simulating the erection of a pontoon bridge that might spare the life of man and machine when an Antarctic ice crack or crevasse would have to be bridged. They accompanied the Navy air arm to Greenland to get first-hand ice experience. While airmen took off and landed planes on the ice Seabees checked out crevasse detectors and pitched tents on Greenland's icecap.

Crews went to special schools in Pensacola, Florida to learn cold-weather photography while other crews went to Camp Lejeune to master the Marine Corps' new assault fuel system.

Every man was schooled in the operation and maintenance of every snow vehicle.

Lectures on cold-weather survival were alternated with psychological screening sessions whereby the "head shrinkers" made a conscientious effort to guarantee that only the fit made the coveted trip.

By September ships began to arrive in Davisville for loading. First were the destroyer escort *BROUGH* and the icebreaker *GLACIER* who would sail independently in the vanguard to take ocean and icepack stations to support the fly-in of planes from New Zealand.

An advance echelon was established in Christchurch, New Zealand to handle supply problems that arose as the massive task force headed south.

*BROUGH* sailed from Newport September 4, 1956 and was followed by *GLACIER*'s sailing from Boston September 19.

*(Continued on page 26)*



TELEVISION cameraman scans pier scene at Davisville during "Wide Wide World" program screened October 14.



# VX-6 Warms Up



DRESS REHEARSAL at Lakehurst, N. J. found the air arm working out right up to the last minute of departure. Upper, two stages of jump: rescue jump team dives out door of R4D to hit the silk, float down, land, repack the

chute, do it all over again. Below, men of VX-6 line up for final inspection by Marine Captain Rayburn A. Hudman, their jump master. CAPT. Hudman lost his life at McMurdo two months later in the crash of the incoming Neptune.



# for the Big Second Phase in Antarctica:



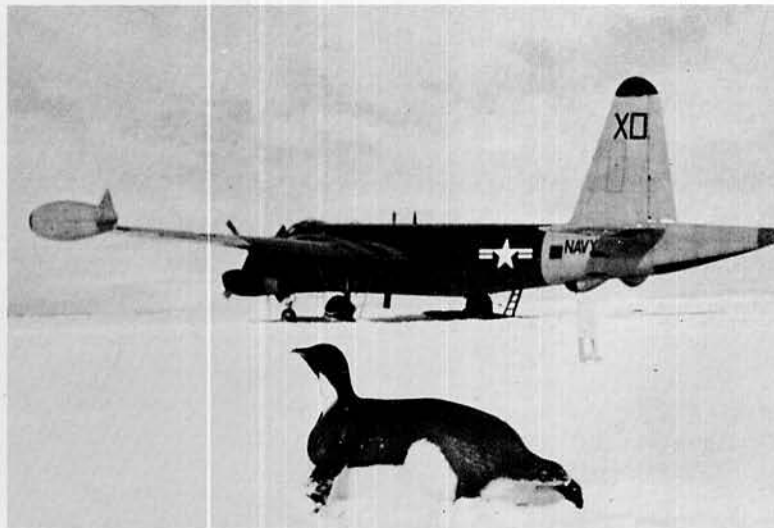
MUSCLES of the air arm: giant USAF C-124 Globemaster (left) capable of toting thousands of pounds of cargo



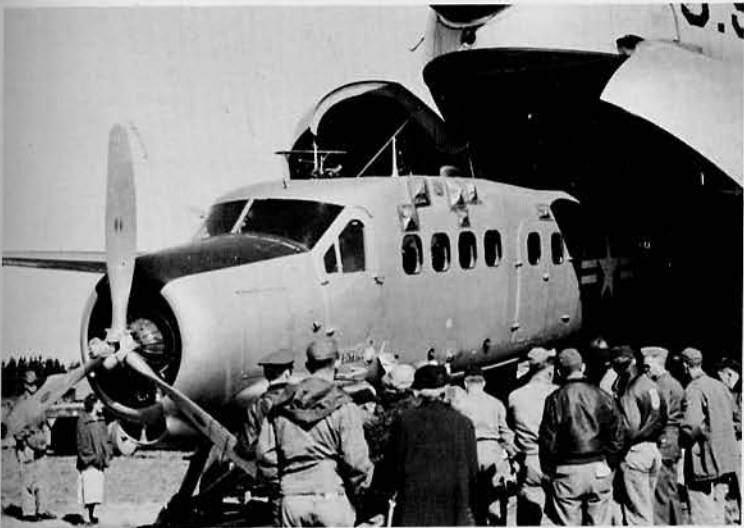
in its huge belly. Right, R5D Skymaster, a Navy workhorse and veteran of the first phase of *Operation Deep Freeze*.



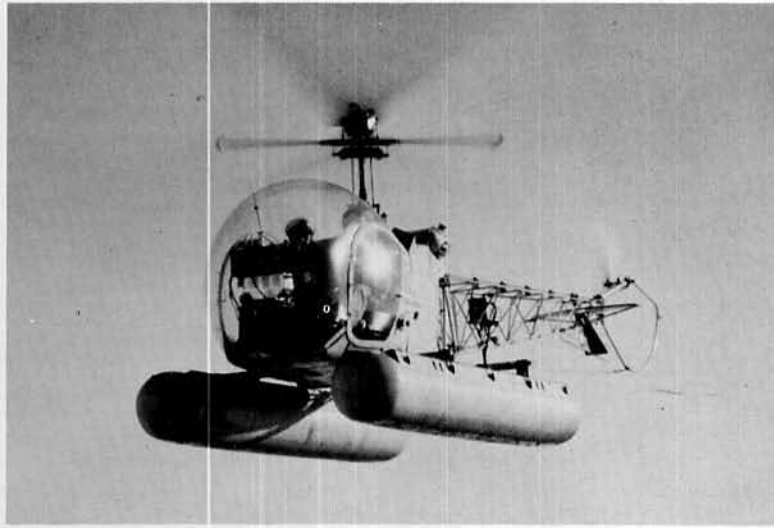
FAITHFUL performers: the R4D Skytrain (left) and the P2V Neptune (right) got dog-tired but stayed in harness



until the job was done. Brand-new P2V7's (jet-prop) were big stars even though harassed by ski troubles.



FLEET little pocket editions: Navy Otter emerges sans wings from maw of C-124 (left). Pontooned helicopter,



just one of many hedge-hoppers, attached to ships, camps, trail party, and what have you; versatile's the word.

# ... While the Bluejackets



USS STATEN ISLAND, ICEBREAKER



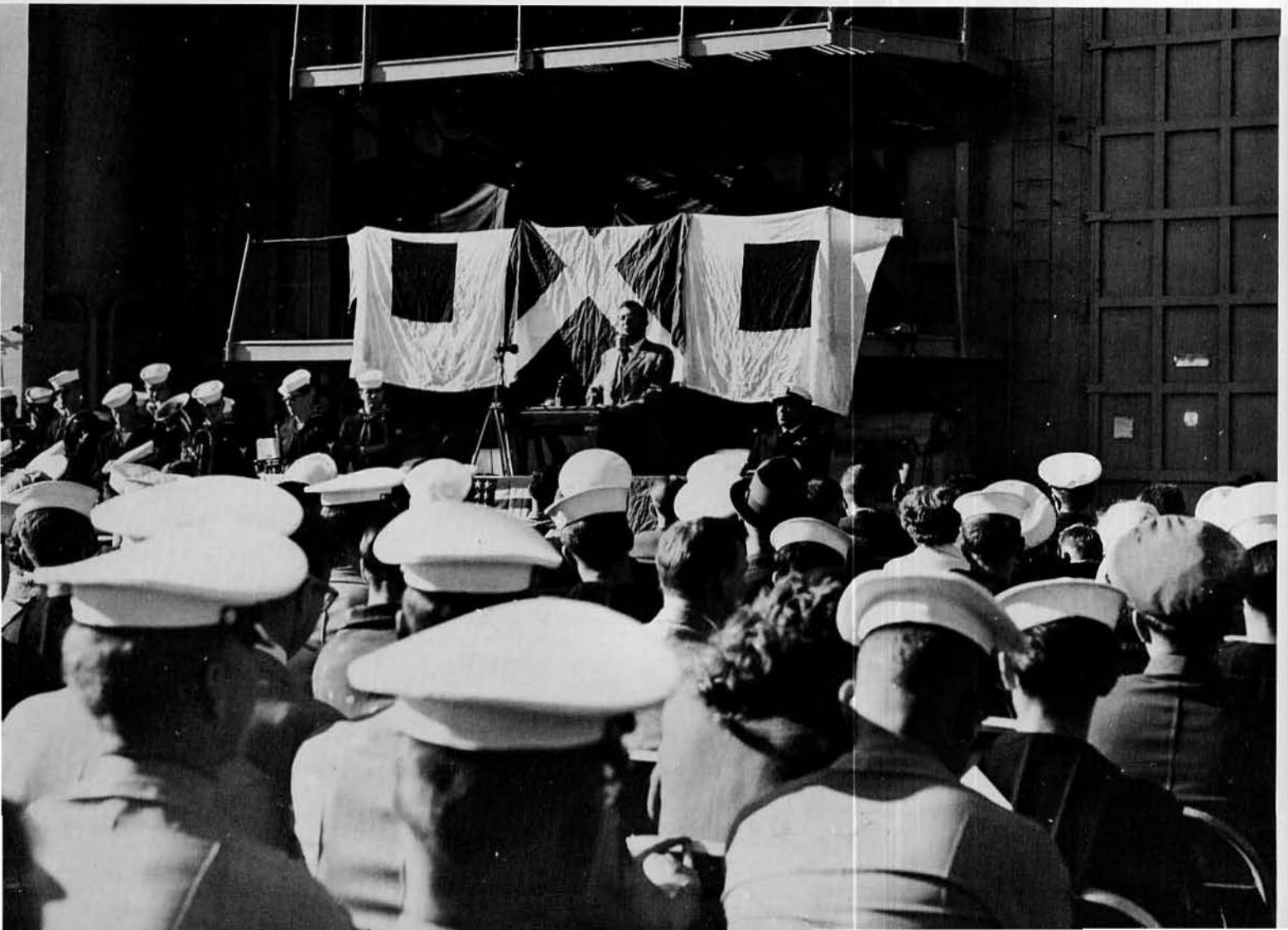
USS GLACIER, ICEBREAKER



USS ATKA, ICEBREAKER

WEIGHING ANCHOR, the ships departed from both coasts at scheduled intervals. Last of the 12 ships to depart was the seaplane tender CURRISS which left San Diego two days after Christmas with the scientists. The farewell

address to crew, passengers, and families was given by Dr. Laurence M. Gould, director of the U.S. IGY Antarctic program and an Antarctic veteran. (He was second in command at Little America I for the first Byrd expedition.



# Weigh Anchor for the Same Big Show:



USCGC NORTHWIND, ICEBREAKER



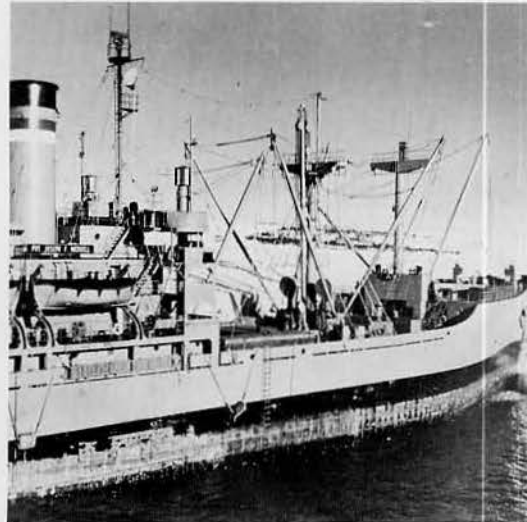
USS WYANDOT, CARGO SHIP



USS ARNEB, CARGO SHIP



USNS GREENVILLE VICTORY, CARGO



USNS PVT. J. F. MERRELL, CARGO



USNS PVT. JOHN R. TOWLE, CARGO



USS CURTISS, SEAPLANE TENDER



USS BROUGH, DESTROYER ESCORT



USS NESPEKEN, OILER

## ON STAGE CONTINUED

Air Development Squadron Six, with two R5Ds, one P2V2, and four R4Ds began the 11,000-mile flight September 10. The flight plan called for stops in California, Hawaii, Canton Island, Nandi Fiji, and New Zealand. Extra cabin tanks had been installed in the R4Ds to prevent a recurrence of *Deep Freeze I's* disappointment when R4Ds and Triphibians had to turn back midway between New Zealand and McMurdo Sound, never to complete their trip.

All planes reached New Zealand safely by September 20.

Meantime Globemasters of the 18th Air Force commenced the air shuttle of 100 tons of priority air cargo from Greenville to Christchurch. The entire squadron reached New Zealand by October 16 without incident.

While picket ships raced to their stations and while aircraft completed their flights to New Zealand, the train was loaded.

From Atlantic Fleet's amphibious force came veteran assault cargo ships ARNEB and WYANDOT to Davisville for cargo. Military Sea Transportation Service (Atlantic) sent the higher-capacity cargo ships TOWLE, MERRELL, and GREENVILLE VICTORY.

Service Force Atlantic provided further help by sending the tanker NESPELEN.

From Service Force Pacific came the icebreakers ATKA and STATEN ISLAND. The Coast Guard loaned the icebreaker NORTHWIND and Commander Air Forces Pacific assigned CURTISS to round out the sea arm of Task Force 43.

Task organization called for picket ships BROUGH and GLACIER to come under Ross Sea command along with ATKA, GREENVILLE VICTORY, MERRELL, TOWLE, NESPELEN, and CURTISS.

STATEN ISLAND would rendezvous in Panama with WYANDOT and sail down the Pacific coast of South America to assault the Weddell Sea. NORTHWIND steamed from Seattle to join ARNEB for the Knox Coast assignment after a joint United States-New Zealand base was established at Cape Hallett. The remaining ships would assemble at Port Lyttleton, N.Z. for the Ross Sea encounter.

Whether by Atlantic or Pacific, they came. Routine aboard each ship included training, boat drills, survival lectures, equator-crossing ceremonies, tropic liberty, and further preparations for the ice.

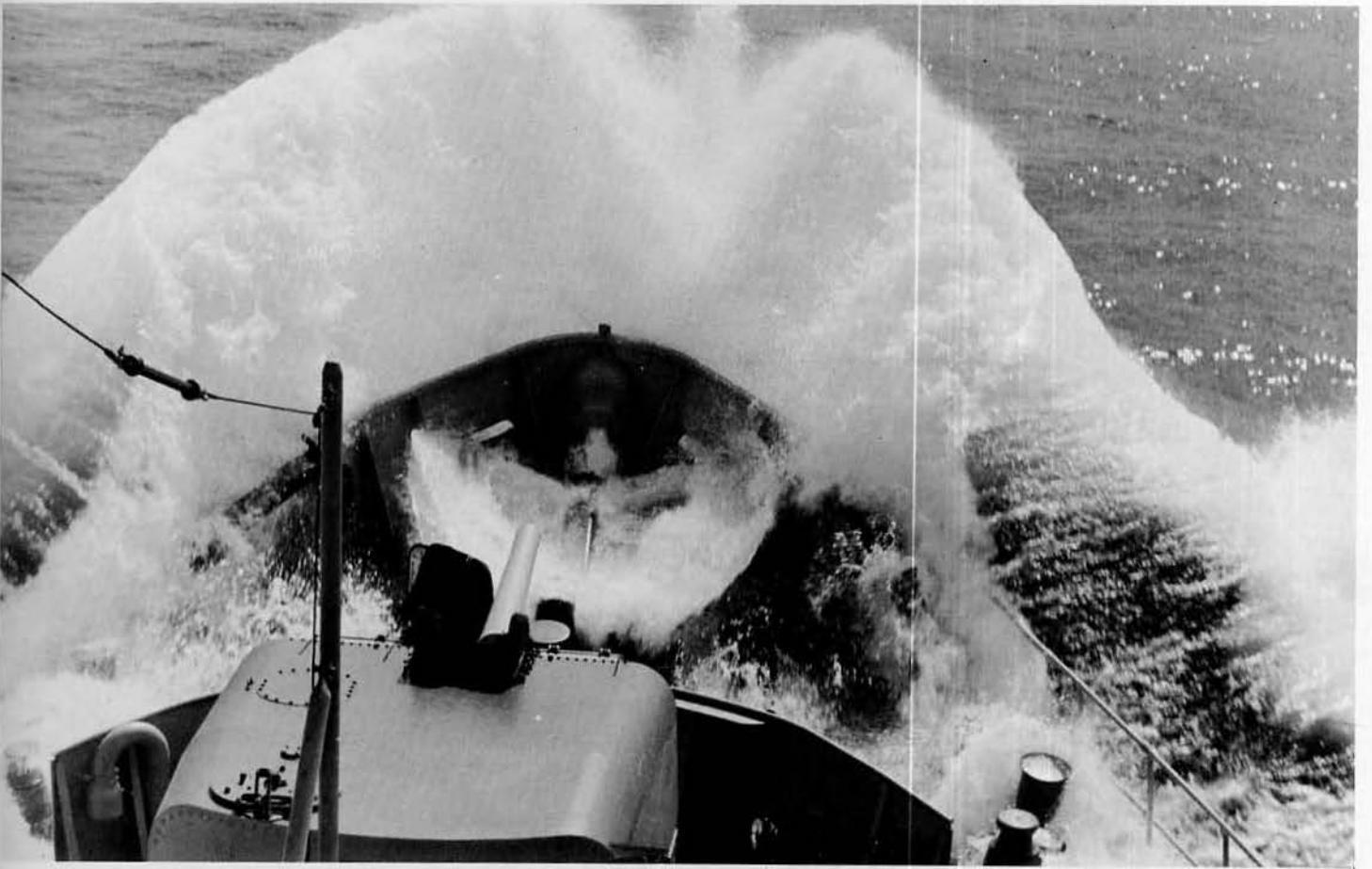
Navy and Air Force planes stood poised for flight south from New Zealand. They would permit a vital headstart of operations at the pole and Byrd Land while surface ships waited to get through the icepack.

SPECIAL SEA AND ANCHOR DETAIL OF THE CURTISS INSPECTS BEAUTIFUL SYDNEY HARBOR ON THE WAY SOUTH.





GLOBEMASTERS OF THE 18th AIR FORCE ROAR IN FORMATION OVER NEW ZEALAND'S PEACEFUL TERRAIN.



NEARING PANAMA, THE STATEN ISLAND PUSHES ASIDE WAVES IN PREPARATION FOR ITS ROUGHER JOB AHEAD.



# Ross Sea

## OPERATIONS

### McMURDO: LITTLE AMERICA: BYRD LAND: THE POLE:

**O**N OCTOBER 16 the newly installed GCA radar at McMurdo Sound picked up the first plane, an R5D flown by Commander Henry Jorda which was winging the Task Force Commander southward.

Flying over the icepack Commander Jorda spotted Cape Adare on schedule, then Mount Erebus and Observation Hill. On the bay ice the 6,000-foot airstrip looked like a small ditch with its snow mounds on both sides.

Admiral Dufek stepped off the R5D to be greeted by LCDR David Canham, Officer in Charge at McMurdo, whose men had accomplished the near-impossible to get a landing strip ready for the fly-in. The admiral had brought their first mail.

The admiral wired New Zealand: "Launch aircraft!" The planes roared skyward.

He was standing by the GCA tower at McMurdo when tragedy struck. An R5D piloted by Commander Edward Ward (VX-6 exec) and a P2V flown by Lieutenant David W. Carey were arriving almost simultaneously. Soupy weather was setting in. GCA operators were alert to handle the planes landing with low fuel supply.

Lieutenant Carey was in voice contact with GCA. He made a pass, saw the landing strip through a low cloud, and decided to land by visual rules instead of GCA. He began a low circle to get into a landing pattern. His right wingtip raked the snow about a half-mile from the strip. His nose came down. The Neptune cartwheeled and broke into fragments which littered an area of several hundred yards.

By the time a rescue party reached the crashed plane the only part that could be recognized was the tail assembly.

Dead were Lieutenant Carey; radioman Charles S. Miller, AT2; engineer Marion R. Marze, AD1. Seriously injured were Marine Captain Rayburn A. Hudson, squadron survival officer, who died eight hours later; Marine Staff Sergeant Robert C. Spann, navigator; Ensign Keith D. McAlpine, co-pilot.

Almost beyond belief, rescuers found plane captain Clifford C. Allsup, AD2, standing by the crash trying to aid his crewmates.

Crewmen and passengers in the R5D and the four R4Ds coming in to land were not informed of the crash until after they had landed.

All crash survivors were rushed to the base dispensary for first aid until they could be flown back to a New Zealand hospital.

CTF-43 GREETS WAOF MEN AS HE LANDS THERE.



♦ MOUNT EREBUS, only known active volcano in Antarctica, floats ethereally like Byrd's "enchanted continent" in the sky, like a pale sleeping princess in icy beauty.





Anxiously scanning the sky through a sudden snowstorm, Admiral Dufek awaits his air group which is winging its way south to McMurdo Sound.

## How Tragedy Came to McMurdo in the Early Days of Phase II

4 DEAD, 3 INJURED  
IN CRASH OF NEPTUNE  
ARRIVING AT WAOF  
FROM CHRISTCHURCH



"Carole Jeane", the R5D that brought the CTF to a safe landing on the sea-ice runway at WAOF.



FATAL CRASH with Father Condit kneeling to administer last rites to crew member (left), transporting the dead to



base two miles distant (center), and taking the injured via C-124 back to New Zealand hospital, (far right).



# ...Then Green Light for the C-124's



YAWNING MOUTH OF GLOBEMASTER DELIVERS MAIL, FRESH VEGETABLES, EQUIPMENT AFTER 2,066-MILE FLIGHT SOUTH.



GREETINGS from CTF-43 to USAF Colonel Horace A. Crosswell, squadron commander of the eight C-124's provided by the 18th Air Force to airdrop pole equipment.



"NORTH CAROLINA" WITH FIRST AIR FORCE CREW TO LAND IN ANTARCTICA.



DWARFED BY LOOMING MT. EREBUS, BIG PLANES LOOK LIKE FLIES ON MILE-LONG McMURDO SOUND ICESTRIP.

## Busy McMurdo Jumps

No sooner than the weather broke, giant Air Force Globemasters were given the green light to take off from New Zealand. They were to bring in 100 tons of priority cargo.

Four C-124's landed without incident, then the fifth nosed down when its nosewheel collapsed. The plane skidded some 700 feet but nobody was injured and the critical cargo was not hurt.

With the runway obstructed by the crippled Globemaster, Air Force Flight Six was turned back to New Zealand until men and tractors could tow the cripple off to a parking strip.

Formerly peaceful, orderly McMurdo Sound with its winter population of 93 was soon a thriving air terminal of a dozen multi-engined planes and nearly 300 men.

The galley began feeding in shifts. Men moved their bunks closer to make room for new arrivals. Before sufficient Jamesway Huts could be assembled men were berthed in the chapel in sleeping bags on folding cots.

Maintenance checks were pulled on the planes and single-engine Otters, which had come crated inside the Globemasters, were assembled on the ice.



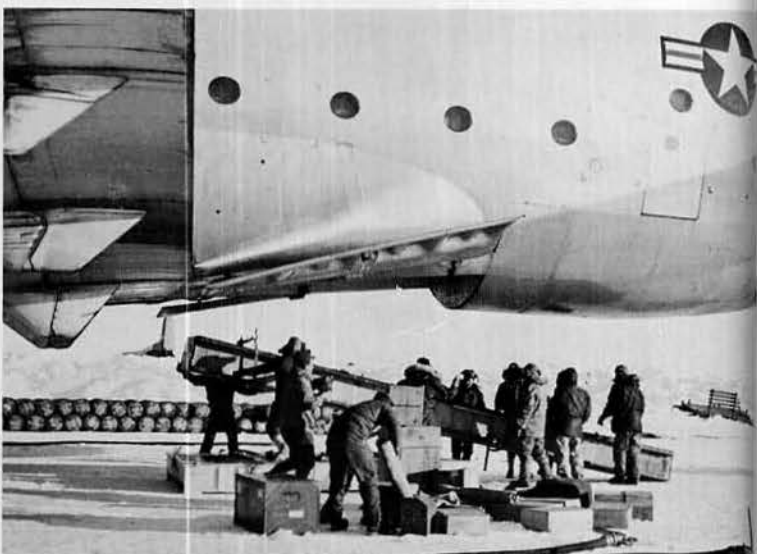
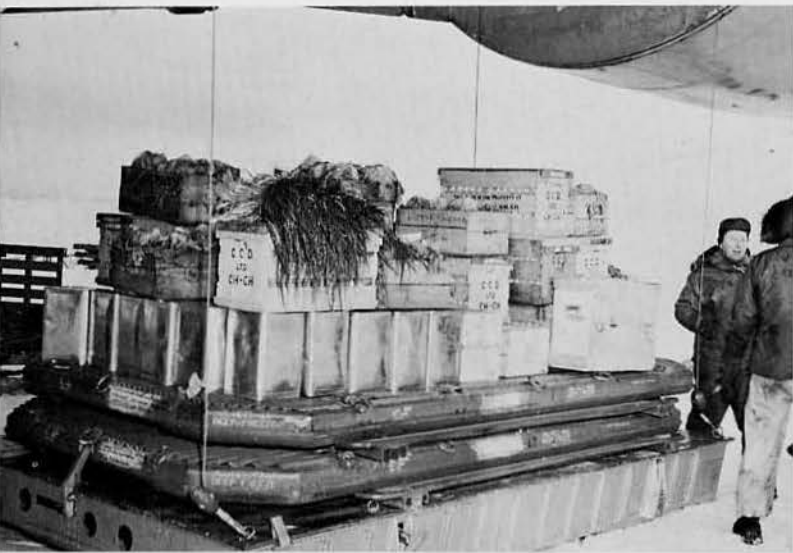
THE RUNWAY, SCRAPED OUT BY SEABEES DURING WINTER NIGHT, WAS ON BAY ICE 7 TO 14 FEET IN THICKNESS.



NOSE-DOWN landing of inbound C-124 was unmarred by injury. Resourceful ground crew towed huge transport

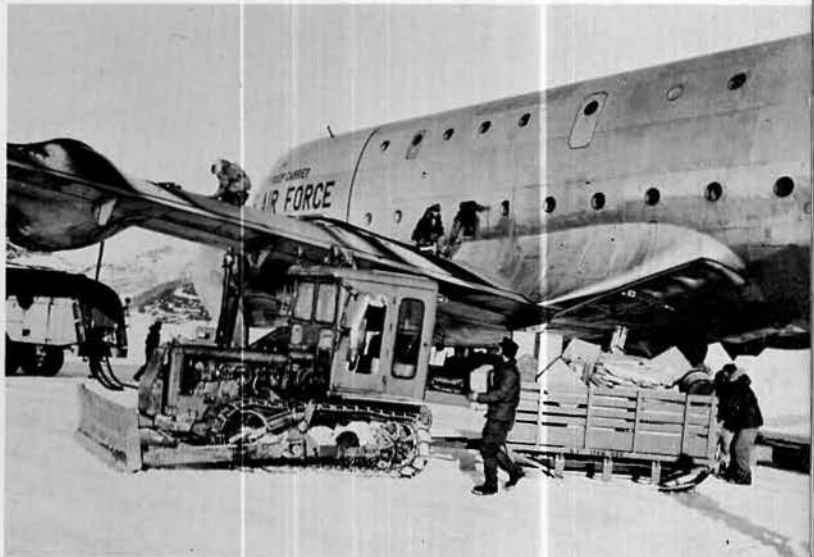
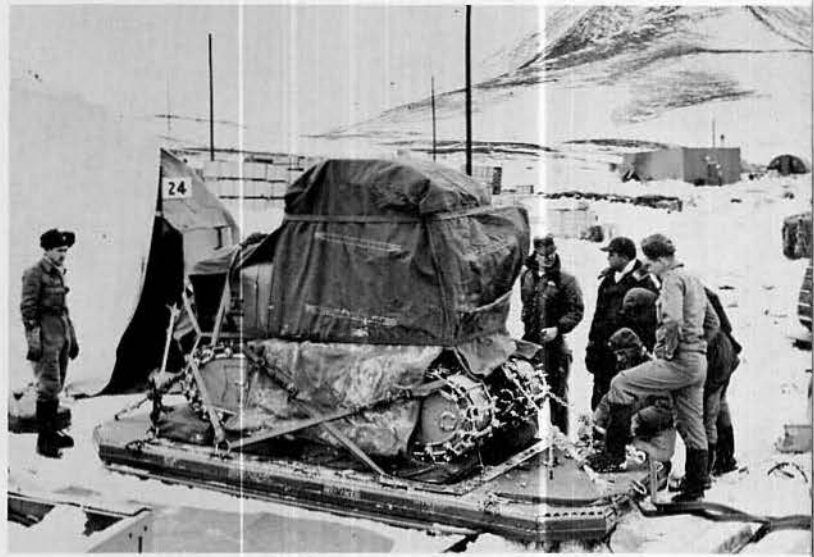
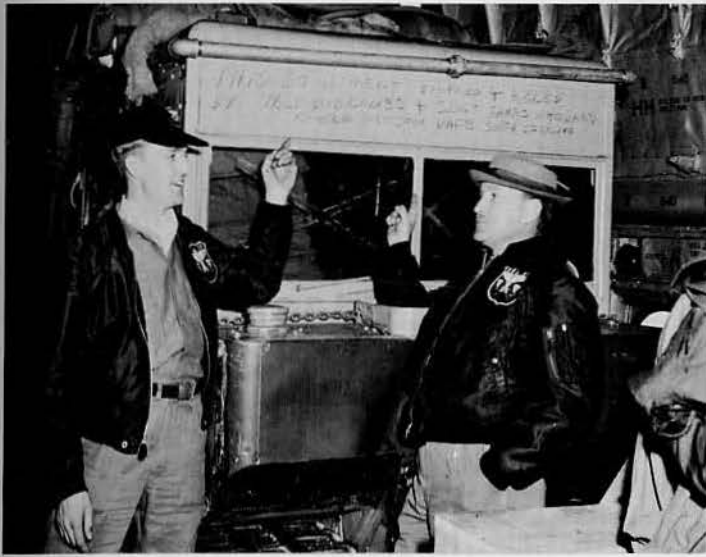
on sled to repair area (center) where it was jacked up on timbers for repairs to its 77-ton hulk, unloaded

# And Cargo Runs Out of Your Ears: \_\_\_\_\_



GLOBEMASTERS, huge silver flying fish with scarlet tails and wing-tips, airlifted more than 200 tons of cargo in from New Zealand then airdropped over 750 tons of

equipment and supplies at the South Pole and another 230 tons of fuel oil to Marie Byrd Land. Here is a cross-section of the gigantic Air Force cargo operation.



CARGOES included heavy mechanical equipment such as weasels (upper left), SnoCats (upper right), and Jamesway huts (lower left). Then, too, there were high-

priority essentials—Christmas trees from Oregon (with ornaments) and Christmas mail and packages plus fresh fruits and vegetables to make the holidays even more so.

# And There Are Only 24 Hours to a Day:



HARD-WORKED TRACTORS REQUIRE MUCH CARE RANGING FROM COMPLETE TEARDOWN AND OVERHAUL TO TINKERING.



HARVESTING SNOW FOR THE MELTER HAS BEEN REDUCED TO A SCIENCE THANKS TO PARACHUTE BAGS AND TRACTORS.



MEALS FOR A RAVENOUS CREW



CLEANING OFF THE SIDEWALKS



PUTTING TOGETHER BUILDINGS



TIME FOR WORK



TIME FOR FOOD



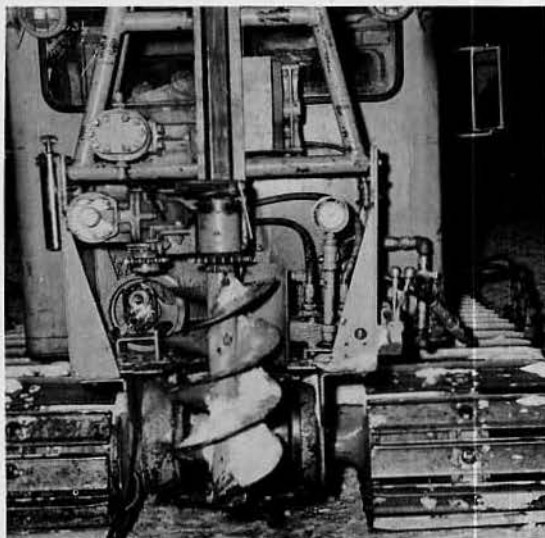
TIME FOR PRAYER



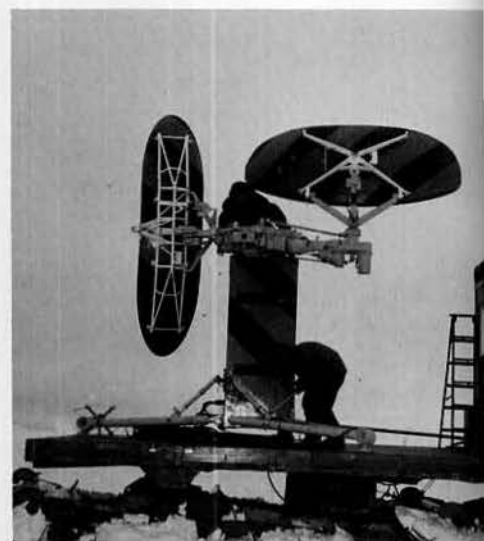
TIME FOR SLEEP



# WAOF Readies for 90° South:



RUNWAY REPAIRS ARE MADE BY LEVELING WITH LAND PLANER, FILLING GOUGES, CHECKING STRESS POTENTIAL OF ICE.



SCIENCE TO THE ASSIST: TAKING THE PULSE OF THE WEATHER (LEFT AND CENTER) AND SETTING UP RADAR UNITS.



MOUNTING JATO BOTTLES ON R4D (LEFT); MOTOR REPAIRS INSIDE HEATED OUTDOOR "HANGAR" ON SKYMASTER.

# Events Leading Up to October 31, 1957

Reconnaissance hops were made to the pole and a landing was made at the Beardmore-Liv Glacier area to learn whether it would be possible to erect a support base there.

Another R4D flew trail-party men and materials to Little America to begin marking a safe trail into Marie Byrd Land.

On October 28 eight men under Michael Baronick, AOC, were landed at the foot of Liv Glacier on the Ross Ice Shelf where they set up an auxiliary base to aid planes bound to and from the South Pole. Their camp was austere in the true sense. They had fuel for planes, dropped by Globemaster; they had radio equipment; they had tents and sleeping bags and food.

And they had guts.

## AFTER 44 YEARS

At 1255 local time October 31, R4D Bureau Number 12418 took off from McMurdo's bay-ice airstrip. Its crew included LCDR Conrad "Gus" Shinn, pilot; Captain William "Trigger" Hawkes, co-pilot; Lieutenant John Swadener, navigator; John Strider, AD2, plane captain; and William Cumbie, Jr., AT2, radioman. Its passenger-observers were Rear Admiral Dufek and Captain Douglas Cordiner, C.O. of Air Development Squadron Six. Aptly named *Que Sera Sera* (Whatever will be, will be), the R4D was destined for history.

*Destination:* The South Pole. *Mission:* The first aircraft landing there in history.

Soon a Navy R5D flown by Commander Henry Jorda took off to fly air cover for the landing as did a Globemaster flown by Major W. Daniels, pilot, and Major Cicero J. Ellen, plane commander.

The R5D experienced engine trouble en route and returned to McMurdo, accounting for the scarcity of pictures of the historic landing since this was the official photo plane. The Globemaster overtook and passed the slower R4D and arrived over the pole at 7:03 p.m.

Obtaining a good navigational fix, the Globemaster circled the pole until the R4D arrived at 7:35 p.m. Then LCDR Shinn searched the 9,200-foot plateau at low levels, looking for the best surface for landing until 8:34 p.m., when he landed.

The seven crewmen and observers in the ancient R4D (accepted in Navy service during World War II) knew great relief when they felt their skis grating against hard snow. There had been previous speculation that the snow was soft and powdery and that it might swallow the plane. No man had set foot there

since Captain Robert Falcon Scott of England in 1912.

Admiral Dufek stepped from the *Que Sera Sera* into minus 58-degree temperature. Less than three minutes on the snow, he saw Captain Cordiner's face grow white with frostbite as they planted the U.S. flag. Radioman Cumbie, helping Captain Hawkes erect radar reflectors for future landings, found he couldn't release the shovel handle and had to kick it free from his hand with his boot.

While others worked with flags and markers plane captain Strider repaired an oil leak.

The initial American occupation of the South Pole lasted 49 minutes.

LCDR Shinn revved up his engines for takeoff and the faithful old plane whose type has been in military service 23 years did not budge. Its skis were stuck to the snow.

He fired four JATO (jet-assisted-take-off) bottles and still the plane remained fast.

He fired another bank of four JATO bottles and the skis broke free.

He fired four more and picked up headway. Finally he fired the remaining three bottles and was airborne at 9:23.

His airspeed was 60 knots.

Every danger signal on the panel flashed on. The windshield was frosted inside and out which required an instrument take-off. Strider threw his circuit breaker so he wouldn't have to look at the various danger signals.

Overhead Major Ellen, too, was concerned. The JATO blasts, plus the Globemaster's own vapor trails, obscured the smaller R4D. He tried to call LCDR Shinn by radio but got no answer. He tried again. Still no answer. (Shinn was so busy clearing his windshield and keeping the plane airborne he didn't have time to answer.)

Finally the airborne R4D came in sight and the Globemaster followed it to Beardmore auxiliary station where it would be refueled for flight back to McMurdo.

You'd think there would have been a major celebration at McMurdo when *Que Sera Sera* returned from its historic mission. There was none. Every man at McMurdo, it seemed, had had complete confidence that the operation would go off as planned and no one showed surprise at its success.

In view of the extreme cold encountered at the pole magnified by the air's thinness at the two-mile altitude, the Task Force Commander decided to postpone further landings of men and equipment until temperatures rose to at least minus 30 degrees.



THE LUCKY SEVEN, first Americans to ever set foot on the South Pole to plant the Stars and Stripes beside the cross of Norway and the Union Jack. Left to right, John P. Strider, AD2; RADM George Dufek; LCDR Conrad Shinn; Lieutenant John R. Swadener; William A. Cumbie, AT2; Captain William Hawkes; and Captain Douglas Cordiner; an all-Navy team for the occasion. Right, the first plane (a wheeled R4D Skytrain) to set down at the pole.

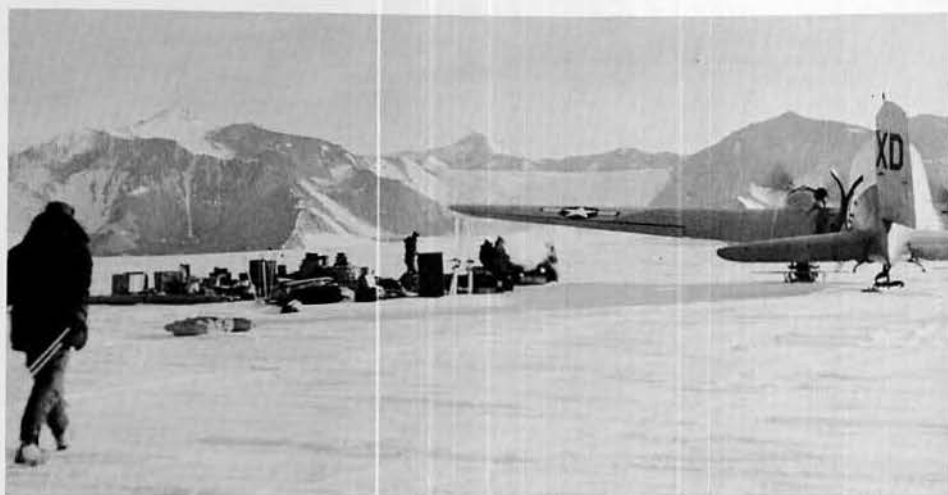
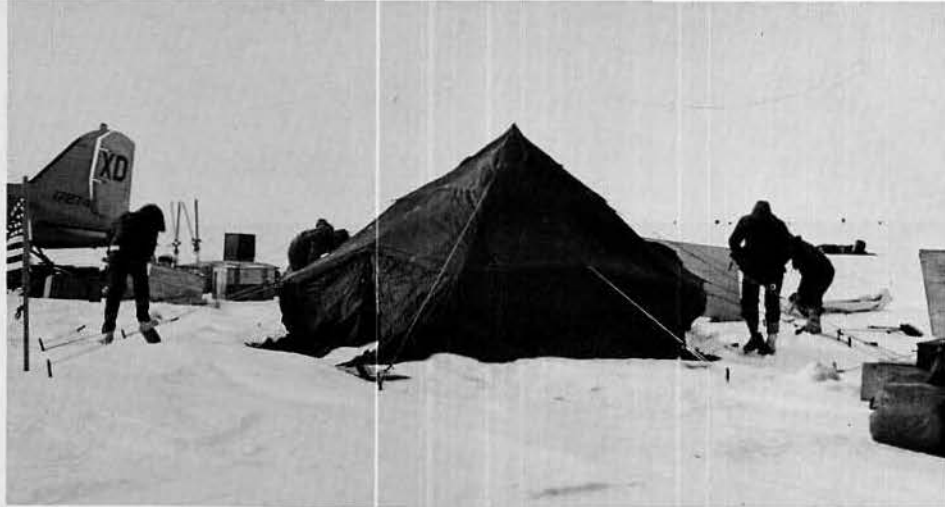




THE "QUE SERA SERA", FIRST PLANE IN HISTORY TO LAND AT SOUTH POLE, TRAILS VAPOR EXHAUST AS IT TOUCHES DOWN.

# HISTORIC LANDING





NAVIGATION check was furnished by C-124 with USAF LtCol C. J. Ellen, commander of the 52nd Troop Carrier Squadron, aboard.

BEARDMORE Station, halfway house to the pole, was set up as a refueling base for long-range planes. Men of the station pitch tents (upper) after arrival by R4D, and unload supplies from shuttle planes.

# AT THE SOUTH POLE



ON DECK at the pole, the historic plane keeps its motors cranking to avoid hazardous freeze-up in minus 58° cold.



◆ CAPTAIN HAWKES AND ADMIRAL DUFEEK STAND AT THE POLE.

LCDR SHINN, POLE PILOT, GETS A HAND FROM CTF-43.

# Trail Party Departs

While McMurdo marked time for subsequent polar landings, the 11-man Army and Navy trail reconnaissance party put out from Little America for Marie Byrd Land on November 6 in two weasels, a SnoCat, and two Caterpillar D-8 tractors.

Planes had flown more than 200,000 miles of visual reconnaissance and had taken aerial photographs of the intended route. Every crevasse and crevasse symptom visible from 500-foot altitude had been carefully plotted at Little America and a tentative trail had been blazed on paper before the advance party even boarded its vehicles.

The lead weasel carried an electronic crevasse detector, the second weasel carried navigational equipment, the SnoCat towed four small sleds containing bunks, the first D-8 pulled two sledloads of fuel, and the last D-8 hauled one sledload of fuel and a messing wannigan.

The advance party made steady progress to a point 160 miles southeast of Little America. Air recco showed crevasses ahead.

The surface party turned southeastward and reached the 200-mile point before running into impassable crevasses. Air recco had ruled out a westward route.

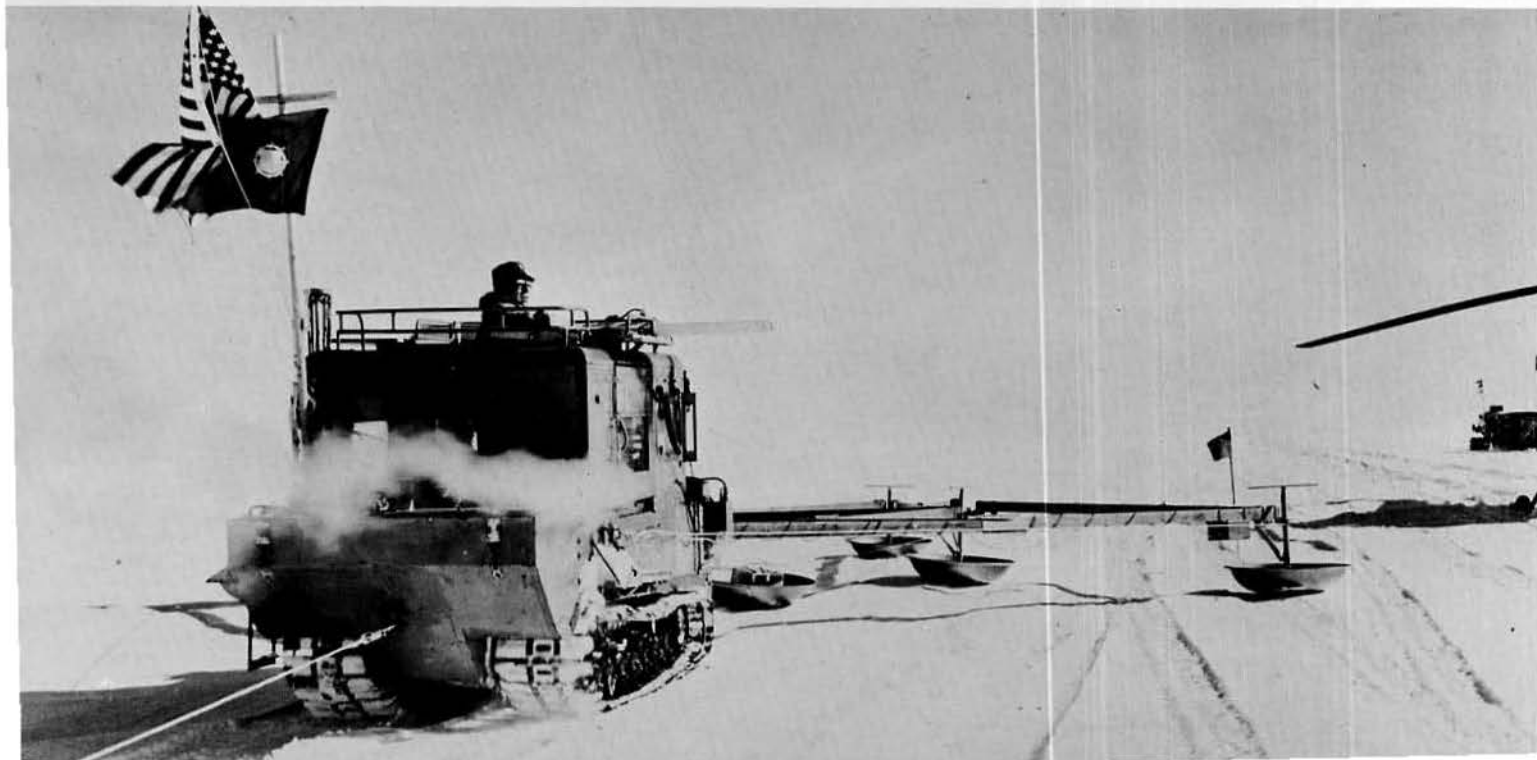
So the surface team backtracked to the 160-mile point, then cut in toward where the Ross Ice Shelf meets the Rockefeller Plateaus at 79-34 South, 151-40 West, about 183 miles from Little America. There were some 50 to 75 crevasses to bridge in the ramp area but even this obstacle seemed the line of least resistance.

*(Continued on page 50)*



ADVANCE trail party makes last-minute preparations of sleds and wannigans (top). Coffee break on the trail (center). Lower, USA Majors Palle Morgensen and Merle R. Dawson (CO of trail party) discuss aerial recco plans.

CREVASSE DETECTOR ON THE PROWL FOR HIDDEN HAZARDS LEADS THE WAY FOR TRAIL PARTY DEEP INTO BYRD LAND.



BRIEFING prior to first South Pole airdrop mission. MAJGEN Chester E. McCarty (seated left) and Colonel Horace Crosswell (seated on table) noodle out problems.



SEABEES, other pole personnel, and sled dogs emplane for flight to Pole Station. First group took off November



20, landing as near to pole as possible then dog-sledding it over the rough *sastrugi* to reach the actual map pole.



C-124 OVER BEARDMORE GLACIER HEADS FOR POLE.

## Poleward Ho!

While the trail party was thus engaged November 19, three R4Ds took off from McMurdo with the initial pole construction crew of eight men and a team of eleven dogs to carry their basic supplies to the exact pole. In navigation, particularly air navigation over an expanse of snow with no navigational aids except gyro and sunlines, it is considered good navigation to come within four miles of an exact point. Thus men with theodolites could take a series of sunlines after arrival to determine the exact pole. Dogs dragging their equipment could save wear and tear on the planes which otherwise would be required to taxi over the rough *sastrugi*.

Subsequent flights carried 16 more construction men and Doctor Paul A. Siple who would be chief scientist at the pole for the IGY studies.

A Globemaster first dropped supplies and food to the men, then the massive airlift began.



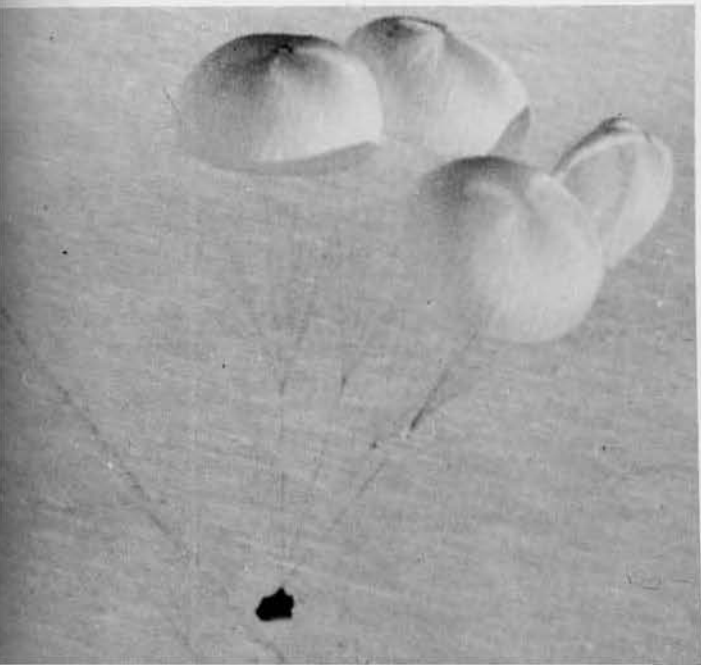
**INDIAN SIGN** over the pole. Captain Leland S. Bearskin, USAF commander of 63rd Troop Carrier Wing, flew 12 drop missions to South Pole wearing his tribal headdress the while. The captain is a Cherokee Indian from Oklahoma. Down goes the heaviest item dropped (lower)—a 17,000-pound D-2 tractor, floated to earth by multiple parachutes and operational in 10 minutes.



# Then the Massive Airlift Began



ANOTHER first for the Air Force: the first Air Force crew to fly over the South Pole. General McCarty and Colonel Crosswell at center of group (top). "Fresh-air taxi" takes fliers to planes (right); (far right) Colonel Ellen and Captain Cassity (airdrop officer) confer. Another look (below) at 7-ton tractor going down via 4 100-foot chutes to land safely.



# Glacier Hits the Ice



THICK ICE COATS DECKS AND SUPERSTRUCTURE, EVEN MUFFLING SHIP'S BELL OF ANTARCTIC-BOUND USS GLACIER.

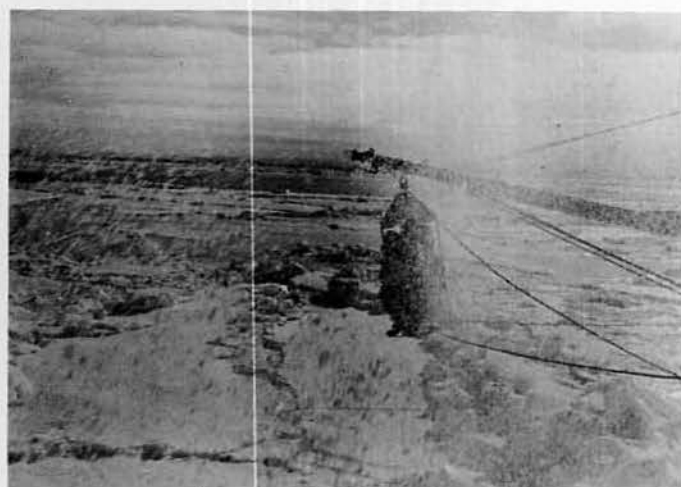
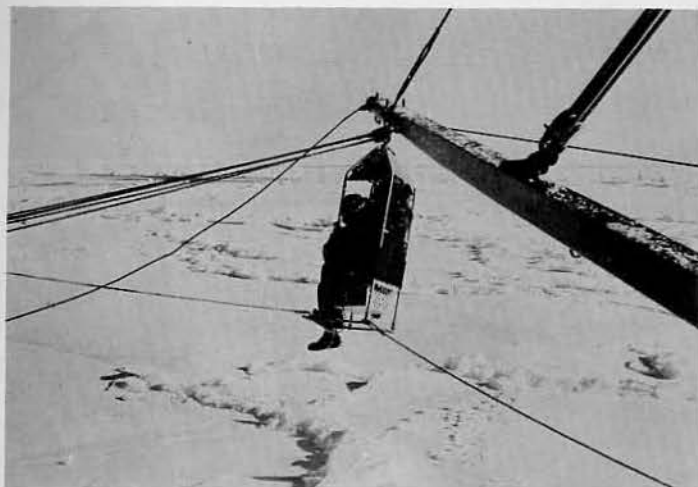
Powerful *GLACIER*, the icebreaking amazon who in *Deep Freeze I* had plowed through ice 20 feet thick to cut a channel for the fuel barges to reach Hut Point, had left its picket station on the fringe of the icepack after the initial fly-in from New Zealand. Bucking heavy pack ice (ten-tenths coverage was fairly common) and field ice with no leads in sight for miles, *GLACIER* bulled her way southward through 800 miles of ice. Hummocks 30 feet thick were encountered. They were attributed to a winter-night storm that had broken up the pack, stacked layer atop layer, then refroze it as if in a concerted effort to deny *GLACIER*'s passage.

From a boom rigged forward, chief photographer's mate Calvin Larsen captured on film for posterity the most tenacious ice fields ever conquered by men and ship.

Using a combination of lookouts, helicopter reconnaissance, radar and the knowledge of veteran icebreaker officers, *GLACIER* arrived at McMurdo October 28, by far the earliest ship to ever penetrate the pack. She discharged critical cargo and passengers at Hut Point and rushed to Little America, arriving November 7 with JATO bottles for planes taking off and landing from the ice and 4,000 pounds of high explosives for the hard-pressed advance party to use opening crevasses. A six-foot crack in the bay ice at Kainan Bay meant her cargo and passengers had to be shuttled from ship to base by a lone helicopter of Helicopter Utility Squadron Two. Turnaround flights left the ship every 12 minutes until men, JATO, and dynamite were unloaded.

(Continued on page 62)

UNLOADING operations were a bit rough. It was the earliest a ship had ever penetrated the ice, October 28; earliest before that was December 7, 1912 when a Japanese ship had arrived in the Ross Sea. D-4 Cat rests on ice (right) after transfer from GLACIER's cargo hatch.



NOW YOU SEE HIM, NOW YOU DON'T: NAVY PHOTOGRAPHER SHOOTS MOVIES FROM BOW OF ICE-DOUSED GLACIER.



HELICOPTER SHUTTLE BETWEEN GLACIER AND KAINAN BAY ICE BARRIER KEPT SHIP AND SHORE CREWS ON TOES.

## Crevasse Junction and the Train

Major Merle "Skip" Dawson's advance trail party tackled ice chasms in earnest November 18.

First the electronic crevasse detector was pushed cautiously forward to detect concealed flaws in the ice. When its graph indicated a snow-covered void men probed with rods. Maybe it would be a crevasse, maybe just soft snow, so sensitive was the machine.

Demolition charges were planted and exploded, opening large and small craters cleanly so tractors could bulldoze snow to fill them, then pack the snow with their 54-inch pads. Cracks too large to fill were detoured.

A helicopter flown from Little America by Marine First Lieutenant LeRoy Kenny made 97 flights in the seven-and-a-half-mile area, laying out flags to mark dangers and fuel drums to mark the direction of safest advance. Trailblazers found that very often a crevasse symptom can be seen from a hovering helicopter that would go undetected by a man standing on the snow or riding a snow-vehicle. (In November the sun's elevation is so low it tends to cast long shadows which can be seen from the air but not from the surface.)

The battle for trail safety was waged foot by foot in an effort to insure that no tractor or its driver would meet the fate of Max Kiel who died the preceding March at Prestrud Inlet while bridging a crevasse.

Even as church services were held at Little America, Navy airmen loaded more and more dynamite into R4Ds and an Otter plane to make ski-landings at Crevasse Junction. The rate of dynamite expenditure averaged 800 pounds per mile of bridged crevasses.

The trail party reached what appeared an impasse. Previously ice chasms could be bridged or bypassed with safety. Now two crevasse systems converged at a point ahead. It couldn't be detoured.

The choice was to abandon all the work that had gone before, or to blast the giant cavern open and attempt to fill it. Meantime the season grew late.

They blasted. They filled. Opened, the chasm looked like a minor Grand Canyon. Two D-8 tractors bladed 105,000 cubic yards of snow (more than 709 standard boxcars full) into the canyon. Still the walls of the valley were twelve feet above the trail, but the 30-foot-wide trail was safe.

Crevasse Junction passed its final safety examination December 4, 1956 when a loaded sled was pulled to the safety of the Rockefeller Plateau by a 38-ton tractor.

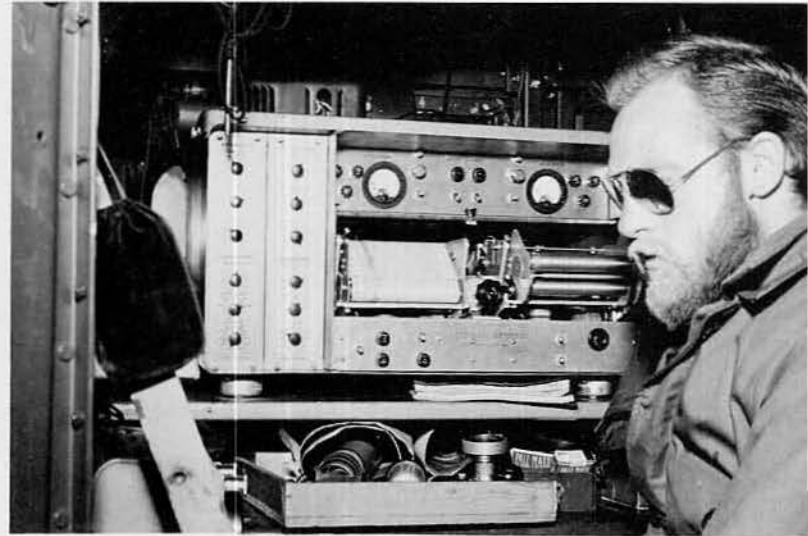
Attainment of the plateau by the advance party was the signal for departure of a six-tractor twelve-sled train from Little America under Chief Warrant Officer Victor Young who rode shotgun in a weasel.

*(Continued on page 52)*



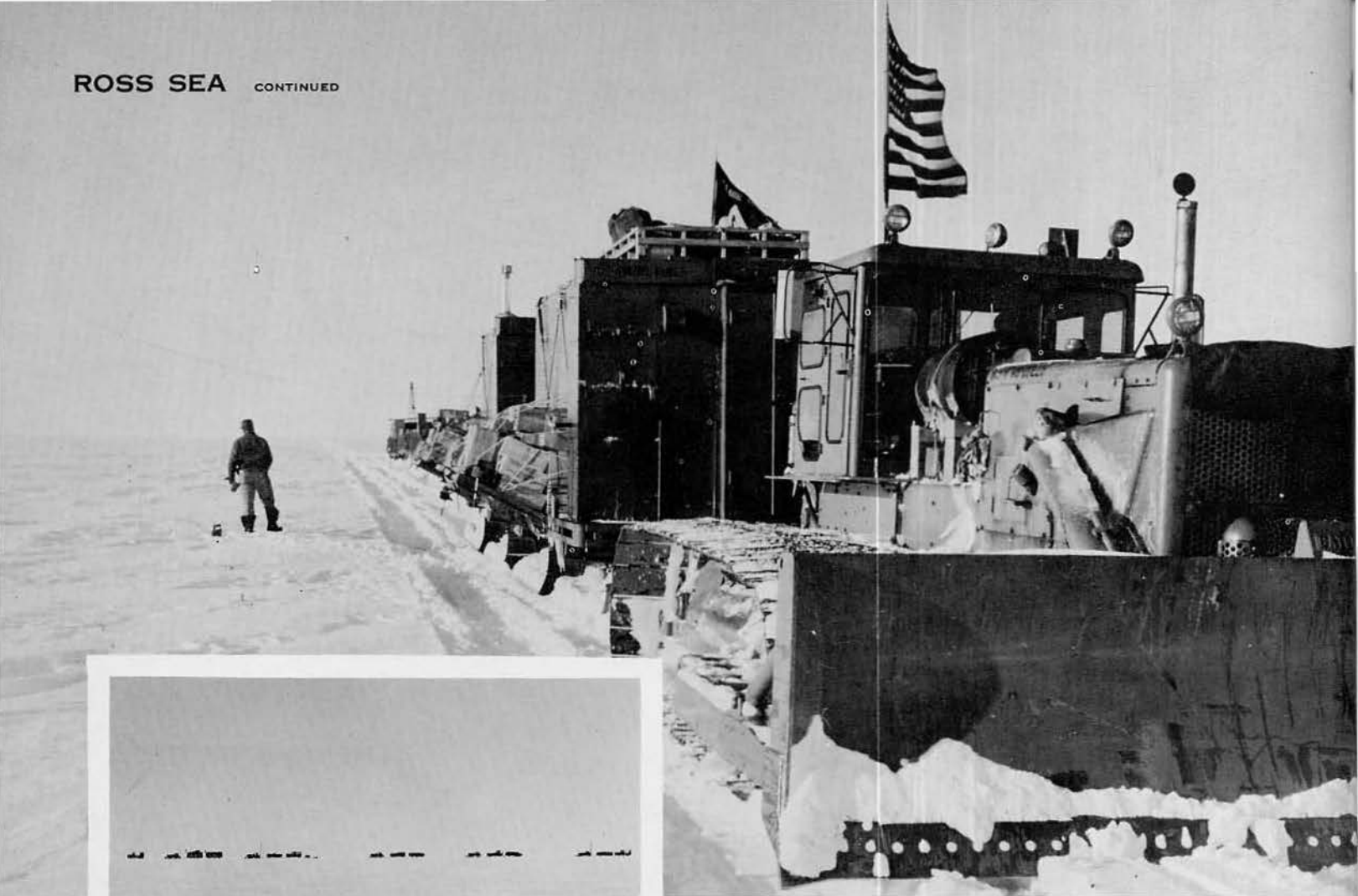
TREMENDOUS pressure within the ice causes natural upheavals such as the pressure ridge (above) extending far across the ice fields, and gaping crevasses (below) that reach hundreds of feet to form great deathtraps.

# The Crevasse Detector Stalks its Prey:



INCHING AHEAD of trail party, the crevasse detector "feels out" caverns, transmits its findings electrically back to receiver (upper). Operators hitch up power cables to transmitter box and adjust bell-shaped detectors (center)

as helicopter stands by for aerial recon. Once found, the crevasse is blasted wide open (below) and its lower limits explored. Spoon-nosed tractors then move in and shove mounds of snow and ice into the holes to fill them.



LARGEST tractor train ever assembled in Antarctica moves across the face of the flat icefields into Marie Byrd Land. "Caravan" is crossing treacherous crevasse areas.

## CREVASSE JUNCTION

Sledloads averaging 20 tons' payload each followed rumbling tractors over the soft snow at three miles per hour.

Meantime the advance party refueled and headed deeper into Marie Byrd Land, planting trail flags five to a mile along the pencil-straight trail which on completion was named Army-Navy Drive.

The heavy train averaged 45 miles per day out of Little America, reaching Crevasse Junction on December 9. Army First Lieutenant Philip Smith was flown back from the advance party to help the tractor train through the danger area.

With the train drawn up into a 375-yard column on the Little America side of the chasms, the first of twelve sleds was dragged across. No cracks were opened.

It had been planned to pull one sled across every twelve hours, allowing the ice to settle between loads. When no cracks opened after the second crossing the time was cut in half and tractors rumbled cautiously across the closely marked trail at six-hour intervals.

After delivering the tenth sled an empty tractor was returning to camp when its driver Ben Melton felt the dreaded catskinners' nightmare . . . his Cat lurched downward and to the left. He knew it meant a breakthrough but kept his gears engaged until his heavy tractor reached safety.

Immediately the blasting crew exploded the cracked snow bridge and from under-ice observation located a detour route for the remaining two sleds.

Safely on the Rockefeller Plateau the train formed up for the remaining 457-mile trek to 80° South, 120° West. The trail ahead ran almost constantly uphill until, at the base site, the elevation was 5,150 feet. The trip was marked by monotony, miserable weather, mechanical problems, and boredom but four buildings for Byrd Station were delivered at 2 p.m. December 23. The first one was converted from sled cargo to a meteorology building within nine hours of the train's arrival:

Burning 11,000 gallons of fuel provided almost exclusively by airlift, the train had accomplished successfully the longest and largest tractor swing in Antarctic history.



YEA HIGH! Biggest crevasse of all took 105,000 cubic yards of snow to fill, still left 12-foot high walls on each side of the roadbed. CWO Victor Young (above) confers

with Army specialist before first unloaded tractor passes over floor of crevasse to try it out for firmness. This crevasse was about 185 miles SE of Little America V.



CWO VICTOR YOUNG (RIGHT CENTER) KEEPS AN EYE ON THE TRACTOR TRAIN AND ON THE CREVASSE-RIDDEN TRAIL .  
MCB (SPECIAL) MEN WORK ON BUILDING PANELS THAT WILL BE RAISED TO FORM PERMANENT BYRD STATION .





THE OLD AND THE NEW JOIN FORCES IN AN ASSAULT ON THE POLE: HUSKIES WAIT TO BE AIRLIFTED TO THE BASE.

## Pole Drops Intensified

Once Lieutenant Richard Bowers and his pole construction crew were landed, Colonel Horace Crosswell's principal question was, "How fast can you retrieve airdrops?"

The pole crew, conditioned for their work by rigorous training during the winter night, responded, "You drop it, we'll pick it up!"

So with two dozen men set to retrieve cargo as it plummeted downward from 93-ton Air Force Globemasters, drops began with piston-thrust regularity November 19.

Squadron Commander Lieutenant Colonel C. J. Ellen (then Major) (same gent who had flown air cover for his fellow North Carolinian, LCDR Conrad Shinn to make the first pole landing), had his forces organized for what Antarctic IGY science director Dr. Larry Gould later described as "the most outstanding logistics undertaking in history."

Stores, panels, wires, stoves, and sundry other items that had been segregated and prepared during the winter night were now strapped to pallets and shuttled to the ice strip with factory-smooth efficiency.

Loadmasters, working around the clock, hoisted items ranging from a 17,985-pound tractor to cans of coffee into the cavernous bellies of Globemaster after Globemaster.

Payload after payload was raced to the pole and dropped by dropmasters as fast as construction crews could retrieve it. When a couple of chutes failed to open, Air Force T/Sgt. R. S. Patton successfully parachuted from one of the C-124's to discover the trouble.

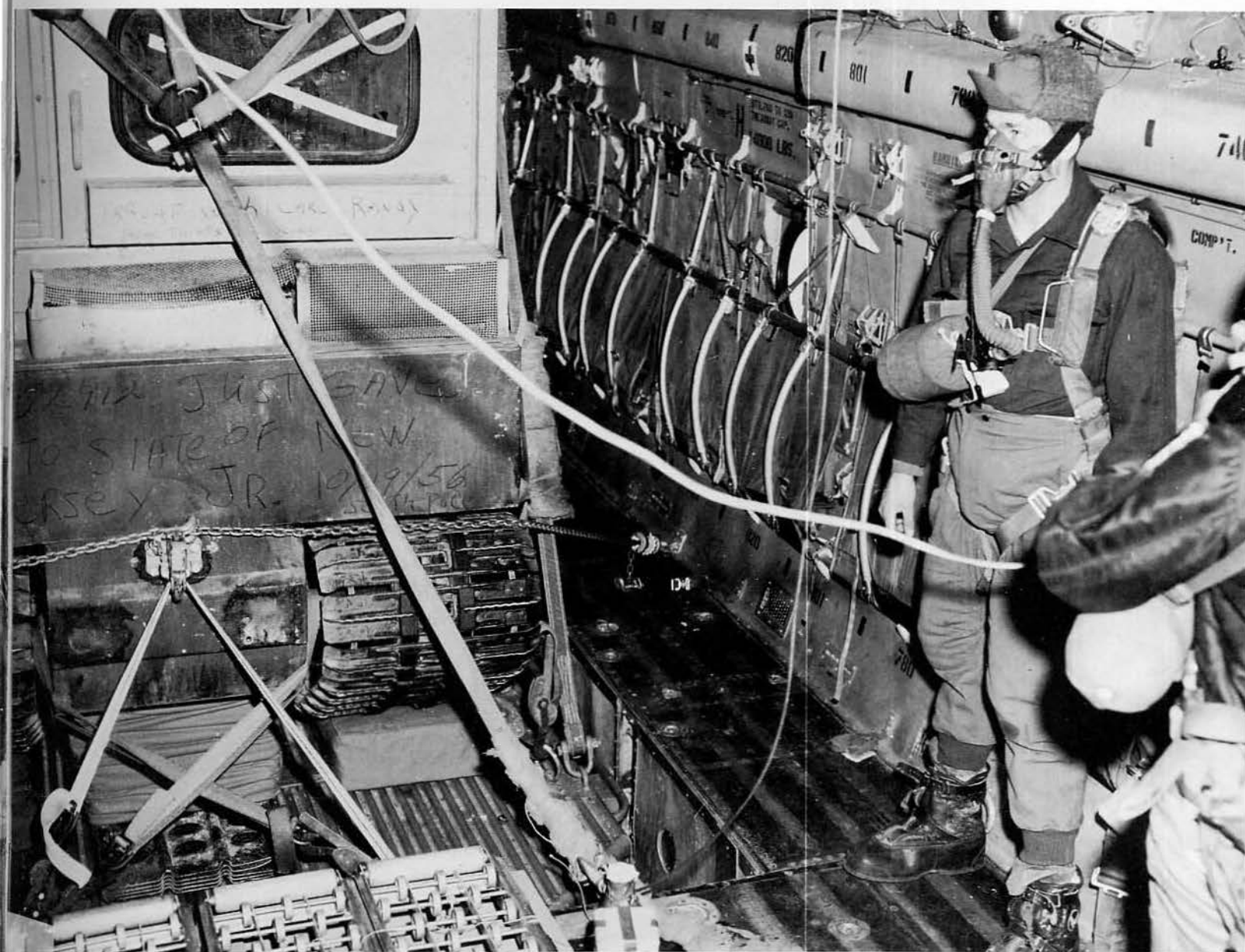
A graph in McMurdo's messhall—which you might compare to a March of Dimes thermometer in the public square back home—registered the rate of ton-

*(Continued on page 56)*



◆ THREE-WAY CONFERENCE: CTF-43, HAWKES, AND McCARTY.





GETTING ready to pull the string. Two out of three weasels airlifted and dropped at the South Pole were usable. This is one. USAF loadmasters, gulping oxygen, give it the send-off that plunges it down to the waiting base.



# Speed-up of Pole Airlift

nage. It streaked upward by scores of tons every day the weather permitted flights. Ten tons, 50 tons, 100 tons, 300 tons, 400 tons, 430 tons. Then *blank*.

Capacity loads, coupled with excessive landings and takeoffs, abetted by unseasonably warm weather and its resulting thaws in December, had had their effect on the natural ice landing strip.

Three nose-down landings had been made in poor visibility, gouging troughs in the ice. Oil pools, gone unnoticed during the periods of minus-30 temperatures in late October and November, now reared their ugly heads. Each black drop formed a veritable magnet for the sun's rays, it seemed. Where there were gouges in the ice, now there were potholes. Where there were oil leaks, now there were potholes with water standing in them.

Yet the pole drops were not completed.

Airmen flew under almost inhuman circumstances trying to get the job done before they were forced to safety in New Zealand. The same warm weather that played havoc with McMurdo's airstrip had upped fuel consumption by the Byrd Land tractor train and had raised a demand for 40 tons of fuel to be flown from McMurdo.

Still the Globemasters flew. On December 18 the Task Force Commander sounded out Major Ellen as to whether or not he'd better head for New Zealand with his planes.

"We'll fly one more day," he answered. This resulted in a 30-ton fuel drop at Byrd Station proper. (Ten tons had already been dropped at the 463-mile mark on the trail and gulped down by thirsty tractors.) The heavy planes left for New Zealand December 19, 1956.

Of the three nose-down landings by Globemasters, no fliers were killed. Factory technicians and Air Force maintenance men had patched up two of the planes and they had returned to New Zealand. As ironical as was the death of VX-6's survival officer on the initial McMurdo fly-in, the scrapped Globemaster had been the first Air Force plane to overfly the South Pole. It is now in daily service as a toolroom at McMurdo Sound.

With airdrops temporarily suspended until a prolonged freeze would permit resumption of landings by wheeled aircraft, the Task Force Commander conferred with the scientists. The discussion went something like this.

There were more than 400 tons of supplies landed at the pole and a fairly complete camp constructed. Four buildings had been erected at Byrd Station and more would be delivered by tractor train.

Let's assume at the very darkest, they figured, that the airstrip at McMurdo can't be used again this season. How many men, at the very minimum, will be required to conduct the science studies at the Pole and Byrd Stations?

"We can get along with twelve men at each base," said Dr. Siple.

"How much food per man do you need?"

"A ton and two-tenths per man per year."

"Alright, we'll deliver men, food and non-droppable science equipment by ski planes," said Admiral Dufek and Captain Cordiner.

So the flights began. Not so glamorous as the giant four-engined Globemasters which could spew ten tons of cargo from their bowels at one sweep, but faithful nevertheless, the tired little R4Ds faced up to the challenge.

Designed to operate at a gross takeoff weight of 27,000 pounds, the old Douglas planes took off regularly, sometimes grossing out at 39,000 pounds.

Said plane captain Strider, member of the initial pole landing crew, "Them old planes are just plain tired. When you get up to 12,000 feet they groan and moan. My coffeepot just won't work."

But they flew. And they were soon joined by the heralded P2V7 Neptunes with their jet-and-piston engineering plants. The brand new Neptunes ("with two a-pushin' and two a-pullin'") could handle up to 5,000 pounds of cargo and nine passengers in a single flight.

Rushed into service direct from the factory without ski-landing tests on snow, the P2V7s suffered repeated troubles with their skis. But brave pilots made sortie after sortie, in overloaded R4D and bugged P2V, until the Pole Station was manned by a dozen scientists and housekeepers, each provided with 2,400 pounds of food.

Finally the Neptunes returned to New Zealand for permanent repairs and three of the four R4Ds shifted to Little America.



CONFERENCE in McMurdo Sound Library between Dr. Paul Siple, Lt John Tuck, Lt Richard A. Bowers, LtCol C. J. Ellen, M/Sgt James W. Smith on drop priorities.

# "Minute Movie" of a Pole Drop:



AIRMEN ride a sledload of equipment for airdrop to the waiting Globemasters on icestrip two miles away (top). (Center) Scanner keeps pilot posted via interphone on condition of plane's engines; beside him part of load ready to coast along the rollers to drop well; now they drop in pattern formation to waiting ground crew; now they are

retrieved and hauled to camp from drop area. "Streamers" mean trouble, maybe loss so T/Sgt Richard Patten (lower) is briefed by Colonel Crosswell and takes off for the first parachute jump at the South Pole. Safely landed, he guided the planes overhead by means of a combat control radio and helped to lick the drop damage problem.

# And a Full-fledged Science Base



BRAND-NEW P2V7's, SKI-EQUIPPED AND WITH JET-AND-PISTON POWER PLANT, TAKE THEIR PLACE IN THE POLE RUN.



BABY, IT'S COLD outside! And "Bravo", Pole Station mascot huddles in his shelter. Tuning up the ham trans-



mitter for Stateside chats (right). Station KC4USN joins KC4USA and KC4USV to beam home news from pole.



# Stands Firm at the World's South Pole



PLASTIC-TOPPED Rawin dome makes South Pole base 100% complete on major construction. Radar inside receives radio reports from weather balloons launched from the base. Jamesway hut, at left, was later moved to isolated area to be used in case fire should damage or destroy the main South Pole base. Picture at right was taken during construction of the station, shows general layout of buildings and tunnels.



◆ POLE BRASS: OINC LT(JG) R. A. BOWERS (FAR LEFT); NEXT, DR. PAUL SIPLE, LT(JG) TUCK, AND LT(JG) BOWERS.



PUMPING FUEL FROM R4D INTO STORAGE TANK NEAR BEARDMORE GLACIER FOR REFUELING RETURN POLAR PLANES.

## Oil Mission on the Trail



TONSORIAL treatment on the 644-mile trail. Ben Melton had a closer clip than he is receiving from George Moss when his Cat hit a partial break-through near crevasse.

At Little America R4Ds, Otters, and a helicopter had heretofore flown men, mail, parts, fuel, and explosives to the trail party and tractor train. Now their tasks were multiplied by a demand for 15,000 pounds of food, a dozen men flown in, construction crews flown out, *plus* sufficient fuel to take a loaded tractor train of 7 tractors and 14 sleds from Little America and return the same empty train to Little America.

With three R4Ds, two single-engine Otters, and one helicopter they began. R4Ds flew men and food to Byrd Station and returned men to Little America. Then all planes concentrated on the fuel project.

The helicopter flew drums to the near-caches on the trail. Otters extended a bit further. R4Ds began caching fuel, 800 gallons at a pass, toward the end of the 647-mile trail. Some days the ski-planes flew up to ten missions.

Cabin tanks that had permitted the R4Ds to make the flight to McMurdo from New Zealand, now held diesel fuel which was pumped into collapsible rubber tanks along the trail until the job was completed.

R4D crews under LCDR Roy Curtiss, LCDR Ed Frankiewicz, and Lieutenant Harvey Speed made blind landings on the snow in their ski-planes that search-and-rescue pilots would flinch at. Their motto for landing on the trail in clobbered weather: "Forget about gullies and snow mounds that might be there; keep your descent down to 200 feet per minute, then cut your throttle when your skis crunch against the ice."



TRAIL CACHE for refueling tractor train to and from Byrd Station was maintained in the same way Beardmore Glacier cache was. Interior tank of R4D was filled with diesel fuel (top left); transferred to 3,000-gallon rubber

tanks by pumping direct from plane (top right). Filling station then dispensed fuel direct to tractors or to sled-mounted auxiliary tanks (lower). Caravan comes to rest (far right) to tank up at 380-mile Byrd trail cache.

## RETRIEVING PALLETIZED LOADS:



PALLETS of diesel fuel, 30 tons of it, were dropped by Globemasters before train arrived at cache. Boom-rigged D-8s retrieved the drops.





SHIPS OF TASK FORCE 43 MOVE THROUGH THE ROSS SEA ICEPACK, SEEN THROUGH RIGGING OF THE USS GLACIER.

## At Work with the Ships



USS BROUGH DEPARTS FOR PICKET STATION.

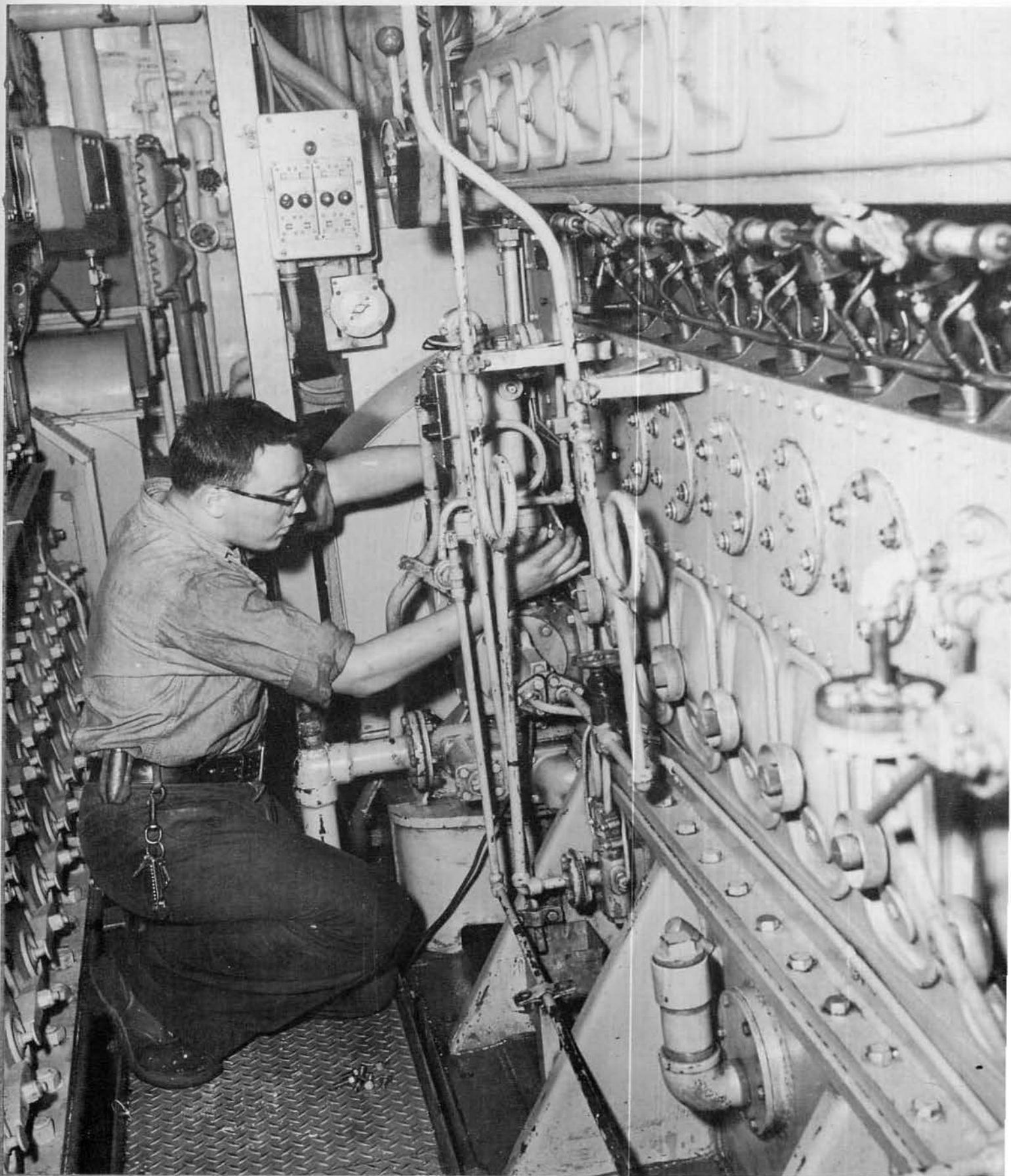
BROUGH continued to operate on picket station between New Zealand and the ice, going back to port just often enough to refuel. In the Roarin' Forties, the Furious Fifties and the Shriekin' Sixties she took a pounding. Once during October she rolled so heavily that her radar was damaged by sea water.

Perhaps least mentioned in press notices, BROUGH was an unsung hero of *Deep Freeze II*. Her regularly schooled boat crews stood ready for five months to grab downed aviators from the seas. As solitary Navy unit in New Zealand's southernmost port, Dunedin, BROUGH was a perfect goodwill ambassador.

After her historic victory over the pack ice and her unloading at McMurdo and Little America, GLACIER returned to New Zealand to rendezvous with the "train" ships of *Operation Deep Freeze*.

(Continued on page 64)





KEEPING THE FIRES DOWN BELOW HOT, ENGINEER HELPS DRIVE THE ANTARCTIC-BOUND SHIP THROUGH ICY SEAS.

## GREAT "SEA TRAIN" ROLLS IN

South they came. The GREENVILLE VICTORY, the TOWLE and the MERRELL with their cargo-handling battalions aboard. ARNEB with her underwater demolition team and amphibious landing craft, NESPELEN with her vital aviation gasoline. NORTHWIND and ATKA to help GLACIER lead their charges through the ice.

As soon as Adare Station should be erected at Cape Hallett, NORTHWIND was scheduled to escort ARNEB to the Knox Coast to erect a base there.

The two-part force left New Zealand on December 10, 1956 and cleared the icepack eight days later. NORTHWIND and ARNEB headed for Cape Hallett while

the remaining ships steamed for McMurdo Sound. But before the Knox group could reach Hallett, ARNEB was hailed by the Task Force Commander to rush her tractors to McMurdo Sound to help construct an alternate landing strip.

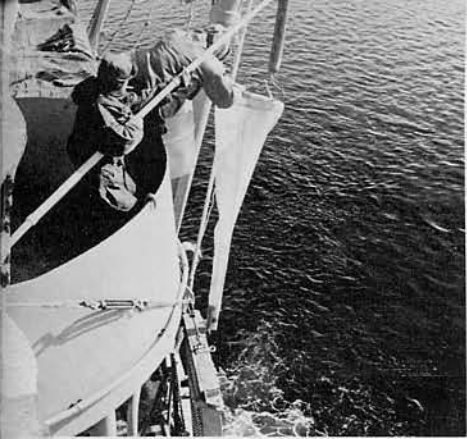
NESPELEN discharged her aviation gasoline at McMurdo, GREENVILLE VICTORY discharged her McMurdo cargo, then ATKA led MERRELL and GREENVILLE VICTORY to Little America while TOWLE commenced unloading at McMurdo. The crews performed like the professionals they were.

*(Continued on page 66)*



NEARING their destination, ships of the task force send out helicopters to recon the thickening icepack. Icebreakers have bulled their way through the slabs and floes to wedge a clear path for the thin-skinned cargo ships.





SCIENTIFIC OBSERVATION: PLANKTON HAUL (LEFT), WET & DRY TEMPERATURE (CENTER), GRAPLE CHART (RIGHT).



McMURDO UNLOADING SITE, LEFT TO RIGHT: ATKA, NORTHWIND, TOWLE, ENDEAVOR (N.Z.), MERRELL, CURTISS.



NORTHWIND CHARGES THE ICE IN THE SOUND; CREW CLIMBS DOWN FROM FORECASTLE TO DO SOME SIGHTSEEING.

## Crisis at Hallett for Arneb and Northwind

On New Year's Eve disaster nearly struck at Cape Hallett. NORTHWIND had damaged her propellers breaking ice for ARNEB and had pulled back to inspect her damage. ARNEB lay in loose pack ice in a sort of V between Cape Hallett and solid bay ice that was earmarked for an auxiliary landing strip.

A sudden shift in the wind moved ice floes down on ARNEB before she could maneuver free. NORTHWIND with her damaged screw was unable to rescue the veteran cargo ship.

Now ARNEB's back was against the wall. Pressed against solid ice on one side, floes began to squeeze against her other side. Frames bent. Holes opened.

Damage-control crews began to work rapidly to patch the holes, to shore the bulkheads, and to pump water. At one time ten damage reports were flashed to the bridge in as many minutes.

Observers topside saw an iceberg approaching the helpless ship. ARNEB tried to maneuver out of her predicament but only succeeded in damaging her single propeller. Meantime NORTHWIND was battling furiously to reach ARNEB.

Underwater demolition crews aboard ARNEB, with their cold-water immersion suits, were a godsend. They went over the side to check damage; they went below water in ARNEB's No. 2 hold to make repairs in the flooded compartment.

Nearly twelve hours after the crisis began, things began to look up. Winds abated and relieved the pressure against ARNEB's hull. Repairs were being made and flooding had been checked.

Then winds shifted again and the iceberg which had threatened ARNEB—then seemed to heave to—was again underway and headed straight for ARNEB. She seemed a doomed ship.

NORTHWIND continued fighting toward ARNEB. Some say the propwash she created trying to reach ARNEB started a slow of current which the iceberg followed. Others say providence guided the berg's course. But at any rate, the berg veered course just before reaching ARNEB so both ARNEB and NORTHWIND managed to maneuver free in the channel created by the berg.

ARNEB swung her heavy boats outboard to create a list which brought her damaged hull above water so it could be patched.

Now that the dangerous ice was washed free ARNEB and NORTHWIND commenced the first amphibious assault on Antarctica.

They unloaded men, equipment, machines, and supplies by boat to erect a base, then steamed for McMurdo for inspection to determine whether they were fit for the Knox Coast assignment.



OOD ON BRIDGE OF NORTHWIND KEEPS WEATHER-EYE OUT.



ARNEB TIED TO ICE NEAR CAPE HALLETT JUST BEFORE THE BIG SQUEEZE WHICH DAMAGED THE SHIP GREATLY.



ARNEB follows NORTHWIND through pack ice (upper left), sustains damage which sends UDT-21 frogman (center) underwater to inspect hull, into hold to stop the flood. (Lower left) NORTHWIND maneuvers into position to re-

move ice from ARNEB's bow with propeller wash. Purposely created port list brings damaged hull above water for repairs (lower center) by damage control party on scaffold. ARNEB lived to fight another ice crusher off Hallett!

# Unloading at McMurdo and LA-V

At McMurdo NESPELEN's cargo had been discharged smoothly by Seabees and a special Marine Corps assault fuel-farm team. Now NESPELEN was ready to head for Little America with fuel.

TOWLE's unloading was interrupted nine times when the ice either broke or threatened to break, but her cargo-handling battalion unloaded tractors and supplies as rapidly as the base could put sleds alongside. While her cargo handlers worked one or two holds with American cargo for McMurdo, others emptied another 800 tons of New Zealand cargo onto smaller sleds brought alongside by the New Zealanders shuttling materials from TOWLE to build their base (Scott Base) two miles from Hut Point.

Sir Edmund Hillary of Mount Everest fame was a frequent visitor on board the TOWLE as the New Zealand expedition ship ENDEAVOR drew water from the American transport while New Zealand tractors emptied her of their cargo.

At the season's beginning Kainan Bay resembled the same unloading site that had been used a year earlier to discharge cargo to build Little America. Bay ice eight feet thick graduated up a natural snow ramp to the Ross Ice Shelf and it was apparent that the unloading procedure would be identical.

But nature intervened. While ATKA and MERRELL stood offshore, ground swells undermined the bay ice and carried countless acres of ice to sea. Each time the ships would try to move closer a new breakup would start.

Soon there was no bay ice. A search was begun to find a point on the barrier low enough to discharge cargo. Once located, the next job was to blast and bridge crevasses between that point and Little America.

A trail was finally bridged and MERRELL came alongside the barrier. She had laid offshore so long her cargo handlers, like the Little America base personnel, were anxious to get to her cargo.

Once MERRELL was alongside the barrier ground swells again began to come in from the sea, causing the ship to surge up and down against the barrier. Discharging 37-ton tractors and crated Otter airplanes from a surging ship onto a jagged ice barrier is no mean feat of seamanship, but it was done.

Unloading of MERRELL was interrupted by GREENVILLE VICTORY's arrival at Little America. That veteran of *Deep Freeze I* had cargo for Little America as well as for Knox Coast. Too, there was a possibility she would have to backload all of ARNEB's Knox Coast cargo if that ship didn't pass inspection after her hull damage, so the priority was to get GREENVILLE VICTORY's cargo off at Little America and get her back into circulation.

By now the barrier itself had begun to chip and break off at Little America. Valiant icebreaker ATKA, who had two years earlier recommended Kainan Bay as the ideal site for Little America V, now was called on for a job unique in icebreaking history . . . she was ordered to buck the barrier in an effort to shave a straight edge for the thin cargo ships to come alongside. She was operating on only four engines since a flooded generator room had put two of her engines out of commission.

But shave the barrier she did. Her forecastle paintwork and her forward rails took a severe beating from the thick ice barrier but the ships got alongside.

Once GREENVILLE VICTORY was through unloading at Little America and NESPELEN had discharged her fuel there, both returned to McMurdo Sound.

Inspection at McMurdo ruled ARNEB fit for the Knox Coast assignment but resulted in GLACIER's replacing NORTHWIND.

With Captain Gerald Ketchum, Deputy Task Force Commander, embarked GLACIER sailed from McMurdo Sound January 14, 1957 with ARNEB, GREENVILLE VICTORY and NESPELEN in her wake. The plan was for GLACIER to squire the ships through the pack, then release NESPELEN to go on to Australia for a second load of aviation gasoline. GLACIER would rendezvous with CURTISS north of the icepack to make cargo shifts, then overtake the Knox-bound ships.



SYMBOL OF "MEN AT WORK FOR PEACE AND PROGRESS".



ONLY SIDEWALK SUPERINTENDENTS AT KAINAN BAY AND McMURDO SOUND WERE THE PENGUINS IN SOUP-AND-FISH.

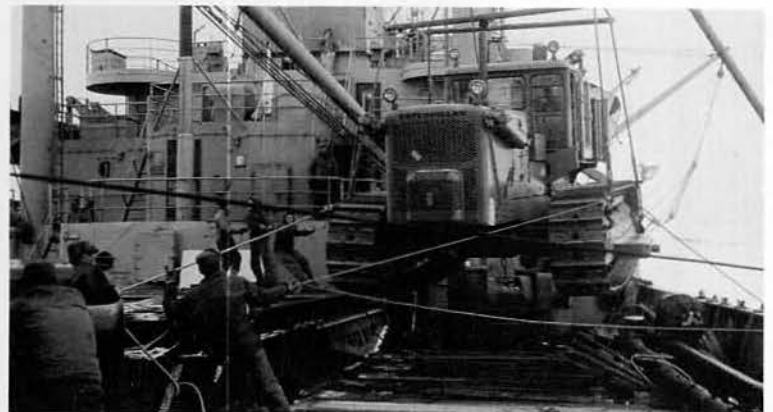
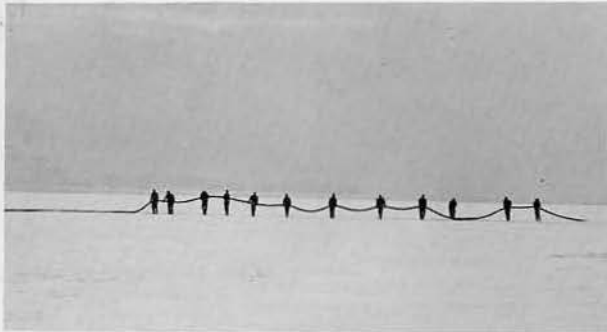


# How McMurdo Offloaded:



AVGAS and diesel fuel were the big cargo at McMurdo as GLACIER towed NESPELEN in (upper) to unload. Below,

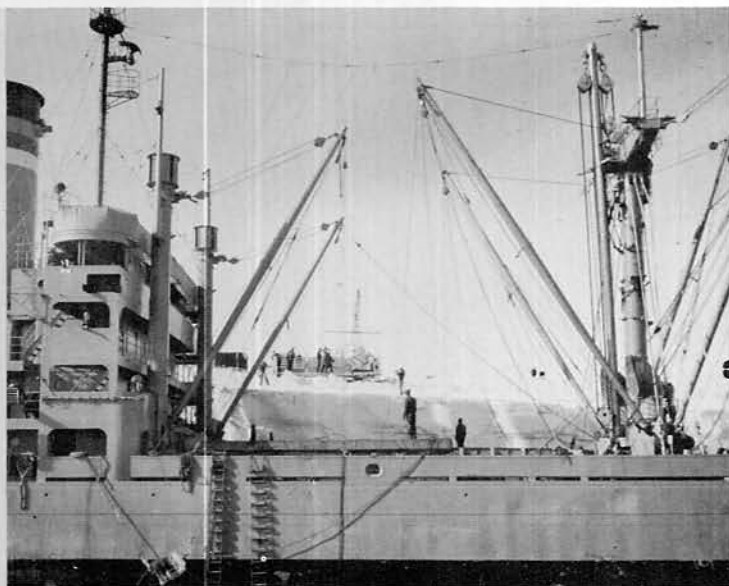
fuel lines and booster pumps are hooked up to transfer gas and fuel from both ships and the from the frozen-in YOG.



USNS TOWLE CREWMEN UNLOAD THE BIG STUFF.



# How They Offloaded at Kainan Bay:



MERRELL UNCOVERS THE HATCHES AND BOOSTS ITS CARGO UP AND OVER THE SHAVED-OFF ICE BARRIER.



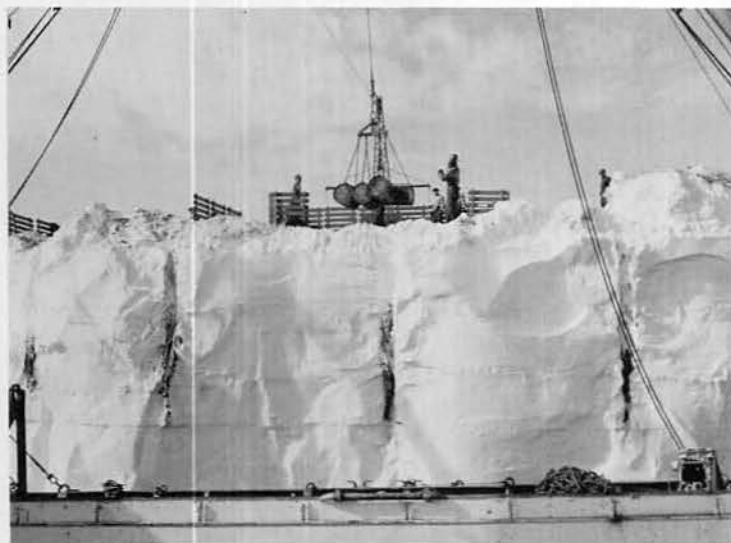
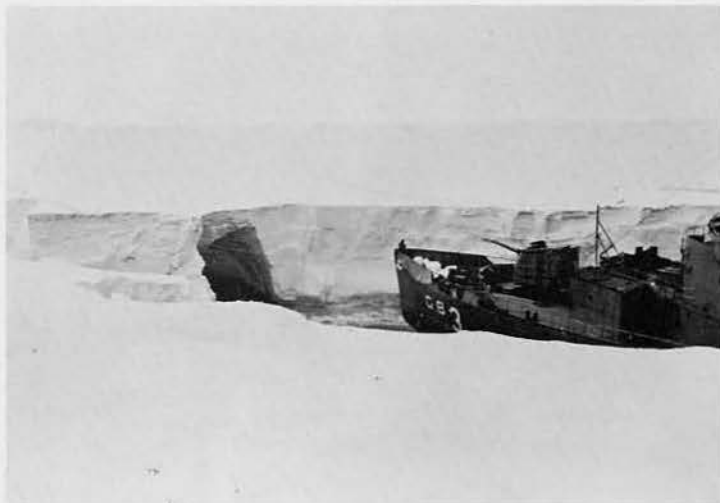
OFFLOADING at the barrier posed special problems as these views show. In addition to heavy equipment there

was a refueling job on a 100,000-gallon avgas tank at LA-V speeded by a high-capacity pumping engine (right).

USS MERRELL gives out with a crated partially assembled Otter (below) as ATKA nudges aside interfering berg from the vulnerable cargo ship.



# PICTURE-STORY OF THE BIG KAINAN BLAST

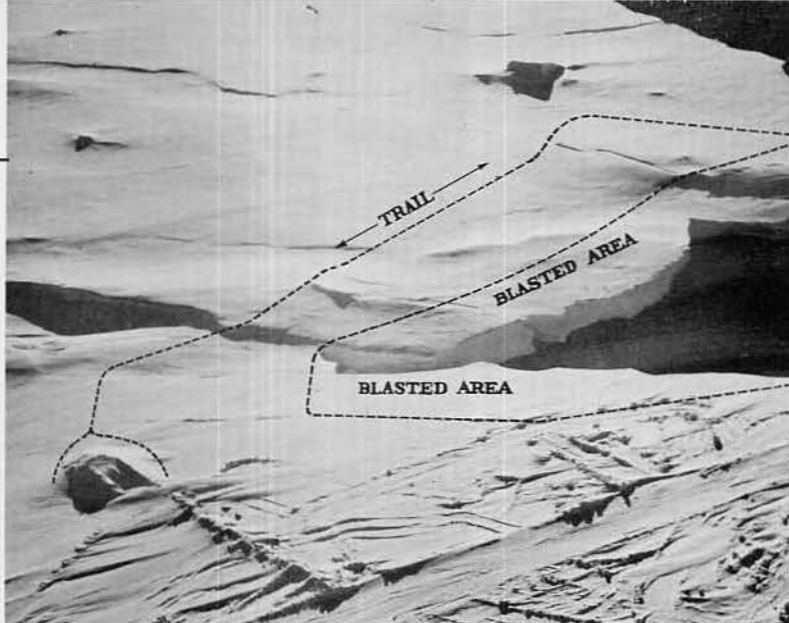


ATKA NOSES up to barrier and men go aboard (above) as preparations are made to blast. (Note large crevasse near ship's bow.) Satchel charges are checked (center),

carried to edge of barrier and planted in position. Blast (bottom) causes ice to fall away into sea. Black marks (right bottom) show where charges drove down barrier.



ADMIRAL DUFEK SURVEYS BARRIER FROM ATKA.



AERIAL VIEW SHOWS ALTERED BAY AREA AFTER BLAST.



PROFILE AND OVERHEAD VIEWS OF BARRIER TELL THE STORY OF THE BLASTING PROJECT BRIEFLY AND VIVIDLY. ICE FLOES AND SMALL BERGS FLOAT FREE IN THE WATERS OF KAINAN BAY AS THE DYNAMITING COMES TO AN END.





RELIEVED from watch, three 2nd Division men aboard CURTISS head below. In background, Erebus and the Sound.

## Last to Arrive, the Curtiss

CURTISS had sailed from San Diego December 27 with scores of scientists and hundreds of wintering-over Seabees embarked. Her arrival in the Ross Sea was the dream of all men who had wintered over between *Deep Freeze I* and *II* as evidenced by the many calendars hanging at Little America and McMurdo Sound with January 21 circled in red—for that was her arrival date.

En route south, CURTISS' wardroom would have passed for a United Nations conference room. American scientists were elbowmates with German, Brazilian, Danish, Norwegian, Irish, Russian, Argentine, Australian and New Zealand nationals who would take part in the IGY science studies.

When CURTISS met GLACIER near Scott Island for what appeared to be a routine transfer at sea, the hundreds of military and civilian observers lining CURTISS' rails to take pictures got a photographic subject they hadn't counted on. LCDR Chuck Constanza, flying the same HU-2 squadron helicopter he'd used to ferry GLACIER's cargo ashore at McMurdo and Little America in early November, now landed on CURTISS' forward flight deck. He took off and hovered. A ground swell raised CURTISS' bow, causing her flight deck to smack the hovering whirly-bird from its bottom. The pilot lost control, his rotor hit a gun mount and the helicopter plunged into the sea. An alert boat crew rescued the pilot and co-pilot within minutes and by dinnertime both were smiling and healthy as they paced the decks.



WINNERS OF CURTISS CREW BEARD-GROWING CONTEST.



BUSY HELICOPTER COMES A CROPPER IN ROSS SEA; PILOTS QUICKLY FISHED OUT OF ICY WATER BY CURTISS.

# With the Scientists Aboard the Curtiss



WHO THEY ARE: Dr. Laurence M. Gould with Captain C. T. Fritter (CURTISS CO) who passes an order (top left); (top center) Dr. Harry Wexler, chief scientist at LA-V, Dr. Gould, and Dr. Paul E. Victor, French polar expedition chief. Dr. Kaare Rodahl with CAPT Douglas, USN (top right). LCDR Jose Alvarez, Argentina Weather Lab (center left); CAPT Robert Dalton, RAAF (in parka), Ben Harlin, Weather Bureau, and Carl O. Wyman, Iono-

spheric Physics, talk with crewman (center); Ben Remington, Weather Bureau and Dick Chappell, Boy Scout (center right). Paul Darymple, QMR&D Micro-Meteorology and Hans Steinitz, Swiss reporter (lower left); Peter Schoeck and Dr. Herfried Hoinkes, Austrian scientists, Dr. Gould, and Fred Milan, Physiology Lab (lower center); Dr. Hoinkes and Dr. Richard McBee of Montana State College, examine penguin skin (lower right).



TWO NAVY YOGS FROZEN IN McMURDO ICE AT HUT POINT.



CHAPLAIN ZOLLER LEADS DRIVERS IN PRAYER.

## Death at Hut Point

By now TOWLE was unloaded except for the 10,000 drums of fuel in her holds. This was being discharged as regularly as sleds could be unloaded and brought alongside.

In addition to the fuel arriving in drums, McMurdo Sound expected more bulk aviation gasoline from NESPELEN when she returned from Australia. Pumps and fuel hose which had been used earlier lay on the bay ice alongside the frozen-in YOGs.

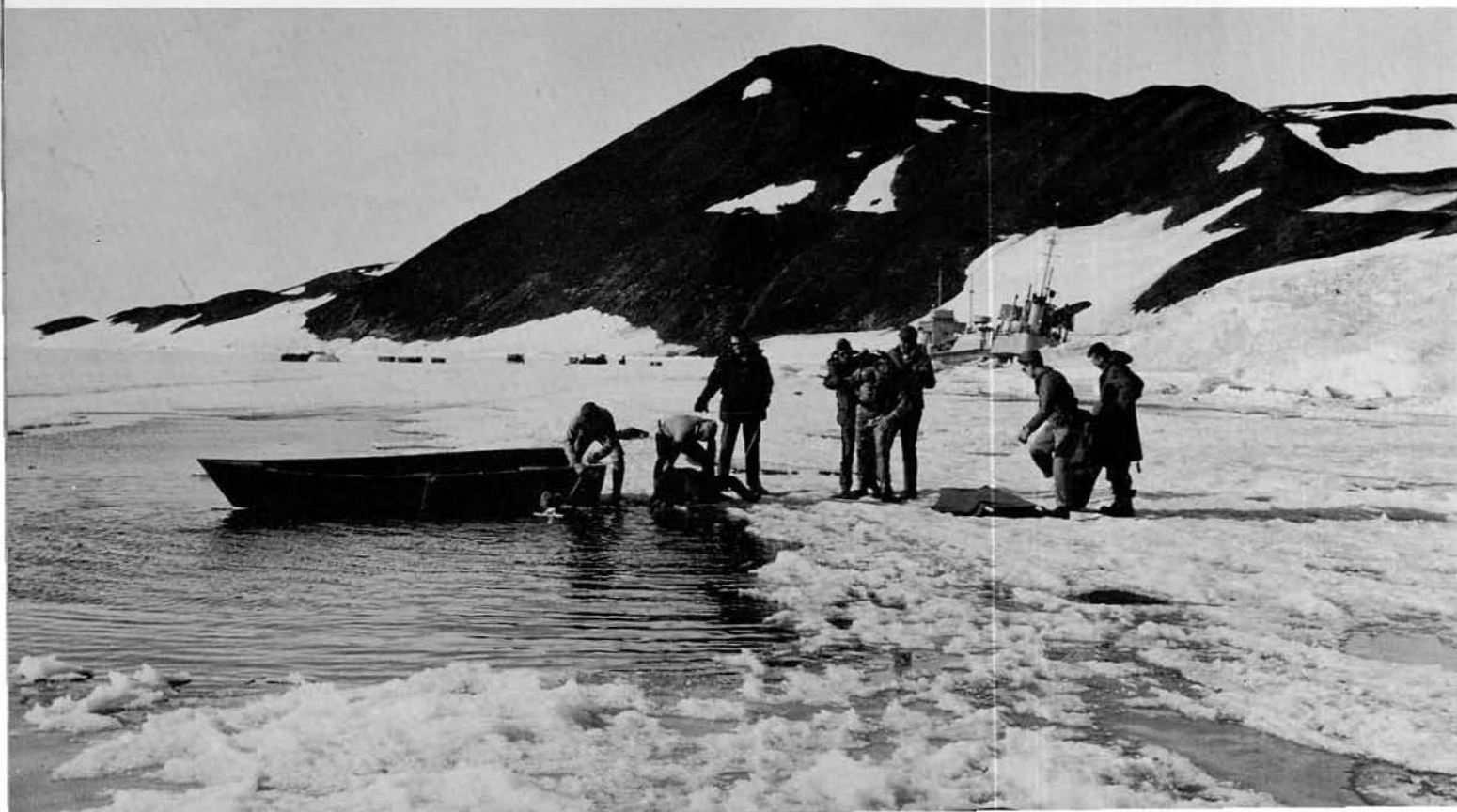
Six men rounded Hut Point in a weasel at 9 a.m. on January 14 to retrieve this pumping gear. They followed a trail that had been used almost daily since the YOGs were frozen in. About 200 yards off Hut Point, in the shadow of Seaman Vince's Cross, a passenger saw water gush upward through a seal hole in the ice near the weasel.

"Get out," screamed the driver. But by then the weasel was already beginning its downward plunge.

One man got out before the weasel went through the ice. He escaped with wet feet. All others went down. By the time the weasel struck bottom five of the six had escaped and were being pulled to safety by the first ones out.

Ollie B. Bartley, CD2, of Slaughters, Kentucky, became the fifth casualty of *Operation Deep Freeze II*. His arm had become entangled in the weasel's radio wire and he drowned. His frozen body was recovered by underwater demolition men from the departing ARNEB.

UDT MEN RECOVER BODY OF OLLIE BARTLEY FROM SLUSHY BANKS OF HUT POINT WHERE WEASEL PLUNGED.





RADM GEORGE DUFEK MAKES DEDICATION SPEECH AT McMURDO FOR PROXY COMMISSIONING OF POLE STATION.

## Amundsen-Scott IGY Base

On CURTISS' arrival at McMurdo, with its top scientists embarked, proxy commissioning ceremonies were held for Pole Station, now named officially Amundsen-Scott IGY Base in honor of the Norwegian and the Briton who had first reached the pole in the winter of 1911-12.

Messages from President Eisenhower, Norway's King Haakon, Britain's Foreign Secretary Selwyn Lloyd, America's Admiral Richard E. Byrd, and leading world scientists were read before the assembled Seabees and airmen at McMurdo Sound where ensigns of the United States, Norway and Britain flew abreast.

SOUTH POLE RADIO EARS PICK UP WELCOME NEWS. ♦





SCOTT BASE, New Zealand's Antarctic station at Pram Point on Ross Island, is commissioned. Admiral Dufek salutes with group as NZ ensign goes up. American and New Zealand flags fly over base which lies on edge of

Sound between Williams Airopfac and Cape Hallett Station, just two miles from NAF. The New Zealand IGY program is maintaining, beside the Scott Base, another Antarctic base in conjunction with the USA at Cape Hallett.



# Speed-up as the Season Latens

NORTHWIND sailed from McMurdo Sound January 25 to get her damaged propeller replaced in a Wellington drydock. She encountered some of the expedition's worst weather in the 2,500-mile passage to New Zealand, arriving March 2, 1957.

TOWLE finished unloading her drummed diesel fuel January 27 and had commenced backloading salvaged airplane parts when the bay ice began to break up in giant floes. She had only one sledload aboard when tractors and sleds were recalled to safety at Hut Point. TOWLE sailed for Christchurch January 28, the first cargo ship to complete her mission during *Deep Freeze II*.

Simultaneously with TOWLE's departure from McMurdo Sound, ATKA led MERRELL and CURTISS to Little America. They arrived a day later.

While MERRELL maneuvered to enter a narrow wedge whose side was straight and clear for coming alongside, CURTISS began to shuttle wintering-over Seabees and scientists ashore by helicopter.

The niche intended for MERRELL's berth was complicated by an underwater spur on the right side of the V. It could be seen from the surface and, by its depth, would have been dangerous to try to shave off by icebreaker.

Explosive charges were planted at strategic points on the barrier's edge in hope that the underwater spur could be blasted free. ATKA stood in close to observe the results of the blast.

The charges were fired simultaneously without visible effect. Then ATKA backed free, her officers presuming that a second blasting effort would be required. No sooner had she got clear of the underwater spur, the edge of the barrier began to calve off. Not only did the spur break free—a sizeable portion of the barrier accompanied it. The tumbling mass of ice created such a splash that ATKA rolled 40 degrees from the wave it created. Had not ATKA backed free, the ice might have done serious damage.

As soon as MERRELL came alongside, wary cargo specialists began to stockpile her cargo on the safety of the barrier as rapidly as possible, then drag it to Little America after the ships left.

Unloading was again complicated when MERRELL, by now moored to the ice, got her propeller fouled by a wire cable. The cable had been used to keep in place a telephone-pole fender between MERRELL and the face of the barrier.

As soon as CURTISS finished sending men ashore by helicopters she began receiving last year's wintering-over group by the same technique. Before all men were aboard CURTISS for the long voyage home, MERRELL backloaded tractors that would be taken to New Zealand for repair, and Byrd Station cargo that she would take to McMurdo Sound for the Globemasters to fly out and drop at Byrd Station. The latter material was beyond the capacity of the second trac-

tor train which left Little America January 28 with seven tractors pulling 14 loaded sleds.

ATKA, CURTISS and MERRELL returned to McMurdo Sound February 7. NESPELEN got there a day later from Australia with her load of aviation gas. MERRELL unloaded the Byrd Station cargo for the airplane flights, then backloaded the salvaged airplane parts TOWLE had to leave behind when the ice broke in late January. She picked up tractors from McMurdo for repairs in New Zealand as well.

Admiral Dufek and his staff moved ashore from the ATKA February 7 and 8. The admiral consulted with Dr. Andrew Assur about the airstrip's progress. Since December 19, when the Globemasters flew north to join the Navy R5Ds which had been evacuated from the failing ice strip to New Zealand, a daily check had been made on the bay ice. The SIPRE (Snow, Ice, Permafrost Research) Institute's Dr. Assur had been rushed from Greenland to try to get the strip back in shape. Unable to fly to the ice, he had remained in New Zealand and studied the daily radio reports as they were filed from McMurdo.

On February 8 the Task Force Commander flashed word to New Zealand that the strip was ready for resumption of air operations.

Dr. Assur arrived McMurdo Sound aboard the CURTISS to find that each of his radio recommendations had been followed to the letter. Meltwater pools had been punctured, drained and refilled with compacted snow, then redrained and re-refilled until pot-holes were nearly level. The final ingredient for successful completion of the treatment had been a prolonged period of cold weather which started in late January and early February of 1957. (Dr. Assur has been recommended for the nation's highest civilian award for his accomplishment which permitted the remaining flight to the Pole and Byrd Station.)

Colonel Horace Crosswell and Lieutenant Colonel C. J. Ellen arrived in the first Globemaster which landed at 9:18 p.m., February 9. Their smooth landing was witnessed by a good turnout of men at McMurdo Sound, some of the viewers being skeptics who'd predicted, "Those big planes will never return this season."



## Rejuvenating the Sea-ice Runway:



TERRIFIC beating of heavy Globemasters is repaired during lull in polar airdrop schedule. While C-124's sojourned at Harewood Field, N.Z. D-8 tractors filled in runway holes and water tanks filled gouges that later froze

solid (top). Graders smoothed the strip level (center) then a weighted C-124 wheel was hauled its length to check stress. Throughout the job the runway was surveyed (below) for cracks, sags, humps—hazards for big planes.





CONTINUING 60 AIRDROP MISSIONS TO POLE RACKED UP BY GLOBEMASTERS OVER 1,500-MILE ROUND TRIP.

## The Big Planes Return

As the big planes loaded cargo for the pole, Lieutenant Harvey Speed and Lieutenant Robert G. Anderson flew R4D planes to McMurdo from Little America to transport the remainder of the wintering-over scientists to the pole.

From February 9 to February 19 the Globemasters averaged three or more drops per day, then flew sporadic flights with items required at the last minute for safety and comfort at the isolated outposts. They made 37 flights between February 9 and February 24. Pole drops were given first priority, then the remaining materials were delivered to Byrd Station.

Completing the season's last R4D landing at the pole, Lieutenant Speed's plane developed an oil leak. The terrain below was too rough for a landing and his plane was losing altitude. He finally found a safe spot on the Ross Ice Shelf and landed where crew chief William Miles worked in the sub-zero cold for more than three hours until he repaired the leak.

This landing was almost "routine" for "Speedy" as he had made previous unscheduled landings while supporting the tractor train. Having expended all his JATO bottles taking off from the pole, "Speedy" probably set the longest taxi-distance record in history before he had his wheels in the well and was headed safely back to McMurdo.

And there was another close one. A Globemaster was en route to Byrd Station with its last load February 22 when one of its engines caught fire.

Extinguishing the blaze and losing the engine taxed the plane's ability to stay in flight. When it began to lose altitude the pilot decided to drop his load on the Ross Ice barrier. The plane returned to McMurdo safely and a replacement engine was flown in from New Zealand. The plane was reloaded and the last airdrop mission was completed February 24, 1957.

While Big Brothers flew cargo to Pole and Byrd Stations, CURTISS and ATKA took final cargo to Cape Hallett. They left McMurdo February 10. When the cargo was delivered, CURTISS sailed February 12 for New Zealand and ATKA returned to McMurdo where she would remain until the 24th, then take station for the fly-out of the last planes.

McMURDO CRASH CREW HELPED KEEP DAMAGE LOW.



# CinClant on Deck

ATKA's crew joined the wintering-over Seabees at Hut Point February 15 as the biggest field day in Antarctic history took place. The word was out:

"Admiral Jerauld Wright, Commander in Chief of the Atlantic Fleet, is arriving tomorrow."

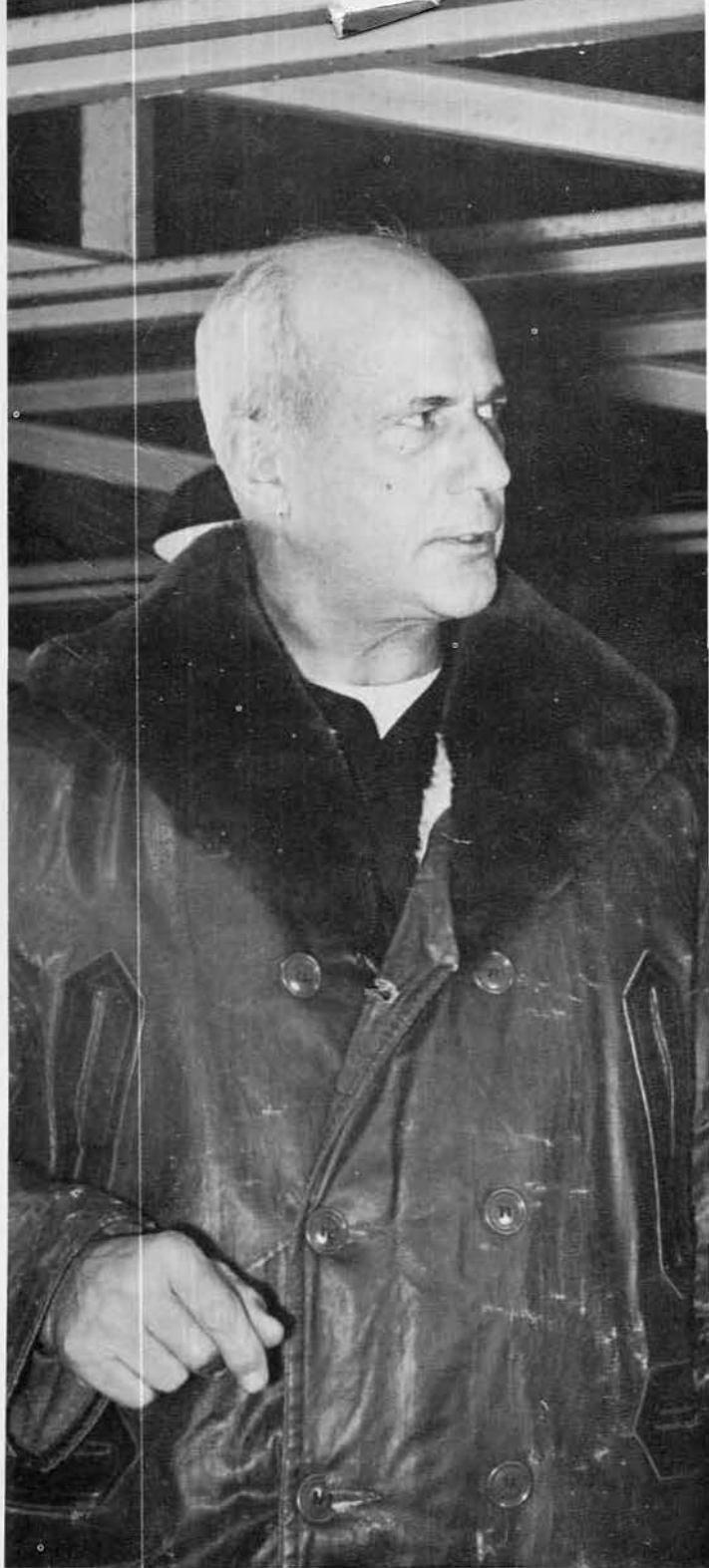
Admiral Wright's three-day visit followed a rapid pace. He inspected McMurdo Sound, the ships and surrounding area, surveyed Adare Station from the air, flew a drop mission over the pole (which was aborted by weather) and another which was successful, flew one to Byrd Station, looked over Little America V, then personally addressed men of each ship and base personnel gathered at McMurdo (aside to Admiral Dufek: "Where do you get such men?") He even took Sir Edmund Hillary along on a pole flight so that the noted New Zealand explorer could check the path he will take in his leg of the British Trans-Antarctic trek in late 1957.

By now the second tractor train which had left Little America January 28 had reached Byrd Station, unloaded, and was nearing Little America again. The round trip was completed in 29 days.

ATKA led MERRELL out of McMurdo Sound February 24, then supported the fly-out of planes February 25. There was no pack ice in evidence, so NESPELEN had already sailed homeward after delivering her avgas at McMurdo.

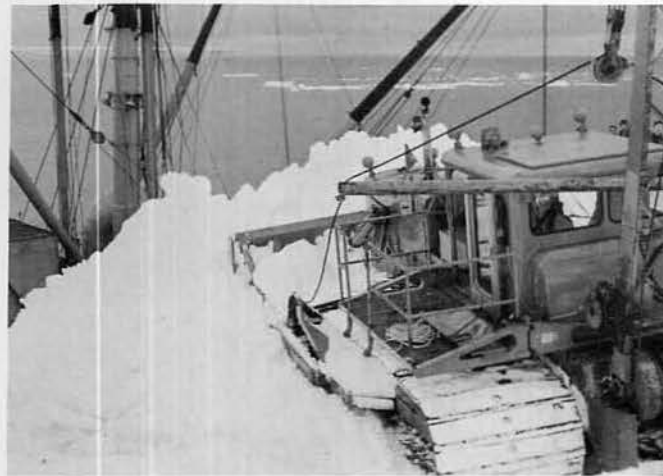
The last Globemaster flew out of McMurdo February 25 leaving only the R4Ds, Otters, and helicopters on the ice until *Deep Freeze III*. The next visitor would be the NORTHWIND, her propeller replaced, which would arrive March 2 with fresh provisions, more food and fuel for the Ross Sea bases, then leave the 318-man wintering party for the long winter night ahead.

CURTISS, with Seabees embarked, arrived Port Lyttelton, New Zealand at 4 p.m. February 17. She stopped there two hours to discharge mail and men, then steamed for Wellington. There three-and-a-half hours, she sailed for Auckland, arriving February 20. Thus some 140 Seabees who'd spent the long night in Antarctica and waited 14 months for liberty, steamed into and out of two harbors before they could get a foot on land. Some say they made up the deficit in Auckland before sailing for Sydney, Australia, and six more days' liberty there.



ADMIRAL JERAULD WRIGHT AND CTF AT McMURDO.





THREE MAIN BASES VISITED BY ADMIRAL WRIGHT.

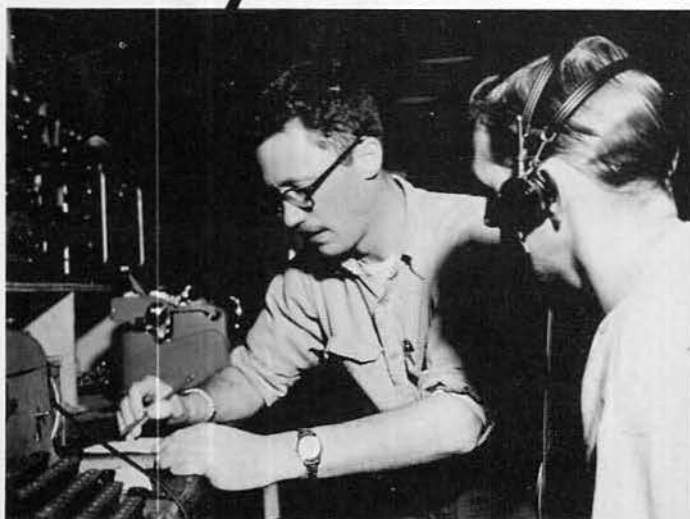
ON POLE FLIGHT (FAR LEFT) HE MEETS SIR EDMUND HILLARY WHO IS PLANNING TRANSANTARCTIC TREK.



# Byrd Station



IDENTIFICATION stake carries location of Byrd Station in isolated Marie Byrd Land—80° South, 120° West.



VX-6 DOCTOR RADIOS DENTAL AID TO BYRD BASE.



INSULATING PIPES LEADING TO BASE SNOW MELTER.



RIGGING TRACTOR FOR LAST RETURN DASH TO LA-V.

# Commissioned



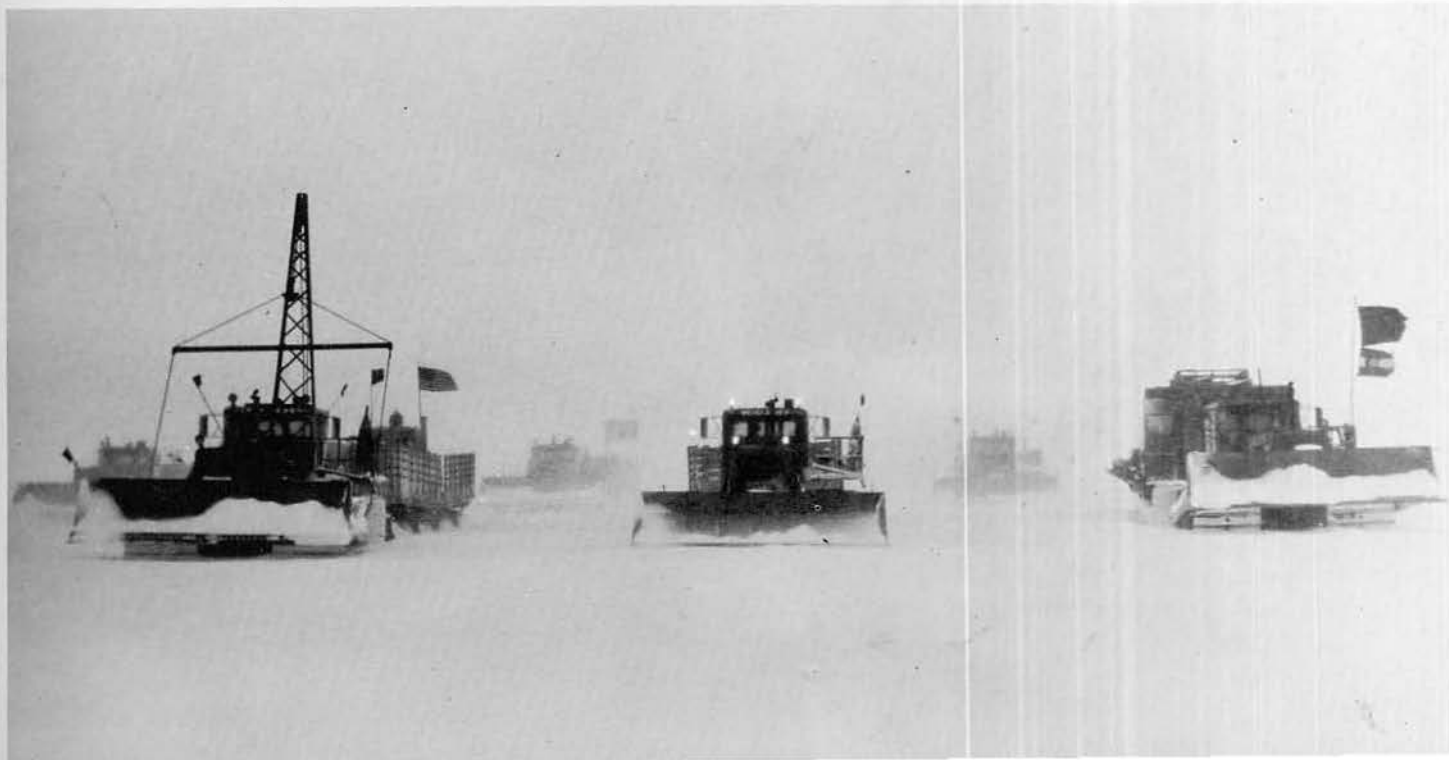
LONG SHOT OF BYRD STATION BEFORE SHOVING OFF.



RUNNING UP THE FLAG TO COMMISSION BYRD STATION.

BLIZZARD besets tractor train returning to LA-V via 644-mile Byrd Land trail. Shift commanders often had to lead

the train of juggernauts, on snowshoes, when the trail flags could not be seen at a distance of 25 yards or less.



# THE SCIENTISTS SET TO WORK:



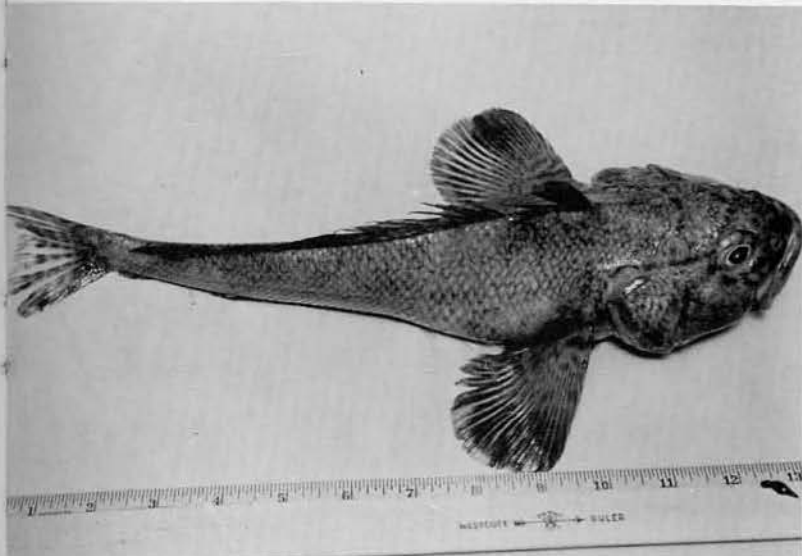
SNOW HOLE (top left) studied for temperatures and densities by Dr. Siple as Dr. Herfried Hoinkes points to thermometers between radiation shields at various altitudes from snow surface (top right). Snow precipitation

gauge (left center) has screens to keep deposited snow from being blown out. Anemometers being calibrated before mounting on LA-V towers (center right). Checking weather readings (lower left) and wind velocity (at right).





AURORA TOWER (right) at LA-V has glass domes from which weather and other conditions can be observed during winter in comparative warmth and comfort (as above).



ZOOLOGY is served on land and sea. Eagle Scout (above) sets and tends snares for skua gulls which he is catching and banding for the Wildlife Service; (top right) he bags



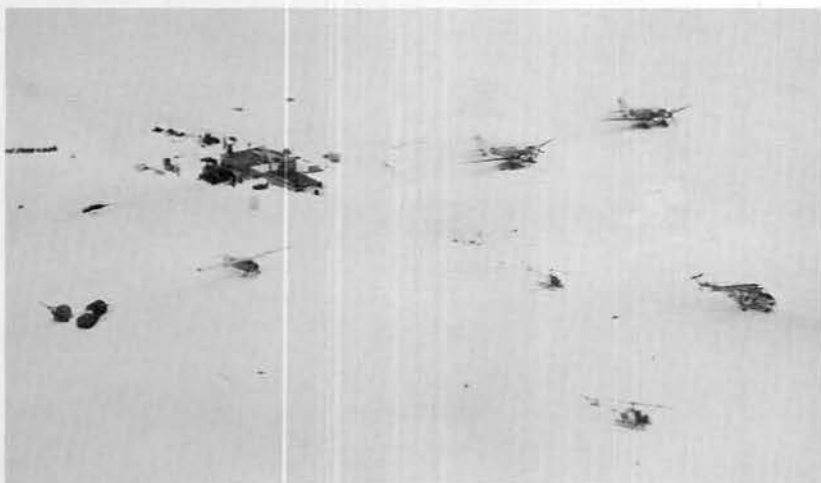
his first specimen. Fish trap on bottom of McMurdo Sound yields unknown specimen (lower left). Other under-sea specimens are examined by Hydrographic Officers.

# Little America V

A LAST LOOK AT THE KAINAN BAY BASE  
BEFORE WINTER'S ICY FIST CLENCHES



RADARSCOPE PHOTO OF KAINAN BAY.



AIR VIEW OF LITTLE AMERICA'S KIEL AIRFIELD.

LOOKING OVER LA-V POLEWARD: RAWIN TOWER, CENTER RIGHT; POLES IN FOREGROUND, ANTENNA FARM.

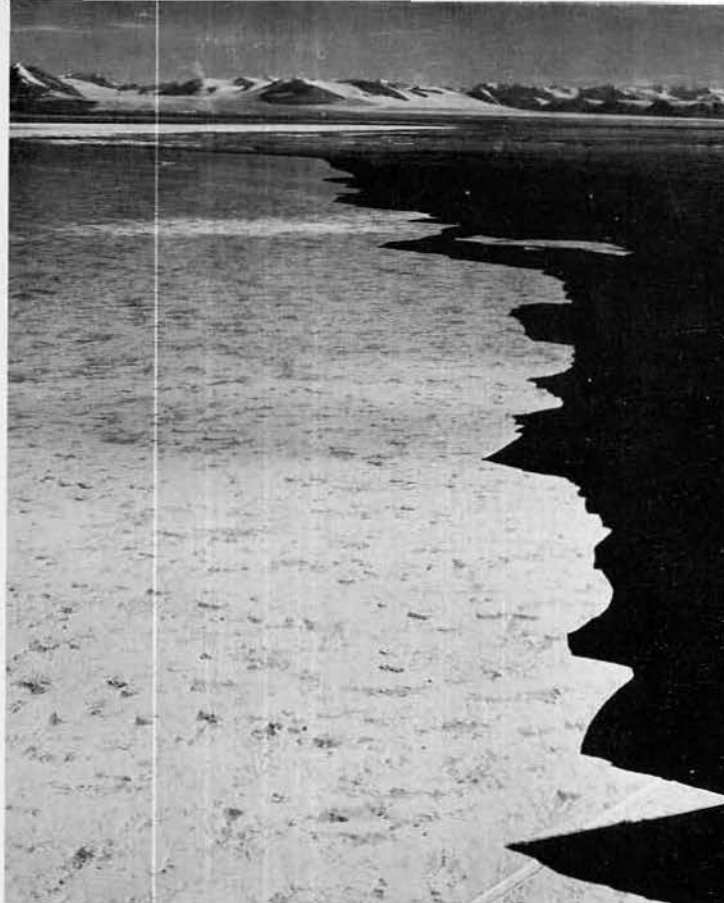


# McMurdo Sound

FAREWELL TO THE GREAT AIR ARM  
AS THE PLANES DEPART FOR HOME

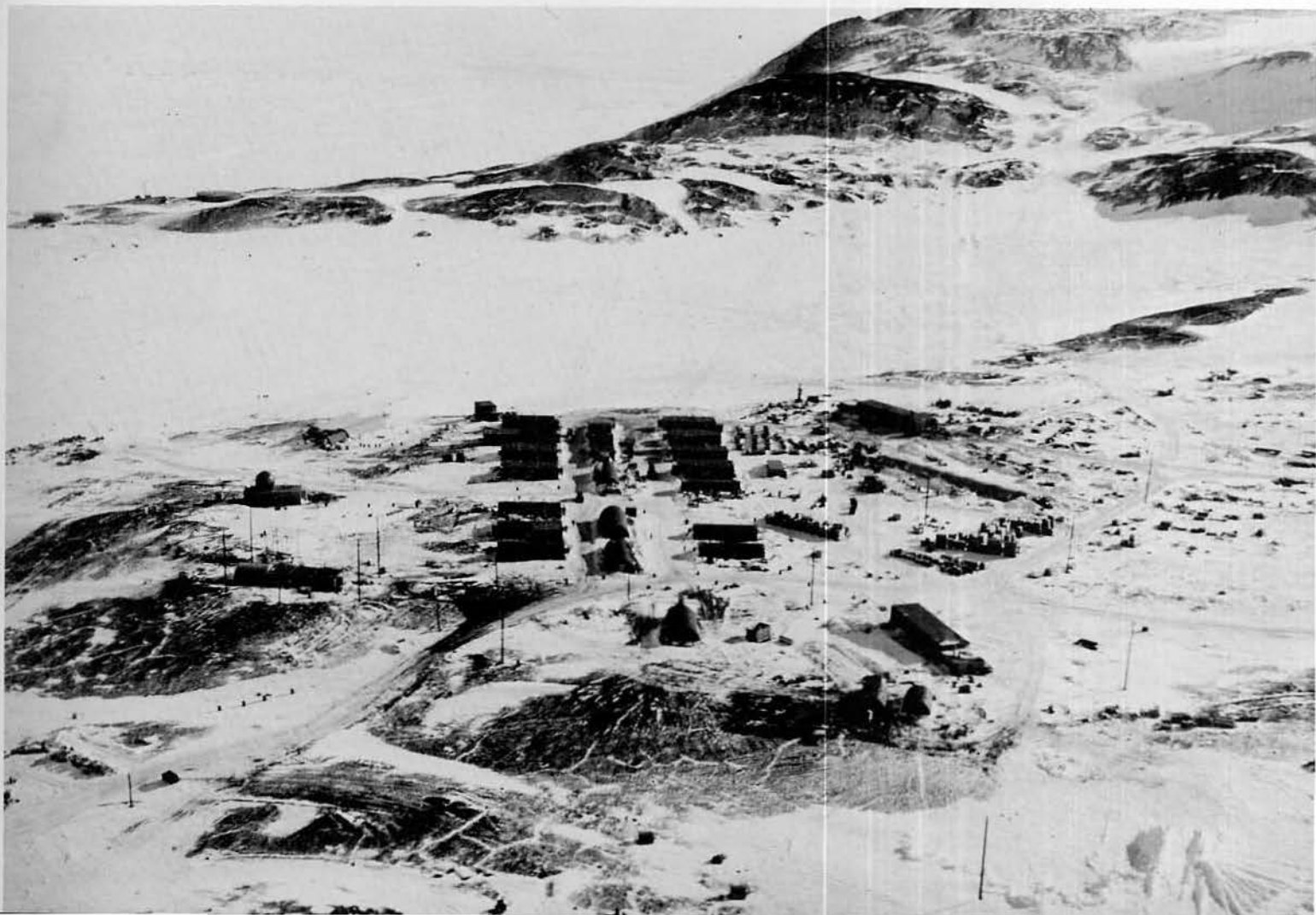


PLANES ON PARKING MAT AT WAOF ICE RUNWAY.



LONG OBLIQUE AIR VIEW OF McMURDO SOUND.

WILLIAMS AIR OPERATING FACILITY LOOKING TOWARD BAY-ICE RUNWAY WITH STORAGE TANKS FAR LEFT.





# Knox Coast

## OPERATIONS

### CAPE HALLETT, WILKES STATION

2 DURING *Deep Freeze II* operations, Task Group 43.6 successfully completed these assigned South Polar missions:

- (1) Construction of a 14-man joint New Zealand-United States IGY station at Cape Hallett in the northeastern reaches of Victoria Land.
- (2) Construction of a 27-man United States IGY station on Clark Peninsula in Vincennes Bay at the juncture of the Budd and Knox Coasts in Wilkes Land.

The task group was composed of the Coast Guard icebreaker *NORTHWIND*, (later replaced by the Navy icebreaker *GLACIER*), the Navy cargo ship *ARNEB*, and the MSTC cargo ship *GREENVILLE VICTORY*.

Captain Gerald L. Ketchum, USN, of Bellingham, Washington, Deputy Commander of Task Force 43, commanded Task Group 43.6 during the Wilkes Station operations. Captain Charles W. Thomas, USCG, of Seattle, Washington, was in command of the task group during operations at Cape Hallett.

Plans to establish coastal science stations in the Cape Hallett and Vincennes Bay area as part of United States participation in the Antarctic IGY program was formulated in 1956. During *Deep Freeze I* the Navy icebreaker *EDISTO* explored the northeastern part of Victoria Land and made preliminary surveys. Vincennes Bay was explored by the *GLACIER* in March 1956.

The *NORTHWIND* and *ARNEB* got underway from Wellington, New Zealand on December 10, 1956. They joined six other *Deep Freeze* ships bound for the Ross Sea area, making the largest single convoy ever

to move into Antarctic waters. (More ships took part in *Operation High Jump*, but this was the biggest single group that ever entered the Ross Sea together.)

On December 16 *NORTHWIND* and *ARNEB* broke off from the convoy and steered southwest toward Cape Hallett. The next day heavy pack ice slowed both ships considerably. In the afternoon two plates in *ARNEB*'s waterline were sprung by ice pressure. *NORTHWIND* led the cargo ship into an ice lake (polynya) to make temporary repairs.

Underway once again, the task group reached a position off Cape Hallett December 19 and prepared to move in. However radio orders from the Task Force Commander called the ships to McMurdo Sound, 350 miles to the south. Heavy Caterpillar tractors in *ARNEB*'s holds were required to work on the ice landing field at McMurdo.

(Continued on page 93)

CAPTAIN GERALD L. KETCHUM, USN, CTG43.6.





ADELIE PENGUINS, mother and grey-downed chicks, contemplate eviction from their pebble home. They are residents of Cape Hallett rookery which has estimated

population of 150,000. Four acres of rookery was cleared by task force members and ornithologists to stake site for IGY station. Transplanted penguins were adaptable.

# Moving Day at Cape Hallett

The ships reached McMurdo Sound on Christmas Eve and, after Navy construction men (Seabees) of the task group's Mobile Construction Battalion One detachment had assisted in the runway strengthening, all but one of the heavy tractors were reloaded aboard ARNEB and the task group steamed north to Cape Hallett.

Arriving off Cape Hallett December 29, Captain Thomas and staff officers surveyed the area for a suitable site. The site chosen was in the midst of an Adélie penguin rookery with an estimated population of a half-million. It was decided that some 6,000 of the native birds would have to be relocated to make room for the station which required at least four acres.

The next day a crew of scientists and military personnel landed by helicopter shuttle and began "Operation Penguin Lift." It was the largest mass animal move ever attempted in Antarctica. An expedition ornithologist supervised the work to note social effects on penguin families. Most of the chicks were several weeks out of their eggs.



ROUNDUP time for penguins. "Cowpunchers" include Australian, New Zealand, and U.S. scientists in the group.

SEABEE SURVEYORS STAKE OUT BUILDING AREA AS DISPLACED PENGUINS IN BACKGROUND GRIPE IN VAIN.





ARNEB NEAR NORTHWIND FIGHTS ICEPACK.

## Two Against the Sea

The NORTHWIND meanwhile began punching into the ice off Cape Hallett to open a channel for ARNEB. Original plans called for an over-ice cargo haul to the station site.

But on New Year's Eve a 60-knot gale funnelled down from the mountainous south halting all operations and seriously endangering the expedition.

Ice moving under tremendous pressure began squeezing the ARNEB in a deathgrip. Her hull was being punctured in several places. And the NORTHWIND was having a bad time maneuvering her way to reach ARNEB. For nearly 24 hours both ships withstood the savage battering of wind and ice. NORTHWIND managed to pry open a lead to relieve some of the pressure on ARNEB. The icebreaker also diverted the course of a 700-foot-long iceberg which might otherwise have collided with ARNEB.

When it was all over late New Year's Day, ARNEB was flooding badly from several holes and NORTHWIND was minus a blade on her starboard propeller.

But this same wind which attempted to exterminate the two expedition ships also blew out the ice clogging the bay off Cape Hallett. The ships could now anchor a hundred yards off the beach leading up to the selected station site. Amphibious landing boats could easily shuttle cargo from ship to beach.

This was ARNEB's element: she had dozens of times in her 15-year history landed men and equipment on beaches like the one at Hallett; some of these operations were in the Pacific during World War II, others in the Atlantic and Mediterranean during training maneuvers.

Navy frogmen of the underwater demolition team blasted out shore-fast ice on January 2, 1957 and the first boats began coming in.

*(Continued on page 96)*



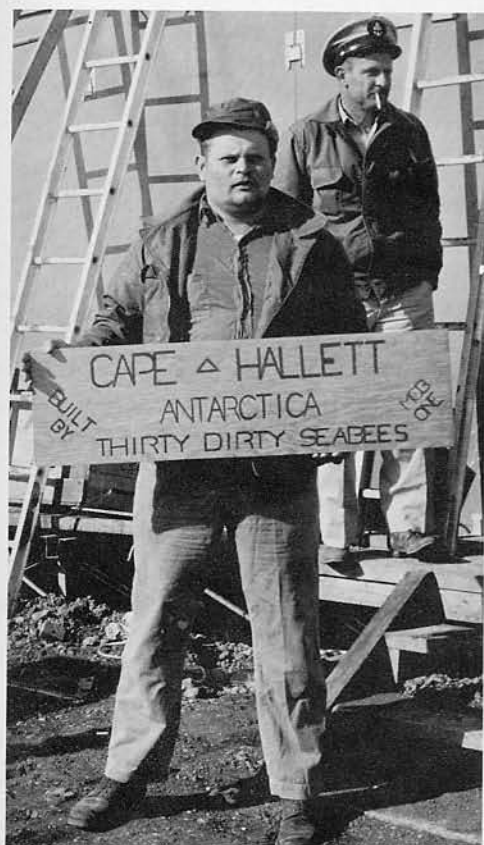
UDT MAN CHECKS NORTHWIND'S BROKEN PROP.

## UNLOADING BEGINS AT



M-BOATS bring in men, equipment. Cape Hallett receives cargo (above). Wilkes Station unloading (opposite page) required beachhead ramp blasted out of barrier and graded.





SELF-EXPLANATORY SIGNBOARD.



AURORA AND RAWIN TOWERS AT HALLETT WITH PENGUIN-PROOF FENCE.

## HALLETT, WILKES:



# USA-6 and USA-5

A few penguins attempted to resettle their old homes, but men again carried the objecting birds outside the station perimeter and erected a more stable barricade.

Heavy equipment of Mobile Construction Battalion One started moving up the beach and onto the station site the next day. A bulldozer planed down the four acres while Seabee surveyors laid out streets.

Almost overnight prefabricated permanent buildings were being hammered together. Two years' food supply was cached at Hallett Station in addition to huge stocks of books, phonograph records, motion pictures, and other recreation equipment. Besides Navy radio communication equipment, the station included an amateur radio sending-and-receiving set.

On January 9, six days after construction began, ARNEB and NORTHWIND weighed anchor and got underway once again for McMurdo Sound. The Task Force Commander wanted to survey the extent of damage to both ships.

The Admiral decided to replace NORTHWIND with USS GLACIER since the latter was almost twice as powerful and the Coast Guard icebreaker required repairs to her damaged propeller. Damage control parties in ARNEB had repaired the punctured hull to make her sufficiently seaworthy for the upcoming mission.

As the flagship, GLACIER, was a Navy ship Captain Ketchum took command of the task group and Captain Thomas sailed as chief staff officer.

Joined by the GREENVILLE VICTORY, the task group numbered three ships. They left McMurdo for Vincennes Bay January 12. Six days later GLACIER rendezvoused with the Navy seaplane tender USS CURTISS on the northern edge of the Ross Sea icepack.

GLACIER's only flyable helicopter began airlifting cargo from CURTISS. At takeoff from the CURTISS on the last lap of the nineteenth round trip, a heavy swell caused the seaplane tender's flight deck to strike the helicopter's tail section. The aircraft crashed into the sea and sank almost immediately. The two pilots managed to escape just in time.

Task Group 43.6 now had no helicopters available for air reconnaissance of icepack conditions.

## TO VINCENNES BAY

The three ships reached the icepack off Vincennes Bay on January 25. GLACIER led her two cargo ships through heavy pack ice on the eastern approaches to Vincennes Bay. The task group fought its way through to the coastal Balaena Islets outside the bay, but even heavier ice concentrations barred further penetration.

Captain Ketchum decided to return the task group to open water and take GLACIER to the western bay approaches. He hoped that prevailing southeasterly

winds would tend to loosen the pack in that area. He was right.

The GLACIER made a relatively easy passage through the pack and sailed into the quiet open waters of Vincennes Bay on January 29. Captain Thomas led an exploring party in a small open boat to search for a station site. Clark Peninsula—previously charted as an island—was selected.

Returning to open Indian Ocean waters, GLACIER rejoined ARNEB and GREENVILLE VICTORY and began leading them through the pack which was becoming increasingly dispersed offshore. At the 23-mile point ARNEB was caught between two mammoth ice floes and new punctures were made in her hull.

Backing up to her, GLACIER levered her free and attempted to tow the luckless cargo ship. The towing rig hook-up placed ARNEB's bow into a V-shaped notch in GLACIER's stern. With cables taut, the tow began. But unmovable ice caused ARNEB to veer sharply, snapping a brake toggle on GLACIER's towing winch. The suddenly loosened steel cable lashed out, crumpling stanchions supporting the icebreaker's flight deck but causing no casualties. The task group had to continue follow-the-leader tactics through the ice.

A few more miles and the pack was virtually gone. It was smooth sailing the rest of the way into the bay.

Frogmen once more tested their skill in blasting out a beachhead on Clark Peninsula. Building Wilkes Station was to be Cape Hallett all over again, only on a bigger scale.

## WILKES BASE RISES

When the first tractor landed on the beachhead, via amphibious barge from ARNEB, it could not carry the steep gradient leading up to the station site. Everyone on the beach picked up a shovel or pick and started hacking into the ice-littered earth. In a half-hour the tractor ascended the slope and began planing it down.

That night construction equipment started to arrive by landing barge shuttle. Construction officers estimated the job would take 47 days. They were soon to be very surprised.

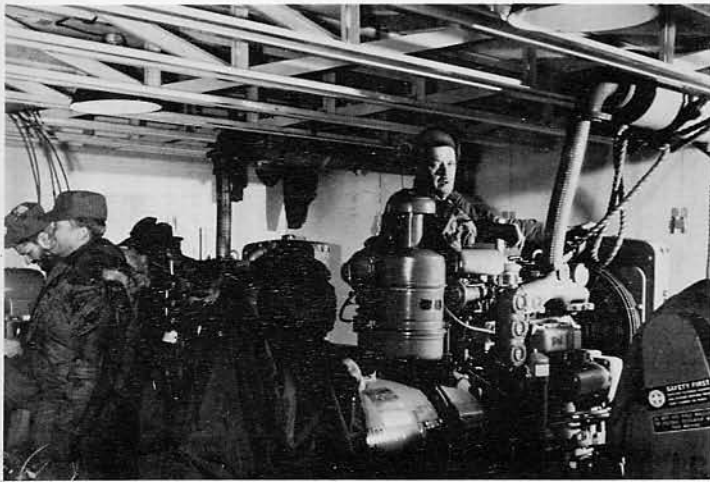
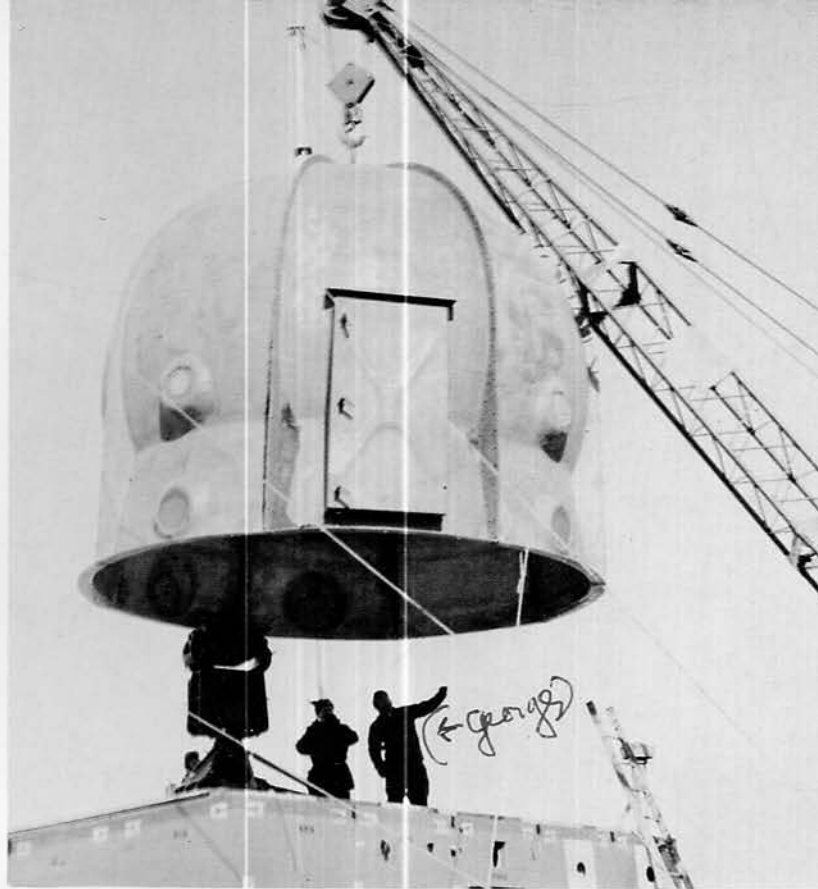
The 92-man Seabee contingent worked 'round the clock, assisted by 60 volunteers from the ships' crews. In a week the first two permanent buildings were up. A total of 18 was planned for Wilkes Station.

In the meantime, coastal survey parties were making offshore soundings to bring existing charts up to date. Another party scoured the surrounding Windmill Islands for Weddell seals which would provide a cheap and nourishing meat supply for the station's eight husky sledge dogs. Still another group stabbed 25 miles into the unexplored Wilkes Land icecap to establish a satellite glaciological station.

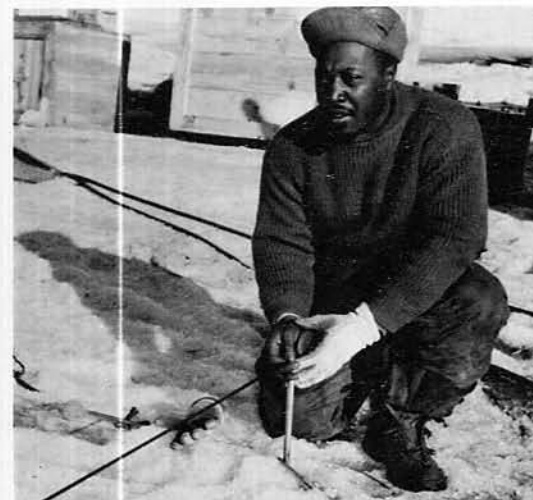
*(Continued on page 98)*



WILKES STATION in various stages of completion. Permanent structures (above) will house living facilities. Rawin dome (right) tops radar weather-balloon trackdown.



BREAKNEAK pace set by Seabees at Wilkes saw them "beat the promise" by many days in raising station.



# The Wind-up at Wilkes

After ten day's construction, amazed Seabee officers announced the task group could sail for home in another four or five days. This meant the station would be self-sufficient in less than a third of the time estimated for construction.

On February 15 GLACIER moved out of Vincennes Bay to probe for a route to open Indian Ocean waters. Icebergs and floe-ice were moving into the bay with dangerous speed. She found a safe route and Captain Ketchum announced that the task group would leave at 2 a.m. February 17.

In the evening of February 16 Wilkes Station was formally commissioned and turned over to its joint leaders: Lieutenant (junior grade) Donald R. Burnett, CEC, USN, of Mount Clemens, Michigan, and IGY biologist Carl R. Eklund of Atlanta, Georgia.

The station staff consists of 10 scientists and 17 Navy men.

At both Wilkes Station and Cape Hallett the IGY programs will encompass aurora and airglow, geomagnetism, ionospheric physics, meteorology, and seismology. At Wilkes glaciology will also be studied.

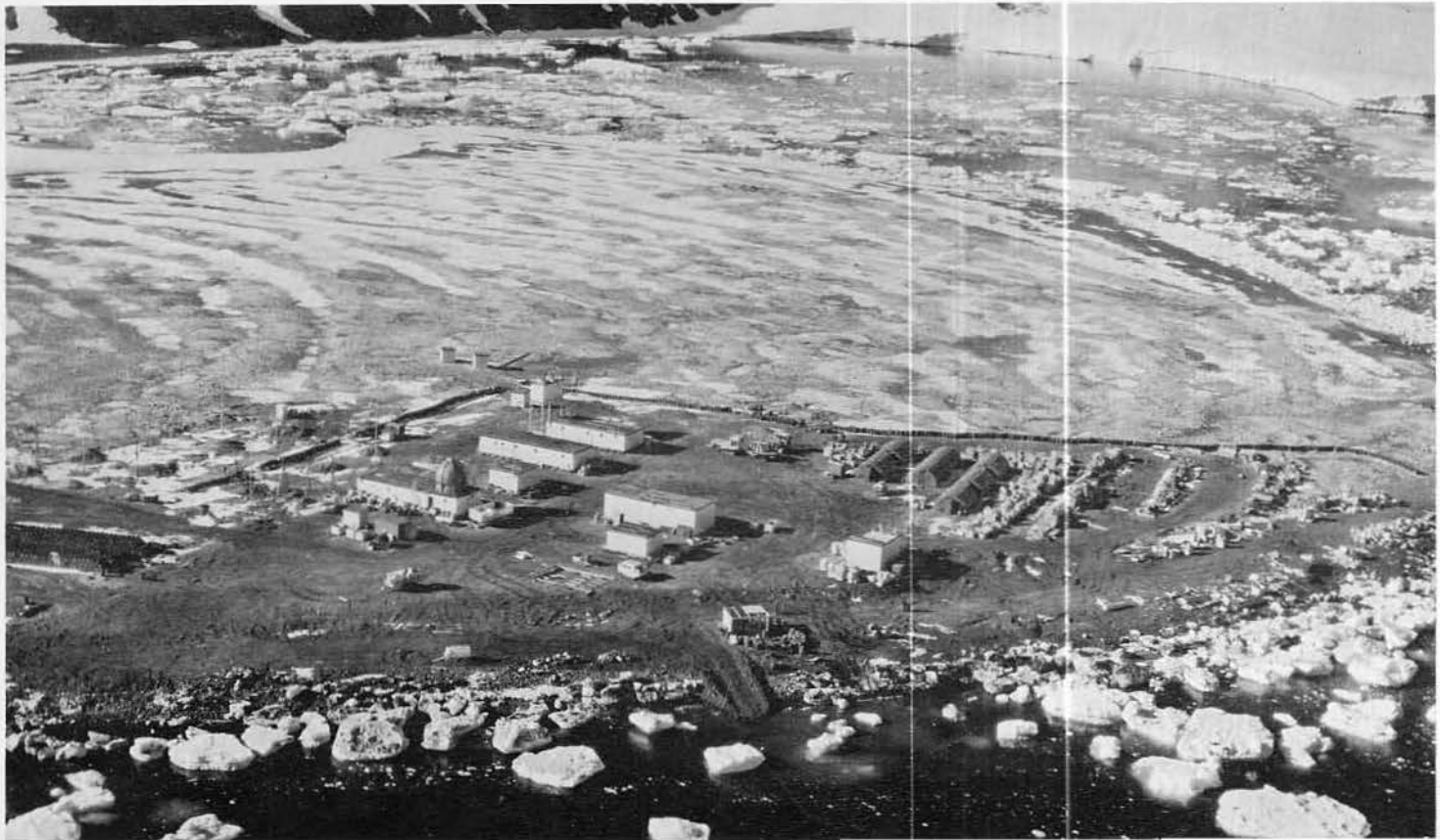
Mission completed, Task Group 43.6 was dissolved on February 18 north of the Antarctic icepack. The ships headed for ports in New Zealand and Australia en route to home ports in the United States.

MCB-1 PERSONNEL EVACUATES TO ATKA FOR HOME.



SCIENTISTS at work before station's completion. Glaciologists from U.S. (left, top and bottom), and from Norway (top right) do research.

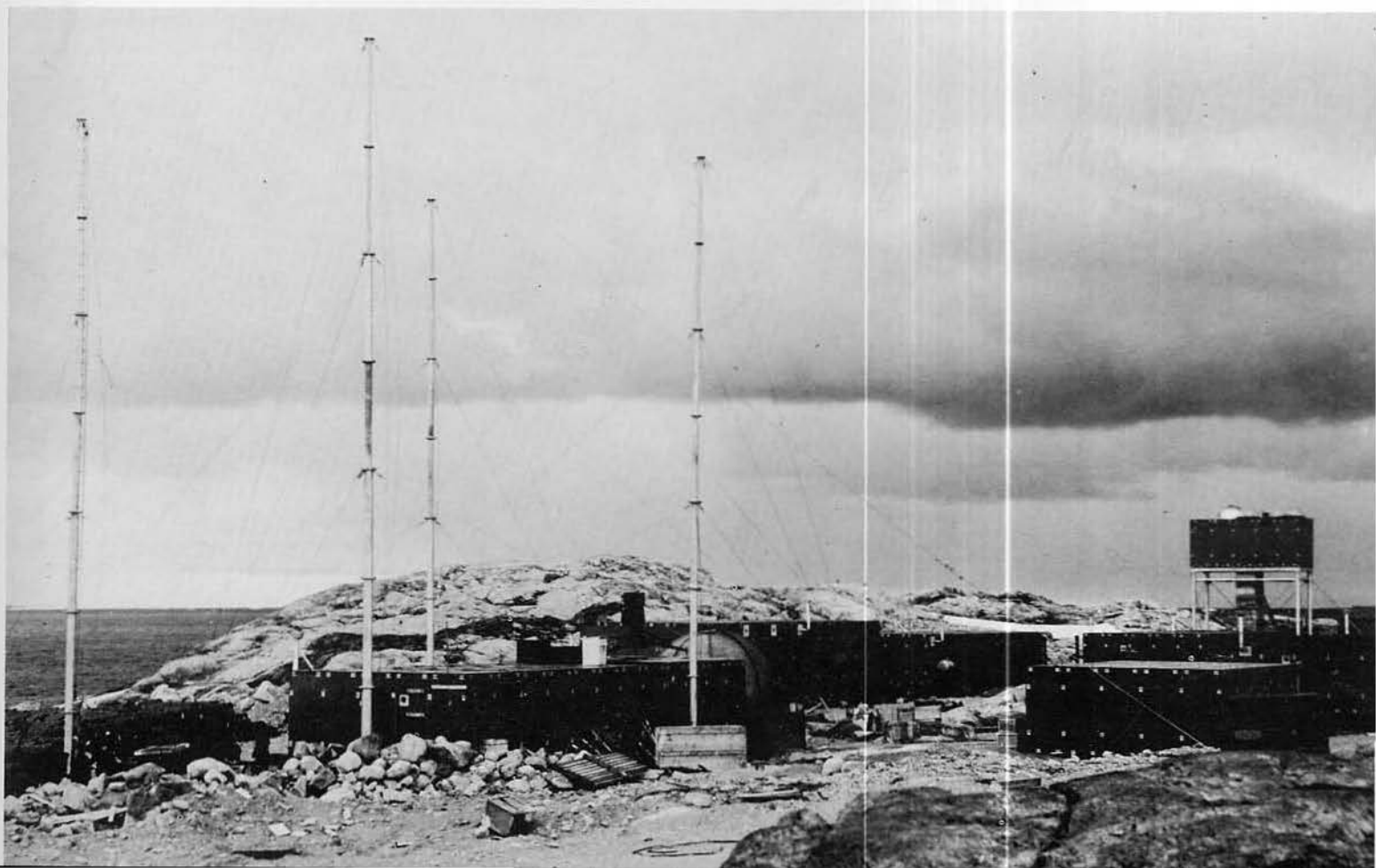
AND ONE LAST OVERHEAD LOOK AT CAPE HALLETT STATION: THE COMPLETED IGY BASE FACILITIES.





WILKES STATION is commissioned. Captain Ketchum (top right) addresses men of MCB-1, MCB(S) Bravo, and ships' crews as Captain John Cadwalader, CTF-43.6 liaison

officer, and Commander Bernard J. Lauff, GLACIER CO, stand behind him. Panorama of Knox-Budd Coast, site of station, directly above. Wilkes Station radio towers (below).

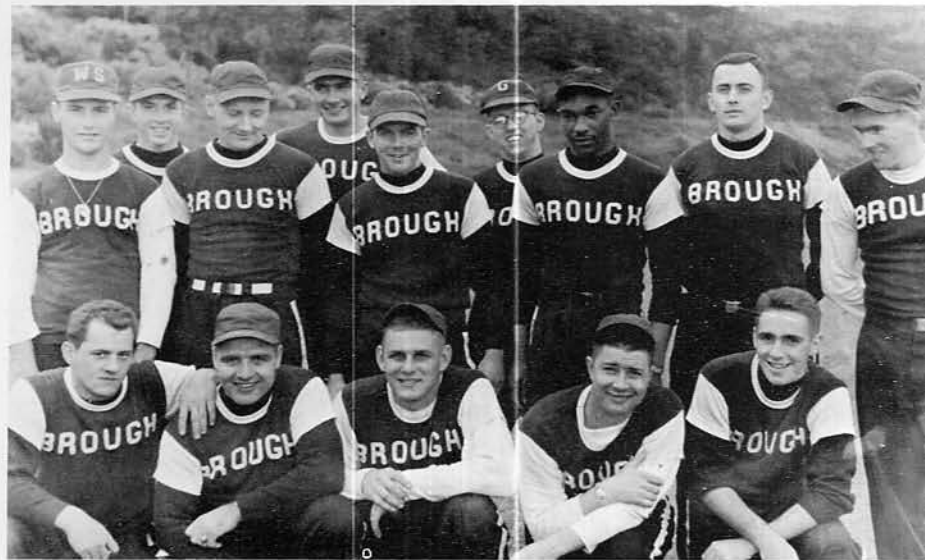




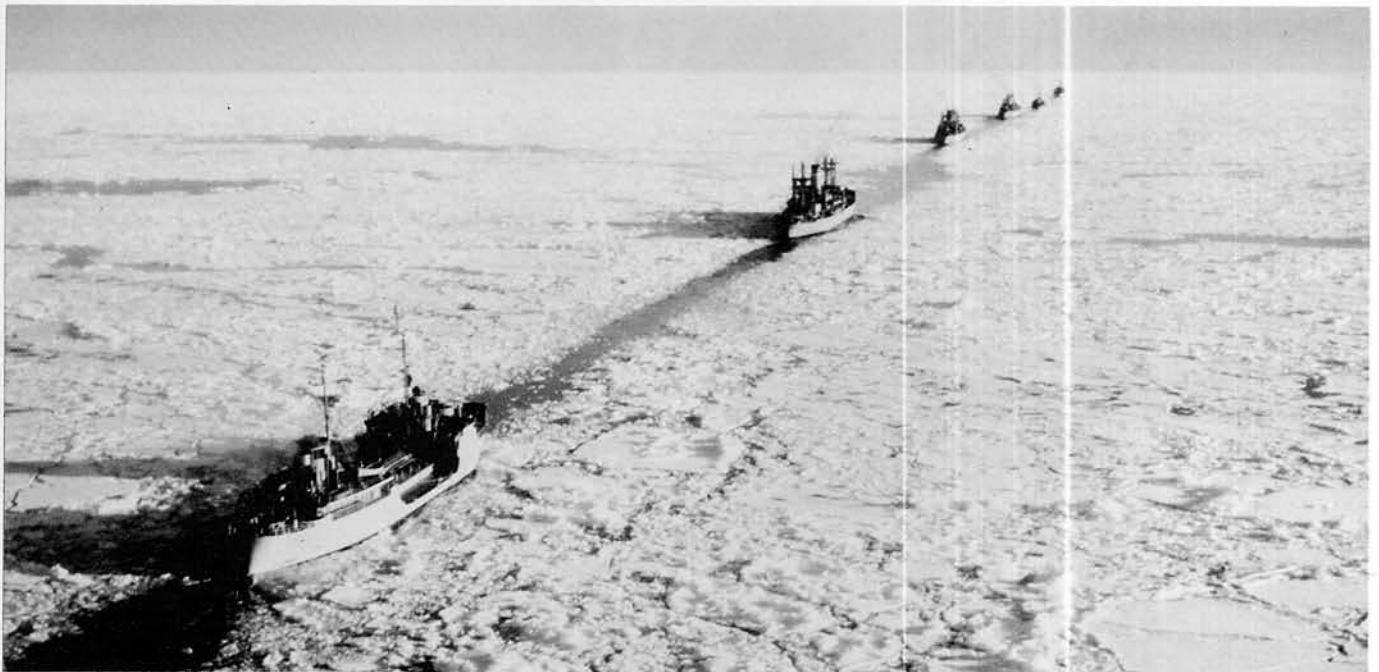
# Panorama



CASTING AN ABSENTEE BALLOT.

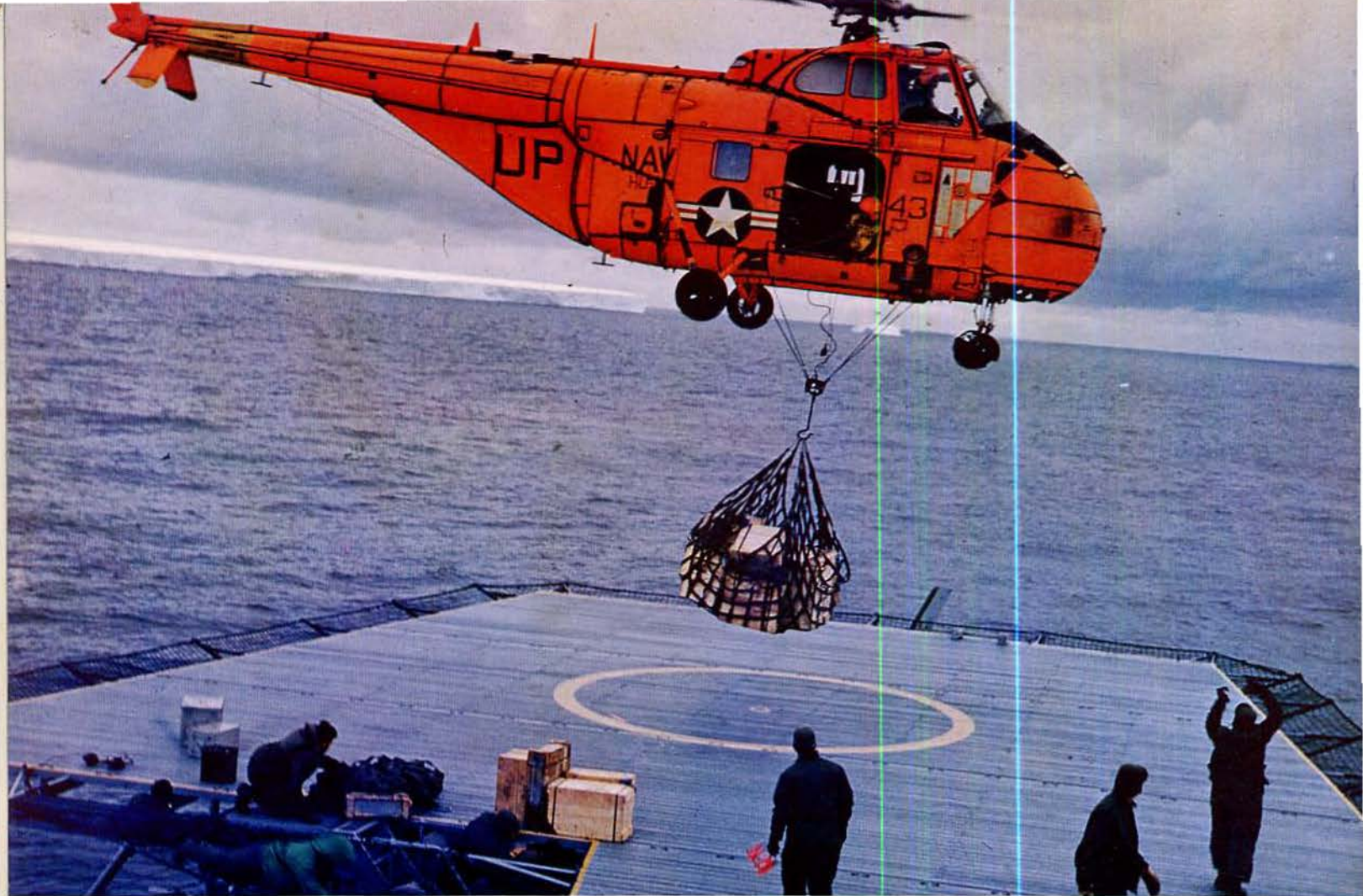


BROUGH BASEBALL TEAM WON GAMES AND GOODWILL IN N. Z.



GLACIER LEADS TASK GROUP 43.4 THROUGH ROSS SEA ICEPACK, THE LARGEST EVER TO TRANSIT.

◆ TRAIL MEMBER DWARFED BY STEEP WALLS OF CREVASSE.



SPECIALLY DEvised CARGO NET SPEEDS UNLOADING FROM USS CURTISS TO THE BARRIER EDGE AT LA-V.

# ROSS SEA



AIR RECCO went on constantly, in fair weather and foul, to chart the changing features of the ice shelf and land.





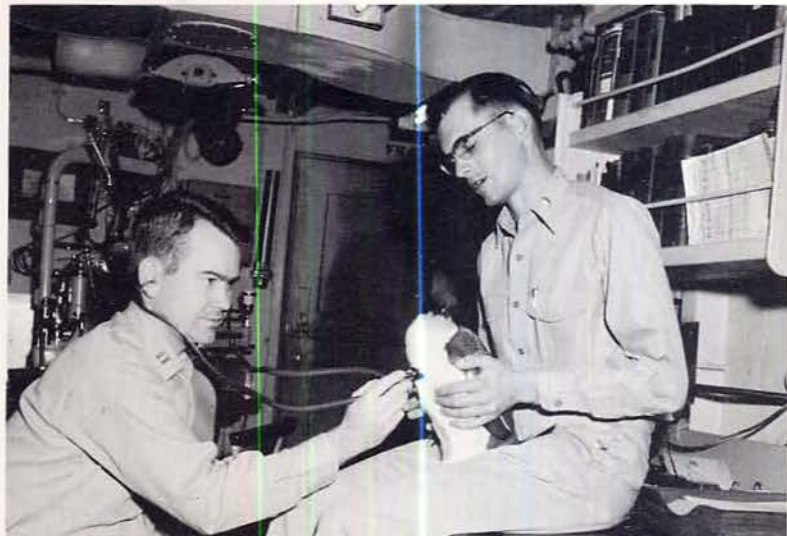


CHOCOLATE CUPCAKES IN, OF ALL PLACES, THE BYRD STATION TRACTOR TRAIN'S MESSING WANNIGAN!

# PANORAMA

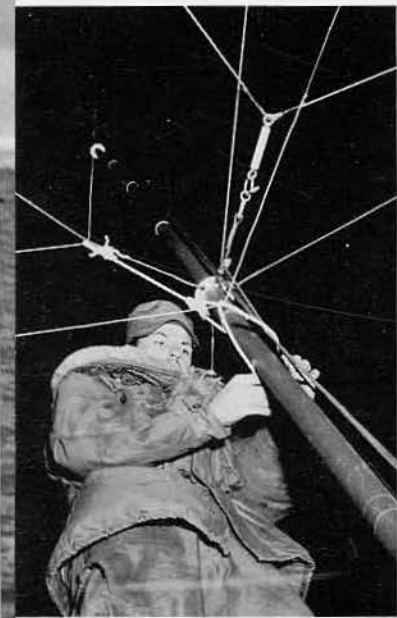


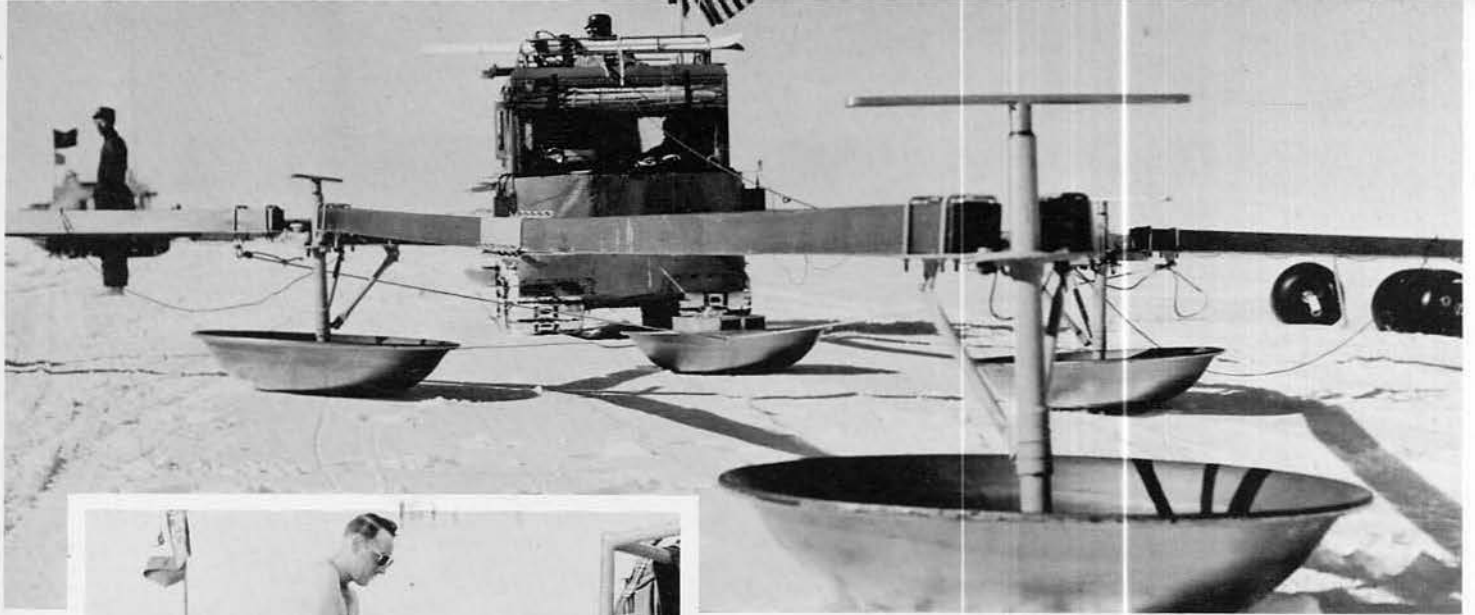
SCIENTIFIC curiosity stopped nowhere. At left, Austrian meteorologist examines instrument which measures radi-



ation from both ice and sky, while (right) two medics examine Adelie penguin in the interest of social welfare.

# The Faces of the Men of Operation Deep Freeze:





IT WASN'T ALL ICY BLASTS ON TRAIL PARTY—SHIRTLESS SEABEES SUNBATHED ON ONE WARM DAY.



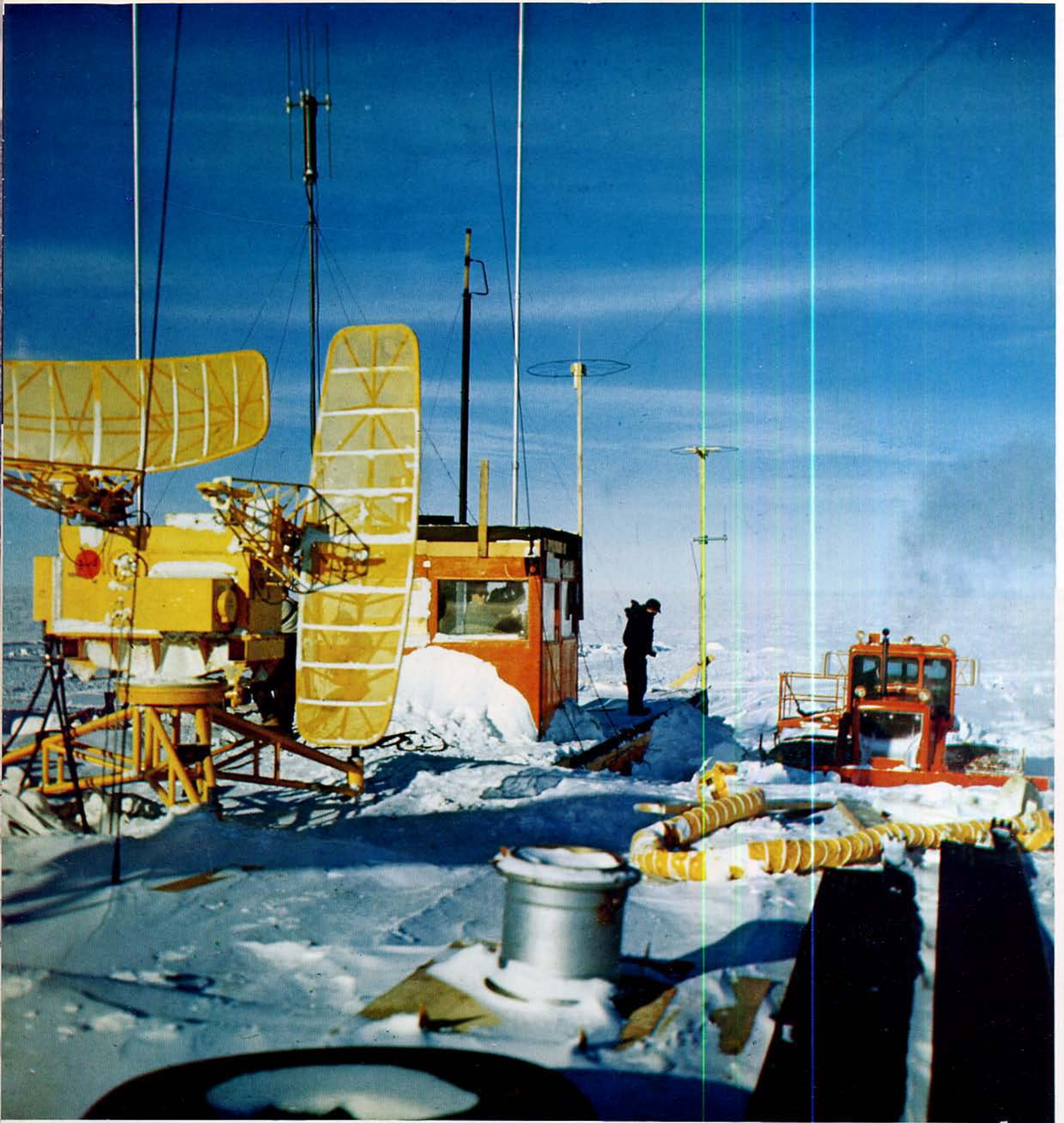
AIR FORCE LOADMASTER READIES CARGO FOR POLE.



KIEL FIELD BUILDINGS BEGIN TO SNOW OVER.



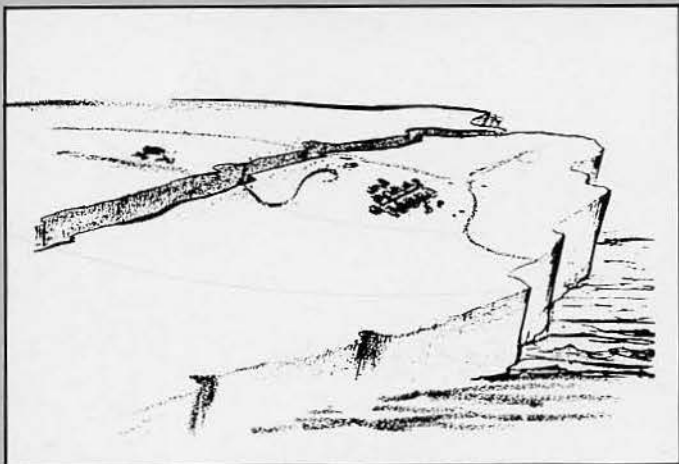
'COPTER SPEEDS OFFLOADING AT LITTLE AMERICA V.



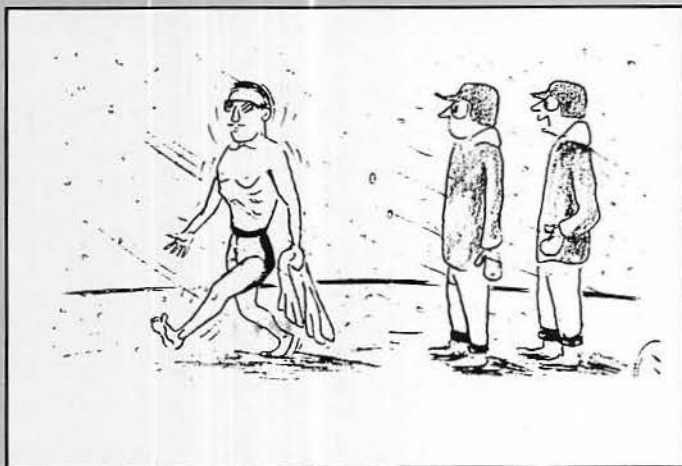
KIEL FIELD, WITH RADAR ANTENNA AND CONTROL TOWER, SERVED AS AIRPORT FOR LITTLE AMERICA V.



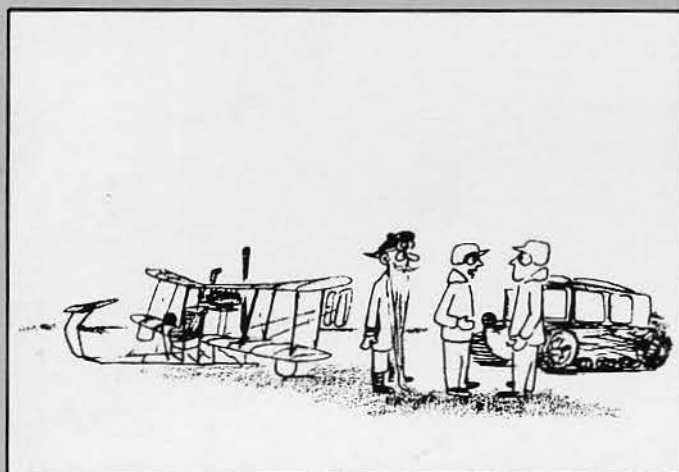
TRAIL PARTY LOADS GEAR FOR AN EASY HOP TO LA-V, PRELUDE TO A LONG, LONG TRAIL INTO MARIE BYRD LAND.



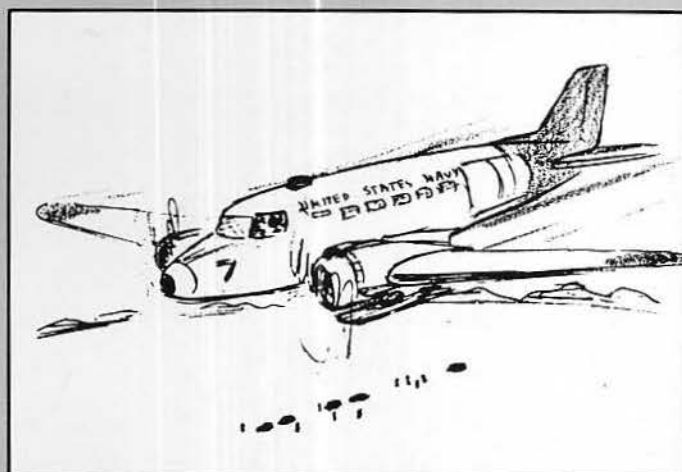
**NOW HEAR THIS! . . . Our new official mailing address:  
USS Little America, c/o FPO. This is the Captain.**



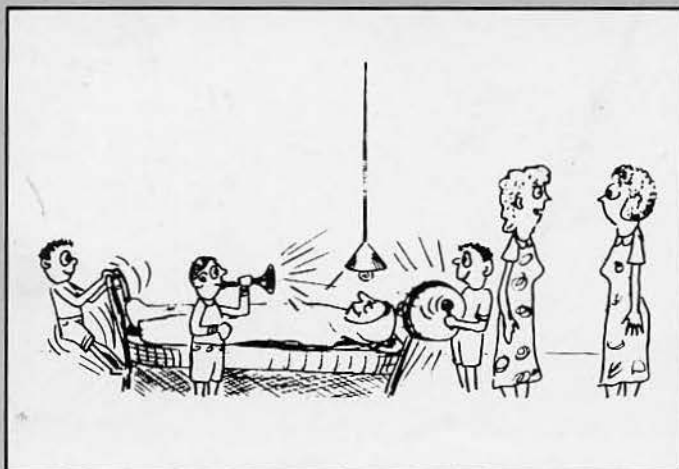
**He keeps insisting that his forecast was correct.**



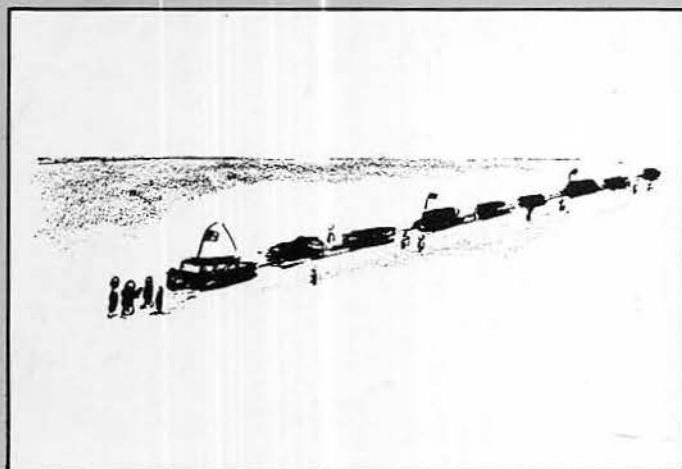
**This guy wants to know if we've seen anything of  
the Scott Expedition around here.**



**They send regards and request one case of Delsey . . .  
IMMEDIATELY! Over and out.**



**It's just about the only way John is able to get  
any sleep since he got back from the South Pole.**



**Whaddya mean, you don't know where we are?**

# Antic- arctica

THE COMIC SIDE WITH  
THE ARTIST'S TOUCH



Say, Joe . . . can you really get snow-blind if you don't wear sunglasses?



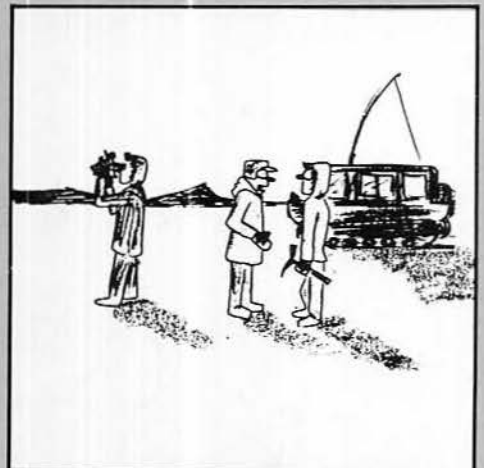
Now, Smedley . . . let's hear. What's all this talk about the "Big Eye?"



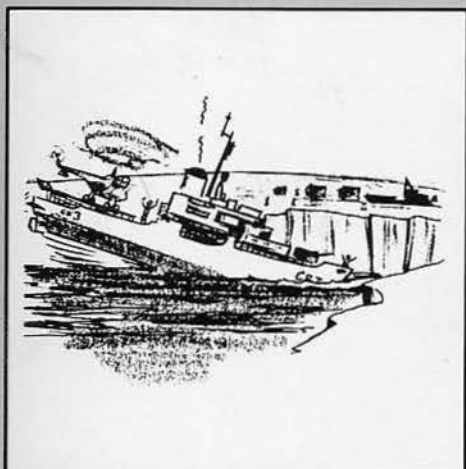
Showoffs!



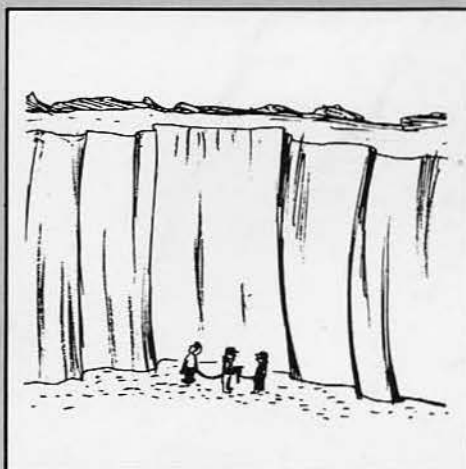
I think it's time you were told about the birds and bees and Navy men.



According to Smedley's observations our position is in the Belgian Congo.



I told you to release those tiedowns before we started up!



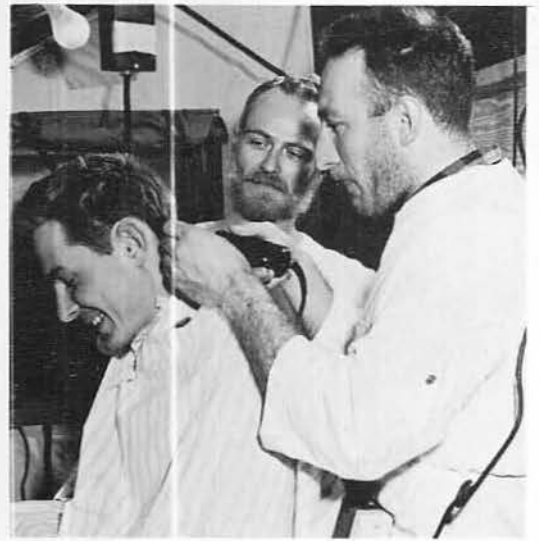
Know any more shortcuts?



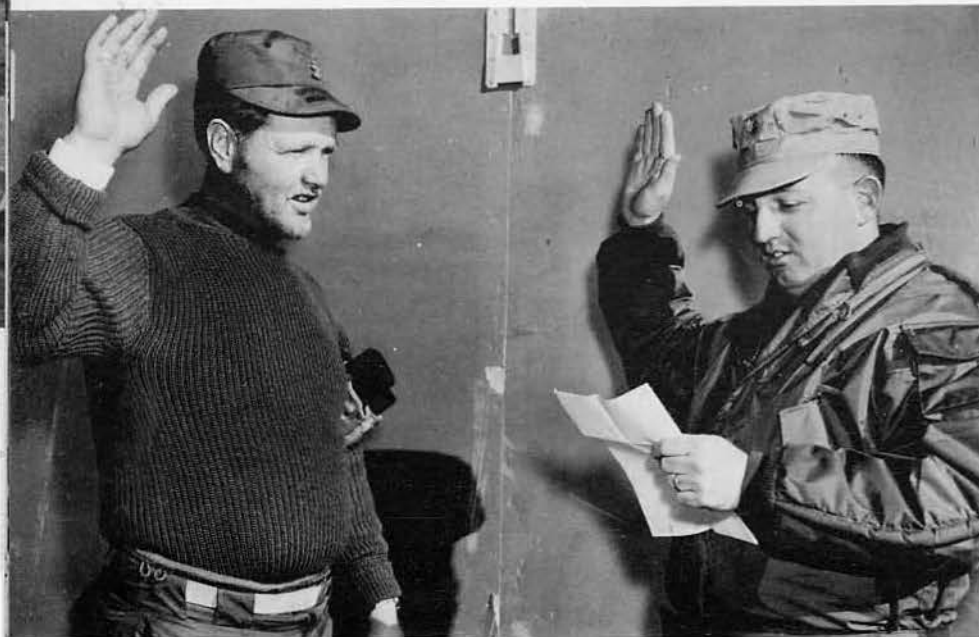
Yes dear, over . . . Yes dear over . . .  
No dear, over . . . Yes dear, over . . .  
Yes dear, over . . . No dear, over . . .



LEISURE TIME (TOP); FIRST RE-ENLISTEE AT ADARE (BELOW).



SCIENTISTS TURN TO BARBERING.



SEABEES, CREWMEN ENJOY BOXING SMOKER ABOARD CURTISS.



MAIN STREET AT CHRISTMASTIDE.



HUSKY AND FRIEND AT McMURDO NAF.





McMURDO CHAPEL AND ITS CHAPLAIN (RIGHT) AT ORGAN.



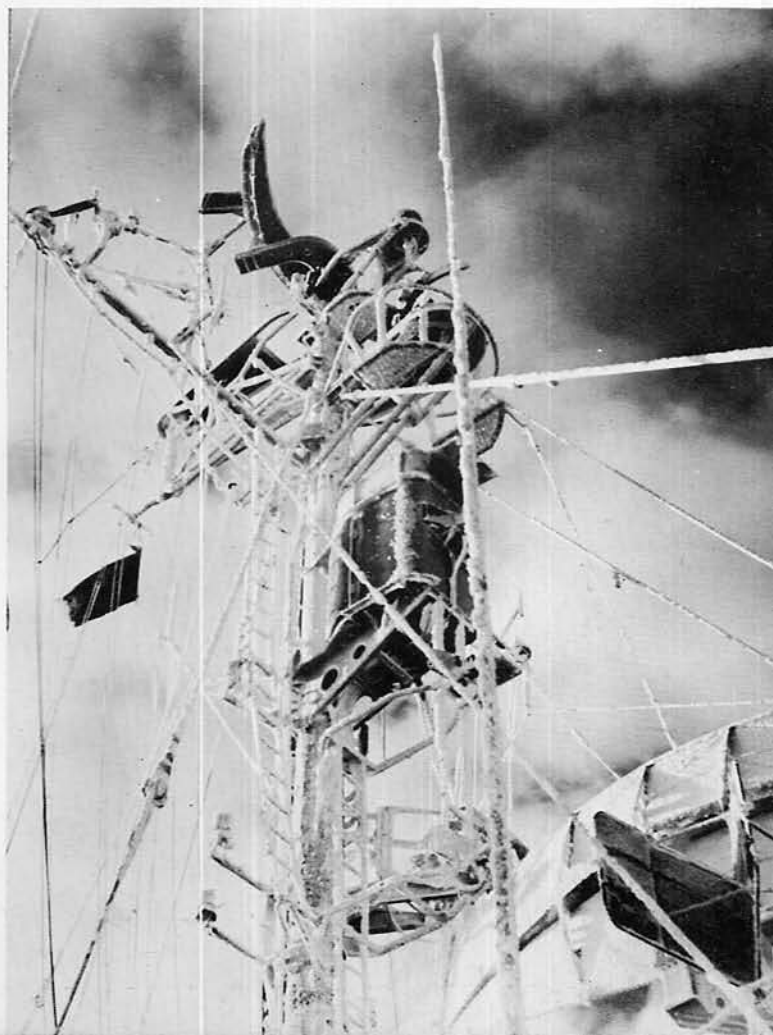
FROST ON NORTHWIND'S STICK, RADAR, ANTENNA.



PROTESTANT CHAPLAIN PRAYS WITH LAY LEADERS.



BALLET ADELIE ON BAY ICE OF McMURDO SOUND.





# Weddell Sea

## OPERATIONS

**T**HE WEDDELL SEA, lying with its face toward the open South Atlantic between Africa and South America, is Antarctica's most treacherous and remote oceanic area. Perpetually clogged with a heavily pressured ice blanket larger than the state of Texas, its history is flagged with ship disasters and death. Navigators have attempted to penetrate this hostile area since early in the last century.

The two-ship Task Group 43.7, consisting of the cargo ship *USS WYANDOT* and icebreaker *USS STATEN ISLAND*, operated under the command of Captain Edwin A. McDonald, USN.

The task group's job: (a) To negotiate the heavy ice field to the Antarctic coastline; (b) Proceed deep into the western portion of the Weddell; (c) Unload thousands of tons of cargo onto the ice edge; (d) Construct an 18-building scientific outpost for 39 scientists and military men; (e) Depart before the short summer ends in mid-February to avoid the possibility of being icelocked for the polar winter.

A big job on paper—a far bigger job in actuality. Information on the Weddell Sea was scanty: her coastline had been hastily mapped only once by air 10 years before; a few miles inland the area had never been seen by man; she had been dubbed "the hellhole of the Antarctic;" her personality was known to be violent, but her face was virtually unscarred by more than superficial exploration.

The actual operation has been summed up in one word—"Rugged." But in spite of setbacks and tremendous odds, with the Antarctic holding the trump cards, Task Group 43.7 established an enviable record and stacked up some "firsts" in the history of Weddell and Antarctic operations.

In the final days prior to her November 9 sailing, the *WYANDOT*, veteran of many voyages to the Arctic

and Antarctic, commanded by Captain Francis M. Gambacorta, USN, took on the appearance of a crowded seagoing hotel. Fifty-six hundred tons of cargo went into her holds. Construction personnel of Mobile Construction Battalion One and MCB Special (Detachment Bravo)—the wintering-over contingent—moved aboard. The task group staff embarked during the last week as did civilian scientists, Air Development Squadron Six personnel, and observers . . . altogether nearly doubling the ship's normal complement. By sailing time the cargo vessel was packed to capacity from the bottoms of her holds to the 03 level. Only on the signal bridge were a few extra square feet of space available.

In Panama on November 17, 1956 the *WYANDOT* met the *STATEN ISLAND*, commanded by Commander James B. Elliott, USN, which had steamed south from Seattle. In company they visited Valparaiso, Chile then proceeded to Punta Arenas, the world's southernmost city at the southern tip of Chile.

AERIAL STILLs FOR RECORDS, MAPMAKING.





SOUTH THROUGH STORMY STRAIT OF MAGELLAN.

Here the task group topped off its fuel tanks, took on final provisions, and severed all visible ties with civilization. The atmosphere was changing. Cold, harsh winds blew across Drake Passage coming out of the iceberg-filled seas bordering Weddell in the southeast. Fifty-knot winds rolled up within an hour, forcing the southern seas to live up to their infamous reputations. Cold-weather clothing was distributed.

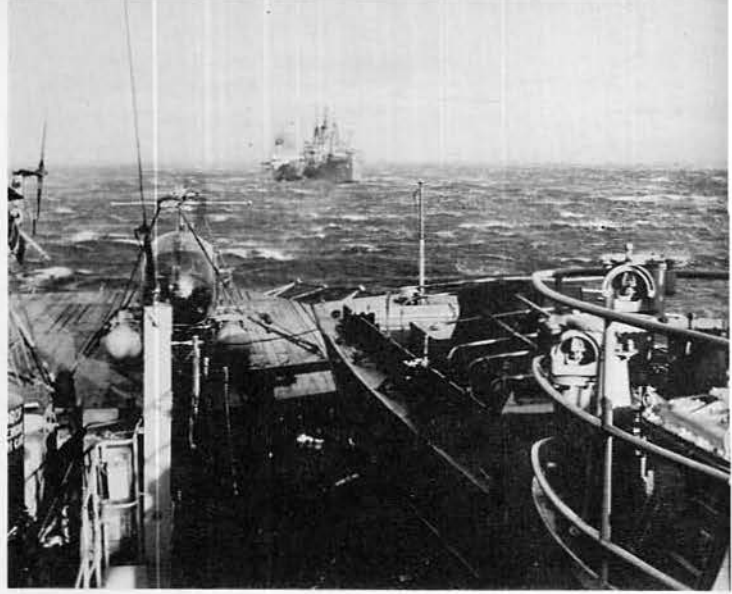
The STATEN ISLAND steamed ahead to gather data at predetermined oceanographic stations. Ice watches were set. Radarmen scanned their sets more intently for the first telltale pips of ice in the seas beyond. Helicopters aboard the STATEN ISLAND were given final maintenance checks. Ice identification and navigation lectures were held in the wardroom and crew's mess. Seabees held unloading and construction conferences.

By December 14, seven days after departure from Punta Arenas, the ships had maneuvered through a heavy concentration of icebergs and stood at the outer extremity of the sprawling icepack. Already the ever-present summer sunlight of the high latitudes was casting a faint glow into the hours surrounding midnight.

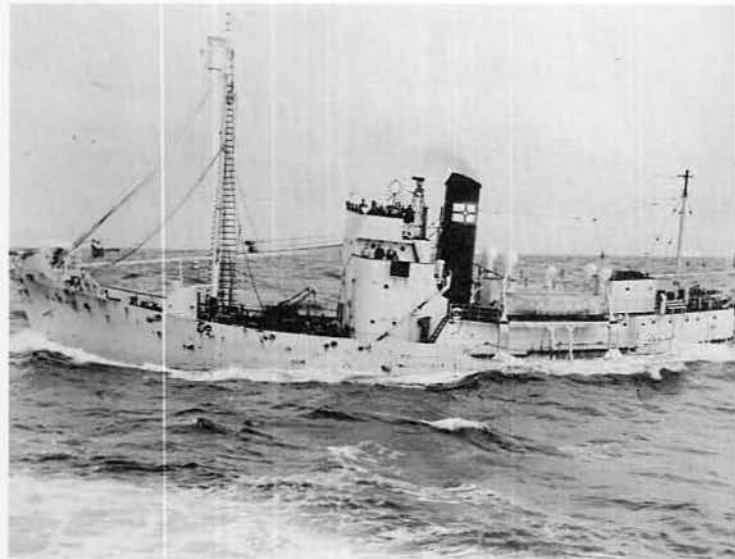
Needed now was an entrance, a lead, a crack in the seemingly impenetrable ice mass that stretched across thousands of square miles before the ships. To better supervise the ice navigation, the Task Group Commander transferred to the STATEN ISLAND and the icebreaker began skirting the ice edge.

The vessels entered the pack at approximately 14° West longitude, 62° South latitude, but before helicopters could get aloft to survey conditions ahead a storm brewed and cut visibility to zero. Open leads however were still available for transit and the stock statement was, "Looks like we'll be there by Christmas." "There" was Bowman Peninsula 2,000 miles distant, resting against the foot of the Palmer Peninsula in the innermost pocket of the Weddell Sea.

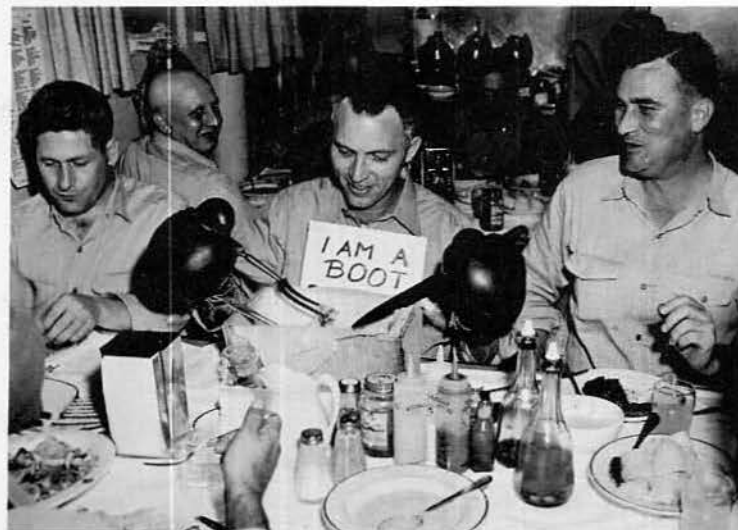
(Continued on page 117)



WYANDOT refuels from Chilean Navy tanker in heavy seas and high winds at Punta Arenas Bay near Magellan Straits.



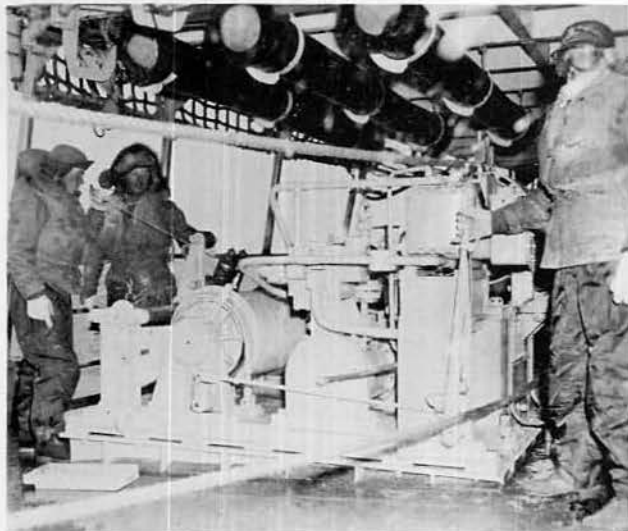
STATEN ISLAND gets weather and ice conditions from this Norwegian whale-killer ship in the stormy Weddell Sea.



NEW CHIEF EATS SUPPER OUT OF BOARD TROUGH



SNOWSTORM sweeps over Weddell Sea icepack, buffeting the two ships as they pushed into the most wildly isolated seas known to sailors. The pack (above) is choked with numerous pressure ridges common to this area of Antarctica. But even in dirty weather the scientists probed: with crewmen of the *STATEN ISLAND* an IGY specialist makes a bathythermograph drop off icebreaker into choppy waters.





THE EYES OF THE ICEBREAKER ALOFT OVER THE VAST ICEBERG-STUDDED PACK SEEKS OUT A PATH FOR SHIPS.



# Weddell Lands Sunday Punch

About the middle of the third week of December the ships made slower progress. Temperatures were well below freezing and snow flurries reduced visibility. Now the core of the ice was reached and it was necessary to commence breaking ice in earnest.

But progress was short-lived. The Weddell struck her first solid blow at WYANDOT on December 20 as the task group edged inside the Antarctic Circle. A large block of ice, moving into the channel cut by the icebreaker, dipped under the bow of the WYANDOT smashing the thin hull of the cargo vessel 20 feet below the waterline. The forward starboard fuel tank suffered a split seam and salt water gushed into the fuel reservoir. Ten thousand gallons of fuel were contaminated (80 percent was later salvaged).

Emergency damage control was started immediately. During the night the ships moved ahead, only to be stopped the following day by the thickening icepack.

United Kingdom stations at Shackleton and Halley Bay radioed that a clear channel extended along the coastline probably leading all the way to Bowman. The problem, of course, was to reach it.

On Christmas Eve Captain Gambacorta on the WYANDOT radioed the Task Group Commander that an inspection of the propeller indicated ice had broken the tips off each of the four blades. Meanwhile the task group awaited an easing of ice pressure and more favorable conditions. Some of the pressure-locked ice floes were nearly 20 feet thick.

The task group observed Christmas Day with one eye on the turkey, the other on the ice. Caroling groups from both ships joined to sing on the open deck. Red Cross Christmas packages were distributed. The following day ice pressure eased enough to permit spasmodic progress again toward the coastline.



VIEW FROM THE ICEBREAKER'S BRIDGE CONTROLS.

Early the following evening the coastline at Cape Norvegia came in view and by December 28 the open lead between the pack and ice barrier was reached. The "open-water highway" appeared to surely lead all the way to Bowman Peninsula, 900 miles farther.

Taking advantage of clear skies, Captain McDonald and Captain Finn Ronne, USNR (officer in charge of the proposed base), helicoptered to the United Kingdom stations and the Argentine base to visit the wintering-over parties, taking them fresh fruit and magazines.

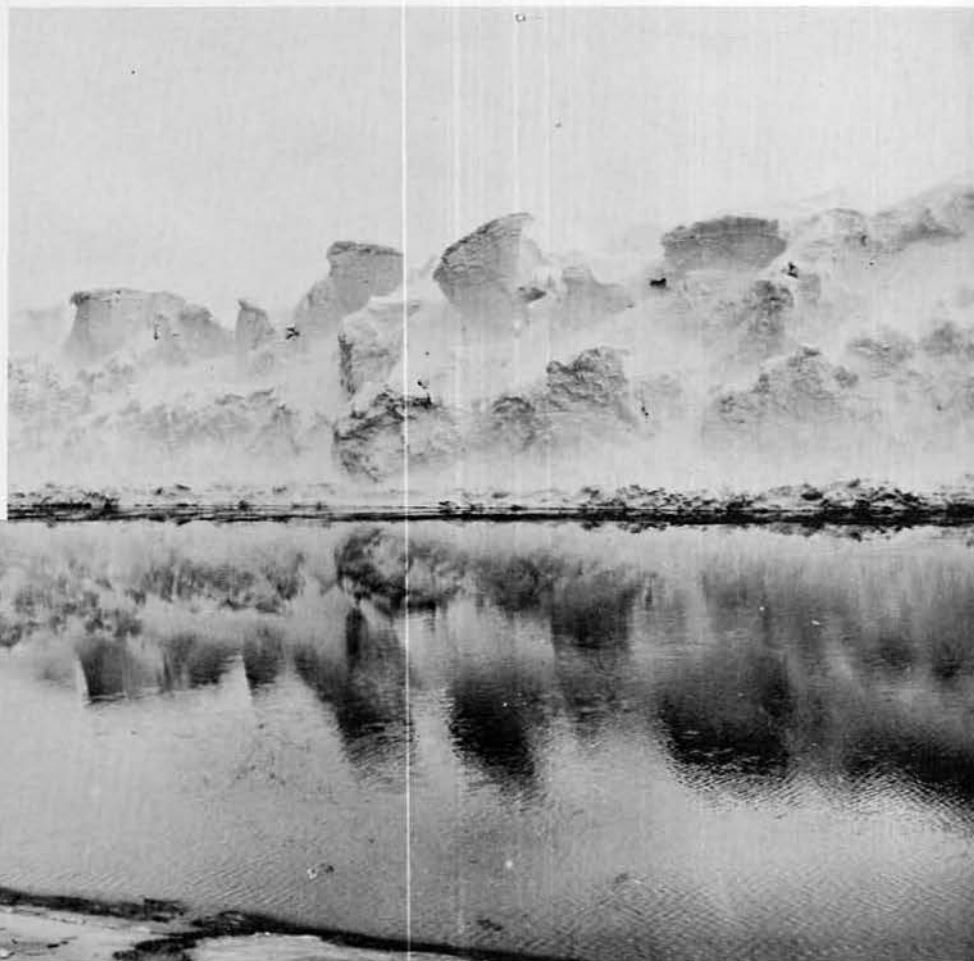


CHRISTMAS comes to the Weddell Sea and brings with it tinsel trees, carol singing with a double choir of men



from both ships on STATEN ISLAND's flight deck, and well-basted turkeys for every mess in this wing of *Deep Freeze*.





TABULAR ICEBERG 30 MILES LONG, 8 MILES WIDE FACED BY STATEN ISLAND AND WYANDOT IN WEDDELL.

## Bowman Draws a Blank

During one takeoff from the STATEN ISLAND a Bell helicopter crashed onto the icebreaker's flight deck. No personnel injury was incurred. Parts were salvaged and the wrecked craft was pushed over the side into the sea.

In the southernmost section of the Weddell Sea the task group again became beset. By January 10, 1957 the ships had advanced no more than 800 yards. Two huge icebergs, one measuring 34 miles in length and the other 27 miles, were grounded and caused pressure to be built up against them. For days the ships could not move. Finally on the twelfth of January the task group was able to move around the bergs and reach the open-water lead against the ice shelf to the west. But in doing so the WYANDOT suffered further damage:

- (1) On the evening of January 11 ice ripped a hole in the cargo ship's forward starboard hull. To make welding repairs, two LCM's and a 13-ton Caterpillar tractor were suspended over the port side by the ship's booms to list the starboard hole clear of the water.

- (2) Two days later more serious ice damage was sustained. A large gap in her port deep tank just behind her double-plated, reinforced bow was made by heavy ice. Extensive repairs were later made when the ship moored to the ice shelf.

The ships had nearly covered the total distance to Bowman Peninsula. Helicopter reconnaissance of Bowman and Cape Adams revealed that the region was probably unsuitable for establishment of a station.

The factors of dwindling fuel supplies, condition of the WYANDOT, and the possibility of difficult re-supply the following year influenced the Task Force Commander in ordering the task group to retrace its steps eastward.

Operations in this remote region, however, were not altogether unrewarding. The task group charted over 300 miles of unknown coastline, gathered valuable oceanographic data, and penetrated deeper into the Weddell Sea than had any other ships in history.

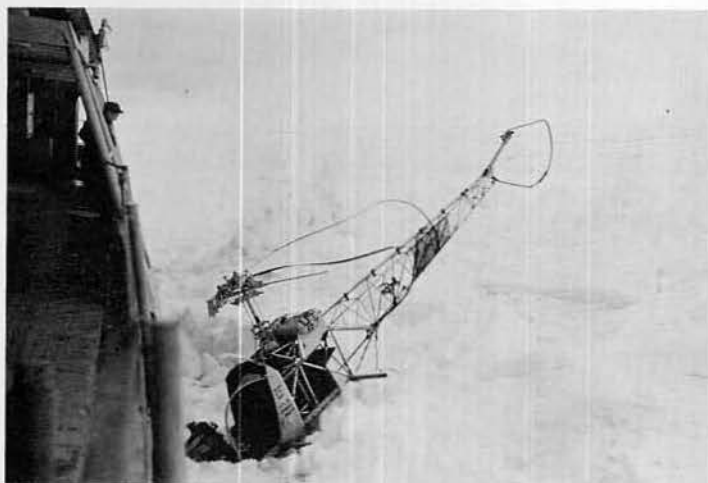
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TASK GROUP commanders scan their charts before backtracking from Cape Adams, finally deciding to return to Gould Bay. Left to right, Captain F. M. Gambacorta (WYANDOT CO), Captain E. A. McDonald (CTG-43.7), Captain Finn Ronne (Ellsworth Station CO), and Commander James B. Elliott (CO of STATEN ISLAND) in session.



BEAT-UP WYANDOT SHOWS SCARS: CRACKED SEAM (LEFT), BROKEN PROP BLADES ARE PHOTOGRAPHED.



CRASHED AND ABANDONED HTL-5 GIVES ITS NAME TO RESTING PLACE—"HELICOPTER HILL."

# At Last—The Ideal Base

The ships doubled back, steaming toward the east in an attempt to locate a more suitable base site. On January 16 hard ice under pressure broke a blade from the *STATEN ISLAND*'s port propeller, reducing her efficiency to 70-80 percent.

Heavy concentrations of ice continued to slow progress but on January 26, after extensive aerial reconnaissance, a section of ice shelf of sufficient height and durability to permit offloading was located on the barrier between Gould Bay and the Argentine station. A party sent ashore to test the ice reported an ideal base site two miles inland from the edge of the ice barrier.

The *STATEN ISLAND*, filling the role of "spoon-nosed bulldozer," trimmed the ice shelf and knocked away

rough edges to fashion an unloading pier.

Offloading began on the 27th. As the first piece of equipment—a 14-ton D-4 tractor—hit the ice, construction men were already at the base site laying out ground plans, setting supply dumps, preparing for the first load of equipment.

The entire Weddell Sea operation shifted into high gear. Ships switched to 12-hour around-the-clock working schedules. The *STATEN ISLAND* immediately volunteered men to aid in camp construction, followed a few days later by working teams from the *WYANDOT*.

In five days the *WYANDOT* was 45 percent unloaded.

*(Continued on page 127)*

ICE "SHAVINGS" pile up on *STATEN ISLAND*'s bows as the breaker fashions unloading pier. Crewmember goes aloft on the barrier to clear away overhanging snow and ice. Then the big cargo ship was nudged against the ice shelf to prepare for offloading equipment for Ellsworth Station.





WYANDOT lies to while crewmen dig holes for deadmen (top and lower left). STATEN ISLAND lowers its crane

(right) for temporary gangway until permanent one can be constructed for unloading to Weddell Sea ice shelf.



LIFE AND CHORES GO ON BETWEEN DECKS AT THE WORLD'S BOTTOM JUST AS ELSEWHERE AFLOAT.

## VISIT TO UK SHACKLETON BASE:



GOOD QUEEN Bess II presiding from the wall, Ellsworth and Shackleton Stations representatives compare notes on the Antarctic. Left to right, Captain Finn Ronne, USNR;

Dr. V. E. Fuchs, Shackleton's OinC; Captain E. A. McDonald, USN; and D. Stratton, second in command at the UK base. The Americans flew in from Ellsworth Station.



PHOTOGRAPHS of IGY activities are shown to British expedition members (above) by Captain McDonald. Captain



Ronne (right) visits with his old friend, Dr. D. Dalgliesh, at Halley Bay, another UK base located on the Weddell Sea.



HEART OF the icebreaker, the engine room, keeps throbbing day and night. On watch in B-2 engine room of the USS STATEN ISLAND, ship's fireman maintains power for the big icebreaking chore.





SNUBBED AGAINST ICE SHELF BY M-BOAT, WYANDOT PREPARES TO OFFLOAD FOR ELLSWORTH STATION.



HEAVY-DUTY tractor is lowered over side of the WYANDOT onto the ice shelf to act as conveyance, trailer haul, and bulldozer. Moderate uphill grade posed few problems but hazards were there.

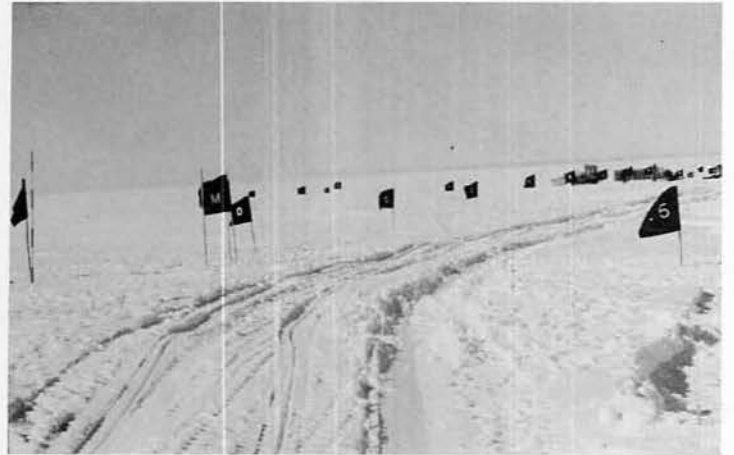


HO4S 'COPTER comes over and down. The unfamiliar Weddell coast required a great deal of air recon and the planes and helicopters did a real job.

## 12-HOUR 'ROUND-THE-CLOCK SCHEDULE:

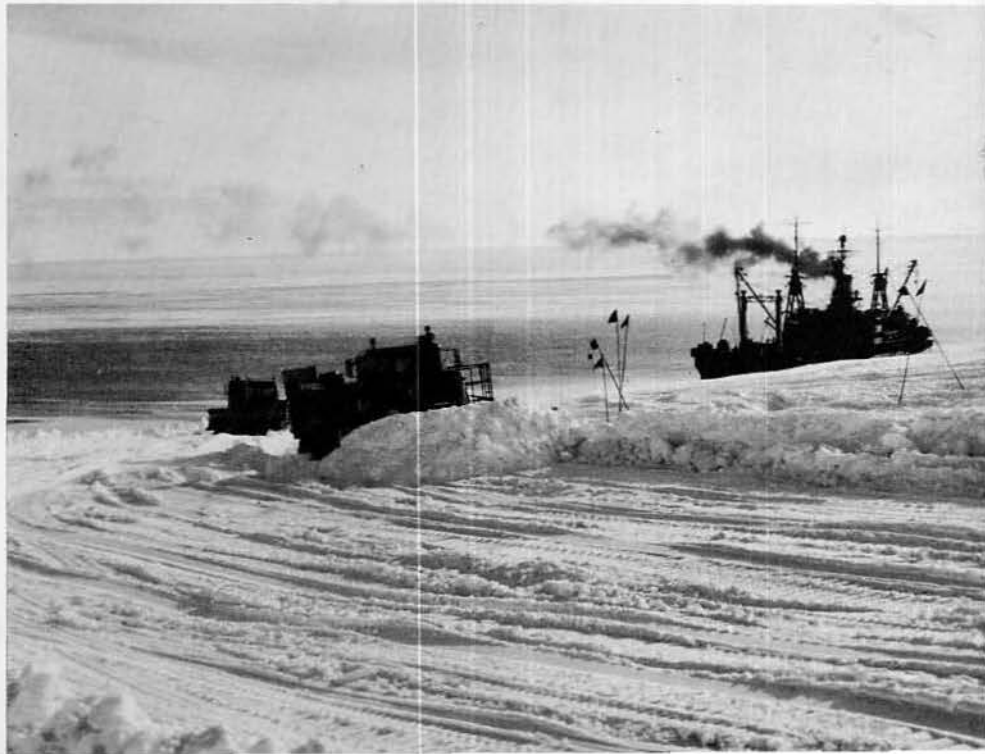


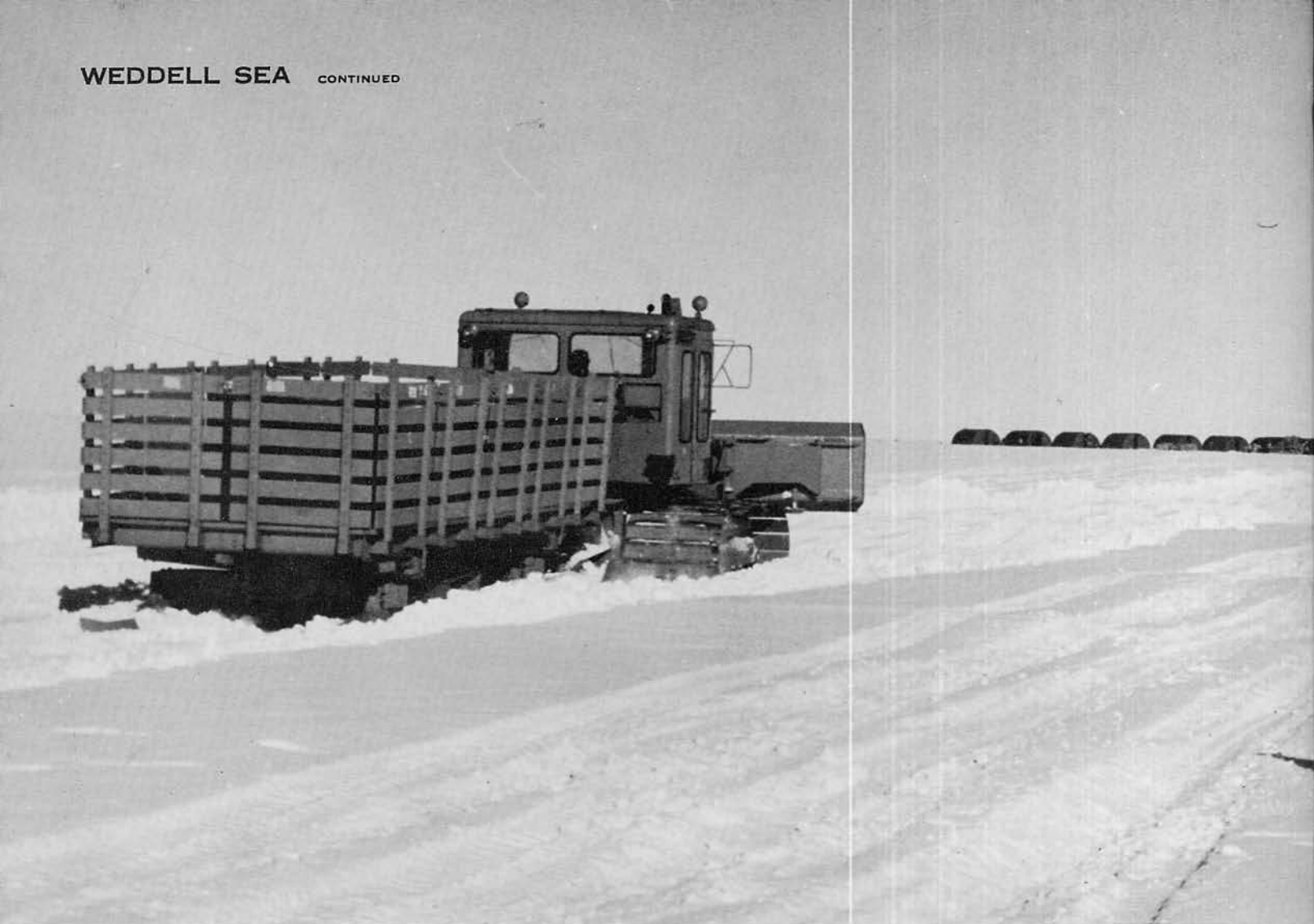
WEASEL-TOWED "GO-DEVIL" SLED MOVES A WORKING PARTY TO CAMPSITE WHILE 'COPTER GOES ALOFT.



CAMPSITE operations were speeded not only by fast transportation but by flagged and efficiently cataloged drop areas.

TRACTORS PULL CARGO SLEDS UP HILL. ▶





A LOYAL NATIVE SON POSTS A ROUTE SIGN TO POINT THE WAY TO ELLSWORTH STATION FOR D-4 AND D-8.



CAN-DO SPIRIT attested by above sign worked wonders in offloading supplies and equipment and in construction.

Contrast of above view with that on page 124 (taken just five days earlier) shows some of that progress made.



## Ellsworth Station Shapes Up Fast

Across the monotonously vacant ice shelf Seabee drivers herded their cumbersome vehicles to the site of Ellsworth Station (named in honor of American Antarctic explorer Lincoln Ellsworth). Someone ground his tractor to a stop long enough to put up a highway marker reading, "Illinois Route 80."

As each tractor and loaded sled bull-gearred into the campsite, construction men fell on the priority gear. The colorless landscape gave way to squat, dull green temporary housing units.

The Weddell Sea air arm (VX-6), consisting of two UC-1 Otters and an HO4S helicopter, got aloft from the ice in the evening of February 2. Training flights, reconnaissance runs, ice and terrain survey hops, mapping missions were crammed into every available flying hour.

By the first of February Ellsworth Station was at a sufficient stage of development for all Seabees to move to the camp. The temporary structures were up, electric power was in, foundations were being laid for permanent Clements Huts, hot meals were available four times a day. Supply dumps and fuel depots for 5,000 drums of diesel fuel, avgas and antifreeze were laid out and marked. The weather, aside from low temperatures and 20-knot winds, had not been a hindrance. Lieutenant Commander Henry E. Stephens, CEC, USN, directing the construction, observed that Ellsworth Station was shaping up fast.



DRAWN CARGO SLEDS MOVING FROM ICE SHELF.



MORE indication of progress, the snug messhall raised and equipped in a few days (right) for frost-sharp appetites.





ELECTRICIAN PUSHES THROUGH LAST WIRING JOBS AT ELLSWORTH BEFORE THE SHIPS WEIGH ANCHOR.

# Bucking for Deadline

The only near disaster during offloading came when 2,700 feet of the ice barrier gave way under a D-4 tractor, precariously wedging the tractor between the ice shelf and the WYANDOT's hull. Roy Cheeks, CD2, climbed to safety; T. G. Lowery, CD1, secured a line to the tractor and it was hoisted to solid ice before the ice section fell into the sea below.

Shortly past noon on February 9 the WYANDOT stood high in the water, her holds empty. The last of 11,200,000 pounds of cargo was on its way to Ellsworth—12 days after the ship began unloading.

Meanwhile the engineering forces and damage-control crews of both ships were readying their vessels for exit of the icepack. The cargo ship's cracked hull was repaired and the icebreaker replaced a broken crankshaft on her No.2 main engine.

Early in the morning of February 11 the task group aerology officer, Lieutenant A. B. Arnett, reported: "Deep low-pressure center moving in over Palmer Peninsula." Soon north winds commenced driving the icepack toward the coastline and toward the two ships. New ice which surrounded the vessels had increased in thickness of one to two feet. The decision was made to wind up operations by noon of the following day.

At 10 p.m. the cargo ship steamed away from the ice shelf. A few miles away, within sight of Ellsworth, she was halted by the ice. But the WYANDOT was safely away from the barrier and could wait for the STATEN ISLAND to break her free the next day.

In the face of the blizzard Seabees and STATEN ISLAND crewmen worked steadily twice around the



SEABEES RAISE WALL PANELS OF HUT INTO PLACE.

clock in an attempt to complete Ellsworth before the icebreaker's departure deadline. Communications equipment, transmitters, receivers were hooked up to the antenna field; generators were cut in. Stores and loose gear were stowed away for winter storage. Electrical work and wiring were finished.

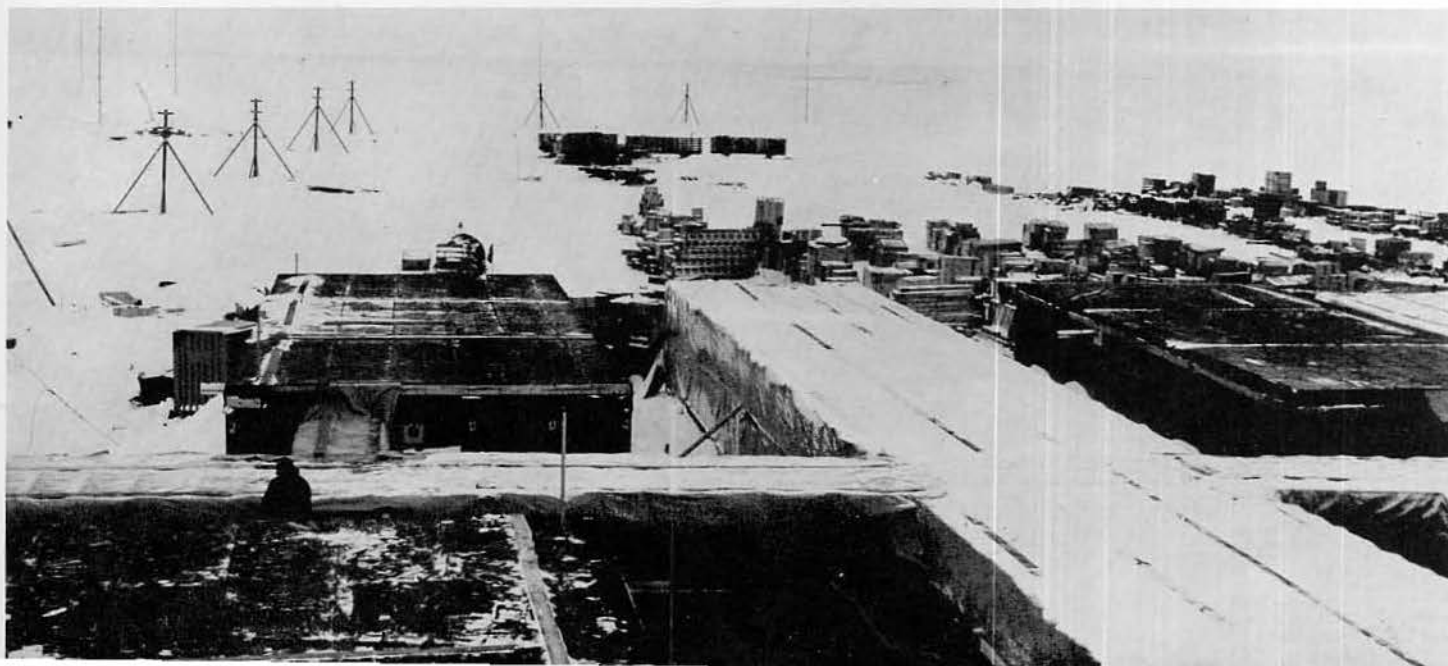
By the next day the base was 90% completed. Only minor—mostly indoor—work was left undone.

In a short ceremony Captain McDonald turned over command of Ellsworth Station to Captain Ronne. Nine scientists and 30 Seabees and airmen would be Antarctic residents until the spring of 1958.

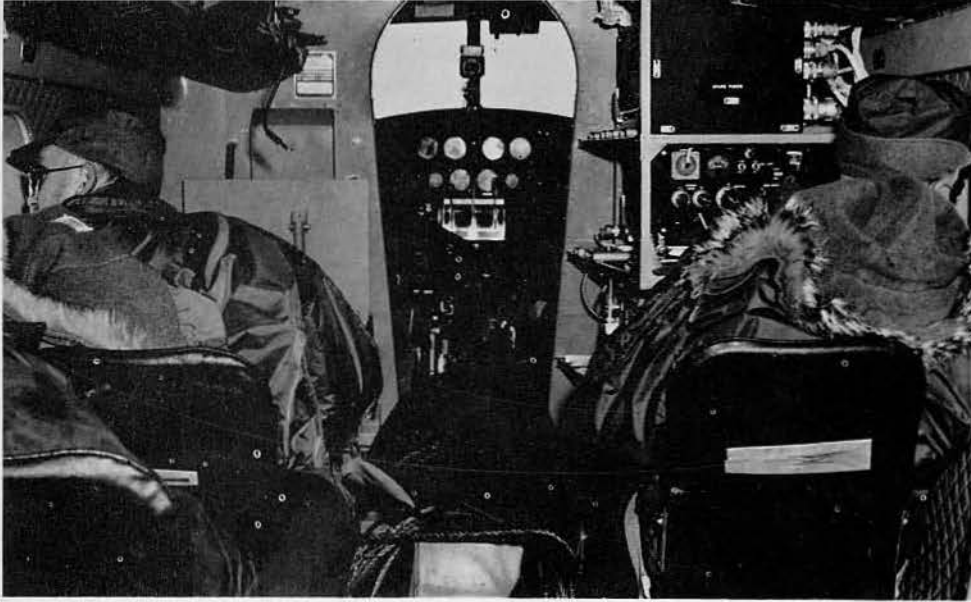
After a hurried round of farewells, non-wintering-over personnel boarded the icebreaker and the ship immediately got underway to break WYANDOT free. Construction men transferred to the cargo ship and the two vessels steamed eastward to escape the ice.

*(Continued on page 132)*

ELLSWORTH STATION SHOWING TUNNEL CONSTRUCTION, POWER LINES, AND RADIO TOWER, FACING POLE.



# Task Force

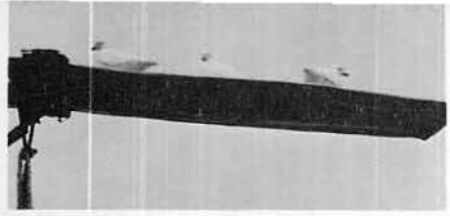


NAVY MEN AND SCIENTISTS LOOK DOWN FROM THEIR OTTER ON VAST PANORAMA OF MOLTKE NUNATAK AT



AN OTTER EMERGES FROM ITS COCOON, GROWS WINGS AND TAIL, GETS WARM BREATH PUMPED INTO IT . . .

# Takes to the Air



DUKE ERNST BAY. ROCK SURFACES SHOWING THROUGH ICE REPORTEDLY ROOF OVER RICH COAL DEPOSITS.



AND IS READY FOR A LOOK AT BOWMAN.



# Outward Bound

The ships passed the Antarctic Circle outbound February 16. At Thule Island in the South Orkneys the ships separated—the STATEN ISLAND heading for Seattle by way of Punta Arenas, Valparaiso, Lima, and San Diego; the WYANDOT for Norfolk via Buenos Aires and Rio de Janeiro.

Long-range results of the task group's work in the fields of science and Antarctic history cannot be weighed completely for some years to come. But there is no question about Task Group 43.7 compiling the following record:

- (1) Penetrated the Weddell Sea icepack to the base of the Palmer Peninsula—a point never before reached by ship.
- (2) Charted 300 miles of unknown coastline.
- (3) Transited more than 3,600 miles of pack ice (some kind of record in ice navigation).
- (4) Offloaded directly onto a high ice shelf 5,600 tons of cargo in 12 days.
- (5) In 14 days built an 18-building station, originally slated for a 50-day construction period.
- (6) Accomplished their assigned mission without loss of life or cargo, and without incurring serious injury to any personnel.



"SAY CHEESE!" directs Walt Disney Productions cameraman as he prepares to shoot ice-locked 'breaker during 10-day period when ships were beset in Weddell.



U. S. FLAG IS PLANTED AT START OF COMMISSIONING CEREMONY AT ELLSWORTH STATION.

# This Is What They Left Behind:



ELLSWORTH STATION from overhead and from the distance of the ice shelf. The base is named for Lincoln Ellsworth, veteran Antarctic explorer who, in 1935, flew from Palmer Land to the Bay of Whales on Ross Sea, being forced down just a few miles short of his goal. Ellsworth Station is under the command of Captain Finn Ronne, also a veteran (whose 1948 expedition photographed over 450,000 square miles of the continent from the air, who is in charge of both the scientific and military operations.

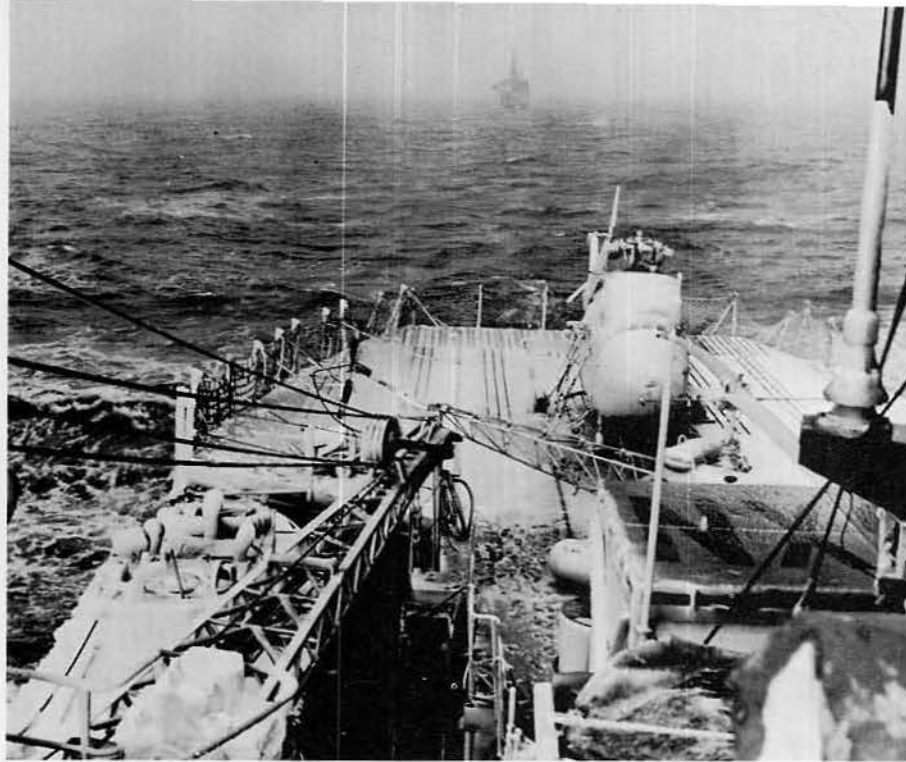


# Mission Accomplished: Phase II



THE ICY HAND OF THE WEDDELL SEA KEEPS A TIGHT GRIP EVEN AS THE STATEN ISLAND MOVES NORTH.





CREWMEN CHIP AWAY TONS OF ICE COATING BOTH SHIPS.

"HAPPY HOUR" ABOARD WYANDOT ON 10,000-MILE RETURN.





# Homeward Bound

**T**WELVE SHIPS sailed into Antarctic waters to lend support during *Operation Deep Freeze II*. Steaming to and from the South Polar Continent the four icebreakers, five cargo ships, one seaplane tender, one oiler, and one destroyer escort covered some 300,000 miles in the Atlantic, Pacific and Indian Oceans. They touched upon five of the world's seven continents.

The destroyer escort USS BROUGH was the first ship to leave the United States. She departed Newport, Rhode Island, September 4, 1956 followed by the icebreaker GLACIER from Davisville 11 days later.

In October the cargo vessels PVT. J. R. TOWLE, PVT. J. F. MERRELL, and ARNEB left Davisville on the 19th, 25th and 27th respectively. The oiler NESPELEN left Norfolk the 27th.

On November 1, 3 and 8 the icebreakers ATKA, STATEN ISLAND and NORTHWIND departed Seattle.

The cargo ships WYANDOT and GREENVILLE VICTORY got underway from Davisville November 9 and 14. Two days after Christmas the seaplane tender CURTISS left San Diego.

All east-coast ships transited the Panama Canal. The WYANDOT and STATEN ISLAND steamed along the western coast of South America toward the Weddell Sea, while the remainder of the task force headed for ports in New Zealand.

Task Force 43 was divided into three task groups. The largest, the Ross Sea group, was made up of ATKA, GLACIER, CURTISS, NESPELEN, BROUGH, GREENVILLE VICTORY, MERRELL and TOWLE. The GLACIER scouted far ahead, penetrating the Ross Sea icepack to McMurdo Sound October 28.

BROUGH served as watchdog for air flights over the more than 2,000 ocean miles between New Zealand and McMurdo Sound. In the event of air crash at sea, she was on hand to swing into immediate rescue operations. From October 12 until February 25 BROUGH maintained five separate ocean stations for the Navy and Air Force flights into Antarctica. She

also radioed weather reports to task-force units during the four-and-a-half month period she was in the world's roughest seas.

On December 20 TOWLE and NESPELEN arrived at McMurdo and resupplied the air facility's aviation gasoline reservoir by over a million gallons.

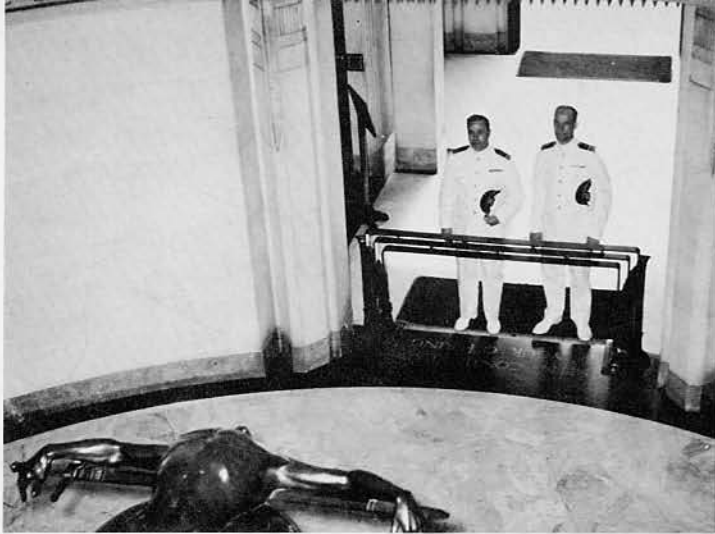
The CURTISS arrived McMurdo January 21, 1957 with the *Deep Freeze II* wintering-over personnel and IGY scientists. On February 10 she evacuated the first-year wintering group and proceeded to New Zealand via Cape Hallett.

NORTHWIND and ARNEB arrived at McMurdo two days before Christmas and left for Cape Hallett in six days to deliver personnel and supplies for construction of the U. S.-New Zealand station there. The ships, ice-damaged, returned to McMurdo January 12 and ARNEB joined GLACIER and GREENVILLE VICTORY for Knox Coast operations while NORTHWIND returned to New Zealand for repairs.

(Continued on page 138)

CHAPLAIN Leon S. Darkowski (LT, USN), chats with Navy men following mass aboard icebreaker USS GLACIER.





CHAPLAINS VIEW ANZAC MEMORIAL IN SYDNEY.

Arriving at Vincennes Bay, Knox Coast on January 31, the task group landed cargo for the 16-building Wilkes Station by amphibious techniques. They completed the base and left Antarctica February 17. Prior to going to Knox Coast, GREENVILLE VICTORY accompanied ATKA and MERRELL to Kainan Bay December 29 for resupply of Little America V.

Elsewhere WYANDOT and STATEN ISLAND arrived at the site for Ellsworth Station in the Weddell Sea January 26. Despite ice damage they established the 18-building outpost and sailed for South America February 11.

The last ship with *Deep Freeze II* to leave Antarctica was the NORTHWIND, which departed Cape Hallett March 14 and arrived in Seattle April 20 after a stop in Sydney, Australia.

BROUGH and NESPELEN followed the same course homeward—Dunedin, New Zealand; Callao, Peru; and Panama. BROUGH arrived in Newport April 5, NESPELEN in Norfolk April 3.

WYANDOT arrived Norfolk March 28 after stops in Buenos Aires, Argentina and Rio de Janeiro, Brazil. STATEN ISLAND stopped at Punta Arenas and Talcahuano, Chile; Callao, Peru; and docked at San Diego March 31.

MERRELL sailed directly from Port Lyttleton to San Francisco, arriving there March 25. After a three-day stop in Panama, TOWLE docked at Norfolk March 1. GREENVILLE VICTORY arrived Norfolk March 21, sailing from Wellington via Panama.

ATKA called at Pearl Harbor after departure from Wellington, and arrived in Seattle April 5. CURTISS left Wellington and stopped in Auckland, New Zealand and Sydney, Australia, arriving San Diego March 25.

GLACIER made calls at Pitcairn Island, Callao, Cristobal (Panama Canal Zone), Ciudad Trujillo (Dominican Republic), and arrived in Boston April 19. Returning via the Indian Ocean, ARNEB stopped at Sydney and Melbourne, Australia; Capetown, South Africa; returning to Davisville April 29.

QUARTERS for entering port. The seaplane tender USS CURTISS steams into the harbor at Port Lyttelton, New

Zealand. The homecoming ships, bearing wintering-over parties, crammed much into a few hours of liberty here.



## SOME OF THE CO'S



CAPTAIN Gambacorta, USS WYANDOT, seated at left in Weddell Sea conference. Commander Elliott, USS STATEN



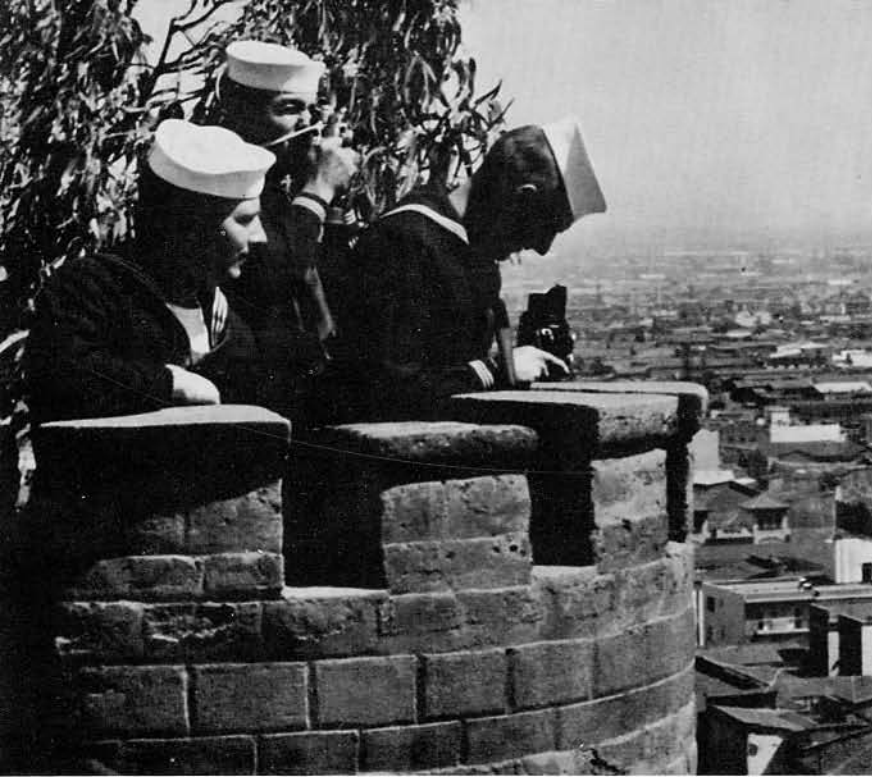
ISLAND, stands between Chilean admiral and American vice consul when his ship received diplomatic visit.



LCDR DUHON, USS BROUGH; CAPT. C. T. FRITTER, USS CURTISS; CDR LAUFF, USS GLACIER.



CDR BULLFINCH ON USS ATKA CONDUCTS PERSONNEL INSPECTION ON THE WAY DOWN TO ANTARCTICA.



CREWMEN of STATEN ISLAND tour Santiago, Chile (top).  
CURTISS Seabees go on the town in Sydney, Australia.

# Sweet Lands



WYANDOT TAKES STARSIGHT AT SUNSET.



THE WHOLE TOWN TURNS OUT FOR HELLOS

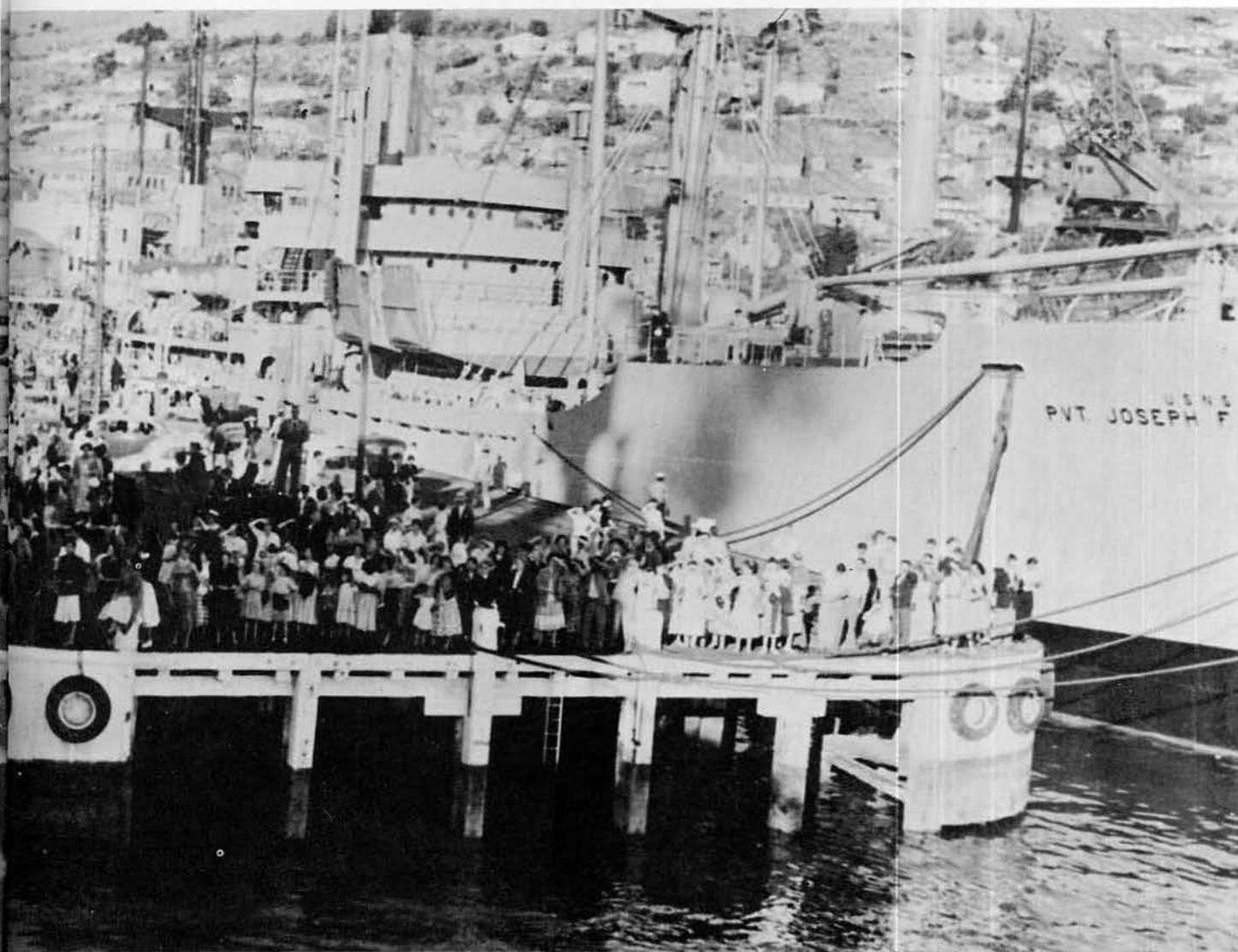
# of Liberty



CAPTAIN SCOTT AND A COLLEAGUE.



PERUVIAN OFFICIALS TOUR USS STATEN ISLAND AT CALLAO.



AND GOODBYES IN THAT ANTARCTIC-CONSCIOUS TOWN, PORT LYTELTON UNDER THE SOUTHERN CROSS.





# Summing Up

**D**EEP FREEZE II turned out to be the best covered military operation in peacetime history.

Twenty-nine reporters representing five countries, two worldwide wire services, two major radio-TV networks, three national magazines, and one major movie producer provided material which kept *Operation Deep Freeze II* in the news spotlight almost daily. *Deep Freeze II*, which established four U. S. IGY stations and one U. S.-New Zealand base, was the most widely publicized come-off since Grace Kelly's wedding.

Of the 32,000 tons of cargo transported to the Antarctic, reporters witnessed the airlift, by Navy and Air Force planes, of men and 760 tons to the South Pole for construction of a base which was dedicated just 84 days after Admiral Dufek landed.

Press media also followed the tractor trail party which blazed a safe route over 600 miles of dangerously crevassed area into the frozen interior of Marie Byrd Land, for a heavy tractor train carrying 500 tons of equipment to build Byrd Station.

After construction of the five new bases was completed, 318 men moved in to spend the winter night relieving 166 Americans who had occupied the two bases built during *Deep Freeze I*.

Logistics-wise the successful completion of *Deep Freeze II* required 3,525 men; 12 ships; 2 aircraft squadrons; a helicopter detachment; 3 Seabee units; a cargo-handling battalion in 3 ships; a Marine assault fuel-farm team and an underwater demolition team.

Although during *Deep Freeze I and II* Task Force 43 succeeded in locating seven bases (which span

4½ million square miles) on this formidable continent, the grim Antarctic exacted a price:

- ★ Lieutenant John Moore was killed in a helicopter crash while operating with ATKA during its first exploratory expedition.
- ★ Drivers Dick Williams and Max Kiel lost their lives when their tractors crashed through ice in *Deep Freeze I*.
- ★ In *Deep Freeze II* four men — Lieutenant David Carey, Captain Rayburn Hudman, USMC, aviation electronics technician Charles Miller, and aviation mechanic Marijon Marze were killed when a Neptune crashed at McMurdo Sound.
- ★ Also in *Deep Freeze II* driver Ollie Bartley went through the bay ice with his Weasel at McMurdo Sound.

Though speeding automobiles on crowded highways and other elements typical of the hurried living in the outside world are nonexistent in Antarctica, natural factors have contributed dangers that have thus far taken eight lives.

NBC CAMERAMAN BILL HARTIGAN (AT RIGHT).





PHILATELIC MAIL (LEFT) AND COMMERCIAL MOVIES (RIGHT) TIE THE PUBLIC CLOSELY TO TASK FORCE 43.

Expressed in money, \$31,000,000 has been spent since ATKA started on her reconnaissance trip in 1954: \$9 million for *Deep Freeze I* and \$22 million for *Deep Freeze II*. This is "out-of-pocket" expense—that is, above and beyond the cost of normal operations of the units had they been operating elsewhere.

Seven planes (one Globemaster, two Neptunes, four Otters) and four helicopters have been lost since the beginning of *Deep Freeze*. Two D-8's and a weasel crashed through crevasses and bay ice; add to these others worked beyond a point of economic salvage.

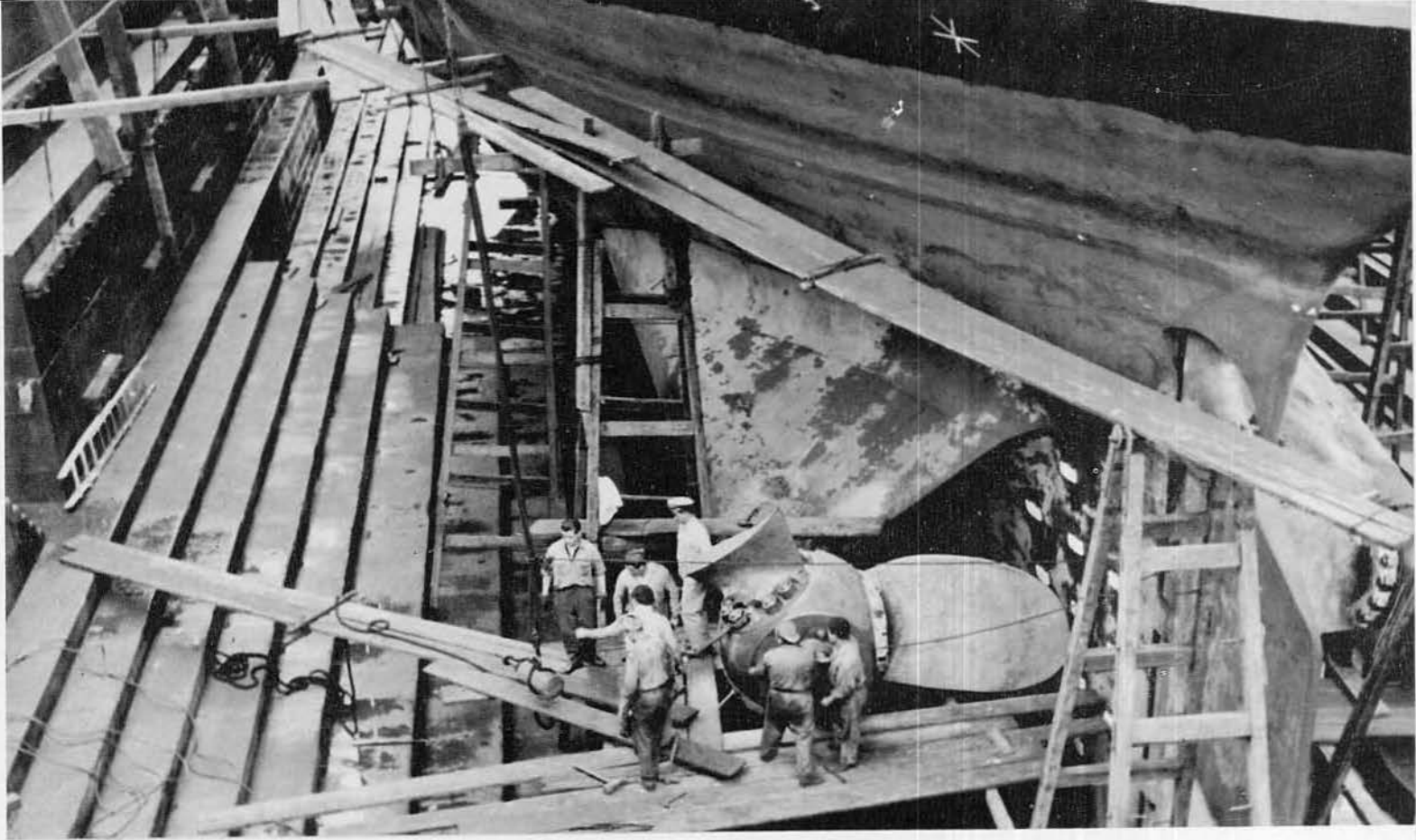
The inevitable ice damage to ships operating in Antarctic waters has also been evident during *Deep Freeze*. ATKA damaged her propellers during her voyage in 1954-55. In *Deep Freeze I* a hull rupture in NESPELEN resulted in the loss of 140,000 gallons of aviation gasoline; GLACIER bent her rudder in her

maiden voyage into pack ice; EDISTO's props and railing were damaged; a broken shaft resulted in a lost prop on EASTWIND; and ARNEB, WYANDOT and GREENVILLE VICTORY all suffered superficial damage during the first phase of *Deep Freeze*.

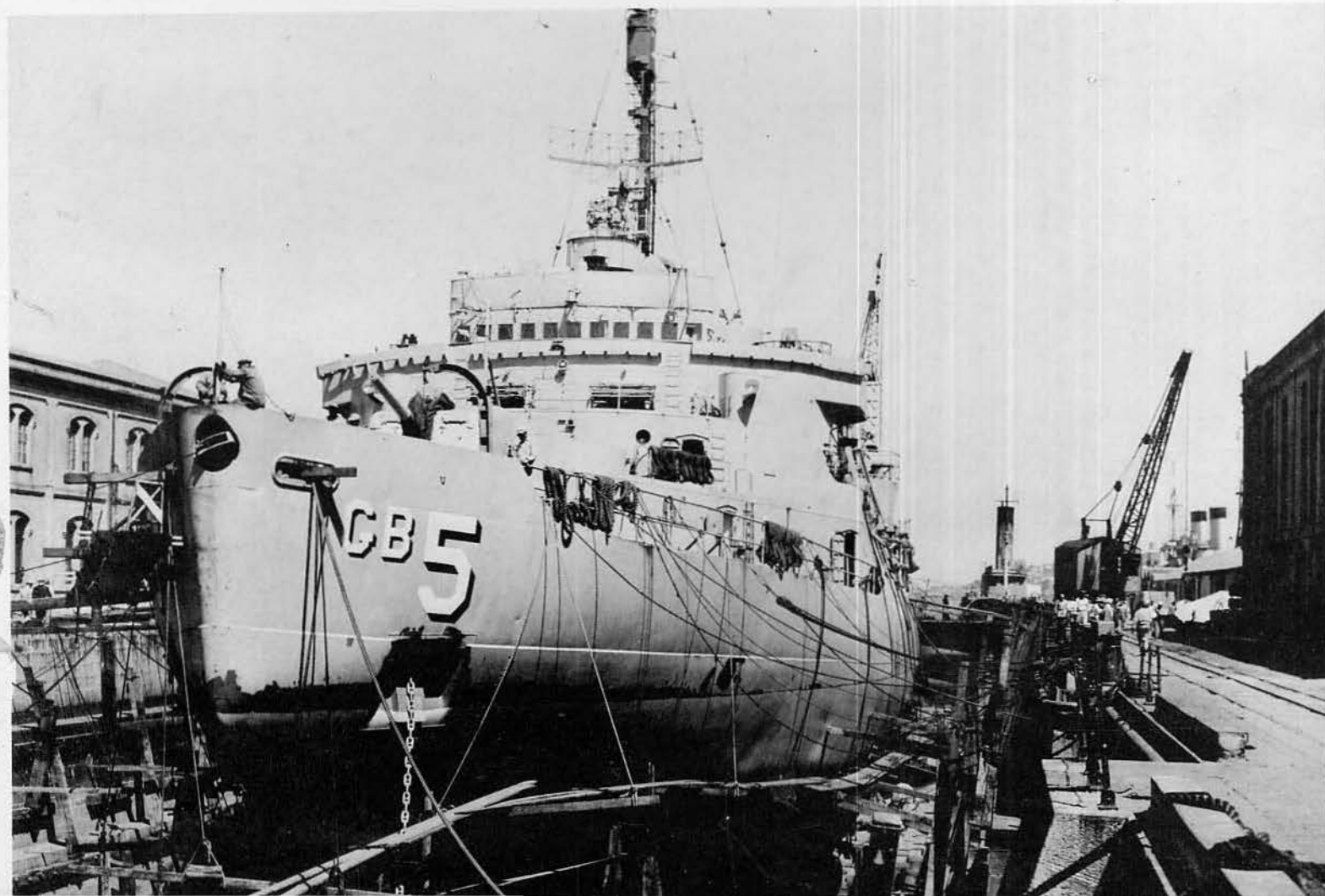
In *Deep Freeze II* ARNEB ruptured her hull, twisted 99 frames, damaged her props and bent her rudder. NORTHWIND's propeller was damaged necessitating replacement. ATKA flooded an engine room shorting two main propulsion motors. CURTISS bent the tips of her prop blades and MERRELL had minor flooding due to hull penetrations. Operating in the Weddell Sea, WYANDOT had pieces broken from all prop blades and the hull was penetrated which caused flooding in one hold. STATEN ISLAND lost a blade from one prop and had to replace a broken crankshaft. BROUGH, GLACIER, GREENVILLE VICTORY, TOWLE and NESPELEN all escaped with little or no damage.

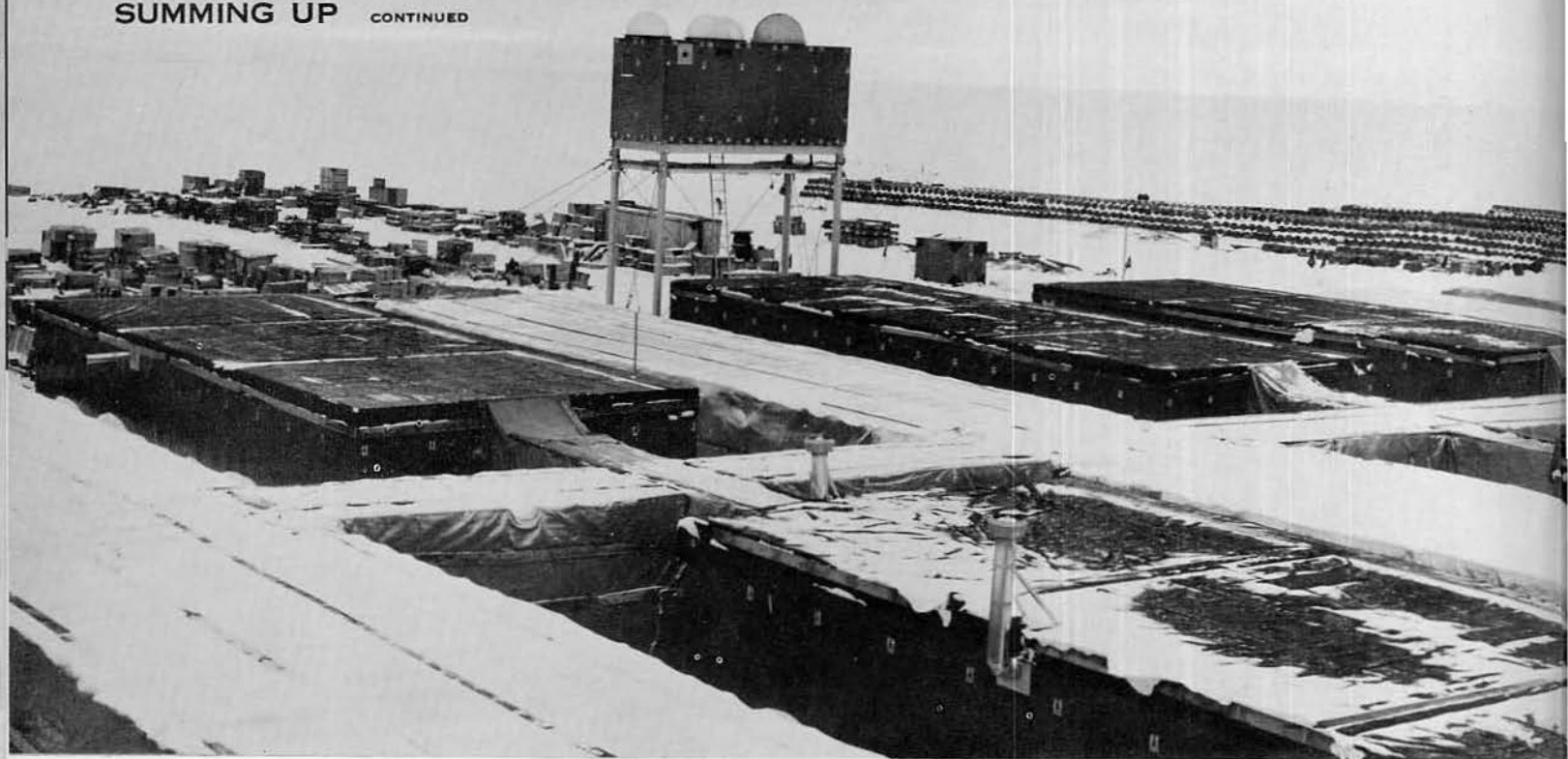


ARNEB (LEFT) AND "STATE OF WASHINGTON" SYMBOLIZE THE DAMAGING HAZARDS ENCOUNTERED DOWN UNDER.



STATEN ISLAND IN DRYDOCK (ABOVE), GLACIER LIKEWISE TO PATCH UP THE WOUNDS OF WEATHER.





AURORA AIRGLOW TOWER AND VIEW OF SCIENCE BASE IN ANTARCTIC IGY PROGRAM FOR YEAR 1957-58.

## The Net Result to Date of

ANTARCTIC SCIENTISTS INCLUDE EVERY FIELD FROM SEISMOLOGY (LEFT) TO MEDICINE (RIGHT).



The value of *Operation Deep Freeze* accomplishments is hard to express in dollars. Whatever the scientists learn will be added to the world's increasing knowledge.

One scientist has estimated that research to date in cosmic activity and geomagnetism, with their combined influence on other earth sciences, can be valued at billions of dollars. During this era of worldwide awareness of the importance of science, the results of studies in Antarctica may have an important meaning in the near future or may influence science in the lifespans of our great-great-grandchildren.

Although it cannot be predicted what will be found in Antarctica (other than scientific information) there is a possibility that useful mineral deposits will be found that can be used to supplement dwindling world reserves.

Turning to specifics, for the first time Americans will be able to conduct extensive studies of the physical Antarctic Continent. Characteristics of the South Pole, Marie Byrd Land, Wilkes Land (from the Knox Coast), Edith Ronne Land (from the Weddell Sea), McMurdo Sound (from Hut Point and Cape Hallett), and the Ross Ice Shelf (from Kainan Bay) will be observed and recorded.

Reconnaissance flights during the first two phases of *Deep Freeze* have enabled hydrographers to chart more accurately thousands of square miles of the



COLD-WEATHER SCIENCE GETS ATTENTION.

Antarctic interior. Aerial maps of this sizable continent will be available when *Deep Freeze* ends in the year 1959.

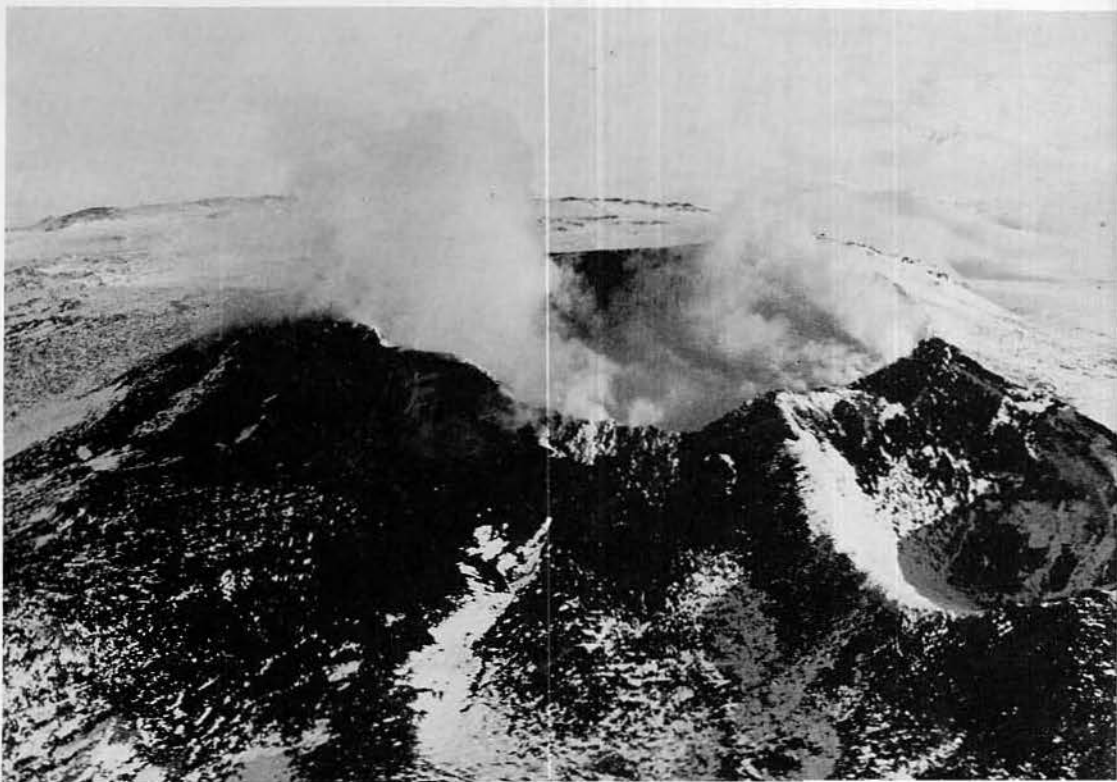
A full-scale weather-observation program will be conducted at all bases to discover some of the secrets of Antarctic weather. By a study of the data collected, sufficient knowledge of the effect of Antarctic weather will be gained which will make possible worldwide long-range weather forecasts.

In *Deep Freeze I* and *II*, cold-weather training was gained for 5,500 men from every branch of military service and from many walks of science.

And, perhaps from a selfish standpoint of many hardy adventurers, a new frontier has been opened.

# Operation Deep Freeze

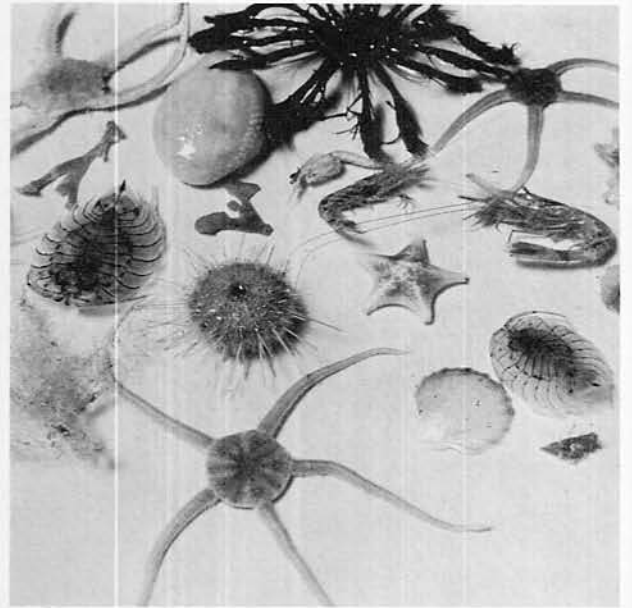
GEOLOGISTS are having a field day in the great unknown continent. Coal, iron and other metals are suspected and substantiated. The live volcano, Mt. Erebus, discovered more than a century ago by Sir James Clark Ross of Great Britain, and explored by Shackleton's expedition 1908, has a seductive quality due to its natural contradictions.



## OBSERVING THE LIFE OF A STRANGE LAND:



OCEANOGRAPHER of the *STATEN ISLAND* (center) discusses plankton taken from Weddell Sea with Argentine



and Peruvian Navy men. Right, selected specimens trawled from bottom of Weddell Sea at 164 fathoms by 'breaker.



ANTARCTIC fauna are few and far between, but fascinating! Emperor penguins (left) are real Rotarians but the petrel (right above) proves to be less tractable on leash.

LIVING TIE with Operation Deep Freeze III: DetBravo specialist Caldwell (above) is acting CO of the two YOGs just behind him, will winter over at McMurdo Sound. When the sun rises over the horizon and the planes and ships follow it next October, this man will be part of the welcoming committee to launch the third great phase.



## *L'envoi*

DETBRAVO SPECIALIST CALDWELL,  
WINTERING OVER AT McMURDO SOUND,  
SYMBOLIZES THE CONTINUITY OF  
OPERATION DEEP FREEZE AS  
PHASE II FLOWS INTO PHASE III.

# Credit

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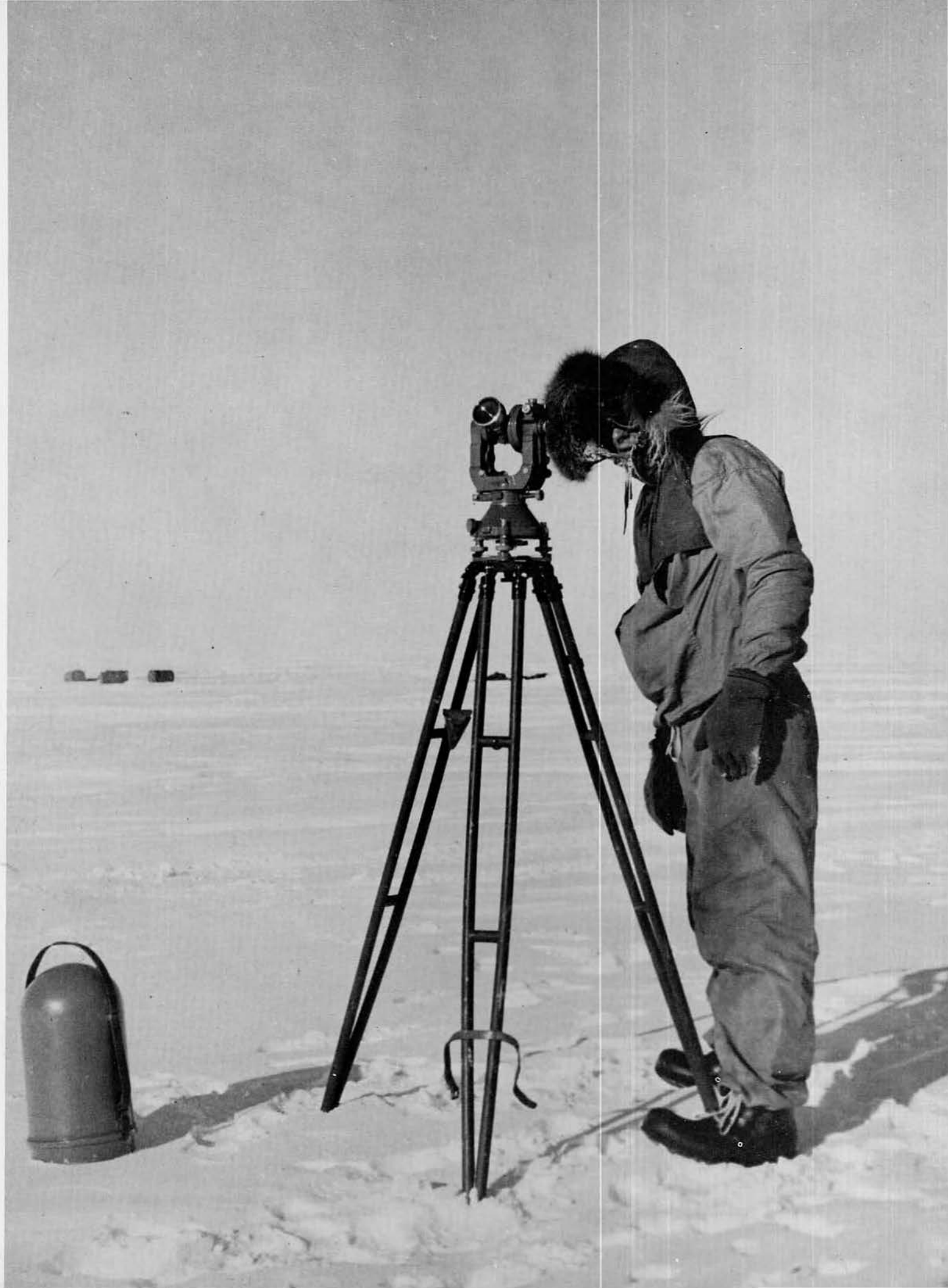
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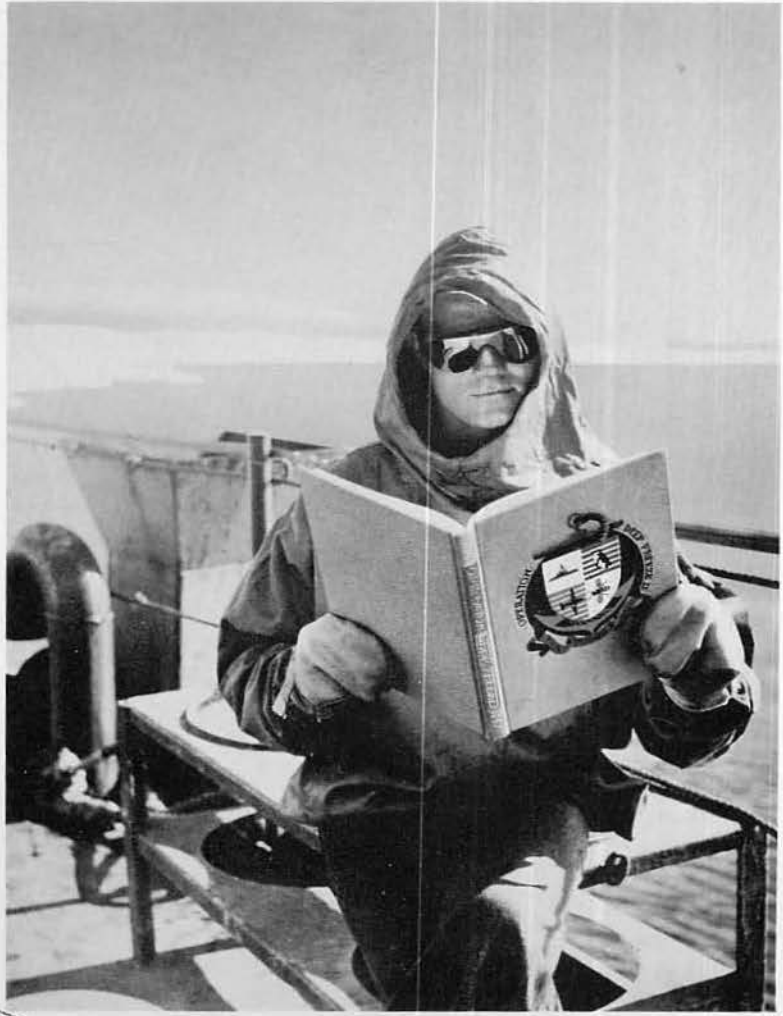
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LOOKING LIKE A "SUNBONNET BABY" SEABEE ELECTRICIAN HOOKS UP GENERATOR AT WILKES STATION.



*Salute...*

TO THE MEN OF TASK FORCE 43!

WE ARE DEEPLY HONORED  
TO HAVE BEEN ASSOCIATED WITH THEM  
AS PUBLISHER OF THEIR HISTORICAL EPIC,  
"OPERATION DEEP FREEZE II."

THE DORVILLE CORPORATION • PAOLI, PENNSYLVANIA



CHECKING FUEL FOR RETURN TRIP FROM BYRD BASE BEFORE THE WINTER NIGHT DROPS THE CURTAIN.



## Otaco's BOX-CARS FOR THE ANTARCTIC

Designed and built especially for "Operation Deepfreeze" to specifications of the U.S. Navy, these Antarctic box-cars are the biggest sleds ever built anywhere. Their 12 x 24 ft. platforms carry loads up to 20 tons' weight—loads of a size that mean fewer trips to move equipment and supplies from point to point.

To make sure these sleds stay on the job, they were designed over-size so that they might withstand

any stresses or adverse conditions of travel. They require no maintenance other than occasional inspection to make sure bolts are drawn up tight.

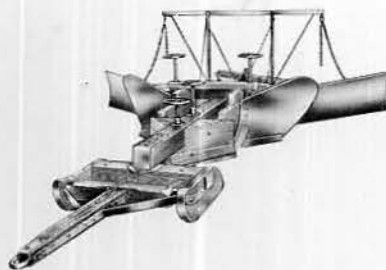
In addition to the 38 original box-cars, some 60 other, smaller Otaco sleds have been delivered to the U.S.N. for Deepfreeze service, with more on the way. (Modifications of a sled design made in co-operation with the U.S. Army for Arctic service,) these smaller sleds carry substantial loads of up to 10 tons each.

### MORE OTACO-MADE PRODUCTS SCHEDULED FOR "DEEP FREEZE" DUTY

#### SNOW PLOWS

For use primarily in the Antarctic as a snow plow for landing strips, this equipment may also see service in making snow or ice roads.

Separate vertical adjustments make it possible to leave a 40-inch comb down the centre of a wide road, cut 28-inch ruts for sleigh runners on either side of the comb, and sweep back snow to a width of 18 ft.—all in a single operation. Comb and rut cutters and wings are adjustable to leave a smooth, unbroken surface as well, of course.



#### MOBILE LIVING & MESSING UNITS

Known as wanigans, sled-mounted housing and dining units made by Otaco will see service in the Antarctic summer of 1958. Wanigans will make possible prolonged, far-reaching ground expeditions with reasonable comfort for personnel.

Bunk-type sleeping accommodation for nine men is provided in the living units, while the messing

wanigans, completely equipped with stove and oven, refrigerator, snow melter, etc., will feed nine men at a sitting.

Wanigans are pre-fab, plywood construction, thickly insulated to retain heat. Both types will carry oil space heaters, extinguishers, generator for electricity, and wanigan heads.

**OTACO LIMITED**  
**ORILLIA • ONTARIO • CANADA**



DRUMS OF FUEL ARE STACKED FOR ONLOADING AT DAVISVILLE IN PREPARATION FOR VOYAGE SOUTH.

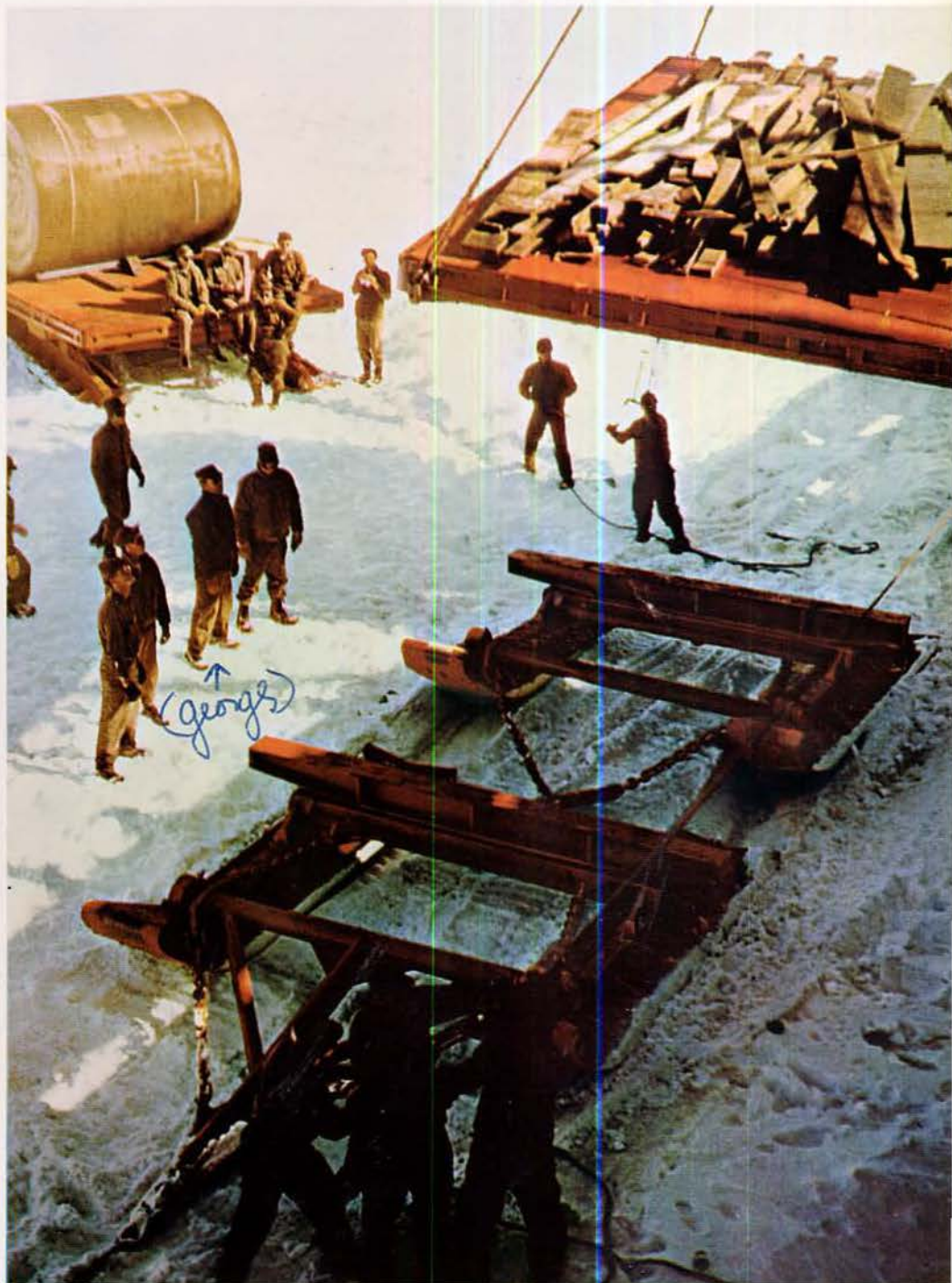
# How a year in the Antarctic proved that USS "T-1" Steel "can really take it"

THE SKIS on these gigantic 10½-ton sleds are made of USS "T-1" Steel. Over a year ago, 38 of the sleds went into service as cargo carriers for the Navy's OPERATION DEEP FREEZE in Antarctica. During that time they have been subjected to temperatures around 69° below zero. Towed by powerful tractors, they have scraped and gouged—400 miles in a single trip—across the rock-hard ice of the South Polar Plateau. And each sled has carried up to 20 tons of cargo per trip.

What has been the effect of this severe service on the skis of USS "T-1" Steel? None. They have remained strong and tough, despite the bitter sub-zero temperatures. No brittleness. No failure. USS "T-1" Steel's hardness has successfully resisted the tremendous abrasive properties of crusted snow and ice. Its toughness has prevented low-temperature impact failure. What's more, its very high yield strength (90,000 psi minimum) permitted the skis to be fabricated from ¼" USS "T-1" Steel plate. Thus, the skis were built *lighter, yet stronger*.

The USS "T-1" Steel skis are 154 inches long and 34 inches wide, were cold-formed on a brake press in the shape of troughs. Then the front and back ends of the troughs were notched at the outer line by gas cutting, formed up and together, then welded to make the curved front and back ends of the skis. Welding was done with E-12015 rod.

USS "T-1" Steel is being used to increase strength and durability, while reducing weight and costs in a wide variety of applications from bridge construction to mining equipment. For complete information, write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.



Sleighs being assembled at landing point in Antarctica. The massive sleighs were designed jointly by the U. S. Navy and Otaco, Limited, of Orillia, Ontario, Canada.

USS **"T-1"** CONSTRUCTIONAL ALLOY STEEL

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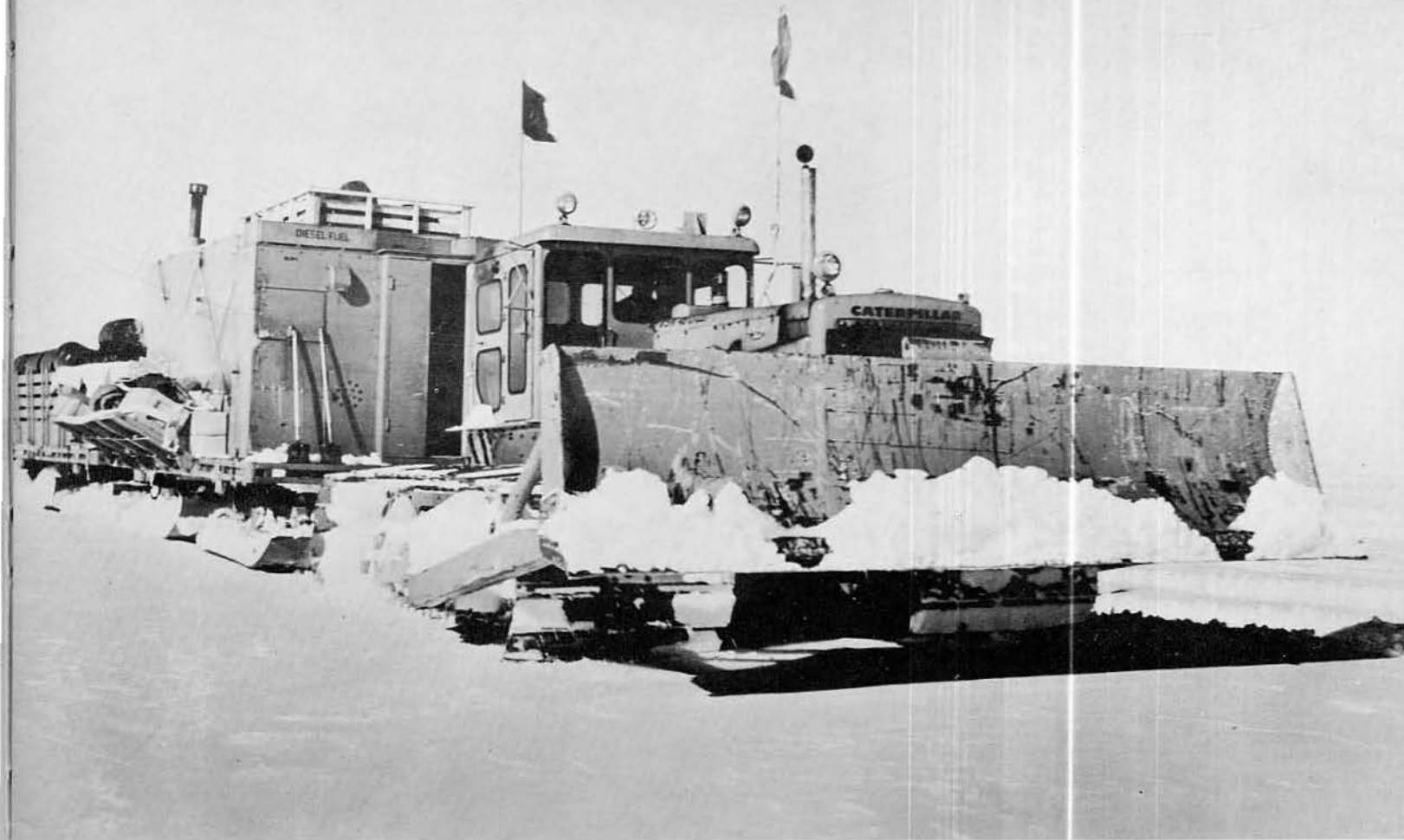
## OPERATION DEEP FREEZE

During the present International Geophysical Year (1957-1958), American scientists, with the support of the United States Navy, will, through research at Antarctica, endeavor to advance the world's knowledge of meteorology, glaciology, ionospheric physics, geomagnetism, aurora and air glow, cosmic rays, seismology and gravity.

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# Helping to make history

**America's share in the International Geophysical Year will owe much of its success to resourceful planning and hard work by the men of Task Force 43.**

Deep in the ice-clad Antarctic Continent, first at Little America V, now at the South Pole itself, a group of courageous scientists is studying the secrets of a whole new world. They were established there by the Navy's Task Force 43.

Caterpillar Tractor Co. is proud that the equipment it builds has had a part in this great undertaking. Specially modified tractors, furnished with "snowshoe" tracks to hold up their 35-ton weight, have moved thousands of tons of materials and supplies inland to intermediate stations. Other tractors have been parachuted in by air for use at the Pole. Tough and dependable, ready to start and keep running at unbelievably low temperatures, these machines have been called the "work-horses" of the expedition.

Power and light are supplied to lonely bases by rugged Cat Diesel Engines and Electric Sets, compact enough for transportation, economical in their use of precious fuel.

What scientific discoveries may be made during this momentous year it is still impossible to say. But we know that in some degree they will benefit all mankind. This is our salute to a conquest boldly conceived and brilliantly executed.



Caterpillar Tractor Co., Peoria, Illinois, U.S.A

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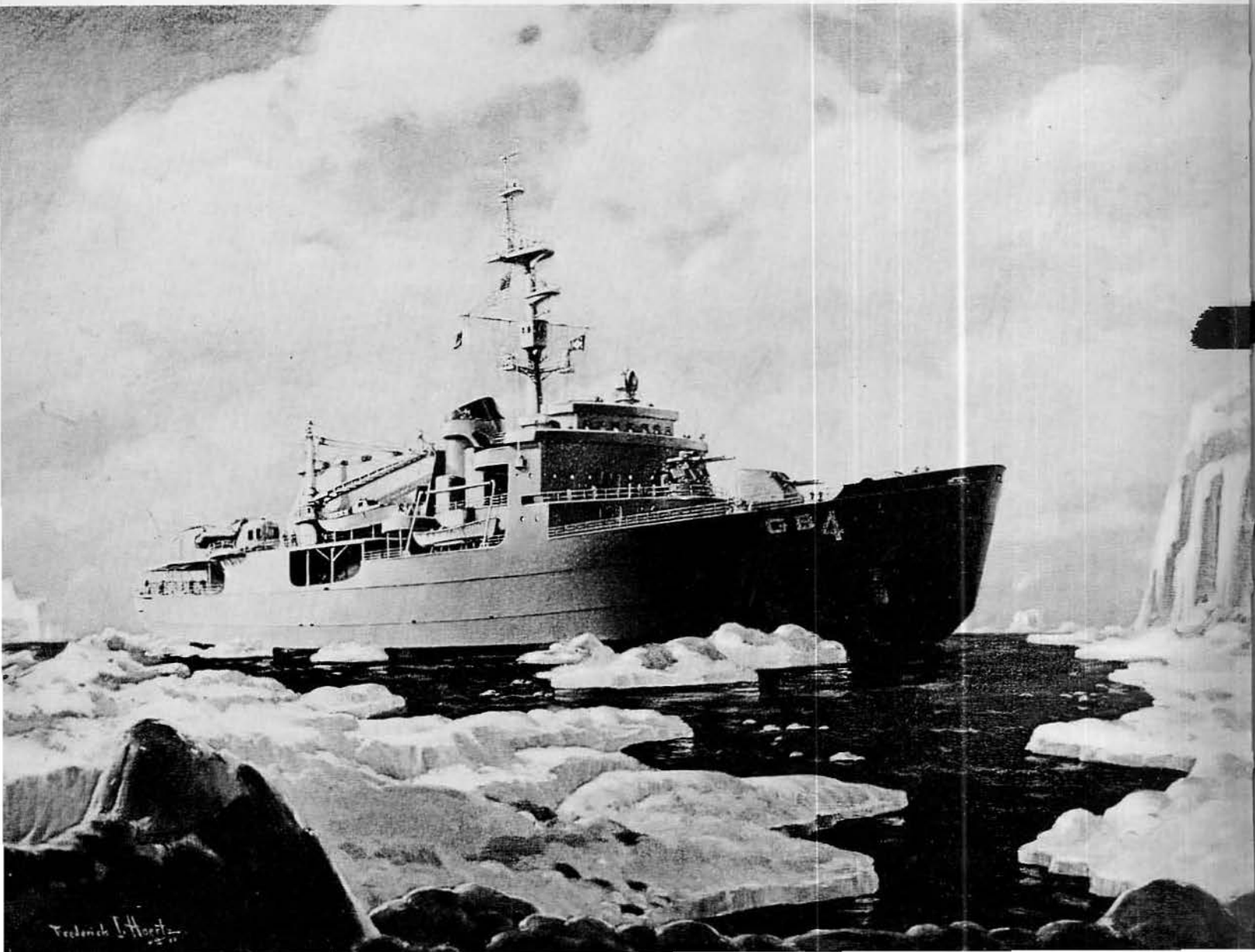
# REPEAT PERFORMANCE . . . REPEAT PERFORMANCE . . .

The INGALLS Shipbuilding Corporation is proud to have again played a part as the designer and builder of USS Glacier, the icebreaker and flagship that led the way through the frozen Antarctic in Operation Deepfreeze II just as she did in the first Operation Deepfreeze during the preceding year 1955-56.

She is the largest icebreaker in the FREE WORLD . . . the most powerful Diesel Electric propelled vessel ever built in America . . . and the prototype of this new class Icebreaker. Into the Glacier was built gigantic strength and power and maneuverability to cope with the crushing resistance of 15 feet of solid pack ice.

USS GLACIER leading Task Group 43.4 through ice to McMurdo Sound.

From a painting by Fred Hoertz, marine illustrator.



Iced over lifeboat and gear show conditions on GLACIER.



Mission accomplished, the GLACIER heads for home.



## OPERATION *Deep Freeze* II



Tough life for a lady! The GLACIER rides up on the ice to show her battle scars earned during the inbound voyage.



GLACIER breaking ice during "white out" in McMurdo Sound.

### **The USS GLACIER...** *Majestic leader of OPERATION DEEPFREEZE II*

The 8,600 ton Goliath was appropriately named for Alaska's Glacier Bay, and conjures all the grandeur of that massive, moving phenomena, which stops for nothing in its path of inexorable progress.

First hand comments have praised her "smart interior styling in the crew's living and messing spaces" and contended that "forthcoming ships will have to go a long way to find advancements that the

GLACIER does not already have".

The log of this "Little Giant with the Big Punch" bears out the unofficial but realistic statements of officers and crewmen that without the Glacier the Antarctic phase of the International Geophysical Year 1957-58 would have met with failure, thus exemplifying the USS GLACIER'S motto, "*We will find a path or make one*".



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*Branch Offices:* New York, Washington, Philadelphia, New Orleans, Chicago, Atlanta, Houston  
*Shipyards:* Pascagoula, Mississippi; Decatur, Alabama  
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