The Antarctican Society

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"BY AND FOR ALL ANTARCTICANS"
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MAINE GATHERING PROVES SOCIETY'S HISTORICAL RICHNESS

The Society's July 2016 three-day Gathering at Treasurer Paul Dalrymple's coastal home in Port Clyde, Maine, drew 114 members, relatives, and friends from across the Nation. A day of presentations in Paul's Garage Theater dramatically showed how today's understanding of Antarctica grew out of the slow and painstaking – and cold – investigations done more than half a century ago. During that transitional time, among many advances, we heard from our speakers – they had been there back then! – how glaciology was transformed from a descriptive branch of geology to an analytical branch of physics. We were informed about some of the ways that glacial geology – investigation of landforms to infer glacial history – made big strides.

Papers that follow, contributed by the Garage Theater speakers, are based on their talks and describe some of this early work done by them in Antarctica. For me, and I'm sure others who were there, being in the presence of not just one but a half dozen of these pioneers was electric. Audience participation revealed that several people in attendance had early experiences in some of the same regions the speakers had explored. What a wealth.

Four of the eleven invited Garage Theater speakers are represented in this issue. Of the other seven, Bob Rutford's commemoration of John Splettstoesser is summarized in an obituary in the July 2016 issue. Bob Breyer's talk about his grandfather, Admiral Richard E. Byrd, and a planned recovery of an airplane that crashed in March 1929 during Byrd Antarctic Expedition I, is addressed in Bob's web site, http://www.admiralbyrd.com. Other papers based on talks given at the Gathering will appear in future issues. As with all issues, the online version of the newsletter includes images and pictures provided by authors or others; the print version does not.

The Society is considering another Antarctic Gathering in the northern summer of 2018, time and place to be determined. Check future newsletters for updates. See you there!

Guy Guthridge

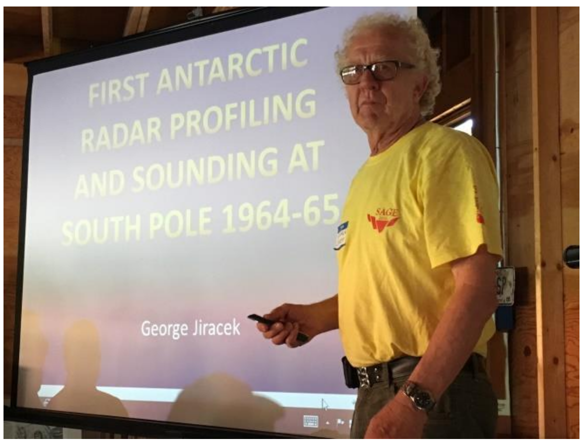
July 2016 Gathering at Port Clyde, Maine

Dr. Paul Dalrymple in Garage Theater

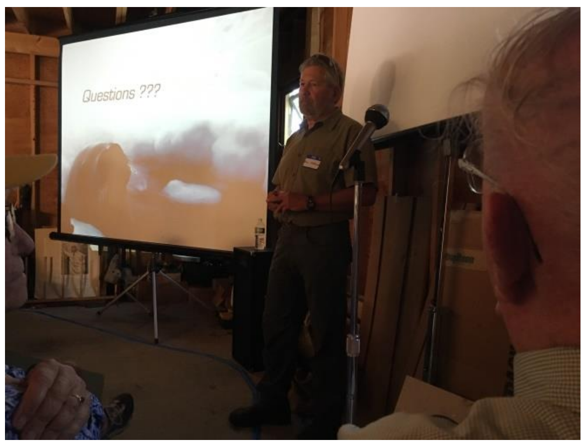
Antarctican Society Board Meeting

Paul and Gracie at Lunch

Bob and Margie Rutford



Dr. George Jiracek in Garage Theater



Dr. Paul Mayewski in Garage Theater

Photos courtesy of Lou Lanzerotti

The University of Maine in Antarctica

by Harold W. Borns

Maine, as a state, has long been related to Antarctica, first through the fur seal fishery along the Antarctic Peninsula and the associated China tea trade of the 1800s, and later through Admiral Richard E. Byrd, who in the 1920s and 1930s summered on Tunk Lake, Maine, where he dictated his Antarctic expedition volumes and his famous book *Alone*, sitting on a raft with his secretary and his dog Igloo, according to his daughter, Bolling.

During the 1957-1958 International Geophysical Year, University of Maine's Assistant Professor Harold W. Borns, a Tufts undergrad, was invited by Professor Robert L. Nichols to join the Tufts 1959-1961 Antarctic expedition as a field assistants working in the McMurdo Dry Valleys and the McMurdo Sound area. I was thrilled. Eventually I spent 28 field seasons "on the Ice" as a glacial geologist and from 1988 to 1990 was program manager for polar glaciology at the National Science Foundation in Washington, on loan from the University of Maine.

In 2002 Maine's Climate Change Institute, formerly the Institute for Quaternary Studies (of which I was the founding director), was established as a multidisciplinary research and teaching unit focused on Ice Age research in the disciplines glacial geology, prehistoric archaeology, paleoecology, and glaciology. CCI has had a presence in Antarctica through Professors Harold Borns, George Denton, James Fastook, Terence Hughes, Paul Mayewski, and others.

The institute now has about 15 tenured faculty and 60 students. The university's marine biological sciences have been involved through Professors John Dearborn and Hugh DeWitt, since IGY at McMurdo and Palmer and more recently Bruce Sidell at Palmer Station. Together, these scientists represent nearly 60 years of research by the University of Maine in Antarctica.

In joining The University of Maine CCI in 2000, Professor Paul Mayewski brought ice core science into the University's established glacial geological focus, which has been providing proxy records of climate changes from locations around the globe, including extensive work in Antarctica, Chile, and New Zealand by George Denton and his team of scholars from several institutions, Brenda Hall, and others.

Paul Mayewski was appointed Director of CCI in 2002 and continued to expand both the geography and the analytical capabilities of ice core research. He promoted and developed campus-wide interest and activity in climate change documentation and its applications to academic and public fields, including programs of Maine state government.

I will be 89 years old this year, am "retired," and remain in good health. My last Antarctic research was a cooperative venture with Parker Calkin, SUNY (Buffalo), and Robert Ackert, Harvard University, to determine the height of the West Antarctic Ice Sheet at the Last Glacial Maximum, measured on nunataks of the Executive Committee Range, which is on the ice divide of the ice sheet.

Paul Mayewski, George Denton, Brenda Hall and others continue the presence of the University of Maine in Antarctica as well as in other glaciated regions, while I, in my "failed retirement," am doing field research in the northeastern United States and in Ireland.

The work in Ireland is documenting a low latitude marine-based glacier off the western coast. This investigation is an extension of retired University of Maine Professor Terry Hughes' revolutionary concept of marine-based ice sheets, which evolved largely from his study of the largest of them all, the West Antarctic Ice Sheet.

Antarctic and global climate interpreted through analogs for past and present atmospheric circulation

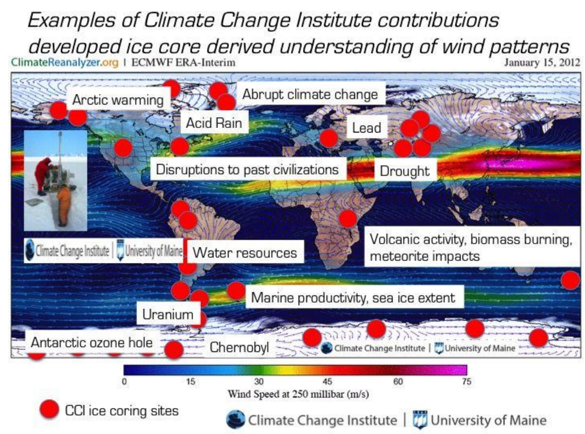
by Paul Andrew Mayewski

During our second expedition into the Ladakh Himalayas in 1980 we were fortunate enough to notice clouds converging from the north (Tibetan Plateau) and from the south (India). Where the two conveying air masses met, over our 20,450-ft-high ice core drill site, snow fell. It was the ideal situation to test an intuitive concept that ice/snow cores carry chemical fingerprints (signatures) of their source region (temperature, dustiness, biotic productivity, and more). While the snow was still fresh we raced downhill to just below 10,000 ft and then back up to our camp to complete drilling for a history of the Indian Monsoon. The concept worked. We have since been able to track the source, emission strength, and transport pathway of many air masses feeding air to the ice cores we have recovered from Antarctica, the Arctic, Asia, South America, North America, Australasia, and Europe.

Understanding the past and present history of air masses is critical because air masses carry heat, moisture, and pollutants. They impact ocean surface currents, sea surface temperature, and sea ice extent. We also know from our work recovering, analyzing, and interpreting the Greenland Ice Sheet Project Two (GISP2) ice core that air mass strength – and the shape of atmospheric features such as the austral and boreal westerlies and the intertropical convergence zone – can change abruptly, in less than a year, and stay in the new state for decades to centuries. These abrupt reorganizations of atmospheric circulation can, therefore, impact all aspects of climate.

The International Trans Antarctic Expedition (ITASE) involves 21 countries. Its goal is to understand past and present climate as analogs for predicting future climate in concert with climate models. The project has recovered and analyzed scores of ice cores and completed thousands of kilometers of oversnow traverses that have provided a base for understanding glacier dynamics and atmospheric chemistry. ITASE and associated SCAR programs have contributed to understanding not just Antarctic climate change, but also the interaction of Antarctic climate with Southern Hemisphere and global climate.

Today, climate change in the polar regions is having remarkable consequences. Recent Arctic warming, induced by greenhouse gases, has been abrupt, as much as 5°C in the eastern Arctic over recent years. It has led to poleward migration and weakening of the boreal westerlies and massive embayments of the jetstream – with extreme weather event consequences. In the Antarctic, stratospheric ozone depletion and greenhouse gas warming have caused the austral westerlies to migrate poleward and strengthen, leading to changes in sea ice extent, drought in Australia, cooling of some Southern Ocean currents due to enhanced upwelling, and southward movement of warm currents to reduce the mass of some Antarctic ice shelves.



The potential for abrupt climate change, the significance of shifts in atmospheric circulation patterns, and impacts of human activity on the chemistry of the atmosphere – all gleaned from ice cores – have in less than three decades of research turned out to be essential to predicting the course of a defining reality of the 21st century – human induced climate change.

Paul Andrew Mayewski is the director of the Climate Change Institute and distinguished professor (School of Earth and Climate Sciences, School of Marine Sciences, School of Policy and International Affairs, Business School) at the University of Maine. Internationally acclaimed glaciologist and explorer, leader of more than 55 expeditions to some of the remotest regions of the planet, >400 peer reviewed scientific publications, two popular books, hundreds of media and speaking venues worldwide, leader of GISP2 and founder/leader of ITASE, numerous first ascents, oversnow traverses to unexplored Antarctic territory, coupled with major contributions to the understanding of past, present, and future climate change.

For more information:
http://climatechange.umaine.edu/people/profile/paul_andrew_mayewski

http://www.climatechange.umaine.edu

http://www.climatechangeinsights.org

http://www.journeyintoclimate.com

http://cci-reanalyzer.org/

Exploring the Antarctic polar plateau

by Jack Long and John Clough

Our discussion at the 2016 Garage Theater centered on exploration and research of the Antarctic polar plateau using two Sno-Cats and Radar Echo Sounding. Jack talked about the two amazing 843 Tucker Sno-Cats, and John discussed the successful use of RES.

The largest Sno-Cats. The Sno-Cats, built specifically for the polar plateau, worked for and protected six different groups of scientists traversing over 5,000 miles in unexplored Antarctica over 8 years from 1961 to 1968 at altitudes up to 14,000 feet and temperatures down to minus 75°F. These are the only large 843 Sno-Cats in existence and are the largest Sno-Cats ever built. Their successful exploration required on-the-Ice redesign and field retrofitting, along with construction of three garages, continual maintenance, and two LC-130 transport trips from the polar plateau to McMurdo Station and back.

This overview includes conception in 1958, birth in 1959, traverse life from 1961 to 1968, death in 1968, and afterlife from 1968 into the future.

Conception. At the end of IGY in 1958, someone with foresight realized that western Antarctica (Little America, Byrd, Ellsworth, and Palmer Stations) was pretty well overflown, traversed, and explored, while eastern Antarctica was looming as the next huge unknown. The United States had South Pole Station (SPS), supported by air from McMurdo, but we had never traversed there or done extensive geophysical studies on the polar plateau. The British, New Zealanders, and Russians had traversed to the SPS. The Russians were particularly active in this large unexplored section of the continent. U.S. scientists had unique capabilities, and exploring the polar plateau was the next logical step.

The big problems were high altitude and extreme cold. Due to less oxygen at these higher altitudes, the existing gasoline-powered Tucker Sno-Cat traverse vehicles (orange beetles) would lose 30% of their power around Pole Station and 45% at Plateau Station, not compatible for towing large loads. Further, the orange beetles would not provide sufficient protection for humans in the extreme low temperatures. Of note, the orange beetles were cramped inside, and the headroom was only 4½ feet.

The visionaries ordered two new traverse vehicles from Tucker Sno-Cat that could handle the high altitude and low temperatures with long range capabilities.

These vehicles would have turbocharged diesel engines, large towing capacity, cold weather starting capability, 6-foot headroom, and accommodations to house scientists and gear in relative comfort. They would be transportable by an LC-130 aircraft.

Tucker had never built such a monstrosity. These vehicles were to be two to three times bigger than anything they had built and of new and untested design. Their largest Sno-Cats to date were the "orange beetles" that we were already using.

Tucker had no jigs, fixtures, forgings, or castings in the factory for so large a vehicle. The company had never used diesel power. They introduced new and untested track and drive systems, frame, and body. The tracks were higher, wider, and longer than any prior Sno-Cat.

To date, these are the only two 843 Tucker Sno-Cats ever built. At the time Tucker likely felt that this was just the beginning, and the Navy, NSF, and other countries would order more vehicles in the future.

Birth. For several months in 1959, Tucker Sno-Cat stopped all other production at the factory in Medford, Oregon. The focus was on building the two 843s. I was sent to the factory to make the new vehicles compatible with our traverse instruments and Antarctic operating conditions.

The two new machines arrived in McMurdo in early 1960 as deck cargo on a U.S. Navy cargo ship.

Traverse life. Arriving at McMurdo Station in February 1960, the two Sno-Cats began 8 years and six successful traverses in some Antarctica's worst conditions: high altitudes, extreme weather, crevasses. Throughout their 5,000 miles the 843s provided safe and comfortable living and working environments for the scientific teams. They met the established traverse routes, destinations, distances, and times.

The traverses were:

1961, Discovery Deep Traverse on the Ross Ice Shelf from McMurdo. 400 miles

1961-1962, McMurdo to South Pole Station. 1,250 miles

1963-1964, South Pole Station to Horlick Mountains. 800 miles

1964-1965, QMLT-I South Pole Station to Pole of Inaccessability. 950 miles

1965-1966, QMLT-II Pole of Inaccessability to Plateau Station. 825 miles

1967-1968, QMLT-III Plateau Station to Shackleton Range. 825 miles

The Sno-Cats could be self-sufficient over a 1,000-mile range, which meant no dependency on refuel flights. In reality, to lighten the load for certain areas of soft snow and crevasses the fuel load was reduced, the range shortened, and fuel airdropped. Even so, the Sno-Cats always towed a large load of fuel and supplies on every traverse. Typically, a traverse would start out with each Sno-Cat pulling 2,000 gallons (14,000 lb) of fuel and 3,000 lb of supplies on a 4,000 lb Rolligon trailer. This created a total towed weight of 21,000 lb.

A Rolligon trailer is a military four-wheel cargo trailer rated at 2½ tons. The tires are big and fat – about 5 feet in diameter and 4 feet wide. Each wheel was equipped with 1½-inch fuel ports and could be filled with 500 gallons of fuel. Compressed air would force fuel out of the fuel ports. On soft snow with full wheels, towing was difficult. The Sno-Cats would gear down, but keep going. Infrequently, trenches made by the Rolligons were 18 inches deep. Distribution of fuel in the wheels was an important towing factor. The 1961-62 McMurdo to SPS traverse was the first use of Rolligons in Antarctica. They worked well and were considered a success. Had the Rolligons failed, the backup plan was to use U.S. Navy 10-ton sleds.

The Sno-Cats reliably performed and pulled these large loads year after year, but not without a lot of help. Repairs and modifications were required. Three garages were built: McMurdo, used by NSF for 40 years; SPS, canvas over aluminum frame, used for 2 years; and Pole of Inaccessability, self-inflating 200' diameter plastic bubble, used 2 weeks.

The design and rebuild problems started in 1961 at McMurdo when a decision was made for a 500-mile traverse on the Ross Ice Shelf, called the Discovery Deep Traverse (DDT). The Sno-Cats departed McMurdo in the fall of 1961 after the search-and-rescue planes were put away for the winter. Things did not go well. Aware of failures and crevasses, VX6 started to pull helicopters out of storage, as winter set in and we had not yet returned to McMurdo. Back in McMurdo it was discovered that the tracks and drive sprockets were almost worn out having traversed only 400 miles pulling light loads, meaning the planned 1,200-mile traverse from McMurdo to SPS would fail. Tucker's new design had to be changed. With the first flight of spring, new track parts arrived.

The traverse to SPS was successful. (See Ed Robinson's video, "Antarctic Traverse Adventures, 1959-1961," on the Antarctican Society website.) It revealed another problem, though. The machines could travel only in the gear in which they started. During a try to shift up, the Sno-Cats would stop. Our speed was limited to 2 mph. The next summer at SPS, the Sno-Cats were converted from five-speed manual to six-speed automatic transmissions, making 3.5 mph possible, and sometimes up to 5 mph in good conditions.

Throughout the traverses, some mechanical failures were a result of wear and tear; others, due to design and material selection. Some parts needed to be replaced with stronger steel. As the years passed, design problems diminished. Wear and tear was dealt with as much as possible in the field, but twice the Sno-Cats were flown to McMurdo for extensive refurbishing. This airlift was possible at SPS and Plateau Stations, with prepared skiways.

Death. The Antarctic traverses came to an abrupt end through a radio message during the QMLT-III in 1968, which was headed to SPS with 600 miles to go. In effect, the radio message said, "Radar Echo Sounding can now be done from the air. There is no point in driving any farther. Pack your personal belongings and scientific instruments, and get on the LC-130 that will land shortly. Abandon everything else."

John Clough had singlehandedly dealt the death blow to the 843 Tucker Sno-Cats and their Antarctic traverses! He had been too successful with the then experimental Radar Echo Sounding used on the last two traverses. From here forward, RES would be airborne!

Afterlife. Is this the end of the Sno-Cats? It doesn't have to be. There they sit, 600 miles from SPS: still operational with fuel and supplies. Install new batteries, fire them up, and you're on your way!

Several foreign countries have museums with Antarctic dog sleds, ships and airplanes, and yes, even early Tucker Sno-Cats. Here in the United States we have saved airplanes and ships. Why aren't we saving the vehicles that played such an important role in exploring the last continent with the harshest living environment on earth? Why not drive them down to British Halley Bay Station? Load them on a ship, and bring them back to America for the benefit of future generations? Let's not let these important gems of our history slide into oblivion.

Scientific objectives of the traverses. During the International Geophysical Year (IGY) in 1957-1958 and the next few years, over-snow scientific traverses were conducted by the U.S. in West Antarctica. Geophysical and glaciological observations provided data on surface and bedrock topography and on snow and ice deposition and accumulation.

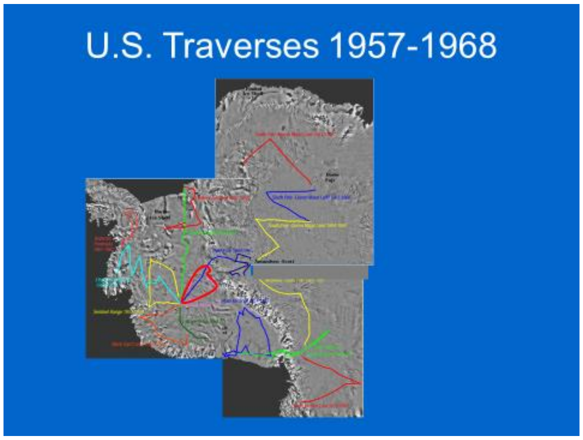


Figure 1. Map of IGY traverses in West Antarctica and the East Antarctic traverses described below.

During the late 1950s, plans described above were made to traverse to the high plateau of East Antarctica. Conditions in East Antarctica with a self-sufficient larger crew called for a larger vehicle than previously used. Hence the Sno-Cats were designed and built by Tucker to sleep five persons, provide all living and science spaces, and tow heavy cargo and fuel loads.

Figure 2. The two Tucker 843 Snocats at Pole of Inaccessibility (1965)

QMLT-2 in 1964-1965 included two new techniques: Radio Echo Sounding (RES) and a neutron density probe for measuring snow density in our 15-meter drill holes.

The 30 Mhz radar was loaned to the project by Amory "Bud" Waite, a Byrd expedition radio operator who was instrumental in the discovery of RES.

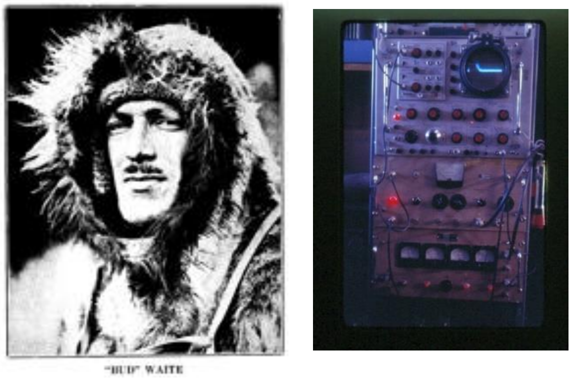


Figure 3. "Bud" Waite and the RES equipment inside the 843 "Seiscat"

RES provided a detailed profile of depth to bedrock and stratigraphy and internal layering within the 3,500-meter-thick ice column.

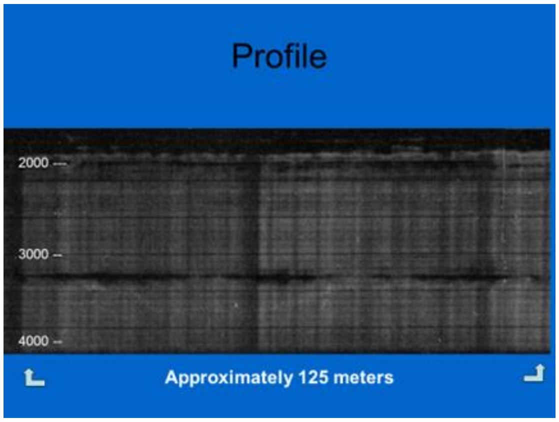


Figure 4. A short sample of RES continuous profile from QMLT-2. The bedrock reflection is seen at approx. 3200 meters.

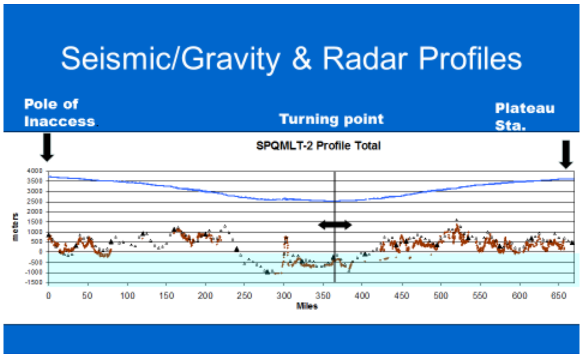


Figure 5. QMLT-2 profile.

QMLT-3 occurred during 1967-1968, after the 843s were flown to McMurdo for a season of rehabilitation. The traverse covered 840 miles in a grid northwest direction and ended in the area of the Shackleton Range about 600 miles from Pole, where we received the call from McMurdo telling us to park the Sno-Cats.

One explanation was that future surveys would be conducted by remote sensing. Airborne radio-echo sounding would undoubtedly provide basic bedrock mapping. Ironically, with spiking fuel prices and budget constraints it was 40 years before significant airborne mapping was achieved.

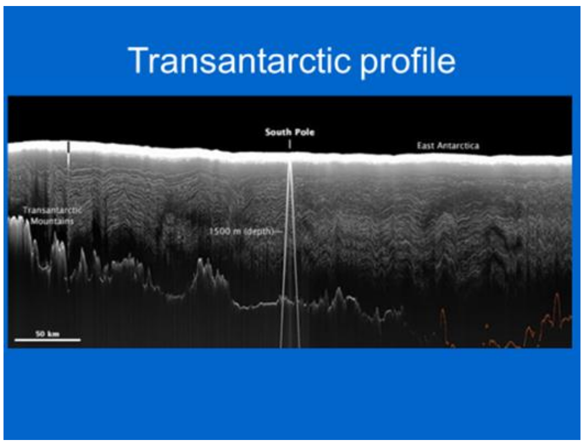


Figure 6. Note the internal layering within the ice sheet.

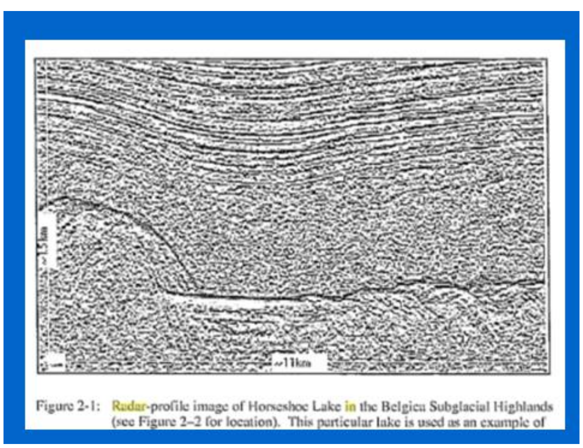


Figure 7. A detailed profile over an East Antarctic lake.

In the 1960s the East Antarctic Ice Sheet was considered very stable. Bedrock topography was mapped from -500 meters to +3000 meters below and above sea level. (QMLT data mapped bedrock depths of -1000 meters.) The ice at the bedrock interface was thought to be close to the melting point, but essentially frozen to bedrock.

Modern RES has revealed a complex hydrodynamic system of 145 or more lakes and channels. Deep fiords lie beneath the ice sheet. RES interpretation shows deep ice melting and water forced up to shallower depths and refrozen. Many of these lake features are expressed at the upper surface of the ice sheet and are visible on satellite imagery. The East Antarctic ice sheet appears far less stable than previously described. It all started with those two 843 Sno-Cats.

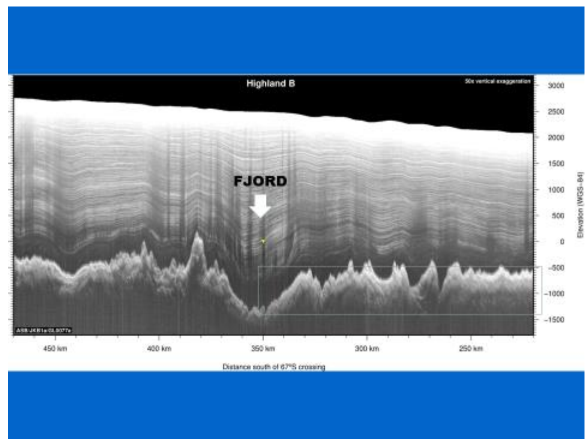


Figure 8. RES interpretation shows deep ice melting and water forced up to shallower depths and refrozen. (Figure 9)

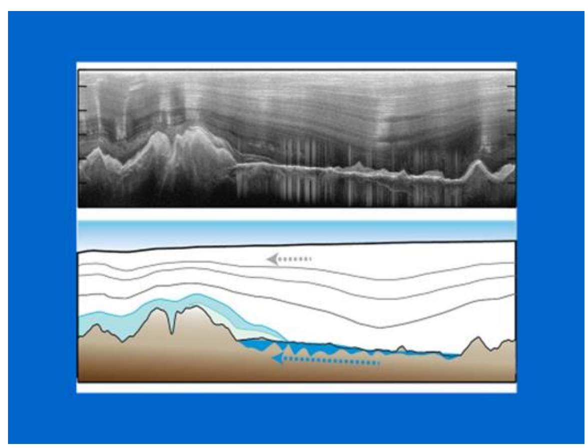


Figure 10. illustrates fresh water being forced up-hill and refrozen at much shallower depth.

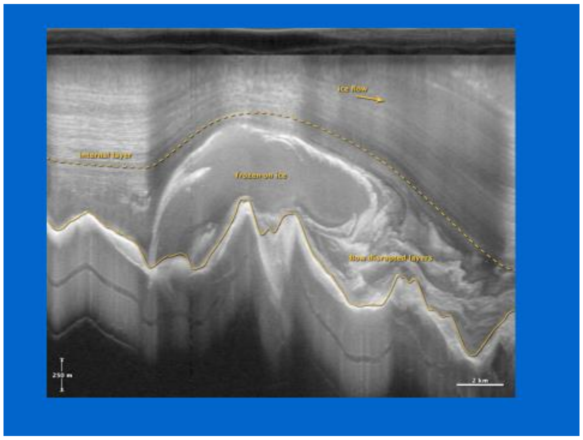


Figure 11. A detailed image of refrozen Ice

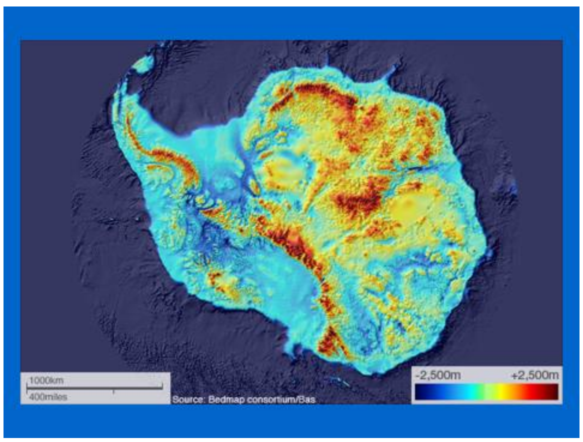


Figure 12. A current map of Antarctica's bedrock contours showing low areas where lakes and streams are located.

Jack Long and John Clough co-presented "Exploring the Antarctic Polar Plateau" to Antarctic colleagues at the July 2016 Antarctican Society Gathering in Port Clyde, Maine. During their talks, Jack ran a silent movie, recorded in 1963-64, showing the South Pole to Horlick Mountains traverse to demonstrate the historic exploration of Antarctica from 1956 to 1968, during the earliest years of airborne Radar Echo Sounding (RES). For a 48-page report about the 843 that Jack wrote in November 1962, see [*https://minds.wisconsin.edu/handle/1793/64961*](https://minds.wisconsin.edu/handle/1793/64961).

First Antarctic radar profiling and sounding at South Pole 1964-65

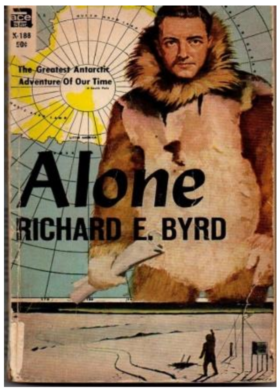
by George R. Jiracek

Let me be clear when I say "first Antarctic radar profiling." Radar profiling of a few tens of kilometers had been done before 1964 near McMurdo. And the British were doing radar profiling in 1964 on the other side of the continent. A major joint U. S.-British effort during the boreal 1964 summer in Greenland measured over 200 kilometers of radar profiling. The 1964-65 radar profiling represents the first such increase in scope in Antarctica.

Greenland 1984 near U. S. Army Camp Tuto

I was a member of the Greenland team, but my Antarctic discussion is set in the context of how operations were done there.

In Greenland, explosion seismics near the edge of the ice cap and gravity measurements were included along the traverse from Camp Tuto to Camp Century and beyond. The U. S. radar team was headed by Amory "Bud" Waite, then of the Army Corps of Engineers. I pay tribute to him for not only teaching me the details of glacial radar theory and equipment, but also for his contagious enthusiasm for polar exploration. Bud was a radioman on Byrd's 2nd Antarctic 1933-35 expedition. He and two others are credited with saving Byrd's life as described in Byrd's book entitled *Alone*. Bud recognized back then that radio waves between two ships were not attenuated when passing through intervening ice bergs. This led to his first glacial radar soundings in the 1940s. Knowing Bud Waite, you never forgot him. He was both gregarious and humble. His story-telling was unmatched – about not only Byrd, but others such as Shackleton and Scott, although he never met them. It was a privilege to spend time with him in Greenland and to use his radar equipment during the 1964-65 Antarctic season.



"Bud" Waite

A polar traverse in Greenland was called a "swing" with large boxcar-like sleds called "wanigans" and huge cargo-carrying trailers pulled by D-8 tractors with extra-wide treads for lower ground pressure. Wanigans had living, cooking, and lab space and even a snow melter for showers. The huge tires on the trailers were about 3 meters across, easily dwarfing me when standing next to them.

Greenland "swing." Wanigans, large sleds, and rubber-tire trailers being pulled by D-8 tractors during near white-out conditions

On to Antarctica! I did radar profiling and soundings on the Ross Ice Shelf near New Zealand's Scott Base, on the Skelton Glacier, on Roosevelt Island south of Little America (a coastal station on the Ross Ice Shelf), and at the South Pole. In contrast to the giant wanigans in Greenland, my assistant (and buddy) Jim Nichols and I built a "mini-wanigan" radar lab out of plywood and canvas and lashed it to a Nansen sled. A single motor toboggan (now called snowmobile) could pull three Nansen sleds with fuel, supplies, and our mini-wanigan. For profiling, the 30 MHz radar transmitting and receiving antennas were

Author next to large trailer's nearly 3-m diameter rubber-tires

Author in "mini-wanigan" containing 30 MHz radar transmitter, receiver, and oscilloscope

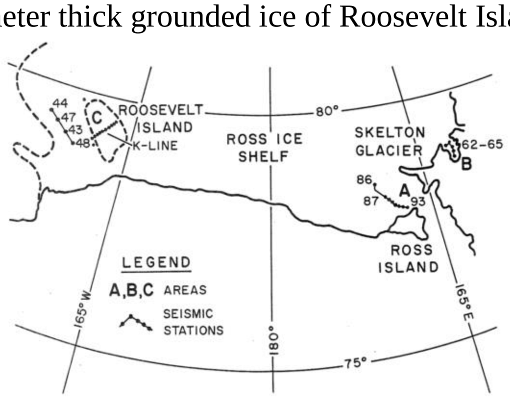
attached to separate sleds with bamboo poles. One person operated the equipment inside the lab, and one person drove the motor toboggan and called out distances from a bicycle-wheel odometer. Meals were cooked and eaten outside our tents where we slept. Cooking dinner on a hot plate with a Coleman stove started with nearly a pound of butter, a can of mushrooms, and filet mignons. Because I was in the Navy Reserve then, I was given two special privileges by the Navy support staff. I directly chose our food supplies from the Navy stores (heavy on filet mignons). And I had full access to the McMurdo photographic facilities where I developed rolls of 35 mm film. This film contained our radar images taken with a camera attached to an oscilloscope. Developing the film in Antarctica meant not having to wait until returning to the States to confirm our recorded data. (It turns-out that the oscilloscope did not work after shipping to Antarctica. This likely would have canceled our project then except that Bud Waite had packed spare parts for everything. My Navy electronics training enabled me to figure out which component was bad.)

The radar profiling results were:

1) the first recordings of multiple radar reflections through ice, these from the 100- to 300-meter thick Ross Ice Shelf when the radar antennas were separated up to 1 kilometer apart

2) multiple, rough bottom echoes exhibiting radar polarization changes from the 1.7-kilometer deep Skelton Glacier

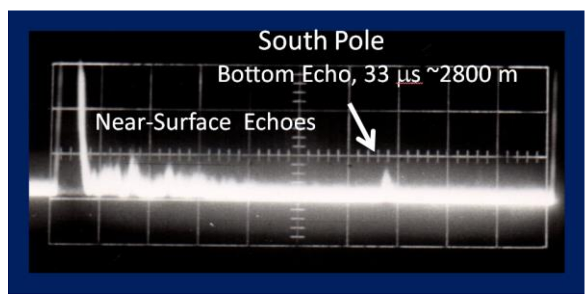
3) four radar profiles totaling over 150-kilometers traversing the nearly 900-meter thick grounded ice of Roosevelt Island



Areas of Radio Velocity Measurements in Antarctica

Even though the accurately measured survey markers on Roosevelt Island have moved greatly in 52 years, it would be valuable to compare the radar soundings of 1964 with those today to document ice thicknesses changes, possibly quantifying an effect of global warming.

Our two-person radar team and gear were airlifted to the South Pole in early January 1965 where my Professor, Charlie Bentley, joined us for the first ever radar sounding at Pole Station. A stronger than expected bottom echo was recorded at 33 microseconds, which was converted to an ice thickness of 2,800 ± 17 m. This compared favorably to a nearby seismic measurement by the University of Wisconsin of 2,803 m. Shallow radar echoes up to 20 microseconds "deep" were partly caused by Pole Station infrastructure. But, some were probably caused by past climate-change discontinuities preserved in the ice. Our celebration of the successful South Pole results included "refreshments" in the lounge while we watched Navy sailors dance with sled dogs and female, department store manikins.



Oscilloscope image of first ever radar sounding at South Pole

I returned to Madison, Wisconsin, mostly via the Super Constellation prop plane called Pegasus, the winged-horse of mythology. From New Zealand, the flight had refueling stops in Pago Pago, Honolulu, and California before arriving in New Jersey. When I finally arrived in Madison, Wisconsin, the temperature was minus 21°F; when I left the South Pole it was a warm summer day of minus 5°F.

I'm forever grateful to Bud Waite and Charlie Bentley for allowing me to have had this lifetime experience. Bud Waite sent me an amusing comment that I shared with the Garage Theater audience.

See: Jiracek, G.R., 1966, Radio sounding of Antarctic ice: Univ. of Wis. Geophys. and Polar Res. Ctr., Res. Rept. Series 67-1, 127 p.

J. Green, British Antarctica Survey, and Charlie Bentley in Hawaii alongside the Super Constellation called Pegasus

George R. Jiracek is Emeritus Professor of Geophysics, San Diego State University.

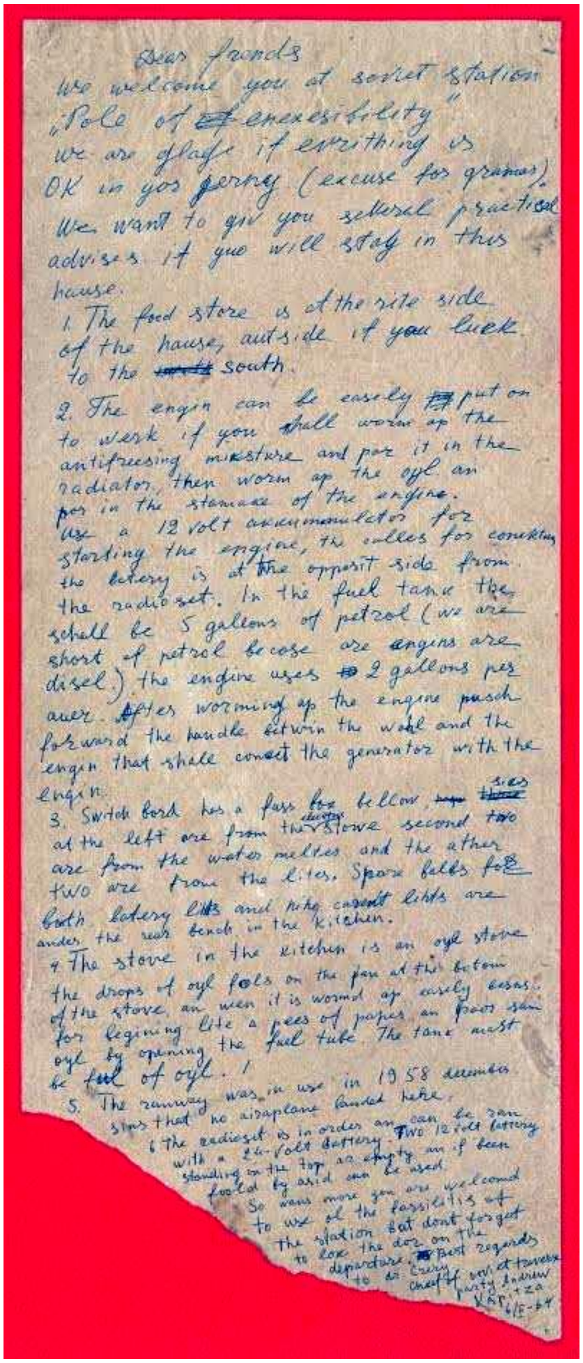
The Message

by Dick Cameron

As an addendum to the presentation on the East Antarctica traverses by John Clough and Jack Long, Dick Cameron told about the message dated 6 February 1964 that the Americans found at the Pole of Relative Inaccessibility, a station the Soviet Antarctic Expedition first operated in December 1958 and now Historic Site 4 under the Antarctic Treaty. Andrew Kapitza, the son of Peter Kapitza (a scientist who worked with Rutherford) and Chief of the Soviet Traverse Party, had written the message.

The Soviets knew the Americans were planning to visit the station the following year, so they left information about what was available for visitors to the station. Our traverse reached the station on 27 January 1965.

For the Garage Theater talks, Andy Cameron (son of Dick) had the message enlarged and posted on the wall.



Dear friends
We welcome you at soviet station
„Pole of enexesibility"
We are glafe if everything is
OK in yor jerny (excuse for grammar).
We want to giv you sellersl practical
advises if yue will stay in this
house.
1. The food store is at the rite side
of the house, autside if you luck
to the south.
2. The engin can be easely put on
to werk if you shall worm up the
antifreesing miksture and por it in the
radiator, then worm up the oyl an
por in the stamake of the engine.
Use a 12 volt accumulator for
starting the engine, the cables for conekting
the batery is at the opposit side from
the radio set. In the fuel tank the
schell be 5 gallons of petrol (we are
short of petrol becose are engins are
disel.) the engine uses 2 gallons per
auer. After worming up the engine push
forward the handle betwin the wall and the
engin that shale conect the generator with the
engin.
3. Switch bord has a fuss box bellow, sies
at the left are from the stowe second two
are from the water melter and the other
two are from the lites. Spare felds for
both batery lits and nite cuount lihts are
under the rear bench in the kitchen.
4 The stove in the kitchen is an oyl stove
the drops of oyl fols on the pan at the botom
of the stove, an wen it is wormd up easely
for begining lite a pees of paper an poor sam
oyl by opening the fuel tube. The tank must
be full of oyl. !
5. The runway was in use in 1958 december
sins that no airaplane landed here.
6 The radioset is in order an can be ran
with a 24-volt battery. Two 12 volt battery
standing on the top are empty an if been
fooled by asid can be used.
So wans more you are welcomd
to use of the possibilitis of
the station but dont forget
to lock the dor on the
departure. Best regards
to all Crew
chief of soviet traverse
party Andrew
Kapitza
6/II-64

Here is the beginning of the message:

Dear friends

We welcome you at Soviet Station "Pole of Enexesibilty"

We are glad if evrithing is OK in yor jerney. (excuse for gramar). We want to giv you several practical advises if you will stay in this house.

The note lists six things the visitor should be aware of such as the location of the food, the kinds of fuel available, how the generator works, and how to start it: "*worm up the oyl an por in the stamake of the engine."* When non-English-speaking people write English it is wonderful and understandable. The message ends:

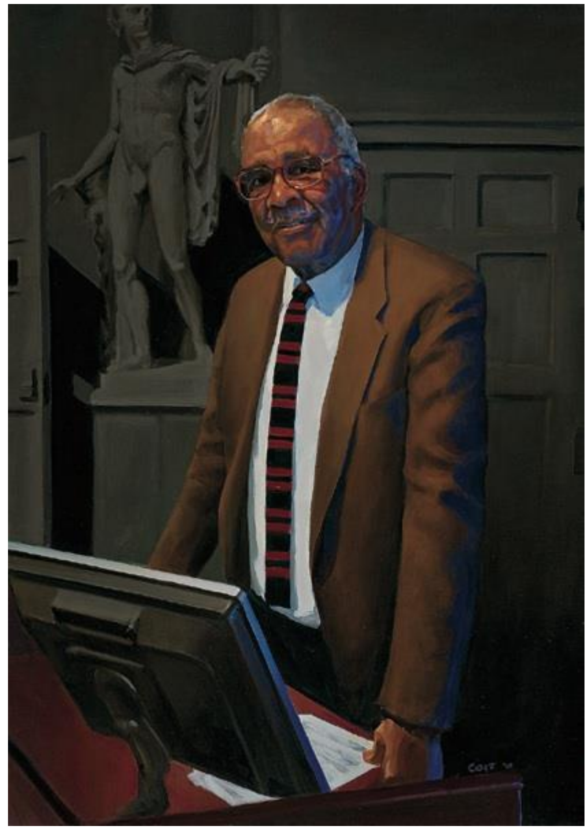
So wans more you are welcomd to use ol the fassilitis of the station but don't forget to lok the dor on the departure. Best regards to dr. crery.

Lok the dor meant for the visitors to kindly secure the door on departure so that snow would not filter into the building. *Dr. Crery* is Albert P. Crary, then chief scientist of the U.S. Antarctic Research Program.

All-American Antarctican succumbs at age 89

by Paul Dalrymple

Chester M. Pierce was born 4 March 1927. Brought up in Glen Cove, Long Island, whose population was just 10 percent black, he was the first black president of his high school. Entering Harvard in 1943, he became an All-American tackle as a 6'4" freshman. which he downplayed saying the real All-Americans had gone off to war. In addition to football he played lacrosse and basketball at Harvard. He became famous Nationwide as first black to play collegiate football in the south, to the consternation of the University of Virginia, on 11 October 1947. Sixty years later the University of Virginia awarded Chester the Vivian Pinn Distinguished Lecturer Award for achievements in the field of health



Dr. Chester M. Pierce

disparities. So you see what goes around can come around!

Chester received his medical degree from Harvard Medical School in 1952.

In the 1960s, pursuing his interest in the physiological and psychological responses of people to extreme environments, he collaborated with Dr. Jay T. Shurley, University of Oklahoma, on studies of the psychophysiology of personnel while asleep and awake before, during, and after winter sojourns: first at Byrd and then at South Pole Station. This and related research in Antarctica resulted in 12 research papers he published between 1968 and 1990 that address response to the protracted stress of wintering, loss of white blood cells during the dark period at Pole, and lessons from Antarctica that might be applied to long duration travel in space. Based on the Antarctic work, Chester introduced the concept of microaggression: small acts, almost innocuous in themselves, that in aggregate can undermine self-esteem and destroy relationships. In all, Chester wrote more than 180 books, articles, and reviews.

He must have attracted more than mlnimal interest in the polar community, as soon he found itself a member of the august Polar Research Board of the National Academy of Sciences, where among other things he chaired a 1982 assessment of polar biomedical research.

Seeking a speaker for a Washington program of the Antarctican Society, we approached Bert Crary for a likely candidate. Without hesitation Bert replied, “Chester Pierce.” Chester’s 1979 lecture on a physician’s view of Antarctica was the beginning of a wonderful association of our society with Chester, especially for myself and Gracie Machemer.

Chester’s career as a Harvard professor spanned 41 years. He was Emeritus Professor of Education and Psychiatry at Harvard Medical School, past president of the American Board of Psychiatry and Neurology and past president of the American Orthopsychiatric Association. He was a Fellow in the American Academy of Arts and Sciences. Massachusetts General Hospital has renamed its psychiatry division the Pierce Global Psychiatry Division.

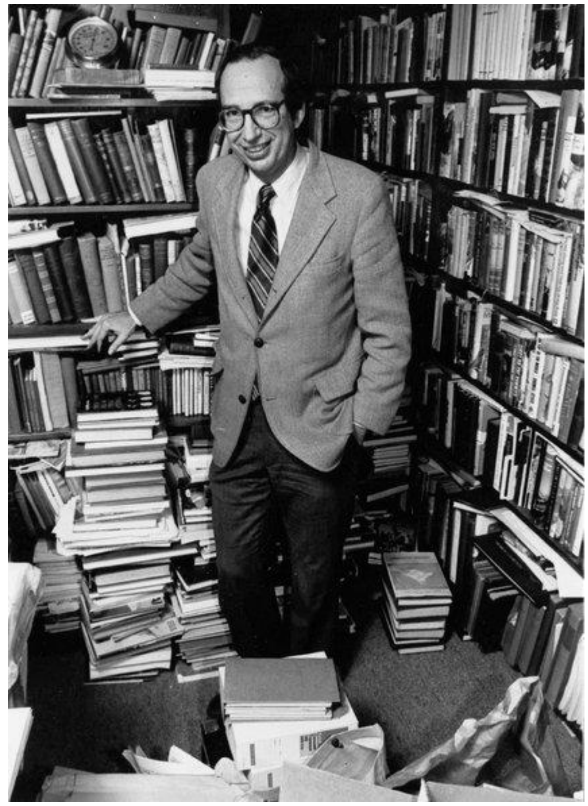
He died on 20 September 2016. Chester was one of a kind. I am proud to say that I enjoyed my association with him and only wish that it could have been extended for many more years. But cancer has no ground rules.

Another famous Antarctican, Nick Clinch, dies at age 85

by Paul Dalrymple

Nick Clinch, an audacious and intrepid mountaineer, who led a ten-man expedition in December 1966 to climb and conquer Antarctica’s highest peak, Mount Vinson, died from cancer on 15 June 2016.

A graduate of Stanford University with a law degree, he became the executive director of the Sierra Club Foundation. A tall, gangly individual, he had an



Nick Clinch

extensive personal library that I was privileged to see once on a visit to his home. His wife, Betsy, once worked as a librarian at the National Geographic Society in Washington. A cohort of hers at that Society was Ruth Siple! *Clinch Peak*, 15,883 feet in Antarctica. is named for Nick.

Antarctic Mountaineering Expedition 1966-67.
Back Row: John Evans, Dick Wahlstrom, Nick Clinch, Barry Corbet, Pete Schoening.
Front Row: Charlie Hollister, Sam Silverstein, Brian Marts, Bill Long, Eeichi Fukushima

New Society Website

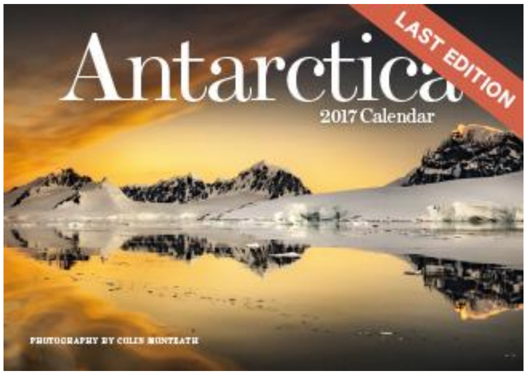
by Tom Henderson

Work has begun on a new, updated Antarctican Society website. The Antarctican Society Board of Directors approved the development of the new website at its July meeting. There are several reasons for the update. The first is that the original website was designed and coded by an amateur web developer (me!). Its construction was neither professional nor did it take into account modern coding for security. As you know, security is becoming an increasingly larger issue in the cyber world. Second, the original website was coded using a coding platform called ColdFusion. Because it is proprietary rather than the more common open source platforms, our host charges around 30% more per month to support it. Finally, the new design will be easier to maintain which is a significant consideration when the time comes to transfer the site to a new webmaster.

The work for developing the new website is contracted to Troy Web Consultants in Troy, New York. They are a very experienced and well-regarded company in upstate New York. They have given the Society a 25% discount for this work.

In the next article, I will explain further the features of the new website and the changes from the original. One change to be aware of immediately is that the username for logging in to the new website is required by the security system to be your email address. If you do not have an email address, contact the webmaster at the address on the newsletter masthead above for instructions.

Antarctic calendars



The excellent 2017 Antarctic calendars are available directly this year for NZ$23 from the Caxton Press, 113 Victoria Street, P.O. Box 36411, Christchurch, New Zealand:
http://www.caxton.co.nz/Printshop/Calendars/

Winter-over study

Dear Antarctican Society:

This study is led by PhD candidate, Cyril Jaksic, from Lincoln University, New Zealand. Its aim is to collect psycho-social data from former winter-overs to investigate the social context in such an unusual environment. The results should help, amongst others, to refine training processes for future Antarctic expeditions or socially similar environments (e.g., spaceship, submarine).

Important note: The present survey is solely aimed at former winter-overs; that is to say, you should only complete this survey if you have spent a winter in an Antarctic station.

The survey consists of two parts:

- Part One (about 10 minutes): questions related to your experience during your last winter-over in an Antarctic station
- Part Two (about 10 minutes): personality questionnaire

The results of the project may be published, but you may be assured of your anonymity in this investigation: you will not be asked to disclose your name. No personal data will be published. The data will be analysed as a whole and no individual data will be disclosed.

This research is independent from any National Antarctic Programme and your participation is entirely voluntary.

By filling in the questionnaires you confirm that you have read and agreed with the conditions mentioned above, and that you give your consent to participate in the research. You can also withdraw from the study at any time until the submission of your survey. Be aware that only completed survey will be analysed and any data on surveys left uncompleted will be deleted. If you have already spent an austral winter in an Antarctic station and you are willing to take part in our survey, you will find the survey on this link:

http://lincoln.az1.qualtrics.com/jfe/form/SV_79b4l6T3SxerMs5

We would appreciate if you could complete the survey within a month, thank you.

This research has been reviewed and approved by the Human Ethics Research Committee, Lincoln University.

The project is being carried out by:
Cyril Jaksic: cyril.jaksic@lincolnuni.ac.nz / 0064.21.261.3890
Dept. of Tourism, Sport and Society
Lincoln University, Canterbury
New Zealand