



# THE ANTARCTICAN SOCIETY

905 NORTH JACKSONVILLE STREET  
ARLINGTON, VIRGINIA 22205

HONORARY PRESIDENT — MRS. PAUL A. SIPLE

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No. 1

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Dr. Claude Lorius, 1986  
Dr. Louis J. Lanzerotti, 1987  
Mr. Peter J. Anderson, 1988  
Dr. Ted E. DeLaca, 1989  
Dr. Sayed Z. El-Sayed, 1990  
Dr. Charles W. Swithinbank, 1991  
Dr. Susan Solomon, 1992

THE BELLS TOLL FOR THREE GREAT ANTARCTICANS

James H. Zumberge, April 15, 1992  
Emanuel D. Rudolph, June 22, 1992  
Richard P. Goldthwait, July 7, 1992  
(see inside pages)

*Our 1992 Paul C. Daniels Memorial Lecture*

**Antarctic Ozone Depletion:  
Global Change in the Last Place on Earth**

by

Dr. Susan Solomon NOAA  
Aeronomy Laboratory  
Boulder, Colorado

on

Tuesday evening, September 22, 1992

7:30 PM

The National Academy of Sciences 2101  
Constitution Avenue N.W.  
Washington, D.C.

*Reception in the Auditorium Gallery at 5:30 PM*

*Dinner in the Great Hall at 6:30 PM*

*Lecture in the Auditorium*

The National Research Council's Polar Research Board and the Antarctic Society are combining once again to bring you the Society's annual Memorial Lecture in the hallowed halls of the National Academy of Sciences.

Susan Solomon truly needs no introduction as she has been prominently featured by the media for her investigative research on the ozone problems in both polar regions. She is a member of the Polar Research Board, and just this year was elected to the National Academy of Sciences, which is considered one of the highest honors that can be accorded to an American scientist or engineer. She is a great choice to be our first-ever female Memorial Lecturer.

Come one, come all! Let's make it a gala evening! !!! MARK YOUR CALENDAR NOW !!!

The cost of the reception and dinner is \$37.50. Please make your check payable to the Antarctic Society, and mail it to Ruth J. Siple, 905 N. Jacksonville Street, Arlington, Virginia 22205. Checks should be received by September 18th.

If summers are scored on a 1-to-10 scale, this one has to be about a minus 10. It all started one night when my fixed bridge came out with my partial, leaving me standing there looking most pathetically at most of my lower teeth in my hand. I was devastated. Trips to a periodontist followed. In late April my mother almost died - the doctor sent me into her room at the hospital to say my goodbyes, but she wasn't ready to go. The scenario wasn't quite right. However, she was called on June 2nd, and went very peacefully after a lovely morning sitting on her beloved porch enjoying cool breezes off the ocean, and admiring her window boxes full of freshly planted petunias.

By then I was commuting to Boston to see an implantologist of national repute, but we weren't exactly on the same wave length. My blood pressure was up, and he sent me back to coastal Maine to get that in order so he could operate. With the help of modern medicine, that was possible on July 1st. For over six hours I was responsive to commands, although I have no recollections of anything!

The tragic news of Gentleman Jim dying in Los Angeles rocked the Antarctic community, although we were well aware of his serious problem. Jim just could not die, but he did. We wanted to get out a special Newsletter honoring him, but before we could get around to it, Emanuel Rudolph had his fatal accident, so then we had two tragedies. Shortly thereafter lightning struck a third time with Dick Goldthwait's untimely death. Of the three, only Dick went with his boots on, as if he had written his own script. All three of these men were truly Antarctic giants, all three were really nice guys. We couldn't afford to lose them, but we did. You know only the good die young, the rest of us linger on.

In the meantime, that "aging Brit", and the South Pole crew were lining me up in their gunsights, and I'm saying, "Go ahead, shoot me," as I'm left with a 101-year old stone-deaf, cantankerous aunt living next door who I have to keep alive so she can give me a hard time. Life is no bed of roses, but Maine is a great place to live. Oh yes! the Newsletter - here it is, sad but true.

**POLLY PENHALE INCOMING PRESIDENT OF OUR SOCIETY.** Dr. Polly Penhale, Program Manager, Polar Biology and Medicine Program, Division of Polar Programs, National Science Foundation, was duly elected president of the Antarctic Society at the brief annual meeting before our last spring lecture. She has been at NSF since 1986, coming from the College of William and Mary where she was Assistant to Dean for Academic Affairs. Actually this is her second stint at NSF, as she was in the Biological Oceanography Program as a program director from 1982 to 1985. She has also been associated with the W.K. Kellogg Biological Station at Michigan State University, and the Rosenthal School of Marine and Atmospheric Science, University of Miami.

Polly graduated from Earlham College in Richmond, Indiana in 1970, which must put tier age at about 25, going on 26. Her master's and doctor's degrees are from North Carolina State University.

She's a bipolar scientist, having done research in both polar regions. She worked

at the Naval Arctic Research Laboratory at Point Barrow in the summers of 1971 and 1972, and also did field research in a place called the Izembek Lagoon on the Alaskan Peninsula, which must have qualified her for future woebegone assignments. She also found time to be a research scientist on cruises to the Bahamas and Nicaragua. Since 1987, she has been a frequent traveler to Antarctica, being the unofficial mayor and sheriff of Palmer Station.

Polly's research interests are in the primary productivity and nutrient cycling in marine systems, particularly, macrophyteepiphyte productivity in seagrass communities. And as the Program Manager for Biology and Medicine, she is particularly interested in the interdisciplinary approach to complex systems.

She's intelligent, she's a scientist, she's an administrator, she's personable, she's articulate, she's reasonable, and she's good-looking. What more could you want for our president for the next two years? We are lucky!

**JAMES H. ZUMBERGE, 1923-1992** (from the University of Southern California Memorial Convocation Program, Bovard Auditorium, May 6, 1992). President Emeritus Zumberge served as ninth president of the University of Southern California from 1980 until his retirement in 1991.

Dr. Zumberge came to USC with a distinguished record as a scholar, scientist, educator and administrator. He was president of Southern Methodist University from 1975 to 1980; chancellor of the University of Nebraska-Lincoln from 1972 to 1975; dean of the College of Earth Sciences at the University of Arizona from 1968 to 1972; and the founding president of Grand Valley State College in Michigan from 1962 to 1968. He taught geology at the University of Michigan from 1950 to 1962, and at Duke University from 1946 to 1947.

Among his accomplishments while president of the University were the development of the exhaustively researched "Academic Planning for USC," a document that set forth the goals that became the basis for The Campaign for USC, which exceeded its \$557 million goal by \$84,574,718. A Presidential Commission on Undergraduate Education developed programs to enhance the freshman experience, and provide access to research opportunities and honors programs for undergraduates. In the Zumberge decade, USC attracted more than \$700 million in sponsored research, and began or completed construction of 15 new facilities. Among those projects were the Norris Cancer Center, the Hedco Neurosciences Building, and General William Lyon University Center. Hallmarks of the Zumberge years were his creation of the Faculty Research and Innovation Fund, named in his honor, and his commitment to a new teaching library. It is typical of Dr. Zumberge's vision for USC that the most singular capital commitment he spearheaded was funding for the teaching library.

Dr. Zumberge was official U.S. delegate to the Scientific Committee on Antarctic Research (SCAR) of the International Council of Scientific Unions from 1972 to 1986, and served as SCAR president from 1982 to 1986. He was the recipient of the Antarctic Service Medal in 1966. Cape Zumberge, Antarctica, was named in his honor in 1960, and the Zumberge Coast, Antarctica, in 1986. He was chief glaciologist for the U.S. Ross Ice Shelf Project in Antarctica for the International Geophysical Year (1957-58), and chief organizer for three subsequent expeditions to Antarctica.

Zumberge earned his B.A. and Ph.D. degrees in geology from the University of Minnesota in 1946 and 1950, respectively, following service as a Marine Corps officer. He held six honorary degrees: an LL.D. from Grand Valley State College in 1970; an L.H.D. from Nebraska Wesleyan University in 1972; an LL.D. from Kwansei-Gakuin University, Nishinomlya, Japan, in 1979; a D.Sc. from Chapman College in 1982; a D.Hu.L. from

Hebrew Union College-Jewish Institute of Religion in 1987; and a D.Pub.Adm. from Chung-Ang University in Seoul, Korea, in 1989.

Dr. Zumberge was married to the former Marilyn Edwards of Western Springs, Illinois. They have four children: John, a geochemist for Core Laboratories, Houston, Texas; JoEllen, an account supervisor for Manning, Selvage and Lee Public Relations, Inc., Los Angeles; James, a physicist at the Jet Propulsion Laboratory, Pasadena, California and Mark, a research scientist at the Scripps Institute of Oceanography, La Jolla, California.

**THOUGHTS AND REFLECTIONS - JAMES H. ZUMBERGE** (presented by Dr. Robert H. Rutford, President, University of Texas at Dallas, and Chairman, National Academy of Sciences' Polar Research Board, at a Memorial service for Dr. Zumberge at the University of Southern California on May 6, 1992). I am honored to be here today to join with you in this tribute to "Gentleman Jim," "Big Z," "the Z," "El Zumo," "the Iceman" (as he was known to some faculty), and other names I cannot repeat here.

When President Sample asked me to participate in this memorial, I quickly agreed. As I now stand here I am very glad that I came, but I am still not sure that what I am about to say will make sense to anyone but me.

Jim was a very special and unique person. He was at home in the Board Room whether it be corporate, academic, or at the National Science Foundation, or the "board" room of the local lumber yard. He loved to escape to the informal life and clothes that were an essential part of his life as a field geologist.

His abilities as a scientist were never questioned. He had an inquiring mind and was a quick learner. His work on the glacial geology and origin of lakes in Minnesota was excellent. His Ph.D. dissertation was printed in 1952 as a Bulletin of the Minnesota Geological Survey. By 1957 it was out of print! For those of you who know something about Geological Survey publications, you will recognize this as some kind of record. It is still a basic reference on the Lakes of Minnesota, and it is now a collectors' item.

Jim's involvement in the International Geophysical Year as a glaciologist led to his research on the deformation of ice and the formation of crevasses, work that continues today. His interest in Antarctic glaciology and his articulate support for research in all scientific disciplines on that continent led to his appointment as Chairman of the Polar Research Board, as U.S. SCAR Representative, and President of the Scientific Committee on Antarctic Research, an international committee.

Jim was a teacher, an excellent teacher both in the classroom and in the field. When he couldn't find the books he wanted for his classes, books that would spark the interest of students in the understanding of the earth that he loved, he wrote his own. His laboratory manual for freshman physical geology, first prepared on a mimeograph machine, has evolved and is now in the 8th edition. (As a joint author for the last several editions I can tell you it is the best lab manual available.)

His academic leadership was recognized early. He moved from the faculty at the University of Michigan, without having been a department chair or Dean, to become President of Grand Valley College where the library now bears his name. He served as Dean of the College of Earth Sciences at The University of Arizona at a time of reorganization, and became Chancellor of The University of Nebraska-Lincoln where he voiced concern about faculty salaries and quality education. His commencement address of 1972 became the subject of an editorial in 1992. He moved to Dallas to serve as President of Southern Methodist University, and then came here as President of U.S.C.

While at Nebraska, Jim received a grant from the NSF for a large glaciology project

in Antarctica, a research project that was known as the Ross Ice Shelf Project, an effort that involved 7 countries and 14 institutions. However, despite all of his best efforts, many of the folks in Lincoln were convinced that this was really an engineering project aimed at the development of a better refrigerator utilizing a new system - The Ross Ice Shelf!

Jim's interest in the Antarctic shifted from pure science to science and resource policy, and his papers on these subjects are excellent. Unfortunately, the politicians and environmental groups have not taken time to read them.

His contributions to the IGY were recognized by the U.S. Board of Geographic Names when they named a small rock outcrop for him - Zumberge Nunatak. As time went by there arose some question as to whether there really was such a feature, so the name was dropped from some maps. To ensure that the name Zumberge would always appear on maps of the Antarctic, several of us proposed that the coast where the elusive nunatak was supposed to be located be named Zumberge Coast, a large feature. Jim always laughed about all of this because both features are at least 1000 miles from where he did his research, and he never saw the features that bear his name.

Jim was a musician of international reputation, at least among the SCAR nations. He played piano in almost all of the original 12 SCAR nations, and his skills with the accordion resulted in the importing of an accordion to Antarctica so that he might lead the songs at the Beardmore Camp Symposium in the mid-1980's.

He was the originator of the famous SCAR Marching Song, a song that is now about 80 verses long! This song in its original form would be classed as "politically incorrect" today! Jim was involved in the cleansing of the then-existing verses prior to the Beardmore symposium, much to the dismay of some of the old Antarctic crew!

One of his major musical contributions was the introduction of an Australian college song into the SCAR venue, Zumberge Octoberfests, and other gatherings. That song from Canberra has traveled to all SCAR meetings - some of you will recognize the title - "It's the Same the Whole World Over."

Jim was an artisan - a woodcarver of great skill. His carvings are an integral part of his cabin in Jackson Hole where his carved plaque, HAUS ZUMBERG, welcomes all.

Jim was a family oriented man - he loved to have his family and extended family with him. He and his brother, Bob, shared a love for life. Jim was proud of the accomplishments of his children - he often told me of their latest exploits. He was proud of his German heritage. Octoberfest, German folk music, and bratwurst were an essential part of his life.

A tribute to Jim would not be complete without recognizing the importance in his life of his wife, Marilyn and the key role she played in his career. Just after they were married Jim dragged her to Alaska, put her up in a hotel, and left for the summer. This must have given her some warning about the life ahead.

Jim and I first met in 1970, and our work together began in 1972. He and I, along with our wives, became "instant friends" if that is possible. He was "Uncle Jim" to my children. He was always available for advice. When I called him to talk about my moving to Texas, we carefully weighed the pros and cons - then Jim closed the discussion by telling me that "everyone deserves to live for a time in Texas!"

We shared a love for geology, for education, for Jackson Hole, for doing things with our hands as well as our minds. We may have the only two cabins in the country with rooms built by two college presidents!

Jim lived a full and rewarding life. He gave of himself to society, and looked forward to the future with eager anticipation. He was busy planning the next revision of his lab manual when I visited him here in Los Angeles in January.

I have very special memories of this very special man. He was and will continue to be an essential part of my life. He was a mentor, an inspiration, but most important, a friend. I will miss him!

But if he were here with us today, he would tell me - "Rutford, get on with it" -and so I say to you - Let's get on with it, and live life to its best and fullest as Jim would have us do.

**A. LINCOLN WASHBURN ON JIM ZUMBERGE.** Jim had a quick mind, a breadth of interests and understanding, and a warm, informal personality by nature, yet also a glint of steel in his makeup. He was decisive but careful of facts and eventualities when making decisions. He could relax, play his accordion, and sing with the Navy personnel who were assisting with his Antarctic field work, but he could also be very formal indeed when chairing a high-level international meeting dealing with Antarctic research. He had a leadership presence that equipped him to be the right man in the right place at the right time, whatever the occasion.

Jim's many talents could have assured him success in a number of different fields. He chose academia in which over the years he combined research, teaching and administration - a difficult series of tasks to be effective in all. Unlike many college and university presidents, he managed to maintain close contact with students, despite the heavy demands to raise funds and be responsive to all the many bodies politic in academia. His own research as a geologist was primarily focused on the polar regions - an active focus throughout his career, as illustrated by his service as Chairman of the U.S. National Research Council's Committee (later Board) on Polar Research; President of the International Committee for Antarctic Research (SCAR); and the first Chairman of the U.S. Arctic Research Commission - a Presidential appointment. Throughout these activities he emphasized the importance of international cooperation in polar research. Jim's family life was equally rewarding, thanks to his wife Marilyn, who was at his side throughout, and their three sons and daughter.

When cancer was diagnosed, he continued to exhibit his strengths. I remember a meeting of the U.S. Arctic Research Commission at the University of Southern California at which he excused himself temporarily because of a doctor's appointment at which he learned he had to undergo major surgery. None of those attending the Commission meeting knew this at the time, nor did the several hundred alumni and others present that evening at the USC Alumni Homecoming Dinner on the spacious lawn of his and Marilyn's home, to which the USC Trojan Marching Band brought a festive spirit. He and Marilyn contributed to this spirit with upbeat talks full of hope and promise for USC and the future, and no one could have guessed his and Marilyn's feelings about the bad news he had just received. Jim survived the operation and continued his duties within a reasonably short time, including leading a major and highly successful USC fund campaign, following which he retired as President.

Jim planned to take a year's leave of absence, then return and teach geology to freshmen, whom he regarded as the most neglected students in big research universities. Tragedy dashed those plans when it was discovered he had an inoperable brain tumor unrelated to the earlier event. Again, his indomitable spirit came to the fore. He welcomed calls and assured friends he was doing his best to meet this new challenge, and that he remained optimistic that treatment would be effective. But no cure was found. Jim's spirit and the memory of a truly exceptional person and leader whose life made an important difference, nationally and internationally, remain imprinted on the minds of those who had the privilege of being among his colleagues and longtime friends.

**CHET LANGWAY WRITES ABOUT JIM ZUMBERGE.** I was Jim's last PhD student at the University of Michigan. I left UM in 1961 just before he left to preside at Grand Valley State College. We originally met at the Snow Ice and Permafrost Research Establishment (SIPRE) in the spring of 1956, and then the next year at Chamonix, France at a glaciological meeting. I was closely associated with Jim, Marilyn and their four kids from that time on. Although Jim was probably somewhat misunderstood by some in the field, he was a fine guy and did a lot to enhance research progress in polar regions. As a member of the NSF Board, he was instrumental in getting the Greenland Ice Sheet Program (GISP) and the Ross Ice Shelf Project (RISP) off the drawing board and into the field operation itself. Much of the drilling in ice being done today is a result of his commitment to polar research, perseverance, and science administrative skills. He was a competent, versatile, and powerful supporter of geological and glaciological research on the national and international scene. (Would that someone of his ilk existed today.) He was extremely active in many behind-the-scene adventures in advancing polar science, most of which were unheralded to the public. As you also know, he had enthusiasm, talent, energy, insight, and a somewhat easygoing manner.

Jim was also a good carpenter (his father's trade), and a pretty good musician capable of playing numerous wind and string instruments, particularly the piano in the Crazy Otto style. He was also a song-master with a repertoire of countless ditties.

He will be a tough man to replace in terms of his overall contributions to this generation of polar scientists. I would like to suggest that some appropriate recognition of his contributions might be considered by our community. I would be willing to participate, serve or contribute.

**DR. EMANUEL RUDOLPH, FORMER DIRECTOR, INSTITUTE OF POLAR STUDIES, DIES.** One of Antarctica's foremost lichenologists, Dr. Emanuel Rudolph, died on 22 June 1992 of injuries suffered in an automobile accident on 20 June 1992. Emanuel, only 64 years old, had stopped at a stop sign near Wooster, Ohio, at about 5:50 in the afternoon, and evidently failed to see an oncoming car, pulled into its path, and was hit. He was an expert on the adaptation of lichens in Antarctica, and also on the history of botany. He authored over forty scientific papers on lichenology, and presented over a hundred papers at scientific meetings.

Emanuel became Director of the Institute of Polar Studies (now the Byrd Polar Research Center) on 1 July 1969, replacing the irascible Colin Bull who moved onward and upward in the hierarchy of The Ohio State University. Emanuel had joined the Institute as a Research Associate in July 1961, coming to Columbus from Wellesley College. His major research interests included ecology and systematics of Antarctic lichens, biosystematics of the lichen family Teloschistaceae, and Antarctic vegetation. With these kinds of interests, how come the U.S. Board of Geographic Names came up with Rudolph Glacier in Victoria Land? However, Rorudia, a genus of lichens, and several lichen species (Catillaria-rudolphi Dodge) were named after him in 1980.

Emanuel was the author of more than 40 scientific papers on lichenology and on the history of botany. He was the editor of a book on symbiosis and parasitism, and authored more than 150 book reviews in major journals. He received the Ohioana Citation from Ohioana Library Association in 1985. At the time of his untimely death he was President-Elect of the Ohio Academy of Science. A list of his publications, memberships, and scholarly and service activities actually take up more than twenty-six pages.

We should mention that Emanuel wrote the introduction and lichen section of Terrestrial Biology, Antarctic Map Folio Ser., American Geographical Society, 1967, Folio No. 5. He also wrote "Terrestrial vegetation of Antarctica: past and present studies,"

American Geophysical Union, Antarctic Research Series, 8:109-134, 1966.

His dear friend and professional colleague, Henry H. Brecher, wrote, "As you probably know, his interests extended beyond lichenology and the polar business, particularly to the history of biology and, of course, to books and book collecting. His personal library (over 6000 volumes back in July 1969), his very active participation in the university's library support organization, and his involvement with the university press are the most prominent examples. And he was committed to service in many other directions as well." Emanuel was preceded in death by his wife, Ann Waterman Rudolph and the two of them probably had the best library of children's books on Antarctica. Henry ended his letter of 24 June to us saying, "I will miss (him) greatly." That can be echoed through the entire polar and botany communities.

**A. LINCOLN WASHBURN ON DICK GOLDTHWAIT, 1911-1992.** Dick Goldthwait died suddenly and unexpectedly of a massive stroke while he and his brother, Lawrence, were collecting water specimens from a lake near the long-time summer home of the Goldthwait clan in Wolfeboro, New Hampshire. With loving family and amid beloved surroundings while continuing a lifelong dialogue with nature, it was a kind of leave-taking to be devoutly desired when nearing the end of life's earthly span.

Dick was an international figure in polar research and one of the most highly respected glacial and Quaternary geologists of his generation. He grew up in Hanover, New Hampshire, where his father, James Walter Goldthwait, a lifelong glacial geologist of his time, was on the Dartmouth faculty. Dick obtained his B.A. at Dartmouth in 1933, and his Ph.D. at Harvard in 1939. He was an instructor and assistant professor at Brown University until World War II when he served as a materials engineer at Wright Field (now Wright-Patterson Field). In 1946 he was appointed Associate Professor in the Department of Geology and Mineralogy at Ohio State University, and only two years later was promoted to full professor. He served as chairman of the Department from 1965 to 1969 and became Emeritus Professor in 1977. Dick was the founding spirit behind the establishment of the internationally prominent Institute of Polar Studies (now Byrd Polar Research Center) at Ohio State University, which he served as director from 1960 to 1965. Dick was appointed to numerous national and international committees, and was affiliated with a number of scientific societies, including the International Glaciological Society, being elected to the Council and to honorary membership.

A dominating theme in Dick's research was comparing the behavior and deposits of contemporary glaciers with those of the Pleistocene. This led him to Alaska and the French and Swiss Alps early in his career as he studied the glacial geology of New Hampshire and the Presidential Range, along with research in Massachusetts and later in Ohio. His polar studies extended to Baffin Island, Greenland, and Antarctica; he also worked in New Zealand and briefly in Tibet. Among Dick's pioneering efforts were the introduction of seismic field equipment in the study of contemporary glaciers in Alaska and the French Alps, and his initiative in furthering interdisciplinary study of polar environments through the founding and work of the Institute of Polar Studies, which now houses the Goldthwait Polar Library.

Publications resulting from his research and other work brought Dick wide international recognition and many honors, including the first Distinguished Career Award of the American Geological Society's Quaternary Geology and Geomorphology Division (1966), the Antarctic Medal of the U.S. Congress (1968), and Ohio State University's Distinguished Service Award (1980). Mount Goldthwait (3815 m) at 77°59'S, 86°03'W in the Antarctic honors his Antarctic contributions. But the career milestones cannot fully convey the value of his services in teaching a generation of students, many of whom have now made their own mark.



Dick was a lifelong friend from our very early years in Hanover and at Dartmouth, including an Alaskan field season with him in 1934 while we were on Brad Washburn's Mount Crillon expedition. I admired Dick greatly, professionally and personally, both for his ever-present critical eye that helped him become the careful and eminent scientist he was, and for being the friendly, warm-hearted, unassuming, and straight-forward person I knew. Along with a relaxed and amusing quip when appropriate and a firm presence when needed, he exemplified leadership in Life as well as in science.

**MORE ON "DOCTOR G".** If you want a blueprint for a traditional old-fashioned memoria] service, Dick's in Wolfeboro, New Hampshire on Sunday, July 12th would be it. It was held in the boondocks in a small country church built in 1841. An outpouring of friends and neighbors joined the family - his wife, Kay, four children, four grandchildren, a brother, and cousins - filling the church to capacity. It's always good to hear something in church with which you are vaguely familiar. Faith of Our Father was the first hymn (the second one was an environmental hymn), and the Twenty-third Psalm must be known by everyone.

The eulogy was delivered by a college friend of Dick's who had many interesting stories about him and Dartmouth, especially the Outing Club. There were also some other stories, one about how, as a Sunday School student downstairs waiting for the church service upstairs to end, Dick sort of sabotaged the ends of the organ pipes with rubber tubing, resulting in some ungodly-like sounds being emitted during the recessional. On the plus side was how, as a youth, he rushed into a burning church in Hanover and rescued the silver communion service set. After the memorial service was over, refreshments were served in the courtyard, and it can be reported with a very high degree of reliability that the cookies were just excellent. Both Tony Gow and I had driven a few miles to get there, so we hit the tables pretty heavily, and then compared notes!

[Cay wrote that Dick's greatest achievement was the founding of the Institute of Pola] Studies at The Ohio State University. She added that among his many awards and tions, he felt greatly privileged to be counted among the select few who were honorary members of the International Glaciological Society. Kay also pointed out that President Johnson appointed Dick to a commission to study the 1964 earthquake which had its epicenter off the Alaskan coast. Altogether Dick spent over thirty summers in the field in Glacier Bay, Alaska, and numerous summers in northern Greenland doing research. The people at the South Pole will be appalled to learn that Kay said that our so-called Newsletters "were required reading at our house!" Besides being brilliant, Dick also had excellent judgment!

**ANTARCTICAN BILL ZOLLER DID NOT DIE, BUT HE LOST 20 YEARS OF MEMORY, TRULY "PARADISE LOST" AND "PARADISE PARTIALLY REGAINED."** This is an old article, but it has just come to our attention. It's by Bill Dietrich and was in the Seattle Times of 11 November 1991. It is some story. Wild Bill Zoller woke up from a 1987 automobile accident with twenty years of his memory missing. Many people probably wish they could do the same, but not by the route Zoller took by mistake. An Antarctic, Bill skidded on ice, and his car was hit so hard by another car that both his seat-belt and his pelvis were broken. His brain sustained two enormous blood clots, inch-wide holes were left in the brain, and he was in a coma for a week. When he came to, his multiple trips to Antarctica had been erased, his participation with the first teams of scientists to enter Mount St. Helens and El Chichon were no longer remembered, nor was his 50-yard ride on the breakaway crust of a lava flow in Iceland. His 150 research papers never happened. When he found out that Ronald Reagan had been president, he said what many an American had been saying, "You've got to be kidding." And to Bill, the Vietnam War was just beginning. He did

remember courting and marrying his wife, as that was before the twenty-year loss. But with the help of his family, his physicians, his therapists, and his colleagues and friends, he has fought off near-suicidal depression since the accident, and has worked to recapture the most central thing of self, his mind. It was a major victory one morning when he woke up and remembered his own name. He has recaptured his speaking skills to the extent that 300 students pack his freshman chemistry classes at the University of Washington. Onstage his old persona seems to take over automatically, and he gives a performance that draws laughs, gasps, and jolts. It seems he remembers all the facts and theories and formulas of chemistry he knew in the 1960's, but is painfully relearning the advances since then. Students rate his lectures among the highest in the university's chemistry department.

None of this would have been possible without a remarkable wife and children who have struggled to adjust to a stranger. A genius with a national reputation as a volcanic and atmospheric chemist had been turned, emotionally and intellectually, into a near-infant. Dr. John Maxwell, his first neurosurgeon, said that the recovery of basic functions like talking and walking may be rapid, but that higher brain functions can take two or more years to come back, if at all. It would be interesting to know how Bill has been doing lately, as this was written eight months ago. Colin Bull, why don't you check Bill out for us and give us an update?

**THE ADMIRAL RICHARD E. BYRD MONUMENT RESTORATION FUND (N.Z.).** John Lenkey III, a Midlothian, Virginia man who is president of Global Business, an export, import and foreign investors consultant firm, went to Wellington, New Zealand on business last November, and decided to revisit the monument to the late Admiral Richard E. Byrd which the Kiwis had put up in 1963 to immortalize Byrd. Supposedly it is the only monument south of the equator which honors an American. To his dismay, John found the bronze plaques were missing, some rocks had been taken, graffiti had been applied, and the whole monument fallen into disrepair. So he went to the Government of New Zealand and to the American Embassy. The New Zealanders agreed to raise half the money needed to redesign and refurbish the monument and the grounds. Then he came home and organized a committee, with a goal to exceed the New Zealand funding. Among the early contributors was the National Geographic Society, and the figure above Gilbert Grosvenor's signature was \$16,000, which puts them into the realm of their rebuilding goal.

The bust will be restored, the plaques replaced, and the covering of the new monument will be scratch-proof acrylic tiles which will be painted to glow blue in daylight, representing the aurora australis. Wonder why blue for the aurora australis? Perhaps it will be a greenish-blue.

If you want to be included among the contributors, your check should be made out to the "Admiral Byrd Monument Fund" and sent to c/o John Lenkey III, 2121 Castlebridge Road, Midlothian, Virginia 23113. Administrative costs will not exceed eight percent of the contributions. Funds will be redeposited to the Account of the American Ambassador to New Zealand for disbursement. All donors' names will be permanently displayed on the monument unless not wanted. It seems to this soul that listing donors' names cheapens the whole production - why not just "family and friends", and leave it at that? People who make "significant contributions" - to be defined by the Committee - will get a full-color architect's drawing of the new monument, framed and with an acknowledgment card under glass, plus an official invitation to the rededication ceremonies in Wellington.

**RUSSIAN ANTARCTIC SCIENTISTS PUT A RUBLE VALUE ON THEIR SCIENTIFIC DATA.** Most of you have already read that 120 workers at five Russian Antarctic stations notified

the world that their homeland must sweeten the pot with higher salaries if they expect to receive real-time scientific data from them.

Walter Sullivan wrote in the New York Times of 23 June 1992, "In a statement signed by Dr. Vladimir Nazarov, leader of the Vostok station, the Russians cited their nation's severe inflation and said, 'The miserable salary of Russian polar explorers, working in the rigorous climate of Antarctica, is hardly enough for our families to even buy food. We cannot help them. We can only send moral support by telephone'." And they stopped sending scientific information to Moscow and St. Petersburg. Officials back home say they are aware of the protest, and have already increased the pay of those in Antarctica. However, the scientists' request to be paid in part in hard currency could not be met, said Yuri F. Zubov, head of the Committee of Hydrometeorology and Environment Monitoring of the Russian Federation.

Eleanor Randolph wrote in the Washington Post of 15 June 1992 that Russian Antarcticans are poorly paid by Western standards but are actually well off compared with other Russians. Top pay for station heads is 18,000 rubles (about \$150) per month. (Russian doctors make about 2,000 rubles per month; speaker of the Russian parliament gets a reported 14,000 rubles per month.) And as Aleksandr I. Bedritsky, first deputy chairman of the Committee for Hydrometeorology and Environment Monitoring, pointed out, "Their life is free," meaning they get their room and board free so their salaries can go to support their families back home. Bedritsky had one surprising statement, at least to this innocent abroad, and that was, "Now we are having difficulties with applicants." The answer to finding wintering-over personnel might be to open it up to women.

**SETTING THE RECORDS STRAIGHT ON NELSON ISLAND** (by Bernard Stonehouse, 30 April 1992). I am currently studying visitor impacts, especially tourism, which I met first in McMurdo Sound in the 1960s and more recently over three seasons along Antarctic Peninsula. This is a growing industry: though it seems to me to be in good hands at present, it could get out-of-hand if it is not well regulated under the Antarctic Treaty. My colleagues and I, based on the Scott Polar Research Institute, University of Cambridge, are gathering data on the industry and its methods, and suggesting way of guiding what many see as its inevitable development. These data are helping to provide the Treaty legislators with sound bricks for building.

My team includes research students from Australia, Denmark, India, New Zealand and the US, and I work closely with British Antarctic Survey, Instituto Antartico Argentina and Instituto Antartico Chileno. We seek funding mainly from trusts and other private sources, the bulk of which supports students in work on different aspects of visitor impact.

I spent just over one month this last season on Half Moon Island, accompanied by Indian researcher Anita Dey, and for part of the time by US researcher Debra Enzenbacher, who worked also on the passenger ships. Of course our Argentine hosts were friendly, informative and cooperative, but that was not where policy was made. Two Chilean biologists scheduled to join us were unfortunately unable to do so. We monitored fourteen visits from six ships, involving 2002 passengers, and collected over 2000 questionnaires which are currently being analysed.

Thereafter I talked in Santiago with the director of INACH and his advisors, and in Buenos Aires with the director of IAA and members of his staff. We agreed to join forces in an international operation for tourist monitoring, centred on a site at one end of the Harmony Point SSSI. I did not propose Harmony Point without the full agreement of the Chileans and Argentines, who have worked there over many years. They would not have agreed to its use if they did not judge it safe to do so. The three countries are seeking, through the Treaty, to vary the site's

management plan to include controlled incursions of tourists in a specified, demarcated area, for a restricted period, so that impacts can be measured and management procedures devised. Most of the SSSI will be retained as an untouched control area outside the experimental site, when it will be protected more rigorously than it is at present.

We are proposing a small research facility at the only permitted landing site, to augment and ultimately replace the present refuge. This will serve also as a visitor centre where information will be available. Staffed by researchers throughout summer, it will be one scientific station in Antarctica where tourists will always be welcome, because we shall be monitoring their behaviour. It will not be a hotel: there will be fairly Spartan accommodation for a small number of scientists and support staff, and no one else.

Our proposal bears no relation to what you say the Chileans have 'sort of done'<sup>1</sup> on King George Island, or what some old codger from Maine may have thought in 1957, what other Brits (of whom, incidentally, I am unaware) may be planning for South Georgia, or whatever other out-of-date nonsense your ear trumpet may have garnered. I'll be glad to give more details if you need them: it is all in the public domain. Just don't rely on your current informants, who seem intent on setting you up.

We considered over 20 other sites, including Half Moon Island, but rejected them as too small, too vulnerable, too damaged already, too little known over a long period, or otherwise unsuitable. Our project includes providing management plans for the fifty or so sites currently used for visitor landings in the maritime Antarctic, and devising a system of inspection to ensure that procedures on board all Antarctic passenger ships conform to those of the best. I gladly confirm that WWFNI supported this preliminary study.

**TO THE MEMBERS OF THE ANTARCTICAN SOCIETY** (by Stephen Warren, South Pole Station, 4 July 1992). The April newsletter of your Society, which arrived here on the winter airdrop, included an edited version of my report to NSF about the green flashes at sunset, together with a statement from the editor questioning my honesty. I am responding by offering more information about the green flash.

The shorter wavelengths of sunlight (blue and green) are refracted by the atmosphere through larger angles (i.e. the rays are bent more) than are the longer wavelengths (yellow and red). Therefore, as sunset is ending, when the upper rim of the sun is about to disappear below the horizon, the different colors set at different times. The last color to set is usually green, and sometimes it briefly appears separated from the solar disk (the green flash). Blue is actually refracted even more than green, but sunlight contains less blue light than green, and the blue is also scattered more by the atmosphere and thus lost from the solar beam. Therefore only rarely, when the air is exceptionally clean, can the upper rim of the sun appear blue (the blue flash).

The green flash is not visible at every sunrise and sunset; the refraction conditions have to be right. I had looked for the green flash dozens of times but had seen it only four times prior to the recent March equinox; each time it lasted about one second: from the hills above Boulder at sunrise over the Great Plains; from my kitchen window in Seattle at sunrise over a level cloud deck capping the Cascades; at sunset from a mountain ridge in Tasmania (this time the last light was blue); and over Lake Eyre in South Australia. On three of those occasions I used binoculars. I have not yet seen the green flash from an airplane, though on sunset flights I always request a west-window seat.

At South Pole the flakes we saw cleaving off the upper rim of the sun were all green, not blue. The green pyramid was visible without binoculars. I knew that eyewitness accounts are sometimes distorted, so I wanted to verify my description before sending it to NSF. I showed my report to several others who had watched the sunset on the evening of 21 March, and they were able to confirm its accuracy.

*(to be continued)*