



THE ANTARCTICAN SOCIETY

NEWSLETTER

"BY AND FOR ALL ANTARCTICANS"

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HERE'S ROB...OUR INCOMING PRESIDENT.

I cannot imagine that there is a single individual who has visited Antarctica or who has worked in Antarctica or even has simply studied Antarctica for whom the experience has not been an important and perhaps a transforming part of his or her personal and/or professional life. The continent has been having a profound effect on people of all types ever since Captain Cook's circumnavigation. The purpose of our organization, it seems to me, is to provide a forum and a fellowship for those of us who have been so affected by the place.

Antarctica has certainly been a shaping force in my life. I was quite stunned on my 27th birthday to discover that I had spent more than one out of every twelve days in my life on the continent (as a result of two winters-over). I first wintered at Byrd Station in 1964 as an engineer for Bob Helliwell's Stanford University's VLF program, recording whistlers and other ionospheric phenomena. I also recorded magnetic micropulsations for a program directed by Sir Charles Wright — it is incredible to think back to this personal link to the heroic era of Antarctic exploration! I returned to Antarctica only ten months later to be the first scientific leader of Plateau Station, which, I am sure would have had the world's record cold temperature, if we had occupied the site for a longer time — it is a few hundred feet higher than Vostok. There were only eight of us at this small outpost - "Eight will dice with Cold Death" was the headline in the Christchurch paper. In retrospect, I am amazed to think that we eight - all so young - were entrusted with this most extreme outpost of the American Antarctic program. I am proud of the amount of scientific papers that resulted from our pioneering year and the two succeeding years that the station was occupied. (Incidentally, it is through his involvement with the micro-met program at Plateau that I first met former president of the Antarctic Society, perennial newsletter honcho, and all-round mover and shaker - Paul Dalrymple.)

By far my most exotic and interesting winter was the winter of 1974 that I spent as guest of the Soviet Antarctic Expedition at Vostok Station. It was a wonderful time to be there. The Nixon detente was in effect, and the Soviets still supported Vostok very well (kilogram this of caviar, e.g.). The station leader, Nicholas Strain, was the most aware and talented of any leader with whom I have worked. I loved the exotic situation and learning the culture and language of my hosts, and representing my country to this group of Russians. It was a transforming experience. I had been married since my previous Antarctic trips, and my wife, Susan, bless her heart, realized how important this experience was for me and took me back when I returned (and gave me two children subsequently). Igor Zotikov met us on the streets of Christchurch the day after my return from the ice, and asked Susan if she perhaps found me a bit more subversive as a result of my year with the Soviets! (Yes!).

My last four trips to the ice, between 1979 and 2001, have all been in support of the Automatic Weather Station program, first for Stanford (Allen Peterson), and later for the University of Alaska (Gerd Wendler) and University of Wisconsin (Chuck Stearns). These stations were originally developed at Stanford and then maintained and improved by Wisconsin. The first three of these trips were in co-operation with the French, and I came to know shipboard life and traverse life with French company. I liked the French attitude: "eat well first, then do good science." I enjoyed both. (Although on long traverse days the corollary attitude, "if you can't eat well then don't eat at all" was a little harder to accept.)

I have greatly enjoyed my experiences in Antarctica and with Antarctic related science. While I have moved on to real estate investment and volunteer conservation and education-related activities, I consider my time on the continent as high points of my life. I know that I share this fascination with all of our membership.

I am counting on past presidents, especially Paul Dalrymple and John Spletstoesser to keep us informed of each other's activities and of Antarctic news in our newsletter, as well as additions to the literature. I count on the membership to keep us on our toes, informed, and to share memories, anecdotes and the fellowship of our common interest in what former Polar Programs Director T.O. Jones at the annual orientation meeting used to call "the strange mistress" who bewitches us all. I thank you for your support.

BOARD OF DIRECTORS. We have a good cross-representation of the Society to serve our President. The sergeant-at-arms will be the man who closed the door at the old South Pole station, ending up picking up meteorites while munching on cashews, Tony Meunier. We also have on the Board the boss man who is building the new, modern South Pole elevated station, Jerry Marty. He really does not have time to serve on our Board, but he feels a firm responsibility to help us out. Thanks, Jerry. We even have an old man on the Board, Conrad "Gus" Shinn, who goes back to Operation High Jump. But he is better known as the first pilot to land a plane at the South Pole. Those who really know Gus know him as The Cat Man, as he never saw a cat that he did not like. Our youngest member is Diana Logan, who has wintered over twice in the past few years at the South Pole, and can give us the perspective of the Up and Coming. For continuity sake on the Board, we have extended Polly Penhale, who has been at NSF in the Antarctic Programs Office for a couple of decades. She is also one of our Past Presidents, as was Tony. The very well known historian from the University of Central Oklahoma, Tim Baughman, will bring a new outlook to the group. Another interesting addition is Charles Lagerbom, who got his Antarctic training in the Dry Valleys with the University of Maine's sweat shop group under George Denton. He is also an author, wrote a book on Birdie Bowers, and is Membership Chairman of the American Polar Society. A past McMurdo Biology Lab manager is Ron Thoreson of Montrose, Colorado, who has served as superintendent and head ranger at several national parks. He is our most athletic member, and most distinctive, once serving on the Honor Guard at Ft. Myers, tossing and catching rifles with fixed bayonets. He still has all his fingers, and never had a drop! And last but by no means least, a married man of some 50 years whose time at home with his wife only adds up to 25, our idol, Art Ford of Menlo Park, CA. To read about him, you must read the Newsletter.

BRASH ICE. As you might have possibly detected by looking at our cover sheet, we are reconstituting our old format. It's probably the right time to do it, as we have just completed a Quarter Century of Near Dictatorship under the realm of Siple and Dalrymple. With our beloved Ruth now gone, we can close that book, some three and a half inches high, some 155 newsletters, some 1448 pages. That's a lot, especially when you had to compose them, have them printed, fold and stuff them in envelopes, and handle the membership, the treasury, and put them all to bed.

Let's face the facts. Everyone loved Ruth, and we got away with murder because no one actually wanted to cross her. Ruth looked upon us as a team, and I was sacred as long as she lived. But now she is gone, God bless her, and now we have to go back to our By-Laws

and dust them off. Towards that end, at the suggestion of our Antarctic sage, Walt Seelig, we have put in a strong company man as our new President, Rob Flint. Besides being a most distinguished Antarctic in his own rights, wearing nine campaign ribbons, oak leaf clusters for wintering over at three interior stations, battle stars (perhaps scars) for working with the Russians and the French, he has served in high positions with such illustrious groups as the Sierra Club Foundation.

We became more national two years ago when we picked our first non-Washingtonian president, John Spletstoesser, and he led us carefully through our transition period, when our newsletters became grammatically correct. Now we will continue to go forward, somewhat reluctantly shedding our cloak as *a* Good Old Boys Club in Washington, D.C. But you can't possibly change the stripes of a leopard overnight, and as the key center of all Antarctic activities in the USA, Washington will no doubt remain the largest rookery in the mid-latitudes.

We have survived women going to the ice, the military being moved from the ice, NSF being moved from Wash. D.C. to Ballston, Virginia, and we have survived the Academy's Polar Research Board vacating Foggy Bottom. We have lost the greatest Antarctic polar scientist-explorer of all time when Bert Crary died; we lost the golden satin voice of the Antarctic when Larry Gould passed away. We have seen tourism invade Antarctica, twenty thousand a year, all with deep pockets. We have somehow even survived the onslaught of wide-eyed adventurers, some teeing up golf balls atop Mt. Vinson, some even parachuting to their deaths at the South Pole.

During our dictatorship, we have seen a lot, but none worse than the crash of the DC-10 in 1979, whose anniversary will be covered in this newsletter. Many of us who had been at the South Pole in 1958 mourned the death in the crash of the very personable Peter Mulgrew, lecturer on the ill-fated crash, whom we all had learned to love during his stay with us at the Pole. This issue will also include an obituary honoring one of the very best of the good old boys who made our Society what it is today, Charlie Morrison. Thanks, Charlie, for your constant support, and may your tenure with us as our Summer Picnic Bar Tender tend you in good stead up above. Be sure to make Ambassador Daniels' double.

We are going to try and be responsive to the modern-age Antarcticans, and towards that end we have been wooing Katy Jensen to make frequent contributions to our newsletter. And we welcome any other Katys to please step forward and help us out. This is a new era, a real new era. No longer does a Chief Gudmundsen have to set a charge and blast another thirty-foot hole below the throne. Now that creates one wicked-chilling experience for your appendages! And imagine now flying to the Pole, taxiing right up to a portal, and walking inside to a spacious heated room, just as though you were at Dulles. And who knows what is next, a we are about to enter into the 4* International Polar Year. In the meantime, please support us, support President Rob, our officers, and our Board of Directors. They were carefully selected. Make this Society your very own, and be a part of it.

NEW HONORARY MEMBER, MARGARET LANYON (Walt Seelig) We are pleased to report that Margaret Lanyon of New Zealand has been inducted as an Honorary Member of your Society. To those of you who have passed through Christchurch, Margaret needs no introduction. Multitudes of scientists, support personnel, distinguished visitors and artists have benefited from Margaret's smooth operation of the facility at Christchurch, New Zealand.

The New Zealand office is one of the most diverse operations within the logistics system and their scope of work increased dramatically during the past decade as a result of the transition of functions from military to civilian. Margaret's wholehearted dedication, hard work and natural abilities resulted in her increasing responsibilities until the late 90's in charge of a large staff that provided all the essentials to operate multiple support services in Christchurch, together with the movement of personnel and cargo to and from the ice and other points. Margaret's desire to help and "can do anything" ability endeared her to hundreds and hundreds of Antarctic program participants over the years. Relaxing in her 5th year of retirement after a long career with the program, she enjoys many calls and visits from current and past associates.

In recognition of her importance to the program, the Advisory Committee on Antarctic Names named the Antarctic feature Lanyon Peak in her honor. Margaret continues her helpful role in providing e-mails and articles from New Zealand papers on items that might be of interest to the Society.

RUTH J. SIPLE MEMORIAL FUND continues with contributions now totaling over \$2500. Remember, if you haven't contributed, anyone who sends in a check for \$50 gets a one-year membership extension with our Society, if you contribute \$100 to the Fund, two more years. Society members who recently have sent in checks are Scott Borg, Peter Harrison, Karen Anderson-Phaup, John Lynch, Jeff Rubin, Myrt Eller, Carl Fisher, Luella Murri, Mildred Rodgers Crary, Bob Byrd Breyer, and Katy Jensen. We thank you all.

GUY GUTHRIDGE REMINISCES. Guy G. Guthridge will retire from the National Science Foundation in February after over three decades with the U.S. Antarctic Program.

Trained as an engineer and an English major, he started with NSF as editor of *Antarctic Journal of the United States* and is winding up as manager of the Foundation's antarctic information program. His projects that involved sending people to the Antarctic included artists and writers, Boy Scouts and Girl Scouts, and K-12 teachers joining investigators to enliven science instruction in the classroom.

Guys longest-running project was the *Antarctic Bibliography*. "I inherited it from Kurt Sandved, who started it in 1963 at the Library of Congress." A recompetition in 1999 moved the project to the American Geological Institute. All those years, the Library of Congress had made microfilm copies of the full texts of each publication cited in the bibliography. "Decades before the Internet," Guy remembers, "folks at South Pole Station had all the world's antarctic literature at their fingertips."

"The strangest meeting," Guy says, "was called by the Registrar of Copyright," the enforcer of the Nation's copyright law. "The Registrar was torqued because here was a unit of her very own Library of Congress, pushing the fair-use provision of the law far past what she thought was OK by making microfilm copies of thousands of published antarctic documents." At the meeting, which included copyright lawyers, the Library employee who ran the bibliography said, "The Library is so huge, and our project is so small. Couldn't you just look the other way?"

"After a pause, the Registrar said she'd get back to him on that," Guy recalls. "As far as I know, she never did."

The world passed microfilm by, though, and now much of the antarctic research literature is online. Some of Guy's best moments were running the Antarctic Artists and Writers Program. "When I was a student, I knew I was going to be one of those guys - the fiercely independent writer whose eloquence and insight moved nations. Instead I became the civil servant signing up writers like Barry Lopez and Stephen J. Pyne, and photographers like Eliot Porter and Norbert Wu, with the antarctic program. They did a better job than I would have done," he says.

Asked what he'll do in retirement, Guy says, "Reminds me of what Bert Crary said when he retired. 'It's none of your goddamn business, and if you weren't such a good friend of mine I wouldn't have told you that much.'" But Guy figures boats and the Chesapeake Bay will be part of the picture.

"I'll never stop paying attention to the Antarctic," he says.

NEW COLD WAR ERUPTS ON SHORES OF LAKE VOSTOK. ST. PETERSBURG, Russia - Russian and American scientists are engaged in a new Cold War of sorts more than two miles below the thick ice sheet covering East Antarctica. At the center of the dispute is Lake Vostok, a sub glacial body of water the size of Lake Ontario. Scientists believe the lake's water, which has been isolated from the atmosphere for as many as 30 million years, has microscopic life forms that could help researchers understand the effects of earth's climate changes.

A Russian team of researchers is determined to be the first to drill to Lake Vostok's surface. But a group of American and international scientists contends that the Russian drilling method may spoil the project and contaminate the findings. The Russians insist their plan is clean and they will proceed this Antarctic summer with drilling to reach the lake, some 2.5 miles beneath Russia's main Antarctica research station, Vostok, which is 775 miles from the South Pole.

The lake's surface could be reached as early as next year, but the work will be slow and under harsh conditions. It was at the station that scientists in 1983 recorded the lowest temperature on earth: -128.6 F.

The Russians say they have followed all the rules set out under

international treaties governing research and environmental protection of the icy continent. The Russian team, headed by Valery Lukin, will employ a drill rig that uses kerosene to prevent the hole from re-freezing as the drill bit punctures through the ice to the lake's surface. Opponents say that the Russians' water samples from the lake will be spoiled by contact with the kerosene mixture. They have urged the Russians to hold off until a better method can be developed through a consortium of international experts. "The ramifications of contamination would be immense," John Priscu, a geomicrobiologist from Montana State University, said via e-mail from Antarctica. There are some 150 sub glacial lakes on Antarctica's mountainous terrain. In recent decades, scientists have used radio waves and satellite imaging to determine the location and size of the lakes hidden beneath the ice.

Some researchers believe Lake Vostok may have existed when Antarctica was part of what scientist call Gondwanaland, a giant supercontinent that once included South America, India, Australia and Africa and Antarctica. Over hundreds of thousands of years and several ice ages, Lake Vostok was covered over with layers of ice, trapping the lake's water in an area 30 miles wide by 140 miles long. The lake is estimated to be nearly 4,000 feet deep at its deepest point, its water believed to be kept in a liquid state by geothermal currents venting from the lake floor. Ice covering the lake contain a more than 400,000-year-old environmental record of what happens when the Earth's climate changes.

The Russian drilling technique would use atmospheric pressure to draw the lake's water out of the drill hole once scientists puncture to the lake's surface. The pressure differential would force water from the lake up the hole like gas through a siphon hose. The kerosene would not mix with the water, but instead act as a plug moving upward through the drill hole as the lake water jets to the surface, Lukin said. But some believe the water will freeze on the ice sheet, ruining the scientific value of the sample. For more information: <http://www.azcentral.com/news/articles/1128antarctic-lake.html>

HOLIDAYS ON THE ICE. Katy Jensen. It is difficult to find anyone who goes to Antarctica who has not missed Christmas. Obviously, that's because the holiday falls smack in the warmest—and thus the busiest—weeks of the short austral summer. At least, that's what we tell our spouses (parents, siblings, and children) when we try to justify another deployment. But it might also be an indication that the type of person who gravitates toward the ends of the Earth often does so to get away from things like shopping, traffic, and crowded gatherings full of strangers wearing uncomfortable clothes. Funny, then, that the very introverts who shun the holidays at home are the first to embrace them when "home" is thousands of miles away.

Consider Sir Ernest Shackleton: the paragon of private souls. Before even dreaming of Antarctica, he spent most of his holidays at sea. But his love for his comrades (or perhaps his love for plum pudding) ensured he always had a portable Christmas celebration, regardless of his geographic location:

1902: Shackleton, Scott, and Wilson are slogging across the Antarctic plateau, suffering from scurvy and snow blindness, hoping to be the first men to set foot at the South Pole. In his journal, Scott laments, "But all our ailments together are as nothing beside our hunger, which gets steadily worse day by day." While a lesser man might turn his back on the others and snarf a selfish Christmas treat, Shackleton instead produces a spare sock containing plum pudding and a small sprig of artificial holly. All day, the men feast and walk, walk and feast, speaking fondly of family and enjoying the "reddest of all red-letter days."

1908: Shackleton is again slogging toward the Pole, and again, hoping to be the first ever to arrive there. He writes in his journal: "Tomorrow will be Christmas Day, and our thoughts turn home to all the attendant joys of the time." And what a day it turned out to be! "We had a splendid dinner. First came hoosh, consisting of pony ration boiled up with pemmican and some of our emergency Oxo and biscuits. Then in the cocoa water I boiled a little plum pudding, which a friend of Wild's had given him. This, with a drop of medicinal brandy, was a luxury which Lucullus himself might have envied; then came cocoa, and lastly cigars and a spoonful of creme de menthe sent us by a friend in Scotland. We are full tonight, and this is the last time we will be for many a long day.

Indeed. Two weeks later, the men planted their flag a mere 97 miles from the Pole and headed home because Shackleton knew they didn't have enough food to do otherwise.

1914: Aboard the *Endurance*, Shackleton and his faithful crew are full of eager anticipation as they glide through pack ice in the Weddell Sea. This time, the Pole is to be a mere rest stop halfway through an epic journey across the ice. After a merry celebration, First Officer Lionel Greenstreet writes, "Here endeth another Christmas Day. I wonder how and under what circumstances our next one will be spent"

1915: Shackleton, a month after the sinking of the *Endurance*: "Curious Christmas. Thoughts of home."

Shackleton's words strike a chord for many of us, who sometimes wonder why we stir up midwinter traditions from home in the middle of the Antarctic summer. Perhaps it's because Christmastime, more than any other time of year, is when we're reminded that each of us has at least two families: the one we leave behind when we head south, and the one we leave behind when it's time to head north again. A brave few have blended the two with mixed results. (At least it removes some of the annual Christian guilt from an otherwise splendid pagan celebration!)

So while those of you on the Ice are thinking of us back home, just know that we're sending warm thoughts your way, too. And, after saying grace, and taking a moment to appreciate our troops in harm's way, we'll take one look at Aunt Edna's gelatin surprise and dream instead of this year's South Pole Christmas Menu, courtesy of "Cookie" Jon Emanuel, who is presently at the Pole...The following is the actual menu for Christmas at South Pole Station:

Appetizers:

Smoked Scottish Salmon
Fresh Assorted New Zealand, French, and Dutch Cheeses
Brie en Croute
Muffaletta Olive Relish
Sundried Tomato and Arugula Pesto Spread
Fresh Crudites

Main Course:

Beef Wellington with house demi glace
Vegetarian Wellington
Steamed Alaskan King Crab (or perhaps Spiny Lobster

Tails)

Real Mashed Potatoes
Roasted Mixed Root Vegetables
Fresh Asparagus

Desserts:

Pumpkin, Apple, and Pecan Pies with Fresh Whipped Cream

AHA! The REAL reason so many Antarciticans spend Christmas on the Ice!

Happy Solstice, y'all.

ANTARCTICA'S DARKEST HOUR - Margaret Lanyon, from *Christchurch Press*, 29 November, 2004. Remnants of the crashed DC 10 on Mount Erebus have emerged from the Antarctic snow and ice as the country remembers its worst tragedy. A party that flew to the crash site for a 25th anniversary memorial service yesterday morning was stunned to see a section of the fuselage with the letter A and the Air New Zealand colours clearly visible. A jet engine and orange cargo netting lie further up the slope.

The wreckage has not been visible for years but a light snow year and an unusually warm spring have revealed a stark reminder of the tragic end of flight TE901 with the loss of all 257 people aboard. On a clear, relatively mild day those present could only ask again: how could this have happened? The jet, flying on the wrong coordinates and in whiteout conditions, struck Erebus just 500m above sea level.

hi a simple, poignant ceremony yesterday, water from Mount Cook given by Ngai Tahu, was sprinkled at a memorial cross on a bare rocky rise 1km above the speck of the wreckage. The water was a symbol of blessing and of love, the Very Rev Peter Beck, Dean of Christchurch, said. Three wreaths were laid in this place of unparalleled solitude and grandeur. Foreign Affairs and Trade Minister Phil Goff represented the government, chairman Paul Hargreaves, represented Antarctica New Zealand, and Scott Base services manager Major Graeme Tod stood in for Air New Zealand.

DAVE BRESNAHAN REMEMBERS (Margaret Lanyon, from *Christchurch Press*, November 29, 2004.) A Commemorative Service was held at Scott Base on the 25th Anniversary of the Air New Zealand tragic crash on November 29, 1979, on Mt. Erebus, taking 257 lives. The half-hour remembrance included hymns and readings, a specially commissioned poem by Bill Manhire read by Sir Edmund Hillary, and music composed by Christopher Cree Brown.

The ceremony was moved inside after the skies clouded and the temperature dropped to minus 12 degrees.

An emotional Dave Bresnahan, NSF representative at McMurdo, both now and at the time of the crash, spoke movingly, his voice breaking, of the frustration of not knowing what had happened. "We, just like those in New Zealand, waited and waited and waited. All afternoon. Shortly after midnight we got personnel to the site and learned that no one had survived. I can't express how I felt. I clearly remember walking from our control center back to my quarters about 2 o'clock in the morning. It was dead quiet. No wind. Very calm. People all over McMurdo were hanging out windows, looking out the doors, watching me walk across. Not a word was spoken. Everyone knew."

\$365,000 BOOST FOR ICE HUT (John Henzell) The preservation of Sir Ernest Shackleton's historic hut near Scott Base in Antarctica has been given a major boost, thanks to an American charity. The \$365,000 grant from the Getty Foundation will aid the Christchurch-based Antarctic Heritage Trust's goal of preserving the hut from which Shackleton and his men set off for the South Pole nearly a century ago.

Shackleton's hut has been listed as one of the 100 most endangered world monuments, but New Zealand's responsibility to preserve it and two huts used by Robert Falcon Scott - has been hampered by Antarctica's isolation and harsh environment.

Antarctic Heritage Trust executive Nigel Watson said the grant would be used for repair work to preserve the hut for future generations, and also to restore it to its original style. Restoration work will include putting back a canvas roof and replacing the windows installed in 1992 with ones in keeping with the originals.

"Without the support of the international community, we cannot hope to conserve these exceptional sites, which are remarkable symbols of humanity's courage and determination and the only surviving example of habitations built by the first humans to reach a continent," Watson said.

BERNT BALCHEN FLIES AGAIN (Review of Bess Balchen's **POLES APART**, published by Red Anvil Press, 2004. Soft cover, \$19.95). If you have trouble finding this book, try the author, Bess Urbahn, 115 Barnestown Rd., Camden, ME 04843-4016.

Although this year was the 75th Anniversary of Balchen flying Byrd over the South Pole, the very first flight ever over the South Pole, this is not an anniversary book issued for the occasion. It is more or less a book about the mid-life crisis of the most famous polar flier of all time, trying to set the record straight on one of the most distinguished polar explorers. The author is one of Bernt's three wives, the middle one, and she comes about writing naturall} as she was a professional writer in Balchen's homeland, Norway, when he married her. She wrote this book under the name Bess Urbahn. The book is a Litany of Who's Who in Polar Aviation, accenting Bernt's military connections plus his many celebrated friends.

Does the book try and create a Demi-God in Balchen? Far from it, as even though she writes that he was "one of a kind, a great man", she also points out his weaknesses. The central theme on the book seems to be the withholding of a star by the military, although this didn't seem to be such a catastrophe to Bernt himself. He, however, was visibly and physically upset by his underused situation by the military, and their failure to put him into important slots where his expertise could be used. Three things evidently kept his career on hold as a U.S. Air Force colonel. First, he had limited capabilities as an administrator, being more of a "can do" person. Second, it was commonly known that a rift developed between Byrd and Balchen, and because of Byrd's influence in Congress through his family representation, Balchen's supporters felt that this prevented his promotion to star rank. And third, Balchen had a penchant for booze, and was a heavy drinker. Probably when you get right down to it, all three entered into the equation.

As Bess points out, there are many books that include parts of Bernt's life, but very few good ones. It seems that Balchen never did much reading, nothing about himself, and this even pertains to biographies such as COME NORTH WITH ME. This paperback by Bess throws a lot of interesting stuff about Bernt onto the table for the readers to digest and then form their own opinions. Her marriage to Bernt was not everlasting, but she was there in his mid-life crisis. Although she does not come out and say it in just so many words, you are left with the impression that his drinking became too much, even for a woman who loved him dearly. There are sixteen pictures of Bernt, all very carefully chosen to depict his career. The cover has one of the watercolors for which he was duly famous, often selling out one-man exhibits in a few days.

In the past 25 years, we have mentioned at least twice in these Newsletters the irony of how Byrd and Balchen ended up, side-by-side in Arlington Cemetery — Byrd with a simple white cross like the common masses at Arlington, then Balchen with a very prominent, high stature tombstone overlooking everyone else. But I don't think there is much communication going on between the two!

HISTORIC HUTS OF THE ROSS SEA REGION. (John Spletstoesser, APS President) This handsome 44-page booklet, produced this year by Antarctic Heritage Trust (AHT), a New Zealand charity started in 1987, is designed to publicize the four major historic huts in the Ross Sea region, namely 1) Cape Adare hut, British Antarctic (Southern Cross), Expedition, 1898-00, Carsten Borchgrevink; 2) Discovery hut at Winter Quarters Bay, Hut Point, overlooking McMurdo Station, 1901-04, R.F. Scott; 3) Cape Royds Hut, British Antarctic (Nimrod) Expedition, 1907-09, Ernest Shackleton; 4) Cape Evans hut, British Antarctic (Terra Nova) Expedition, 1910-13, R.F. Scott. The mission of the AHT is to conserve the huts and contents for the benefit and inspiration of all. Maintenance of them is expensive, now that their ages have passed the century mark or are approaching it. As the name indicates, AHT is funded by tax-deductible donations, legacies and grants. The huts are visited by National Program individuals in the Ross Sea area (from McMurdo Station, Scott Base, e.g.), as well as many tourists on cruises. For several decades prior to their restoration, some hut relics

were "souvenired by visitors, but through time, many have also been returned. If anyone is aware of relics that should be returned to the huts, please contact the Trust (email and website below).

If you would like to learn more about AHT or assist financially, contact AHT and consider joining their Antarctic Explorers Club. Further information can be found at www.heritage-antarctica.org; email ahnt@antarcticanz.govtnz, or write to the Trust at Private Bag 4745, Christchurch, NZ. The booklet will become yours upon joining this very useful organization. Alternatively, you can purchase a copy of the hut booklet for US\$12.00 (incl. P&P) by contacting AHT. All proceeds go towards the conservation of the huts.

SHACKLETON'S FORGOTTEN EXPEDITION, by Beau Riffenburgh. NY/London, Bloomsbury, 2004. 358 p. Reviewed by Tim Baughman.

I began reading this book with two preconceived notions. Sir Ernest Shackleton's own account of the *Nimrod* expedition, *Heart of the Antarctic*, is one of the half dozen greatest polar books. When teaching a course in polar history, I choose it if I can only include one full length firsthand account of south polar exploration. Thus Beau Riffenburgh has chosen to compete with among the finest literature in the field. The second assumption is that Dr. Riffenburgh would approach this material in a meticulous manner and would no doubt produce an excellent volume. His *Myth of the Explorer* remains one of the best books in the body of Arctic studies and offers insights into the whole era of pole seeking in the north. Despite these two assumptions, I am extremely pleased with this current effort.

Dr. Riffenburgh has made use of all the materials that have appeared on the scene in the century since Shackleton penned his account. Moreover, unlike the people who drop in on Antarctic history and whose main motivation to write about Shackleton is to make big bucks, Riffenburgh brings nearly two decades of research, writing, and lecturing about the polar regions to bear on his subjects. Too often Shackleton and other polar heroes have been subjected to what I call "The Antartophile Imperative," the desire of some people,— having learned a little about a polar explorer or having been briefly to the south polar regions—to return and write a bad book about Antarctica. Not so here, in *Shackleton's Forgotten Expedition*, true scholarship shows through.

The reader will be taken through the story of the *Nimrod* but not before the author has set the stage and, in particular, explained the impact of the *Discovery* expedition on Shackleton's emotional and personal development. Therein lies the key to understanding the real importance of the *Nimrod*, an expedition that when I lecture on it, I entitle the talk, "Shackleton's finest hour." Dr. Riffenburgh, too, believes that this expedition shows Sir Ernest at his best.

The author also does a superlative job of placing the expedition and its leader in the context of their times. Gone is the illusion often created in polar writing that all this activity is happening in a vacuum. The reader is taken through the period with pertinent

remarks about what else was happening in Great Britain and the world. Moreover, Riffenburgh's deep understanding of Arctic history provides the reader with insights often overlooked by those writers whose knowledge of the polar regions is transparently thin.

Riffenburgh also develops, with great sensitivity and perception, the complex nature of the marriage of Emily and Sir Ernest Shackleton. The reader sees how the explorer is torn between his desire for fame and fortune and his deep love for his wife and the need for the home she creates for him, even if, most of the time, he can be there only in his thoughts. Riffenburgh portrays Shackleton's passionate desire to return to the ice which has gripped his psyche as certainly as it did many ships of the period. Riffenburgh never loses sight of the fact that Shackleton remained, on certain levels, all his life, a little boy.

The story of the whole expedition is retold with a view to developing the complete story, with attention paid to the cast of characters, not just the star. The outline of the story is known to all polar enthusiasts, but this book gives us all a chance to look at the *Nimrod* again with fresh eyes. The author does a fine job of presenting all the figures from this expedition. We learn much more about Professor Edgeworth David than Shackleton himself would have told us because Riffenburgh has been able to mine much scholarship and other primary materials not available to the great explorer when he wrote. Similarly, the reader will find that other members of the expedition are now more fully and clearly fixed in one's mind, particularly J. B. Adams and Eric Marshall. The author's portrayal of Frank Wild demonstrates why he deserves to be seen as one of the great figures of the heroic era.

I might disagree with some minor points—Scott's motivation in invalidating Shackleton home or Sir Ernest's decision not to sail with the *Terra Nova* relief expedition—but these are issues open to contention and without the possibility of final resolution. I would have preferred the author to mention by name rather than the anonymous "it has been suggested" when discussing historical interpretations. The notes are more difficult to use than necessary, but this fault is that of the publisher. More important is the splendid manner in which he deals with certain complex topics like the controversy between Scott and Shackleton in 1907, about the winter quarters of the expedition and Wilson's role in that affair.

Riffenburgh offers some interesting thoughts about how Shackleton might have made it to the pole had his planning been different. These insights and a broader retelling of the story are what should compel every polar enthusiast to buy this volume and read it.

Riffenburgh chose a difficult task—setting himself up against Shackleton and his amanuensis Edward Sanders—but he has acquitted himself marvelously. In the process he has shown once again that he is a scholar of the first rate and that he had one of the qualities most appreciated by Heroic Era British explorers: he has pluck.

JACKIE RONNE IS ON THE STREETS. For the past three weeks we have been trying unsuccessfully to get a copy of Jackie's new book, *ANTARCTICA FIRST LADY*, but have failed as we go to press. We know of only one person who has read the book, and he

said his comments were strictly "off the record", which in itself must mean that the book will be of interest for what is included. Or for what perhaps may have been omitted!

When Jackie writes you assume that she is including the whole Ronne clan, from Martin Ronne down through her own grandchildren. Four generations, all whom have been to the ice!! But the book could also just be about Jackie herself, as she has had a singular career of her very own. So I guess you are going to have to buy the book and find out for yourself.

The publisher is Clifton Steamboat Museum and Three Rivers Council #578, Boy Scouts of America, 4650 Cardinal Drive, Beaumont, TX 77705. The ISBN numbers are 13:978-1-57579-298-2 and ISBN 10- 1-57579-29-2 . And Good Luck to you.

ART FORD TELLS ABOUT HIS VERY INTERESTING LIFE. Art's PhD (Geology) research, University of Washington (1958) was the first study of Glacier Peak, one of the North Cascades major, active volcanoes. In 1958 he, his wife, Carole, and 1-year-old daughter, Judy, piled everything they owned into an old Ford and headed south for his first job, as Asst. Prof. of Geology at San Diego State College (now University). He was happily teaching there when a cable arrived in August 1960 inviting him to take a USGS geologist position for an expedition to the unvisited "eastern Horlick Mountains" (85°S, 90°W), later named the Thiel Mountains after the late University of Wisconsin geophysicist, Ed Thiel. Art's great wife said "OK," and his department chairman gave him a six-month leave of absence for his temporary USGS appointment. Art eventually arrived at McMurdo in time for a Thanksgiving dinner and flew back across the dateline to reach Old Byrd Station in time for a second Thanksgiving dinner. What a great introduction to Antarctica! No Hercs then, he flew in a vintage DC-3 (US Navy, R4D8), and met other party members, including cartographic engineer Pete Bermel. Weeks passed waiting for the expedition leader, who was stranded in Christchurch by Navy medics, who suddenly found he had a medical problem and could not continue south. A cable to Old Byrd informed Art and Pete they were elevated to co-leaders of the expedition. The expedition was a success (all came back alive) and the USGS asked Art to stay on and lead the USGS geology program in the Transantarctic Mountains. So Art gave up a promising academic career for the government bureaucracy of USGS. Art returned as expedition leader for the 1961-62 summer in the Thiel Mountains. His work extended to previously unvisited parts of the Pensacola Mountains (Paruxent Range, 1962-63) and to Dufek Massif and Forrestal Range, 1965-1979, as expedition leader to study one of the world's largest layered igneous-rock complexes, the Dufek intrusion.

Art was a geologist on first explorations of the Lassiter Coast (southern Antarctic Peninsula) in 1970-1971; and, with the British Antarctic Survey in 1986-1987, on the Black Coast of the Peninsula, an area containing the last previously unvisited major mountain ranges left on earth. He was a geologist/sedimentologist on the first Antarctica cruise of the Deep-Sea Drilling Project ship,

D/V *Glomar Challenger*, on a 1972-1973 cruise into the Ross Sea that still holds the record for length of a DSDP cruise (75 days at sea). Drill sites in the Ross Dependency that showed evidence of hydrocarbon gases brought front-page news in New Zealand newspapers. In the middle of the Cold War, in 1976-1977 (Brezhnev, USSR; Carter, USA), Art was an exchange scientist on a USSR geological study of the Shackleton Range, working out of Druzhnaya ("Friendly") Base on the Filchner Ice Shelf.

Art is the only person who has participated in all nine of the SCAR-sponsored international symposia on Antarctic earth sciences, beginning with the 1963 Cape Town meeting and through Number IX in Potsdam, Germany, 2003. His abstracts and papers are in many of these volumes.

Art's numerous publications of reports and geological maps include Antarctica, Encyclopedia Britannica, 15th ed., 1974 (with periodic updates to 1995); and Geology and Crystallization of the Dufek intrusion, Pensacola Mountains, 1991, in Tingey, R.J., ed., The Geology of Antarctica, Oxford University Press. In 2003 he was contributor on rocks to the book Encyclopedia of Antarctica and the Arctic published in Australia.

In all, Art has spent 13 summers working with Ski-Doos out of tent camps in remote parts of Antarctica. Through all of that, as well as prior graduate school and later boreal field seasons in the North Cascades and Alaska for 35 years with the USGS, and succeeding years after retirement going on cruises to Antarctica and the North Pole as geology lecturer, his amazing and incredible wife hopefully will stay with him until next September 25th when they will celebrate 50 years of matrimony (but some 25 years together).

CHARLIE MORRISON, A FRIEND TO ALL, SUCCUMBS AT AGE 77 (Pete Bermel) Charlie Morrison died November 27 at Fairfax (VA) Inova Hospital of complications from a massive heart attack suffered at home on the evening of November 17. He initially was placed on life support but never regained consciousness. The thought is that he was oxygen-deprived for too long.

Charlie was a long-time Antarctic Society member and a mainstay back in the 70's and 80's. When the Society used to have a summer picnic to celebrate Antarctica Mid-Winter Day, Charlie would make the arrangements at Stronghold Estate, and arrange for the catering from a local restaurant. He was on the board of directors and a prominent member.

Returning to Altoona, he found his high school diploma waiting for him. He enrolled in the Pennsylvania State University on the GI Bill, graduating in 1951 with a degree in forestry, marrying Dorothy, and beginning a 33-year career with the U.S. Geological Survey. He also began a lifetime obsession with Perm State football and wearing Perm State gear.

After a period of training, the USGS declared Charlie to be a topographer - a maker of USGS topographic quadrangle maps and all of the many varied surveys that make up topographic operations. The

early part of his career included field surveys in many of the states east of the Mississippi River, with assignments in the north during the summer and in the south during the winter. If you sign on with the USGS you had better be prepared to move. Nothing is less useful than a mapmaker after his map has been made. Charlie and Dorothy were in the field 12 years, and during that time they made 31 moves - and that is nowhere close to a record on the Survey!

Eventually he was assigned to the USGS research center in McLean, testing new field equipment for its potential usefulness and trying new methods of completing field surveys. And then he was transferred to the Branch of International Activities, leading to assignments in Antarctica, Saudi Arabia and Yemen.

Charlie's Antarctic assignments were all in the field away from base camp. Walt Seelig remembers meeting Charlie in Christchurch in 1964, when Walt was NSF rep there. And he also remembers hearing shortly after Charlie was at McMurdo that there was a new USARP that the Navy seemed to like and who could get anything for anyone who needed it. Charlie's time in the Navy was beginning to pay off.

In 1964 he went down as part of a USGS party to establish the Byrd Ice-Strain Network, a series of 1 km. quadrilaterals that were to stretch into Marie Byrd Land from Byrd Station. The corners were marked by 4x4 posts and by very accurately measuring the original net and remeasuring it at later dates, NSF hoped that the deformation would give glaciologists new information on how the ice sheet was flowing. Some hot shot PR type dubbed it the picket fence even though you couldn't see from post to post without a scope. Not a very adventurous beginning in Antarctica, but one that required living in the field and taking very accurate angular measurements.

Later that season he participated in a long-term project of taking astronomic observations at the South Pole before the advent of GPS to determine the rate and direction of movement of the ice there. South Pole Station was collapsing under the weight of ice and NSF was in the planning stages of a replacement facility. The life of the new station was planned at 25 years and NSF wanted the South Pole Station to be directly over the South Geographic Pole at its half-life of 12.5 years and they asked the USGS to help them determine where construction should take place to make this happen.

His next three assignments on the ice were more conventional for a USGS topographer. In Marie Byrd Land in 1966-67 and in Ellsworth Land in 1968-69 the mission was to establish geodetic control for more maps in the 1:250,000-scale topographic series. Two events are noteworthy: he survived a helicopter crash and conducted high latitude operations on the first GPS equipment designated as field portable (24 boxes which weighed 1,800 pounds). Charlie also told the tale of a fly that emerged from a frozen package of New Zealand mutton when it was thawed, and how the camp felt it was a scientific oddity and should be

preserved. Eventually the camp cook ended the discussion, but the story was typically Charlie.

In 1971-72 he was in charge of the USGS survey party that worked with a New Zealand party to establish control in the McMurdo Dry Valleys for larger-scale mapping. This was the first cooperative venture of this nature and resulted in the maps being jointly produced through photogrammetry and cartography and printing. As usual, Charlie worked well with everyone.

His work in Saudi Arabia was funded by the Kingdom's Ministry of Petroleum and Mineral Resources in an effort to locate minerals in the western Precambrian shield area to balance the proven petroleum resources in the east. Work in Yemen was part of an AID project intended to provide much-needed water resources to a water-starved nation. Although not as remote, culture and bureaucracy combined to make some aspects of the jobs more difficult and frustrating than Antarctica. For example, Yemen controlled all telephones in the country and for weeks held up entry of electronic distance-measuring survey equipment because they were equipped with phones that allowed operators to talk with each other while measuring distances between the units. Cell phones have probably solved this problem by now.

Charlie retired from the USGS in 1984, but not to a life of leisure. He became a volunteer guide at the USGS headquarters in Reston, taking school groups and others on tours of the building and explaining the mission of the Survey. His down-to-earth way of explaining things and his outgoing nature made him a favorite with students and teachers alike. And he knew everyone there - not just former coworkers, but the guards, cleaning ladies, and the entire cafeteria staff. He earned the title "Mayor of the National Center." On the annual USGS Open House dates, Charlie would help man the Antarctica exhibit.

He also volunteered as a driver for Meals on Wheels and no doubt was a bright spot in the day for many he visited. Charlie also made himself available to pick up and deliver to local hospitals emergency staff who were stranded at home during extreme snowstorms.

Charlie had a 1935 Ford 3-Window Coupe that was purchased new by a member of his family and he had it restored at a place in White Post, Virginia that has a national reputation for restoring antique autos. They take the car apart until there isn't a nut on a bolt and the entire car is just lying there. Any part that is damaged or missing is made in their machine shop and when the car is rebuilt the original owner would recognize it as the image of what he had bought years ago. Charlie entered his Ford in auto shows and at first the picky judges found bolts that should be painted, etc. Finally he got it perfect, bought a trailer to take it all over the country, and began winning all shows. After receiving the highest award given, he was invited to shows to participate but not to compete. He took a lot of pride in that old family Ford.

Charlie was very proud of being a docent at the new Udvar-Hazy Center of the Smithsonian Air and Space Museum near Dulles

airport. To be qualified to speak about and answer questions on all of the many aircraft in the huge facility boggles the mind. He spent much time and effort even before the center opened to become certified as a tour guide and he loved to tell about the people and the groups he met while giving tours.

He was extremely proud of his heritage and looked forward to celebrating it each year at the Scottish Days in Alexandria, and yes - he wore his kilt with the Morrison tartan. For a number of years he was the head of the local Morrison Clan, and would be pleased to let you know that John Wayne's real name was Marion Morrison.

In addition to our Society, Charlie belonged to the Old Antarctic Explorers Association and attended their first reunion in 2002 in Pensacola. Morrison Bluff in the Kohler Range in Marie Byrd Land was named in his honor by the U.S. Board on Geographic Names. NSF gave him the Antarctic Service Medal and the Department of the Interior presented him with its Meritorious Service Award.

Survivors include his wife of 53 years, Dorothy Irene Morrison, of Vienna, Va.; three children, and three grandchildren.

Services were held in his church in Vienna, and in addition to the minister, speakers were Rad Radlinski who talked about Charlie and his association with the USGS and the retirees group, a fellow docent from the Udvar-Hazy Center who had been paired with Charlie recently, Walt Seelig who spoke of Antarctica and Charlie's work there, and Pete Bermel who had personal remembrances and reminded people of all the lives Charlie had touched and to keep their memories of Charlie alive. Charlie was buried in Altoona in a Morrison Family plot.

GORDON ROBIN, SMALL IN STATURE, GIANT IN ANTARCTICA by Charles Swithinbank. Gordon Robin was a leading figure in British polar research throughout the latter half of the 20th century. Most of his polar work was based at the Scott Polar Research Institute (University of Cambridge) but he began with FIDS (the Falkland Islands Dependencies Survey (later renamed BAS - the British Antarctic Survey)). Australian by birth, Gordon was educated at Wesley College in Melbourne and the University of Melbourne. Graduating in physics at the height of the war in 1942, he joined the Royal Australian Navy. After being commissioned as a sublieutenant he served in a corvette before coming to England and serving in MTBs. Back in the Pacific, and now a lieutenant, he joined the submarine HMS *Stygian* and saw action in the closing stages of the war with Japan.

After being demobilized, Gordon sought to pursue research in physics. Professor Mark Oliphant (also an Australian) took on Gordon as a research student to work with the University of Birmingham's cyclotron project. It so happened that the Birmingham Vice-Chancellor was Raymond Priestley (also Australian) who had worked in the Antarctic with both Shackleton

and Scott. Admitting to a long-held ambition to visit Antarctica, Gordon was directed to Cambridge and to James Wordie. Wordie was the geologist with Shackleton's Imperial Trans-Antarctic (*Endurance*) Expedition of 1914-1917 and was now influential in supporting not only FIDS but also the Scott Polar Research Institute. These contacts led to an offer to join FIDS for one year as a meteorologist in the South Orkney Islands. Two weeks after signing on, Gordon was on his way south. Sailing from Montevideo in SS *Trepassey*, one of his companions was Ray Adie (later Head of Earth Sciences at BAS). Appointed base leader, Gordon's first task was to move the FIDS station from Laurie Island to Signy Island. On Signy he studied the synoptic meteorology of the area, also making a plane-table map of the island.

On leaving Signy in February 1948, his role as base leader was taken by Dick Laws (later the Director of BAS). Within months of rejoining the physics department at Birmingham, Gordon heard of plans for the Norwegian-British-Swedish Antarctic Expedition of 1949-52. The story of that eminently successful expedition has been told in John Gjaever's *The White Desert* (New York, E.P. Dutton & Co., 1955) and Charles Swithinbank's *Foothold on Antarctica* (Lewes, England, The Book Guild, 1999). Gordon was responsible for studies of upper winds over Maudheim during two winters and seismic ice-depth sounding during summer expeditions inland. His tractor traverse penetrated 620 km into the interior and measured ice thicknesses of up to 2450 m. These were astonishing results and beyond earlier estimates of ice thickness in Antarctica.

Returning to Birmingham in 1952, Gordon spent the next five years working up his Antarctic studies while at the same time teaching and doing laboratory experiments on factors affecting the velocity of seismic waves in ice. After earning his Ph.D in 1957, he was awarded a senior research fellowship at the Australian National University in Canberra. However, after only a few months in Australia he was offered the directorship of the Scott Polar Research Institute in Cambridge. Whereas earlier directors of SPRI had been part time, in 1958 Gordon became the first full-time director. This was during the International Geophysical Year, when several national expeditions (notably the US) extended Gordon's seismic work by conducting extensive inland traverses in Antarctica.

The success of the IGY in terms of international collaboration led in 1958 to the formation of SCAR, the coordinating body for Antarctic scientists. The Royal Society appointed Gordon as UK permanent delegate. Later he became secretary of SCAR and eventually president from 1970 to 1974. The friendships and associations established during this period were to prove of immense benefit to SPRI throughout the ensuing 30 years. As a small research institute, SPRI lacked any logistical capability of its own. Gordon saw that the key to future field work lay in developing original research programs of such quality that collaboration with SPRI was sought by institutions having stations, ships or aircraft. Ionospheric research at the British Royal Society's IGY station at Halley Bay had shown that radio waves were passing through the ice shelf before being reflected at the ice-water interface. This confirmed reports by Amory Waite (who had served in the

Antarctic with R.E. Byrd in 1934) that he had inadvertently measured ice thickness with a radio altimeter, and suggested to Gordon that it might be possible to design an instrument for measuring ice thickness. In 1959 Gordon recruited Stan Evans, who had wintered at Halley Bay, to design such an instrument.

Through collaboration with BAS, the SPRI Mark I radio echo sounder was successfully tested on the Brunt Ice Shelf in 1963. Later, in collaboration with the US Army, Gordon deployed a Mark II version in Greenland. He used the data to study the relationship between surface slope and ice thickness. Internal reflecting layers within the ice sheet were shown to represent time horizons, so that once dated, the depth of a given layer could indicate the rate of snow accumulation since it was laid down.

The logical extension to the new technique was to put the instrument in an aircraft, and this Robin and Evans did in 1966 with the collaboration of the Defence Research Board of Canada. This led to trials in Antarctica with the collaboration of BAS and led in 1967 to an invitation from the US National Science Foundation to use US Navy aircraft. Such was the success of these operations that they continued for several years, surveyed a substantial proportion of the ice sheet and brought in other collaborators. In order to assist with analyzing the wealth of data obtained, Gordon and Stan Evans took on a series of research students. The result was not only a steady output of publications but more than a decade during which the SPRI was producing more Ph.Ds in glaciology than any other UK university. None of this could have been achieved within the confines of SPRI's original 1934 building in Cambridge. Through his SCAR contacts, notably that of Dr Laurence M. Gould who had served with Byrd at Little America in 1928-30, Gordon secured a substantial sum from the Ford Foundation. With contributions from other donors, this allowed an extension to be built in 1968 which tripled the capacity of the institute. Quite apart from the institute's reputation for academic excellence achieved during Gordon's directorship, the new building will represent his most lasting legacy. Throughout his time at the SPRI, research in Russian studies begun by Terence Armstrong in 1946 has continued, and other groups concerned with Arctic geology, remote sensing, polar history, polar ecology and polar oceanography have flourished. A post-graduate teaching course in polar studies has resulted in more than 100 students graduating with an M.Phil. degree. Quite apart from directing these developments at the institute, Gordon's own research output in glaciology was prodigious. He made seminal contributions to the study of ice shelves; the history of the Antarctic ice sheet; the interaction between ice flow and sub glacial topography; temperature distribution and its bearing on climate change; satellite radar altimetry; sub-glacial lakes (which he discovered in 1967 while using USARP's R7V Super Constellation); and the attenuation of ocean waves in pack ice. Gordon Robin was born on 17 January 1921 and died on 21 September 2004. He is survived by his wife Jean and their daughters Caroline and Elizabeth. (Note: An excellent article on Gordon's life and times was published in *Polar Record*, Vol. 39, No. 208, 2003, p. 61-78).