The Antarctican Society

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DELIVERING THE GOODS WHERE IT COUNTS, SINCE 1957

On 8 February Elaine Hood, longtime member of the support contractor staff providing essential services to the U.S. Antarctic Program, issued one of her "In the News" emails with a simple declarative sentence: "This year there will be no cargo vessel to McMurdo." She noted that the incident is unique in the program, and she provided a thumbnail history of the seaborne cargo operation since 1957.

Seaborne deliveries of cargo and fuel are mission-critical parts of U.S. Antarctic field activities. It's easy for folks arriving at McMurdo by air, which most do, to miss knowing that over 90 percent of the cargo used, and all the fuel, arrives by cargo ship and tanker. To get the ships in, a channel first has to be broken through the sea ice of McMurdo Sound by icebreaker. All this takes place in a carefully choreographed sequence in late austral summer when the sea ice is at its annual minimum.

For decades, missing just one of those annual deliveries would have meant doom for field operations: No fuel? No program. Managers worked for years toward the goal of seaborne deliveries every *other* year. They relentlessly increased energy efficiency of buildings, introduced tractor trains to reduce air delivery of cargo and fuel from McMurdo to South Pole, added fuel storage tanks at McMurdo, and beefed up use of solar and wind generators.

Then covid-19 changed the rules. The U.S. Antarctic Program drastically reduced, but did not terminate, field operations. Critical cargo was delivered this season from Christchurch to McMurdo by augmented C-17 flights in an operation called *Air Bridge*. No cargo ship. No tanker. It worked.

I listened to an interview on the radio some weeks back in which a scholar in social and economic affairs commented that most of the wealthy world has built its capabilities around the principles of comfort and convenience rather than resilience. Antarctica does not permit such indulgence, and the notion seems hard-wired into the thinking of the people who work there. The years-long buildup to the ability to substitute *Air Bridge* for sea deliveries this season underscores the point.

Guy G. Guthridge

Strength in strategic diplomacy: Ambassador Paul C. Daniels

by Ana P. Daniels

Ambassador Paul C. Daniels signing the Antarctic Treaty, December 1, 1959

The phrase "save the best for last" describes the Antarctic Treaty. Its final signer was the Treaty's visionary, my grandfather U.S. Ambassador Paul Clement Daniels: laser-blue eyed, pipe-smoking, totally brilliant, and ever humble.

While the Treaty itself, signed in 1959, is a marvel – subordinating property and military rights, fostering collaborative global science – its backstory holds important details. Many center on the Treaty's architect, my grandfather. Most of his papers reside at Yale's Sterling Memorial Library, but some remain with my mother Jean Daniels Portell. Among them is a book, *Fables for the Nuclear Age* (1989, Paragon House, New York, 207 p.). A penned dedication by the author, Alan F. Neidle, reads, "In gratitude to Ambassador Paul Daniels who stimulated me to think sensibly and without blinkers about diplomacy. His creativity, wisdom, and strength saved a continent from the follies of the Cold War." My grandfather had selected Mr. Neidle, who in the 1950s was a young GS-7 lawyer with the State Department, to be part of the team negotiating the Treaty.

My grandfather was a magician in every sense of the word. He loved performing tricks and was exceptionally good at it. A dynamic strategist, he had a unique affinity to engage audiences across generational and continental divides. As an expat child, my mother recalls he would enliven trips back-and-forth to the United States by boat; "reading" his audience, entertaining with skilled illusion. He taught the importance of curiosity: knowledge of history and the arts, games of chess, banjo playing, singing favorites entwining his Yankee roots with my Grandmother's Louisiana Southern flair: "*Red River Valley*," "*On Top of Old Smoky*", "*Oh! Susannah*," and my favorite "*The Old Family Toothbrush*." At meals we sat straight, elbows off the table.

My grandfather's work is evidenced in a special Antarctic issue (vol. 26, issue 10, 1970) of the *Bulletin of the Atomic Scientists*, in which he explains the "close relationship between science and international cooperation," both aimed at reducing barriers to peace and progress. He brought a dynamic mental discipline as Ambassador to Honduras and Ecuador, Council of the Organization of the American States, Director of American Republic Affairs in the State Department. At the start of his career, he was the youngest career foreign service diplomat. To 'solve' his greatest puzzle of all, the Treaty, he was drawn out of retirement.

He finessed challenges taking a creative twist. He didn't just 'do' anything – he mastered it. My grandmother would cut-out Sunday crossword puzzle grids, leaving just the clues. To 'up the ante' – he rebuilt each puzzle from scratch on graph paper. He made time for everyone he touched: golf with Eisenhower, bridge with my grandmother, chess with my father, hearts with my mother, and 52-card pickup with my brother and me. He had an official "backseat driver's license" issued for my mother, who admired her father's quick-wit and lively spirit. In a 2014 Antarctican Society presentation, my mother

spoke of his courageous, significant contributions to the Treaty.

Paul C. Daniels, Yale University, Class of 1924

Called out of retirement

It was from 1957 to 1959 that he was brought in, under secrecy at first, as U.S. negotiator to design the Treaty. He was summoned for his vast knowledge of Latin American leadership and intelligence. The State Department previously supported Antarctica assignments through the Latin American Bureau because of Chile and Argentina's overlapping political and territorial claims. Other constituents carried top-priority sensitivities. It is difficult to appreciate the critical military viewpoints held in check to design the Treaty; its continuity through the decades reflects its success – an incredible feat.

Unlike bilateral treaties, the Antarctic Treaty involves delicately interlacing relationships -- Cold War rivalries between former World War II allies. My grandfather's mission: to conceive a multi-lateral Treaty to restore adversaries to allies. He established a playbook and team, including that young GS-7 lawyer, who later acknowledged him as the greatest stimulus to international diplomacy, encouraging "a concentration of what is important, devoid of clichés."

My grandfather chaired sixty meetings in rapid succession over 9 months including countries active in Antarctica. When others balked at including the Soviets, my grandfather stood firm – he understood the import of Soviet trusted participation; his working group was first-in-class, and it paid off.

Alan F. Neidle in 2000 was interviewed at length by the Polar Oral History Program at The Ohio State University. "Not only was [the Treaty] a very significant issue," he said, "but Daniels conducted this in what I considered a very old fashioned, but very sound and excellent diplomatic manner. We analyzed the problem, the possible approaches, the ways to go about it, when to go to other countries, whether to start with principles, and what I think we came with up with, as I remember, is that we would work for a policy statement by, I think it was Eisenhower, even. So this was an initiative to develop the format, the procedure, the steps we worked out by this little group with Daniels playing a very, very active leading role and all went smoothly."

Timing and strategy were everything. From years working alongside Latin America dignitaries for tightly controlled groups as the coffee industry, my grandfather understood studying 'the dance' from all angles.

Neidle: "Now one of the things that interested me… was Daniels's way of drawing everybody in, getting all of the views, consulting everybody, having everybody kind of be part of the process."

Through my grandfather's alliance building, the Soviets became increasingly more engaged. The Russian representative was later replaced by a senior Russian Foreign Ministry legal advisor.

Neidle: "The Russian line was that these talks were invalid because the People's Republic of East Germany wasn't present. And immediately there was a question, how to respond to this. And Daniels had what I thought was the perfect diplomatic line which

was just to let them have their way. And he calculated, I think quite correctly … that they wouldn't walk out because they'd want to hear what everybody else was saying. They wouldn't want to miss the opportunity to collect all that information and intelligence."

Once he had Russia fully engaged, the timing was ripe to draft the Treaty.

"One day," Neidle stated in the interview, "Ambassador Daniels said to me, 'Alan, I think it's time we had a Treaty text.' And we had gone through many months talking principles, circulating statements, and so forth. But he said to me, 'I think we need a full treaty text in treaty language. Draft One.' So I went back to my office, pretty excited. This was, you know, quite an assignment. I sat at my typewriter, I stared at the damn thing, and I said, 'How do you start the most important treaty, multilateral with the Russians, since World War II?' Because this would be the first treaty limiting military activities of the Soviet Union in any significant way. So I sat and scratched my head and finally I came up with a sentence." 'Antarctica shall be used for peaceful purposes only.'

Paul Daniels also worked extremely hard to ensure the Treaty bore Eisenhower's imprimatur.

"There were people – Cold Warriors, as it were – experienced, respected, serious people who said this is never going to work. The Russians are not interested in bringing peace to and cooperation with us anywhere. They operate on a zero … gain basis . . . any gain for us is a loss for them and vice versa… and we ought to get out while we have a good excuse and can blame them for foot-dragging in inserting the East Germans who have no business being discussed at all."

Calling it nonsense

"And Daniels worked very hard above my level to say this was nonsense. You just pursue your interest as you calculate it. You do it patiently. You don't let the other side determine what's in our interest. We decide that. And this treaty, if we got it the way we want and if they signed and others signed, and we had the inspection, would be in our interest. And I think the issue went fairly high – maybe even to the President, although I'm not sure. But it was decided to continue the course of seriously, quietly, without polemics, without publicity, seeking the treaty. And it was a little while after that that the Russians came around."

In a 1972 presentation to the Salisbury Rotary Club my grandfather noted the Treaty's impact: Antarctica was the *only* place where the Soviets allowed inspection of its installations. True magic – a tactical master drawing together allies and competitors, earning trust – demonstrating diplomacy as more powerful, lasting, and impactful than war.

Gov. Reagan, Paul's wife Theodora ("Teddy") and Paul C. Daniels, 1975

He presented the Ninety-Eighth Commencement Address to Vassar College in 1962, *Antarctica – Proving Ground for Practical Idealism*, demonstrating the grand idealism of the Treaty was no pipedream. Describing his journeys to Antarctica, he shared details such as windowless military planes, flying over the Daniels pristine mountain range located at 71°15' S. 160°00'

E. longitude in Northern Victoria Land: nature's enduring classroom. He was deeply committed to its spirit and sanctity – preservation of treasures not to own but for deeper scientific knowledge.

One of the enduring qualities of the Treaty resides in its framework, shaped from my grandfather's Antarctican Society ethos, a vision seeking solutions beyond military lines for global scientific advancement. The Treaty's resiliency marks his legacy: courageous diplomacy. In polarizing times, the Treaty stands an iconic beacon of integrity and global strength.

"Bampa" Paul Daniels with his only granddaughter Ana (author of this article)

His passion for science inspired me as a junior member of the American Society of Polar Philatelists. I was thrilled to receive handwritten letters from senior Society members, heroes, and veterans teaching me of the Arctic and enclosing covers and seals for my collection, sparking my awakening interest in new frontiers.

The Treaty continues to resonate powerfully – its essential governance remains intact through decades of scientific and political change. It marks the first arms control agreement in the framework of the Cold War effectuated through painstakingly complex strategic diplomacy. Nuclear arms control was indelibly shaped by the Treaty: "I think it no exaggeration that your father was the greatest stimulus to my thinking at that early and impressionistic stage of my career." (Neidle letter to Jean Portell, 4 September 1991)

In my own career living overseas and raising a next generation of expat children, pioneering global R&D governance for a science-led enterprise, the Treaty stands a steadfast reminder of my grandfather's brave vision to lead always with trust and inclusion in building our collective future.

Paul C. Daniels built this CT lakeside cabin where the family celebrated the 80th birthday of daughter Jean Daniels Portell (seated, in red). The author is standing behind her. Daniels' grandson Paul Daniels Portell is at left.

Ambassador Paul C. Daniels (1903-1986) was a Director and first Honorary President of the Antarctican Society. For more than three decades the Society presented annual Paul C. Daniels Memorial Lectures. In an Appreciation in the April 1986 issue of this newsletter, longtime editor Paul C. Dalrymple wrote, "I hope the Society, whatever it is or may become, will never stray far from the ideals he had for it."

Alan Neidle transcript: https://kb.osu.edu/handle/1811/30107.

Jean Daniels Portell delivered a presentation about her father Paul C. Daniels to members of the Antarctican Society on July 18, 2014 at Port Clyde, Maine.

My years in Antarctica, then and now

by Robert Rowland

My polar career started with a draft notice. In 1961, just after returning to San Diego from a 6-month Indian Ocean expedition on a Scripps Institution of Oceanography research ship, I was drafted. Thankfully, the local draft board postponed my induction until I completed my BS in geology at San Diego State College.

Army basic training started in March 1962 at Fort Ord, California. I was assigned for the rest of my 2-year active duty obligation to the Cold Regions Research and Engineering Laboratory. At that time, CRREL's function and location were unknown to me. In the Fort Ord library, a book of Army posts did not list it. To me, a 21-year-old, this indicated the CRREL assignment might be very good or very bad. I decided to report to CRREL. If it was very bad, I had the application for Officer Candidate School in my pocket.

The first person I met in Hanover, New Hampshire, at CRREL told me I would replace him and would be going to Antarctica. I was overjoyed, because at that time research was the only way one could go to the Seventh Continent. I also would enjoy returning to New Zealand plus I knew an American geologist who worked in Antarctica. In Washington, D.C., the physical exam was passed. Next, I visited a former San Diego State College professor, Art Ford, at his USGS office where he worked when not in Antarctica. Art's enthusiasm was infectious; he recognized studies done there, in the 1960s, would be basic contributions to Antarctic knowledge. Years later, Art was influential in my joining the Antarctican Society.

At CRREL, our first task would be conducting engineering studies on the strength of sea ice in McMurdo Sound and snow bearing studies for footings for the planned geodesic dome at South Pole Station. Our job also included measuring the tunnel closing distances at the under-snow New Byrd Station. In 1962-1963, the "we" was another draftee, George Hendrickson, a civil engineer who had studied at Michigan Technical College, in Houghton, where winters were probably colder than we would encounter during our summer in Antarctica. While we were working at the South Pole, George took a photo for my parents. I was at the bottom of the world 90 degrees south, standing on my hands, holding up the whole world.

Bob Rowland ice coring near the Dailey Islands

The next Antarctic summer, 1963-1964, Tony Gow – one of our bosses at CRREL – joined us. In addition to repeating the previous year's tasks, we added a trip to the Dailey Islands where we found fish carcasses on the ice surface (*Jour. Glaciology*, 1965). I found the frozen fish bodies tasteless.

About this time President Kennedy was killed. At first we thought the US Navy psychologists had initiated this "news" to see how fast a rumor would travel in Antarctica. Our suspicions were heightened when we were told the person who shot the president was shot. But the next plane from New Zealand carried people and newspapers and, sadly, we learned that all we had been told was real.

In the Arctic summer of 1964 and 1965, now a civilian, I worked for CRREL at Camp Century, Greenland. Again, the research was on the load bearing properties of snow. The major difference was that my salary was more than 10 times my former Army pay. The three articles I co-authored while at CRREL no doubt helped me gain admission to graduate school in geology at the University of California at Davis. The field work for my PhD was in Alaska, collecting bottom samples in the northern Bering Sea. I completed my degree and worked for 20 years with the USGS marine programs. I retired as soon as possible and sailed my 30-foot sailboat *Kiana* to the Panama Canal and then westward. On my return to the US I spent a few years writing about my 4½-year trip, but shelved this project; I decided no one would buy my book as nothing went wrong sailing around the world.

In 2004, the Antarctic beckoned again. A former CRREL colleague told me he was getting too old to continue guiding and lecturing on Antarctic cruise ships. He sent my résumé in, and I was hired by Hurtigruten, a Norwegian shipping company that was getting started in polar expedition trips. Every Antarctic season since 2005, I have worked along the Antarctic Peninsula and the nearby islands as a geology lecturer on Hurtigruten ships and as a guide at our onshore sites. A few years later, the company added me to its Arctic shipboard staff, even though I was the only staff member fluent in one language. 2005 also brought me more employment as I re-joined the USGS Law of the Sea project. I worked with USGS geologists to evaluate seafloor claims by other nations, seaward beyond the 200-nautical-mile offshore limit. Many of these claims were in the polar areas where I worked.

The covid-19 pandemic has affected the entire cruise ship business. Many Antarctic trips were canceled, as were Arctic trips in 2020 and 2021. I am scheduled to head south of the Antarctic Circle in early 2022. If all goes well, this southernmost trip will reach Stonington Island. Onboard we will have Bob Dodson to re-visit his 1947-1948 base where he was an assistant geologist and dog team driver with the Ronne Antarctic Expedition.

Sixty years after being drafted and landing at CRREL, I'm still with polar science.

Thoughts on Antarctic tourism in the covid-19 era

by Valmar Kurol

With the explosion of covid-19 in the early months of 2020, ship-based tourism ground to a halt as ports closed and services such as airports restricted access. The restrictions varied by country, as reports of vessels being turned away reincarnated horrors of immigrant ships of past eras being denied landing.

Antarctica has no conventional governance and thus no covid-19 regulations. The international political mechanisms of the Antarctic Treaty System have not provided guidance. Tourism to Antarctica is not banned, but access is largely by ships from Argentina and Chile and to a lesser extent from Australia and New Zealand. Each country has its own entry and departure rules, some of which are restrictive. 2019-20 statistics from the self-regulating International Association of Antarctica Tour Operators (IAATO) indicate 74,401 tourist visitors to Antarctica, of whom 55,895 were ship-based landed/deep field visitors and 18,506 cruise-only visitors. Many Antarctic cruise operators, operating under IAATO guidelines, put their operations on hold for the 2020-21 season due to the perceived risk of covid-19 transmission on cruise ships as well as to operational uncertainty. According to IAATO, the Antarctic community, including national programs and support infrastructure, has a dominant goal to keep covid-19 out of Antarctica. In the only reported cases of covid-19 in Antarctica, in December 2020 36

people tested positive on a Chilean scientific base on the Antarctic Peninsula.

One unfortunate Antarctic expedition vessel that had been denied access to port at Montevideo, Uruguay, had at the time about 60% of its crew and passengers infected with the virus. That decision was later reversed, and seriously ill passengers were removed for hospitalization. The ship had departed Ushuaia, Argentina, on 15 March 2020 for a 2-week tour of South Georgia and the Antarctic Peninsula, but was forced to divert almost immediately. The Australian government provided assistance to repatriate Australian and New Zealand citizens on a flight to Melbourne. American and European passengers had to wait in quarantine for negative tests before being flown out via São Paulo, Brazil, for linking flights.

Covid-19 has raised questions about the health and safety conditions on all types of cruise ships and the use of screening processes, sanitation practices, and beefed-up onboard medical services as well as coordination with public health authorities. Already, many older ships have been scrapped or sold.

There is no universal schedule for Antarctic cruise restarts, although some companies have advertised packages for late 2021 to early 2022. In January 2021, a new venture, Adventures by Disney, announced two departures for December 2021 and January 2022 for the Antarctic Peninsula for a 12-day cruise beginning in Ushuaia, Argentina. It was to be marketed to families with children over 12 years of age.

The ship will be *Le Boreal*, operated by a French cruise ship company, with room for 264 guests. Prices were reported to range from $11,500 to $27,500 per person. Last heard from under a different name, the ship had a major fire in 2015 and was evacuated near the Falkland Islands. With the help of British forces it was recovered and repaired in 2016. It later appeared on the TV show Mighty Ships for its South Georgia-Antarctic Peninsula cruises. Disney's iconic cartoon characters such as Goofy, Donald Duck, and Bugs Bunny have already appeared in several Antarctic cartoon shorts since the 1930s, so this new venture is not a complete surprise.

A casualty of the pandemic will be the prominent Antarctic cruise operator Zegrahm Expeditions. After 30 years, it will wind down its brand in 2022 due to the current business environment and will consolidate with its affiliates under the Exodus Travels/Encore Expeditions.

Future Antarctic tourism could have 1) a quick recovery of ship-based travel if vaccines prove ironclad, 2) a slow recovery if vaccines prove not as effective as anticipated, with or without allowed landings to protect wildlife and habitat, or 3) a longer-term sidestep into more airplane-based travel if infrastructure can be developed.

A benefit of reduced tourism has been the reduced impact of human and ship disturbances on wildlife and habitats at the edges of the continent where landings usually take place. On the other hand, during covid-19 Antarctica perhaps has been out of sight and mind of the world at large. Issues affecting it such as global warming, overfishing, and protection of marine species habitats have been on the back burner for world bodies. Tourists have been a ready source of informed ambassadors for the continent and should continue to be in the future.

Andrew M. Stillinger, 1964-2021

by Bob Melville and Michelle Brown

Andrew ("Andy") M. Stillinger – project engineer for A-112 with the New Jersey Institute of Technology – died suddenly and unexpectedly of natural causes at his home in New Jersey on 23 February 2021; he was 57. Andy was responsible for engineering improvements to the Automatic Geophysical Observatories on the high east Antarctic plateau. His expertise – particularly with design for the wind-turbines – has provided almost unparalleled reliability and up-time for geophysical data collection at these remote,

unmanned sites. Andy was an engineer's engineer.

Andy Stillinger at AGO Project installation

In addition to his official duties with the AGO project, Andy demonstrated boundless energy and enthusiasm and was always ready to help other groups and projects. His repair jobs were legendary, whether it was a broken food processor in the kitchen at South Pole, an exercise cycle in the gym, or an optical instrument at Arrival Heights outside McMurdo Station. He once extended the reach of the HAM radio by upgrading an old amplifier using transistors cannibalized from something he found in the skua bin.

Andy was committed to outreach and went out of his way to identify and then work with PolarTREC teachers. He was involved in numerous impromptu educational experiments, demonstrations, and videos, including one showing how to calculate the tilt of the Earth through trigonometry and shadows while at the Pole at solstice.

His energy, expertise, humor, kindness, and enthusiasm will be missed. Andy is survived by parents Frank and Dot and by a sister, Connie.

HRH Philip in Antarctica

by Steve Dibbern

I was saddened to see the death of HRH Prince Philip, Duke of Edinburgh, the husband of Queen Elizabeth II, at age 99. Some folks may not realize that he visited Antarctica in 1957. He was on his way back from the Olympic Games in Australia on the yacht *Britannia*. He had an intense interest in wildlife and published a book, *Seabirds in Southern Waters* (Kessinger Publishing, 2010, 118 p.), with his own photography as a result of the trip. His stops included the Falkland Islands Dependencies Base "W" at Detaille Island and Base "B" at Deception Island.

During the early 1980s I was researching the history of Deception Island and came across his book with a map of his trip. Realizing that he was both a photographer and had visited, I wrote to him: "HRH Prince Philip, Buckingham Palace, London" on one of those folded blue airmail letters we used then.

This was pre-internet, so several weeks later I received a reply. It was not from HRH, but from "His Man," a Major "Somebody or Other." He informed me that HRH liked my research project and was sending his original slides for me to copy and use at my will. They arrived some days later, and I had them copied. Unfortunately, the weather was not the best, and although they had lots of good information on the condition of the facilities at Deception, none was usable for publication.

I write this because I think his kindness to me, an unknown interested in his photography, should be noted. He had the experience of visiting Antarctica and was willing to share it with someone in the "colonies."

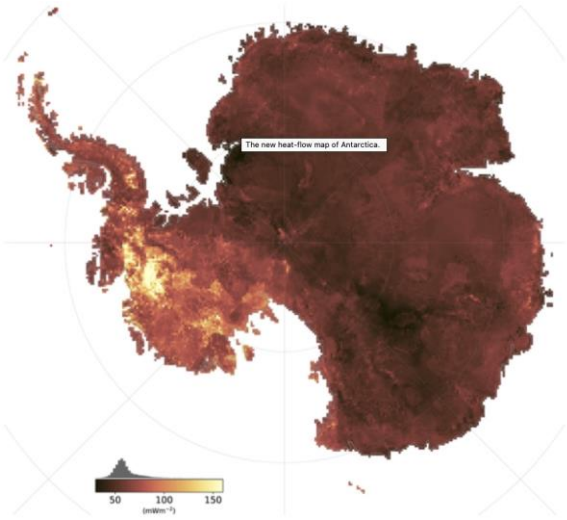
Hot rocks in West Antarctica

by Wes LeMasurier and Art Ford

Recently the American Geophysical Union published a new map of geothermal heat flow in West Antarctica, seen in the figure accompanying the online version of this article, https://eos.org/editor-highlights/taking-the-temperature-of-antarcticas-crust&utm_campaign=ealert

The new information is important because heat flowing from Earth's interior influences basal melting of the ice sheet. As can be seen from the scale at the bottom of the

figure, heat flow increases from the brown to the yellow colors. The highest values are in West Antarctica, where the ice sheet already is unstable because it rests on a bedrock floor 500 to 1,000 meters below sea level.



T. Stål et al. [2021]. Antarctic geothermal heat flow model*. Geochemistry, Geophysics, Geosystems, 22*

The heat flow shown here is the amount of heat (mW/m^2 = milliWatt per square meter, or thousandths of a watt per square meter) that flows from Earth's interior to outer space. A small proportion of this heat is original heat being lost from the early molten history of the planet. However, the majority of the heat flow shown here is produced by radioactive decay of uranium, thorium, and potassium from rocks in the crust and the upper mantle.

The average continental heat flow is about 50 mW/m^2, and that is the value shown for all of East Antarctica. West Antarctica is an intracontinental rift system, like the Basin and Range of the western United States or the East African rift, where the crust has been stretched and thinned to roughly 25 km, compared to a roughly 40 km thickness for East Antarctica. This attenuation, or thinning, over the rift system has allowed partly molten (~5%) mantle rock to rise to less than 100 km from the surface, producing the higher heat flow seen here (in yellow). These values are similar to those in other intracontinental rifts like the Basin and Range. In the Lake Whillans area, 1,000 km southeast of Ross Island, the heat flow is much higher and similar to Yellowstone.

These heat flow values no doubt enhance basal melting somewhat, i.e. they are much higher than those under the Laurentide ice sheet 20,000 years ago; but they are unlikely to be as much of a threat to ice sheet stability as the recently discovered rise of relatively warm sea water beneath the Thwaites and Pine Island glacier tongues, which is currently the threat of greatest concern. Finally, the geologic evidence for a postulated large volume of young, potentially active, volcanoes beneath the West Antarctic ice sheet is very weak, which reduces the threat of increased basal melting from this source (Andrews, JT, and LeMasurier, WE, manuscript in revision, EPSL).

The new data in the attached figure should be accepted as a valuable contribution to knowledge and not mis-interpreted as a cause for undue concern.

Wes LeMasurier is with INSTAAR, University of Colorado at Boulder; Art Ford, USGS Retired, Menlo Park, California.

Dr. Edwin S. Robinson, 1935-2020

by Richard Robinson

Edwin S. Robinson, Antarctic scientist, explorer, and long-time Antarctican Society member, passed away in Roanoke, Virginia, on 10 September 2020, after suffering a stroke. He is survived by his wife of 58 years, Valarie, his daughter Lindsay Ailstock, his son Evan Robinson, and three siblings.

Ed made four journeys to the continent, the first during the International Geophysical Year. In January 1957, after graduating from the University of Michigan in geology, Ed learned that a fellow student was going to Antarctica with one of their professors. Ed landed a job as a junior surveyor on the project. In early October, he

arrived in New Zealand with his colleagues. They waited weeks for a flight to McMurdo. While they languished in Christchurch, on 25 October a six-man team already on the Ice, led by IGY Deputy Chief Scientist Albert P. "Bert" Crary, departed Little America on the Ross Ice Shelf Traverse intending to do seismic surveys and glaciology, and measurements of elevation, gravity, and magnetism. The group faced terrible weather crossing areas riddled with snow-covered crevasses. A glaciologist on the team, Peter Schoeck, was badly injured after falling 60 feet down a crevasse. He survived after a daring and dramatic rescue, but he had to be evacuated to New Zealand. Peter Schoeck's misfortune ended up an opportunity for Ed. Bert Crary invited Ed to join the traverse midstream to replace Peter, which he did, arriving on 16 November 16th. The opportunity set the course for Ed's career for many years.

Following that season, Ed joinegraduate students he met in Antarctica who were studying earth sciences at the University of Wisconsin and working at the university's new Geophysical and Polar Research Center, established by George Woolard to analyze the data they had gathered in Antarctica during IGY. This group, who became close friends for life (and Antarctican Society members) also included Hugh Bennett, John Behrendt, Ned Ostenso, Charlie Bentley, Ed Thiel, Steve den Hartog, Mario Giovinetto, and the traverse engineer, Jack Long. Between 1959 and 1968, scientists from universities throughout the United States and the world joined those from Wisconsin on traverses that explored and studied vast areas of the interior of Antarctica never before visited or mapped. Much was learned about the nature and depth of the Antarctic ice sheet, the surrounding ice shelves, and the land masses below the ice.

As part of this group, Ed returned to Antarctica for the 1959/60 season, wintered at McMurdo in 1960, and stayed on for the 1960/61 summer season. He skipped the 1961/62 polar season, staying in Wisconsin taking courses, and he married his wife Valarie in February 1962. He returned to Antarctica for the 1962/63 season and made his fourth and final journey to the continent on a project in the 1977/78 season.

Ed Robinson in Antarctica, 1960

In addition to his scientific contributions in Antarctica, Ed kept detailed written journals, took many photos, and documented life on the traverses through many movies he took in both eight and sixteen millimeter format. A few years ago, he teamed with a fellow Society member and outstanding videographer, the late Ed Williams M.D., to produce two excellent documentary films that revealed life on traverse in the late 50s and early 60s. Those films as well as his written journals are in the "Pack Ice" section of the Society's website.

After receiving his doctorate from the University of Wisconsin in 1964, Ed began teaching at the University of Utah in Salt Lake City and in 1967 joined Virginia Polytechnic Institute (Virginia Tech) in Blacksburg, Virginia. He remained at "Tech" for the rest of his long and distinguished career, teaching geology and geophysics and conducting scientific research. He was the author of two textbooks as well as scientific papers and journal articles. He retired from active teaching in 1997, but as a Professor Emeritus, he continued to work and study geology for many more years.

Ed Robinson in 2020

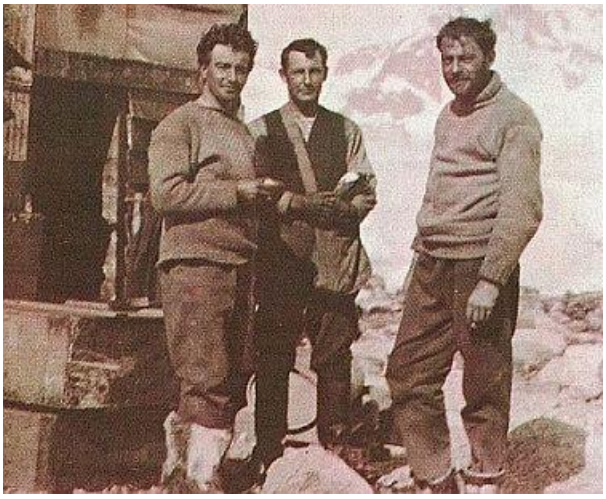
After visiting Scotland in the 1960s, Ed began playing bagpipes. He was a member of two bagpipe bands. As a soloist bagpiper, he performed at public events as well as private funerals, weddings, and social events. Members of the Antarctica Society may recall him playing at the Port Clyde gatherings in Maine at the home of Dr. Paul Dalrymple.

Ed was instrumental in arranging an opportunity for his younger brother (the author of this obituary) to travel to Antarctica as a traverse engineer on the 1965/1966 Queen Maud Land II Traverse, after which I wintered at McMurdo in 1966. The Antarctic adventures shaped both of our lives.

Antarctican Society First Online Talk! May 17, 2021 at 7:00 p.m. EDT by historian Joan Boothe

The Society's Joan Boothe will lecture via Zoom 17 May at 7:00 pm EDT about what may be the smallest and least known of the wintering expeditions. Just 100 members can attend the lecture on a first come, first served basis. The Zoom link for this lecture is:

https://us02web.zoom.us/j/81682800834?pwd=Wmsrc0pQWXJMSjU4d3VvOHhWWlpXQT09



Lester, Bagshawe and Cope in Antarctica, 1921

A century ago, just two men wintered to study penguins. They may be the smallest and least known of the wintering expeditions. In late 1920 John Lachlan Cope, a survivor of Shackleton's Ross Sea Party, took G. Hubert Wilkins, and the two neophytes — Maxime Lester and Thomas Bagshawe – to the Antarctic Peninsula. Whalers transported them down the west coast to what Cope named Waterboat Point at the north end of Paradise Bay. A month later, Cope gave up. Wilkins quit. Lester and Bagshawe – young, inexperienced, but determined – stayed to winter at Waterboat Point with the dogs and carry out a scientific program. They endured, triumphed, and achieved so much that they deserve to be celebrated rather than mostly forgotten.

If you can't make the Zoom date, Joan's lecture will be posted later on https://www.antarctican.org/webinars-podcasts.