

CHAPTER 5

Good Bye

Wes Morris' polar school prepared me for the imminent expedition intellectually and practically. However, he scared me about the need to be in reasonable physical shape for successful living on the high plateau of Antarctica. I was tested many times for my physical stamina and lung capacity, but I never believed I was in good shape. Never at schools I attended before college did I ever receive encouragement for my physical abilities. Coaches only seemed interested in finding boys for their next team and if you were not taller than most, faster than most, or bolder than most, then it was open season for the mob to ridicule you while the coach looked on. If you complained, you either were ridiculed more or the teacher added his own scorn along with the big boys to show you that you need not complain.



At Wes' encouragement I began a jogging program of my own following a published program of physical fitness of the Canadian Air Force. It included a run of about five miles every other day, running full speed the last half mile. When I returned to my apartment evenings from my office at Polar Met at the Old Mexican Embassy I changed into old clothes, which for me were shiny dress slacks and a T-shirt used while painting. In prim and proper Georgetown, where people were well dressed for walking their dogs, I looked out of place so I would sneak around the corner from my efficiency apartment at Q and 30th Street Northwest and start jogging north for about two blocks on 30th Street to Montrose Park. From there I ran past the John Howard Payne House, through Oak Hill Cemetery along the west bank of Rock Creek, heading southeast until I came to the bridge at Q Street. Once over the bridge I enjoyed an easy run along the Rock Creek Parkway winding north past the National Zoological Park as far north as Pierce's Mill where I turned around and followed the same way back to my Georgetown apartment.

I learned all about a second wind and some of the joys with long distance running. But it was 1965. No one was health conscious. No one was jogging for recreational purposes except Senator Proxmire from my home state. One of the first weeks I was jogging, heading south and pouring on the coals for a speed run between the Zoo and Massachusetts Avenue, a police squad car with lights flashing came over the curb and down a grass embankment to the path I was running along. I thought it strange and looked over my shoulder to see if anyone was behind me. No one was in front of me. Why was he trying to drive down to the river? He even momentarily got stuck in a mud patch. I continued to run, not wanting to slow the great speed I thought I had achieved. Maybe I even ran faster. The police officer put on the siren and seemed very angry as he shouted to "Stop running immediately!" Only then did it dawn on me that he might be after me. Although it was not the first time that I was stopped and restrained by the law, it was the first time that I was somewhat angrily pushed over the squad car and roughly searched.

I desperately tried to explain that I was not running away from something. I told the officer I was training for a research expedition to the South Pole and needed to build up my lung capacity. He only laughed at the mention of the South Pole. He reminded me of a coach, but alone on this parkway I was beginning to get worried. The policeman made me remain standing with my hands flat on the hood of the squad car while he radioed for robbery and rape reports and then waited for other reports to come

over the radio for almost thirty minutes. Again I tried to explain that I ran this route along the Rock Creek Parkway every Monday, Wednesday, Friday, and Saturday. It was Monday. He suddenly was called away for a traffic accident somewhere else, but before releasing me he warned me that he would be watching for me the next several days. Wednesday, he was there, parked down along the mud path along the creek. I waved as I ran around the squad car as fast as I could, never to see him again.

People used to say that good rigorous exercise made the mind fresh. In my case that certainly was not true. Evenings of the days I ran for lung strengthening were shot for intensive theoretical study. Complex articles from scientific journals to me sounded like mush when read after a long run. In the end, although my running program rightly prepared me for high altitude living, it slowed necessary intellectual development. Everything not learned before the time of departure for the Ice was lost.

My social whirl of life in our nation's capitol was drawing to unreachable heights, unreachable as the common voice finds the National Anthem unsingable. A high school and college classmate, Alan Merten, in the Air Force, was a rapid climber as a "whiz kid" in the computer world of Defense Secretary Robert Mac Namara, and we continued that friendship in the District of Columbia. Al became a White House Aid for President Johnson and lived in the "Glass House" mansion along the George Washington Memorial Parkway on the west side of the Potomac River. As his friend, on several occasions the social whirl for a slum child like me seemed too much.

An apartment of girls, all friends of Al Merten, two blocks away from my apartment in Georgetown, became a good escape from the politics of swapping equipment, memorizing formulas, and crash learning little bits of trivial information without which it was impossible to use the mainframe computers. To these good friends and especially to Betsy I owe thanks for sharing their slower southern pace of life and the taste of grits and bacon.

Nearby Georgetown University sponsored many free cultural events such as political lectures and dances. The associated street trappings of restaurants and taverns were always luring along Wisconsin Avenue. At one of these very fine and expensive restaurants called the Ross House, I met a wine steward who worked in the White House during the Eisenhower years and learned from him many social graces concerned with the ordering of wine. "All the rules were of no value, but personal taste was everything." When Nancy visited me for a lengthy weekend several years later, it was this wine steward who put on quite an elegant display of his knowledge of wines, all the while letting us think we were knowledgeable about wines instead. He told us about the fragrance of strawberries being drawn up into the grapes when grown nearby and by doing this, he reaped the benefit of selling several bottles and a large tip.

Free Watergate concerts started or ended with the National Anthem that always sounded better and louder in the District. Melanie Masters, a girl in a basement apartment which opened onto a sunken garden, went off to marry an Arab from the Tunisian Embassy. I ate "koos-koos" at a banquet she served for her Arabian friends, all who were appreciative of my interest in their country that I had because of my service with the Model United Nations I participated in at Madison.

I learned to carry cigarettes and matches, even when I did not smoke, for Carol Anderson, an aid to Senator Scranton from Pennsylvania. We shared an interest in politics and jazz, particularly Peter Nero's concert. Carol seemed to be inordinately concerned about American involvement in Vietnam.

Frequent trips were made at extreme speeds down the Henry G. Shirley Memorial Highway to Richmond, Virginia en route to Langley Air Force Base at Hampton, Virginia and the Naval Station at Norfolk to visit Don and Carol Panzenhagen and Larry Burroughs. With these long time acquaintances dating back to all my years in college I made many friendships among the several armed forces.

They too were concerned about Vietnam, not about an over involvement, but about the need to serve our nation when she calls.

Their occupations were new to me. I, who could never stop talking about my job and the interesting aspects about what I was working on, found the military crowd dedicated to the elimination of shop talk, not because of a lack of enthusiasm, but out of necessity to eliminate the temptation or accident to release secrets. To that end I was always thankful for the openness of Antarctic service where any and all studies were expected to be published for the sharing of all interested parties.

While living in the District, I attended two Lutheran churches. A Missouri Synod Lutheran Church, on Connecticut Avenue as I remember it, was accessible by bus. I found the people truly Christian with open hearts and socially open to accepting me. At Bible studies and volleyball gatherings at the Church I met many people of like mindedness, some of whom were, like me, facing service in a foreign country. One couple of note accepted a tour of duty for the State Department in India and was struggling with how to follow the guidance of the State Department when dealing with the greatly impoverished versus their Christian principles of freely giving of their wealth.

I also attended Grace Lutheran Church, a Wisconsin Synod church, in Falls Church, Virginia. The members, although members of a church of my heart, seemed very removed from a young man of twenty-five years of age. They also seemed to be all Republicans. Why was it that to be conservative in one's scriptural beliefs, it was expected that you had to be hard heartedly conservative in your political beliefs, which in my view meant you were callous and unforgiving to the poor. Our WELS church was not in the District of Columbia where you might meet a poor person or a person of another color. I saw that in Milwaukee where I grew up as church after church abandoned the inner city as the lily white German descendants moved to the suburbs. There were still many souls of mixed races living very near these churches, yet little or no mission work was done. This false German pride will ruin our church body one day. We are asked by our Lord to be loyal to Christ, not to ethnic origins such as Germany or Wisconsin. I was most gratified that the Bible was being translated into all languages, even into American English.

After a while, the considerable hope to have someone from Paul Dalrymple's lab come to Washington D. C., came to an end. Things there seemed to be in a state of delay. I arranged to go to Natick, Massachusetts, and visit the Polar and Mountain Research Labs of the U. S. Army. With time running out, ships long gone from Davisville, Rhode island, and procrastination beginning to shorten programs in the field, I was more than nervous about the radiation measurement program I was expected to conduct for NLABS while at Plateau Station.

When I arrived at NLABS I found the fundamental equipment had just arrived. I met Leander Stroschein, an engineer for Paul Dalrymple who had recently conducted field measurements of radiation in Alaska and the Yukon Arctic. Lea was a very personable guy originally from South Dakota. He was still unpacking the newly purchased equipment we were supposed to use at Plateau Station. I was stunned that it was still in house and not at the docks. Sailing time to McMurdo was hopelessly too long to get there on time. In fact it was too late. The Army rarely trusted the Navy and both Paul and Lea were unconcerned. Paul said that the Air Force at one time was part of the Army and he trusted fly boys before sailors.

I began to mistrust this outfit. As it turned out, Dalrymple and Stroschein just played a little closer to the edge than I wanted to. Even though I thought I was a professional procrastinator, I learned in the government while I might be a workaholic I had no right to expect that those serving under me would be willing to work with the same fanaticism without reward. To expect it was simply wrong and taking undo advantage. Luckily for Stroschein, we both wanted the thrill of acquiring the

most sophisticated and complete set of data for the top of the south polar icecap.

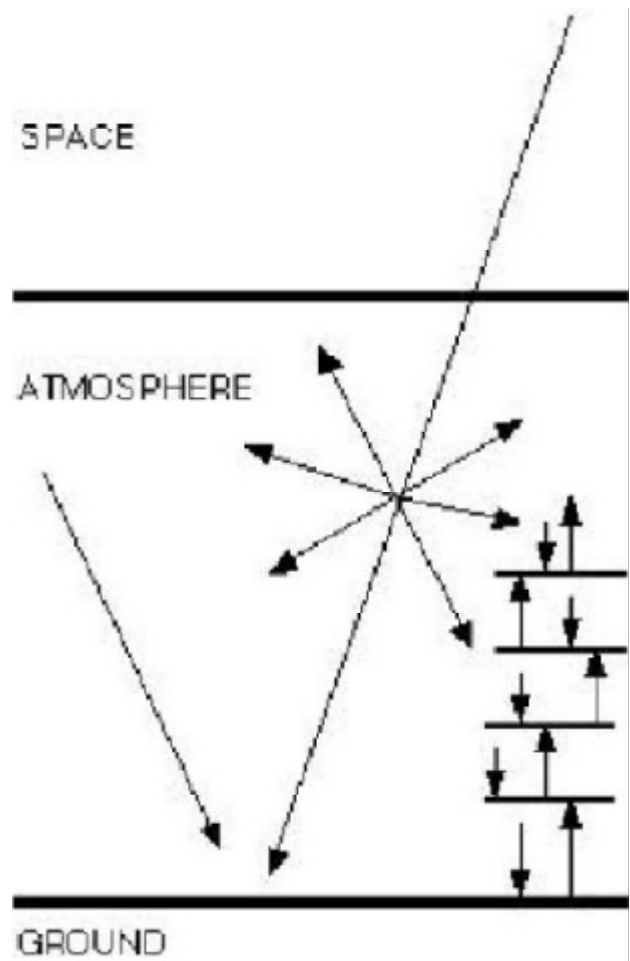
Suddenly Stroschein, with me observing, started to take apart all the newly purchased instruments. He was the engineer. For me, I would have left them alone in their box and been more concerned that they were shipped. Lea wanted to see how they were put together and what is more important, what repairs should be anticipated for the isolated Plateau Station during winter when resupply was impossible.

The plan now was that I would now be hand carrying some of the chief radiation instruments. Heavier recorders and auxiliary equipment were air freighted to Christchurch. The first instrument was a Linke-Feussner actinometer that could monitor the solar energy by looking directly at the sun. I was given two Kipp solarimeters. One was aimed upward, the other aimed downward. They measured solar radiation coming in from the sky and the radiation being reflected off the snow surface. I also carried a CSIRO Funk pyrradiometer to be faced upward and a CSIRO Funk net-radiometer for measurements of the radiation absorbed and then reradiated from the earth and air.

I was excited to learn with my own hands on these instruments that would measure the most fundamental data, the very heat energies that drove the heat engine of the earth from the sun. All other factors - wind, temperature, humidity, pressure changes, air density, cyclonic or anticyclonic air flow, etc. - were related to the four radiation components: incoming short wave solar radiation, outgoing reflected shortwave radiation, downward long wave radiation from the atmosphere, and upward long wave radiation from the snow surface. These were clearly defined and measured by Kirby Hanson at Amundsen-Scott Station. Yet when working with the actual instruments, I became aware what is not taught in the class room, the beating of the data into submission. The four components of radiation cannot be measured directly.

First of all, meteorology, a multi-disciplinary subject in 1965, still dealt with solar energy as light formed of waves even though physicists had shown clearly that light is made of weightless particles called photons emitted by electrons as they shifted levels of orbiting of the atoms. Some people hid behind a phrase "duality of light" but this phrase just hid ignorance. Like teachers teaching science as a vocabulary lesson, they didn't understand the phenomenon enough to explain it in their own words and hid behind big words.

Secondly, there is the problem that light simply does not come into the atmosphere straight. A beam of light from the sun enters the atmosphere at many places, not all parallel, and scatters in all directions as it interacts with the atoms of the air. This scattering sometimes is called diffused light and



can commonly be seen as a blue sky on our planet.

At first blush, short wave (waves being already an erroneous point of view) radiation from the sun can be seen as direct solar and diffused solar. Every layer of air diffuses the light both upward and downward. Then the diffused light from all directions and many many paths eventually reaches the ground to be reflected and scattered all over the place again. This is just talking about the unabsorbed shortwaves.

Every layer of air and the surface of the ground absorbs differing quantities of this short wave energy and reradiates it as long wave radiation and these long waves are likewise scattered and reradiated. The problem was compounded with short wave and long wave energy moving in and out of semitransparent glacial snow and ice as a surface. Each instrument used sees all these waves (remember also that they are really photons) as composites that come out as differing sensitivities registered on our recorders and greatly interpreted. The instrument pointed directly at the sun is measuring mostly direct solar radiation but also some diffused energy and some energy coming back down that reflected off the surface. Each instrument in turn had to be analyzed with all these interpretations. Radiation studies were a computational nightmare before the digital computer. Nevertheless the high speed computational techniques of modern computers have masked this dressing of raw data and given an illusion of certainty of measured knowledge. None of the uncertainty detained our drive to the high polar plateau to acquire this most valuable and fundamental information about our atmosphere.

Before leaving NLABS Paul Dalrymple insisted that I meet his “war department,” namely his wife and child. I enjoyed his very comfortable home in a suburb of Boston and met his very British wife and bright young child. Knowing Paul only from casual acquaintance I had no idea he was still planning to come to Plateau Station and maybe even held a desire to stay the winter but had not told his wife. I made the horrible mistake of speaking about his possible wintering over and a livid, cold, silence descended like a thick blanket of ice fog choking off all further conversation for the evening. I suspect his wife was beginning to plot another trip to Bermuda.

I returned to Washington D. C. with a promise from Leander Stroschein to come to the plateau and assist with the installation of the radiation instruments and his recording system, assuming he could get it all back together again. Another of the pieces of the puzzle of all the work to be done before the expedition now was in place and I was at greater ease.

At polar met the mood was one of crisis. Phil Smith, claiming to represent Burt Crary, was in touch with Bill Weyant. The original plan to have two meteorologists at Plateau Station was formally changed to allow only one. Apparently the air operations officer of the U. S. Naval Support Force, Antarctica, arrived at this conclusion several months ago. There simply were not enough flying hours in the austral summer to carry all the required building materials, fuel supplies, and personnel so far inland at such a high altitude as that required for Plateau Station. By cutting the size of the station from twelve to eight men an economy of flights by FC-130F could be achieved. I suspect that the powers that be always knew there would only be room for four civilian scientists and therefore only one meteorologist, but either Dalrymple simply did not listen or his close friend Burt Crary did not have the heart to tell him until the last minute.

We all knew the Navy was the support force and not the only force. The civilian scientists’ researches were the only reason for being in Antarctica. The Navy just helped us to get there and to keep us safe while we stayed there. So in principle, if it was important to have two meteorologists at Plateau Station, the Navy should have been told they had to support them there. Number two at the National Science Foundation as deputy head of the Office of Polar Programs and thus chief civilian

coordinator to the Navy was Phil Smith. None of us liked him. We all believed he continually was betraying the scientific efforts, giving in to the military for little or no reason other than for the pomp and circumstance and hoopla the military is capable of providing when it needs to.

It was Phil Smith who telephoned Weyant asking him to break the news to Dalrymple and me that at Plateau Station I would be alone with the inversion project and the radiation project. Weyant was in near panic at this very late announcement with no changes of the program possible other than simply to quit. I knew Stroschein would be coming during the summer season to help me set up the radiation instrumentation. The inversion program was another matter, but I had a potential solution. Bob Geissel was improving as a workable aid for tracking the balloons. Hugh Muir could not follow the balloons but would be effective at other support tasks during a full balloon flight operation. I primarily feared the responsibility for the initial establishment of the meteorological program and the very formal calibration requirements for this new weather station called Plateau Station. If it truly was to become a major milepost for weather research, I had too little experience and I knew it. Yet I certainly was prepared for the long haul of the wintering over and isolation. I persuaded Weyant to let me negotiate this one.

Exploration of an entirely new region of the polar continent was a lure for any “polar rat.” I desperately wanted to be on the team to fly first into the high plateau region. Now I had an opportunity to mend some fences with the boys who finally took me under their wing in spite of some bitter politics of the past which I had not been part of. I walked over to the Polar Ops. Eddie Goodale, an old polar hand back in Admiral Byrd’s day, was already in Christchurch. Vaughn Rockney, a Chief of OOPS, was a good choice to sound out the plausibility of my first major foray into civil service politics. Together we found Charlie Roberts. As an old polar hand with several expeditions in his experience it was easy to see the logic in asking Charlie to take my place as the first meteorologist to Plateau Station. He would be able to deal with the Navy and establish the correct position of the station for meteorological research on the highest “ridge” of the plateau. He could set up the standard weather station and was an expert on the standardization process required for the United Nations Global Weather Network. I would follow and together we could set up the inversion program. He then could leave Plateau Station and survey other stations operated by Polar Ops.

Charlie was polite. He knew how important being first was to me. I knew it too. That is why it was such a good swap. I could rest in the assurance of having the best man assist me in setting up my program, which without a doubt would launch my research career as an expert on inversions. The smile that swallowed this grown man’s ears assured me that Charlie was very excited to help. The trip to the Antarctic high plateau was getting closer.

Just before the new summer personnel and the replacement teams of the wintering personnel were to embark from state side, the National Science Foundation conducted an orientation session for a week sequestering all these scientists at Skyland Resort in Shenandoah National Park along the Appalachian Mountains of Virginia about a hundred miles west of Washington D. C. Our individual researches were set aside for an intensive immersion into everyone else’s research as well as lessons in our national interests.

The keynote address was given by Ambassador Paul C. Daniels of the State Department. He was President Eisenhower’s special adviser on Antarctic affairs and headed the U. S. Delegation to the Conference on Antarctica. Ambassador Daniels wrote the first major draft of what eventually emerged as the Antarctic Treaty and was signed by him on 1 December 1959.

Ambassador Daniels reviewed for us the mileposts of this famous treaty, still (1994) functioning quite well. In spite of great mistrust between the East and West, between the USSR and the USA and

its allies, at the height of the Cold War this treaty provided for free exchange of all information gathered in Antarctica, a nuclear free zone for all of Antarctica, and open inspections of all stations and military material in Antarctica. When the Soviet Union had been closed to any and all thought of inspection, such ideas were accepted in Antarctica.

“The Governments of Argentina, Australia, Belgium, Chile, the French Republic, Japan, New Zealand, Norway, the Union of South Africa, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America,”

“Recognizing that it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord;”

“Acknowledging the substantial contributions to scientific knowledge resulting from international cooperation in scientific investigation in Antarctica;”

“Convinced that the establishment of a firm foundation for the continuation and development of such cooperation on the basis of freedom of scientific investigation in Antarctica as applied during the International Geophysical Year accords with the interests of science and the progress of all mankind;”

“Convinced also that a treaty ensuring the use of Antarctica for peaceful purposes only and the continuance of international harmony in Antarctica will further the purposes and principles embodied in the Charter of the United Nations;”

“Have agreed as follows:”

“Article I”

“1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, inter alia, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons.”

“2. The present Treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose.”

...

“Article III.”

“1. In order to promote international cooperation in scientific investigation in Antarctica . . .”

“(a) information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy and efficiency of operations;”

“(b) scientific personnel shall be exchanged in Antarctica between expeditions and stations;”

“(c) scientific observations and results from Antarctica shall be exchanged and made freely available.”

...

“Article IV”

...

“2. No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force.”

“Article V”

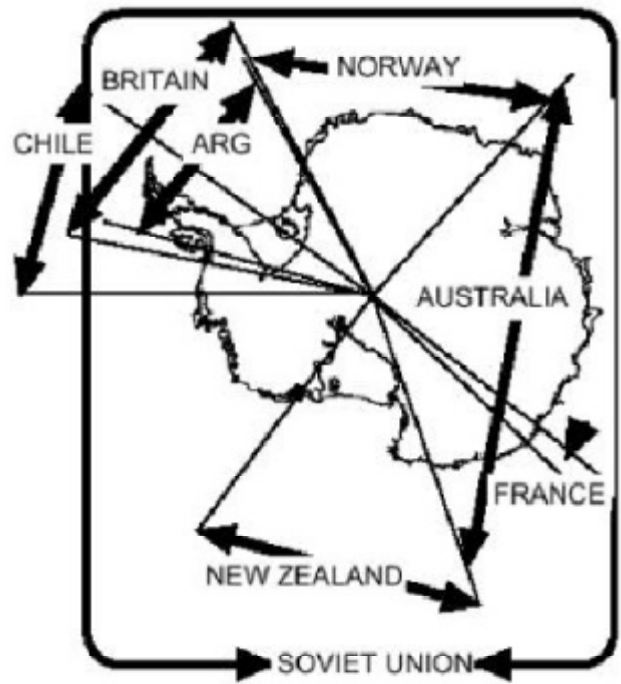
“1. Any nuclear explosions in Antarctica and the disposal there of radioactive waste material shall be prohibited.”

...

“Article VII”

“1. In order to promote the objectives and ensure the observance of the provisions of the present Treaty, each Contracting Party whose representatives are entitled to participate in the meetings referred to in Article IX of the Treaty shall have the right to designate observers to carry out any inspection provided for by the present Article. Observers shall be nationals of the Contracting Parties which designate them. The names of observers shall be communicated to every other Contracting Party having the right to designate observers, and like notice shall be given of the termination of their appointment.”

“2. Each observer designated in accordance with the provisions of paragraph 1 of this Article shall have complete freedom of access at any time to any or all areas of Antarctica.”



ARGENTINA'S FULL MAP

“3. All areas of Antarctica, including all stations, installations and equipment within those areas, and all ships and aircraft at points of discharging or embarking cargoes or personnel in Antarctica, shall be open at all times to inspection by any observers designated in accordance with paragraph 1 of this Article.”

“4. Aerial observation may be carried out at any time over any or all areas of Antarctica by any of the Contracting Parties having the right to designate observers.”

...



Daniels made us feel that our work was the embodiment of this great Treaty. The pursuit of human understanding of the earth's environment was the most noble cause a human could pursue for the preservation of all of mankind and the sharing of that information maintained the peace and preserved humanity.

The issue of claims, set aside for thirty years, remained a real one. Scientists serving in the Antarctic Peninsula needed to get a visa from Argentina. As part of its contiguous territory it claimed all the Antarctic between its eastern and western most longitudes south to the South Pole. In order not to raise an issue, most nations, including the United States, complied.

We heard inspiring reports; we heard technical reports. We saw uplifting films of past explorations. One memorable enlightening report was really a travelogue on “Man Hauling in Antarctica.” It was a glorification of the original man hauling of British fame carried out on numerous expeditions of Robert Falcon Scott and Ernest Shackleton in the first quarter of this century. Dr. Robert L. Nichols, Professor of Geology at Tufts University, still led such parties in the Antarctic where each man hauled a one ton sledge between mountains and over glaciers.

On one hand it seemed ridiculous. It was man hauling that led to the frozen death of Scott's party in 1912. Yet, by walking over the ground you were exploring, geologically you did not miss anything. The search for detail was the Tuft mark of excellence and the National Science Foundation rewarded such excellence.

Antarctic research led the way in many earth sciences. Van Allen, leader of Antarctic projects during IGY and discoverer of the Van Allen radiation belts that circled above the poles, spawned an awesome research program from many universities all using the quiet Antarctic icecap from which to monitor the ionosphere and the magnetosphere of the earth.

Peter Kuhn, in a most enthusiastic and impassionate manner, delivered his speech. In doing so, he showed us all and charged our enthusiasm to obtain the most fundamental measurements, the basic radiational energies at the South Pole. When he was finished, those of us using his net-radiometers knew we had the most important task of all explorers in the Antarctic. Even scientists of other disciplines seemed to believe it for a while.

Antarctica was becoming a bench mark against industrial pollution for the earth. DDT was found even in penguin eggs, evidently reaching the polar region by way of wind and wave from industrial counties far to the north.

We heard brilliant deliveries. We heard utterly ridiculous reports. Mr. Tickell with a heavy British accent but with the Johns Hopkins University told and showed slides on how he captured wandering albatross (*diomedea exulans*), spray painted them international orange and chased them with his helicopter to monitor what they did during their life in the Antarctic ocean waters. He had the audacity to claim, with colored photographs even, that the spray paint did not interfere with the albatross' sex life.

During smokers and other breakout sessions we met each other. It was my first meeting with Rob Flint, the chosen scientific leader for Plateau Station. He had spent a previous winter at Byrd Station and was an electrical engineer and physicist from Stanford University. He would be the only member of our exploration team that had any previous experience wintering over. I was glad he was tall. Somehow it helped me to accept his leadership.

We also were introduced to Lieutenant Jimmy Gowan, MD. He was of a very fair complexion, from South Carolina without a sun tan. He had a slight southern drawl but not too noticeable. He seemed a very pleasant fellow and promised each and every one of our scientific team - Rob, Bob, Hugh, and me - the very best assistance the Navy could provide. The navy crew men, three in number were not present.



When Sir Charles S. Wright, a veteran of the Antarctic since Scott's expedition to the South Pole in 1911, arrived at Skyland via a limousine and was escorted by all the NSF dignitaries, we all knew to stand and applaud before he began to speak.

On Robert Falcon Scott's march to the South Pole, he started his man hauling with a team of eight men: E. L. Atkinson, a surgeon; Lieutenant Henry Bowers, RIM; Petty Officer Edgar Evans; Apsley Cherry-Garrard, a paying volunteer and a zoologist; Petty Officer Keohane; Captain Lawrence Oates, 6th Inniskilling Dragoons; Dr. Edward Wilson, expedition zoologist; and Charles Wright, a Canadian physicist. On 21 December 1911, after the nine men man hauled all of their supplies up the Beardmore Glacier, Scott selected four disappointed men to return to base camp at Cape Evans on

Ross Island. The remaining five - Scott, Bowers, Evans, Oates, and Wilson - marched to the Pole and froze to death on the return march. Sir Charles Wright was one of the four disappointed men who was not allowed to go with Scott to the Pole. It was Sir Charles Wright, navigating for the search party the next year, who first found the tent with the bodies of three of the five men - Scott, Bowers and Wilson - who froze.

What did he tell us? What did each of us ask him? I don't remember. But I did not remember the next day after his speech either. What difference does it make? I saw him. I heard his voice. I learned just by looking at him to press on with my duties without looking back. I learned never to be disappointed with what my God ordains, no matter how disappointed I might be. I knew before my expedition started, the men I would get cold with together would be forever bonded as true friends. Sir Charles Wright was on his way back to the Antarctic as a consultant for the Canadian Pacific Naval Laboratory in Esquimalt, British Columbia.

Finally, Mr. L. D. Bridge from Wellington, New Zealand gave us the straight skinny on survival on the Ice and, of course, a manual. (Some signals to be memorized are shown here.)

After the Skyland conference different members of the Weather Bureau embarked for the Ice at different times. Those bound for Byrd Station were the first to depart. A few short weeks later, the South Pole parties left. Everything depended on the Navy's schedule and their schedule depended on God's weather. The high plateau was the last region to open for the summer so I had a short respite to dash to Wisconsin for last good byes.

First, shots. I was avoiding the inevitable. At Skyland the Navy chaps learned that I did not have my shot record up to date and all laughed. On return to Washington D. C. I immediately visited the U. S. Navy Dispensary on Constitution Avenue next to the Reflecting Pool. The officer in charge asked for and received my travel orders, read them and laughed. I had to ask why every Navy person was laughing? I learned in the next painful minutes and suffered for two weeks after. He simply took a map of the earth, drew a line that traced out my flight plan from Washington, to Hawaii, across the equatorial zone, to New Zealand and down to the bottom of the map repre-

| | |
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|  | Require doctor—serious injuries |
|  | Require medical supplies |
|  | Unable to proceed |
|  | Require food and water |
|  | Require map and compass |
|  | Probably safe to land here |
|  | Unsafe to land |
|  | We have found only some personnel |
|  | Have divided into two groups, each proceeding in direction indicated |

senting the South Pole. That line crossed essentially every disease area and I received shots in my left arm, in my right arm, in my left buttock, in my right buttock, in my left thigh and in my left arm again. Enough said. He was laughing; I was groaning.

A last visit was paid to Prof. Lettau and Prof. Schwerdtfeger. This time not much information was exchanged. I reviewed the criterion for balloon launches. Each professor still tried to add more to the project but now, as a government civil servant I no longer listened. I wanted to, but time simply was gone. I was already covering all the last minute blunders of my own plus some of the procrastinations of NLABS.

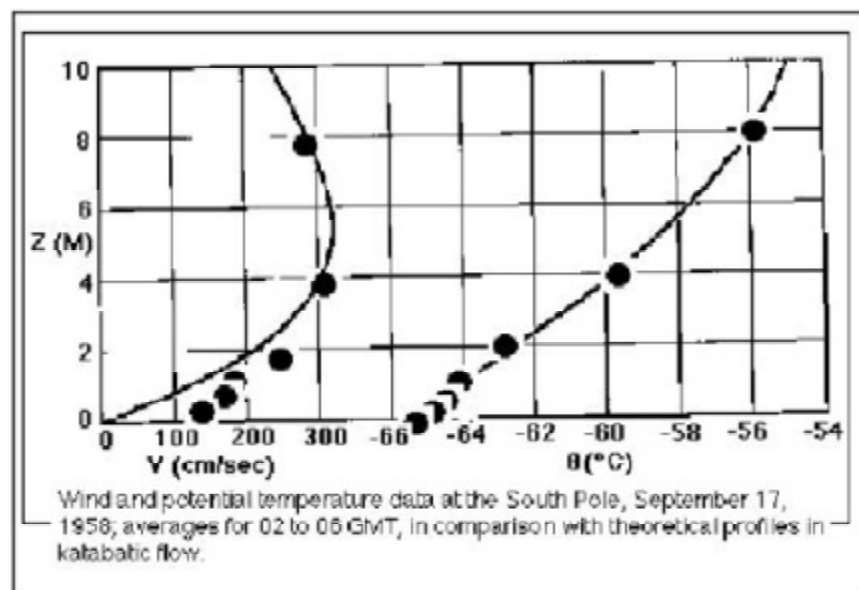
Lettau insisted he receive the warmest temperature measured in the air the first few weeks at Plateau Station and the temperature of the snow at the deepest level I could dig to. He wanted to predict the coldest temperature of the year. At that point I knew nothing about communications on the Ice. It was hard not to be able to promise Lettau's request. I asked for his prediction method but he only smiled and said he would wait for my data and would be glad to share after that.

Lettau did show me some advanced draft of a work on South Pole data he intended to publish soon. I was somewhat stunned although I should not have been. It was evident Prof. Lettau was racing on with research on air flow over the Antarctic interior speculating on the plateau from data already published by NLABS from the South Pole micrometeorology program of Dalrymple.

I chided him about the debate his class through my work out east was causing. Would the winds over Plateau Station be katabatic or of a different nature? Lettau saw katabatic winds as a special case.

The direction Lettau wanted the research to go strongly pointed to katabatic winds as truly down slope winds of a short time duration. Thus, they did not involve the Coriolis force from the spinning earth. Katabatic flow was caused by a piling up of cold air held on to the sloping plateau by another wind system.

“... Dalrymple et. al. They found that, at the south pole, the difference vector between the wind velocity at the top of the inversion layer and the wind velocity in



the surface layer gives evidence not only of a systematic frictional backing of wind direction with height, but also of an additional prevailing tendency toward a cross-slope motion. In other words, there appears to exist a physical cause that tends to make the air motion in the surface layer an ENE wind regardless of the velocity vector in the free atmosphere.”

“An obvious explanation presents itself in the thermal wind effect, or the geostrophic balance between a force due to gravity and a horizontal density gradient, and the Coriolis force, which accompanies the resulting equilibrium motion of the air. Namely, the prevailing condition of a substantial ground-inversion layer of several 100 meters thickness, on a sloping boundary, must of necessity mean that the temperature increase normal to the snow surface sets up a horizontal temperature increase in the air away from higher ground. The large horizontal extent of the sloping plateau provides sufficient opportunity for the Coriolis force to develop the balance, because, at a mean speed of 5 m/sec, it would take nearly a full day to traverse a distance of 400 km. In conclusion, it can be said that the surface wind distribution at the south pole is primarily caused by geostrophic motion above inversion height, which is modified by a prevailing thermal wind (due to systematic horizontal density gradients in the sloping inversion layer) as well as by surface friction.” (Heinz H. Lettau, “A Case Study of Katabatic Flow on the South Polar Plateau,” in *The Antarctic Research Series*, Vol. 9, Morton Rubin, Editor, American Geophysical Union, 1966, pages 1-2, also figure 2, page 8.)

It was obvious no one could develop mathematical models faster than Prof. Lettau and his students. Nor should they. I was a recipient of his gifts as his student. Nevertheless I did feel envious of the younger student who could sit comfortably in the classroom, take notes and formulate theory at the whim of the theoretician. I now had to depart to the frozen field to collect the confirming evidence and I did not like my disconnected role from the theoretical side of things.

Schwerdtfeger was formulating a stronger and stronger case for sinking saturated air which in an inversion then would precipitate ice crystals from a clear sky. As warm nearly saturated air descended into cold stable air, super saturation would be achieved or the moisture would have to precipitate out. I would watch for this phenomenon.

The visit back to Wisconsin was like a crash course in saying good-bye. I tried to look up everyone I knew to say good-bye and in the end said very little. At the homestead in Milwaukee on Second Street official paper work let the reality of a year in Antarctica sink in. In spite of my personal demand to be truly independent, all efforts to do so, at least with respect to federal income taxes, became impossible. Every federal tax official I talked to said simply mail your taxes. It was impossible to get anyone to accept the thought that for another part of the government, namely the United States

30 November 1965. “To meet this possible—and in my view likely—Communist buildup, the presently contemplated Phase I forces will not be enough (approx 220,000 Americans, almost all in place by end of 1965). . . . If it is decided not to move toward a compromise, I recommend that the U. S. both send a substantial number of additional troops and very gradually intensify the bombing of NVN. Amb. Lodge, Wheeler, Sharp and Westmoreland concur in this prolonged course of action, although Wheeler and Sharp would intensify the bombing of the North more quickly. . . . recommend up to 74 battalions by end-66: total to approx 400,000 by end-66. And it should be understood that further deployments (perhaps exceeding 200,000) may be needed in 1967. . . . Evaluation. We should be aware that deployments of the kind I have recommended will not guarantee success. U. S. killed-in-action can be expected to reach 1000 a month, and the odds are even that we will be faced in early 1967 with a ‘no-decision’ at an even higher level.” (Memorandum for President Lyndon B. Johnson from Secretary McNamara.)

Antarctic Research Program (USARP), there would be no mail after the last supply plane at the end of summer sometime in February 1966 until the first flight again in the next summer in December of 1966. I had to turn power of attorney over to my Uncle Edgar Hahm.

Some of the paper work quietly announced that there could be some danger though no one said anything. I had to have several signatures on forms designating my brother Ray Sponholz as my nearest next of kin. And likewise I needed signatures and witnesses that if I died in the service of my country in the international territory of Antarctica that burial in Antarctica would be acceptable. It was my wish to let it so be.

I don't remember this good-bye, again with Tanna, Ray and Trudy and their children Scott, Debbie, Craig and little Brad, being as emotional as the departure for Washington D. C. the previous summer. Antarctica was incomprehensible. Also, I had been independent now living on my own for five months. I had turned from a dependent child to a relative and you just didn't make a big deal of saying good bye to a relative after beer and cards.

Back in Washington D. C. I immediately got in touch with Jim Sparkman, an old college acquaintance who developed a PhD dissertation using pictures of targets to show a mirage and then using the refraction of light and his mathematical models to compute the details of temperature changes within the column of air of the mirage. Lettau thought that Sparkman's model would be a helpful and subtle way to measure the details of the lowest layers of the Great Antarctic Temperature Inversion.

Feodor Ostapoff, Director of the Sea Air Interface Laboratory (SAIL) encouraged me to abandon ideas of thermal winds as a mechanism for the winds in the interior of Antarctica. His research of the ocean with Viebrock kept him interested in my work but he, like most of the meteorologists along the East Coast, saw katabatic winds with a Coriolis force dominating all of Antarctica. My greatest lament was that I was about to go off to the field without my or anyone else's mathematical model of inversion winds. I would be looking for a phenomenon without the guidance of a hard and fully shaped model and the young men at home probably would invent one. Newly invented models have a way of changing the need for observations and identifying what is important. Whatever happened, the adventure to come was going to be mine.

