THE ANTARCTICAN SOCIETY
NEWSLETTER

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Vol. 02-03 April No. 5

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POLAR RESEARCH BOARD AND ANTARCTICAN SOCIETY
ANNUAL LECTURE

WEBCASTING SCIENCE LIVE FROM ANTARCTICA

Presented by:
Dr. Mary K. Miller
Senior Science Writer and Webcaster Producer
San Francisco Exploratorium.

TUESDAY, MAY 20th
6:30-8:00 p.m.

THE KECK CENTER OF THE NATIONAL ACADEMIES
Room 100
500 Fifth Street NW
Washington, D.C.

Located at 500 Fifth Street NW (bounded by Fifth and Sixth on one side and E and F on the other). The nearest well-known building is the Building Museum (kitty corner) barely a *1/2* block from the Judiciary Square metro station (red line).

Reception to be held before and after lecture 6:00 p.m. - 9:00 p.m.

Mary K. Miller of the Exploratorium science museum headed a group in Antarctica that in the 2001-2002 austral summer produced over 45 live webcasts to museum audiences in San Francisco and on the world wide web. The Librarians' Index to the Internet, which "posts only the cream," listed Exploratorium's project as one of its recommended web sites. Titled "Antarctica - Scientific Journeys from McMurdo to the Pole," the project was one of six scientific locales supported by a $1.3-million grant from NSF's Education and Human Resources directorate.

Dr. Miller is the producer of six "Live @ the Exploratorium" webcast series, of which the Antarctic was one. She has been a senior science writer at the Exploratorium, assistant editor of ZooGoer - the magazine of Washington, D.C., National Zoo - and a freelance writer for numerous magazines, including *The Smithsonian, New Scientist* and *Natural History.* She holds degrees in biology and science communication from the University of California, Santa Cruz, and is a polar-qualified scientific diver.

The legacy web site is: http://www.exploratorium.edu/origins/antarctica/.

There is a great photo exhibit here now (and running during the May 20-21 meeting), "Under Antarctic Ice," photos by Norbert Wu taken during his participation in NSF's Writers and Artists Program.

BRASH ICE. In Light of the current political situations in several parts of the world, Antarctica no longer seems important. We can be thankful for something our diplomats did before us, enacted the Antarctic Treaty of 1959, which contains unique Articles that prohibit everything from nuclear testing to military maneuvers, as well as putting a hold on territorial claims. If only the Antarctic Treaty boundary of 60S could be moved northward 5 degrees of latitude every year, and its Articles adapted accordingly, eventually the entire world would have an "Antarctic Treaty equivalent." There would be no losers!!

I tried to think at this time of a suitable theme for this newsletter, something that would perhaps bring us closer to The Ice. I thought one way to do this would be to research some of the existing web sites on The Ice, where we all might be put back in contact with what is going on down south. Several summers ago I was blessed by the visit of a German physicist, Robert Schwarz, who had wintered over twice at the Pole, and was about to go back for an additional summer. Well, Bob is back at the South Pole again this winter, and you must visit his web site.

If you look at the web site for The New South Polar Times, you will find its first-ever on-line book, **AMONG THE .MAGI: RESEARCH TRACKS IN THE DESERT SNOW** by Marty Sponholz. This is all about Marty's most interesting life as a micrometeorologist at Plateau Station in 1966. Jim Waldron,VX-6 pilot in Antarctica in 1956-58, has also written a book on a website, but we don't have his website information. Any help from readers?

We hope that most of you Washingtonians attend the reception and lecture at the spring meeting of the Polar Research Board. Their new facilities on 5th Street NW sound real gorgeous, and parking should be no problem in that area. Don't feel guilty gobbling up some of the goodies at the reception, as our Society will make a small contribution.

INTERSTATE 90S. (Dave Bresnahan; Antarctic Sun, NSF/OPP) Work has begun on blazing a trail from McMurdo Station to Amundsen-Scott South Pole Station. Instead of blazing trees to mark the trail, though, this trail is marked with crevasses. This equivalent to the Trans-Alaska Pipeline road (about 800 miles, and marked by permafrost concerns) is about 1,000 miles long and is marked by some huge crevasses where the Ross Ice Shelf meets the McMurdo Ice Shelf, creating a shear zone (the Ross Ice Shelf moves faster). The objective of the 'road', more aptly a trail, is to show that tractors pulling heavily loaded sleds can be a viable way to move fuel and other cargo, thus providing more flight time for the LC-130 aircraft that have been supplying South Pole for many years. The flights are shorter, 825 miles, but tractor trains don't have to be concerned about weather curtailing flights, and can haul larger loads overall.

If you request route maps from AAA, they will tell you that you head east from McMurdo, then angle SE across the Ross Ice Shelf some 600 miles until you encounter the Leverett Glacier, hang a right and head up the glacier and south to the Pole. The first 30 miles were easy, turning off the Black Island road and heading to 'Shear Zone Camp.' The next 3.1 miles took two months because of the flat, featureless plain of snow that hides a belt of 32 crevasses, the largest 26 feet wide and 110 feet deep. The advance team located them, blasted them open, and filled them with snow to provide a safe trail. The Leverett Glacier part of the trail has not been fully explored, but fewer crevasses are expected. Climbing from the Ross Ice Shelf to the Polar Plateau is the next challenge for the traverse. In 2004-05 the convoy will go the full distance to the South Pole and back, carrying cargo to demonstrate it can be done. If the trial run goes well, supply traverses could become a regular part of the Antarctic program. A convoy of Challenger 95 tractors pulling full trailers could deliver fuel to the Pole without using as much fuel as the LC-130s do (George Blaisdell, CRREL). Although it would take longer - 30 days instead of 6 hours, fuel and food do not need to be delivered as quickly as fresh food or people. Over the course of a season, six round-trip traverses could deliver 243,500 gallons of fuel, about half the station's needs. The cost of delivery would be from $0.63 to $0.84 a pound, compared with more than $13 per pound by plane (CRREL estimates). (CRREL - U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire.)

So what's the bad news? The road won't be in the same place next year. Because the entire shear zone moves toward the sea at the rate of up to a meter a day, the road will have to re-marked. (For more of the story, see Antarctic Sun, http://www.polar.org/antsun/Sun020203/traverse.html.)

ANDRILL. (Scott Borg, NSF/OPP) Geologists from the United States, New Zealand, Italy, and Germany are working hard to develop plans for geological drilling to build on the recent success of the Cape Roberts Project. The new effort is called the ANDRILL Program (for ANTarctic DRILLing) and is envisioned as a long-term effort to address a range of important geological questions. The first phase of ANDRILL, as it is being discussed in the community, is to drill a suite of four targets in the McMurdo Sound region: New Harbor, the Windless Bight area of the McMurdo Ice Shelf, the MacKay Sea Valley in Granite Harbor, and a site between Black Island and Mount Discovery on the Southern McMurdo Ice Shelf. Many of the questions are aimed at understanding paleoceanographic conditions and the history of ice sheet development during critical intervals of the last 80 million years or so of Earth history.

This first phase is envisioned as taking 4-5 years beginning in the 2005-2006 austral summer, but much work has to be completed before a drilling phase can begin. Because the drill sites are in relatively deep water (up to about 1000 meters deep), a specially designed drill rig and riser system must be developed. This work is underway, with US participation through an NSF Major Research Instrumentation award of nearly $1 million to the University of Nebraska (Dr. David Harwood) and Northern Illinois University (Dr. Ross Powell). New Zealand and Germany are also contributing significantly to the drill development effort.

Representatives of the national Antarctic programs of the US, NZ, Italy, and Germany met in Annapolis, Maryland, in late March 2003 to discuss how the McMurdo Sound part of ANDRILL might be supported and to outline the framework of an agreement that would have to be signed if the project is implemented. The science leaders are meeting during the AGU/EUG meeting in Nice, France, in mid-April to finalize their science plans. Also, the science leaders are putting the final touches on an internationally integrated science proposal to actually drill the four sites mentioned above. This proposal will be reviewed collaboratively by the nations whose scientists are developing the project. An international review panel will be convened to give advice that will then be used by the NSF Office of Polar Programs, Antarctica New Zealand, and the Antarctic Programs of Italy and Germany to make decisions about whether or not to proceed with implementing the program. If this proposal is successful, this project will definitely be one to watch because of the interesting problems it will try to address and because of the inevitable unanticipated discoveries that are made during geological drilling.

If this first phase of ANDRILL in McMurdo Sound is successful, scientists have their eyes on eventually moving the rig to other places around Antarctica such as the ice shelves of the Antarctic Peninsula and the Lambert Glacier region of East Antarctica. But that is a long way down the line - better to watch and see how ANDRILL unfolds in the short term.

METEORITES ARE SOLELY FOR SCIENCE. (Scott Borg, NSF/OPP) Effective at the end of April 2003, a new regulation under the Antarctic Conservation Act will protect Antarctic meteorites by requiring that they can only be collected for scientific purposes. The new regulation was published in the Federal Register on 1 April 2003 (but it's no April Fool's joke), and it requires any US expedition organizer who contemplates collection of meteorites to develop a collection and curation plan, subject to approval under the regulation, that will ensure that the scientific value of the meteorites is preserved and that they are made available for scientific research. For Antarctic expeditions that don't plan to collect meteorites but that find some anyway, collection is permitted but the regulation requires that a plan for curation be developed immediately after the expedition.

SSSHHH! SOUTH POLE HAS A NEW SEISMIC STATION. *(Science News* and Scott Borg, NSF) Following earlier attempts at recording seismic waves at the South Pole station (since 1957), during which the instruments picked up everything from generator noise, construction activities, and shuddering of windblown antennas, the new seismic sensors are located about 8 km from the facilities at the bottom of 300-m-deep boreholes. The first 2 months of operation revealed that the sensors can discern ground vibrations 100th the size of those that could be distinguished from seismic noise at the earlier observatory. It is now so seismically quiet at the new site that instruments can detect ground vibrations from snowmobiles 8 km away. Ssshhh!!

SOUTH POLE CONSTRUCTION MOVING ALONG. (Jerry Marty, NSF/OPP) Jerry Marty, Construction Manager for the new South Station reported that for the first time in the history of the station, personnel will be using a dining facility "above surface" and with a view of 90S. First occupancy of the elevated station was on March 4, so they are no longer within the Dome. The Al building wing is designed to house 50 winter-over personnel in individual rooms, to include provisions for some removable walls to accommodate husband/wife winter-over personnel. The food service/dining facility is designed to accommodate the total 150-person summer population. Things have changed a bit since Paul Siple was Station Leader in the first winter (1957). Marty, by the way, operates in robotic fashion, using acronyms that only government workers are familiar with. He said that the SPSE/SM project schedule is on track. In our terms it means South Pole Safety & Environmental Upgrades and South Pole Modernization. Keep up the good work, Marty.

SOUTH POLE DOME HISTORY. (Jerry Marty) Jerry and his construction team came up with a real find, a bit of history of the Dome construction in the 1970s. A 4 ft x 8 ft piece of plywood was found that has the Deep Freeze 72, 73 and 74 names of all the USN Seabees who constructed the Dome and arches. The names were 'burned' into the wood. The plywood sheet was packaged and sent (via vessel this summer) to the Seabee Museum, Port Hueneme, California. Marty typed all the names and sent the list to Paul Dalrymple for Society Archives. Next time you're in Port Hueneme, have a look.

BIG TOUR SHIPS IN ANTARCTICA. (John Spletts) For the first time in about 90 cruises to Antarctica on tour vessels since 1983, on ships with passenger capacities ranging from 90 to 135,1 went the way of the 'big casino' (pun intended) and was a lecturer on a large, 1,200-passenger ship that goes to Antarctica (about 4 days). The Antarctic leg is a 'teaser', for no stops are made, although a visit to Palmer included briefings by Polly Penhale (Mayor of Palmer), and her staff on board the ship. Most of the 3-week itinerary consisted of one-day stops in South American ports for shopping and excursions (all optional, at extra cost). A ship that includes two swimming pools, a large gambling casino, several restaurants, and a floor show in a large theater every night, can be said to be off its usual route in the Caribbean. It has happened several years now with an Antarctic itinerary, cruising by some of the highlights for a few days and then leaving. People are happy, the penguins are happy. In addition to giving 6 lectures, I also provided commentary from the bridge when the ship was in Antarctic waters (Palmer, Lemaire Channel, Deception Island, Antarctic Sound, Hope Bay, Elephant Island) and at Stanley. Ports included Valparaiso (start), Puerto Montt and Punta Arenas, Chile, Ushuaia, Buenos Aires, Montevideo, and Rio (end). Society member Charles Swithinbank did about the same on the sister ship on a reverse itinerary. Next season? Several more of the "Big ships" are planning visits. Perhaps a portent of the future.

BILL MACDONALD, AN OLD ANTARCTIC USGS ICON. (Walt Seelig, Bob Allen, Pete Bermel, Bill Radlinski) William R. MacDonald, "Mac", was one of those unforgettable guys that

everyone enjoyed talking to. He first joined the U.S. Geological Survey in 1942. After serving as a U.S. Marine in World War II he returned to the Geological Survey and became involved in a system of mapping from aerial photographs. It was called "trimetrogon" and involved three cameras with six-inch focal length metrogon lenses producing horizon to horizon photographic coverage. The system was developed by Jim Buckmaster and Jim Lewis, employees of the Survey, in response to an urgent need by the Army Air Corps to rapidly produce charts of unmapped areas of the world for the global war that was coming.

On Mac's return to the Survey after the war, he was placed in charge of that part of the mapping process that took existing ground control points and expanded them through a system of metal templates to locate photographic points that would position the new information. The trimetrogon mapping system was being used to map Chile, Mexico, etc. Mac's experience with all facets of the trimetrogon system made him indispensable. This was especially true when the attention of many nations focused on the last large unmapped world area, ANTARCTICA. Trimetrogon cameras were installed in U. S. Navy aircraft to obtain the aerial photography needed for mapping. Mac arranged for the visit of the Navy flight crews to the Branch of Special Maps where they could see first hand how important good-quality aerial photography was to the map-making process. When an area was selected for mapping Mac would lay out the properly spaced flight lines over it and select times for the photographing to minimize the shadows that would obscure detail. This resulted in the best quality aerial photography for map compilation. He served as an unofficial member of the U.S. Navy's LC-130 crew accompanying the photographic flights and taking the exposed film to Christchurch where he inspected it. Some of the flights originated in Punta Arenas, Chile, one of which lasted 21 hours. It was generally agreed that Mac had seen more of Antarctica than anyone else. Margaret Lanyon in Christchurch wrote "Mac enjoyed great rapport with flight crews who would make a point of stopping by the office on no-fly days to chat and good-naturedly banter with Bill".

Map making can be a slow process, and, in Antarctica, where the map coverage was practically nonexistent, there was an urgent need to provide maps on which the geologists, glaciologists and other field personnel could plan their field work and record it. Mac made a major contribution by initiating a system of "sketch maps" in which advance copies of the map bases were made available to field personnel long before the maps were published. Mac's responsibilities increased in keeping with his abilities and he was made Chief of the Branch of International Activities of the Topographic Division of the Geological Survey where, among other things, he oversaw the activities of the Survey field engineers in Antarctica.

In view of his accomplishments, the U.S.Board on Geographic Names approved the naming of MacDonald Peak in the Sentinel Range, Antarctica, in his honor. He was later asked to join the Department of Interior's Advisory Committee on Antarctic Names (ACAN), where his knowledge and experience contributed significantly to the naming of Antarctic features. He was also the recipient of the McCormick Unsung Hero Award which is given annually by McCormick and Co. of Baltimore, to a distinguished citizen of Maryland.

Mac died in 1977 of cancer of the kidneys. He will long be remembered for his accomplishments in the office and in Antarctica, for his friendly outgoing manner, his subtle sense of humor, and his generosity, assisting wherever he could.

WEBSITES - READ ALL ABOUT IT!! (Dave Friscic, NSF/OPP; Polly Penhale, NSF/OPP; Jerry Marty, NSF/OPP; Robert Schwarz, AMANDA, Univ. of Wisconsin)

http://www-bprc.mps.ohio-state.edu/ Go to the POLAR POINTERS section of the Byrd Polar Research Center website. There is a wealth of information on the many types of polar websites here.

http://tea.rice.edu/science education/researcher opprojects.html This site shows Current Polar Research Community Outreach Projects.

http://www.glacier.rice.edu GLACIER site. Explore Antarctica! Investigate the weather, oceans, ice and land of this frozen continent at the bottom of the world. Find out the weather for today at the South Pole, meet the researchers, discover what life is like on the ice, and more!

http://205.174.118.254/nspt/home.htm New South Polar Tunes Site. A newsletter written by the staff of the Amundsen-Scott South Pole Station at the South Pole, Antarctica. This internet newsletter provides students and teachers around the world with information on Antarctica, the scientific research taking place there, and fun facts about life at the station.

http://www.wbur.org/special/antarctica/ This is a good one for Palmer Station, from the January 2002 National Public Radio journalist, Dan Grossman, now updated. The 'tour of the station' requires 'Flash and broadband connection'.

http://amanda.physics.wisc.edu/rschwarz Robert Schwarz is currently wintering over at the South Pole for his 3rd time, and this website includes photos from all of his three years. His aurora pictures are outstanding, so be sure to punch them up. You may have seen some of his photography in the Antarctic Hedgehog calendars of past years.

MARTY SPONHOLZ ON PLATEAU AND BEYOND. The New South Polar Times website has its first-ever on-line book, AMONG THE MAGI: RESEARCH TRACKS IN THE DESERT SNOW, one by a former colleague of mine, Marty Sponholz, who wintered over as the first meteorologist at Plateau Station in 1966.

I don't think the book was ever published in either hard-back or paper back, a loss. But at least it is available on line and many of our members, namely Rob Flint, Tom Frostman, Mike Kuhn, Walt Seelig, Phil Smith, Charlie Bentley, Chuck Stearns, and perhaps one or two others creep into the book. Marty wears his heart on his sleeve, and was outspoken, and let the chips fell where they may, even though you may not agree with him. No holds are barred, as he even dissects the shirt worn by one of the chief Antarctic scientists. He seemed to be successful in his scientific career, although at the same time he always seemed to be reaching for something he could not obtain. When push came to shove, he passed up a promising career as a research meteorologist to seek personal satisfaction and happiness while serving the Lord as a secondary school teacher.

Marty was a graduate student in the German-rich University of Wisconsin Meteorology Department, featuring such well known professors as Heinz Lettau and Werner Schwerdtfeger, under whom Marty studied, and Eberhard Wahl and John Kutzbach. Also on campus was Kirby Hanson who was the meteorologist-in-charge at the South Pole in 1958. Kirby was instrumental in talking Marty into applying for an Antarctic assignment, and Lettau the Elder threw his weight behind Marty's application. This was tantamount to his being on a plane to the ice, as Washington always listened to Lettau. Out of the blue one day, Marty was told by Kirby, "One last thing, comb your hair, and wear a suit!" Besides his two backing professors and Kirby, a senior meteorologist from Washington by the name of Mort Rubin who had wintered over with the Russians at Mirny, and I were there. It was fait accompli and for the rest of us it was more a celebration of finding another red-hot body for the ice. But for Marty, he thought he was being interviewed!

Marty was to be serving two masters, conducting a program in radiometry for my office, the Quartermaster Corps Research and Development Laboratory, and also being the station meteorologist under the United States Weather Bureau. And indirectly, he was also working for our current Society president, John Splettstoesser, who was an administrator at the Institute of Polar Studies at The Ohio State University. The only way I could get NSF money was to have it laundered through Ohio State, who bought the instrumentation that Marty was to use. Confusing, maybe, but it worked. So I saw Marty several times in conjunction with our program. He was young, looked even younger, was still wet behind the ears, and worried about why his instrumentation was still at our office. I had an ace up my sleeve in Lee Stroschein, who was an expert on instrumentation and recording systems, and he was going to Plateau Station for three consecutive summers!

Marty touches base on another interesting deal involving me. I had hired a red-blooded Mexican mathematician by the name of George de la Borbolla. My original selection was washed out by the head shrinks at the last minute, and George had been recommended by another government agency. But he and the Navy clashed wickedly, and every time the micromet system would get up and running, the Navy would foul up the generators so George would not get any good data. After the season, George demanded a hearing at NSF, and a bunch of us were called to Washington. The head of the Office of Polar Programs was a nice guy, but rather naive, who was in over his head, (Louie Quam), and he innocently came to the meeting and said that he never realized that there ever had been any problems between the Navy and the civilians. Anyway, Marty wrote about this Hearing in his book. In retrospect, I think it may have been the first stepping stone towards civilian contractors replacing Navy as support in the Antarctic.

There are many great sentences in Marty's book. One is a dandy — "I know many of the modern taverns where new scientific ideas were derived." Several things bothered Marty, such as the power struggles going on. He mentioned that Uwe Radok and the University of Melbourne wanted to confiscate his data. Radok, who later worked for a while in the Office of Polar Programs, made a move on me at the end of our first year at Plateau to take over our whole program. After two years involvement, I was not ready for an intruder from the Outback to take over. Marty also felt another power struggle between Washington and the University of Wisconsin. I think any of us who have been on the ice can sympathize with Marty's feelings, as who wants to devote a year of their life to turn over their data to another? This all led up to his deep-rooted feelings about his religion. He wrote "I was stunned at the almost complete lack of interest in religion of any kind by so many of these scientists who now were my friends by virtue of the camaraderie established through frost bite, risk, and survival." We hope you read this book, appearing on the South Polar Times Website in its entirety, as it has a lot of good stuff which you will never find elsewhere, and it is *INTERESTING.*

ANTARCTICA; A YEAR AT THE BOTTOM OF THE WORLD, by Jim Mastro. Book review by Kristin Larson (KL), plus additional review comments by Steve Dibbern (SD). Bullfinch Press (Little Brown), Boston, 2002, 175 p. For those of you who have spent more than a few weeks in Antarctica, Jim's book is the diary you wish you would have kept. Those who have not been there will understand what it is about the place that keeps most of us returning many tunes. Jim's book successfully captures and recounts the full range of emotions; portrays the friends and furies; lays open the continent's beauty; and plumbs the depths of abject soul-searching that only an extended stay in Antarctica can inspire. Jim spent quite a bit of two decades there, 9 summers and two winters, and thus has much to draw on to cover the continent in all its moods, seasons and geographies. Jim's thoughtful prose, telling his stories in a warm, approachable tone as though you, the reader, were sitting at his kitchen table, is a writing gift. His writing is only half the story, though, as the stunning color photographs on every page of the book emphasize what the words are saying. Jim's book achieves an understanding of what life, adventure, and mis-adventure in Antarctica was like at the closing of the 20th century. (KL)

In addition to Jim's diary anecdotes, which spellbinds the reader, the photographs provide a seasonal account on their own, with examples of long-shadowed Fall and Spring subjects that summer visitors miss; whiter cloud-reflected glow from the lava lake in Mt. Erebus; and moon reflections. People and their relationships to the place they are in are a major part of the content. One thing that

doesn't appear to fit is the chapter on Bird Island, South Georgia. Although the photographs in that chapter are superb, it doesn't fit with the author's "Year at the Bottom of the World." However, Jim spent research time at Bird Island, and thus has included it as part of his overall experience. (SD)

NEAR RECORD SQUID CAUGHT IN THE ROSS SEA. (Modified from *Sports Illustrated,* April 14, 2003). A bunch of Kiwi fishermen hunting for Patagonian toothfish came up with a killer squid which weighed 330 pounds and was 16 feet in length. Marine biologist Steve O'Shea said "from a science point of view, it's absolutely priceless." It seems it had attacked the fish being hauled on, and the fishermen gaffed it and hauled it aboard. It was only the second of its kind ever caught, and the creature had giant tentacles (yes, tentacles) with enormous toothlike hooks and the largest eyes - the size of dinner plates - of any animal. The female specimen was given to the Te Papa national museum in New Zealand for research. Eat your heart out, DeVries.

GEORGE A. LLANO - ANOTHER SIDE. (John Spletts) We have reached the end of available material about and from George Llano, the subject of several recent newsletters, and are pleased to add some detail about the many facets of this remarkable person. The following is excerpted from the two books listed, each available from internet sources. His service in the U.S. Air Force (1943-46) included field-testing sea survival equipment and life rafts for the USAF Air Proving Ground Command. On one occasion, he was testing a solar still under survival conditions at sea when his life raft got away from the PT boat tending him, and he was lost for two to three days in the Straits of Florida. He is co-editor of the USAF Survival Manual, which no doubt has examples of situations George lived through. He also authored two books on survival situations, one on sharks and another on sea survival in general. *"Sharks: Attacks on Man,"* is an interesting account from the literature that George compiled for the contents. A paperback edition, 1975, 190 p., was published by Tempo Books (Amazon.com, $3.00 plus S&H). *"Airmen Against the Sea: An Analysis of Sea Survival Experiences,"* is a series of factual reports of what happened to men who bailed out or ditched at sea, and whose only refuge for days was a rubber life raft. A stiff-cover version published by University Press of the Pacific, Honolulu, in 2003, is reprinted from the original edition, and is priced at $24.50 plus S&H.

The following paragraphs are from material that George sent to Paul prior to his unfortunate passing in February.

TALES FROM PALMER STATION (more from George Llano). Before NSF initiated biological studies in the Antarctic, benthic investigation began at McMurdo in 1959 through holes in the adjacent sea ice, which served as well as a ship's deck. Largely behavioral investigations of regional marine organisms and ecological surveys of the inshore and sea-ice habitats, these led to more sophisticated cold adaptation studies offish and other marine organisms. The lack of a salt-water aquarium at the Eklund Biological Laboratory barred some experimental and physiological investigations, particularly of marine invertebrates. On the other hand, the Eklund Lab was ideal for taxonomical, physiological research, and for observing and monitoring environmental factors of High Antarctic marine ecosystems.

In the interface between the High Antarctic marine zone and the Antarctic Convergence, lies the most northerly extension of the continental ice mass, the Antarctic Peninsula known as the Sub-Antarctic life zone. This zone is characterized by a wealth of marine mammals, a splendor of bird species, singular, specialized fish species and a remarkable invertebrate fauna dominated by vast swarms of krill, or *Euphausia superba.* Because of the geographic remoteness of the Peninsula from the principal theater of operations at McMurdo and its rugged terrain it did not appear likely to warrant construction of a U.S. scientific station.

The situation was dramatically resolved when scientific drilling [in Bransfield Strait] revealed methane, suggesting possible oil deposits in a region of overlapping national claims, the cause of past political contention. The State Department, fearing that discovery of oil might renew past unrest sought an entree for regional U.S. presence by asking the Foundation to establish a research station in the Antarctic Peninsula, an area of numerous foreign research stations.

Dr. Tom Jones [NSF Director of Polar Programs] convened a meeting of the science and logistic managers to determine scientific objectives. He quickly found that the physical, glaciological, meteorological and earth sciences showed little interest. In representing the life sciences I argued that the U.S. program needed a marine station in the Sub-Antarctic, provided it included a free-flowing salt-water aquarium and a small, seaworthy ship to support the station and permit regional oceanographic work. The Sub-Antarctic life zone was a most promising area for krill research, which could be carried out independent of the boarding-house facilities at McMurdo.

Without delay a schedule was set to search for a suitable station site using the icebreaker *Stolen Island* under the command of Captain Price Lewis, accompanied by Captain Edwin McDonald. I was assigned as the NSF representative in the 1962-63 operation. For reasons I can't recall I had to withdraw but I proposed as my replacement, Dr. Waldo L. Schmitt, a retired marine crustacean specialist from the Smithsonian Institution and consultant to NSF's Antarctic programs. My nomination gave rise to questionable comments in the Division of Polar Programs when it was disclosed that Dr. Schmitt was close to eighty. Since his health was not faulted, I persuaded my Office to take a chance on "the old man". Waldo came on board. He was aware of my interest to initiate /'«-*situ* research on krill. Therefore, it was essential to find a site accessible to a ready supply of live krill and suitable for installation of a free-flowing salt-water aquarium. The Captain's responsibility was to approve a proper anchorage for the proposed supporting ship. I emphasized to Waldo the importance of finding a small, isolated land area unsuitable for expansion and away from other stations.

Knowing Waldo's obsession for collecting and because of his advanced age I made sure that there would be no biological collecting gear on the icebreaker. From here I paraphrase from material I gave Blackwelder for his 'Life of Waldo Lasalle Schmitt":

"...1963 was an open ice year, most favorable for collecting inshore and offshore. The lack of equipment was corrected by inducing the *Staten Island's* engineering department to improvise dredging and other over-side collecting gear, as well as Berlese rig for securing insects and other organisms in the Antarctic moss and lichen cover of exposed rocky areas. The cook most helpfully set aside no end of emptied glass jars, bottles and sizable tins for preserving marine invertebrates, algae and the stomach contents of seals. Of the several hundred fish taken in traps constructed earlier in New Zealand, together with a few that were hand-lined, some 85 to 90 fish were frozen for convenient transport back to Washington.

From Sick Bay Waldo scrounged all the formaldehyde and ethyl alcohol the Medical Officer would release. Whenever and wherever the opportunity permitted, all manner of collections were made, botanical and zoological. At the conclusion of the *Staten Island* cruise, Waldo brought back some 29,000 specimens, one of the largest collections ever made in Antarctica. Though largely a general collection, it was particularly rich in specimens of polychaetes, ascidians, and mollusks. I have Capt. Lewis's word that Waldo set a strenuous pace. He also enriched the lives of the *Staten Island's* crew who found the old man's exuberance and knowledge of sea things a welcome relief from the monotony of long days in a frozen sea. The purpose of the cruise to survey possible sites for a new, permanent, biological station was well fulfilled."

Arthur Harbor on Anvers Island has proven suitable as a new American marine station. Nearby Norsel Point used originally by the British as Base N in 1955 was marked by a small hut. Permission was granted by the U.K. to occupy Norsel Point and use Base N hut as a laboratory while construction of a new U.S. Station was in progress. The Seabees completed construction of New Palmer Station in 1968 in Arthur Harbor on a point later named Gamage Point. The British site Base N continues to be referred to as Old Palmer minus the British hut, which accidentally burned down while being renovated. "Palmer" commemorates the young New England mariner Nathaniel Palmer who in the 1800's sailed nearby Antarctic waters in a small shallop named *Hero.* Waldo's endorsement for a station-supporting vessel was helpful in the NSF decision to construct a 125-foot, oak-bulled, ketch-rigged, motor research vessel manned by a crew of 12. Named *Hero,* it sailed in the Atlantic north along the coasts of Argentina, discover big the Southern Right Whale breeding area in Golfo San Matias, in cooperative work with Chilean scientists in the Strait of Magellan channels as well as conveying supplies and personnel between all stations in the peninsular region and South American ports. Under its famed Captain Pieter Lenie, it charted safe approaches to uncharted areas, rescued Argentine personnel when Almirante Brown station [Paradise Bay] caught fire in 1984, assisted in other emergencies and in many ways served as the best ambassador for the U.S. in a region fraught with political problems. So Palmer Station eased the concerns of the State department as well as supporting the Foundation's scientific programs. Without a runway and 2350 miles from the entrepot of McMurdo Station, Palmer Station has set a high standard for scientific work and international compatibility.

Bill Schevill of Woods Hole turned his attention from antisubmarine surveillance to recording marine mammal sounds. For his work at Palmer, NSF provided him with a small boat with especially designed propulsion and scientific instruments to record underwater marine sounds. Under Coast Guard supervision the boat was built at Curtiss Bay for about $100,000. Bill named it the *Heroine.*

On the morning of January 29, 1973, a night watchman at Palmer descried a small boat bobbing in Arthur Harbor. On boarding it, station personnel found David Lewis of New Zealand unconscious in a partly flooded cabin of a badly battered boat, *Ice Bird.* When revived, Lewis said he had left Sydney, Australia, October 1972 alone, bound for Antarctica. Lewis finally left Palmer on the British supply ship *John Biscoe.* In his absence, the Station maintenance personnel undertook the repair of *Ice Bird,* which had a cement hull. In order to cushion *Ice Bird* against the dock, they used *Heroine* as a protective buffer. When I visited Palmer shortly after on the Coast Guard ship *Eastwind,* I found *Heroine* on land with its equipment intact. At this time I learned about *Ice Bird.* An officer on *Eastwind* experienced in salvage inspected the hull of *Heroine,* which he reported damaged beyond repair. In November 1972, Lewis returned to Palmer and sailed *Ice Bird to* Cape Town.

I had *Heroine* mounted on a cradle at Gamage Point with Palmer Station stenciled boldly along the hull. I understand that when Dr. Todd visited Palmer he had *Heroine* removed. That's life.

COUSTEAU COMES TO PALMER. (George Llano) Early in 1972 I had occasion to be in Los Angeles. A friend of Vietnam days met me at the airport, saying he had planned a dinner for a special guest he wanted me to meet. It was in this way I crossed paths with Captain Jacques-Yves Cousteau. Because of the casualness of the introduction it took several minutes for the Captain to connect me with the National Science Foundation. Then reprovingly he said "I wrote you at the Foundation for assistance in an expedition I am planning in the Antarctic." This I knew because I had referred his letter to Ken Moulton in the logistics section. Cousteau needed access to Palmer Station for re-supply and obtain water for his ship, *Calypso,* and jet fuel for his small helicopter.

The next day Michelle, Cousteau's son, drove me to one of their offices where the Captain waited for me, pressing for my assent to his request for assistance. I couldn't make father or son understand that this was not my decision. Both were visibly annoyed and at one point Michelle implied that I was acting like a bureaucrat. I questioned the Captain on the objectives of his expedition. It appeared that he had contracted to make a scientific documentary

about Antarctica. I mentioned the Foundation's scientific activities in Antarctica. "Ah, yes, but millions of people turn on ze boob tube, to watch Captain Cousteau!" As I suspected, the Foundation was not forthcoming. However, the U.S. Navy provided some communication equipment that proved helpful when *Calypso* was nipped in the ice and had to limp for port.

I was not witness to the following events. I learned about these from news accounts, or from conversations with Captain Lenie, Ice Master on the Greek cruise ship, *Illyria,* when we met in 1980.

The most tragic event of Cousteau's Antarctic expedition of 1972-73 was the death of a crew member who accidentally walked into the rear rotor *of Calypso's* helicopter. Cousteau frantically radioed the Argentine Station for assistance but when it was learned that the man was dead, the Argentines withdrew their assistance. A similar distress call to the Chilean Station was also withdrawn when the individual was reported dead. In reminiscing about the *Calypso* affair, Captain Lenie told me that the French had also contacted Palmer Station for help, and that he was preparing *Hero* to respond to the S.O.S. call when he learned that it was not an emergency but death. Lenie asked me if I had seen Cousteau's documentary film. "No, I replied, but I understand that it has some good underwater photography!" Lenie continued, "Well, it has a very sad end. Apparently the group was traversing a hazardous ice fall when one of the party disappears down a crevasse. The film closes as the remaining members, heads uncovered, draw together lamenting the loss of a comrade."

"But Lenie," I remarked, "it was my understanding that Captain Cousteau lost only one man?"....

On one of my last visits to Palmer, I discovered that *Calypso* had left on the Station several drums of helicopter fuel. These were parked uphill from the buildings in an open area used as a dump. I wondered why the Station had accepted aviation fuel when we only used diesel and some gasoline for outboard motors. I asked Captain Lenie if he could transport the drums on *Hero* to Harberton on the Beagle Channel for Tom Goodall, who had always been generous with his small plane when we needed it. Lenie canted a steel barrel on end, exposing a rusted rim. "George," he said, "this barrel may be leaking and that is probably why these were unloaded at Palmer. If they leaked it would be hazardous to take them on *Hero."*

Before the replacement *of Hero* by *Polar Duke* and the increase of station personnel and supplies, refuse accumulation at Palmer was negligible. Periodically, a Chilean naval ship would show up and take away damaged, rejected or replaced equipment, machinery or house-ware. I became concerned that the leaking aviation fuel might flow down hill toward the station area. The Chileans were not interested in taking the drums and we could not jettison the steel drums. So I systematically began burning off the aviation gas in the dump at intervals. Later, when I told a grantee, Bob Risebrough, who measured organochlorine pollutants in Antarctica of my action at Palmer, he laughed, saying that now he understood the source for the high concentration ot hydrocarbon residues in the snow samples he tested around Palmer Station.

GREEN GROCER AT MCMURDO. (John Spletts and NSF website) Luther Burbank is alive and well at McMurdo Station. Actually, his name is Robert Taylor, from Missoula, Montana, and at 34 years old, operates a hydroponic greenhouse to grow edibles for the McMurdo troops not only during the summer but also the winterovers. Products include cucumbers, peppers, tomatoes, limes, lettuces, basil, and parsley, all no doubt to prevent the scourge of scurvy. Scurvy, though, is not the issue, but instead, morale, as a means of providing fresh greens for McMurdo citizen all year-round. Annual harvest amounts to about 3,600 pounds, and includes only edibles, no glitzy flowering plants (pansies are grown, but are edible). Because insects cannot be introduced to the Antarctic Treaty area for pollination, Taylor does it by hand-pollinating. The last time I saw something like this was at the Greenpeace base at Cape Evans in the 1990-91 season, where a similar operation occurred. If only Scott's Hut would have had a similar 'farm' in 1911, think of the morale-boost that Wilson, Bowers, and Cherry-Garrard would have had on return from Cape Crozier and the search for emperor penguin eggs.

STATE DEPARTMENT CHECKS IN. (Ray Arnaudo) The 21st Annual Meeting of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) was held in Hobart, October 20-31, with a major topic of discussion being the illegal fishing of Patagonian toothfish, also known as Chilean sea bass if you see it in restaurants. The species continues to be fished because there is a demand for it, but the development of a 'black list' of illegal fishing vessels will identify those who fish for not only legal species but also toothfish. A Vessel Monitoring System plus a US-sponsored centralized reporting system for toothfish imports, are intended to provide further controls on a practice that could eventually lead to extinction of a species. Although the temperature range for the species is 2° -11°C, it has also been reported in Greenland waters, implying migration by deep currents *(Nature, 6* Feb. 2003). If the species thrives there in sufficient numbers, Greenland natives could ultimately fish for it as an aboriginal (and legal) practice. Both CCAMLR and Art DeVries could find themselves operating in a different hemisphere. Art (the 'Mayor of McMurdo') has been fishing at McMurdo since 1960 or so, virtually every austral summer, and has landed cousins of the toothfish, the 'Antarctic cod' (both are from the subfamily Notothenioidei).