

ANTARCTIC ASSIGNMENT, 1961-62

by Conrad G. Merrick

On October 21, 1961, I departed Andrews Field, Washington, D.C., via MATS for New Zealand. After brief stop-overs at Travis AFB, Hickam AFB, Canton Island, and Nandi, Fiji, I arrived Christ Church, New Zealand, on October 26. My stop-over in Christ Church was all too brief, and after two aborted flights I departed for the ice via C-124 on October 30, arriving at McMurdo on the morning of October 31.

My assignment in Antarctica was to be with the University of Wisconsin Antarctic Peninsula Traverse, on which I was to be the navigator. I was to also ^{map} locate as many mountains and nunataks as possible. We had hoped to be flown out by the Navy to the start of the traverse by November 10, but a P2V plane crash at Wilkes Station delayed our departure for several days, while bad weather added an additional delay after the Navy ^{flight operations} was ready to start our shuttle.

While waiting at McMurdo, I was "checked out" on the snow cats we were to use by the mechanic, Lee Kreiling. On one "practice run" with one of the snow cats, Lee and I, with two biologists from McMurdo, traveled the 15 or so miles along the bay ice to Cape Evans, where Scott had base-camped during his ill-fated journey to the South Pole in 1911-12. Here I helped the biologists cut a hole with a power chain saw in the 6-foot thick ice. After the hole was cut the biologists set fish traps on the bottom of the bay. We also visited Scott's hut while here at the Cape.

During the delay at McMurdo I also helped Bob Martin with his triangulation and base line measurements by tellurometer for the control of low-altitude photography of McMurdo Base.

Finally on November 23 John Behrendt (traverse leader) and Hiro Shimizu (glaciologist) flew out from Byrd Station in an R4D, and were able to get in to and land at Camp Minnesota in the Jones Mountains, from where we were to start our traverse. They immediately contacted McMurdo by radio, and the operation was set in motion to fly our three snow cats and three plane loads of fuel, food, and gear to Camp Minnesota. This entailed six C-130 loads, with three planes making two trips each. The snow cats went on the first three flights, with Lee Kréiling, Perry Parks, (siesmologist) and Pete Wasilewski (Coast and Geodetic Survey) as drivers for the 'cats as they were unloaded.

While waiting at Camp Minnesota for the arrival of the first flights, Behrendt, Hiro, and the Navy crew of the R4D dug out the Jamesway and the equipment left from the termination of last year's traverse. With no difficulties they started up the three old snow cats that had been left all winter. Two of these old 'cats were returned to McMurdo on the first flights, along with a snowdrilling rig. While "digging out" Behrendt discovered the mess wanigan left from the previous season had completely disappeared. It apparently had been blown away. The two runner sleds on which it was mounted were all that was left. One 1-ton food sled was *also* blown away. When Behrendt discovered this, he radioed McMurdo again ~~and~~

and ordered cooking utensils and a cook tent sent out on the last flights. John Melholm (glaciologist) and I, the remaining two men of the traverse, were on the fourth flight from McMurdo.

On November 25 after the final flight had deposited its load and returned to McMurdo, we settled down to getting our traverse organized. For the following five days we loaded sleds, pumped diesel fuel into the tires of the roli-trailer, *(each of the 4 tires held 9 barrells of fuel)* mounted radios and instruments in the new snow cats, and even rebuilt a sled from the runner sleds of the destroyed mess wanigan.

Our gear included what we considered to be an Antarctic first, a folding out-house! It was designed and built by Hiro, and the four walls folded up by piano hinges into a flat, compact unit. The roof and "stool" were separate, but also fairly compact. This out-house was laughed and scoffed at by many, but in a blizzard or high winds it was one of the best cold weather equalizers we had. Any future snow cat traverse would do well to have one.

We decided to take along the third old snow cat (named "Hoot Mon") that had not been returned to McMurdo. It involved hauling extra gasoline for it, *since the other 3 'cats operated on diesel* but it could be used as a mess wanigan and could pull the heavy roli-trailer -- as long as it would hold up, at least.

On November 30 we pulled out from Camp Minnesota and proceeded around the east end of the Jones Mountains and up onto the peninsula plateau. We made 40 miles the first day, and at the end of that day I made my first position

computation, using three sun LOPs. There had not been enough of the canvas wind screens to go around to all of the U.S.G.S. men, so I did not take any with me. All I ever used was a sled or vehicle to protect me from the wind, ^{and my theodolite} but this worked fairly well.

Due to a misunderstanding, I thought there was a transit at Camp Minnesota, and Behrendt thought I was to bring one along. Since I had no transit with which to take compass bearings along the traverse, I had to use a Brunton compass set on a transit tripod. This worked quite well, however, and even after I received a transit on the first air re-supply, I would occasionally still use the Brunton compass for convenience.

At the end of the second day out of Camp Minnesota, I was able to find two stars with the Rude star finder, and used these with two sun LOPs for a position check.

At the end of the third day out, December 2, we had gone 112 miles, and were in sight (0.3 mile) of one of five ^{bamboo} snow stakes left on the previous year's traverse. I had successfully navigated our group to our first predetermined location, and I felt pretty good about it.

The following morning Behrendt and Perry Parks started out to measure by tellurometer the distance between the snow stakes to check any relative movement from the previous season. A storm set in shortly, however, and they were barely able to find their way back to ^{the snow cats} camp. This blizzard lasted until December 8, and we were unable to do anything but "sit tight." As

soon as it cleared up enough to travel, we dug out our sleds and snow cats and proceeded on along the traverse without taking the snow stake measurements. About eight inches of new snow had fallen, making going slower for the next few days. At one place it took two 'cats to move the roll-trailer through the deeper drifts.

On this section of the traverse we were following rather closely the route taken by Bentley on the traverse of the previous year, so we were traveling about 40 statute miles (by odometer) a day. As I was taking positions at every over-night stop, I soon "calibrated" the odometers of the snow cats to actual distance covered. For every one mile on the odometer, we were only going about .9 statute mile or .8 nautical mile. Until we reached mile 208 and left the old traverse, we continued to travel the 40 or 50 miles a day, not taking any seismic data at the stops. When we hit new territory at mile 208, *where Bentley's traverse veered off in a different route,* we settled down to 32 odometer miles per day. The altimeter and gravity stations were four odometer miles apart, with altimeter and magnetometer readings every $\frac{1}{2}$ mile. Seismic data was then taken at the 32-mile stops. *As we traveled we kept our direction by a simple auto compass mounted in the lead snow cat.*

This daily seismic data was called reflection shooting, and every fourth day the seismologists would do more extensive work called long refractions. This involved measuring out with the tellurometer up to three kilometers and setting off explosives to test the velocity of shock waves through the ice. So every fourth day we would lay over while the seismologists did their work. This usually afforded me time to catch up on my computing. Pete and I alternated in helping the seismologists on these long refractions also.

In making my chronometer time "hacks", I found that WWV ^{radio reception was} usually came in good from about 6 p.m. until 6 a.m. local time. ^(These time hacks, down to $\frac{1}{10}$ of a second, were essential for navigation.) Since our normal overnight stops occurred during these hours, getting time hacks at that time produced no problems. I would usually get two time hacks at each stop at least several hours apart to get a rate of gain or loss for the chronometer. Occasionally we would be traveling during the "night" hours and laying over during daylight hours. This situation sometimes produced problems in getting WWV, but generally I managed by getting hacks when we first camped or just before we broke camp to leave. The rate of gain or loss (mostly loss in the case of my chronometer) was always different while traveling than when staying ~~at~~ camp. While traveling the chronometer was in a bottom drawer in the snow cat, and when at a camp site it usually stayed right on the snow at my instrument setup outside. While our normal overnight stops allowed good WWV reception it also necessitated sun shots of a lower altitude, which gave ambiguous positions. It seemed I seldom had good weather coincident with any extra time in which to observe LOPs beyond the minimum three required for a position computation.

At mile 256 the old snow cat "Hoot Mon" tore out a differential, broke an oil line, and broke something loose on the shifting forks of the transmission. After we had worked on it for six hours, we gave up and decided to abandon it. This meant losing our mess wanigan, but we were short on spare differentials, so Lee took out the other differential from "Hoot Mon" for another spare for the new 'cats. From here on to our first re-supply at Camp Sky-Hi, we cooked in the snow cats we were living in and did not bother to put up the tent we had.

On December 14 when we left mile 256 and the abandoned "Hoot Mon", we began to hit high winds. The wind blew the heavy top off the glaciologists refrigerator sled, and it had to be roped down. We finally made mile 288 at 0030 hours December 15, but did not get away from there until December 17. Winds up to 40 knots drifted the 'cats and sleds in pretty badly, and one 'cat tore out a differential trying to pull the roli-trailer from the drifts.

From here on we hit very rough and hard sastrugi, and the roli-trailer tongue broke shortly after leaving mile 288. At mile 293.4 we sighted our first nunatak and headed for it. After traveling 15 miles toward it over the roughest sastrugi of the entire traverse, Behrendt decided we were losing too much elevation and apparently were headed for a crevasse area. So at mile 308 we turned again inland, as our course to the nunatak had taken us toward the sea.

Behrendt believed this feature may have been Mt. Combs, even though it was about 48 nautical miles SSE of the map position of the mountain. On a recon flight previous to our traverse, the plane's radar had not picked up any other features in the area. Also it looked from our position like we were looking out to sea, and that no land existed as far out as the map location of Mt. Combs.

At this point we heard from the snow cats behind us that one of the sleds had broken down. We waited in the lead 'cat while they fixed it, which took about ten hours. Finally we moved on to mile 320, and arrived there at 2200 hours December 18.

At mile 320 we were again beset by high winds and drifting snow, and the wind did not diminish until December 22. At 1500 hours we started digging out again and worked until 0600 hours of December 23 before we could move on. Lee had welded the roli-trailer tongue back on, but it broke again at about mile 342. Every time it broke on the trail we simply continued hauling the roli-trailer with a short, heavy cable until we came to our regular stopover and the tongue could be welded again. After mile 342, however, Lee had no more heavy strap steel to repair the tongue, so we towed it the remaining 90 miles to Sky-Hi by cable.

While we were traveling on December 23, we contacted Camp Ski-Hi by radio and got their astronomic position from them. This value varied from what the Navy had advised us by about 15 nautical miles. Had we been unable to contact Sky-Hi, we probably would have had a difficult time finding it from the Navy's position.

On the afternoon of December 23 as we camped at mile 352 we were again hit by high winds, which kept us from moving until the afternoon of Christmas Day. Then we traveled on toward Sky-Hi, and first spotted several nunataks from mile 414. We had been advised by the Sky-Hi station leader, Floyd Johnson, that these nunataks were also visible from Sky-Hi. One of them was Mt. Rex, already named on current maps.

On the afternoon of December 27, I first sighted the buildings of Sky-Hi from about 12 miles out. They were dead ahead, right on my course, and when we reached the camp later that night, my estimated mileage was off .3 mile in distance.

Of course there was handshaking all around, for here were some new faces we had not seen for a month. Also Sky-Hi meant a building we could stand up and move around in, and the station boasted a make-shift but highly enjoyable shower bath. We did not know it then, but the worst of our traverse was over, with mostly "gravy" to come.

Our next six days at Sky-Hi were spent in reloading supplies on sleds, adding fuel to the roli-trailer, and building a new mess wanigan on the old runner sleds from plyboard and lumber sent out by resupply from Byrd Station. *and doing a good repair job on the roli-trailer tongue.* (I also received a transit on the resupply.)

While at Sky-Hi we flew a recon flight over the area into which we would be going. On this flight we observed many nunataks and mountains, and we apparently discovered a new range of mountains. Behrendt suggested we name them the Thiel Mountains, after Ed Thiel, a scientist killed on the P2V crash at Wilkes. *(Board of Geographic Names)* However the BGN was already in the process of naming a range in the Horlick Mountains after Thiel, and this other range has since been approved as the Thiel Mountains. *(Our subsequent traverse proved 2 small ranges, which were later named the Merrick Mountains and the Behrendt Mountains, by BGN.)* We departed from Sky-Hi on January 3 and reached Mt. Rex in one day's travel. Rock and lichen samples were collected here, as they would be on every nunatak we were to visit.

On January 7 we visited a low, bare ridge at about mile 505, and named it and the surrounding nunataks after Floyd Johnson, the station leader at Sky-Hi. *(This group is now named the Lyon Nunataks)* On this low ridge we found fossils of small sea shells plus several quite varied and interesting species of lichens. I occupied this top

with the transit and observed compass bearings to all other features in sight. From here I could see about one dozen other nunataks, one of which was Mt. Res. Incidentally, I observed Mt. Rex from one nunatak 50 nautical miles away.

For the next three days I was almost driven to distraction trying to intersect with compass bearings the more prominent mountain peaks and nunataks within sight. We visited another nunatak on January 9, and named it after Steve Barnes, a previous scientific leader at Byrd Station. *(Blond now calls it Cheeks Nunatak)* By now we were in sight of the new range^s of mountains we had found on the recon flight, but fog and snow squalls hindered my efforts to get compass bearings to the peaks. We continued traveling, however, and I did all I could to position these mountains and nunataks, but I know I missed some in the fog.

By January 11 when we reached mile 604, we were pretty well out of the mountains, although some could still be seen in the distance. We were now headed generally northeast to the ^{previously mapped} map position of Mt. Vang. We continued on this course until January 15, when we reached mile 700, the northernmost point of our traverse. At about mile 668 we had passed within 12 nautical miles of what we assumed to be Mt. Vang, which was only a medium-sized nunatak. *(Later named Gomez Nunatak)*

From mile 700 we turned southeast for 40 miles, then south to mile 764, traveling most of the way in a foggy white-out. If any mountains or nunataks existed along that route, as they probably did, I could not see them to locate them. Near mile 764 there were three small nunataks, ^{one of which is now Lang Nunatak} and these were the last we came upon until January 30, when we reached mile 850.

In the meantime we arrived at mile 796 on January 19. Here the seismologists wanted to do several days of extensive refraction shooting, and we would also get our last air resupply. The day after we arrived high winds came up--the first we had had since a brief blow at Mt. Rex. For two days we had winds up to 45 knots, but it then eased up enough for two R4Ds to get into us with supplies and mail. Even then the visibility on the ground was so poor that once they landed they had difficulty ~~in~~ finding us.

After the planes left the winds continued until January 25, and the seismologists were able to finish their long refractions. On January 28 we moved ^{on} out, arriving at mile 850 on January 30, as mentioned before. Here we visited a nunatak overlooking a large and impressive range of mountains. The geologists collected their rock and lichen samples as usual, and I occupied the top with the transit, shooting compass bearings to every feature in sight. We decided to name this nunatak and the surrounding ones after Shimigu, the Japanese glaciologist attached to Ohio State University, and a member of the previous year's and this year's traverse. ~~(In this group,~~

was subsequently named the Anderson Nunataks by B.C.N.

The same day we moved on to mile 864, where one of the snow cats tore out a differential. Here we stayed overnight while Lee installed another rear end unit.

The following day, January 31, we traveled 44 miles to mile 908, and again I was quite busy along the way intersecting features of the Sweeney Mountains. During the day we descended down quite an escarpment without incident. Mile 908 was a layover station, and for the first time I was able to utilize the seismologists' tellurometer measurements for a base line. I

on the east end of the Sweeney Mountains

could only use two kilometers of it, but I intersected 14 peaks from both ends of the line.

On February 2 we moved on and were soon in sight of the ²new range of mountains we had previously passed, only now we were on the opposite or south side of them. Even though a foggy condition set in before the day was over, I was able to intersect some more peaks of this range and get more "cuts" to peaks I had intersected from the north side. I also got a few compass bearings to another range of mountains far to the south of us.

On February 3 at about mile 946 as we were trying to skirt around the south end of the new mountain range, ^(the Behrendt Mountain) the lead 'cat that I was riding in suddenly dropped the front tires of the roli-trailer into a hidden crevasse. The lighter snow cat had made it across all right, but the heavier roli-trailer dropped through the snow bridge in to the top of the ^{2 front} large tires. Behrendt roped up with Hiro and immediately began to "probe" the area around the vehicle. We radioed back to the other 'cats to drop their sleds and come help us pull out the roli-trailer. When they arrived one of the 'cats dropped part of its rear pontoon into another crevasse as it was turning around. Finally after about four hours work, we pulled the trailer from the hole. We then back-tracked two miles and took an 8-mile right-angle detour away from the area. As we continued on we kept well away from the mountains.

I continued to cut in peaks and nunataks until we were out of sight of the mountains. This concluded my intersection work, which resulted in locating 103 mountain peaks and nunataks along the traverse.

By mile 956 we were headed west in the general direction of Sky-Hi. As we cleared the south end of the mountains and crevasse area, I determined a bearing to head straight for Sky-Hi. However for the last three days of the traverse overcast skies prevented me from getting any LOPs or azimuths from the sun. Normally at every stopover I would get an azimuth to a ^{Temporary} mark, then determine the magnetic declination at that particular location. During these three days the declination had changed about four degrees, and I was not aware of it. I should have realized it, and once it did dawn on me I knew I could at least get the declination at Sky-Hi from Pete, our magnetics man. I contacted him by radio (he was in one of the rear snow cats) for the information when we were only five miles away from Sky-Hi, then corrected our course from there on. This correction brought us into Sky-Hi on February 5 with not much to spare in the way of visibility, as a storm was building up at that time. Of all the times to falter on navigation, I had picked the last day! When we arrived at Sky-Hi we had covered 1052 odometer miles on our traverse.

For the next two days at Sky-Hi we inventoried the equipment and fuel, stored the sleds, cleaned out the snow cats, and even tied down the mess wanigan so it would not blow away again. We received word by radio the traverse would probably not continue next year, so we prepared most of the scientific equipment to go back to McMurdo. On February 8 a C-130 arrived to pick up our traverse crew and the Sky-Hi personnel. On the way back we stopped at Byrd Station to refuel and eat. We arrived McMurdo at 1300 hours February 9.

Phil Smith, the senior USARP representative at McMurdo, had made arrangements for seats for most of us on a C-130 flight leaving for Christ Church the next day. This left me very little time to turn in my equipment and get organized to leave. All of the U.S.G.S. Topographic Division men were there at McMurdo, so there were times to talk over and experiences to relate as we met again with old friends. I would have liked to stay over a few days, but at that time of the year one does not miss his plane to New Zealand!

I left on schedule February 10, and again after a too-short stopover in Christ Church I moved on toward the States on February 12. I arrived at McClellan Field, Sacramento, on February 13 and entered on annual leave to go home.

SUMMARY AND SUGGESTIONS

Our traverse this year was initially shortened by the late start, and continued to be harassed the first month by storms and high winds. Of the 68 days on the trail, we lost about 20 due to weather. While on the trail I was limited in time and by weather in locating features along the way. However, considering our limitations I believe the traverse as a whole did very well. Cooperation among the men was good, and Behrend's perseverance kept us moving whenever possible. Suggestions will not help the weather, and it was our biggest stumbling block.

My instruments and equipment were generally adequate and all in good condition, with the possible exception of the lack of a wind screen. Of the latter, I had the materials to build a plywood wind screen, but I did not consider it necessary. The variable-density dark eyepiece I had would not adjust dark enough for a bright sun, but this objection has been submitted with suggestions at our annual critique meeting.

It was emphasized to me, and I cannot emphasize it enough to those who go after me, always keep the theodolite away from a heated area, preferably outside on the sleds or roli-trailer. Once it is warm and set outside, blowing snow freezes to it and causes no end of trouble. The chronometer will have a more consistent rate of change in a colder place, although proper care of it requires it to be kept in the smoothest riding vehicle.

I learned fairly late in the traverse to keep track of the magnetic declination myself, although the magnetics man, Pete, would get the observations for this information at every stop where he could get a sun shot. He did not always have the data computed for declination by the time we departed, however, so if I observed for the declination, I had it at hand on departure.

The pictures from the polaroid camera of intersected features were not too clear. It was probably due to the cold, although the camera was kept as warm as possible. Points were identified on these photos, however, and should be of some help in identification on any future aerial photos.

At some primary stations I was not able to get any sun shots, and at a few I got only one or two LOPs. The weather was seldom good enough for star

observations, although I was able to use one or more stars at four primary stations. As mentioned before, lack of time prohibited me from getting an extensive number of LOPs at any station.

Some of the features I located are quite prominent and should be named. We believe we found Mt. Combs, Mt. Rex, and Mt. Varg, and we are going to suggest the names Johnson Nunataks, Barnes Nunatak, and Shimigu Nunataks for features mentioned before. ^(Since changed by B G N) I am submitting the letter numbers of other features prominent enough to deserve names. Some of the mountain ranges we found may be the Sweeney, Latady, and/or the Lowell Thomas Mountains, although the positions we found are quite different from the current map locations of these features.

Personally I enjoyed my assignment in Antarctica and the challenges it offered, and appreciated the opportunity to go. If my circumstances prove favorable in some future year, I would like to return for another season.