

A Year on Ice

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Chapter 1

The Great Ice Shelf

Extending from the front of the world's largest piece of floating ice, we saw the orange wing of what once was an airplane. We stood on the deck of the USS Curtis on our way to Little America V. It was late January 1957, the beginning of summer in Antarctica. My companions and I faced the biggest wall of ice on Earth, the front of the Ross Ice Shelf. The white, frozen barrier at the bottom of the Pacific Ocean extends some 450 miles from east to west. The shelf it fronts reaches southward, 400 miles in places, to about 300 miles from the South Pole. Few, if any, of the scientists, sailors, airmen, or Seabees had ever seen anything like the Ross Ice Shelf so close. One hundred fourteen of us would spend the next year living on it.

The orange airplane remains sticking out of the ice front came from a past Little America station, probably Little America IV 1947. The craft may have been flown over the South Pole by the greatest U.S. Antarctic explorer, Richard E. Byrd. He would have loved to see the old plane, and had been scheduled to ride with us on the USS Curtis. But he became sick, then died in March 1957. Glaciers moving down from the polar plateau push the Ross Ice Shelf toward the Pacific Ocean. Never ending snows cover what explorers leave behind. Eventually, the ice wall we faced would move forward, break off, and float away as an iceberg.

Byrd's crews built Little Americas I through IV just south of an inlet in the Ross shelf once known as the Bay of Whales. Between 1928 and 1956, ice moving north pushed the Bay into iceberg non-existence. We were headed about 35 miles farther eastward to another sheltered recess called Kainan Bay. Located at about 78° south and 162° east, the bay offered an opening in the ice barrier where large vessels like the Curtis could off-load men and equipment.

The Navy had already constructed an airport for ice landings and a "town" of buildings connected by tunnels. The buildings, from barracks and bathrooms to mess halls and meeting rooms would soon be buried under snow. But living and working quarters, a snow-tractor garage and an airport stood far enough back from the edge of the ice shelf to avoid becoming parts of ice bergs. Tractors, hauling sleds, sno-cat "trucks", and military "taxies" known as weasels moved people, packages and equipment back and forth. Residents at Little America included 24 civilian scientists who would study weather, glowing auroras, ice movements and history, thickness and temperature, magnetic fields, and forces of gravity. To avoid learning all our

occupational titles navy men just called us all “sand crabs.” To avert schooling ourselves in ranks and specialties, we referred to them as “swabies” or “airdales.” What brought us together was a worldwide effort known as the International Geophysical Year or IGY.

During this time, scientists would measure and record what went on all over earth at about the same time. Ologists and isicists from 66 nations would study air, oceans, land, ice mountains, plains, magnetic and gravitational forces, even activity on the sun and between there and here, for an entire year. It had never been done before. Out of such an effort would come new knowledge of how our planet works. Such wisdom could change lots of things for the better for earth people.

That’s a big order, so to get it done scientists made up a longer “year.” The IGY, they decreed, would go from July 1, 1957 to December 31, 1958. We new Little-Americans arrived there on January 30, 1957.

Chapter 2

Digging for the History of Cold

By February 12, the transport and supply ships had left. In the last mail out, I wrote a friend to tell her that we were “working hard and getting into an organized routine.” This included “snow mining”, or digging shafts deep into the snow and ice below it. We identified layers that fell on the Ross Ice Shelf recently and years ago. We measured the size of ice crystals in each layer. Cold, tedious work, but it revealed how much snow fell and how low temperatures fell during the history of Antarctica, information that could be obtained no other way.

At this time of year in Little America, temperatures ranged from 29 degrees to ten below zero F. It almost never got above freezing, no slush or puddles. That’s summer 720 miles from the South Pole.

It’s also daylight 24 hours a day, convenient for working 12 hours a day. All that sunlight made it difficult for some guys to sleep. Such unusual insomnia became known as “The Big Eye”. That did not bother me. After working 12 hours a day, 6 or 7 days a week, I could have slept naked on a barbed-wire fence in a hail storm.

Spoke to my friend Alicia by Ham radio on Feb. 28. On March 7, wrote her that I had gained weight, about 12 lbs, from Navy food and hard work. Growing a beard. The never-setting sun was making low circles around the sky each 24 hours, waiting for its chance to slip below the horizon and hide there for 5-6 months of fall and winter.

In this letter, I told Alicia, for the first time, that I was in love with her. “I love you”, I wrote. “This is all I say. I do not say, ‘wait for me, or marry me, or give-up anything or anyone’. I just want you to know how I feel. I do not ask that you return this love, although that would be a most wonderful thing. I promise no great and fabulous life. I say only that ‘I love you’. It is a most deep and unselfish love. If it is taken, it would be a full love”.

We were married one year and 10 months after I wrote this.

On March 22, the temperature dropped to 30 degrees below zero.

On March 24, we received a dispatch from Richard Byrd. “Ages of science will record your services, and compensate, insofar as such a thing is possible for the inevitable loneliness and the long separation from your loved ones at home. Your work may well make the beginning

of permanent occupancy of the Antarctic continent upon the threshold of a new era, and you are the pioneers. Good luck and many affectionate greetings”.

Byrd had died on March 11, 1957 at age 68. Condolences were sent to Mrs. Byrd from Little America and a memorial service held. A chapel built in his name by Seabees was dedicated on April 21 (Easter).

Low temperature on March 13 (near the end of summer) was 37° below zero. The high that day soared to minus 25°. By the first week in April the mercury plunged to minus fifties, tough conditions for working outside, something we glaciologists did almost every day.

The Navy’s experimental cold-weather trousers froze solid in at least one case. At minus 48° one seabee’s nostrils froze, a screwdriver snapped like glass, fuel in hand-warmers would not burn, tractor treads (wheels) broke. Lieutenant Harvey Speed, VS-6 naval air development squadron, found that skis on his R4D ski-plane froze and his landing gear could not be raised after take-off. Seabee Chief Petty Officer Julian Gudmundson won the “Steel Wool Cluster” on April 7 for carrying the most ice in his beard.

On Easter, April 21, I send a “hamgram” to Alicia. Those radio amateurs kept in touch with us everyday that the atmosphere permitted. Great people!

The sun set for the fall and winter months at 12:28 p.m. on Wednesday, April 24. Total darkness did not cloak us immediately. Rather, we lived in twilight as ole sol orbited just below the horizon. The sun would rise again five months later on August 22. A beer party was held in honor of the occasion. It is safe to say that the personal suns of some 109 souls at Little America experienced individual “sunsets”.

During Easter week, Bert Crary, Hugh Bennett, Walter Boyd, and I went on a frigid camping trip, a 200 mile trek over the desolate Ross Ice Shelf. The purpose was a test of equipment, including vehicles, procedures and ourselves. It served as a rehearsal of the 1500 mile exploration of Antarctica we would do the following summer, one of the main reasons we were there.

We followed the so-called “Byrd Trail”, a 650 mile path, marked by red flags on slender bamboo poles, leading to Byrd station another IGY/Deep Freeze base. The trail was blazed by Task Force 43 seabees in 1956. Their flags guided supply tractors to that station, 5,000 feet high in the mountains of Marie Byrd Land. The trail enabled travelers to skirt dangerous crevasses that tore the ice shelf and snow covered mountains like deep facial scars. These hazardous

canyons were, at times hidden by lids of snow-covered ice too thin to support the weight of a vehicle or an individual glaciologist or seabee.

The first day out, we got caught in a blizzard so thick it hid the red flags. We got lost. In the blinding snow our two vehicles – a sno-cat and a weasel – had driven off the trail. Nothing could be seen but the white above, white underfoot, and whirling around in between. The chalky blindness kept us in our tent for two days.

Upon digging out, we were still lost. No red flags or tractor tread tracks could be seen on the pearly desert. We worked too close to the south magnetic pole for a conventional compass to be useful and both our gyrocompasses failed to work. We found our way an old fashioned way, walking outward in radial lines until someone cut across the Byrd trail or found a red flag. The trek turned out to be an excellent test of our equipment and physical stamina. It provided a good experience for planning the 1,500 mile journey we would take the next spring and summer. And we arrived back at Little America in time for the “sunset party”. It sure felt fine to drink cold beer in a warm place again.

During our long twilight and completely dark winter, I spent most of my time on two projects. One: building and taking measurements at the first oceanographic station ever established in western Antarctica. Two: Digging a snow mine 63 feet deep to study the ice history of the Ross Ice Shelf and past climate of Antarctica.

Walter Boyd and I chiseled a pit, wide enough to hold both of us at once. At its bottom, we hand drilled a hole another 30 feet deep. Going down 93 feet, as deep as a nine story building is high allowed us to reach ice that was decades old. We wanted to sample climate as far back in time as we could.

Walt and I installed electric lights in our winter darkened ice mine. We constructed wooden platforms every 20 feet, connected by aluminum ladders. A 50 gallon drum roped to a winch on the surface hoisted away ice samples and ice trash. For obvious reasons, our mine lacked heat. Temperatures sank to minus 50 degrees F. as we measured the size of ice crystals as small as sand grains or bread crumbs. My last job before coming south was as a mining geologist in Butte, Montana. It was tough work, but this was harder. Walt labored as conscientiously as any prospector looking for hints of gold or silver ore. I admired him.

Those crystals of ice are like letters spelling out the history of weather in Antarctica. In a given year, how much did it snow? How cold was it? The size of crystal and the thickness of

their layers answer that. Glaciologists have also learned that ice temperature at a depth of 33 feet (10 meters) equals the average annual air temperature at that location.

And you don't even have to dig 33 feet to get those numbers. Walt and I traveled all over the Ross Ice Shelf, including to places no human had ever been, to drill for that information. We hand drilled 33 feet down, using hollow tubes that brought up cores of ice. Then we measured and recorded ice temperatures. Hand drilling holes 33 feet deep every place you go is not a thing that makes your day in Antarctica, but it sure beats digging that deep through frozen ice with a shovel.

When we completed our 93 foot excavation at Little America, some enlisted men asked if they might have the abandoned hole. We gave it to them on the condition they cover the top with strong wood to prevent anyone from falling in. Later, the Navy discovered that cases of beer unloaded from supply ships had gone missing. Rumors arose that cargo had been "stored" in the "sandcrabs mine". I don't know. I never looked into it.

Chapter 3

Seals Swamp Science

At the beginning of winter, near the bottom of June, Antarctica was cloaked in darkness. Temperatures fell to minus 40° and lower. We decided to investigate the ocean under the 800 foot deep ice shelf on which we lived. The best place to do this seemed to be the bottom of a crevasse where the icy water rose to near the surface. The crevasse lay under the floor of the wide, shallow valley between Little America and Kainan Bay.

We lowered ourselves on ropes to the bottom of the depression. A mouthful of ice flooring in the cavern tasted salty, proving we had reached the ocean. We cut a hole through the four-foot-thick floor. Water as well as thousands of thin flakes of ice, flowed in. The under part of the shelf was covered with these flakes, which eventually freeze into bottom layers of ice. This “baby” ice made our work frustratingly miserable. When we tried to lower instruments into the water or bring out samples of water or sediments, flakes blocked the way. There seemed to be millions of them. Shoveling them away became tedious and back-breaking.

At first we thought the flakes grew out from the sides of the ice that lined the sides of our holes. We decided on a desperate solution: blast away the protruding ledges that kept us from lowering and hoisting equipment and specimens. The explosions, it was feared, could blow out the floor of the crevasse or collapse its walls. Dealing with the chips was so flustering; however, we decided to chance it.

Dynamite was lowered and blasting wires hooked up. The explosion shook the ice violently. Crevasse walls remained intact, but our ice lab became filled with ice chips. We lowered weights to see how far down the chips went, but we couldn't find the bottom. Since it took us a day of shoveling to clear away six-feet of ice flakes and there might be a hundred of feet of them, the Little America V Hydrographic Hole Laboratory was abandoned.

We then turned our attention to a place where the crevasse reached out to Kainan Bay at the face of the ice shelf. Where cavern and bay met, there existed a hole we could access from winter-frozen ice or Kainan Bay. What's more, no walls and floors of ice flakes blocked the way. There was a problem, however. Near the end of the crevasse, where it opened into the bay lived a family of six seals. We thought that they might help us by rubbing away the ice chips growing on the walls of the hole running from the ocean into our tent. The seals wouldn't go for

it. One bit one of my ski pole probes in two. We finally took over the place with the help of long bamboo seal-hitting staffs.

Winter froze over Kainan Bay with 18 inches of ice to give our oceanographic lab a floor. But our troubles were not over. An ice crack opened up under the tent, wider than the tent ropes could reach. Our shelter ripped in half. Another tent replaced it, and a blizzard later blew that one away. The seals also kept coming as soon as we chopped a hole big enough to lower our instruments. During their inspection trips, they brushed flakes off the sea ice and clogged our work space. However, instead of being many feet in thickness, they were only tens-of-inches thick. They could be shoveled out in a few minutes. Then we used the shovels to discourage the animals from hanging around.

That's how the winter of '57 went at Little America V, Oceanographic Station I: 24 hours a day of darkness, temperatures as low as 70° below zero, shoveling ice chips and banging seals on their noses with shovels. That done, we lowered instruments to measure temperatures, salinity and currents in the 2,000 feet deep water under us.

And the winter wind kept howling 50 to 60 mph and more. During one blizzard, Bert Crary and I lost our way on the 3 mile walk back to Little America V. The trail was marked with flags, but we lost it in darkness, whipping wind and blinding snow. We stumbled around for three frigid hours before finding our way. It totaled five hours before we reached the snow buried huts and warmth again. I suffered severe frost bite on my hands and face.

We did get the world's southernmost oceanographic station (750 miles from the south pole) up and running by the beginning of the International Geophysical Year on July 1. It still operated well when the sun rose again on August 22, contributing data from Little America to a network stretching around the world.

When not shoveling seals' flakes and "mining" ice, we uncrated, then packed food, scientific instruments and other supplies for our upcoming 1,500 mile trek over unexplored parts of the Ross Ice Shelf. We also checked out and serviced three sno-cats that would take us and three large sleds loaded with equipment over the unmapped route.

The food boxes contained such delicacies as dehydrated meat (beef and pork), powdered milk, instant potatoes, canned ham, dried fruit, jam, ice cream mix, concentrated soups, beer and a bourbon known locally as "old overshoe". I was appointed trail cook and became noted for my hearty breakfasts of oatmeal, raisins and bourbon.

On July 3, temperatures ran from a chilly 43 degrees below zero to a mild 27 degrees below, so we worked on our cats in the heated garage built by the Seabees to repair and maintain their big tractors. This included such chores as oiling and greasing movable parts down to the four short sleds that served as wheels on each vehicle. We also modified sno-cat cabins to hold instruments like an electronic crevasse detector and seismic wave recorders. There was also need to provide for human comforts such as eating, and sleeping. We slept in padded bags on the floor, two men to a cat. I also had to prepare a kitchen.

Hugh (Blackie) Bennett described this work in a letter he wrote to my son, Steven, in 2006. (The Navy garage was not yet available to us at the time he describes) “Even though the cats had been driven onto boards to keep them from sinking into the snow, blowing flakes encased their tracks in ice. After what seemed hours of work knocking ice off the tracks, we started up the vehicle we were working on. I tried to get it to move, but it kept lurching without forward movement. We would then work on the track again and repeat this scenario several times over. Finally I grew impatient. (I) put the vehicle in low gear, revved up the engine and disengaged the clutch. Kaboom!!!...I had managed to blow out part of the rear axle.”

“As I recall, Bill and I spent the next day digging out the snow covered ...storage (crates) to locate replacement parts. The following day it stormed. On the third day, we again did some major digging and dragging parts to the snow cat. We then rigged a skirt around the base of the tractor and blew hot air from a gas heater into the skirt so we could work. It was 40° below zero.”

“It was still uncomfortable because the underside of the vehicle dripped melting snow on us. Bill never complained. He was truly an admirable companion to have over the long winter months.”

I was 27 years old at the time and 17 months out of Columbia University. I never dreamed I would be repairing snow tractors in 40-below-zero weather and 24-hour-a-day darkness.

It was a time when the Antarctic sky rewarded those who went outside with the sight of colorful lights dancing in blazing patterns across the black polar sky. The Latin name, aurora australis does not do this magnificent sight justice. Here’s a description from my journal: “Aurora shown in the sky most of the day. It was a bright, pure intense blue shining against the dark blue of the sky and blue-black cumulus clouds rolling around the horizon. At the same time

a striking green auroral glow moved high in the western sky. The rich flares moved in curtains, rays and columns. On other days, yellows and reds dominated the natural glow shows. One time, over the northern horizon a twisting, waving band of reddish-orange shivered and fluttered. Above it hung a lemon-yellow band melting into a pale, limpid green which diffused into a bright blue-white. Over this blue shimmered a thin band of deep purple. Part of the time, the sky could be imagined as red, white and blue. I also thought of it as a rainbow lighting the polar darkness.”

On July 5, Hugh and I witnessed what I described in my journal as a “huge explosion of color which extended from the top of the sky to the horizon”. The burst flung rays of radiance in all directions: yellows, greens, bright blues, and reds hued from the border of violet to a weird orange. I also watched a gigantic splash of warm bright cherry red cool to orange and pink. All varieties of shapes and colors competed for space in the sky. Magnificently painted curtains hung from heaven. We saw columns, thick and thin, coiled and folded.” I wrote about “fat caterpillars of light struggling to move their huge bodies across the sky”.

In the diary margin, I sketched a gray-white half moon surrounded by rings of bluish green, deep violet, faint yellow and rusty brown. I had never seen anything like it. It made Hugh and I forget the cutting and biting wind for a time.

Chapter 4

Little America Theatre Group

The sky shows, hard work with frozen sno-cats, frustrating tussles with seals, and carving-out of a snow mine went on both before and after the IGY began on July 1. But it would be negligent not to describe how we celebrated the beginning of our 18 month year.

It started on Saturday night, June 29. Officers and enlisted men wore dress whites or blues. Some civilians broke out suits and ties. I donned my gray flannel suit, lavender shirt and black tie. We sandcrabs contributed 24 cases of beer to our swabie friends, one from each scientist. The Navy provided a buffet of fried chicken, shrimp, coldcuts, liverwurst, nuts and potato sticks. A bucket of “big orange” appeared. That is a more-celebratory-than-beer combo of orange juice and bourbon. Bill Cumbie’s “Combo”, a Navy band that the Navy did not officially know existed entertained us.

I organized the party and acted as master of ceremonies. The sandcrab corps had the idea of awarding “leather medals” to swabees for what we regarded as dubious or dirty deeds. These included navy orders that officers wanted civilians to follow. The highest “honor” went to Captain William (Bill) Dickey, the top ranking Navy guy to “winter-over” in Antarctica in 1957. Some people expressed concern that such antics would damage moral between our two groups. However, “Deep Freeze Dickey” laughed as hard as anyone and flung back tomfoolery without malice.

A highlight of the party was a folk dance done by Lieutenant Pat Unger, our Navy medical doctor at Little America, and Vladimir Rostorguev, a Russian meteorologist working with the U.S. weather crew. Vladimir wore an all leather outfit with knee-high boots and a blue silk undershirt. (Very fetching). Unger wore dress whites. Vladimmir finished the dance on his buns, felled by the beer-slippery floor.

The party was successful enough to embolden me to produce more shows to entertain Little Americans. I formed the Little America Theatre Group of the Ice with help from Paul (Scroungy Redbeard) Dalrymple, weatherman Bruce Lieske, pilot Earl Hillis and others. Our first production was based on events made famous by Robert Service’s great poem, “The

Shooting of Dan McGrew, which begins with the ringing words, “A bunch of the boys were whooping it up in the Malamute saloon...”

Enough people attended (where else could they go) to support a continuation of the theater group. To attract suitable players, the weekly Little America newspaper ran a “Play Boys wanted” ad. “Join the Theatre Group” it urged. Requirements for a shot at the thespian glory were listed as “cannot sing, cannot act, must be good natured, like amusement and ignore criticism.” The cast of “Dangerous Dan McGrew”, which knocked ‘em dead on July 20, fit this description well. I wrote the script and played Dangerous Dan. Boy Scout Dick Chappell chosen to spend a year at Little America in a nationwide contest, proved himself a good choice by playing the piano as “The Ragtime Kid”. Hugh Bennett starred as the Hermit of Shark-Tooth Shoal, also known as Yukon Jake.

“Tough as a steak was Yukon Jake,
As hard boiled as a picnic egg.
He washed his shirt in Antarctic dirt,
And drank his rum by the keg.”

Following the show, many of the older, more sober navel officers and scientists retired to their quarters. Most of us, however, decided to party hardy. It’s easy to imagine scientists, Seabees, and airmen singing rowdy songs together or arm wrestling. But wearing costumes and dancing with each other, that’s something else. Seabee mechanic Bill Bradley and I started a lusty Mexican hat-dance. Physiologist “Muckluck” Milan, from the University of Alaska, and Navy pharmacist Bob Hills challenged us to a contest. The four of us wound up hat-dancing together in a circle. Muckluck also entertained us by standing on his head on a chair. He then coached Lieutenant Commander Robert Hancock into doing the same thing.

What brings out such tomfollery? I don’t know. But I’d bet months of deep cold and darkness, and more months without wives, girlfriends, family and other loved ones has a lot to do with it. Even Scout Dick Chappell earned a merit badge for “fooling around”. The “Ragtime Kid” stayed at the piano through it all.

Of course such play does not occur without bangups. Bert Crary hit the floor and could not get his legs back. We had to load him onto a flat wooden cart, wheel him to his hut, and put him into his bed. He was fine the next day.

Bert's bang recalled an earlier drinking bump. Seabee Charlie Leighton lost his legs and consciousness and had to be carried to his bunk. Charlie was a big guy who slept in an upper bunk. We grabbed his shoulders and feet, then gave him a 1-2-3-go swing. Unfortunately our uplifting was too energetic. He bounced off the mattress and fell off the other side of the bunk, breaking his arm.

On August 17, the Little America Theatre group struck again, presenting Romeo and Juliet in four acts with a lot of bad actors. I wrote and directed the play and starred as the precious Juliet. Lieutenant J.G. Earl Hillis (the flying story-teller from Chattanooga) wowed them as Romeo. Seismologist Hugh Bennett handled the role of Tible. Cook Richard (Ski) Banasiak deserves mention as "Mamma".

Beside our theater group, Little Americans enjoyed entertainment by a small but loud band headed by Bill Cumbie of the VX-6 air squadron. A hoe-down expert from Milton, Florida, Bill played a foot-tapping electric guitar. I remember one shake-out when Cumbie was accompanied by Bobbie Grice, a radioman from Hubbard, Texas, who tooted a storm on a harmonica. Added to this was the Boy Scout, Dick Chappell on a jazz piano and pilot Earl Hills, who slapped a homemade bass something-or-other consisting of a washtub, mop handle and taught piece of string. Added to this, Rocco (Rock) Taurisano, from Massachusetts gave his unforgettable impersonation of Hildergarde in Falsetto.

As the subject matter of the Little America Theatre demonstrated, some tension existed between the Navy brass and civilians. This angst added to the usual tension between naval officers and enlisted men. Such stress, of course, multiplies when all must live closely together in tunnels buried under ice and snow, plus weather that discourages long walks to "cool" off.

Such unease bubbled to the surface over the fact that some enlisted men and civilians liked to decorate our gloomy surroundings with pictures of incompletely dressed, well-built models from "girlie" magazines. This art escaped from inside the doors of personal lockers to the outside of doors, walls and even floors. The undress that broke some of the officers sense of dignity consisted of full page pictures of large butts belonging to women in suggestive poses which hung above a counter in the mess hall where we picked up our food.

From both swabs and sandcrabs such "art" brought forth many humorous, albeit crude jokes and bawdy remarks. For some officers, however, the bare buns and boobs were too much

to bear. Meetings were held and orders issued. They decreed that such pinup art must be confined to surfaces of locker doors.

Some obeyed the new laws without comment. Others, especially civilians, saw the orders as an invasion of “freedom of ogling”. One Saturday, these differences came down to a junior officer leading a working party, armed with knives and razor blades, into well decorated sandcrab barracks. They vigorously attacked all “public” areas, including floors and ceilings, where a large gallery of body art had appeared since the purification order had been issued. It was a tough job since many of the pictures had been securely fixed in place with lots of glue. Also, weathermen from the night shift, who were trying to sleep, let the hard-working sailors know they were not welcome.

A more upstanding demonstration of the behavior of men living under ice involved phoning home. With the gracious aid of ham radio operators around the world, we could call home. Hams liked to contact radio operators in places such as Little America. They display award-like cards on their radio-shack walls, announcing they had made such contacts. Many of them could “patch” their radios to telephones and connect us to people who we had not seen for months. On July 28, for example with the expertise of Jules Madey in Clark, New Jersey, I carried on a long conversation with Alicia. We talked of the upcoming expedition over the Ross Ice Shelf, of mutual friends, and when I might come home. Sound was as clear as a call made from a few miles away. The “patch” left me feeling like a trillion dollars.

Chapter 5
The Sun Returns
So Does Hard Work

As the unending darkness of winter started giving away to hints of pre-spring light, so theatrics, tomfoolery, and tommyrot began to be replaced by outdoor work and exploration.

Even in July, our sky was not totally black all the time. On July 26, at 37 degrees below zero, we saw stars all day in the clear sky. On the northern horizon, however, we could spot some faint coloring. Whitish daylight mingled at the edge of our world with varied shades of blue. Pastel shades showed low in the north. A bright azure, that reminded me of the Mediterranean Sea, colored the low west. The sky darkened to deep indigo higher up, then into the blue-black of night overhead. A beautiful view!

On August 1, we saw long, narrow streaks of blue reaching out from the northern horizon like gigantic fingers, touching cumulus clouds and intermingling with them.

By August 6, around 2:30 p.m., the sky burned with color although no sun was visible. A dark, fiery orange, glowing cherry red and a burning rose lit parts of our horizon. Everyone stopped to enjoy the display.

In early August, we also saw clear signs of snow and ice movement at the northeast edge of the Ross Ice Shelf. In crevasse valley, an east-west concavity indented the surface. A deep trench floored it. This was the ravine where we struggled when we first tried to set-up an oceanographic station.

On Aug. 7, we found wooden measuring stakes that marked the valley, once standing six-feet above the snow, they now lay buried under 9-10 feet of snow. We put new stakes, flying red flags, atop the buried ones. The crevasse bridge had thickened by about 10 feet, and the place looked completely different than it did in April.

The northern or ocean side of the valley appeared to have moved upward. Also a large block of floor moved up about 15 feet at the bottom of the south side of the valley. It appeared that the north side of the ice, at the edge of the shelf, slipped down and “in” (backward), while the South side moved up and out.

We saw the sun (or at least part of it) on the morning of August 19, the first time since April 24. It came-up about 11 a.m., then sank away again by 11:25. The Earth's star burned fiery red in an eastern corner of a mostly overcast sky. The intense red then mellowed to a bright gold. I stood on a weasel outside the garage and enjoyed the sight. Did some reflecting, too; 116 days of darkness had to be at least partly to blame for some of the angst, tension, and bad behavior experienced over the past four months. The enlisted men drank too much and the officers lost aplomb. Ordering the take-down of pin-ups----really!

On Tuesday, Aug. 20, the Navy made the sun-rise official. At 10:29, the flag was raised for the first time in 117 days. Temperature stood at minus 26° F., wind breezed at eight knots (nine mph). All hands fell into formation for the flag raising. The chaplain said a prayer. Capt. Bill Dickey, made a speech about our accomplishments and the splendid cooperation between naval personnel, and between them and civilians. Humor soon survived the pomp and bullshit. An unofficial announcement ordered that "the uniform of the day consists of anything that isn't worn out."

On Sunday, August 25, with temperature down to 40° below zero (F.), we played the first softball game at Little America V. The sandcrab Tigers, managed by Paul Dalrymple, faced Navy Seabees. Cold, wind and darkness held the length to a modest two innings. Navy sunk the sandcrabs by a score of 11-6. Oh well! Anchors away!

Monday, Aug 16, saw the full sun on the northern horizon for the first time in four months. It was a cold golden-yellow, lightly tinged with red, sitting in a grayish bank of sinuous clouds. The clouds constantly changed and contorted Sol's shape, flattening it top and bottom, bulging its sides. Finally, Sol rose free of the cloud line, showing itself as a fiery, golden ball rimmed in red. By 9:30 it was a blinding yellow-white globe floating on its own.

At 1 p.m., it sat down in the clouds again, glowing gold and bright orange. At 3 p.m., the sky shone blue, then gave away to purple which paled to lavender. The colorful display took my mind off work, 50 below zero cold, and a biting wind from the south. On August 27, the south wind screamed down from the South Pole at close to 22 mph (19 knots), enough to ruin a day outside. By 1 p.m. on Aug 28, a 27 knot wind rose to 36 knots in minus 30° temperatures. There shines more and higher suns every day now.

During the dark winter, we devoted much time to preparing for the long dangerous traverse over the Ross Ice Shelf. This consisted mainly of assembly of the sno-cats, their care,

and loading supplies on the large sleds they would tow. Much of the pieces to be put together had been buried in the snow since we arrived at Little America seven months ago. With the increasing sunlight, this work speeded up.

VX-6 planes have started flying to McMurdo Station and Beardmore Glacier, one of the largest in the world. Activity increased at Little America as did talk about traverses, incoming people, planes, ships, mail and fresh food. Oh for a crisp apple or a juicy orange!

August 30 brought winds screaming at 45 knots (51 mph), gusts of over 50 k. (57 mph) and barometer readings as low as 27.3. The historic record for wind-speed was broken at Little America – all Little Americas, I to V. The official reading at 2027 (8:27 p.m.) reached 69 knots or a wisk over 79 mph. Meteorologist Gene Harter made the observation. I assisted with sending two hydrogen weather balloons aloft that night. Also working as weather observers on that shift were Jose Alvarez, a lieutenant commander in the Argentine navy and U.S. meteorologist Bill Lavris, then of Elmira, N.Y.

The hurricane-strength storm blew-over one of the DeHavillen Otter aircraft at Kiel Field. Although tied down, the wind tore it from its moorings and flipped the plane over. The left wing wound up on the airplane's right side. The tip of its right wing broke off. Part of the tail section ended up 15 feet in front of the propeller.

Work continued on our traverse sno-cats. The shipping from Medford, Oregon to Little America and months buried in snow were hard on the vehicles. My one week of sno-cat schooling in Oregon, plus jobs in a few boiler rooms and engine rooms on merchant marine freighters and tankers, did not add up to making me a skilled mechanic. Additional help from seabee mechanics turned out to be invaluable. This was especially true of John "Red" Renback, a talented young Navy craftsman.

Sno-cat parts didn't always fit together and work as they were supposed to do. Parts broke at critical times, some didn't work at all. Spare units were missing, no replacements existed sometimes. We also had to assemble and make ready sno-cats to be taken to Byrd Station, some 600 miles from Little America. Another traverse would explore the Byrd plateau from that station.

Moe Morency, who attended sno-cat school with me in Oregon, served as Byrd's traverse mechanic. He was a "real" mechanic who had been to Little America with Admiral Byrd in the

1930s. After graduation, Moe and I drove non-stop from Oregon to Washington, D.C. in my old 1946 Pontiac. We never turned off the engine on the trip.

The Navy also had difficulties with the sno-cats. On Sept. 2, when the moon was still visible in the day sky and minus 53° temperatures chilled us, I wrote in my journal about a broken rear drive-shaft, starter troubles, and a cracked frame on Navy sno-cats.

On Sept. 3, I described working on our cats all day in the Navy garage. This included struggling with a pump's drive shaft. I found twisted and broken metal on the shaft. With help from seabees, we extracted the broken pieces but had no spare parts. Repairs required building replacements, then machining them to the right size. The shaft-break involved oil that was too viscous. Of course, this required checking the oil pumps feeding all other sno-cat engines. I wanted to scream at the machines.

Here's an entry from my Sept. 6 journal: "assembled an oil-pump and drive-shaft. Installed them in one of the sno-cats with the help of one seabee. In the process, we found some large aluminum chips in a bucket used to catch the lubricating oil. We concluded that the metal shavings came from one of the engine's piston walls." Ouch! That was a catastrophe!

It was decided that we must remove the engine-head to get a good look at the pistons, then clean and smooth the pistons and cylinder walls that enclosed them.

This would be difficult enough in a warm garage in New Jersey, but in Little America on a tractor designed by a devil, it was knuckle-skinning, and frustrating. Just removing four bolts so we could slide a snow-cat engine a few inches back and forth served as an example. When I crawled under the cat to unloosen two of the bolts, I found a lack of enough room to do the work effectively with the wrenches we had. While I struggled, seabees swung open the garage door to move something in or out. The sharp, cold air rushed under the cat and grabbed me. With numbed fingers, I rolled out and made for the stove. It was turned off.

I finally worked-out a way to loosen the bottom bolts with a short box-end wrench, then finish with an open-ended one. Hugh Bennett and a seabee (Al Fellows) loosened the other bolts fastened on top of the engine. Beside oil and water dripping on me, Al dropped a screwdriver and Hugh added various other items.

In addition to physical problems, we dealt with social tensions. One chief petty officer, who ran the garage, did not care much for sandcrabs and our sno-cats. He wanted to get the IGY sno-cats running long enough to drive out the garage door, then the hell with them. "We don't

work for no civilians,” he griped. Such an attitude keenly contrasted that of most of the mechanics. They helped us when they could.

On the night of September 8-9 one of the fights that I’m aware of broke-out between navy men and civilians at Little America. It involved a German scientist, with a big ego, who everyone found difficult to like. On the other side were a navy petty officer and a civilian weather observer who was a former marine officer. The latter two were drinking. Mix a drunken sailor and ex-marine with an overbearing sandcrab, who regarded seabees and weathermen as servants, and you get a fist cocktail. Loud name-calling and cursing brought Chef Petty Officer Bernie Verboncouer to the scene. The scientist left the place calling his verbal attackers “drunken marine and swabee”. Verb got both men under physical control and radioed for the officer on duty. He had them both pinned down when that officer arrived.

At a “Captain’s” mast, the abusive sailor received a sharp slap on the wrist. As a second class petty-officer, if he seeks first-class stripes he won’t get them while in Antarctica. The ex-marine couldn’t be punished by the Navy as a civilian, but his uncalled for and sarcastic conduct shrank to more silent and standoffish behavior. A nice outcome, many of us agreed.

Chapter 6

Springing to the Long Trail

As September skies grew lighter and temperatures got somewhat warmer, we did more outdoor labor. We serviced and repaired our sno-cats and loaded the sleds with everything from dynamite to pemmican to bourbon. The latter comes in handy for washing down the former, described in one dictionary as “dried meat pounded into a paste with melted fat.” To that unappetizing description, you could also add “frozen to rock hardness.” These made-up the supplies and equipment we needed for the first complete exploration of Antarctica’s Ross Ice Shelf, the RIST (traverse) it was named.

Another party of scientist-explorers would leave Byrd Station, about 600 miles away from Little America along latitude 80° south. In 1956 the Navy had mapped a trail to 120° west longitude, 80° south. Here they build the station at Rockefeller Plateau, Marie Byrd Land, at an altitude of some 8,000-10,000 feet. IGY scientist would explore this eastern plateau while we mapped the Ross Ice Shelf.

They would also drill a hole to measure ice-depth to rock underlying the plateau. Our group at Little America serviced the sno-cats and drilling equipment which the Navy would carry by tractors over a trail marked with red flags. The tractor train to Byrd Station was due to leave in October.

On Sept 9, a two engine R4D aircraft began taking off from McMurdo Sound station to ready a substation at the north end of Beardmore Glacier, latitude 83° south, longitude 172° east. The substation provided a navigation, communication and rescue base for planes flying people and supplies from McMurdo to South Pole Station. The plane flew over Mt. Kyffin and up the Beardmore to the Antarctic Plateau.

Navy VX-6 pilot Lieutenant Harvey Speed made the first successful run from McMurdo to Beardmore in an R4D. Trying to make a second trip, Sept. 12, he was forced down on the ice 80 miles from McMurdo. Another flight also had to turn back to McMurdo. VX-6 believed the problems were due to water freezing in the planes’ gas and/or oil lines.

Speed flew his R4D to Little America on Sept. 14. With the plane fixed, he made another try for Beardmore, but his left (port) engine gave-up. This caused the tip of the left engine to hit

the ice and smash. As Speed shut-off the right engine to land, the left restarted itself and the right wing tip got damaged. He managed to get the plane airborne again but narrowly missed some ice-pressure ribs on the ground. A hit would have wrecked the plane and all in it. Mt. Speed was later named in his honor, a 1,010 meter (3,315 foot) peak at about 84°30' S. 177°E.

As we dealt with loading sleds for traverse journeys and opening the Beardmore Station, the light of day grew longer and more colorful, if not warmer, or less stormy. On Sept. 14 we still felt 40-below-zero air and 12 miles-per-hour winds.

The same day saw some startling mirages. There appeared to be solid gray and white horizontal and vertical objects high over the Ross Sea. We decided these were images of the vertical ice shelf face and of horizontal ice in the sea and Kainan Bay, all reflected on the bottom of low blankets of clouds. The sun also poked its head between the cloud blankets and horizon, coloring the space between them gold and orange. As it set, Sol threw rays of gold and crimson at the cloud bottoms. Further away, in the south, sunlight painted the cold sky curtains lavender and pink. A nice sight for a shivering, hard-working guy to view at days end.

After sunset, meteors could sometimes be seen. Hans Bengaard, a Danish researcher, and Peter Schoeck, a German scientist working at the University of Minnesota, erected instruments for viewing and counting these bright rocks from space. Peter and Boy Scout Richard Chappell, then took turns counting the meteors.

An incident during a stormy, cold (36 below) Sept. 19 day showed how easy it is to lose your cool in continuously bad weather and long working days. I was doing a simple job like draining gasoline from our vehicles, when a spill gave me a gasoline bath, soaked me to the arm pits with stinging fluid. At first, I slammed down my tools and walked away, but then I came back and finished the job. But I did get sore enough to want to quit the expedition. I felt like asking them to send me home on the next boat. That would have ruined my career as a scientist, of course. After a shower and washing my gas-soaked clothes, however, I felt better. The incident seemed too small to blow my cork like that. I vowed to watch my temper more carefully and control it more closely.

On Sept. 20, about a month after the sun rose again at Little America, South Pole Station reported a record cold temperature of minus 102.1° F., 134 degrees Below freezing.

That evening of record cold, we were bored by the chaplain and medical-doctor lecturing us on "Love and Sex." The Navy ordered such B.S. and the two carried it out with all the

enthusiasm of a mechanic changing oil on a sno-cat. The chaplain delivered his wisdom in droning monotony, an oral bowel-movement of flowery advice and clichés. The Doc, Lt. Pat Unger, started off well-enough, but soon lost himself in a verbal circle. Both speakers gave the impression of carrying out a much dreaded duty. Peter Schoeck came out with what I saw as the only point worth hanging onto. He said that self sacrifice is a “major determinant of love.”

In late Sept., we did research at the Kainan Bay oceanographic station. This included shooting dynamite to make seismic maps of the thickness of the ice shelf we lived on and the depth of waters under it. We also spent much time getting ready to traverse yet unexplored parts of the Ross shelf.

The journey will go south, along the trail to Byrd Station as far as Roosevelt Island, a large, flat-topped hump of snow surrounded-unfortunately-by deep, dangerous crevasses. Then, we cross the island and go west to the other side of the shelf at McMurdo Station and reach a New Zealand-run base. Here, Ross Island boasts two volcanos, Mount Erebus (12,448 ft.) and Terror (10,750). These peaks rise at 78°30'S, 168°40'E. Erebus, still active and smoking, is named for the Greek god who ruled the mythical kingdom of darkness, i.e. Hell.

Near McMurdo, we turn south and work our way to a line of mountains that lead from the ice shelf to the high plateau crowned by the South Pole. These mountains include the Queen Maude Range stretching for 500 miles along latitude 85°S. The range crosses the International Date Line at 180° longitude. The Queen is cut by some of the longest glaciers in the world, named (from west to east) Beardmore, Shackleton, Liv, Amundsen, and Scott. They form steep pathways that explorers use to reach the South Polar Plateau.

During the IGY, Navy airplanes flew from McMurdo Station over the Beardmore to the Pole with men and supplies, a distance of about 720 miles. On our traverse, we sno-cated approximately 375 miles to a rescue station near the foot of Beardmore. Here we turned east, then traveled along the face of more mountains to a line south of Little America. Most of this area had never been stepped on before. Along the way we mapped the mountains. After about 250 miles of eastward slogging, the traverse turned north to explore another 400-or-so miles stretching from the bluffs to Little America. The total traverse covered 1,450-1,500 miles.

For our efforts, mountains were named for us near the mouth of Shackleton Glacier at 84°35'S., 176°W. A group of peaks was christened Crary Range for Bert, our expedition leader.

Mt. Cromie, 9,700 feet tall is at 84°50'S 179°14'W., near the International Date Line 300 miles from the Pole. Nearby are summits that honor Hugh Bennett and Walter Boyd.

Sept. 23 was the first day of spring at Little America and the rest of the southern hemisphere. At Little America temperatures ranged from minus 12 to 43 below zero. Now it was time to put together the big sleds. Their assembly was my charge, with the help of one naval officer and two Seabees. The sled parts were in storage under six-feet of snow by then. This covering turned out to be hard and heavy. The digging was more difficult than assembling the runners, flat bed, side stakes and tongues that made up the 2-½ ton carriers.

The first day of spring shined clear and bright enough for some people to wear sunglasses. Snow-white clouds came up in the north and northeast. Waving mirages rippled across the horizon in those directions. Dark-blue shadows filled the crevasse valley between Little America and Kainan Bay. They grew in size as the sun lay down for the night.

Despite all the work that needed to be done, spring also seemed like a good time for another Little America Theater of the Ice Show. This, in turn, seemed like a good way to get back at Navy brass for taking down our much-loved female “art.” “Let’s see”, some of us thought, how they would react to having their morale torn-up.

Lieutenants Pete Raynolds and Pat Unger guessed our theme and tried their best to stop the production. But on Sept. 28, the show went on. We fired verbal shells about sex, public relations, cursing, what many of us thought about the Navy’s orders and its unnecessary bullshit. Those at whom the fire was directed had to sit there and listen. It would be admitting a fault to get up and walk away. Unger celebrated in the skit as “Dr. Bat Hunger,” said it all for the Navy when he waved a white handkerchief as a symbol of surrender.

The play took place on the same night as a celebration of and for “Little Americans” from other nations; international night. Peter Schoeck sang a song in German. Jose Alvares, an Argentine meteorologist, along with airmen Joe Gutierrez and Dave Casteneda, belted out “Rancho Grande.” Vladimir Rastorguev, a scientist from Moscow, celebrated Russia. International nighters filled coffee mugs and empty potato-stick cans with “Old Methuselah,” official Navy whiskey, named after Noah, grandfather of Noah of Arch fame. Sailors and sandcrabs emptied six bottles of it in citing one officer to wonder “where did it all go.” Part of it went to one VX- sailor who had to be restrained from punching a fellow airdale of higher rank. Another airman wanted to fight anyone, but he, too, got held-back. Airman Joe Gutierrez needed

to be carried out. Others celebrated the night by singing (?). Radioman Boyd Russel tried to imitate Elvis Presley. Then there were those who just passed out.

Beside each other, there were also real fires to fight. Near the end of September, Little America's largest garage almost burned down. That would have been a tragedy for our exploration schedule – a big setback for the IGY. It began with heater problems in a sno-cat. First, one of them did not heat, then fire blazed-up inside it when I shut it off. Flames shot-out of the exhaust. After dosing the blaze, we concluded the flames came from gas that had accumulated in the combustion chamber.

Later, another fire broke out under a large D-8 navy-tractor, one of the big machines that Caterpillar Company makes. It appeared as if some inflammable liquid on the floor got ignited by a spark from welding. Bennett almost got caught in the inferno. A large extinguisher failed to work, so did a smaller portable one. I rushed to bring in a carbon-dioxide-type quencher, but by the time I got back the fire had been put out with other portable equipment.

September's fun and fires combined with drilling and dynamiting, seal slamming and ocean sampling. One day, Crary and I walked about a mile-and-a-half west to drill some dynamite holes for seismic sounding. Sound waves from explosions buried in the ice holes are reflected from boundaries separating ice, water and ocean floor to be recorded by instruments on the surface. Their travel times revealed the thickness of ice and depth of water. Sound-frequency-changes mapped the sea floor: flat, mountainous, or somewhere between. We previously marked a five kilometer (3 mile) line with bamboo stakes where we would explode dynamite. At each stake, we drilled two to five holes, each five meters (16 feet) deep. We dug five holes, 82.5 feet of drilling, in three hours.

Two days later, we drilled four more holes. Stakes were about 1,000 feet apart. We planned on drilling and blasting like this every second-day during the upcoming traverse across the Ross Ice Shelf.

We also put up lines of stakes where the ice-shelf met Kainan Bay. Changes in their positions would reveal movements of the edge of the ice as it was pushed from behind by glaciers. The amount and direction of such displacement can be measured by mapping changes in stake positions. This seaward-shoving caused the outer edges of the ice shelf to crack then break off, giving birth to icebergs and their smaller kin known as "bergy bits".

The last day of September marked the completion, for us, of eight months in Antarctica. Temperatures ranged from 30 to 49 below zero. Bert and I went out on the ice of Kainan Bay to check the oceanographic station we had established previously. The station sat on a 10 to 15 foot wide crack running across the south end of the bay. Natural opening of the crack during winter ripped the tent we had set up there in several places. We poked the crack with a chisel. Sea water bubbled up, a sign we could go to work.

Water in the bay was about two miles (10,560 feet) deep. We measured temperatures and took sea samples down to 300 meters (about 1,000 feet), through a two-foot-square hole. The hole immediately attracted a seal. The visitor brought with it an upside-down shower of ice chips scrapped from the bottom of the bay ice. These clogged our opening. We socked the seal on its nose, then spent more than an hour mucking out the junk ice.

Bert and I rigged a tripod over the cleared hole. A roll of line running from a winch allowed us to lower and raise water sampling bottles. After we installed a stove to keep warm and cook, we found we neglected to bring the bottles. I drove our sno-cat back to Little America to get the containers. These Nansen bottles, as they are known, can be opened from the surface when they reach their target depths. At the same times, thermometers flip into position and record temperatures at various levels. We took samples and temperatures at 50, 75, 100, 150, 200 and 300 meters (about 165, 250, 330, 500, 660 and 1,000 feet).

The seal watched us work with interest. On each visit, it left a scattering of ice chips behind. That annoyed us but, fortunately, the debris was not enough to seriously interfere with our labors. But clearing out chips did keep us on the job until 7 p.m.

Back at Little America, I reviewed what had been accomplished. We built and operated what was probably the first U.S. oceanographic-science station in this part of Antarctica. During this historic year of international study, we had contributed to getting data about how the world works.

Chapter 7

A Hard Road to Knowledge

The tractor train left at noon October 2, for Byrd Station, about 600 miles east and 130 miles south of Little America (80°S, 120°E). Tractors, pulling giant sleds of resupplies traveled about 200 miles over the ice shelf, then climbed the mountainous mainland to Byrd Land on the Rockefeller Plateau. It was a cold day, as low as minus 50 degrees, and a gay, colorful departure. State and national flags flew over the Navy-orange vehicles. A weather balloon held aloft a German flag. Cook Rocco Taurisano decorated a sled with a banner of Italy. There flew ensigns of Argentina, Oregon, California and other states. Seabee Delmar Ward displayed a skull and crossbones.

Chaplain Robert White said a few encouraging words atop a weasel, then led a “bare-headed” prayer asking God for his protection. Then the convoy was off as the stay-at-homes shouted “Good Luck on the trail.”

Three Navy planes flew into McMurdo Station from New Zealand on Oct. 1. They carried the VIPs who spent their winters in warmer places. Common sandcrabs and swabs arrived later on larger, more freight-like C-124 aircraft. On Oct. 4, a C-124 took off for New Zealand with those needing medical attention not available at Antarctic stations.

Meteorologists reported that the average temperature at the South Pole in September reached a chilling 80.1° below zero. And on the Antarctic “spring” day of Oct. 3, bad weather at the Pole caused cancellation of C-124 flights.

Back on Sept 30, when we closed the oceanographic station, Bert and I had to walk about three miles from Kainan Bay to Little America because our sno-cats heater failed to start. We didn’t need heat for ourselves, but to get the gas warm enough to start the engine in minus 42° temperatures. Smoke rose from two large crevasses we passed. It reminded me of fumes from a volcano or a swamp in the early morning. Bert guessed it came from relatively warmer Ross Sea water seeping into the crevasses through bottom cracks.

It was a rare sight as the rising smoke got picked up and flattened out by what little wind was blowing. A spring 7:30 p.m. twilight added color to the picture. A bright orange band,

tinged with red, ringed the north horizon. By 8:30, as we approach Little America, the ring was fiery red below some small blue-violet clouds.

I took the oceanographic equipment from the cache near the ice-shelf end and loaded it onto the disabled sno-cat on Oct. 2. That chore involved five trips of heavy hauling by sled to the vehicle. Getting a large winch there turned out to be the toughest part of the task. Then I tried to get the cat moving. Our trouble involved the pump that fuels the engine heater. I could not get it going so had to walk miles to get home again.

Next day, we decided to use another cat to start the disabled one. But the rescue vehicle's batteries were dead. We lugged in replacements, but these, too, went dead. Enter the third cat to jump start the second. In our frustration, however, we connected the jumper cable backward. That produced a short circuit with flying sparks.

Bert ordered the third cat out to the one stuck on the shelf edge. We connected a heater line from the rescue vehicle to the gas pump on the stalled cat, but that did not work. Tried a blow torch next, that turned out to be ineffective in the high winds coming in from the north. Cursing and growling, we removed the gas pump from the heater and brought it to the garage at Little America.

Next day the cat fix fight continued. I soldered a new electric starter wire to the pump, thinking that would solve one problem. It didn't. The pump wire broke as I tried to connect it because of too much bending of the metal in the cold. Walked the miles back to the garage then resoldered the wire. I got the idea that it would break again without a guard on it. I soldered the wire to the guard then the guard to the pump. Connected the wire to a battery to determine if the pump would start. The wire shorted out.

Two days later, on a Sunday it was so warm, 15 degrees at noon, I decided to try to start the moribund cat without the heater and pump. Mentioned my misery to seabee mechanic "Red" Renback. He was about to take a Navy sno-cat for a test drive and offered me a lift to the barriers edge. On the way, we came across "Muckluck" Milan, Scout Dick Chappell, and Walter Boyd in an overturned IGY weasel. Walter had been driving and tried to take a short cut between roads clogged by snow drifts from a recent storm. Clouds darkened the day, making visibility bad and his eyes were not too sharp.

More misery when we arrived at the moribund cat. Its engine was filled with snow. We killed the battery trying to start it. Back to the Little America garage again. Red, Bennett and I

loaded a sled with a larger heater plus two 12-volt batteries. Once the whole cat was heated, not just the fuel pump, plus fully-charged batteries, the engine kicked over. We added some gas from the heater and drove the cat home.

Thinking about it later, I realized that too little gas in the tank might have caused the original mishap. The six days of struggling with the fuel-pump heater, soldering wires, and frustrated cursing might all have been unnecessary. I decided not to dwell on that idea.

Another thought about driving in Antarctica crossed my mind. On his 1901-04 and 1911-12 expeditions, Robert Scott, the intrepid British explorer, experienced so much trouble with motorized sleds that he abandoned them. I also ruminated about our upcoming 1,500 mile trip across unmapped ice. Perhaps such hardships are a natural part of breaking in new types of vehicles in a harsh and unforgiving environment. As we get more experience – sometimes by hard ways – things must improve. Both men and machines should increase their efficiency. I hope so.

Spring brought some warmer weather; temperatures up to minus two degrees. But bitter winds from both north and south, up to 39 miles an hour on Oct. 4, cut visibility and comfort away from outdoor work. And that was the main kind of work we did. I suffered frost bites on my face and neck while walking into the wind, pulling a sled loaded with equipment and tools.

Blowing flakes with deep snow-banks also made traveling by foot or vehicle more miserable and dangerous. One of our meteorologists, Herfried Hoinkes from Innsbruck, Austria, noted that winds could pile snow up to 300 – even 660-feet high. Even drifts of soft snow, three-foot-deep, could cause havoc along trails from the main buildings to storage or working areas.

The Boyd, Milan, Chappell turnover of a small-tracked weasel involved poor visibility. A deep low-pressure area brought in clouds, snow, winds and relatively high temperatures. On Oct. 6, the latter rose to a “scorching” 15 degrees F. Such conditions can produce confusing “white outs,” wherein you can’t tell where surface snow ends and low clouds begin. Judging distances is difficult, and mistakes are dangerous. Airplanes are grounded.

Little America got storms of such weather from Oct. 5 to 9. High pressure to the north keeps them pressed against the Ross Ice Shelf as the lows move from west to east-from McMurdo to Little America stations. These lows carry winds up to 60 mph. They bring lots of soft snow with high drifts.

On Oct. 8, we were under a low, stretching over the International Date Line from McMurdo Sound to Little America, a distance of about 500 miles. Winds blew 48 miles an hour for 13 hours, gusting to more than 59 mph. Lows spin clockwise in the southern hemisphere, the reverse of such swirls north of the equator.

Fine snow blew into holes and cracks in every building. Imperceptible gaps introduced jets of cold snow everywhere. Large piles of it stacked up in the tunnels between our buried living quarters. Trying to patch closed these chinks was useless. We just kept shoveling. “Warm” temperatures, from 2 to 9 degrees, also melted overhead snow that leaked everywhere. Such continuous blizzardry contributed to the deaths of Robert Scott’s party on their way home from the South Pole in 1911.

We decided it was unwise to begin our traverse in such weather. Bert delayed departure until at least Oct. 20.

On October 8, I had been away from home for 10 months. This counts from early the previous December when I was sent to the San Diego Naval Station at Coronado to oversee loading of IGY equipment into the USS Curtis. During Christmas, I took my last vacation, flying down to LaPaz in Baja, California, for some fishing and fun. Now, I was in a blizzard of spring activity. The tractor-train was nearing Byrd Station. Planes waited to fly between Little America and McMurdo, McMurdo and New Zealand. They brought fresh Seabees and fruit, equipment and the wonderful stuff called “mail”. Nothing better than sucking on a juicy orange while reading love-words from people who care about you, while storms keep you under the snow.

Little Americans got their first mail in seven months when a plane from New Zealand landed on Oct. 12. It was a big event. Our station became as quiet as snow when everyone stopped to read their letters. Some guys received as many as 150 envelopes. I got 20 letters and four packages, mostly from my girlfriend, Alicia and my mother. The packages from Alicia included a paper Xmas tree, with decorations to put on it and a manger to lay under it.

Next day, Sunday, was as quiet as a church, when people read and re-read their mail. After dinner, the party began. Bill Cumbie and band provided music for lyrics, nostalgic, rowdy, rude and robust. Captain Mahr, due to replace Capt. Bill Dickey as on-site commander of all Navy forces, played pool and shuffle board and drank beer with the men. He was unofficially proclaimed “a good ole boy.”

I read a story-rhyme I composed in the meter of “The Cremation of Sam McGee.”

“There are strange things done in the midnite sun
By men who IGY it.
Antarctic trails hold secret tales
That make your blood run riot.
The southern lights have seen queer sights.
But the Queerist of the queer
Was the night on the edge of the barrier ledge
That I stole a barrel of beer.”

The poem tells the story of a sandcrab who steals beer from Navy storage instead of purchasing it, as required. Rumors existed that such things actually happened.

“Dave Cañtanedo and Joe Gutierrez, enlisted airdales, sang Spanish songs. One officer entertained us with a pantomime of a lady putting on a tight girdle. Later, we broke up a shoving match between two swabs that looked like it might get ugly. I finally got to bed at 2:30a.m.

With the weather better and mail read, it was time to get ready for our traverse. We had three sno-cats to prepare. One carried equipment for seismic soundings of the ice and water under the shelf surface. Another held a crevasse-detector mounted on its front. The third boasted a table and cooking gear needed for a mobile mess hall. Each cat towed a large sled filled with food, fuel and other needy stuffs. Bert and Bennett would pilot and live in the seismic cat. Peter Schoeck and Walter Boyd manned the crevasse-detector vehicle, while mechanic “Red” Renback and I kept the kitchen cat.

On the quiet Sunday morning of Oct. 13, I wrote my mother about the traverse, a what-if-I-don’t-come-back missive. I told her that if I didn’t get back, I’d go cold but happy. I requested to be buried in the Antarctic. Upon re-reading, I thought it sounded too melodramatic. But I mailed it anyway. Next day, I talked to Mom and my two grandmas by ham radio phone. Had a very pleasant chat. Did not mention the letter.

Despite bad weather and difficulties working, fixing and re-fixing in extreme cold, the Navy always had time for public-relations tomfoolery. On Oct. 16, a Pan American Airlines passenger jet landed at McMurdo Station, carrying enlisted men to relieve some of those who

wintered over. It would then carry veterans of the cold back to the USA. The Navy's public message was along the lines of "see how well we treat our men."

Of course, the airliner also carried officers, reporters, congressmen and others with "clout." Also included were two attractive hostesses. Some P.R. guy came up with the "oh-my-gosh" idea of a dog-sled race. One lady would ride in a sled pulled by U.S. huskies living at McMurdo. The other would passenger a sled from the IGY New Zealand base, a short distance away. The American mutts had not been worked much while the New Zealand animals were well exercised and trained. Their difference in athleticism became startlingly clear when the teams met. As soon as New Zealanders saw their first strange canines in months, they bolted toward them. Witnesses said their sled turned over but they came right-on coming, dragging the sled behind. The U.S. hounds appeared disorganized and frightened. Both women decided they did not want to risk a ride with such overwrought beasts. The ladies also judged a "best-beard" contest. That went off better than the dogs-that-never-raced fiasco.

Muckluck Milan, who studied how people and animals adapt to cold climates, viewed the Navy's dog no-show with disgust. He wanted to test the U.S. hounds to determine how well or not well they adjusted to Antarctica. The Navy turned down his request to examine the McMurdo mutts, who technically were here for rescue work. This was another big setback for him. Muckluck had previously, so one story goes, tried to measure the rectal temperatures of bears during their hibernation in Alaska. Many biologists believed such bears slept while hibernating, so it should be possible to measure their body temperatures without unduly annoying them. To his surprise, Muckluck discovered that bears, at least the ones he chose to study don't sleep that soundly. It was a hard-won discovery, the story of which won him lots of laughs.

Without dogs or bears at Little America, that left only one animal species to experiment on---us. He wanted to answer the question: How well do men, who spent most of their time working outdoors, adapt to the cold compared to, say, cooks, radio operators and others largely sheltered from everyday weather. Bennett, Boyd, Crary, Schoeck and I were, for him, excellent examples of the first-class of subjects.

One test of acclimation consisted of simply putting our fingers in a small bucket of ice. Bennett and I realized this was not so bad if you kept your fingers very still. Body heat warmed a thin layer of water surrounding our skin so the punishment wasn't hard to take. Of course,

Muckluck knew this and we knew he knew it when we saw him approach with a slim glass stirring rod. The first time I did this, in April, the pain felt terrible. I had to pull out my fingers after 20 minutes on ice.

The next time we played the game, on October 16, my skin temperature dropped to 32 degrees. The pain felt terrible at first, but after 8½ minutes it began to rise and the agony began to fall. When my fingers reached 48 degrees, however, the hurt increased again. This time the ache left after about a minute. My skin fell to 42 degrees then stopped without falling back to the awful freezing of 32. I did not feel the irresistible urge to pull out my hand. I kept it in ice for a total of 30 minutes.

After removing my hand, the fingers throbbed, then burned with pain, but only for about two minutes. Back in April, the after-grief lasted minutes longer. There was no doubt, I had adapted to Antarctica's stinging refrigeration. Others, who had not spent as much time outside, also improved, but not to the same extent as Bennett and I.

Muckluck did not limit his adaptation experiments to a single icy fingers test. He used other challenges to determine who had been reshaped and by how much. One unpleasant trial involved stripping to your under shorts and laying on a metal screen in a cold room. He provided no blankets or sheets. We lay on our backs on a copper screen with open holes. "Excruciating" describes how I felt the first time I tried doing this for two hours. I shivered and shook violently much of the time. After six months of enduring more cold than I wanted, it was far from comfortable. I could read a book, titled "Polar Exploration", while lying on the unheated metal. I shivered much less. I could not have taken that much punishment so lightly ten months before.

Science notwithstanding, the macho men of Little America naturally made a competitive game out of the tests. Who could handle the most pain with the most aplomb? Who shivered the least? Or more to the point, who was the toughest guy in Little America? Official judges were not available but nobody argued against giving the title to Bert Crary. Before coming to Antarctica, he had spent much time floating around the Arctic Ocean on an iceberg unromantically named "Station T3."

On Oct. 17, I received a surprising and very welcome letter from Maurice "Doc" Ewing, director of Lamont Geological Observatory at Columbia University. He offered me a position as an oceanographer aboard the research vessel Vema, a three masted schooner that sailed around

the world. The job was well received because I had no idea what to do after leaving Little America. It surprised me because other university oceanography centers replied to my letters with “come see us when you get back to the U.S”. Ewing said I could meet the ship at South Orkney or South Sandwich Islands, located between Antarctica and the south tip of South America. If I could not get away from Little America until April, he suggested joining the vessel in Capetown, South Africa.

Ewing did not advise me how to get to South America or South Africa, but I liked the way he made decisions. Next day, I wrote him to say I’d join Vema in Capetown. It took trips on an ice breaker, a Navy transport, two airplanes and trains across Australia and South Africa, but I made it in time.

Chapter 8

On a Path to Fame or Misfortune

It was October 16 – time to think about the crevasses we would be meeting on our upcoming traverse. We attached a detector to the front of one sno-cat and took it out for a test. A wooden bridgelike device extended about ten feet ahead of the bumper. Electric wires crossing the wood planks made no sound while moving over snow deep enough to support a heavy vehicle or sled. A hole or wide crack in a surface that was covered with thin snow should shorten its circuits, setting off a screeching alarm. We pushed the detector over a well-known crevasse hidden by a scant covering of white. The detector screamed in protest. We did it again, and the alarm went off again.

This work got us thinking about others who had set-out over unsure snow. On October 19, 1911, the Norwegian explorer Roald Amundsen and four companions left from a camp, not far from where we were now, on the first successful trip to the South Pole. Using four dog sleds, they made it to the south end of Earth on Dec. 14. They beat a British expedition, bound for the Pole from the McMurdo Sound area by 35 days. Under the command of Robert Falcon Scott, the party of five had left in November. They died of cold and starvation on their return trip. Despite 46 years of polar exploration, advances in equipment and the U.S. Navy behind us, it was impossible not to think of what the next three months would bring for us.

Such reflections heightened when, while moving equipment from an outdoor storage area, I came across a box of personal effects belonging to Max Ray Kiel. A seabee, Max had died two years before, when a large tractor he was driving fell into a crevasse. I turned his possessions over to two Navy officers who were shocked by the discovery. Kiel Field, Little America's airport, had been named in his honor.

I thought about the feelings of Kiel's family when they finally received Max Ray's stuff. Next day, Sunday (Oct. 20), I wrote an eight page letter to Alicia. I did not know yet that we'd be married some 14 months from then, but I wondered what she'd think if I never came back.

On Oct. 21, we labored to catch up with our travel schedule. The weather did not help. Temperatures sank to a cruel 16 degrees below zero. Winds 25-26 mph blew snow everywhere. I worked with seabee Bob Molla, to assemble and load onto sleds all the gear for maintaining our

sno-cats. With other seabees' help, I dug out explosives that would be used every other day for sounding and mapping the ice and ocean below us. Eighteen boxes of boom-boom, here-to-fore missing in a buried snow cache, were found. We also loaded hundreds of pounds of frozen meat and other food. Loading continued next day with towing cables, cooking gear, skis and snow-shoes. I heated and gassed up the mess cat, then took her for a test drive. Everything went fine.

That evening (Oct. 22), we had what could be called a "going-away party", although men who lived in huts buried under snow for 10 months really did not need a reason for a party. Smoke and bearded men crowded every inch of one hut's "lounge area", the scant space between four man sleeping cubicles. Guys in such surroundings feel few inhibitions. Add a microphone and tape recorder to the mix, and even the most painfully shy guy can turn into a singer, story teller, or a performer of some kind. Beer and comradery win out over reluctance, and the boozing becomes good natured.

I awoke next morning with a hangover. Outside, all the snow in Antarctica seemed to be rushing past. It reduced visibility to a few yards. Blizzard winds sucked the breath from our mouths. It wasn't a travel day.

But the next day, October 24, was. We planned an early departure. The wind had eased. However, mechanical problems, which along with the weather, had delayed us for the past ten days, did not. Nine a.m. slipped to 3:30 p.m. Those who came to see us off gave in to the cold. Wishes of "good luck" changed to "thank god, they finally left."

The three sno-cats, each towing a fully-loaded sled, moved south in tandem. It wasn't a bad day to travel, considering we moved over frozen ice at the bottom of the world. A northwest wind pushed snow faster than we moved but temperatures reached a mild ten degrees. The ground looked like a chalky sea that merged into the sky without creating a horizon.

I began day-dreaming that we were part of a new mechanized age in Antarctica, replacing the traditional dog teams. My meditation was shredded by the screech of metal tearing up metal. An instant later, Red and I crawled under the sno-cat behind us to look up at the wreckage of a universal joint. Removing the joint with numbed fingers, we saw that the drive shaft attached to it was mangled. Nothing else could be done. After traveling less than a mile on our historic journey, we returned to Little America and the ribald ribbing of our comrades.

Red and I worked our freezing fingers until long after midnight, then again early next morning. It was 14 below zero. We called the vehicle "fixed" at 10 a.m. I lit our Coleman stove

to thaw some coffee the cooks at Little America gave us the night before. We washed down some stale sweet rolls with it.

By 10:30 Oct. 25 we reached our official starting point, about a mile from Little America. To our left (east) lay the tractor trail to Byrd Station. As the last red trail-flag to Byrd went out of sight, we turned west into the great flat white desert of the Ross Ice Shelf.

We believed we were clear of a dangerous crevasse belt spotted from Navy planes that scouted the area previously. We were wrong. Ahead lay a wide depression, stretching from horizon to horizon, across our path. Odds were that a large crevasse sat on the bottom of this trough. We couldn't turn back or get around it, so we moved into the depression slowly, one vehicle at a time. Driving the kitchen cat, nicknamed "Tweety", I felt greatly relieved when we crossed the ditch floor then started up the other side. We concluded that we had spanned an older crack now bridged by falling and blowing snow. Further along, we saw openings in the bottom of the same moat, and congratulated ourselves for crossing in a safe place.

Such holes in our planned route meant that relaxing would be out of the question. The ice shelf was shattered like a window, hit with a rock, between here and Roosevelt Island. At this snow islet, 79° South, 160° west, the surface rose gradually to 1,200 feet. What causes this 90-mile-long hill was not known. One of our goals was to find out. We arrived there on October 27, eager to set off the dynamite, whose sound waves would reveal what lay underneath. Next day, such blasts marked our first scientific station, the first probings of our traverse.

Named after Theodore Roosevelt, we could boast of being one of very few people who reached its top, and the first to cross the island, from east to west. Its gently slanting sides made ideal slopes for an amateur skier like myself, so I used the historic event accordingly.

Where do the humps come from? Pushed by glaciers some 400 miles to the south, shelf ice, reaching 800 feet below sea-level, smashes into the obstructions rising from the sea floor beneath. The collision creates the confusion of arising cracks and crevasses that makes life so miserable and dangerous for explorers who come near Roosevelt Island.

At first, brutal weather made work on top of the island a torture, or prevented it completely. Blizzard winds flung icy snow so hard, standing upright or seeing more than a few inches ahead became impossible. Nevertheless, we did the work we came to do. When Bert Crary is your boss, no day passes without accomplishing something worthwhile.

After two days, we put away our equipment, dug out our sno-cats, and slipped down the west side of the island that we would remember for the rest of our lives. It was October 30.

Next day, we stopped to set up a second station of seismic and glaciological measurements. While doing the latter, Peter Schoeck fell into a deep crevasse hidden by a thin bridge of snow. He plunged 60 feet and became wedged between two blocks of ice at the bottom. "I can't breathe", he moaned up to us.

Hugh grabbed 120 feet of rope. Red backed Tweety sno-cat toward the open hole, despite the fear of another unseen crevasse in the 50 feet or so between the cat and the chasm. Hugh tied one end of the line to the cat, then lowered himself to Peter. He saw no blood or skin-tearing fractures, but Peter felt pain like he had broken bones.

Dragging an injured man out of a 60 foot hole on a rope might injure him more than the fall. However, Peter had begun to shiver from the cold. It was the best thing we could think of to do. But we quickly ran into problems. The weight of Hugh, holding on to Peter, pulled his body rope so tight it made his breathing difficult. Walt and Bert, holding my ankles, lowered me to Hugh. I helped him slip into a fresh rope. We then pulled him up and out by hand.

Getting Peter out was difficult. He hung under an overhanging lip of the crevasse ledge. His life line had sawed into the projecting ice. We could not reach his shoulders or arms. This meant chopping away the ice hanging over his head. That solution cruelly rained down chunks of ice onto the shivering, moaning, half-delirious Peter. We finally chiseled out a ramp, hauled him to the surface and got him into a heated sno-cat. There, we wrapped him in blankets and a sleeping bag.

Bert and Hugh radioed Little America for an ambulance flight. It was bad weather for flying. Milky clouds reached down to the snow, whitening away the horizon. Landing could involve a field of crevasses of unknown location and depth. If the small aircraft missed this danger, sharp ridges of ground-ice could rip landing skis or tip the plane onto its side.

Near midnight, we heard a single engine Otter overhead. All five of us turned out on skis into a polar night as light as a spring afternoon in New Jersey. We carried bamboo stakes topped with red flags to mark the path we had driven over in sno-cats without falling in. Lieutenant Commander James Waldron, to avoid losing valuable time by making an inspection, came right down on the narrow strip in a hard, bouncing, wing-wobbling landing, which took him only a spit from the rear sno-cat. "Sorry I took so long in getting here," Waldron said unemotionally.

“The weather is socking in at Little America, so I’d like to take off as soon as possible.” He was cool and positive.

We bundled Peter into a wire stretcher. He was delirious by now. A narrow crevasse tripped us stretcher bearers. Peter’s head slammed into the edge, but we got him aboard the airplane. Waldron’s take off took the Otter in a wide circle away from “safe” ground marked by the flags, but we unclenched our fists and emotions as the plane lifted off.

It was the kind of landing and take-off pilots talk about in officer’s clubs for years. I had the luck to meet Jim Waldron twice in succeeding years and to thank him again for his skill, calm, and bravery.

Next day, we heard by radio that Peter suffered from five broken ribs, some cracked vertebrae, and a punctured lung. His broken bones probably came from the fall, but the lung tear may have resulted from our rough rescue effort. Later, Peter was flown to McMurdo Station, then on to a hospital in New Zealand.

A blizzard roared into the area after we got Peter out of the crevasse, making us feel lucky to have acted as fast as possible. Even a pilot as skilled as Waldron could not fly in the driving snow. We did not even try to move the sno-cats in such weather. But this did not mean we stayed home from work. There was still plenty to learn about this broken hell. Besides, Crary wanted to take our minds off Peter, and dynamite for seismic probing had already been planted. No one had ever done seismic studies in this area before so, crevasses or a blizzard notwithstanding, we couldn’t pass the opportunity.

From surface to sky, blowing snow filled the air as I moved-out with a detonator box. I felt the tug of a rope around my waist, held tight by Hugh. If I fell into one of the craters around here like Peter, he would prevent me from hitting the bottom. Hugh boasted the most mountaineering experience in our group, a comforting thought. I found the explosives, dug out their wires and attached them to the so-called “hellbox.” Previous employment in the copper mines of Montana made me feel easy with explosives. Easiness with the weather, however, was something else. The wind, coming all the way from the South Pole, felt like it was flinging all the snow it picked up on the way into my face.

Adding to that misery, the blasts produced a disconcerting hollow sound and some sinking of the surface under my skis. At one point, I feared I was on my way to the end of an undetected hole. I slipped downward all of four inches but that’s a long drop for a stomach

attached to a worried mind. The sinking movement probably came from a compression of loose snow onto more solid layers.

The weather improved on November 4, but the crevasse situation did not. We began moving again. In a matter of minutes, lights on the detector flashed and its alarms rang out. Sixty-foot-deep chasms cut across our path. In less than a half-mile, pans on the detector cat broke through a snow bridge and slid sideways into an open pit. I looked up to heaven, silently protesting that the Lord was not being fair. How much more of this did he expect us to take?

Pontoons on the left side of the cat and runners on the sled it towed tipped into the gorge. It appeared that we ran parallel to the crevasse, which then widened out until it got under detector's left flank. The warning bells rang, but looking ahead revealed no danger. Suddenly tractor and sled headed over into the hole.

We unhooked the sled from Detector. With some creaking, groaning and slipping, we pulled it up straight and onto solid snow with the help of Seismo cat. Next, we unloaded the detection gear and all heavy equipment from the tipped cat. Four-by-12 inch timbers were placed under the tractor's pontoons but we could not pull it out sideways. In the trying, the cat slid around 90 degrees. Its front-end dangled worryingly into the depths, the back was held by Seismo-cat with a strong (we hoped) wire. With the timbers repositioned under the pontoons, the other two cats hauled slowly and steadily. Detector's rear end came up and out vertically then slammed down onto the surface. Her front pontoons moved up on to the wood rails until the cat stood safely out of danger. The rescue took three hours. We celebrated the effort with some bourbon that the Navy provided for such emergencies. The label assured us that no finer bourbon existed, although some drinkers referred to it as "Old Overshoe".

Next morning, Bert promoted me (sort of). With Peter gone, Walter had to do all the glaciological work alone while three of us did seismic labor. It made more sense to split the teams to two and two. I boasted more experience with dynamite than measuring ice crystals, but the split still seemed wise. Two men could dig ten foot holes and record details of the ice layers twice as fast as one. I was now glaciologist, cook, weatherman and assistant mechanic.

While waiting for an airplane to provide a birds-eye view of how best to steer out of this crevassed mess, Walt and I decided to examine the wall of the chasm Detector had slipped into, rather than dig another pit. Hanging in the blue gloom of an ice cavern on a rope, feet pinned to its wall by crampons, can be quite pleasant, once you relax a bit. The sculptured wall protects

against biting wind and a monotony of unchanging whiteness. There's a thrill to dangling in an open zipper of history, reading ice pages that reveal how the Ross Ice Shelf built itself.

Outside, a whiteout turned our part of Antarctica into a blanched gloom. Next day, the air was clearer but not enough for flying or landing in a field as broken up as a shattered windshield. Jim Waldron came out to help us, anyway. Hugh and I swung Detector around the area, looking and listening for crevasses that might wreck his plane. The alarm clanged like a fire engine, but we saw no large splits in the surface.

"I've got new parts for that cranky detector machine and, what's better, the guy who invented it is onboard," Jim advised. "I'm also low on gas, so I'm coming down quickly." It was another Waldron landing – perfect.

John Cooke, the inventor of the crevasse detector, stepped out of the aircraft. He had the bewildered look of a man who, only a few days before, was having Sunday dinner with his family in Texas. Now he stood at the frigid bottom of the world with strange, bearded men warning him to "watch where you walk." Carrying a bag of tools and a box of parts, Cooke speedily went to work. The quicker he repaired the bleeping detector, the sooner he could leave this white hell.

Another passenger arrived with the plane. He was a tall, smiling red-haired, red-bearded, ex-Army lieutenant named Phil Smith, who had seen lots of snow, ice, and crevasses. Last year, (1956), Smith had worked with the Navy to blaze the 600-mile-trail from Little America to the highland site of Byrd Station. It felt good to "howdy" him and shake his big, freckled hand.

Over hot cocoa in the "dining" cat, those of us not helping Cooke went over recon maps drawn by Waldron and his co-pilot William Schick. These pilots had looked into our future. They flew over where we wanted to go. On two flights, they went as low as pilots dared to and drew a map of what lay ahead. Jim was a thin quiet fellow with a slight southern drawl, as reliable and brave as a naval officer could be. It pleased me to hear him say, in his low calm voice, "The best way out is to the southwest." That was the same direction we chose from looking at the orientation of the chasms we had fallen and almost-fallen into.

Cooke and the others entered the cat. "I think the detector will be alright now," the inventor said. I put a cup of cocoa into his shivering hands. Jim stood up. "We should get back," he announced. "I wish you fellows the best of luck". We silently wished Waldron the

same, as he swung the aircraft onto an unknown and dangerous runway. His path was in the wrong wind-direction for a take off, but he got airborne just the same.

Later, Red stepped outside to set up an antenna for radio contact with Little America. This involved stretching a piece of wire from Tweety cat to a ski pole jammed in the snow about 50 feet away and oriented perpendicular to Little America. Upon returning, he remarked that his leg had dropped into a hole up to his knee. Crary suggested that the hole would be a good place to test the repaired detector. The instrument barked in alarm at it. Good!

However, when pushed to what we thought was the other side of a small crack it did not stop clanging. Several of us, tied to each other, probed the neighborhood of the crack. We found nothing but snow with the 10-foot-long probes. Next, we stuck dynamite into the fissure. The blast blew the thick lid off a crater large enough to hold our sno-cats, sleds, all our equipment and us. Its near edge cut the snow only 25 feet from Tweety. Red walked right over it when he rigged the antenna.

Next day, Waldron flew over and landed in the same place. He took off contrary to the wind direction again, with Crary and Smith, to look for a route for us to follow. They came back with encouraging news. We checked what they saw against our guess maps and decided we might get out of the broken predicament in as little as four miles. Cheery news, but we still faced a hazardous unmarked road along which every step could lead straight into a deep hole with a hard bottom.

It was the toughest four miles any of us had ever traveled.

We started armed with long probers and sitting on the wooden booms of the detector. In a few minutes, the warning siren screeched. Poles driven into the snow found no crevasse. Dynamite, our deep sight-seer, showed us a gaping hollow. Was its thick bridge strong enough to support tons of weight? In which direction did it extend?

Smithy dropped a rope into the opening with me on its end – one of the advantages (?) of being the lightest member of our party. The canyon measured about 20 feet wide, broader than a sno-cat is long. I could not see the bottom, as I sketched directions and shapes in my mind. Back on the surface, I diagramed what I saw as a map in the snow. We backed away.

The detector alarm rang again, almost immediately. With a “Smithy rope” for a belt, I started digging a peephole. In a minute, I was shoveling air. Throwing myself sideways, I

grabbed one of the detector booms. “You dug your way through a crevasse bridge,” Smitty observed. “I can’t see a bottom.”

It was a tormenting, frustrating way to travel. Our arms ached from jabbing the probes into hard snow as the alarm called out. Temperature dropped to 10 degrees below zero. Wind stung our faces and spirits.

At another stop, the poles found no resistance about five feet down. Roped up, I walked along the shallow gully. Then the floor dropped. I bounced up and down on the end of a nylon line. I could not see anything below my feet.

Two falls into nowhere sapped my spirit of adventure. Our progress that day measured yards, instead of miles, per hour. We all felt disheartened. Even hot food that night could not restore our mental strength.

Next day, Nov. 8, we faced the same lack of soul and progress. Two overlapping chasms blocked our path. It took four hours to back up and get around them. Then we ran into the same situation again. By 4 p.m. we had moved only 500 feet. We started to quarrel over what to do. Many crevasses boasted bridges thick enough to cross. Also some narrow alleys looked like tempting paths between wider cracks.

“The hell with blasting into every goddam detector signal, then backing away and searching for another path” said some of us. “Let’s just move ahead. If the detector-cat slips in, pull it out with the other cats.”

“Too dangerous”, insisted others. “Not all of the crevasses had bridges strong enough to hold tons of tractors and sleds.” Some of us showed a “I can’t-go-or look”, fatigue and disappointment fed bickering and vexation.

“Crary settled us down with a “move ahead” decision. We would follow our course with minimum blasting, backing, and bickering. He would drive the first shift, moving without probers sitting on the detector bumper and with the door on the driver’s side open.

“I’m gonna move ahead alone”, Crary said, “alarm signals or not. If the cat goes into a hole, I don’t want to drag anyone down with me.”

He moved ahead only about 10 feet. The alarm screamed in protest. Bert stopped. We probed between the detectors, booms and the front of the cat. No crevasse was found. We moved forward another boom length. “We’ll keep movin’ ahead until we run out of alarms or the cat falls in,” Crary announced.

The vehicle slogged ahead a quarter-mile that day, then a half-mile the next day. We cheered our progress. It would take us weeks to advance the four miles or whatever, to less torn – up-ground.

By 6 p.m. on November 8, we had dug or blasted only seven crevasses. One won “the deepest-yet” prize. Hugh and Smithy held my ankles and lowered me into the chasm. I dropped chunks of ice, counting seconds until they crashed into the bottom, invisible in the purple-black shadows below my head. By that measure, the snow canyon dropped 120 feet, about as deep as an 11 story building is high. That day we traveled a half-mile, all of it forward. Morale soared, even my cooking tasted good.

“It’s been rough”, Red commented. “But what the hell can you expect? This is the damn Antarctic! We’re getting’ what we came for. We’re the first jokers in the world to come over this ground, and I think we’re doing a great job.”

The faster progress started to develop into a “it should be an easy drive from here” feeling. That was a mistake. We covered a half-mile during the afternoon of Nov. 9, running parallel to a wide, deep crevasse about ninety feet down and 20 across. That made a hole big enough to swallow a sno-cat. Bert guessed that a trench that size could not allow another one beside it without creating a depression that could easily be seen. Then such a sinker appeared.

Two crevasses were converging and we had moved into the narrowing wedge between them. Three sticks of dynamite opened up a new hole, and I got lowered into it to check its size. I remember feeling like a spider dangling into a basement 98 feet deep. The place was empty and still, with cold indigo gloom. I could not see both walls; they lay too far away.

Bert quickly backed Detector. We could do nothing but turn around and give up a half-mile of ground we had risked our lives to gain. The discouragement felt colder than the sub-freezing temperatures. Depression reached deeper than the crevasses. We had never come upon converging chasms like this before. It was a new thing to worry about. It made us miserable as kids lost in the woods.

That evening, we radioed Little America to advise them we were low on sno-cat gas. They tried to cheer us up but to no avail. Ronald Viets, who replaced Bert as chief scientist at the station, told us that amateur, or “ham” radio operators in the U.S. stood ready to relay any messages we sent to family and friends at home. At first, no one felt like breaking their gloom to call home. Then Walt Boyd said he had a message for his parents.

No one left the sno-cat while he spoke. We listened numbly, then each of us took a turn at the microphone. I tried to avoid sounding depressed, and chose my words carefully to prevent them from being heard as a “last message”.

Chapter 9

Onward But Not Downward

On Nov. 10, we awoke to good weather for continuing our glum sledding over dangerous snow. Cloudless blue dressed the sky. Temperature soared to a sunny 10 degrees without biting wind. We worked our way forward without heavy jackets, ear-hiding hats, or three pairs of gloves.

We found a bridge over a crevasse so thick and icy we cut steps into it with an axe. I walked downward, but soon slipped off the steps into a spacious void. A nylon rope around me caught my fall and left me dangling. I'll never forget the first time this happened to me, but today I passed it off as routine, then called for a lift out of a hole whose bottom I could not see.

By the end of Nov. 10, our team had fallen into, blasted, gone around, and ignored too many chasms, slumps, and cracks to count. But things today were not the usual hard labor, disappointments, and frightening surprises. We became aware of a trend. The crevasses were getting bigger and their bridges thicker.

Pressure patterns had changed. Walt theorized that deeper, wider canyons meant more stable ground. This allowed bridges to grow thicker. But what lay beyond? More less-disturbed snow and ice, or newer fields of treacherous widening crevasses with thin bridges?

Next morning, we found only four holes. Our toughened muscles and trained brains moved us ahead a half-mile. In the afternoon, I slipped a leg into an unseen gap, and Hugh stumbled on an open crack. We covered two miles, about as far as an old lady could walk in a half day. However, that much progress got us to thinking unspeakable things. It was as if premature speculation could jinx our luck.

After dinner, we compared what Navy pilots saw from the air with our calculations of distance and direction we had traveled. The result looked good. Lt. Comdr. Jim Waldron mapped a stretch, four-and-a-half miles long, of torn up ice but no visible crevasses. Bert and I figured we had struggled ahead about 10 miles in the same direction.

Whether we reached safety or not, we had run short of food and fuel. Bert radioed Little America. If we were clear of fissures and caves, a plane could try to land. If not, goods could come down by parachute.

Next day, Nov. 12, we push forward for 25 miles without being stopped by one crevasse. It was like going to heaven without dying, I thought.

At noon, a plane flew over, but the ground did not look heavenly to the pilots. They said a landing appeared too risky. We agreed.

I opened our last box of food for dinner, a meal of only half rations. With gas also short, we decided to do science the next day, the reason for being here in the first place. We measured our position as about 650 miles from the South Pole and 170 miles east of the International Date Line. A good spot, no one had ever measured anything there. We had been on the road 19 days. It seemed a lot longer.

All next day, Nov. 13, we watched the sky. It looked like a sheet of chalk. Visibility was bad and temperature was at five degrees below zero. Not a good day for flying.

That evening, I burned the last of our gas in the cooking stove. Our “official” menus considered balanced diets, vitamins and calories. The hard work and extreme cold demanded more than double what the dieticians calculated for us.

As we cleaned dishes and pots in snow, we heard airplane engines overhead. What a nice dessert.

The single-engine Otter waded with a dipped wing, then veered awkwardly and bounced to a landing. Everyone agreed it was a good comedown. The plane rolled to a stop, its door opened and a tall, wiry man kicked out a wooden box of trail rations.

Ltjg Earl “Chattanooga” Hillis, an affable Tennessean in his early twenties had “wintered over” with us at Little America. We were as glad to see him as the food and fuel barrels he brought with him. His co-pilot, Ron Agyarn, also in his twenties, recently arrived. He seemed to be surprised at his surrounding as if he landed in a movie set. “Has the other aircraft contacted you,” he asked.

The blank expression on our faces answered his question.

“They may be lawst,” Hillis offered. “They’re new arrivals and Marines, you know how them jarheads are.”

A little while later, the Marines found us. They made a landing in the poor visibility and treacherous ice that even Hillis admired.

The planes brought us much needed food and fuel, but saddened us with the loss of two valuable men – Smithy and Red. “We sure enjoyed your company as well as your valuable help

in getting by the crevasses,” Bert told Smithy. “If you want to stay longer, you’re sure welcome.” But Smith bolted toward his sno-cat to grab his belongings.”

The Navy wanted Renback to come back on this next plane. I received that news like a punch on the jaw. Red and I were close friends even before leaving on the traverse. During the last difficult 19 days, we had helped each other a great deal.

Red was not disappointed in the news.

“I’m gonna miss you jokers, but I’m not gonna miss this ice picnic,” he said between pulls on a can of beer.

“Damn good thing nothing happened to you, Red,” said Bert. “If you got hurt or worse, I’d be answering letters from the Navy for the rest of my life.”

“When I’m back at Little America, I’ll be thinking about you poor bastards,” Red added. “The first thing I’m gonna do when I get back is jump into a hot shower and stay there until the guy shovelin’ snow into the melter for water goes into fits. Then I’m gonna get me five cases of beer. I ain’t gonna move off my ass until they’re all drunk, except to drift into the mess hall for a big steak.”

Red came to the plane, a tool box in one hand, duffle bag in the other. With much hand shaking and back pounding, Red climbed into the high door of the plane. “You’d think you guys would at least have a damn ladder so a guy can get aboard without rupturing himself,” he growled.

The Navy mechanic, a corpulent fellow with a rotund face ornamented with a cigar butt, appeared in the doorway. “Terribly sorry sir,” he growled back. “You missed the ‘Red Carpet’ flight that has a stairway with wheels for you old folks.”

“Is that the stewardess,” Walt asked sarcastically.

“What time are you guys serving the champagne?” Red asked.

“Son, you do have dreadful poor luck,” the mechanic replied. “We ran out of champagne on the way out. We don’t even have seats. Just go up-forward and wedge yo’ butt between the side of the plane and the emergency gas tank.”

The door clanked shut on Red’s goodbye. The engines roared the plane ahead, and it disappeared in its own blizzard of blowing snow.

“I’m sure gonna miss him,” I thought.

Next day, Nov. 15, we turned the sno-cats due west and headed for McMurdo Sound, the Navy's main station in Antarctica, located 330 miles away. We also were about 660 miles from the South Pole and just west of Roosevelt Island. The sky started out clear, but a thin layer of low-cloud cover, thickened, then seemed to droop to the ground from its own weight. The clouds and snow combined into a complete whiteout. You couldn't tell the snow from the sky. Somewhere, the sun continued its 24-hour-a-day summer shine.

During this white night, Little America radioed to tell us an airplane was on the way. We assumed the featureless weather would turn it back. But pilots, Earl Hillis and Harvey Speed – two of the best – decided to try a comedown even if the landing area looked like an enamel pot full of milk.

“Come in low and kick the fuel and other cargo out the door,” Crary advised.

“Five-hundred pounds of the cargo is in people form,” Speed noted. “I don't think they'd appreciate that kind of treatment.”

The pilots could not see our sno-cats. Speed reasoned that, “If I came any lower, I might as well land. Besides, I used so much trying to find you in this milk, I don't have enough gas to fly back loaded the way I am.”

We could not see the large two-engine R4D aircraft, but we heard Speed cut the engines for a landing. Then they roared aloud again as the propellers were reversed for braking.

“Goddamn glad he made it!” Bert commented. “We don't have any fire-fighting equipment, or medical supplies past band-aids and some iodine.” Even if we had had such stuff, no one knew how to use it.

The cargo included a reporter, Tom Morgan, and photographer, John Vachon, from Look magazine. “You don't have to look pretty,” Hillis assured us. “Them new people are too scared to take any pictures.”

Also aboard was Frank Layman, a civilian to replace Red. Hillis described him as, “kind of oldish and kinda quiet.” He looked like a distinguished businessman to me, with close-cropped gray hair and rimless glasses. At 52-years-old, he was almost twice my 27 years and older than most of the people who wintered-over on this harsh continent.

I returned to the sno-cat dining room and kitchen where eight of us gathered around a table crowded at six. Our visitors from Look magazine, by a stroke of good luck, carried a bottle of scotch with them. The whiskey proved to be an excellent lubricant for an elbow-to-elbow get

acquainted session. The Lookers neither prodded us with questions nor asked us to pose for photographs, a consideration much appreciated after a long, tough day. As far as trying to land in a dangerous whiteout in a plane short of gas, they admitted being too ignorant of what was happening to be frightened.

Frank Layman introduced himself as “your new mechanic.” He quietly sipped his scotch and occasionally smiled approval over a situation that would scare a less tougher man into shock.

After the social hour, I explained that he would be bunking on the floor of the sno-cat between the stove and a radio in a used sleeping bag.

“Suits me fine,” he said.

At 5:30 a.m., Nov. 16, I arose and went outside to take a weather observation. Our world looked all white from sky to horizons. A 20-mile-per-hour wind and a temperature of 10-degrees-below-zero made it a wicked way to start a day.

You can’t get up and out of a sno-cat without waking your floor-bunk mate. Frank, without any instructions, started the stove and began melting snow for breakfast water. Eight gallons of snow yields about a pint-and-a-half of water. Breakfast that morning was a typical meal of canned sausage, powdered eggs, and coffee.

Tom and John housed themselves in a two-man mountain tent, set up close to a sno-cat. Despite \$400 spent on cold-weather clothing, Tom could not get warm, even in the crowded, stove-heated “Kitchen.” His feet suffered most.

After breakfast, which Tom pushed away, I took Frank on a tour of the sno-cats, pointing out all of the peculiarities I had learned about during the nine months of working in, under, and around three of them. He seemed unflustered about caring for the vehicles. Still, I thought about the absence of parts and tool stores, as well as heated garages. All of the work had to be done outside, mostly in subzero cold, sometimes in biting wind and flying snow. I was 27 years old and such labor punished me. Frank was 52.

All that afternoon, he lay under the detector-cat in the mean wind and below-zero cold, his arms over his head, lubricating joints, some of them frozen shut with ice.

“Tough job, eh?” I asked at dinner time.

“Yup,” he answered. “Can I help you make supper.

Somehow, cooking for seven seemed easier that evening.

Taking advantage of increased kitchen-service, after the meal, I slid away on skis, a treasured nightly outing curtailed by crevasse dodging. For sure, the danger of crevasses never goes away, but the relative safety lifted the burden of fear. It was a light-hearted romp. I felt more relaxed than I had in weeks.

Nov. 17th started at 20-degrees below zero. We worked on getting the right number of sock-pairs and the best spare-pair of boots to keep Tom Morgan's feet warm. We studied the layers of ice under us to learn about the area around us, much like botanists probe tree trunks. Echoes from dynamite revealed the depths of ice and seawater below us. In the afternoon, Detector and Seismo sno-cats moved ahead. Frank and I stayed behind to check some instruments for weather and altitude. When we tried to start Tweety to catch up with the others, we found that our batteries were dead. We could not even radio the others.

“Whatta we do now?” Frank asked.

“Sit and wait until Bert and the others think we fell into a crevasse, and they come back to rescue us,” I answered.

A plane flew over us as we waited. It went to the other vehicles, then came back to us about an hour later. The crew tried to give us some fuel, but hoses on the plane were frozen and the fuel pump did not work.

By 6 p.m. Hugh arrived in Seismo. That cat's batteries gave us a start, and, in another half-hour, we were together again. Plus one more.

The Navy had dropped off Ed Robinson, a University of Michigan seismologist in his early twenties. A quiet, amiable fellow, he would help Bert and Hugh with hole digging, blasting, and recording echoes of what lay below us. I could replace Peter Schoeck, helping Walt to dig pits into ice and making tedious measurements of crystal sizes.

Ed was not all the Navy had left for us, who they called “those poor bastards out there.” The cooks filled all available space in the plane with fried chicken. Cook Richard “Ski” Barasiak added a case of anchovies and a big pan of peach cobbler, which crewman Daniel McCrea kept protected on his lap during the jolting ride and bumpy landing. McCrea and shipmate Robert Hackett also had raided Navy stores for canned strawberries, cranberries and mixed nuts. Such “goodies” went beyond treats, since the nutritionists who made out our trial menus had missed our needs by half.

Also very welcome were visitors' gifts of brandy, bourbon, and other stimulants. As cook, I found that such beverages made tasty "sauces" or "gravies" for drab powdered eggs, frozen meat bars, and "what-the-hell-is-it" foods. Bert officially declared the feast a celebration. We had been out of continual crevasse-danger for about five days and on the road for three weeks. It was time to party hearty.

But Bert also warned that the present was not the future. We still had more than 1,000 miles to go. It was more likely than not that those miles meant more crevasses, whiteouts, and blizzards – even dangers we had not yet thought about. "We had completed only four scientific measurement stations," Bert reminded us. "I've planned 40."

Still, crawling into my sleeping bag under the "dining room" table that sunlit night, full of food and cheer, I felt no doubts about making those 40 stations.

Robinson moved into Seismo with Hugh. Bert shared Detector with Walt. Ed did not like sleeping among shelves and equipment. "Real" explorers should repose in tents, like Tom and John. They had no room for a third body. We carried a six-man tent with us, but, on shorter traverses it was decided that it took too much effort to erect then take down. Ed insisted it would not be too much trouble for a "real" explorer. Hugh and I, against our better judgment, helped him rig it up. Next morning, we could not tell who shivered more, Ed or Tom. After one cold night, Ed chose the floor of a sno-cat.

Next day, a gentle breeze swept the clouds away, the barometer soared, and mid-afternoon temperature rose to a "balmy" eight-degrees-above-zero. Tom wrote non-stop. Ed romped like a playful polar-bear-cub, while setting out the line of phones to receive return calls from dynamite echoes from the bottom of the ice shelf and the Ross Sea. Frank whistled tunes while lying under a sno-cat greasing its moving parts. Soulful Bert was all smiles. In the snow pit, trying to read the history of ice layers, Walt worked in a heavy undershirt, while I frequently raised my face to catch the sun's warm caresses. Even John Vachon, dormant in cloudy cold, blossomed into a busy picture taker. He shot rolls and rolls of film.

In the evening, however, Harvey Speed flew over and dropped chilling news. He spotted crevasse-mutilated ground between us and McMurdo Sound, ahead of us. Next day, Nov. 19, we traveled 28 miles under a clouding sky that maliciously, or so it seemed, hinted warning sights of broken snow. Brows furrowed and stomachs tightened. As we stopped for dinner, Tom saw a wide, shallow trench.

After the meal, Bert and I decided to ski over for a closer look. Tom, not an experienced skier, asked to join us because it looked “pretty easy”. At least the falling part turned out easy. He fell a half-dozen times before we reached the snow valley, then he entered it feet first. The bottom seemed encouragingly stable. Bert and I guessed the valley floor to be a thick bridge or an old opening now filled with snow. “It looks like a big dent,” Tom summarized. The remark led us to christen the big ditch, “Morgan’s Bottom.”

By November 24th, we had safely bypassed the “Bottom,” so we prepared ourselves for a much better-known travelers honor. The International Date Line lay only a few miles ahead. For most of its imaginary extent, from Pole to Pole, the Line follows the 180th degree-of-longitude, just as the Greenwich Meridian splits the other side of the world at zero-degrees. Seamen honor themselves when they sail across the International Date Line by being initiated into the “Order of the Golden Dragon”, just as those salts who cross the equator, at zero degrees of latitude become admitted into the “Ancient Order of the Deep”. Those of us who sailed a Navy ship from San Diego to New Zealand won a double nautical set of such honors. Going south from the U.S. takes you into the “Domain of Neptune Rex” at the equator; going west you reach the “Domain of the Golden Dragon”.

But driving across the Line, rather than sailing or flying, won us another type of honor. When the 180th meridian cuts through land as it does briefly in small corners of Siberia, the Aleutian Islands, and the islands of Fiji, governments jiggle the Date Line so it stays at Sea. This prevents a situation wherein people living across the same street might live in different days at the same time. Traveling from west to east, say from Siberia to Alaska, a person “loses” a day. Six p.m. on Saturday becomes six p.m. on Friday, for instance. That’s because the 24-hours it takes for Earth to orbit the Sun must begin and end somewhere. Passing over the Date Line on Nov. 25, in an east to west direction brought us to Nov.26 in seconds.

Intrepid explorers who had journeyed to the South Pole on foot did not cross the Line. They moved down a narrow swath of longitude. British adventurers trudged along at about 170-degrees-east-longitude. Roald Amundsen and his team moved along a path near 160-degrees-west-longitude when they became the first to reach the end of Earth’s surface on December 15, 1911. Both groups only reached the International Date Line when they stood at the Pole. Besides, they sledged or walked across the Line, not drove across.

Ours was surely a crossing to be ignored by history, but not by us. This not-so-famous occasion must be celebrated, I insisted. Having recognized the non-importance of entering a new domain of explorer-travelers, I was unanimously appointed “royal instigator of appropriate rituals.” On Nov. 24 or 25, while Frank drove our sno-cat, I drew-up the proper documents. The new province would be christened “the Domain of the Golden Ice Worm,” in honor of that exalted and elusive annelid who dwells in the Antarctic ice, subsisting on the tails of his companions. That evening, I read the esteemed charter to the first humans to drive across the International Date Line. It was soberly signed by the Great White Father, Bert Crary, Royal Keeper of Seismological Keys; Sir Hugh “Blackie” Bennett, Exalted Digger of Snow; Sir Walter “Waldo” Boyd, Royal Doctor of Most-Royal Sno-Cats; Frank Layman, “Official Tent Minister,” Sir Ed Robinson. Of course, the icy royalty also included “Royal Scribe and Bottom Skier,” Tom Morgan, and “Royal Artist and Cinematographer,” John Vachon.

The document was addressed to “all ice worms, Eskimos, sourdoughs, polar bears, penguins, skua birds, swabis, scientists and other creatures of the ice. It announced that we drove our sno-cats across the imaginary boundary at 79-degrees South latitude, or 660 miles from the Pole. It noted that we braved the hardships of inclement weather, irregular mail, and frozen beer to become the first to drive into “the most revered domain of his royal excellent highness, *Platyhelminthes aurum*, empirical undisputed monarch of the Great White Wastes. It acknowledged that we had “forsaken warmth and female companionship, ate the sacred nauseating feasts of trail rations, lived in total winter darkness and total summer sunlight, shoveled snow at 80-degrees-below-zero, and defecated outdoors in blizzards.” Finally, it granted holders of the said certificates, “freedom to fall into all crevasses within the Royal Domain of the Golden Ice Worm.”

We then toasted our royal benefactor with thawed beer and medicinal brandy. Before I could prepare a fitting feast, the sound of an airplane landing tumbled us outside. Instead of interrupting our festival, the aircraft added to it by bringing in mail. Walt received a letter from his draft board. “I’m afraid I am late for a physical exam.” He moaned. The plane carried men who had “wintered-over,” and now were going home after a year or more at Little America. “So long, you poor bastards,” they shouted from the door. “Hey Bill, I left a half-case of beer under my bunk,” said one. “If there’s any left when you get back, you can have it.”

They would fly to McMurdo, then New Zealand. Tom and John were leaving with them. The air filled with a blizzard of shouts, promises, telephone numbers, wives and relatives names, invitations, handshakes, and “hope-to-see-you-agains.”

We returned to our Golden-Ice-Worm celebration and to reading mail. We didn’t feel like “poor bastards” that darkless night.

On Thanksgiving Eve, we moved close to an area where plane crews reported seeing crevasses. “Damn it,” described our feelings. In addition, milky clouds had come down to meet the snow. You could not make out where the surface ended and the clouds began. It was a white nothing meeting a white everything.

“Good God,” Frank exclaimed. “I’ve never seen anything like it!”

“There is nothing like it,” I replied.

“We ought to continue moving” Bert decided. “There hasn’t been a crevasse to speak of in 16 days now. I think we have as good a chance of missing those ahead as running into ‘em. The detector seems to be running good.”

Two demons haunted our trails. One, we always entered a broken area in a blinding whiteout. Two, whatever equipment we pinned our hopes and safety on, let us down. Within an hour, the detector started clanging maddeningly. A quick check revealed it was due to an electronic malfunction, not lurking danger. But in order to find the latter, we had to listen to the former.

I was driving the detector cat. The shrill blare affected me like spikes sticking into an exposed nerve in my brain. In the confusing whiteness, I slowed-up for things not there or speeded-up until the rock-hard sastrugi ice jolted and slammed the sno-cat. Hell, I thought, is not burning red heat, its screeching cold white.

The screaming did not stop until late afternoon. Hugh kicked the device savagely. “What’s wrong now, you moody son-of-a-bitch!” he asked the machine.

When the screeching stopped, we guessed at the reason for deafening silence. “If the alarms did not signal crevasse, maybe the quiet does,” Walt offered.

Then came the sickening feeling of moving downhill. With the crevasse alarm so malcontent and a whiteout blinding us, it would be foolish to keep going. Never-the-less, we kept moving ahead. The alternative of plunging downhill into a white-nothing was sitting stupefied in that white nothing. We had to continue on – right or wrong.

The depression was tediously wide. It took half-a-mental-eternity to reach the other side. Our nervous energies drained, we chose to make camp, rather than risk finding another depression. We had crossed 29 miles of empty whiteness and enjoyed the feeling of making a right decision.

After dinner, Ed, Hugh, and Walt fell into the laborious task of hand-drilling a 33-foot-deep-hole. We would lower thermometers and dynamite into it, then examine the ice-layers it crossed to learn about what was under us now and in the past.

Drilling and digging continued next morning---Thanksgiving Day. Raw winds stirred-up the snow. Temperature sank to 10 degrees below zero, but the whiteout had lifted. I gazed mournfully at the monotonous white flakes, realizing that I had seen no natural colors for eleven months. I thought about the changing leaves back home in New York.

Dinner was nothing to be thankful for. Powdered potato soup and canned turkey would bring back painful memories of home cooking. Instructions on the cans promised that the turkey could be cooked in the can and eaten directly from it. Such preparation proved ideal for heating cans and a few inches of meat near the metal. However, the inner turkey remained solidly frozen.

I dosed the soup powder with dehydrated onions, then heated the mixture in the boiling turkey water. The result was hot but far from tasty. Dinner followed the mood of the day – miserable.

Ed saved the day. After forcing down the cold turkey and scalding soup, he hurried to his home sno-cat, then returned with a bottle of scotch. The golden liquid heated the turkey in our stomachs, flavored the soup, and melted the misery in our minds.

Chapter 10

We Reach Terror and Hades Doors

The day after Thanksgiving the wind left the snow alone. Sun glared at millions of ice crystals which returned its stare with sparkling winks. The quiet air warmed to one-degree-above-zero. No depressions or wide holes loomed in sight. It was a good day to be on the move again.

At four o'clock that afternoon, a strange looking cloud blotted the turquoise brilliance of the western horizon ahead. Or was it a cloud? Such corpulent white puffs are gregarious; they like to gather in groups. And they keep moving, wandering to some secret destinations. This hulking loner required a closer look. I climbed out of the roof hatch with binoculars. The same feeling, that grips sailors when they spy land after months at sea, grabbed me. I saw a mountain top, no doubt about it. And only one mountain in the world looked like that one – Mount Terror, an extinct volcano, 10,755 feet high at the western edge of the Ross Ice Shelf. What a sight!

Then the others saw Terror. Their sno-cats sped toward it. Tweety slammed recklessly over the rock-hard sastrugi. The rocking and jolting shook our cooking pots and pans to the floor where they clattered in a metal melody. The rush awarded us. Mount Erebus, Terror's 13,200-foot companion, also broke into view. Rising behind Terror (when you look from the east), Erebus is an active volcano, the only one on the continent. If you get close enough, you can see white smoke rising from its snowy peak. Climb-up a way and you smell sulphur. Looking at those massifs after 11 long months of nothing but flat stretches of snow and ice, I imagined that I felt some of the same wonder as Captain James Clark Ross and his crew when they became the first humans to see those icy volcanoes, in 1840.

I thought about our own exploits. We were the first to closely explore the 500-mile north side of the Ross Ice Shelf. Then we would drive south about 300 miles to where the shelf meets the Queen Maud Mountains. Glacial paths lead through these barriers to the plateau topped by the South Pole, where the ice is piled about 9,000-feet-thick. At the mountains, we'll wheel

eastward, again crossing the Ross Ice Shelf on a route never traveled before. Crossing in front of the mountains, then sno-cating back to Little America, covers another 500 miles. The entire traverse takes about 1,500 miles.

But first we had to reach the naval station at McMurdo Sound at the western edge of the ice shelf. At McMurdo, “first thing I’m gonna do is find a nice soft bed” Walt announced. “I’m gonna stretch out full-length, not twist myself into a sleeping-bag wrapped around a crevasse detector and other equipment.”

I looked toward eating food cooked by someone else. Bert dreamed about a comfortable chair. “It don’t have to be an easy chair or a rockin’ chair,” he elaborated. “I just want to lean back without slammin’ my head on some part of a sno-cat, or stretch my legs without hittin’ someone else’s legs.

“I love ya all,” Hugh added. “But it’ll be good to see new faces, hear strange voices, read news, and enjoy a variety of conversations.”

“I’ve got a stack of letters to mail,” Ed told us. “And I’m gonna try to get a Ham-radio telephone-call to home!”

Frank looked forward to “a heated garage and some high-class tools,” to do work difficult or impossible on the trail.

With mountains in sight, the aspect of travel changed dramatically. We no longer squinted across the flat, white nothing, searching for some sign of position or direction. The high tops of Erebus and Terror became “stars” to steer by in the unending daylight. Their growing bulks eased the need for constant vigilance and frequent compass checks. The sky stayed clear. Stomach-turning depressions and sno-cat-swallowing crevasses remained out of our way. It felt pleasant to bounce across hard sastrugi, watch the mountains and day-dream about a better future.

One Dec. 1, while still too far away to see Erebus and Terror clearly, nature bent sunlight through cold and warm layers of air in a way that appeared to raise the massifs above the horizon. The huge mirage seemed to elevate the mountains and make them shimmer in the clear air. What a sight it was!

Erebus, in Greek mythology, is a dark and gloomy place through which the doomed pass on their way to Hell. That day, the brightly lit volcano promised Heaven – a place of tasty food, warmth, and good companionship, where weary travelers could stretch out and work was easy.

That evening, we made our first radio contact with the “Airdales” at McMurdo, the Air Operations pilots who would fly to us with fuel, food and other “goodies” never listed on official cargo manifests. “We want to transfer our base of air support from Little America to McMurdo,” we told them. “Can you handle us?”

“We’ve been expecting you,” came the welcome answer. “Do you request a supply flight, or will you come and get it?” Our sno-cats laid 100 miles east and south of them and fuel was low, so we requested a delivery.

“Can do!” They cheerily replied. “Send location and weather info.”

Next, we contacted IGY scientists working at a New Zealand-run base about five miles from the McMurdo airport. The “Kiwis,” as New Z’s are known, named their facility “Scott Base,” in honor of Robert Falcon Scott, leader of the second expedition to reach the South Pole.

Scientists at Scott Base studied and measured snow, ice, sea water, air, weather, gravity and magnetic fields on the western side of the Ross Ice Shelf. Our colleagues and we did the same on the east side. The traverse work we did would connect the two efforts. Each reading of elevation, gravity and magnetism was based on the one before it. Any errors caused by the jarring motions of instruments riding in our sno-cats, extreme weather changes, or rough treatment on the trail would be accumulative. It was imperative to compare our instruments and readings with those made at Scott Base, to uncover any errors and to close gaps between east and west.

“Cheerio, there,” said the radio-voice of Dr. Trevor Hatherton, chief scientist of Scott Base. “I understand that you boys have had a rough time of it,” he continued. “Well, come-on over. We’ll fix you up with a good meal and give you some Moose’s Milk (whiskey),”

I poked Hugh’s arm with my elbow. “I can taste the New Zealand beer from here,” I said. “And maybe something stronger.” But it was not to be.

“Our traverse is well behind schedule,” Bert told him. “But I feel we must take time to run our survey right to your doorstep.”

“No need,” Hatherton replied. “We’ve run our survey out to where you are now. You can come straight in without another reading.”

“Little point in our coming at all if that’s the case,” Bert shot-back. “You could fly out, or we could fly in, for instrument and data checks”.

The sno-cat became as silent as a pastor with empty collection boxes on Christmas Day. No vacation? No easy-chairs, or beds to stretch-out on? No fresh meat or fruit, no Moose's Milk? It would be hard to sleep on that.

On Dec. 3, we talked to Hatherton again. Bert gave him our position, then asked, "what's ahead?"

"Nothing but goddamn crevasses," was the discouraging answer. "If you come in on a straight line to Scott Base, you're liable to get into trouble."

Five pairs of eyes bored into Bert's back. He felt that. He half-turned as he spoke into the radio, addressing us at the same time as he talked to Hatherton. "Trev, it'll take three days to go in and three to come out, plus the time spent at Scott. We're behind schedule. I can't afford the time."

"That's a pity, Bert," Hatherton replied. "We'll fly out a gravity meter and bring our other data out in a vehicle. Cheerio!"

Bert turned to us. His dark, soulful-eyes hung with deep crescents of flesh. His hair was disheveled, his beard matted and unkempt. He looked very weary.

"What's for supper, Bill?" He asked quietly.

Next day, Dec. 4, we worked scientific station No. 12. Snow started rather gently, then increased to a face-stinging blowout. Sky and horizon vanished into a white covering. Somewhere above, we heard airplane engines. A question came into the radio. "Nash 02. Hello. Where are you?"

"Do you know where you are?" Bert asked back.

"No," Navy 274 admitted. The pilots could not even find us on radar.

"Circle in diminishing orbits," Crary suggested. "We'll try to guide you in by the sound of your engines."

"How high is the drifting snow," the pilot wanted to know. "We can stand on our cat's roof without seeing over it," Bert advised.

The pilot noted that "it's perfectly clear up here at only 200 feet."

"Whoa!" Bert came back. "From the sound of your engines, you're right over us."

"Roger! We're coming down to 100-feet."

After a long pause, the pilot complained, "Christ, it's dirty down here. I can't even see my wing tips. I'm afraid the snow will come-up and hit me in the face."

We could not see his plane. “Give it up, Navy; it’s too risky.” Bert warned.

“Roger,” the pilot agreed. “We’re going upstairs and head for home.”

“Thanks for trying,” we said.

“We’ll be back tomorrow,” Navy promised.

We thought the weather would clear next day, but the snow gods pulled their white sheets over us again. The Navy radioed us that they could not even get off the ground. Bert decided to push ahead.

“Ahead” meant a left turn to the south. We tied our measurements of gravity, magnetics, ice age, water depths, and other little-known science to readings made by the New Zealanders. It was time to turn toward the hulking Queen Maud Mountains. Other explorers had trod this path to reach the South Pole. They experienced success, disappointment, glory, suffering and death. Now, we would study tiny grains of ice, depths of snow and underseas, gravity, magnetism, weather, and whatever else nature put down.

Detector was the first sno-cat to turn toward the southern mountains. As we watched the vehicle move in the soupy whiteness, it seemed as if we were above it, watching her slink slowly into a sea of chalk. Seimo, carrying Ed and Hugh, followed. Tweety, with Frank and I, brought up the rear.

Later, Ed surprised me by turning off to the right. Seismo stopped, and he jumped out. He searched the blank snow fugitively. I drove Tweety up along side him.

“Where the hell are you goin’? I asked sharply.

“The white got to me,” he answered. “I began to just stare into it. When I tried to see the tracks made by Detector, I couldn’t find them.

Detector carried the only compass. We needed to find its trail in the snow to find the cat.

“I’m okay now, Bill,” Ed said as he climbed back into Seismo. Then he headed north, the direction from which we had come.

I jammed Tweety into high gear and cut Seismo off recklessly. Ed jumped out. He began wandering in the whiteness. I grabbed his collar. “If you drive in circles, you’re damned sure gonna walk in circles,” I chided.

Hustling him back into Seismo, I ordered, “Follow me!” Turning Tweety until I believed the cat was perpendicular to Detector’s trail, I drove for an interception. That worked. I put Tweety’s left pontoons into the imprints made by Detector’s right pontoons. Seismo followed. I

had to hang out an open window to see the tracks in the chalky world. That cost me a frost-bitten ear.

We joined Detector again. But in the nutty world of a whiteout, we soon found ourselves separated from the other vehicles. I looked out the window and thought I saw a mountain bluff that was 35 miles to the west, according to my map. I told Frank the mountain had suddenly appeared on what I thought was the horizon. "Geezus!" He exclaimed. "We must be lost."

"Either we're lost alone, or the others are lost and we're following them," I observed.

I slowed the sno-cat. The mountain began to change. "That's not a mountain" I decided. "It's a goddamn chunk of dark metal, a gas drum or something Seismo must have dropped."

"If I look at it with a nearby gas-drum on my mind, I see a gas-drum," Frank concluded. "If I think of it as a distant mountain, my mind tells my eyes it's a mountain. God-damnest thing I ever saw."

Suddenly, I had another thought. "Maybe it's a crevasse hole," I gasped. I slammed on the brakes. "Detector's and Seismo's tracks lead right to it."

I quickly tied a coil of rope around my waist, and headed for the "hole" with Frank holding the other end. The closer I got to what I guessed might be an opening, the more foolish I felt.

The confusion of a whiteout had turned a three-foot-long piece of metal rod, which fell off Seismo's sled, into a mountain, then a mighty hole. When we caught-up to the other cats, Frank and I did not say much about our hallucination. The wind had picked-up, and by seven p.m. it was driving snowflakes at 40 miles-an-hour. We stopped trying to move ahead in the blinding whiteness. Bert and I naviguessed that we had blundered about 24-miles southward.

The wind left early next day. The horizon opened up, a welcome blue ring separating the sky from the ground. The weather became good enough for flying. The Navy agreed. We heard the welcome sound of engines on an airplane named "Charlene." A pilot, I knew only as "Lieutenant Epperly," laid Charlene down on the ice like it was a smooth runway in a big New-York-City-airport.

In her voluptuous body, she carried 50 gallons of sno-cat fuel, 50 gallons of white cooking gas, two cases of trail rations, and some booze from Look-writer Tom Morgan and photographer John Vacon, now in New Zealand.

“A good load, but lacking the “goodies” which Little America’s airmen knew pumped up our morals: fried chicken, soft bread, baked peach-or-apple-cobbler. How to convey such a message to airplane pilots and crews already risking their lives for us, without sounding like unappreciative and greedy “sand crabs”?

I made a pot of coffee for the plane crew, offering the pilot, Robert Epperly, a biscuit, to go with it. He bit into the hard, tasteless chunk, then frowned. “These are part of your trail rations?” He asked with obvious amazement.

“Yeah, Lieutenant. It’s our substitute for bread,” I answered.

“They’re not a very good substitute,” he noted.

“No,” I agreed.

Lieutenant Epperly thought about that for a while, then he said, “Say, maybe before I come out next time, I could stop in the galley and pick up a few fresh-baked loaves.”

“Why that’s a fine suggestion,” I assured him.

“Is there anything else we could bring? He added.

“Meat!” said Frank. “Our canned pork chops and steaks are tasteless.”

“What are they like?” Ep was new to such food.

“They look like round cardboard disks,” I explained. “We soak ‘em in melted snow-water for an hour, then heat ‘em in a frying pan.”

“What’s the taste like?” Ep asked.

“Like round cardboard disks,” Frank noted.

Bert entered the snow-cat, and added, “We need bread the most. Bread and maybe some cake or pie to give us more sugar in our diets.

Ep drained his coffee cup. He stood up as straight as the low roof of the snow-cat allowed, then said, “We’ll do what we can.”

That was good enough for us.

After the plane left, our attention switched to the small wooden crate Tom and John had sent to us by the “Ep express”. We had not received mail or any food “goodies,” so it was the high lift of the dinner we sat down to after completing our scientific work. Martini cocktails and Drambuie cordials added a holiday touch to hard biscuits and dehydrated steaks. Ever thoughtful, our journalist visitors even provided cocktail olives and onions.

On Dec. 8, about 600 miles from the South Pole, we enjoyed the company of two other visitors, Trevor Hatherton and Dr. Harry Wexler, chief scientist of the U.S. IGY Antarctic Program. A distinguished gentleman in his late fifties, Wexler quickly learned he was not a tourist on vacation. When Bert told his boss we needed help with some “tricky glaciological problems,” the learned and portly leader manned a shovel to help Walt and I explore the depths of ice around us.

Hatherton “hustled jugs,” planting arrays of microphones in the snow to receive the sounds of dynamite echoes reflected and refracted from layers of ice and water below us, much further down than the shovels could reach.

Trev brought us up-to-date on the British Commonwealth Trans-Antarctic Expedition, the first successful attempt to cross the continent by land. Sir Vivian “Bunny” Fuchs, a British geologist, and his party had left the Weddell Sea coast, south of the Atlantic Ocean. After some bad experiences, with crevases, they completed 300 miles of a 750-mile trek to the Pole. Sir Edmund Hillary, who was one of the first two men to climb to the 29,028-foot summit of Mount Everest, just four years before, was now on the way from Scott Base on the Ross Ice Shelf to meet Fuchs’ team.

On Dec. 8, Hillary’s group was about 100 miles ahead of us, according to Hatherton. They had made their way up the rugged Shackleton Glacier to the plateau where the Pole sits. His crew laid out caches of food and fuel for the two groups to use on their journey to the Ross Sea. The east-to-west crossing would cover 2,158 miles in 99 days, ending in 1958.

Next day, 12/9/1957, we enjoyed a clear view of the Queen Maud Mountains, cut by glaciers and rising to more than 14,000-feet-high. No crevasses ripped or sank the surface, and sastrugi ridges lay low-down. Our sno-cats covered 39 miles, breaking all records for one-day’s travel.

Erebus and Terror lay behind us, to the north, catching the rays of a 24-hour sun. Those beams caught the top of Terror, burning it with an icy fire. Cold flames seemed to race down the mountains as the sun moved westward. A wide cloud band at the feet of the volcanic massifs glowed orange-red. As the sun creped away, the hot colors cooled to pinks and lavenders. The fire on Erebus’ crown went out. The orange cloud-belt at her waist thickened and became streaked with blue. Then the solar fires died out, leaving ashes of blue scattered over the snowy mountains. It was our last good view of those wondrous guide posts.

Next day, Dec. 10, as we worked our 15th science station, the Navy treated us to another visit. An Otter plane came down with a cargo that included mail, fresh bread, and cherry pie. We also received a surprise carried by one of Trev's colleagues, low temperature oil of some kind.

Hatherton was as surprised as us. "What the bloody 'ell did you bring this crap out 'ere for?" He wanted to know.

"In your radio message you said..." the carrier began.

"I know what I said, but you didn't 'ave to take me at my sacred work," Trev shot back.

"I thought..."

"I thought any bloody idiot would know I was trying to ask for a little rum without telling the whole U.S.Navy and eleven bloody nations (via radio) about it."

Dinner was rumless, but we still had enough from Look magazine's gift package for martinis all around. After food, we settled down to a favorite pastime---story telling. Hatherton, reared and educated in England, traveled the world prospecting for oil before "settling" in New Zealand. Cray told tales of hunting for oil in the jungles of Columbia, and for knowledge while living on an iceberg in the Arctic Ocean. Hugh searched for what could be learned about the history of the world by exploring the Greenland Ice Cap. Walter participated in two scientific voyages to the Arctic. Frank told stories about good days in Guam and bad ones in Arabia. Ed told about "sitting on an oil well" in Venezuela hoping for a rich result. I contributed tales from traveling the world in leaky tramp-freighters, and mining silver and copper 5,000 feet below the streets of Butte, Montana.

The flight on which the low-temperature oil and cherry pie arrived took away Wexler and Hugh Bennett. Hugh complained of a sore throat and unstoppable coughing. Bert decided the medics at McMurdo should check him out.

A screaming blizzard, featuring whipping snow driven horizontally by 28mile-per-hour winds, made our science station a miserable place to work on Dec. 11. But we did what we were paid to do and moved on south and east next day. The snow under our tractor-cats and sleds made movement hard, bumpy, and jerky. Frozen ridges of sastrugi, one to three inches high, banged and lurched us uncomfortably.

The abuse caused the equivalent of a tie-rod to come loose on Detector. The unusual structure of sno-cats made it difficult for Frank and I to replace the broken rod. We had to

remove our gloves in the below-freezing air to take out small cotter pins and an awkwardly-placed nut. Wind blew snow under the cat and into our faces. It was the first time Frank and I became annoyed enough to curse at each other.

The repair cost all of us two hours of travel time.

We covered about 30 miles that day – Dec. 12. We might have gone 40 without the stop to repair Detector. The bouncing, breaking ride took us to station 16, at 81-degrees south-latitude and about 171-degrees east-longitude, approximately 540 miles from the Pole and 27 miles from the International Date Line.

The following day, Friday 13, was a good working day – light winds, summer temperatures as high as 26 degrees F., visibility of about ten miles. Walt and I measured details of the ice down to about ten feet. Bert, Trev, and Ed Robinson drilled down almost 50 feet to make seismic soundings reaching to the bottom of the ice shelf and the Ross Sea below it.

About 10 p.m., I heard the welcome roar of a Navy R4D aircraft. It carried Hugh Bennett back, along with fuel, food, mail, and goodies that made trail-rations bearable. I scored a can of mixed nuts from home and a letter from my wife-to-be.

Hugh had run across many of our comrades from Little America at McMurdo, waiting to fly to New Zealand and then home. The “greetings” they send consisted of the “good ole boy” stuff we expected. “We’ll be thinking about you poor bastard still freezing your asses off when we’re home eating Christmas dinner and cuddling-up with the wife or girlfriend.”

On Dec. 14, our team finished a science station at a location some 508 miles from the Pole and 25 miles-west of the International Date Line. It was a “nowhere” place where no human ever stood before. On Dec. 30, 1902, British explorers sledged to a location about 75 miles west of where our sno-cats traveled. They hoped to be the first to reach the South Pole, but brutal weather and ice conditions forced them to turn back 575 miles short of their goal.

Our trail through additional nowheres also brought us some 50 miles from the foot of treacherous Beardmore Glacier, a slippery, crevassed stairway to the plateau on which the Pole stands. In 1908-09, a group led by Ernest Shackleton scaled this barrier for the first time. They got 97 miles from the Pole before they could go no further. Robert Falcon Scott closed the gap on Jan. 18, 1912, only to find that a team led by the Norwegian explorer Roald Amundsen reached there first, on Dec. 14, 1911. Amundsen’s expedition followed a route well to the east

of the Beardmore. Edmund Hillary and Vivian Fuchs traversed the Glacier on the first crossing of Antarctica in 1957-58.

Walter and I measured ice temperatures down to 17 meters, or about 56 feet, with the help of a hand-powered auger. These numbers reveal average air temperatures at locations where they are measured. This gives glaciologists a handy method of determining weather in the past.

Ice temperature at the surface on this day was 23 degrees F., reflecting air temps of near 24 degrees F. Ice 10-feet-deep registered minus-seven-degrees, about the average of our temps the past winter. Drilling down to 33 feet, we found an average annual temperature for this place to be about minus-15 degrees. The ice continues to get colder as depth drops, reaching minus-18 at 56 feet. We calculated that average air temperature of the Ross Ice Shelf during the 1957-58 IGY period was minus 15, or 47 degrees F. below freezing (26 degrees Celsius).

Shoveling and drilling into ice on a cloud-filled, windy day chills your mood as well as your body. Walt and I felt as gloomy as the weather. I hoped next day, Dec. 15 and a traveling time, would be cheerier. But we awoke to a windy whiteout. There were no mountains or sky to brighten us and help us find our way

However, as I stepped outside to make a 6 a.m. weather observation, my mood was lightened by the sight of a skua gull. Usually, these fierce predators, with strong, hooked beaks and brown-and-white feathers, do not wander so far from the coasts. But they will follow the trails of travelers, particularly those who boast garbage. I experienced a feeling of comradeship as I approached the bird with a piece of trail bread. The skua let me get about eight-feet away where I tossed the morsel toward my fellow traveler. He or she pecked at the offering then flew away with it. I felt like we had made each other's day.

Moving through the unending whiteness of what seemed the inside of a gigantic ping-pong ball, I wondered how the skua found its way back to a familiar formation of rock or stretch of coastline where it lived.

Despite the unbroken milkiness and nerve-wracking bouncing over hard waves of ice, we covered 39 miles that day. The following dawnless, colorless morning, we went from the unending routine of traveling, where you can't see where you are going, to the numbing routine of digging, blasting and measuring. Near 10 feet down, Walt and I found ice temperatures of minus 16-17-degrees-F., the average air temperature here last winter and colder than what we found at the previous station.

On the surface, it was balmy. Temperature rose to 28-degrees F., a scant four degrees below freezing, while we worked. Next day, it reached 24-degrees in whiteout conditions. Visibility closed to three miles or less. Although it was a traveling day, we stopped to explore the ice and water below us. Seismic waves from explosives would reflect back to the surface at speeds that revealed if they went through ice, water, or rocks. This let us know if the ice we worked on floated on the Ross Sea or was grounded on the feet of mountains rising as high as 15,100 feet. We would be stopping every day now to be the first to make such measurements.

The most arduous chores seem less difficult when you can look-up at the mountains with their various shapes and dressings of snow. Add a sunny sky, and moral soars. The peaks and saddles make excellent beacons for navigation, like lighthouses. It's so nice to know where you are.

We finished station 18 and moved-off again on Dec. 19. The joy of mountains and a clear day soared when an airplane came to visit. It rose even higher as Walt and I went-up on a reconnaissance flight. Antarctica looked so much better from a few thousand feet-up than from ten-feet down.

It felt so nice to fly over pictorial, ever-varying rock-formations, rather than riding over never-ending deserts of snow. We went over peaks from 2,700 to more than 11,000-feet-high. Smaller mountains wore partly snowless suits and sweaters of brown. Higher ones boast white heads and spires that reached for the sky. Snow softened their sharp bodies, carved by uncounted years of winds and driving snow.

Like massive soldiers they guarded the edges of the exhaled plateau where the pole of Antarctica sits. Our plane climbed one of the broken, crevassed, stepless-stairways that cut through the mountains to the lofty bottom of the world – the Beardmore Glacier. Like other openings, the Beardmore more than 100-miles-long, carries snow and ice downward a half to about two yards a day. Such movement has built the Ross Ice Shelf, largest floating ice sheet in the world.

I experienced both a thrill and chill looking down at the great glacier. My mind saw Robert Falcon Scott and his companions trudging up the incline on foot, pulling sleds that carried their food and other needs. Now, it served as a skyway, guiding Navy aircraft carrying men, equipment, and supplies from McMurdo Sound to the Pole. We landed at the foot of Beardmore, where the Navy maintained an emergency station some 385 miles from the Pole. Here planes

could land and refuel in emergencies. The station consisted of a single Quonset hut, radios, a runway marked by red flags and fuel tanks, three men and a husky dog named “Arrival.” After refueling, hand-shaking, and petting the excited dog, we headed back to our camp.

One of the trip highlights was food. The airplane’s radioman prepared fresh veal chops, along with franks, beans, and very edible bread. I had three helpings. This was one of the best days of the traverse.

Spoiling it somewhat, however, Hatherton took the plane back to Scott Base. Tough to see such a hard worker and fine fellow leave our company. We all shook hands heartily, with promises and hopes of seeing each other again.

Next morning, Dec. 20, our cats moved again, our 57th day on the road. We halted about noon to work station 19, some 426 miles from the South Pole and 400 from Little America as the skua-bird might fly. We had traveled 725 miles to get there.

The day was warm-as “hot” as 26 degrees. Working outdoors felt glorious. Walt and I labored in a pit of ice all day, bareheaded, without jackets, wearing only nylon gloves instead of wool mittens. I thought of the tests to determine how men adapt to cold, conducted by Fred Milan at Little America. I remembered them that night when I bedded down with the sno-cat doors and hatches open and my body half out of my sleeping bag.

The delight of summery weather increased with the sight of mountains lining the foot and sides of Beardmore Glacier. We could see from peaks like Tripp and Kyffin, 7,872 and 5,839 feet-high, to big Mts. Elizabeth (10,073 ft) and Anne (10,266 ft). Walt, Hugh, Bert, and I never thought that, then unnamed peaks about 125 miles ahead, would be named for us. (Mt. Cromie stands 9,676 ft.)

The tallest mountain we could see was called Markhem, rising some 15,095 and located about 110 miles away at 83-degrees-South. Fog hid it next day, Dec. 21, when we moved to a seismic station. Here, we located the bottom of the Ross Sea at 2,000 feet below us. At 7:30 p.m. we reached the Navy’s Beardmore “gas station”. Michael Reabold served as an air controller, Kenneth Spry as a mechanic, and James McCue as a radio operator. “Arrival”, the playful husky, was the official greeter and food-scraps collector. The dog was assigned here because the Navy judged him too “stupid” to be a sled-puller. Maybe so, but he was not too stupid to find a life of eating, sleeping, being petted, and living in a warm hut in a very harsh place. For me, it felt wonderful to play with a dog for the first time in more than a year.

McCue cooked a dinner of beans and some kind of meat, washed down with beer. Then came story time. I brought our hosts up-to-date on our trip, and did not crawl into my sleeping bag until 2:15 a.m.

Next day, Dec. 22, a Sunday, we discovered that our stopover was officially known as a “Naval Auxiliary Air Facility.” We called it station 20 and marked the location to be 383 miles from the Pole, 32-miles-west of the International Date Line. Mike, the air controller, cooked and collected routine weather data, freeing me to work in the ice hole and take photos of the mountains.

On Christmas Eve eve, we began to refuel from the Navy’s voluminous supply, then move-on. But the first major sno-cat breakdown changed those plans. Tweety’s steering mechanism failed completely. No matter how Frank tugged at the wheel, the pontoons connected to it did not budge. Frank and I crawled under the vehicle without really knowing what to do. We replaced everything we thought could cause the problem, but by noon we still had the problem. More hours passed. Then, as suddenly as the steering locked, it unlocked. Why it “froze” up, or how we freed it, Frank and I never figured out, but we enjoyed the backslaps and handshakes of our comrades.

It was a day before Christmas, but we were here today and would be gone tomorrow. All agreed on moving-up our holiday-meal and celebration. I unpacked a five pound gift ham from our stores, and McCue and I went to work at the stubby, pot-bellied stove with the rusty chimney pipe. We roasted the ham with cloves and pineapple, added canned yams and olives, and topped the meal with beer. McCue concocted a dessert of jello with fruit, and we drank more beer.

Frank brought out a small, white artificial tree with tinsel and dim, battery-powered lights. Ed played Silent Night and Jingle Bells on his harmonica. There was talking, laughing, some staring into space, and more beer drinking. Stories and jokes filled the hut, but nothing much came out about personal lives or things missed the most.

We started Christmas Eve with a McCue-cooked breakfast of lumpy corn mush. Bert, Hugh, Walt, and Ed went ahead, while Frank and I stayed behind to load a generous gift of Navy food onto Tweety’s sled. None of us were good at saying elegant parting-words or expressing how much we enjoyed each others company. McCue shifted his weight from one leg to the other. Ken Spry shuffled uneasily. Mike Reabold built a small pile of snow between his boots. Arrival pawed the snow and lifted his left-front-foot. I grabbed and shook the paw.

“If you guys get in trouble up the trail,” Mike said, “call us by radio.”

Frank and I headed eastward in the tracks of Detector and Seismo. It was an important change of course. Maps showed blank white spaces in all directions. Mountains walling our south side lacked names or descriptions. No one had ever been here before. We would move as close to the mountains as time and crevasses allowed.

As Antarctic days go, it felt like a sultry one – 31 degrees. Snow flew around. It melted on the sno-cats like sweat. Tarpaulins stretched out on our sleds to catch naturally-made water. The horizon disappeared under low clouds. It was the kind of dismal day that tires you out even when you don’t do much. We moved 28-miles-eastward to about ten miles from the International Date Line. Crossing it would give up yet another Christmas.

After a cheerless dinner of leftover ham and sweet potatoes, I put up decorations sent to me by Alicia, the darling I would marry. There was a cardboard manger crowded with cardboard occupants, and a paper tree that I hung from a screw in the roof of the sno-cat. Frank turned on the radio. Holiday songs and carols came in loud and clear. Ed got his harmonica and joined in.

The radio began broadcasting recorded messages from “home” to armed-forces relatives stationed overseas. We listened numbly to their tidings: gay, sad, funny, profound. I looked at the faces around me: haggard and expression-less. One-by-one, we wished each other a “Merry Christmas”, then went to our sleeping bags.

Christmas was no holiday at the Ross Ice Shelf Traverse station 21, 383 miles from the Pole. We dug into, blasted, studied, and measured the 2,000 feet of ice and water below us. Our white holiday, or nonholiday, reached a pleasantly warm (to us) 31-degrees F. The wind blew gently, clouds covered the sky, and delicate crystals of icy snow fell on us.

I worked hard on dinner, believing it would have a heavy effect on our morale. We began with Scotch, saved for such an occasion. The appetizer consisted of Navy-issue cheese. Undehydrated Navy strip-steaks (two each, cooked to order), along with mashed potatoes in cheese sauce, baby green-peas, and apple sauce. A nice dry sherry had been donated by a friend who knew the hardships of trail food. The same generosity accounted for Drambuie to accompany desserts hoarded for such an event: fruitcake by Walter and chocolates by Hugh and Ed. I claim no credit for the excellence of the food and wine, only for the preparation of it in a space the size of a large closet.

The next day, we drove across the International Date Line, moving from west to east at a distance of 374 miles from the Pole. It was a warm (31 degrees) and milk-cloudy day. We could see mountains to the right. An American Geographical Society map, published in October 1958, shows a largely unmarked white-space from 174-degrees East to 170-degrees-West-longitude, between 84 and 85-degrees-South latitude, a distance of more than 100 miles.

While digging into ice to learn what we could, Walter and I kept eye-balling the unnamed massifs. One year before, on Dec. 27, I and many others, left San Diego aboard the USS Curtis. We arrived in Antarctica on Jan. 18, 1957.

The following day, the airplane called Charlene landed with fuel, goodies, mail and two visitors. Goodies included a raffle-sized cooked-turkey, a box of frozen (vs dehydrated) steaks, newly-baked bread, fruit and a fruit cake the size of a sofa cushion. The visitors were Drs. Will Siri of California and Gerhard Hilderbrandt of Karlsruhe, Germany. Part of the International Physiological Expedition to Antarctica, they studied the physical reactions of humans exposed to prolonged working and living in the cold. In other words, they came to study us. That becomes less than welcome when you already have too much to do, and more than welcome when they share chores and prove to be good companions around an overcrowded eating table.

That evening, the goodies provided for another Christmas-style dinner. Fortunately, the turkey was cooked, solving the problem of having no place to cook it in the sno-cat. I set the cold, roasted bird in the center of our small table for six. We played a “guess-the-numbers” game for the turkey legs. Thoughtfully, McMurdo cooks provided a four-legged fowl. Around it, I arranged the fresh fruit: oranges, tomatoes, onions, scallions, and a cucumber. It’s difficult to state in words how tasty a moist fruit or vegetable is when you have not eaten one for months. Our holiday packages also included cigars and a generous supply of beer. At Little America and other stations, swabies and sandcrabs had to pay for every can of beer, but we received no bill. At the end of dinner, the two physiologists joined us for cigars, beer and bull_____.

Travel that evening and next-day took us 26 miles-eastward along the face of the unmapped mountains. What a sight it was! The big question was, how close could we get to them? Certainly there would be crevasses. Nature cannot shove endless ice down from 9,800 feet, via glacial hallways ten-miles-or-less-wide, into the Ross Ice Shelf, without cracking that ice like a barmaid making a cocktail. How close and how deep would such barriers be? Walt and I got some answers on a reconnaissance trip aboard Charlene.

We flew between the Beardmore and Liv Glaciers, about 160 miles, over some of the most alluring mountains in the world. I imagined pitons on my feet and an ice axe in my hand, being the first to climb one of those peaks. But it was not to be.

Glaciers coming down to the ice-shelf from the south, east, and west tear up the surface like hands ripping-up an unwanted letter. Treacherous cracks and rips stretched everywhere. From the air, we could see no-safe paths between the crevasses, or routes around their ends. I thought that, if hell ever froze over, this is what it would look like.

We were not adventurers, not mountain climbers, but scientists. We did not climb, we measured. Tomorrow, Walt and I would dig holes, measure and squint at layers and crystals of ice to learn the history of the world's largest ice cube. Bert, Hugh, and Ed would record echoes of explosions to determine the thickness of ice and the water under it, heavily guarded secrets of nature. But we would have to stay at least 20 miles from those tempting mountains for reasons of time and safety.

“We have no choice but to keep moving east, staying close enough to the mountains to map them and far enough away to avoid deep crevasses.” I told Gerhard Hilderbrandt as he sucked blood out of my arm with a needle. Funny thing! No matter how tough a guy thinks he is, or actually is, most of us flinch when we get stuck with those sharp little spikes. As he filled a vial with my blood and moved to store it away, I found myself thinking, “don't drop the damn thing.”

“Hurt?” He asked.

“Can't feel a thing,” I answered.

He and Dr. Siri emptied our veins, took urine samples, and weighed us, stripped. Bert, Hugh, and Walt lost a few pounds each. I gained several pounds more than when I worked in the mines the previous year. As the cook, the gain cost me considerable ribbing.

We guessed that the point of these tests pointed to determining if and how men from temperate climates adapt to the rigors of surviving in polar regions.

“That's true,” Siria said. “Now that the Antarctic and Arctic have become increasingly important from a military standpoint, we want to know how people adapt to such climates. I suspect you four are living examples of it.” (They did not think Ed and Frank had been here long enough.) “We want to learn about the physical mechanisms of such adaptation, particularly, what kind of men can make the adjustment.”

So how are urine samples going to tell you who is most likely to survive frigid times? I wanted to know. “Hormone activity,” Siri answered. He could tell by the dumb look on my face that I needed more explanation.

“Loss of adrenalin,” he continued, “takes it out of you.” “For instance, during this journey, have you even felt extremely weary, weary to the point you had difficulty performing your duties?”

“Many times,” I answered.

“That’s probably due to over activity of your adrenal gland,” he summarized. Siri told me about soldiers in the Korean war who, after four-five days of pitched battle, were so weary, clumsy, and irritable they were no longer fit for combat. “We hope to get ideas about where that point of no-return is for you people. When and how it comes about.”

He and Hilderbrandt wanted to compare the stress reactions of Bert, Hugh, Walt, and I, whom they considered “acclimated” after almost a year on ice, with the hormone activity of Frank and Ed, who had only been with us about a month. I remember thinking that their hormones would do quite well, from what I saw.

On Dec. 30, we four acclimates had been on the trail for 67 days. With our two rookies, we settled-in to work at station 23, some 365 miles from the bottom of the world and about 25-miles-east of the International Date Line.

At the previous station, Walt and I found heavy layers of ice about ten feet below the surface, a sign of increased melting, and thus unusual warmth sometime in the past. Such a thick layer also appeared at this site. Echoes from seismic probing come back from below with greater speed, hinting that they traveled through thicker ice. The whys and whens of these findings should reveal themselves in closer studies of the ice samples we brought back with us.

The last of 1957, we traveled in a white-out. The mountains on our right, which took on fetching, hazy-blue faces the night before, disappeared. Our scientist guests expressed amazement that we intended to advance 30 miles in the milky blankness.

“It’s all in getting acclimated,” Bert joked.

Adding to the difficulty of finding our way, one of our big supply-sleds developed runner problems. A spacer bar, which that kept the two rear runners parallel to each other, broke off. The bar hung down to the surface, and one rear-runner was toed outward. With some hard labor, we wrapped a chain around the displaced runner and pulled it back into place with a sno-cat.

Then we bolted the spacer-arm back in place. The rear runners finished the repairing a little out of line, but we could live with that. Hard, high sastrugi also forced us to slow down, so driving became a mean chore.

About 5:30 p.m., we heard an airplane overhead. We could not see it, so we knew the pilots could not see us. Their view lacked both a surface and a horizon. Ours lacked a sky.

Lieut. Epperly was already acclimated to flying in an all-white world. He overshot us by two miles, but landed on the rough sastrugi as easy as if it was a airport runway. However, taxiing over the rough ice was too much to ask of a plane's engines so we moved up to it. Drs. Siri and Hilderbrant decided to ride with Epperly back to McMurdo. During the hands shaking and thank-yous, Hugh asked Siri, "What's your diagnosis, Doctor?"

"I would say, Mr. Bennett," he replied, "that you men are as well adapted to this climate as Eskimos." He also expressed an opinion that the extra food the Navy brought us was "very necessary for such extended living in cold."

His word fit in nicely with Ep's news that he would be transferred to Little America in the next few days. "Great," I thought, "the goodies express flies on!"

"I requested the duty," Ep said. "The crew and I feel responsible for getting you fellas back safely."

The crew agreed loudly. Strong hand shakes and hardy New-Year-wishes passed all around. Charlene then churned-up a dense cloud of snow and noise, and disappeared into it.

It had been a long, hard day. No one felt much like celebrating a new-year. I had hit my head while working, cutting the bridge of my nose open and breaking my appetite for cooking. I put together a dinner of canned ham and potatoes, along with macaroni and cheese.

We desserted on hard candy sent to Frank by a girlfriend, and a box of petit-fours from Hugh's family. The physiologists contributed a bottle of Scotch for a toast to 1958. Each of us slid into his sleeping bag, feeling glad that the last day of 1957 was over.

I awoke on the first morning of 1958 some 12,000 miles (about half a world) from home and 70 days out of Little America. The new year was just as white as the old one, but the monotony was pleasantly broken by a view of the mountains. Wind coming all the way from the South Pole blew away the clouds, revealing the endless shapes of their craggy bodies and various heights. All wore snow caps, many showed bands and outcrops of dark red and brown rock. In

the millions of years of their lives, I was one of the few men to see them, perhaps one of the first six.

As a geologist, I wondered when and how they were born. Did they exist in a warmer place before drifting to Earth's bottom? Do their rocks hold fossils of ancient living things: fish, insects, dinosaurs, even mammals that fed their young on mother's milk. I ached to climb them with a rock hammer and break into some of their secrets. But that that was not for me. My call involved digging and blasting into ice to learn what history I could and, maybe solve a mystery or two. So Walt and I dug ten-feet down to measure the thickness of ice layers and the size of ice crystals. We collected ice samples, not the remains of ancient plants and animals.

About seven-feet-down, we uncovered more thick ice layers, indicating this was the warmest part of the Ross Ice Shelf yet encountered. It must be due to the closeness of the land and increased amount of solar heat absorbed by mountain rocks.

On Jan. 2, we continued to move closer to broken shelf ice between us and the mountains. The previous night, while mapping the ground around station 24, Bert came upon some worrisome cracks not far from our sno-cats. Now, we saw networks of small rips in the surface under us. It was not unlike the tears we had seen near the hell-of-crevasses around Roosevelt Island.

We traveled over the flawed ice for ten hours, without Detector sounding an alarm. All of us were fond of the machine, but reluctant to trust our lives to it. In addition, we continued to have trouble with Tweety's sled. Our fix became unfixed, perhaps from the jolting over curved, rock-hard sastrugi. That happened twice, so our day was unnerving.

The rear sled-runners toed-in, making them useless for helping to slide along. We pushed them back into place with a large timber, maneuvered by Seismo-cat. The final nudging into place was done with sledge hammers, then we fastened the runners down with a bar and chains. Such re-rigging cost us time, plus sled maneuverability and speed. In making turns, the rear runners did not pivot in the opposite direction from the front ones. Instead, they were dragged in the track of the front runners. Such dragging caused the front skis to dig into soft snow and plough through it instead of riding smoothly over the ground. It was like walking with a crutch.

On the plus-side of such an anxious and vexing day, we saw one thing that made us sleep well. Through binoculars we clearly viewed the mouth of the Liv Glacier, approximately 30 miles away. The Glacier and mountains on its east-side appeared on charts in our possession.

We were no longer in an unmapped part of the world. The blank, white gap at the feet of the Ross Ice Shelf was now closed. Antarctica was now better known. The mountains we mapped actually sat five miles south of their positions on existing charts.

Now a big decision had to be made: how close to those mountains could we get. On Jan. 3, station 25, Walt and I chose one of the larger cracks as the place to dig a pit. It was a “Y” shaped tear. We opened a trench where the arms intersected. On the previous day, Walt had dug into a long, narrow break that ended five-feet down. This “Y” slit closed three-feet down. Shallow or not, the broken ground surely heralded what lay ahead. The ice-shelf was being squeezed by the glaciers moving down the mountains at as much as two-feet a day.

On one of Richard Byrd’s expeditions, Lawrence Gould flew over the area, about 20-miles-north of the Liv Glacier where we were on Jan. 3. South of here, he reported seeing small cracks and crevasses which grew larger toward the glacier. They reached a width, he said, of 50-100 feet.

“It would be foolish to try to go further south,” Bert concluded.

“I sure would like to get closer to the Pole,” Frank spoke for us all.

“Any additional data we obtain in this area would be very valuable,” Walt noted.

We finally agreed that going south would be unwise. However, we also agreed that not to make an attempt, after our long struggle, was unwise.

Next morning, on Jan. 4, we moved south. Within two hours, Detector and Seismo disappeared from sight in front of Frank and I in Tweety. We went through stages of shock and puzzlement before realizing our sno-cat laid on the floor of a shallow, almost imperceptible valley. The other two cats had passed over the far ridge. In the hazy, milky air, the subtle concavity was invisible without the orange references of two other vehicles.

And this was not a lone indentation. The trough of the next hardly-visible basin we entered, slipped deeper. Its ridges stood higher. Atop them, the icy sea rolled south in longer, ever-deepening swells. With a shiver, the sight reminded me of the crevassed vista bordering Roosevelt Island. We lacked time or the daring to go on.

This was IT, station 25.1, the farthest south we would go, 317 miles from the Pole at 167-degrees-west longitude.

You could see it as a scenic spot. Mountains, some 28-miles-away and 10,000-feet high, made an unforgettable background. Southeast winds ripped away an earlier curtain of clouds.

Pieces of it became impaled on high peaks and wedged into low valleys. Sunlight glared through the openings, painting the mountains golden white, pale blue, brownish red. Temperatures rose to the lower twenties.

We laid out a line of geophones or “jugs” to capture the echoes of dynamite sounds bouncing and reflecting off ice and rocks a thousand-and-more-feet below us. These signals traveled along wires to write down new knowledge in the form of black lines wiggling across strips of paper.

Hustling jugs felt pleasant after my usual chores of digging pits and cooking. Also I was keenly aware that laying out jugs took me, 1,200 feet further south. I looked at the colorful mountains, then at shining ice torn-apart by deeper and wider splits than those behind me. “Will I ever reach the South Pole,” I wondered. (I finally made it about ten years later in 1967.)

When blasting stopped, we put away the jugs and wires, then I rushed into Seismo to read the coded results. They revealed that the Ross Ice Shelf was afloat, not marooned on a beach of rock at its southern end. It is the world’s largest, floating piece of ice, some 475-miles-wide, 500-miles-long, 1,000-feet-thick. It’s an awesome feeling to realize that you have lived on a burgly ice desert for more than a year.

We all walked south to where the southern most geophone had been set. Bert looked at the mountains. Then he said, “Let’s go to Little America.”

That “go” was 488-miles away.

I knew right away it would not be an easy trip. A loud, metallic thud announced that fact while we still could see the face of Liv Glacier glowing in hazy sunlight. I imagined the ice was laughing at us as I crawled under Tweety to see that a tie-rod had come loose. Frank and I moved the back of the rod into place, then we secured it without too much trouble. But the back pontoons - the cat’s “wheels” – had to be positioned under the weight of our vehicle. That took repositioning them with the help of a large crowbar and wooden blocks pushed by Seismo cat. We added battering by hand with crowbar and hammer to get the rod in a position where we could clamp it as it should be. The pushing, pulling, hammering, and other struggling on our backs under the sno-cat took a toll on traveling time that day. We covered only 16 miles.

Little did I know it would be my last repair job on the Ross Ice Shelf Traverse.

Our group awoke next day, Jan. 5, to a screeching, howling wind. It raced to us at 18 mph, shaking and shoving sno-cats and sleds. Bert decided not to shoot dynamite in such

weather, but to get on with moving north. It was so warm, about 27 degrees, that drifting snow melted on the windshields. “You never know what the weather around here will do to you,” I said to Frank as I turned on the wipers.

After driving 30 miles, we halted 364 miles from the Pole at longitude 168 West. Made clear radio-contact with Little America that night. One message changed the path of my life.

“Cromie,” it told me, “join Indian Ocean oceanographic expedition. Stop. Proceed by first available transportation to McMurdo Sound. Stop. Navy to provide transportation on to Capetown, South Africa. Stop. Good Luck!”

I got the job I wanted – but sooner than I wanted. “First available transportation” was two days from now. The “expedition” involved an extension of the International Geophysical Year. It would involve working on a 3-masted schooner, operated by Columbia University, mapping the bottom of the Indian Ocean. A great opportunity. But I felt disappointed about leaving this traverse, as difficult as it was.

I looked at Bert with a “what’l I do” expression. He looked back with a wordless reply. It said, “you want to be an oceanographer – be one.”

I eyed my friends and companions in-hardship. “I hope they have a good cook on that ship,” I said.

Chapter 11

The Last Crevasses

No matter what oceans lay ahead, next day, Jan. 6, was a “same ole” ice-and-snow day. Biting winds made the usual work at stations 26, more laborious and uncomfortable. Clouds ruled it out as the next-available-flight-out day. Measurements at the bottom of our ten-foot deep pit revealed that average yearly temperatures, got colder as we moved north away from the shelter of the mountains.

On Jan. 7, winds and sky were more suited for traveling, but the crevasses were not. Early in the day, Detector, leading our advance, met a black hole. Bert and Walt roped themselves to the sno-cat to have a closer look. They did not like what they saw. Bert decided to veer away to the northwest. But, first, we needed to fix Detector’s detectors. These aluminum pan-shaped devices are wired to a convex framework attached to the front of the cat like a wide-mouthed snow shovel. Electric wires, connected between the pans and recorders inside the cats, carry signals alerting us of holes in our way. Pounding and twisting over brick-hard ice ridges snapped guy wires, allowing pans to pull and rotate electric connections to breakage. Repairs had to be made before we could move-on safely.

A snow-driving wind, blasting along at 20 mph, made a northwest course the best direction to see what lay ahead. With the blinding snow coming from behind, we could see somewhat clearly for a few hundred yards ahead. Bert also hoped we might outflank the crevasses by moving west.

That did not turn out to be the case. Detector found plenty of them. Following behind in Tweety, Frank and I reached a sagging valley a hundred-feet-wide. It was the bridge of an enormous crevasse, as big or bigger than those around Roosevelt Island. Bert, Walt, Hugh, and Ed had stopped to curse our luck and wonder what to do next. Was the thick bridge over that shallow ditch, and others in the neighborhood, strong enough to drive over, or not?

By then, four in the afternoon, the wind had died-down. Without blowing snow to ice our hands, pack-into our beards, and inch down the back of our necks, exploring this trough was easier if not pleasant. With a rope around me, I eased down to the bottom, dug a three-or-four-

foot-hole, and put five pounds of dynamite into it. The blasted-opening revealed a second bridge below the first.

“That bomb was only a popcorn-fart in a Chicago snow-storm,” I complained.

Hugh planted 15 pounds of explosives at another location. This bigger “eye” showed only the roof of the lower bridge. I decided to go down for a closer look. Bert did not like that idea; Hugh thought I was crazy. But they humored me. It might be my last trip into an Antarctic crevasse. The thrill wiped away any fear. The bridge under the first bridge was more than ten-feet thick.

Hugh dropped in for a look and found a hole to the bottom. Ed wanted to explore his first crevasse when Hugh came-up. The dark-blue shadows in the cave below impressed him. Frank passed-up an opportunity to break his crevasse virginity.

On our way back to Tweety, Hugh, Ed, and I found six cans of beer in Seismo’s sled. Then we received a radio message from Little America telling us that a supply plane would be out tomorrow. That made two good reasons for a party.

“Ya-hoo! A going-away party,” Hugh shouted, throwing me a frozen beer.

I nudged Frank, who was sleeping under Tweety’s eating table, with my foot. No response, so I drank his beer. Ed and Hugh concluded they wouldn’t mind, so we drank Walt’s and Bert’s shares of the beers.

“Who’ll cook after you go?” Ed asked.

“Frank,” I answered. “He did a fair job on ground-meat, bacon and canned tomatoes the other night.”

“Bill and I have been roommates for near a year and worked together for a while in (Washington) D.C.,” Hugh remarked, “and I still like him.”

“Hugh – Ed: I’m darn lucky to be on a traverse with you guys,” I said. “I’m proud to drink my last Antarctic-trail-beer with you.”

On Jan. 8, we awoke to a clear day without driving winds, blinding snow, or whiteout. It was a good start. At 8:30, Detector and Seismo rolled ahead to test the surface. An alarm stopped them almost immediately. It was also a bad start.

There must be crevasses all over the place, we concluded. Bert decided to steer north, the shortest route to Little America. We lined-up in crevasse formation. Detector led with Bert, Hugh, Walt, and Ed tied together and probing the snow ahead with long poles. Frank and I

followed, him in Tweety, me in Seismo. Frank did not like crevasses, but he did not like being left back either. He knew Bert was thinking of his age. He also did not want anything to happen to me when I was so close to being relieved. We followed Detector's tracks after that cat had moved ahead for one hour.

When the time came, we needed only ten minutes to catch-up. We crossed a slumping bridge on the way. As we reached Detector, another, or the same drooping depression, was still beside us. Progress felt agonizing. In another hour-and-a-half, our cats lay wedged between two converging trenches. About 100 feet separated them. Both appeared too wide and weak to try going over them.

The situation gave us two choices – try to get thru the place where the crevasses converged, or back-up the three sno-cats. Backing or turning with sleds attached, dictated trying to first move ahead. Maybe the bridge where the moats merged was strong enough to hold us.

A closer look at the joint, however, showed us an open-hole off-to-one-side, partly filled with swirls of snow. Bert and Hugh grabbed long poles with a T-handle and started poke-testing this opening. The sun shined from ahead, its glare turning them into blackened uprights. From where I stood on the roof of Tweety, they looked like two shadow people, dancing or grappling with each other. Then, holding hands, they walked together back to Detector.

The cat went ahead, slowly, into the shallow valley. We were to follow in the other cats-if possible. But suddenly, our small part of the world changed. Frank's sharp ears picked-up the sound of an airplane. We made radio contact with the pilot, Lieutenant Frank Wasko.

"You guys are sure in one-helluva spot," he said. "So many holes down there, I can't spot a place to land."

Bert told him to fly north, ahead of us. Wasko did that, but did not like what he saw. I suggested flying south and guided him to clear places where we had camped the day before. The plane flew over us.

Frank and I strained eyes and ears to see or hear a landing. Nothing happened for nervous minutes.

Finally, over the radio came, "We're on the ground. Wadda we do now?"

"Hang tight. We'll be right there," I told him.

But that was not going to be quick or easy.

Detector's electronic-brain bellowed in protest at crossing the bridge where we were scissored together. In attempting to back-out, the cat's rear pontoons slipped partly into a hole. Detector's sled had sunk up-to-its-bed. We agreed to drive Seismo and Tweety to the airplane, about seven miles away, to unload its cargo of supplies.

Frank and I were too tightly pinched between the crevasses to turn around with our sleds attached. I unhooked Seismo's sled, then backed and turned until the cat faced south. Frank did not want to try the same maneuver with Tweety because of its weakened tie rod. (The plane brought welding equipment to fix that fractured leg.) A good decision since we found a crack in the snow which we had not noticed before. It opened only five feet from that cat. Frank reminded me that I was leaving, so I threw what little stuff I owned into Seismo. We headed south.

The cats had passed over a number of scary depressions earlier that day, which were probably crevasse bridges. I figured, if we crossed them safely in three cats towing heavy sleds, we could make it in Seismo. I put her in high-gear and made it to the Navy plane in 30 minutes, plus several "oh, my gods" from Frank. It felt good to shake Lt. Wasko's hand.

Amid the dynamite, food, and beer being unloaded, stood RonViets, a geophysicist we "wintered-over" with at Little America. He had come to measure Earth's magnetic-field in this area, which he could not have reached otherwise.

Ron introduced me to Den Hartog – my replacement. A short fellow with a powerful body, big smile, red crew-cut and hard handshake, he looked to be in his twenties. He had a lot to ask me and I had lots to tell him, but there was little time.

I asked Wasko if we could do a flyover so I could find the best way for the crevasse-imprisoned sno-cats to reach safety.

"I don't have enough gas to do anything but fly an empty airplane back to Little America" he said. Wasko was short of height but well-stacked with muscle. "Can you show me the best way out of here?"

"Best way is to run down the track our cats made in getting here," I told him. "We snaked around some, but I'll find a straight line nearest our trail."

I grabbed a pair of skis and poles. Finding the ski-bindings useless, I decided to walk a half-mile, keeping in a straight line where the cats zigged or zagged. Coming back, I took a parallel path offset about 50 feet to accommodate the plane's width.

Wasko walked out to meet me. He decided he could get airborne by the end of my tracks with the aid of JATO. Jet assisted take-off employs an extra jet engine to provide additional lift on short runways. It's not unlike a rocket-assisted boost.

However, on our way back, we met some of the plane's crew who found a sagging soft-spot a scant 1,000-feet ahead on the cat trail.

"It's a filled-in crevasse," I assured them.

"How do you know it's all filled up?" They asked.

I ran as fast as I could, then jumped into it. Some place along the way, I wondered if this was a wise-thing to do. My feet and lower legs disappeared into the snow. It reached up-to-my-knees, then stopped.

Wasko looked convinced. "I'll straddle your track with the plane's landing skis," he explained.

We boarded the aircraft, then took-up "crash" positions. Everyone sat forward, each body crumpled tightly between the legs of the man behind, heads down.

The aircraft moved slowly ahead, then its speed increased. My head rang with an old ditty:

"Hear'er comin' down the runway,
See the pilot's tremblin' hand
If he don't get her airborne,
We'll see the promised land!"

He got her airborne.

The plane's skis tilted upward on a high sastrugi ridge. Before they slammed down, Wasko hit the JATO switch. A loud hissing-roar deafened us. The craft trembled, lifted, and kept moving upward.

No time to relax. I quickly obtained information about our position and airspeed from the plane crew. Then Ron Viets and I sat on opposite sides of the plane. We drew maps of crevasse fields that lay ahead of the sno-cats.

Tears below cut the surface like tracks in a railroad yard. Open chasms and closed depressions were everywhere. It appeared that the surest path would be to turn-back south, then swing east before going north again to Little America. It looked like a 30-mile detour eastward would bring them around the worst badlands.

By 7 p.m., we had covered 400 miles to the edge of the Ross Sea. It felt good to see green-blue water again. Wasko banked the plane over blackened trails and splashes of bulldozer exhaust. Orange vehicles, gray buildings, and crates of equipment were all-over. Everything and everyone seemed to be moving or waiting to move. I hadn't seen so much activity and color in months.

Wasko set the plane down smoothly. I rode in a weasel to new-and-old tunnels and huts of Little America. Most of the guys I knew had already gone home. I enjoyed the familiar smells of newly sawn wood, tar, paint, baking bread, even garbage. Shadows and darkness in tunnels pleased me after three months of whiteouts and glaring snow.

I bolted down some food. Then I met with Navy pilots and their commanding officers. We agreed on two things. A recon flight needed to be flown to map the best routes to follow to exit the badly crevassed area and to find the safest road to Little America. The other need involved getting me to McMurdo Station to board the ice breaker USS Burton Island, which was due to sail tomorrow. I counted on her trip-north to be my first seagoing step to Capetown and the Indian Ocean.

The officers, who included Gus Shin, the first man to land a plane at the South Pole, came-up with a plan to do both on the same flight. Tomorrow, a twin-engine R4D with extra gas tanks would do the reconnaissance then take me on to McMurdo, a 900 mile trip.

I managed, with the aid of Ham-radio operators at Little America and in the States, to call my mother in New York City. I assured her I was okay, and updated her on what was happening. Next came beer and conversation with a few leftover scientists and some new people who had arrived since I left. I drank little beer and endured a restless night despite my first clean sheets and comfortable mattress in 77 days.

Next morning, Jan. 9, I managed a breakfast, shower, tooth brushing, and haircut (no shave) before throwing my gear aboard the plane. We were airborne by 9 a.m. Herfried Hoinkes, an Austrian glaciologist, accompanied us to provide two more keen eyes for spotting places to avoid. Lieut. Ray Hall commanded the plane.

"I'd welcome any suggestions you have, Mr. Cromie," he said.

"Let's start the recon immediately, not wait until we're over the target sno-cats," I said. "Once clear of the crevasses, Crary still has more than 400 miles of unexplored ground to cover."

"Roger that. Give me a longitude to fly south on."

“Let’s go along 163-west.”

At 12:30, we were over the cats. Seismo had gotten out of a hole it fell-into the day before, on the way back from Wasko’s plane. Detector was also clear of the ditch that stopped yesterday’s progress. Its sled tilted into the crevasse at a disabled angle, but the cargo had been unloaded.

“What’s your situation?” Hall asked Bert by radio.

“We’re clear temporarily,” he answered. “We expect to work the sled out soon.”

“Glad to see things are looking O.K.,” I told Bert.

“Yeah, Bill, they were pretty-black yesterday. How about running north ahead of us. See if you can find a way through this mess.”

We went that way the day before and found 40-50 miles of pot holes. So I advised him that, today we came south along the 163West-meridian, then went west on 83-degrees, 40 minutes latitude.. I recommend backing southward to that latitude on their own tracks, then turning north at “163-west street.”

“No cops or traffic for more than 100 miles,” I assured them.

“Would you like to drop your boys a goin’ away present?” The plane’s mechanic asked me. The day before, Wasko’s crew did not include two packs of welding-rods with the equipment they landed. It required three passes to drop the rods where we wanted them to land. I could see everyone’s face, but did not want to hit them. They landed about 50 feet from Frank, who waved a hearty goodbye with his hat. The others radioed “good lucks” to me.

At 6 p.m., Hall turned west toward McMurdo Sound. I sank into a seat. In one way, I was sorry not to be helping my “poor-bastard” friends to finish a great adventure. In another way, I looked forward to sailing the Indian Ocean in the Southern Hemisphere-summer.

END

ANTARCTICA: A YEAR ON ICE is a visually stunning journey to the end of the world. Guided by nature photographer Anthony Powell, we experience firsthand the beauty and brutality of the most severe environment on Earth along with the hardy and devoted people who call it home year-round. Capturing epic battles against hellacious storms, quiet reveries of nature's grandeur, and everyday moments of humanity, this one-of-a-kind documentary reveals a close-knit international community of scientists, craftsmen and laborers that thrive in a land few have ever experienced. Filmed over 10 years on t Anthony Powell is raising funds for "Antarctica: A Year on Ice."

Documentary feature film on Kickstarter! A visually stunning chronicle of what it is like to live in Antarctica for a whole year from the point of view of the everyday workers.Â A visually stunning chronicle of what it is like to live in Antarctica for a whole year from the point of view of the everyday workers. Created by. Anthony Powell. Antarctica: A Year on Ice is the first feature film by New Zealand filmmaker Anthony B. Powell. This documentary is set in Antarctica, specifically in the Ross Island region, which is home to two research bases: United States' McMurdo Station and New Zealand's Scott Base. It chronicles a year of time spent living and working at these remote stations; the summer season (October to February) when the sun shines 24 hours a day and the long dark winter (February to October) where the sun goes down for