



The Antarctic Society

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NO. 3

HONORARY PRESIDENT

Dr. Robert H. Rutford

PRESIDENT

Dr. Anthony J. Gow
117 Poverty Lane
Lebanon, NH 03766
petprotector@comcast.net

VICE PRESIDENT

Liesl Scherthanner
P.O. Box 3307
Ketchum, ID 83340
schernli@hotmail.com

TREASURER

Dr. Paul C. Dalrymple
Box 325
Port Clyde, ME 04855
Phone: (207) 372-6523
pcdal@roadrunner.com

SECRETARY

Joan Boothe
2435 Divisadero Drive
San Francisco, CA 94115
HooDooskr@aol.com

WEBMASTER

Thomas Henderson
520 Normanskill Place
Slingerlands, NY 12159
webmaster@antarctican.org

ARCHIVIST

Charles Lagerbom
16 Peacedale Drive
Northport, ME 04849
clagerbom@gmail.com

BOARD OF DIRECTORS

Dale Anderson; Dr. John Behrendt; J. Stephen Dibbern; Valmar Kuroi; Dr. Louis Lanzerotti; Mark Leinmiller; Jerry Marty; Ronald Thoreson; Leslie Urasky

NEWSLETTER EDITOR

Guy Guthridge
gguthrid@yahoo.com

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Post Office Box 325, Port Clyde, Maine 04855

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"WE ALL HAVE OUR OWN WHITE SOUTH"

Lynne Cox swam almost every cold ocean she could think of. But, "I wanted to do so much more. An idea came to mind then": *Swimming to Antarctica*. A review in this issue, 16 years after her swim, calls attention to a remarkable book you otherwise might not have known of.

The above headline quote is attributed to Ernest Shackleton, and it is considered to refer to one's inward journey, or voyage of self-discovery. Ms. Cox's own White South was the mile-plus solo swim to shore in Neko Harbor, Antarctica, in an ordinary bathing suit. This life-challenging achievement required complex preparation and close monitoring by a support team.

Society member Henry Worsley, who attended our 2014 Gathering in Port Clyde, challenged Antarctica with an unassisted crossing of the continent. The April 2016 newsletter summarizes the attempt and his death in a hospital in Chile. His White South, the place he sought to find answers about himself, was the Antarctic. His wife Joanna thought Antarctica dreadful, but she remembered that Thomas Pynchon, in his 1963 novel *V.*, had written, "You wait. Everyone has an Antarctic," and gave her blessing. The February 12 & 19, 2018, *New Yorker* has a new 38-page article about Henry's quest. Find the article and more about Henry on the Society's web site; click on Pack Ice.

If we dare to think of organizations as having consciousness or even will, then SCAR might do. The Scientific Committee on Antarctic Research was established in 1958 with a first task of devising a continuing international program of Antarctic research. SCAR is 60 this year and will celebrate, not just itself but the science, still going strong. See "SCAR turns sixty," inside.

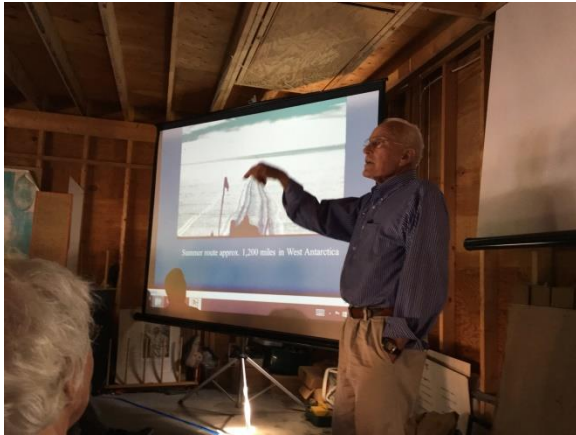
If SCAR can look inward, the Antarctic Treaty can, too. Ray Arnaudo considers it, along with comparable international arrangements in the Arctic, as inspired and relevant today. See "Peace and the Poles," below.

Guy Guthridge

Maine Gathering approaching!

The next Antarctic Gathering is at Paul Dalrymple's house in Port Clyde, Maine, Friday-Sunday, 20-22 July 2018. Friday evening: fish chowder. Saturday: Garage Theater presentations and lunch. Sunday: lobster brunch.

If you have not done so yet, please tell Treasurer Paul Dalrymple or newsletter editor Guy Guthridge you're coming; see our emails on the front page.



Honorary President Robert Rutford delivers a eulogy to John Splettstoesser in the garage theater during the 2016 Gathering. Photo: L.J. Lanzerotti.

Some attendees, as before, will tent in Paul's yard. If you're not going to do that, reserve a place to stay. Close hotels are Seaside Inn (207-372-0700) and Ocean House (207-372-6691) in Port Clyde, East Wind Inn (207-594-7644) in Tenants Harbor, and Craginair Inn (207-594-7644) at Spruce Head. The proprietors know about our event and will try to give priority to Antarctic Society members; tell them that's why you are coming.

For other hotels and cottage rentals check Airbnb.com, True Hall Real Estate (207-372-8952), or other internet.

We'll assume you're coming to all three meals unless you tell us otherwise. During the Gathering, cash or check donations to cover the cost of food and drink will be enthusiastically accepted.

This unique and wonderful event, held only once every 2 years, appears again to be shaping up for something like a hundred participants. See you there!!

SCAR is sixty



When SCAR – the international but nongovernmental Scientific Committee on Antarctic Research – met for the first time at The Hague 3-5 February 1958, it had a problem. Participants, along with colleagues still in Antarctica, had found at least a decade worth of Antarctic science to do, but their sponsor – the IGY – would be extinct in 11 months. Their task? “Prepare a plan for the scientific exploration of Antarctica in the years following the completion of the International Geophysical Year program.”

They did. SCAR had ups and downs over the decades, especially a top-to-bottom repurposing in the late 1990s and into the 2000s, but it grew from 10 to 43 member nations and will celebrate year number 60 in Davos, Switzerland, 15-27 June 2018, during the organization's 35th full meeting.

The U.S representative to that 1958 SCAR meeting in The Hague was Laurence M. Gould, head, U.S. Antarctic IGY, and President of Carleton College in Minnesota. In January 1958, on his way to The Hague, Professor Gould stopped in New York to deliver a lecture, “The polar regions in their relation to human affairs,” at the American Geographical Society. He said the poles “will play more and more important roles in

human affairs as the world becomes more crowded and mobility increases.”

The Antarctic Treaty hadn't even been written yet, much less signed, but that didn't keep Larry Gould from telling his audience, “the IGY may turn out to be a brilliant approach toward international understanding and organization.” Just over 3 years later the Treaty, signed and ratified by those 12 Antarctic IGY nations, had reserved Antarctica for peace and science.

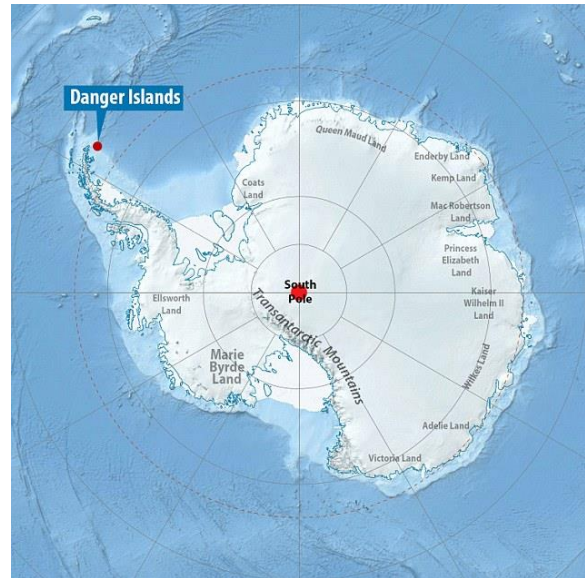
Over time, the Treaty and SCAR (and the challenge of a vast region) have helped to raise Antarctic international collaboration to twice the world average, according to citation analyses in 2008 and 2009. IGY triggered much of that. Sixty years ago, SCAR picked up the ball and ran with it. Besides Larry, two other Society members – James Zumberge and Robert Rutherford – have been President of SCAR.

Adélie numbers: up here, down there

Consider yourself, for the time it takes to read this article, to be an Adélie penguin. You live in the present, don't see the big picture, can't see the forest for the trees. If you've had food, life is good. You think, vaguely, about getting back to the rookery where you were born and finding your mate from last summer. But mainly it's a matter of eating and not being eaten. Life, though you don't think of it this way, is brutal and short.



On one of the Danger Islands, an Adélie penguin and a drone consider one another.

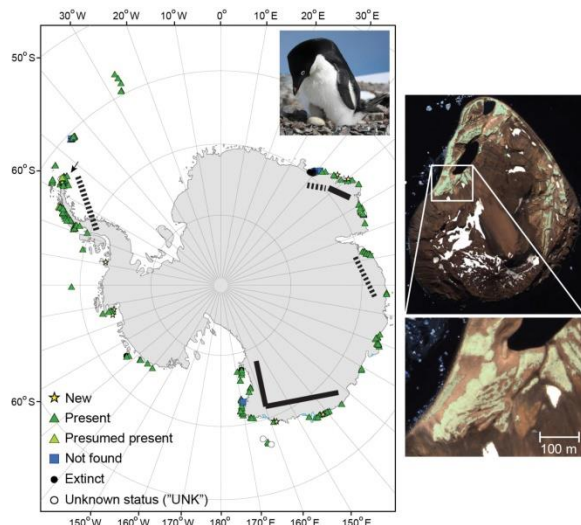


Finding your way back to Pétrél Island, on the Adélie Coast, which has 18,000 breeding pairs, you see over the course of the summer – this is the 2016-2017 austral season – that the rookery has had a “catastrophic breeding event.” All but two chicks have died of starvation. French scientists, large red creatures who do not eat you, have come by and reported this information to other humans. They say an unusual amount of sea ice has forced you and your compatriots to travel an extra 100 kilometers for food. The area around your colony has been an exception to the experience elsewhere in Antarctica, which has had a record low amount of sea ice. And the rain! Adélie chicks are built for cold, but they are not waterproof.

In 2010 the Mertz Glacier tongue lost a piece the size of Luxembourg: 40 by 80 kilometers. It's 250 kilometers away from the rookery, but one of the red creatures, Yan Ropert-Coudert of France's National Centre for Scientific Research, has told *The Guardian*, “The Mertz glacier impact on the region sets the scene in 2010 and when unusual meteorological events, driven by large climatic variations, hit in some years this leads to massive failures.”

A distant relative of yours – you've never met and never will – halfway 'round

Antarctica is in a different circumstance. On Danger Island, near the tip of the Antarctic Peninsula, she's one of 750,000 breeding pairs in an area where the sea ice is just right: not disappearing, which is bad for Adélies, but not too extensive either. Heather Lynch of SUNY Stony Brook says in the 2 March 2018 *Scientific Reports* that this is one of the largest Adélie colonies anywhere. Satellite imagery revealed the colony, previously unknown to science!



Adélie penguin colonies. Solid bars: populations generally increasing. Dashed lines: generally decreasing. Arrow on map shows location of high-resolution imagery (right). Guano areas are light green. Imagery © 2014 by DigitalGlobe, Inc. Courtesy *The Auk*.

What you don't know, since you're just a penguin, is that a 2014 survey of all Antarctica has found that, since 1993, the breeding population is up 53 percent. You are one of the world's 3.79-million breeding pairs living in 251 breeding populations. And 30 percent of your colleagues are in East Antarctica, where you are. Heather Lynch, who found those long-lost colleagues of yours on Danger Island, with M.A. LaRue told other humans about it in "First global census of the Adélie penguin" in a 2014 issue of *The Auk*.

And you're entirely unaware that your ancestors have pulled off a breeding explosion you might only dream of. In East

Antarctica – your home – the Adélie penguin population has exploded 135-fold in the last 14,000 years. The population now numbers 1.14-million breeding pairs, report Younger et al. in *BMC Evolutionary Biology* in 2015.

You're the beneficiary of the following two changes, both having to do with ice. Since the end of the last Ice Age, 14,000 years ago, land ice in Antarctica has retreated sufficiently to expose coastal area of bare ground on which Adélie penguins can breed. And, in the more recent past, sea ice has stayed at about the right level to support krill and other species at the ice edge that are your main diet.

Being a penguin, you don't know or care about these larger considerations. You just hope to live through the coming winter, at the ice edge, and get fat enough to make it back to Pétrel Island, where you may once again find your dear mate and make an egg, or two, and see a chick, or two, through the summer alive.

"Antarctic Exploration Timeline"

Society member Art Ford calls our attention to an animated web site, http://www.thingsmadethinkable.com/item/antarctic_exploration_timeline.php.

The site depicts, on a map of Antarctica, the establishment of stations and camps from 1898 to 2012. The creator of the site, Mark Jeffery, has done field work in Ellsworth Land and states that his depiction "is by no means exhaustive."

It does, however, list sources and stations and can be handy for checking your memory or simply to watch the timeline sweep by to show, according to the site, "in broad sweeps how the last continent was revealed to humanity."

Our webmaster, Tom Henderson, has seen better: "Time Trek, which was a feature of our website for a number of years. Unfortunately, Google decided to discontinue the Google Earth plugin and has not replaced it

with something of equal capability. Therefore, we were forced to take Time Trek off our website. We could show bases (a more complete set than this application), events (again a more complete set), geographic names and photographs for any time span. And it used Google Earth as the backdrop so you could zoom in to see incredible detail of the continent. I hope that we can resurrect it one day.”

U.S. Antarctic Program funding assured in fiscal 2018



A planned modernization will result in fewer and newer buildings at McMurdo. Credit: Peter Rejcek, *Antarctic Sun*.

The omnibus appropriations bill that the President signed into law on 23 March 2018 funds the U.S Government through the rest of the current (2018) fiscal year, which ends 30 September. Of the \$1.3-trillion total, \$7.8-billion is for the National Science Foundation, an increase of \$300-million over its fiscal 2017 appropriation.

The bill provides up to \$544 million for polar research and operations, including the U.S. Antarctic program, states the American Institute of Physics. The Senate report encourages NSF to prioritize research into the stability of Antarctic ice sheets and the impacts of future instability.

The statement includes \$1.8 million for the \$350-million Antarctic Infrastructure Modernization for Science (AIMS) project to replace old facilities at McMurdo. The

administration wants to ramp up funding for AIMS to \$104 million in fiscal year 2019.

The fiscal 2017 appropriation for NSF’s polar programs (Arctic and Antarctic) was \$467.85-million; the new appropriation provides a welcome and needed increase.

Swimming to Antarctica

The phone call came around the year 2000, when I still was working for the National Science Foundation. Lynne Cox needed support for her next project, which was to swim in the Antarctic. She had broken the record for swimming the English Channel, was the only person known ever to swim across Beagle Channel in southern South America, was the only woman to swim from the North Island to the South Island of New Zealand, and made history swimming from the United States to the Soviet Union in Bering Strait.

With each swim, the water was colder. Now *my* idea of an ocean swim is coastal South Carolina in August, but it wasn’t just cold that had my attention. Before the end of our conversation, her swift and professional presentation convinced me that, one way or another, this determined soul was going to accomplish her goal. And I convinced Lynne Cox that the Foundation’s U.S. Antarctic Program was not going to have anything to do with it.

By chance I recently read Lynne Cox’s 2006 book *Grayson*, which describes her swim off California with a baby gray whale that had lost its mother. I recalled that phone call 18 years ago and got a copy of her 2004 book *Swimming to Antarctica*. A hundred thousand copies have been bought, and it has been translated into six languages. *Sports Illustrated* says it’s more than the story of the greatest open-water swimmer: “*Swimming to Antarctica* is a portrait of rare and relentless drive.”

Indeed. Lynne’s saga begins at the age of eight, training in Manchester, New Hampshire. The boys wanted out of that

day's unusually cold pool, but Lynne stayed in. Alone in the pool after a hailstorm, "I felt as if I were swimming through a giant bowl of icy tapioca. I had experienced something different, beautiful, and amazing."

Alone, but not a loner. Her parents moved the family to California so Lynne could train with Don Gambrill, head coach for the U.S. Olympic team. Lynne outgrew Don's pool and started training in the Pacific. Off Seal Beach at the age of seventeen is where she met the baby whale as told in *Grayson*.

Swimming to Antarctica is what's reviewed here, but "Swimming to Antarctica" is just the last, and longest, chapter. The book is about the development of Lynne as an exceptional cold-water swimmer. It is a page turner. It positions Antarctica as the end goal, the ultimate challenge, true for this swimmer and true for other global challenges such as "last continent" or the ozone hole.

Following the grueling swims mentioned above, and others including a crossing of Muir Inlet in Glacier Bay, Alaska, where a rower ahead broke ice and Lynne broke more with her arms, she did "a series of swims simply for fun" across lakes in Italy. But "I wanted to do so much more. An idea came to mind then, one that was bigger, more complex, and more challenging than any I had ever contemplated."

Hence the call to NSF.

All her swims, including the Antarctic one, followed rules set by the English Channel Swimming Association. You wear an ordinary sleeveless, legless bathing "costume" with no thermal protection or buoyancy, you enter and leave the water on your own, must not touch any person or boat, and take food or drink only if tossed to you. You are "permitted to grease the body before a swim, use goggles, wear one cap [not thermal], nose clip, ear plugs." Flippers are beyond consideration.

Lynne and her support crew caught a lift aboard *Orlova*, a Russian icebreaker used by both Marine Expeditions and Quark Expeditions for Antarctic tourism. In 33-degree water, she did a "practice" swim in Admiralty Bay from the ship to the Polish Antarctic station Arctowski; her core temperature dropped from 99.5 to 97.7 during the 22-minute swim covering 0.92 mile.



Photo courtesy of lynnecox.com.

For the "real" swim, into Neko Harbor (adjoining the Antarctic continent) from a mile offshore, water 32 F, Lynne started down the gangway. She was in a bathing suit, everybody else in parkas.

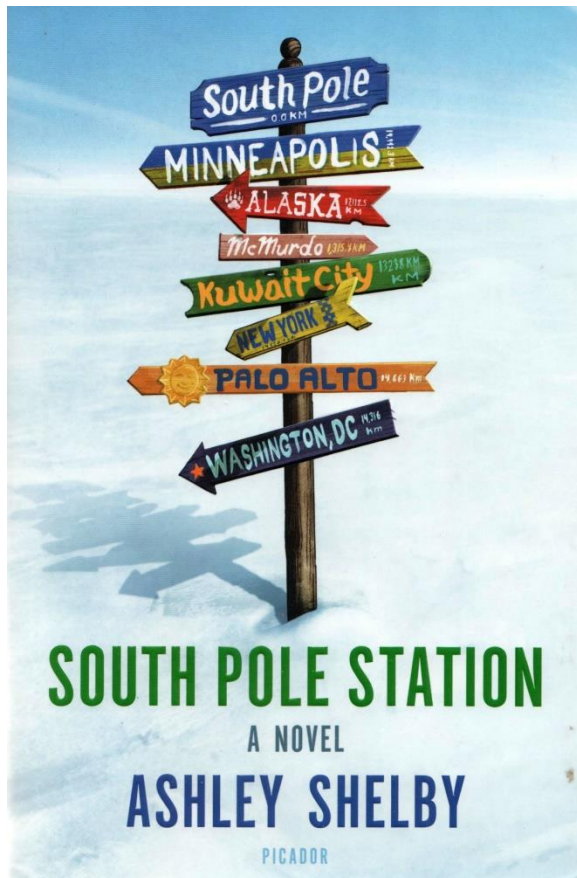
"When I hit the water, I went all the way under. I hadn't wanted to immerse my head, which could overstimulate my vagus nerve and cause my heart to stop beating. I felt like I was swimming through slush. My arms were thirty-two degrees, as cold as the sea. I was in oxygen debt, panting, gasping. The intensity of the cold was as sharp as broken glass. I'd thought that swimming across the Bering Strait in thirty-eight-degree water had been tough, but there was a world of difference between thirty-eight degrees and thirty-two."

She completed the 1.06-mile swim in 25 minutes. "I had been able to do what had seemed impossible because I'd had a crew who believed in me and in what we as human beings were capable of. It was a great dream, swimming to Antarctica."

This 359-page book is an amazing read. I recommend it to anyone interested in realization of the human potential.

South Pole Station by Ashley Shelby

review by Tom Henderson



Ashley Shelby has written an entertaining and mostly accurate novel set at my favorite place in the world: Amundsen-Scott South Pole Station. She writes about a fictional 2003-04 season in which her heroine, Cooper Gosling, has been selected for an NSF Artists and Writers grant to paint her impressions of the geographic bottom of the world. The story is told through the eyes of the main character and several of the supporting characters using the effective technique of a nonlinear timeline; that is, events take place in generally chronological order but with historical side-trips to fill in the background explaining why the characters did what they did.

Shelby gets most of the facts right. But for those of us who have spent time in Antarctica – and specifically South Pole

Station – some of the mistakes are irritating. She has the “lingo” right from my recollection, and many of the technical details of Operation Deep Freeze and the dome South Pole Station are spot on. However, some details are just wrong. For example, there was never an Artists and Writers Annex at Pole, and A&W grantees never wintered there during this time. Reference to C-17 Globemasters landing at Pole will be grating for Pole vets (C-17s are wheeled aircraft that can only land on hard runways, not on the soft snow of the Pole skiway). To her credit, she admits in the Acknowledgments that she took some liberties, and there is “stuff here that will drive some veteran Polies crazy.”

The story is timely in that it revolves around the clash between climate change scientists and climate change deniers. Physicist Sal Brennan is a member of the former group who is very vocal in his criticism of the latter, particularly of Frank Pavano who is a scientist assigned a NSF grant (through political pressure) to look for proof that climate change is not real. As friction mounts, there is an unfortunate accident at the West Antarctic Ice Sheet (WAIS) drilling camp that precipitates an official shutdown of the science program at Pole. The scientists at Pole do not take this lying down, however, which leads to a dramatic conclusion. Cooper Gosling is caught in the middle and tries to understand both sides. Eventually, she pays a price for this.

Shelby’s characters are three-dimensional. It is a sign of her skillful writing that the reader will develop an understanding of, if not empathy for, their motives. I found myself seeing parallels with the real “characters” that I came to know during my own winter at Pole. For someone who has never been there, she manages to paint a familiar picture of the unique people who gravitate to the Last Place on Earth. It turns out that her sister Lacy Shelby wintered at Pole in 2003, and

she credits Lacy for providing insights and descriptions that helped flesh out these fictional Polies and the station environment.

South Pole Station is not destined to be a classic in Antarctic literature, but it is a good read, even for those who have been there and done that.

Peace at the Poles

Ray Arnaudo's 1 December 2017 op/ed in the *Wall Street Journal*, [Peace at the Poles](#), reminds us of the success of diplomacy in the polar regions. If you are not a WSJ subscriber, drop Ray a line at arnaudorv@yahoo.com and he'll send you a copy. In global diplomacy, where conflict and failures seem the norm, Ray sees the polar regions as examples for cooperation in other places.

Ray's article starts with the First International Polar Year (1882-3), when scientists began to plan research in the unknown continent. Arctic experts were added to the Second International Polar Year (1932-3). The third one, the International Geophysical Year of 1957-58, led to the Antarctic Treaty. Thoughts for the frozen continent had included using it for nuclear tests or a dump site for wastes or weapons. The Treaty, now 57 years old, reserves the region for peace and science.

The original signatories (**Argentina**, **Australia**, Belgium, **Chile**, **France**, Japan, **New Zealand**, **Norway**, South Africa, the Soviet Union, the **United Kingdom**, and the United States), include seven (in bold) that had staked territorial claims to sectors of the continent. The Treaty defers claims and bans military fortifications. Now over fifty countries, representing almost seventy percent of the world's population, have signed, and almost thirty maintain research stations, sharing plans and information.

In the op/ed Ray describes a sister in the Antarctic Treaty System, the Convention for the Conservation of Antarctic Marine Living Resources. Negotiated in 1980, it

oversees management of marine resources. Krill and fish are monitored and harvested sustainably by the 36 signatories. There have been disputes over Soviet bloc overfishing excesses in the 1980s, and some poaching and underreporting recently, but the convention has led to cooperation and sustainable catches.

In the North, the eight countries with land or waters above 60 degrees North began discussing regional cooperation in the mid-1980s. In 1996, the eight agreed to create the Arctic Council, focused on environmental protection, sustainable development, and inclusion of native organizations in decisions. The Council now has its original members (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States), 13 observing countries, and participation by the six major indigenous groups (Aleut, Athabaskan, Gwich'in, Inuit, Russian Indigenous Peoples, and Saami).

Unlike the Antarctic Treaty, the Arctic Council excludes military matters and fisheries, covered by other agreements. But the bulk of regional problems are discussed, and new agreements focus on the increasing ship traffic and access to northern waters.

Both the Antarctic Treaty and the Arctic Council were built on scientific cooperation, coordinated by the Scientific Committee on Antarctic Research (SCAR) in Antarctica and the International Arctic Science Committee (IASC) in the Arctic.

These accords have helped to sustain peace at the poles. New Antarctic research stations are planned with oversight by all parties, insuring environmentally sound management. In the Arctic, new regional agreements in the last three years focus on the maritime and navigation issues of search and rescue, oil pollution prevention, and scientific access.

Ray argues that the polar solutions might be looked at when considering problem areas like the South China Sea. Scientific cooperation in the South, and maritime navigation successes of the North,

might be a starting point. A regional scientific body could coordinate research, like SCAR and IASC do for polar regions.

Maybe E. William Colglazier, editor-in-chief of *Science & Diplomacy*, read Ray's op/ed. Looking at the tension with North Korea, he argues in *Science* (9 February 2018) that "diplomacy by scientists might be one step toward a more lasting rapprochement. . . . I propose bringing together North Korea's science leaders and a group of prominent U.S. science and security experts outside of government."

Ray notes that at a 1985 diplomatic conference held on the Beardmore Glacier, Antarctica, Professor William F. Budd, University of Tasmania, suggested that by raising the northern boundary of the Antarctic Treaty by ten degrees of latitude a year, in no time at all we would have world peace! Banning military activities, like the Antarctic Treaty does, is maybe a bridge too far. But recalling the principles that have helped keep the Arctic and Antarctica calm, global cooperation perhaps can prosper if we don't forget that peace prevails at the ends of the Earth.

Society member Raymond V. Arnaudo is a current member of NSF's Advisory Committee for Polar Programs. He is a retired diplomat with a career in international environmental and science policy affairs at the State Department where, among other assignments, he was Director of the Office of Oceans and Polar Affairs.

Scott's coldest March was preceded by a damagingly warm December

Modern science continues to shed light on how unusually extreme the weather was that hit both Robert F. Scott and Roald Amundsen during their separate South Pole expeditions in the 1911-1912 summer season.

The temperatures of March 1912 were so far below what was expected that

they contributed to the deaths of Scott and his party during their attempted return from the South Pole, which they had reached in January.

This information has been available since 1999, when Susan Solomon and Charles R. Stearns published "On the role of weather in the deaths of R.F. Scott and his companions" in *Proceedings of the National Academy of Sciences*. Their analysis of the 1919 observations by British meteorologist George Simpson, along with contemporary automatic weather station data on the Ross Ice Shelf, led to their conclusion that the weather in March 1912, when Scott and his two remaining companions perished, was much colder and persistent than average and that it was a primary cause of the deaths.

Susan provided additional information and context in her book *The Coldest March: Scott's Fatal Antarctic Expedition*, which Yale University Press published in 2001.

Now, new analyses – again, based on examination of the historical record in conjunction with modern data – establish that the 1911-1912 austral summer had exceptionally high temperature and pressure anomalies. Both Scott and Amundsen, despite their different routes taken between the Antarctic coast and 90°S, experienced these anomalies.

In a March 2017 paper, "An exceptional summer during the South Pole race of 1911/12" (*Bulletin of the American Meteorological Society*), Ryan L. Fogt, Megan E. Jones, Susan Solomon, and others state that the unusual summer warmth "places an even more dramatic change in the weather coming down from the south polar plateau to the Ross Ice Shelf and therefore might have also caused these cold spells to be perceived as more intense by comparison."

The authors show that in the period 1979-2015 the temperatures only rarely changed as sharply as Scott and his men experienced. A multiyear variation called the southern annular mode, or SAM, had

one of the strongest negatives in 1911-1912 since 1850.

The warm December produced lots of wet, sticky snow that made for hard sledging. The cold March gave the snow so much more friction that Scott's party might almost as well have been sledging on sand.

"The period of warmth, consistent with another period of exceptionally high pressures at Cape Evans, may have lulled Scott's party into slowing down, and it is possible that they would have reached their key next depot if they had not done so."

When Scott and his party died in March 1912 they were still far inland. Amundsen's crew had reached its coastal base, thus finishing its northward trek, on 26 January.

Read the 2017 paper online for free. <https://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-17-0013.1>

1958 C-124 crash near Hallett Station

by William Highlands, CWO4 USN (Ret)

In 1958 I was at Hallett Station, near Cape Adare, a joint base of the United States and New Zealand usually staffed with 16 people. From its establishment in 1956 to 1964, Hallett operated year-round. From the 1964-1965 season until the end of the 1972-1973 season, it was used only during the summer. The party then included seven wintering research scientists.

We arrived at Hallett in January 1958 and stayed mostly isolated from outside contact, except for a visit from the icebreaker *USS Glacier* around mid-February, until October 1958. Then people and materials began flowing south from New Zealand, destination McMurdo Sound. Even though Hallett was a way station on the flight path, we seldom knew about or heard from the aircraft flying the route. Still, we readied the emergency ice runway on the bay ice should a plane need to land.

Early in the season, McMurdo became "socked in," and planes returning from South Pole station and other areas that could not land there were diverted to Hallett. This emergency caused our population to skyrocket to 52 people. Luckily, this overcrowding lasted only a short time. Because we had assisted and because we had not received mail since February, it was decided that an Air Force C-124 would deliver mail, fresh vegetables, eggs, and other perishable foods to Hallett. Needless to say, we were looking forward to this delivery.

On 14 October we received word that the next day a C-124 would parachute mail and other items. We waited for the appointed hour to arrive and heard nothing from the aircraft. Around 1730, McMurdo radioed us that the aircraft had crashed on a mountain north of Hallett.



C-124 crash north of Cape Hallett. Photo by Tim Timmerman, U.S. Navy

We met in the mess hall to talk about what to do. Most favored sending land vehicles to look for and assist survivors, even though our ability to do so was limited. We had had only three tracked vehicles: two weasels and an unreliable Snocat that Edwards, the Construction Driver Chief Petty Officer, did not want to use. We gathered items we thought would be useful such as first aid kits, food for both rescuers and survivors, and extra fuel.

A team was chosen to head for the crash site from those who were not only willing, which was pretty much everyone,

but had some skills that might come in handy. Also, some duties were considered essential to the International Geophysical Year; for safe operation of the base, those people could not be spared from their jobs. All hands loaded the weasels, and the two vehicles headed out. Most watched until we could only make out small dark spots on the ice, and then we retreated inside.

We could communicate with the rescue party over shortwave radio, but the unit in the weasel was battery powered and had a limited lifespan, so transmissions were kept to a minimum. It was mid-October, so sunset was late in the evening. The rescue party made slow progress towards the mountain on which the plane had crashed. Drifting snow from winter storms on the frozen bay ice made it rough going. Finally, we heard from the rescue party. They had reached the base of the mountain, but when they tried to go farther they were hindered by high ledges and deep crevasses. To make matters worse, they had lost one weasel and were fearful of losing the second one.

Meanwhile, McMurdo had sent a P2V airplane to the Hallett area to see if they could assist. It arrived shortly after the rescue party reported it could not go any farther. The P2V flew over the crash area and spotted the wreckage, but it was unable to do anything more. After landing at Hallett, the pilot of the P2V radioed McMurdo with his report, and the decision was made to send an Otter and a helicopter to Hallett to conduct search and rescue. By this time, darkness had fallen, so the SAR flight would have to wait until dawn.

At first light, the aircraft made their way north to Hallett and landed. The Otter landed on the runway, and the helicopter landed among some penguins. Along with the Otter and the helo came other aircraft with fuel bladders and pumps to refuel any aircraft that required it.

Immediately after topping off its tanks, the helo departed for the crash site. We soon learned they had found survivors

among the wreckage, some injured. The wounded were flown back to Hallett, and subsequent trips were made to the crash site until everyone was evacuated. Also during this time, the weasel crews made it back to the station. They were fine, but exhausted from the journey.

The injured airmen were loaded on a waiting C-124 and transported to New Zealand. After the SAR mission was complete, all aircraft were refueled and departed for either New Zealand or McMurdo.

Eventually, we did receive our mail, but the excitement of its arrival was tempered by sadness about the accident that had occurred.

This is my recollection of the events. That was nearly 60 years ago, and my memory may not be at its best.

A history of Hallett Station is in the December 1983 Antarctic Journal, p 1-8, at <http://www.coldregions.org/vufind/Content/ajus-home>. Aircraft losses in the early years were grim; see "United States aircraft losses in Antarctica," by Peter J. Anderson, Antarctic Journal, Jan.-Feb. 1974, 1-21.

Dee Lewis Breger, 1943-2016



Dee Breger in Antarctica

In 2014, as the Antarctic Society prepared for that July's Antarctic Gathering in Port Clyde, Maine, we were especially pleased to receive an offer from Dee Breger

to give a presentation about her work as a scientific illustrator. Her emphasis had been Antarctic oceanography, starting as early as 1968 with a voyage in the Southern Ocean aboard the ice-strengthened USNS *Eltanin*.

With sadness, we learned that Dee was unable to give the presentation owing to sickness. She died 8 September 2016. Dee Lewis Breger was born 12 March 1943.

In 2017 Dee's sister Lois Breger compiled a short biography of Dee and provided it to the Society. We draw from this and other material to provide the following commemoration.



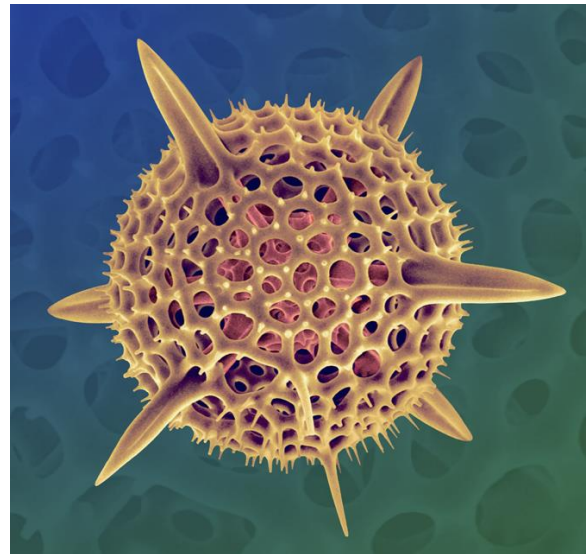
Dee on pyrite rocks

With a degree in art from the University of Wisconsin, Dee Breger began her career as a scientific illustrator at Columbia University's Lamont-Doherty Earth Observatory. After Lamont acquired one of the first scanning electron microscopes, she began specializing in SEM imaging.

In 1982, Dee founded Lamont-Columbia's first professional SEM and X-ray microanalysis facility, which she directed for 22 years. In 1995 her book of images, *Journeys in Microspace*, was featured in *The New York Times Magazine*. Her work also was featured in the 1998 BBC documentary *Hidden Visions*. Dee relocated to Philadelphia in 2004 to serve as Director of Microscopy and Research Professor at Drexel University's College of Engineering. In

2007, she participated in a History Channel documentary as the analytical microscopist for a project investigating meteorite impacts.

In addition to specializing in the SEM, Dee led or participated in research programs on over 30 expeditions ranging from Siberia to the South Pacific, with an emphasis on Antarctic oceanography. She was on Lamont's Alumni Association Board of Directors as well as a Fellow with the Explorers Club, served as a Field Associate for Liberty Science Center, and was a Council Member at the New York Hall of Science. She was active with the Holocene Impact Working Group, researchers dedicated to uncovering evidence of cosmic impacts during the last 12,000 years.



Fossil Antarctic Radiolarian

In 2009 Dee created Micrographic Arts, a website to promote her images, and moved to the Saratoga, New York, area. Throughout her career, Dee encouraged an interest in the world of science through visual presentations at schools and other venues. Her award-winning images have been displayed in national and international exhibitions, science centers, corporations, and various media.

Lamont continues to maintain a web site, [Dee Breger's Microworld: The Sublime Side of Science](#).