



The Antarctic Society

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HIGH SUMMER IN THE SOUTHLAND

In considering an opening for this first newsletter of CY-2022, I had only to look up to our nameplate and focus on “**January.**” The warmest month in Antarctica, and consequently its most active. I can think of at least a dozen Januarys that I was working in the Antarctic (most recently in 2020). So, here’s a brief reminder of some notable January events in the Antarctic and some personal ones as well.

We know it all started in January 1773 with Captain Cook’s first crossing of the Antarctic Circle. The coastline then started taking shape with the January 1820 sightings by Bellingshausen on *Vostok*, and Bransfield on *Williams*. The U.S. Exploring Expedition under Charles Wilkes charted Wilkes Land in January 1840, and a year later, *Erebus* and *Terror* under James Clark Ross penetrated the pack ice of the Ross Sea leading to a host of discoveries.

In January 1895 Henryk Bull’s mainland landing was recorded at Cape Adare; three years later, Roald Amundsen with the wintering *Belgica* party set off on the first Antarctic sledging journey in January 1898. The longest continually operated station in Antarctica on Laurie Island was occupied by Argentina in January 1905. Shackleton’s furthest south at 88°23’ occurred on January 9, 1909, followed a week later by his *Nimrod* colleagues making their way to the South Magnetic Pole. January 1912 saw the arrival of Scott’s party at the South Pole and Amundsen’s return to Framheim following his dash to the Pole.

The original IGY station at the South Pole was completed in January 1957, and then had its last overnight resident (that was me) in January 1975. Hillary and Fuchs met at the Pole in January 1958, the first surface arrivals since Scott.

It was January 1973 (I was at McMurdo) when Hercules JD-917 crashed at Pole. Those of us about to winter at Amundsen-Scott in 1975 well remember when JD-319 and JD-129 both went down at Dome C on successive days in January. Conversely, JD-321 flew again in January 1988 after 27 years on the polar plateau.

Finally, I think back to the first day of the new millennium when I shared in a Y2K celebration with an uncommon gathering of political and entertainment “names” at Deception Island! I’ll write more on that event in the next newsletter!

Dick Wolak, Co-Editor

Update on 2022 Burlington Gathering

by Tom Henderson



Winter sunset at Burlington Harbor

We are now roughly eight months from our August 2022 Gathering in Burlington, VT. Thanks to the 35 members who have registered to date. Our early registration fee of \$175.00 (full registration) and \$90.00 (guest registration) will continue until March 31, 2022. Registration includes the presentations at Main Street Landing, a catered reception at the Leahy ECHO Center, a provided lunch and live auction one afternoon, a sunset dinner cruise on the tour boat *Spirit of Ethan Allen*, and a memorial picnic on the last day of the Gathering.

You should register and reserve lodging as early as possible. Burlington is popular in summer and hotels and motels fill up fast. Also consider Vrbo and AirBnB. Even if you are “on the fence” about attending, make a reservation with free cancellation to hold a spot. Extensive information can be found in the Gathering Planning Guide on the 2022 Gathering web page on our website:

(<https://www.antarctican.org/2022-gathering>). If you are not able to get to the website and want a copy of the Planning Guide, contact me at webmaster@antarctican.org or 518-888-0387.

Those of you who wish to camp or RV at the Gathering should be aware that **online** reservations for the North Beach campground, which is a little over a mile north of our venue, will open at 10:00 a.m. ET on March 1, 2022. The website address

is <https://enjoyburlington.com/place/north-beach-campground/>. Phone registrations may be made starting May 1 at 802-862-0942. As with Burlington lodging, this campground is very popular during the summer, so we recommend you register online on March 1 if camping is your preferred option.

Carrying on the tradition of the Port Clyde Garage Theater at previous Gatherings, our Gathering will include an eclectic group of speakers. Here is a partial list of invited speakers:

- Dr. Roberta Marinelli, Director of NSF Polar Programs
- Alan Campbell, Antarctic artist
- Discovering Antarctica. A panel discussion by Charles Lagerbom, Richard Wolak, Joan N. Boothe, J. Stephen Dibbern
- Guy G. Guthridge, NSF (retired) will talk about Admiral Byrd and his legacy.
- Tom Henderson will present on Dr. Gordon Cartwright, the first US Exchange Scientist (IGY)
- Kristen Carlson, artist and science communicator with a focus on sharing the beauty and wonder of the undersea world.
- Professor Lisa Crockett, regarding her work and her polar father’s influences.

We will publish a final list closer to the time of the Gathering. We will also have an open forum for members’ stories.

Our auction tradition will continue and while we mourn the passing of our auctioneer-extraordinaire Dick Cameron, his son Andy has graciously agreed to carry on that role. It should be a lively and entertaining event. Only members who attend the Gathering will be able to bid on items – we’ll provide a preview in the coming months. If you would like to donate items for the live auction, contact auction chair Kathy Covert at AuctionChair2022@gmail.com.

We continue to keep an eye on the “x-factor” for this year: Covid-19. While we hope the pandemic will abate before the Gathering, we strongly, strongly encourage all members and Gathering attendees to get vaccinated, including boosters as soon as possible.

So, make plans to join us for a great time in Burlington as we initiate a new era in our Antarctic Society Gatherings. The recent successful Society Christmas Social Zoom is a clear indication that our members are ready to get back to in-person renewal of friendships and meeting new friends. See you there!

Next Society Virtual Lecture Feb 15: From Plankton to Penguins

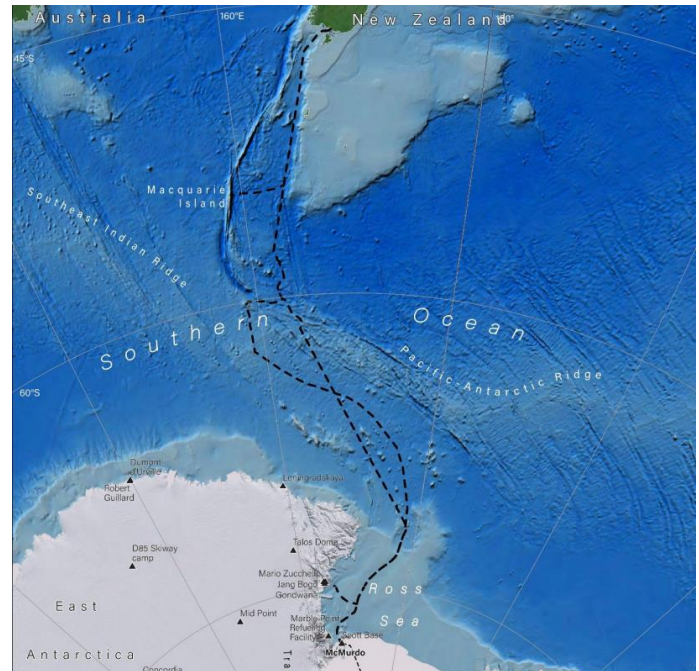
The Antarctic Society is hosting a Virtual Lecture via Zoom, February 15, 2022, at 7:00 p.m. EST. In **“From Plankton to Penguins,”** Endowed Professor at the University of Alabama at Birmingham, James McClintock will discuss the dramatic impacts of climate change on the Antarctic Peninsula. Dr. McClintock is a veteran of 16 productive research expeditions to Antarctica where, over the past twenty-plus years, he has become an authority on Antarctic marine chemical ecology, drug discovery, invertebrate nutrition, reproduction, climate change, and ocean acidification. He’s been featured on NPR, 'TEDx' (Birmingham), 'The Moth' (Lincoln Center, New York City), and The Weather Channel as well as in *National Geographic*, *Smithsonian*, *Discover*, *Scientific American*, *Washington Post*, *Wall Street Journal*, *Chicago Tribune*, *Los Angeles Times*, and CNN. Additional information is on our website. Zoom link to join: <https://us02web.zoom.us/j/87813835736?pwd=ZWQwTW0veU12N2ZCK1p5dzJMcE1OZz09>

Plans for Fiber Optic Cables to Antarctica

Antarctica is the only continent without high-speed fiber optic internet cable. That may change soon. A June 2021 workshop organized by the National Science Foundation concluded that there is great interest and benefit in laying an undersea fiber optic cable from New Zealand or Australia to McMurdo that would accelerate the increasing volume of critical science there and “enable meaningful new research and understanding of the region.” To see the final report from this workshop, click on: <https://drive.google.com/file/d/1Ao4Hz6-bBheFMpGSR4nMvSZJ9kHpji0o/view>. The current

satellite-based internet connections severely restrict the volume of data transfer and analysis in Antarctica. To see a more complete discussion of this initiative, see an article in the online magazine *The Verge*:

<https://www.theverge.com/2021/11/23/22765471/antartica-internet-mcmurdo-station-research>.



Potential undersea cable routes (from 2021 Antarctic Subsea Cable Workshop)

In a parallel development, Chile is studying a similar undersea fiber optic cable from Puerto Williams to the Antarctic Peninsula. Their cable would not only benefit scientific research but also the burgeoning tourist cruise industry along the Peninsula. To see more on this, go to: <https://en.mercopress.com/2021/11/29/chile-planning-an-optical-fiber-cable-from-puerto-williams-to-antarctica>.

Thanks to Elaine Hood and the Antarctic Support Contract for sharing this information.

Honoring William Silva (12/21/1952 – 10/28/2021)

by Bob Melville, Lynnette Harper, Victoria Landgraf, Mark Noske, Ethan Dicks, and Liesl Scherthanner

Will Silva, MD, a highly respected medical professional with several Ice tours under his belt from 1997 to 2015 (including several summer seasons, three winters at Pole [1998, 2003, and 2006], and one winter at Palmer [2000]), died peacefully in his home in Bellingham WA in October 2021. We were fortunate to have had Doc Silva as our South Pole doctor for the 2005-2006 year. His professional skill was only exceeded by his genuine compassion and willingness to listen.



Will Silva 1952-2021

Doc Will's ability to exert calm command and to inspire with his steadfast example were evident in the way he showed up in the Polie community. He knew that being a doctor in Antarctica requires much more than exercising excellent medical training, and he was an exemplary servant to the community while being a reliable practitioner, helping implement telemedicine improvements, transitioning to the new medical facility in the Elevated Station, safely managing medevacs, enhancing procedures and caches, choreographing emergency trainings and medical courses, participating in shared tasking, working at PoleMart (while refusing to sell cigarettes), skiing daily, studying to be a pilot, and being a team player. He even quickly volunteered to take over the

dishwashing roster for a team member who broke their toe. Throughout it all, he showed endless patience and humor.

He was appreciated by us all and drew admiration as he took time from his already full schedule to play radio darts with dart-teams from all over Antarctica, to sit in on music jams with his fiddle, and to smoothly switch from quoting poetry to telling a corny joke. Doc Will's boundless energy and unflappability would have made Ernest Shackleton proud. It made those of us wintering over feel supported and safe, in a very harsh environment.

He said many wise things, but the two quotes that countless Polies still remember are: "Failure to prepare is preparation for failure," and his memorable, "Wash your hands, wash your hands, wash your damn hands!"

Doc Will was a true renaissance man: a pilot, an expert rock and ice climber, accomplished skier, talented musician, a kind soul and one of the few South Pole doctors who earned high praise from a McMurdo dentist, who called Will "the best MD Dentist" he had ever seen.

Will Silva deeply touched all of our lives and will be sorely missed. To reminisce with our favorite doctor a bit more, please see his essay on a last trip to Pole in the 2015 Newsletter Vol 14-15, July No. 4, page 3 (members area of website) and <https://www.harvardmagazine.com/sites/default/files/html/1999/11/alumni.html>

Matthew Fontaine Maury's 1861 proposal

by Guy G. Guthridge

An Antarctic pathfinder, science visionary, and high government official with an international perspective, Matthew Fontaine Maury (1806-1873) left a complex and awkward legacy.

On 10 April 1861, the U.S. Government conveyed a detailed proposal to the ministers of nine nations, outlining an international investigation of the Antarctic. Maury, its author, had labored for a year and won approval for the campaign from his superior, Secretary of the Navy Isaac Toucey.

Maury's international approach was prescient. In 1842 he had been appointed superintendent of the Navy's Depot of Charts and Instruments. He gleaned

millions of observations from thousands of ships' logbooks as the basis for *Maury's Wind and Current Charts*. In 1853 he arranged a system for international exchange of scientific information. In 1855 he published the monumental *Physical Geography of the Seas*. The final edition, some years later, urged extensive Antarctic exploration.



Matthew Fontaine Maury as a U.S. Navy Lieutenant, 1853. (*Matthew Fontaine Maury, Scientist of the Sea* by Frances Leigh Williams (1969), p.290)

Maury's 1861 Antarctic letter stated, "this exploration should be a joint one among the nations that are most concerned in maritime pursuits." A 44-page proposal with scientific objectives accompanied the letter. Maury had worldwide stature. Hugh Robert Mill, in his classic *Siege of the South Pole* (1905), wrote that Maury was first among those who saw the immense importance of increasing our fragmentary knowledge of the remotest south, "a profound scientific investigator and the most brilliant writer who ever attempted to put into words the wonders of the sea."

"Never," Maury argued in his 1861 letter, "were nations so well prepared to undertake Antarctic exploration as are those that I now solicit."

But the United States was not one of them. "Alas," he wrote separately, "this is not a time for the American people to turn their attention away from domestic troubles." A few days after the April 12, 1861 bombardment of Fort Sumter, S.C., he resigned from the U.S. Navy and left for his native Virginia to assist in the cause he thought was right. He became a Commander in the Confederate Navy.

The nine nations took no action in response to Maury's Antarctic letter. However, writes Kenneth J. Bertrand in his seminal *Americans on Antarctica 1775-1948*, Maury influenced the design of the first (1882-1883) International Polar Year.

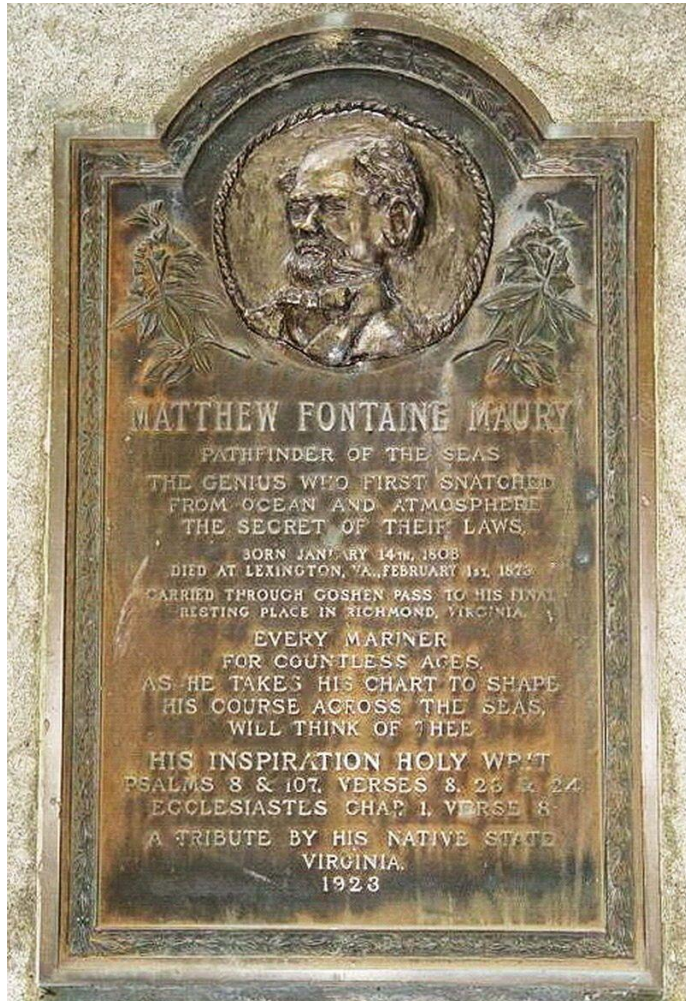
A century after his 1861 letter, from Aug. 21 to Sept. 6, 1961, a conference in Honolulu was titled "Antarctic Research, The Matthew Fontaine Maury Memorial Symposium." The American Geophysical Union published the 28 papers as the hardbound *Geophysical Monograph No. 7* (1962). Long-time Society members will know, or know of, many of the authors: Harry Wexler, Mort Ruben, Ed Thiel, Sam Treves, Bob Nichols, Dick Cameron, Colin Bull, Gentleman Jim Zumberge, Charlie Swithinbank – the last having been an Antarctic Society Honorary President. The book's opening paper, a 3-page "Dedication to Matthew Fontaine Maury," by Wexler, concludes that the IGY, as Maury had predicted, did indeed "unbar the gates of the South."

In his lifetime Maury earned the nickname "Pathfinder of the Seas." His accomplishments as scientist and administrator are established.

Maury was against secession, and he wrote to northern governors urging them to stop the momentum toward war. He was in the West Indies when the Confederacy collapsed and did not return to the States until 1868, when the Federal government pardoned him. In the 5 years before his death, he taught at Virginia Military Institute, wrote *The Physical Geography of Virginia*, and was central to establishing Virginia Tech.

Maury made the news last year when his statue in Richmond, Virginia, with the pathfinder phrase inscribed at the base, was pulled down in acknowledgement of his "proslavery international"

strategy. He “deplored slavery as a curse,” writes a biographer, but to end slavery in Virginia and eventually throughout the South, his plan was to send slaves to Brazil where work would be done “by Africans with the American axe in his hand.”



Maury Memorial at Goshen Pass overlooking the Maury River in Virginia. (Creative Commons Attribution-Share Alike 4.0 International License)

The Matthew Fontaine Maury Papers at the Library of Congress document his scientific endeavors including correspondence, notebooks, and lectures. His grave in Richmond lies between those of Presidents James Monroe and John Tyler. Maury Crater is a feature on the Moon. Maury Glacier, on the east coast of Palmer Land, Antarctica, was named by the U.K. for the “American naval officer and hydrographer, and distinguished promoter of maritime research and Antarctic exploration.”

Antarctic bacteria live on air and make their own water using hydrogen as fuel from *THE CONVERSATION*

by Pok Man Leung, Chris Greening and Steven Chown, Monash University

Humans have only recently begun to think about using hydrogen as a source of energy, but bacteria in Antarctica have been doing it for a billion years.

We studied 451 different kinds of bacteria from frozen soils in East Antarctica and found most of them live by using hydrogen from the air as a fuel. Through genetic analysis, we also found these bacteria diverged from their cousins in other continents approximately a billion years ago.

These incredible microorganisms come from ice-free desert soils north of the Mackay Glacier in East Antarctica. Few higher plants or animals can prosper in this environment, where there is little available water, temperatures are below zero, and the polar winters are pitch-black.

Despite the harsh conditions, microorganisms thrive. Hundreds of bacterial species and millions of cells can be found in a single gram of soil, making for a unique and diverse ecosystem.

How do microbial communities survive in such punishing surroundings?

A dependable alternative to photosynthesis

We discovered more than a quarter of these Antarctic soil bacteria create an enzyme called RuBisCO, which is what lets plants use sunlight to capture carbon dioxide from air and convert it into biomass. This process, photosynthesis, generates most of the organic carbon on Earth.

However, we found more than 99% of the RuBisCO-containing bacteria were unable to capture sunlight. Instead, they perform a process called chemosynthesis.

Rather than relying on sunlight to power the conversion of carbon dioxide into biomass, they use inorganic compounds such as the gases hydrogen, methane, and carbon monoxide.

Where do the bacteria find these energy-rich compounds? Believe it or not, the most reliable source is the air!

Air contains high levels of nitrogen, oxygen and carbon dioxide, but also trace amounts of the energy sources hydrogen, methane, and carbon monoxide.

They are only present in air in very low concentrations, but there is so much air it provides a virtually unlimited supply of these molecules for organisms that can use them.

And many can. Around 1% of Antarctic soil bacteria can use methane, and some 30% can use carbon monoxide. More remarkably, our research suggests that 90% of Antarctic soil bacteria may scavenge *hydrogen* from the air.

The bacteria gain energy from hydrogen, methane and carbon by combining them with oxygen in a chemical process that is like a very slow burn.

Our experiments showed the bacteria consume atmospheric hydrogen even at temperatures of -20°C, and they can consume enough to cover all their energy requirements.

What's more, the hydrogen can power chemosynthesis, which may provide enough organic carbon to sustain the entire community. Other bacteria can access this carbon by "eating" their hydrogen-powered neighbors or the carbon-rich ooze they produce.

Water from thin air

When you burn hydrogen, or when the bacteria harvest energy from it, the only by-product is water.

Making water is an important bonus for Antarctic bacteria. They live in a hyper-arid desert, where water is unavailable because the surrounding ice is almost permanently frozen and any moisture in the soil is rapidly sucked out by the dry, cold air.

So the ability to generate water from "thin air" may explain how these bacteria have been able to exist in this environment for millions of years. By our calculations, the rates of hydrogen-powered water production are sufficient to rehydrate an entire Antarctic cell within just two weeks.

By adopting a "hydrogen economy", these bacteria fulfil their needs for energy, biomass, and hydration. Three birds, one stone.

Could a hydrogen economy sustain extraterrestrial life?

The minimalist hydrogen-dependent lifestyle of Antarctic soil bacteria redefines our understanding of

what is the very least required for life on Earth. It also brings new insights into the search for extraterrestrial life.

Hydrogen is the most common element in the universe, making up almost three-quarters of all matter. It is a major component of the atmosphere on some alien planets, such as HD 189733b which orbits a star 64.5 light-years from Earth.

If life were to exist on such a planet, where conditions may not be as hospitable as on much of Earth, consuming hydrogen might be the simplest and most dependable survival strategy.

"Follow the water" is the mantra for searches of extraterrestrial life. But given bacteria can literally make water from air, perhaps the key to finding life beyond Earth is to "follow the hydrogen."

Antarctica and the latest IPCC report

by Guy Guthridge

You likely know that in 2021 the Intergovernmental Panel on Climate Change (IPCC) issued its first update in 8 years to its *Assessment Report* series. And, it being 1,300 pages long, you probably didn't read all of what 200 authors from 66 countries have to say about the future of our climate.

Here's a quick rundown from scientific organizations.

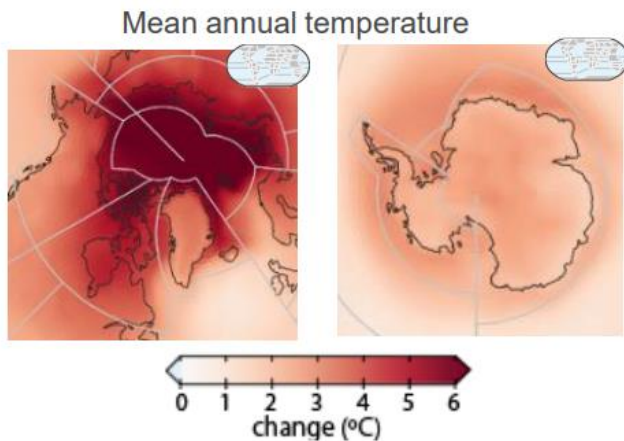
For the worldwide view, look up "What Five Graphs from the U.N. Climate Report Reveal About Our Path to Halting Climate Change," by Janessa Dunscombe (9 August 2021), in *EOS*, the newsletter of the American Geophysical Union. Warming will reach 1.5°C by the early 2030s, the Arctic could be ice-free by mid- to late-century, sea level could rise a meter by 2100, and extreme heat waves could be more intense and frequent. The first graph in her summary shows what everyone has heard: In the last 2,000 years, global surface temperatures stayed about the same until unprecedented warming began in the mid-20th century. Earth's temperature now is more than 1°C above what it was in 1850–1900.

For information specific to the Antarctic (the Arctic, too), search for "IPCC and Antarctic" to get a "Regional Fact Sheet – Polar Regions" from the IPCC. It has images and six main points:

Observations show widespread, strong warming starting in the 1950s in the Antarctic Peninsula. Significant warming trends are observed in other West Antarctic regions and at selected stations in East Antarctica (medium confidence).

The Peninsula, West Antarctica, and some East Antarctic regions are projected to continue to warm in the 21st century at a rate greater than global.

Projected changes (SSP5-8.5 scenario) in mean annual temperature and total precipitation at 2°C global warming compared to 1850–1900 for the Arctic (left) and Antarctic (right).



Antarctic snowfall and net snow accumulation have increased over the 20th century (medium confidence).

Mass losses from West Antarctic outlet glaciers, mainly induced by ice shelf basal melt, outpace mass gain from increased snow accumulation.

At sustained warming levels between 2°C and 3°C, the West Antarctic Ice Sheet will be lost almost completely and irreversibly over multiple millennia; both the probability of complete loss and the rate of mass loss increases with higher surface temperatures.

For Antarctic sea ice, there is no significant trend in satellite-observed sea ice area from 1979 to 2020 in both winter and summer, due to regionally opposing trends and large internal variability.

The full IPCC report is available free online at: <https://www.ipcc.ch/assessment-report/ar6/>

Logbooks linked to Shackleton and Scott found in New Zealand storage room

by Eva Corlett in Wellington

“Priceless” artefacts linked to Antarctic explorers Ernest Shackleton and Robert F. Scott have been unearthed in a surprise discovery within a storage room of New Zealand’s meteorological service.

Metservice staff came across a set of logbooks from some of the most famous Antarctic expeditions while preparing to move buildings in Wellington.

The 1916-17 logbook from the famed sailing vessel *Aurora* records the conditions during the rescue mission to save members of Shackleton’s 1914-16 Trans-Antarctic Expedition from Ross Island in [Antarctica](#).



Captain Robert Falcon Scott writing at a table in his quarters at the McMurdo Sound Hut in Antarctica, 1911. (Scott Polar Research Institute)

Other finds include two logbooks dated 1910 and 1911 from *Terra Nova*, the ship that carried Scott on his tragic attempt to be first to the South Pole. Inventories and letters from Australian Antarctic explorer Sir Douglas Mawson were also discovered.

Kevin Alder, MetService’s manager for meteorological data services, was handed the documents by a colleague and asked if they were something worth holding on to. When Alder opened one and saw “Terra Nova” inside, he was astounded.

“No one had any idea that they even existed. I mean, it’s long forgotten, they’ve probably been sitting on the same shelf for 50 years,” Alder said.

Alder says the documents not only detail the weather and ship positions, but also observations about penguins, orcas, Mt Erebus, and sea-ice.

“It’s a little snapshot in time of what the conditions were on particular days. Shackleton’s ship – you can see the weather on the day that his ship actually arrived down to rescue the stranded party. The documents from Scott’s ship - one of them is the transit across the Indian Ocean. So it’s not Antarctic but it’s still the *Terra Nova* with Scott on board on his way to Antarctica and that is just incredible.”

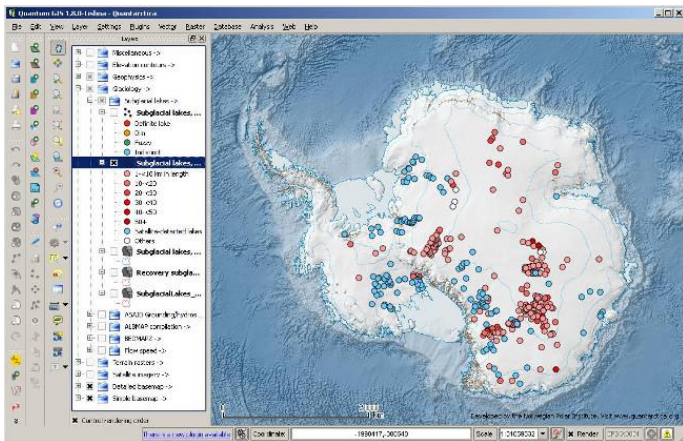
“It’s such an amazing story that has come to light now, 110 years later,” Alder said.

The artefacts were in excellent condition, he said, because they had been housed in a cool dark room: “There’s almost no deterioration whatsoever.”

Quantarctica – Free GIS Data for QGIS

by Caitlin Dempsey

Quantarctica is a collection of freely downloadable GIS data for Antarctica which includes "*community-contributed, peer-reviewed data from ten different scientific themes and a professionally-designed basemap.*"



Screenshot from Quantarctica, showing one of the subglacial lakes datasets. (From Quantarctica website)

The Quantarctica package is released under a Creative Commons Attribution 4.0 International License. All data in the package includes metadata in order to see the individual attribution requirements

necessary. It’s important to check the different licenses, terms of use, and attribution requirements as they vary among the individual datasets.

A QGIS specific free GIS dataset is available for downloading from the Quantarctica site (QGIS + Antarctica). The data contains geography, glaciology and geophysics data originally developed for in-house use at the Norwegian Polar Institute.

Quantarctica was first released for public consumption in July of 2013 and there are plans to expand the data offerings with contributions from the research community. The data is free for noncommercial use.

Users can download a 7GB base package which includes GIS base map vector and raster data, and scientific data covering geophysics and glaciology. Geography data includes place name, facility, ice shelf, grounded ice, and outcrops. Glaciology data includes ice thickness, ice-flow speed, and subglacial lakes. Geophysics data includes geoid heights, and magnetic anomalies.

The data are available at a range of scales from continental to local.

QGIS 1.8 is also bundled in the package. Those users that want to individually download Quantarctica’s datasets can do so via the Quantarctica FTP server. Also available from the download page are high resolution imagery datasets such as Landsat MOS and RADARSAT images.

Users can sign up at the bottom of the home page with their email addresses to receive updates to the Quantarctica site.

2021 Treasurer’s Report

by Tom Henderson

The Society remains in good financial condition. We moved the balance of the Calvert Fund to the Vanguard Wellesley Income Admiral Fund in June, which has yielded considerably greater returns in 2021.

I want to especially thank the generous donors to the Society in 2021: Michael Maish, the Bear Gulch Foundation (managed by the Rob Flint family), Tom Henderson, Julius Madey and Gisela Dreschhoff.

2021 INCOME & EXPENSES**Income**

Dues	\$3,908
Investment Income	\$3,440
Interest Income	\$14
2022 Gathering Registrations	\$5,701
Donations	\$5,500
Total Income:	\$18,563

Expenses

Admin. Costs	
Supplies & postage	\$47
Printing Costs	\$1,776
D&O Insurance	\$614
Communication Licenses	
Google Gsuite	\$72
Zoom License	\$160
Website Expenses	\$317
PayPal Fees	\$208
Professional Fees	
Vermont Incorporation Fees	\$195
IRS 501(c)(3) Registration Fee	\$275
Gathering Expenses	\$1317
Other Expenses	\$94
Total Expenses:	\$5,075
BALANCE	\$13,488

2021 ASSETS & LIABILITIES**Assets**

Bank Accounts	
Antarctican Society Checking	\$19,154
Ruth Siple Fund	\$4,156
2022 Gathering Registrations	\$5,701
Investments	\$65,990
Total Assets:	\$95,001

Liabilities

2021 Gathering Registrations	\$260
2022 Gathering Registrations	\$5,701
Total Liabilities:	\$5,961
BALANCE	\$89,040

Byrd's *Bear* Discovered in North Atlanticby Tom Metcalfe, *LiveScience*

**U.S.S. *Bear* at ice edge near Little America III, 1939
(U.S. Naval History and Heritage Command)**

Ocean scientists have located the wreck of the U.S. Revenue Cutter *Bear*, a ship that served at sea for at least 88 years and played a part in the capture of a Nazi spy ship.

The *Bear* has a storied history. It started working as a commercial sealer in 1874. Then, because the ship could travel through ice-filled waters, the government purchased it in the 1880s to use for rescue work in the Arctic. It also served as a relief ship during the Spanish flu pandemic of 1918-1919, a floating museum, a film set for a Hollywood movie and an expedition ship on Adm. Richard Byrd's Antarctic explorations.

It also patrolled Arctic waters for the U.S. Navy in both world wars, and in 1941 helped capture the Norwegian trawler *Buskø*, which was being used by the German military intelligence service Abwehr to report on weather conditions in the North Atlantic.

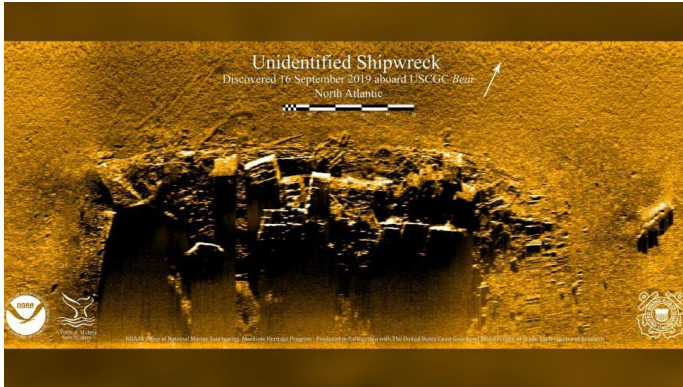
The *Bear* was decommissioned in 1944 and tied up at a wharf in Halifax, Nova Scotia. As it was being towed to Philadelphia in 1963, it sank during a storm, south of Nova Scotia and east of Boston.

"The *Bear* has had such an incredible history, and it's so important in many ways in American and global maritime heritage because of its travels," said Brad Barr, the mission coordinator for the U.S. National Oceanic and Atmospheric Administration's

(NOAA) Maritime Heritage Program, who has led the search for the wreck for several years.

Historic ship

In the late 1970s a group started searching for the *Bear*. It included the Massachusetts Institute of Technology's Harold Edgerton, who invented side-scan sonar — a technology widely used today to detect and image objects on the seafloor.



Side-scan radar image of unknown wreck (presumed to be the *Bear*) on the seafloor (NOAA)

The group tested out the new side-scan technology in 1979, but they didn't find the wreck — possibly because the location of its sinking had been misreported by its tow ship, Barr told Live Science.

A secret Navy submersible, the nuclear-powered NR-1, carried out a second search in 2007, but it too was unsuccessful. The U.S. Coast Guard and NOAA joined forces with other partners and began another search in 2019. After mapping 62 square miles (160 square kilometers) of seafloor with sonar, they identified two submerged objects in the search area.

In September, they returned on a Coast Guard ship equipped with a remotely operated vehicle to take underwater video and confirm that the largest object is the wreck of *Bear*, Barr said.

The wreck now lies on the seafloor at a depth of about 200 feet (60 meters), in Canadian waters about 90 nautical miles (167 km) south of Nova Scotia's Cape Sable. The exact location is being kept confidential in the hopes of deterring technical divers from trying to reach it, Barr said. The search partners are discussing with the Canadian government how the wreck can be protected.

The aging wooden hull has been badly damaged by nets from fishing trawlers and strong currents on the seafloor. But the researchers identified several distinctive features of the *Bear*, including the "bow staples" that strengthened its hull to allow the ship to handle heavy ice in polar waters, Barr said.

Steamship to diesel

Although the *Bear* was equipped with three masts for sailing, it was built as a steamship for its role as a sealer in the 1870s. In the 1930s, the boiler was taken out and the steam engine replaced with a diesel engine as it was refitted for its Antarctic service with Byrd.

As a result, several piles of metal can be seen among the remaining wood of the wreck, which includes sailing-ship technologies, Barr said.

"There's a pile of metal rubble with a deadeye [a fixed wooden pulley] sticking up out of it," he said. "These deadeyes have been around since the 1700s, but they were used on the *Bear* to attach the standing rigging."

Among the *Bear's* most famous exploits was its part in the 1884 rescue fleet for the Greely Expedition to the Arctic, which had become lost in 1881 near Ellesmere Island, northwest of Greenland. Several members of the expedition died of starvation and disease before the *Bear* rescued Greely and the other survivors.

After serving for many years as a government revenue cutter in Arctic waters — intercepting and inspecting ships at sea, and often rescuing commercial ships trapped in ice — the *Bear* was transferred to the Navy; it patrolled around Alaska during World War I, and delivered supplies there during the Spanish flu pandemic.

In 1929, the decommissioned ship was given to the city of Oakland in California, where it became a museum and then a film set for the 1930 film "The Sea-Wolf," an adaptation of a Jack London novel.

The *Bear* was recommissioned for Arctic patrols during World War II, when it helped capture the *Buskø*; but it was mostly tied up in Halifax after that, until it sank in 1963 on its voyage to Philadelphia, where it was planned to become a floating restaurant.

"These are incredibly compelling stories," Barr said. "When you read the details of what the *Bear*

did, how many lives it saved, how many incredible missions it was on — it is really the kind of history that people should be aware of."

To commemorate its discovery, Barr has compiled years of historical research into [several website posts](#) detailing the many exploits of the *Bear*. "One of the reasons why we wanted to find it is because it allows us to tell all these stories."

Britain's *RRS Sir David Attenborough* makes maiden voyage

Britain's brand-new polar research ship is on its maiden voyage in Antarctica. In addition to supplying food, fuel and research teams to the British Antarctic Survey stations in Antarctica, it will also conduct oceanographic research. *The RRS Sir David Attenborough* represents an ongoing significant investment by Britain in its Antarctic program. Built by Cammell Laird Ship Builders, the 15,000-ton ship cost GB£200 million. The *Attenborough* replaces the retired vessels *RRS James Clark Ross* and the *RRS Ernest Shackleton*.



***RRS David Attenborough* in London prior to departure for the Antarctic. (British Antarctic Survey)**

Among the innovative features of the ship is a "moon pool," a 4-meter x 4-meter vertical shaft through the center of the ship open to the air and the sea beneath. This allows sensors to be launched into the sea below even in conditions of dense pack ice and rough seas. Another feature is "plug-in"

containerized scientific laboratories to accommodate additional lab space when needed.

To learn more about this state-of-the-art polar research vessel, go to <https://www.bas.ac.uk/media-post/rrs-sir-david-attenborough-makes-maiden-voyage-to-antarctica/>.

To take a video tour of the ship, go to: <https://www.bing.com/videos/search?q=rrs+sir+david+attenborough&docid=608014614492569466&mid=68D85C842167B462A07C68D85C842167B462A07C&view=detail&FORM=VIRE>

Adélie Penguins Target Certain Nests in Strategic Stone Thieving

By Lauren Lipuma, *Antarctic Sun* Editor

Adélie penguins often steal stones from each other's nests, but new research shows the wily birds target some nests more than others.

Biologists observing Adélies on Antarctica's Ross Island found the birds tend to steal stones from nests on the outside edge of their colony, rather than taking stones from nests in the center.



Adelie penguin "thief with purloined nest stone. (Photo by Elaine Hood)

Penguins and other birds who build nests at or near the center of their colonies tend to have better success breeding and raising chicks. Central nests are less likely to be disturbed by predators and are more protected from the harsh Antarctic elements. The new results show there's an additional benefit to life in the center of the colony: the birds don't have to worry about others stealing their nest stones quite as often.

“It’s really important to have a well-shaped nest, and if you have a lot of birds trying to steal your stones, it’s not as easy to maintain,” said Virginia Morandini, an ecologist at Oregon State University and lead author of a new study detailing the findings. “So they need to spend more energy to maintain their nests.” The stones keep the eggs dry by allowing snow and water to flow beneath them.

Well-built Adélie penguin nests can have hundreds of stones, and collecting them requires a lot of energy. It’s also one of the significant ways mated penguins interact with each other, according to David Ainley, who has studied Adélies for decades: “It’s part of the pair formation process.”

Morandini decided to watch the stone thieves more closely and track where they lived in the colony. She saw that penguins tend to remove stones from nests on the periphery of the colony more often

than from nests near the center. And, not surprisingly, nests near the center tended to be larger and better built.

“The peripheral nests had more stone removal attempts, and the removal attempts were more likely to be successful if the nest was on the periphery of the colony,” Morandini said. “What we saw in central nests is that when a penguin tried to steal a stone, it’s not only the owner of the nest that is attacking him, but the other neighbors are attacking him at the same time because they see him as a possible problem for them too. But nests that are peripheral, they don’t have neighbors on all the sides of the nest. So we think penguins take advantage of that.”

To watch David Ainley explain the Adélies' larcenous and defensive techniques, visit <https://antarcticsun.usap.gov/science/4684/>



The Antarctic Society

www.antarctican.org

August 12-14, 2022 Burlington, VT Gathering Registration

Name (s) _____

Address _____

Email _____ Phone _____

Qty.

_____ Full Registration(s) - includes day programs, Reception on Friday evening, *Spirit of Ethan Allen* sunset dinner cruise on Lake Champlain on Saturday evening and the picnic on Sunday (\$175.00 per person **before** April 1, 2022, \$225.00 per person **after** March 31, 2022)

_____ Guest ticket(s) for Friday Reception, Saturday *Spirit of Ethan Allen* and picnic (\$90.00)

Guest(s): _____

Total amount enclosed: \$ _____

Refund policy: 100% prior to March 31, 2022; 50% April 1 – June 30, 2022.

Mail your check and registration form to:

The Antarctic Society
35 Cherry Street Unit 701
Burlington, VT 05401

Would you like to visit the Shelburne Museum at 1:00 p.m. on Thursday, Aug. 11? ___ Yes ___ No

Would you like to attend no-host dinner on Thursday evening in Burlington? ___ Yes ___ No

Do you or another of your registrants require handicapped access? ___ Yes ___ No

Do you or another of your registrants have a special dietary need? ___ Yes ___ No