



# The Antarctic Society

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**BRASH ICE.** This Newsletter is long overdue. I could cite innumerable reasons why I am so late, but rather than take up space, just let me say "I'm Guilty". Be sure to read the lead article by Guy Guthridge on three very important reports.

But before we get going, let us present a sales pitch for the 2013 Hedgehog Antarctic calendars, which we feel is one of the best ones that they have published in many moons. We are actually begging you on bended knees to buy one or more, as we have a bunch on stock. We have been snake bit on these calendars. For the second year in a row, something has happened to shipments from Christchurch. Last year, a parcel of 25 were intercepted, never got here. This year a shipment of 50 was opened en route, with fifteen taken out. In defense of Hedgehog, they more than compensated for our losses by shipping more. However, one of our regular Society big-time buyers has accepted his delivered order, but has refused to pay a special sweetheart cost offered to him. As we go to press he has refused to pay the special deal we offered him, so we are out \$420. It is the first bad debt that our Society has suffered in our fifty odd years of existence. Even at the price we sell them to Society members, \$15.00 each, we are only making pennies on each, mailing them cost us over \$2.00 each. We do this as a personal favor to our members who want an Antarctic calendar. If you ordered directly from Hedgehog, you would be paying \$23.00 each, but where we buy in bulk and more or less know the people on the other end, we do get a discount. Besides, some that are mailed never get received, so we have to send out additional ones to them. Is this agony for us worth it? NO, definitely not. But to get rid of our current supply on hand, will you order today, buy as many as you can use, and let's get this all behind us.

It seems that nothing is forever in Antarctica, and that pertains today. There has been a recent reorganization in our National Science Foundation which has resulted in at least a cosmetic change in polar nomenclature. Scott Borg writes us that the NSF realignment is on their web site. The Director has stated in several venues that there is no intent to diminish NSF's commitment to polar science and that they will continue as in the past. The Transition has already started, but there are lots of little details to be attended to before they change their business cards. Scott writes that no one "expects earthshaking changes – we are and will be a proposal-driven science program."

In the meantime, there has been some rattling of the chains in the UK. We will quote later on in this Newsletter from an article by Tony Juniper in The Observer of 29 September relative to "Axing of the British Antarctic Survey". But, as we are bent to do when we seek knowledge, we emailed the erudite Charles Swithinbank in Cambridge. This is what he came back with on October 7<sup>th</sup>: "It is a battle being fiercely fought. As it stands, BAS is unlikely to move from Cambridge. But funding will be cut."

**CALENDARS.** We have a limited supply of the 2013 Hedgehog Antarctic calendars, which are excellent this year. Where this will be our only notice of their availability, will those of you who want them, PLEASE order NOW. Same price as last year, \$15.00 each, checks made payable to the Antarctic Society, Box 325, Port Clyde, ME 04855

**THREE NEW REPORTS FORESEE U.S. ANTARCTIC FUTURE** (by Guy G. Guthridge, Warren M. Zapol, and Louis J. Lanzerotti) Introduction. Since the 19<sup>th</sup> century or earlier – perhaps because sending out a polar expedition is expensive – high-level studies and reports often have preceded, and significantly influenced, what people then went on to do in the Antarctic.

For example, the 1895 International Geographical Congress said “the exploration of the Antarctic region is the greatest piece of geographical exploration still to be conducted.” Just 16 years later, heroic expeditions had pushed back the unknown and attained the South Pole. In *Problems of Polar Research* (1928, American Geographical Society), 31 papers by scientists and explorers helped to set the basis for Richard E. Byrd’s expeditions in the 1920s and 1930s. The National Academy of Sciences’ 1949 *Antarctic Research: Elements of a Coordinated Program* was an early but comprehensive blueprint for the Antarctic part of the 1957-1958 International Geophysical Year. And in 1996 and 1997 reports by the President’s science advisory office and a National Science Foundation external panel explained why America needed to build a replacement research station at the South Pole and continue its leadership role in the Antarctic.

So – back to the future! – at the Garage Theater the authors of this note discussed three new reports describing what could come to pass over the next decade or two in the U.S. Antarctic Program. The reports, like the examples above, have no budget or decision authority. They are ideas, intended to be

seminal in the long slog toward implementation.

But the ideas are presented with care. Norman Augustine, who chaired the group that wrote the third report discussed below, said to his committee at its first meeting, “We’re taking on a dangerous assignment. Somebody might actually do what we recommend.”

Here are the three reports Guy, Warren, and Lou talked about.

*Lessons and Legacies of International Polar Year 2007-2008* (National Research Council, 2012). This report highlights IPY outcomes from a U.S. perspective and evaluates lessons learned. Julie Brigham-Grette (University of Massachusetts) and Robert Bindshadler (NASA) cochaired the committee of 12 that wrote the report. One participant – Mary Albert (Dartmouth) – is an Antarctic Society member, but Mary couldn’t attend the 2012 Antarctic Gathering at Port Clyde so Guy (National Science Foundation, retired) stood in.

IPY was big: some 50,000 participants from 60 nations. With some of the science not even published yet, talking about legacy may seem premature. Remember, though, that the previous polar year – the IGY half a century ago – brought Antarctica into the modern age almost before it was over when all 12 participating nations established continuing programs of research and signed the Antarctic Treaty as the basis for international collaboration.

The new IPY report points to changes in public attitudes toward the polar regions. These shifts could become as dramatic, in a different way, as what IGY brought about. Before IPY, people tended to think about the Antarctic as just frozen and icy; now they recognize the region’s melting episodes. Before, folks considered the polar pace to be static or slow, but now they appreciate that changes in sea ice cover and rapid collapse of ice shelves can be dynamic and fast. Before IPY they may have

thought of polar regions as pristine, but now realize that with the ozone hole and airborne industrial pollutants the Arctic and Antarctic atmospheres and ice sheets aren't so much intimidating as they are vulnerable.

In the research community, IPY highlighted that reality is challenging models formerly seen as worst case, with sea ice and glacier mass loss exceeding projections. Before IPY, expeditions and multiyear initiatives were the norm; since then long-term, in situ observations and monitoring have become more recognized as not only essential but also feasible because of new technologies. Basic research was the norm before IPY, but now research increasingly will be driven by problem solving and applications.

Something that stayed the same before and after IPY is the awe of new findings. A project mapped, in detail, the under-ice Gamburtsev Mountains, big as the Alps, and showed hundreds of meters of ice accumulation *at the bottom* of the East Antarctic Ice Sheet not to mention basal water flowing uphill. The NRC report also points to an IPY legacy as old as civilization: renewed appreciation of the human spirit of discovery.

***Future Science Opportunities in Antarctica and the Southern Ocean*** (National Research Council, 2011). Warren M. Zapol (Harvard Medical School) chaired the 17-member committee that produced this report, and Warren described it for the Garage Theater audience.

The President's Office of Management and Budget and Office of Science and Technology Policy had requested the effort as the first of a two-part evaluation of (a) needed research and (b) how to support it operationally. Warren's group summarized science conducted on Antarctica and the surrounding Southern Ocean that will demand attention over the next two decades. They looked at opportunities for more international collaborations and examined promising new technologies.

The report does not set research priorities or discuss budgets, but it does point to two major themes having emerged from IPY and other prior research. For the theme of global change, the report lists four overarching research questions: How will the Antarctic contribute to changes in global sea level, what is its role in the global climate system, what is the response of its biota and ecosystems, and what role has Antarctica played in changing the planet in the past? The second theme, discovery, also has four questions. What can records preserved in Antarctica and the Southern Ocean reveal about past and future climates, how has life adapted to the Antarctic and Southern Ocean environments, what can the Antarctic platform reveal about interactions between Earth and space, and how did the Universe begin, what is it made of, and what determines its evolution? Mindful of the separate part-2 group's task, Warren's group comments broadly in the report on the logistics capabilities and technologies that, from a science delivery perspective, need to be improved or changed.

The report makes six recommendations, stating the United States should lead the development of a large-scale, interdisciplinary observing network and support a new generation of robust Earth system models, support basic research to yield new discoveries, improve international collaboration, exploit emerging technologies (including cyberinfrastructure and novel and robust sensors), coordinate an integrated polar educational program, and continue strong logistics and support.

The report states that, despite challenges of the harsh conditions, the region offers insight into the changing planet and is invaluable for new discoveries. It says preserving the environment for observations and experimental science requires a commitment to stewardship. Through use of international and multidisciplinary collaboration, emerging technologies and sensors, and educational opportunities, the report argues that the next 20 years of Antarctic research can advance understanding of the planet and beyond. But a

robust and efficient U.S. Antarctic Program is needed to realize this potential.

***More and Better Science in Antarctica Through Increased Logistical Effectiveness***

(U.S. Antarctic Program Blue Ribbon Panel, 2012). Louis J. Lanzerotti (Center for Solar-Terrestrial Research, New Jersey Institute of Technology) was a member of the 12-person panel that developed this report. Lou faced this challenge at the Garage Theater: he talked about the report on Saturday, 21 July, but the report was embargoed until Monday, July 23. He focused, therefore, on how the report was prepared and what it was intended to cover.

The 232-page document now is in print and on the web. And an hour-long video of the rollout by the panel's chair, Norman Augustine, and others is online via NSF's Press Release 12-141 ([http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=124939](http://www.nsf.gov/news/news_summ.jsp?cntn_id=124939)).

This summary focuses on the report itself ([http://www.nsf.gov/od/opp/usap\\_special\\_review/usap\\_brp/rpt/index.jsp](http://www.nsf.gov/od/opp/usap_special_review/usap_brp/rpt/index.jsp)), which tackles the challenges of how to support operationally the science envisioned in the *Future Science Opportunities . . .* report.

The Introduction notes that “the substantive research itself is only the visible part of the iceberg. The logistics effort supporting that science is the vast base of the iceberg.” The report states, “U.S. activities in Antarctica are very well managed but suffer from an aging infrastructure. . . . The status quo is simply not an option.”

Current practice, says the report, is that when NSF and its contractors must choose between repairing a roof or conducting science, “science usually prevails. Only when the science is seriously disrupted because the roof begins to collapse will it be replaced. . . . In the longer term, increased logistical efficiency could yield savings that would substantially increase the amount of research supported by NSF.”

The report identifies eight major issues, several single-point failure modes, and ten top recommendations. It also discusses “implementing and ancillary actions” of which some are essential for safety and health, some readily implementable, and others need significant investment but would yield large payoff.

Of the major issues, capital budgeting for the program is at the top; lack of it has led to deteriorated and inefficient infrastructure. Second is McMurdo, which is critical to most of the program but depends utterly on icebreakers; “no reasonable alternative to McMurdo was found,” the report concludes. Lack of U.S. icebreakers is third, and the issue “transcends NSF’s responsibility and resources.” Other issues include transportation on the continent, the desirability of a hard-surface ice runway at South Pole Station, energy efficiency and alternative energy, limited communications within Antarctica and with the rest of the world, and safety and health needs.

The top single-point failure mode is, interestingly, potential circumvention of the Antarctic Treaty. Others are U.S. icebreaking capability, broadband communications for South Pole, the Palmer Station pier, the Christchurch, New Zealand, hub post-earthquake, Pegasus runway, fire suppression, research ship replacement, and the single automated dishwasher at McMurdo.

Here are the panel’s top ten recommendations, in priority order.

1. Continue McMurdo, Pole, and Palmer as the primary science and logistics hubs.
2. Restore the U.S. polar ocean fleet, both icebreakers and research vessels.
3. Use state-of-the-art logistics to reduce costs and expand science opportunities.
4. Upgrade or replace facilities at McMurdo and Palmer.

5. Set up a long-term facilities capital plan and budget.
6. Strengthen consideration of support costs during review and selection of science projects.
7. Modernize communications to increase science output and reduce operational footprint.
8. Increase energy efficiency.
9. Increase international cooperation in logistics and science.
10. Revise as needed existing U.S. government Antarctic policy documents.

“Simply working harder doing the same things that have been done in the past,” the report concludes, “will not produce efficiencies of the magnitude needed in the future. . . . In spite of the above challenges, USAP science and science support could be vastly enhanced within about five years.”

We – Lou, Warren, and Guy – think all three reports deserve your attention. All are on line (the first two at the National Academy of Sciences web site). For printed versions you may have to buy those first two, but the third one is available free from NSF as explained on the above web site.

#### **POSSIBLE 'AXING THE BRITISH ANTARCTIC SURVEY WOULD MEAN THE END OF SCOTT'S LEGACY**

Considering the importance of polar research in understanding global change, it is alarming that the Natural Environment Research Council (NERC), a [research funding](#) body reporting to Vince Cable's Department for Business, Innovation and Skills, has published proposals to close the BAS headquarters in Cambridge, doing away with its name, and thereby making it politically easier to make deep cuts in Antarctic bases, ships and aircraft later on.

The extent of the seismic shifts about to take place are underlined by the recent departure of senior staff. The director, deputy director and a board member have all left BAS over the past

six months, and disillusioned with current events, senior scientists are contemplating moving to other institutions. BAS is vulnerable and the Whitehall axe could soon strike with devastating effects.

NERC and ministers are making reassuring noises as to their commitment to polar research, and to retaining a strong British presence in Antarctica, but senior figures at BAS fear the loss of the name and shift of headquarters is the first step toward bigger changes that will endanger the British capability to continue with properly supported scientific research on the southern continent.

In the wake of shocking changes taking place in the Arctic, including record sea ice melting, it is surely wise to retain Arctic and Antarctic research as an unambiguous national priority. The Polar Regions may be far away, but they have the potential to directly affect us in the UK. A study published earlier this year suggested that the cold winters we have seen recently in the UK and elsewhere may be directly linked to the melting of Arctic sea ice.

More worrying is the west Antarctic ice sheet, which is suspected to be dangerously unstable and which could lead to more than three meters of sea level rise (at an unknown rate) if it collapsed

It is sobering to note that the Thames barrier is built to cope with just a 16cm rise in sea level over the next 20 years. The research at Lake Ellsworth will help us assess the risk, and given the stakes retaining a world-respected, world-renowned and high-profile organization is surely a huge asset.

Ministers and NERC need to stand back, take the longer view and do what is obviously the right thing: keep the British Antarctic Survey intact, keep it properly funded, and keep it in Cambridge.

#### **OZONE THREAT AVERTED BUT.....CHRISTCHURCH PRESS. SEPT. 11, 2012 (Forward by Margaret Lanyon)**

The ozone hole affecting Antarctica and New Zealand is slowly healing. The University of Canterbury Antarctic expert Adrian McDonald

said the recovery followed a reduction in chlorofluorocarbon substances that destroyed ozone which had been largely banned worldwide. He said it was unclear when the ozone would return to natural levels, but it was expected to be after 2050. Ironically, ozone depletion might have protected Antarctica from the worst of greenhouse gas-related global warming, he said. "With the ozone recovery, the future of the Antarctic climate is less certain, though the complex interactions in the atmosphere associated with climate change makes this region particularly hard to predict," McDonald said.

"The future recovery of the Antarctic ozone hole and increases in greenhouse gases are expected to have opposite effects on the winds and circulation in the southern hemisphere. "The increasing ozone hole has until now acted to change the circulation of the southern hemisphere so that the strong winds linked to the jet streams have moved towards the pole." He said ozone recovery should act to move the winds back towards the equator. The jet-stream positions were one of the main things that helped control the width of tropical and polar weather belts, McDonald said.

**DR. SCOTT PARAZYNSKI, NSF CHIEF MEDICAL OFFICER** Dr. Scott Parazynski has an intimidating resume. A former NASA astronaut who served on the Space Shuttle, Parazynski now oversees medical operations for the National Science Foundation's (NSF) United States Antarctic Program's bases and outposts on the polar continent. He's also a former Olympic luge coach and an accomplished mountaineer who successfully climbed Mount Everest in 2009. At his current position, Parazynski is responsible for hiring doctors and medical support staff for multiple Antarctic bases and on-ice care for all United States Antarctic Program participants.

Scott is chief medical officer of the Center for Polar Medical Operations, which is in support of the National Science Foundation's United

States Antarctic Program, so we oversee all of the medical screening, the provisioning of the major stations on the Antarctic continent, and real-time medical support. This includes providing health care providers as well as telemedical support here from Galveston, Texas and everything in between. So it's a very exciting mission and obviously very challenging. I liken work on Antarctica to being in a station on the back side of the moon...or even what living on Mars would be like. It requires a lot of forethought, a lot of good screening, and then some real MacGyver-type medicine on occasion to handle all the unanticipated things.

There are three main stations dispersed around the Antarctic continent. Each of them has the equivalent of what I would consider to be an urgent care center. They have ultrasounds, X-rays, enhanced cardiac life support, but it's not an intensive care clinic and it's not an operating room. If you're really sick, we'll do everything we can to treat you in place and we'll try to medivac you during the Austral Summer. However, there are certain cases where we have to make the best of what we have on the scene and get you off as soon as conditions allow--and that's where the MacGyver medicine comes in.

We make clinical treatments and medical plans without all the bells and whistles taken for granted in the United States.

**TERRA NOVA FOUND OFF GREENLAND. ( By Paul Rincon, BBC News)**The SS TERRA NOVA was found by a team from a US research company. Scott and his party set off from Cardiff aboard the Terra Nova in 1910 with the aim of becoming the first expedition to reach the South Pole.

It had been on a journey to deliver supplies to base stations in the Arctic when it was damaged by ice. The Terra Nova's crew was saved by the US Coast Guard cutter Southwind. On arriving at the geographical South Pole in January 1912, Scott and his

party discovered they had been beaten to it by a Norwegian team led by Roald Amundsen. One of the scientists noticed an unidentified feature during sonar mapping of the sea bed. Team members then noted that the 57m length of the feature matched the reported length of the Terra Nova. Technicians dropped a camera package called Shrimp to just above the presumed wreck to film it. Camera tows across the top of the target showed the remains of a wooden wreck lying on the seabed. Footage from the Shrimp also identified a funnel lying next to the ship. Taken together, the features of the wreck closely matched historical photos of the Terra Nova, leading to the identification. Brian Kelly, an education officer from the Discovery Point museum in Dundee, where the ship was built, told the Daily Record newspaper: "The Terra Nova has such a story.

"She went through a lot in her lengthy history and really was the pinnacle of Scottish wooden shipbuilding.

"It is incredible that one of the most famous ships in history has been found 100 years after the race for the pole and in the year commemorating the event."

**SECRETS OF THE ICE: ANTARCTICA'S CLUES TO CLIMATE, THE UNIVERSE, AND THE LIMITS OF LIFE**, by Veronika Meduna, Yale University Press 2012 - Ed Stump

This beautifully rendered book showcases research in Antarctica, with a focus on the Ross Sea region and New Zealand accomplishments. The style is one of science reporting, clearly stated, making it an easy read. The author's approach is to introduce and profile specific scientists, and to describe the research that they have done. Most of the scientists are New Zealanders, but in a few cases Meduna profiles Americans such as Art deVries (Dr. Toothfish), John Prisco (Dr. LTER-DVs), and Susan Solomon (Dr. Ozone), plus a few Brits as well. Meduna is adept at explaining in simple terms the concepts that drive the science, and the science that she describes is right up to date. (There is a photo

from the 2010-11 CTAM field camp.) However, because many of the researchers have been working in Antarctica for a decade or two, or longer in some cases, the book also gives a perspective on the development of specific research projects over time. I liked the book very much, and recommend it highly.

The choice of science subjects is wide ranging, but not comprehensive. The emphasis is on ecosystems, and organisms that populate them, whether on the ice, in the ice, under water, or on land. Penguins and seals take brief bows, whereas microbes, lichens, and mosses are center stage - not the usual biology covered in an Antarctic book. Bedrock geology is hardly mentioned, nor is the field of ice dynamics (which is dominated by Americans.) However, coring in McMurdo Sound and ice coring elsewhere are given ample coverage, along with their importance in the area of climate change. And in a coda at the end, brief mention is made of the astrophysics research being conducted at South Pole station.

What makes this book unique is the range of science topics that are covered. A similar approach was taken in the book: *Antarctic Science* by David Walton, ed., Cambridge University Press, 1987, which was basically a status report of Antarctic science at the time, with an emphasis on British contributions. (The ozone hole and the British discovery of it were among the topics covered.)

The book is done in full color. Photo images come from a variety of sources, and many are spectacular. The set in the introduction, which shows most of the vistas and spots in the McMurdo area familiar to us all, is really exceptional. I'm a sucker for pattern pictures, and the collages of starfish and lichens spoke to me. Photos of researchers on the job are more of a mixed bag, but they serve to put faces on this exceptional group of scientists. It was fun for me to see pictures of old colleagues whom I have known for decades, and thought that it will be interesting for those younger faces to check in 20 or 30 years from now to see how they've aged.

With its publication of *Secrets of the Ice*, Yale University Press expands its portfolio of Antarctic offerings, which include Susan Solomon's *The Coldest March*, Edward Larsen's *An Empire of Ice*, and my own *The Roof at the Bottom of the World*.

**FUR SEALS, WHALES, AND TOURISTS. A COMMERCIAL HISTORY OF DECEPTION ISLAND, ANTARCTICA.** By J. Stephen Dibbern. The Antarctic Society, Port Clyde Maine, 2012. Reviewed by Joan N. Boothe

The title page of this book states that it was originally published in the *Polar Record* in 2010. It is, however, is far more than that — a major expansion of the original article that includes not only important added text, but also, most significantly, more than 100 additional photographs, many of them in color.

*Fur Seals, Whalers, and Tourists* opens with a reprint of the text of the original *Polar Record* article of the same name. This is a fascinating article, an excellent discussion of economic activity at Deception Island since 1820, when fur sealers first arrived, and this book provides a real service in making it available to those who do not have access to the *Polar Record*. The sections on fur sealing are, appropriately, relatively brief since there was little actual sealing at Deception Island. The heart of the article's text concerns the Deception Island based whalers, who arrived in the first decade of the twentieth century and quickly found a home at a place they named Whalers Bay, inside Deception Island's splendidly sheltered Port Foster. Mr. Dibbern vividly describes how — and why — Whalers Bay was the center of Antarctic whaling in the Antarctic Peninsula region south of 60° S from 1906 until 1931. A brief discussion of events at Deception Island during and post-World War II follows. The article ends with a summary description of the beginnings of Antarctic tourism that introduces a splendid concluding section — a descriptive tour of Deception Island today highlighting the historic artifacts that can still be seen by a modern visitor.

These final, evocative, paragraphs would be a marvelous guide for any visitor to Port Foster.

The *Polar Record* article takes up only the first ten pages of this 82-page book. The balance consists of five new brief text sections plus 112 photographs, many of them full page and in color, with extensive, rich captions. The added text expands this account of human activity at Deception Island well beyond the commercial. Mr. Dibbern tells us of early science and exploration, war and politics as it played out here, aviation including the earliest flights in the Antarctic, research bases, and about the dramatic, disastrous volcanic eruptions in the late 1960s.

But it is the marvelous photos that illustrate this book that are really its heart. Some of them are very rare, historic ones of whale ships and whalers at work in first years of their tenure at Whalers Bay in Port Foster. Others illuminate the story of human activity in the years following the whaling period. The captions are rich, with the result that a casual reader can ignore any or all of the text, focus on the illustrations, and still thoroughly enjoy this work. It should be noted that due to the historic focus of this book, the vast majority of the photos are of activity at locales within Port Foster. The final section, "A Deception Island Tour," expands this a bit, including a few photos from the outside coastal sections of the island, but even here, most pictures are from within Port Foster. Thus readers looking for a full guide to Deception Island may be a bit disappointed. But for those who are interested in the dramatic human story of this genuinely unique place, this book is a marvelous resource, indeed, a must read.

P.S. If you want to buy directly from the author, U.S. buyers should send a personal check for \$25.00 to: J. Stephen Dibbern, 5996 Via Lane, Crozet, VA 22932



**ROBERT A. WHARTON - PRESIDENT OF SOUTH DAKOTA SCHOOL OF MINES DIES** September 19, 2012

Robert Wharton, the president of the South Dakota School of Mines and Technology in Rapid City has died, the school and South Dakota Board of Regents announced Wednesday. Wharton, 60, was diagnosed with neck cancer late last year. He went through seven weeks of radiation and chemotherapy treatments at a Rapid City cancer center. He issued a statement last April saying the treatments succeeded and he was cancer-free. Christy Horn, vice president of university relations, told the Rapid City Journal newspaper that Wharton was cancer free at the time of his death but died from complications the early 2012 treatments.

Wharton came from Idaho State to become Mines' 18th president in July 2008. He received his doctorate in botany from Virginia Polytechnic Institute and his bachelor's in botany and masters in biology from Humboldt State University in California. Wharton served as executive officer for the National Science Foundation's office of polar programs, participating in 11 expeditions to the Antarctic. He also was a visiting senior scientist at NASA headquarters in Washington, D.C. In April, Wharton was selected to serve on the board of the South Dakota Science and Technology Authority, which oversees the operation of the Sanford Underground Research Facility at Homestake in Lead. Daugaard at the time said Wharton was a strong advocate for the underground lab and research by scientists from South Dakota. Robert A. Wharton, Jr. 1951-2012  
Survivors include his wife, Dr. Carolyn Fassi Wharton, Rapid City; son, Matt Wharton, Loveland, Colo.; two grandchildren; a brother; and a sister.

In 1966 Bob was awarded the rank of Eagle in the Boy Scouts. He was also inducted into Order of the Arrow. Bob kept a gold paperweight on his desk that says, "Once an Eagle, always an Eagle and he served as a local leader for the National Eagle Scout

Association. Bob was a recipient of the Eagle of Merit Award for Career Excellence and the National Distinguished Eagle Scout Award.

Bob was a 1969 graduate of Birmingham High School in Van Nuys, CA; He attended Los Angeles Pierce College from September 1969 to June 1971 and went on to study at California State University, Northridge. He received his B.A. (Botany) and M.A. (Biology) from Humboldt State University and his Ph.D. (1982) in Botany at Va Tech under Bruce Parker (also working under the guidance of limnologist George M. Simmons (Doc) at the time too). Bob was named as one of the California Community Colleges League Distinguished Alumni for 2004.

During our work in the McMurdo Dry Valleys, Bob invited Eagle Scouts Louis Sugarman (1986) and Toby Everett (1992) to join us for some fun at our camp at Lake Hoare. It was nice having other Eagle Scouts with us, we both thoroughly enjoyed the time. In 1986 when Louis Sugarman was with us we were filming what would later become the PBS program **Life on Ice, Antarctica and Mars**, and in 1992 Galen Rowell was staying with us when we had the pleasure of having Toby in the camp. That year Bob and I had worked with folks at NASA HQ and we set in motion the requirement to get enough bandwidth into MCM for video broadcasts and out to the camp at Lake Hoare for basic e-mail. We had a 300 baud connection between Lake Hoare and MCM and we were delighted that Toby did not mind downloading long files for us at the time!

In 1980, Margulis established a Planetary Biology Internship (PBI) program, which the Exobiology/Astrobiology program has supported since its inception - as I recall Bob and Chris McKay both took part in the first set of interns.

Bob's thesis, titled "**Ecology of algal mats and their role in the formation of stromatolites in Antarctic dry valley lakes**" which he completed in 1982 set the stage for a very productive body of work that continued with

investigations of the perennially ice-covered lakes in the McMurdo Dry Valleys, lakes of the Canadian High Arctic and the search for life on Mars. His research areas included polar ecology, microbiology of extreme environments, cold deserts, space exploration, the Arctic, Antarctica, Mars, and Europa. His work on the physical/chemical and biological aspects of the lakes of the McMurdo Dry Valleys was extensive, with many 'firsts' documenting discoveries made, and he led the successful effort to start a Long Term Ecological Research (LTER) project in the Dry Valleys and was the Lead PI for the project from 1993-1999....The MCM LTER is still operating today. Bob got together with Chris McKay at NASA Ames Research Center in the early '80's and they began trading ideas about the possibility of ice-covered lakes on the planet Mars as refugia for life as that planet slid into a 3 billion plus year winter, and the McMurdo DV lakes being great analogs for those early martian lakes.

Bob was quoted extensively in an article about work in the Dry Valleys in the October 1998 issue of National Geographic. While a research professor and vice president for research at the Desert Research Institute, Bob was appointed to the National Research Council's Polar Research Board. Bob was an avid athlete: black belt in karate, scuba diver, an avid mountaineer and rock climber - climbing/mountaineering was his passion.

Bob was a fellow of the American Association for the Advancement of Science, the Royal Geographical Society, the Explorers Club, American Alpine Club, and a member of Sigma Xi. He joined the Senior Executive Service as the Executive Officer for the National Science Foundation's Officer of Polar Programs.

Bob will be remembered as much for his contributions to science as for the wonderful person he was. I had the privilege of spending a great deal of time with Bob in Antarctica, the Canadian High Arctic, at NASA HQ, a lot of time on travel together in Soviet Russia,

Europe, many mountain peaks in the Sierra Nevada mts., underwater in the Florida Keys, and we had a lot of fun kicking around at VaTech as students in the late 70's and early 80's.

Places Bob worked and studied over the years: Va Tech, NASA Ames Research Center, Desert Research Institute, NASA Headquarters (2 yrs within the Life Sciences Division working with Exobiology), Closed Environmental Life Support Systems (CELSS) and the Biospheric programs, Desert Research Institute, NSF/OPP, Idaho State University South Dakota School of Mines and Technology

#### **RECLINING SCOTT BACK ON DISPLAY - Rachel Young (Christchurch Press)**

One of the Christchurch statues damaged in the 2011 earthquake is back on display, albeit horizontally. At 12.51pm on February 22, 2011, the Captain Robert Falcon Scott statue, at Scott Reserve on Oxford Terrace near Worcester Street, was thrown off its pedestal, where it had been since 1917, by the magnitude 6.3 earthquake. The marble figure chipped in several places and broke across the ankles, but no other cracks or fractures were found. It lay in the red zone until it was taken into storage where a team of people, including an engineer, a conservator, and a stonemason, worked to repair and strengthen it.

Parker said Scott's wife Kathleen, was commissioned by the Christchurch City Council in 1913 to make a sculpture of her husband. In 1917, the statue was unveiled in Scott Reserve. Parker said since then it had represented the city's links with Antarctica.

"We're going to put him back in his rightful place, but in the meantime we wanted to bring him out of storage in a safe way." The statue will be on display in Hagley Park during the New Zealand Icefest for the next month. Leighs Construction have designed a wooden enclosure to keep the display airtight and moisture-free.

P.S.

Happy 86<sup>th</sup> Birthday to Charles Swithinbank!