THE ANTARCTICAN SOCIETY

905 NORTH JACKSONVILLE STREET
ARLINGTON. VIRGINIA 22205

HONORARY PRESIDENT — MRS. PAUL A. SIPLE

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Joint Meeting with The Explorers Club - Washington Group
and The Society of Woman Geographers

Around the World Under the Sea

by

Dr. Norbert Wu

on

Saturday evening, December 5, 1998

at

The Cosmos Club 2121
Massachusetts Avenue NW

Social Hour 6 PM - Dinner 7 PM - Lecture 8 PM

The cost of dinner, including tax and gratuity, is $45 / person Make check payable to ECWG, and send to Frank R. Power -- 13208 Glen Mill Road, Rockville, MD 20850-3708 (301-294-9377) before December 1st! No cancellations after November 30th!

Dress will be black tie, or dark suit, if you prefer.

(Parking free at Cosmos Club)

Dr. Norbert Wu, professional underwater photographer, led a team of four (himself; Dr. M. Dale Stokes, oceanographer; Dr. Leighton Taylor, marine biologist and writer; and Peter Brueggeman, Director of the Library, Scripp's Institution of Oceanography) diving in McMurdo Sound in the 1997-98 austral summer. Photos were taken on sixty-eight scuba dives, and on field excursions to Cape Royds, Cape Evans, Cape Bird and Cape Washington, Granite Harbor, the Dry Valleys, and on the sea ice edge of McMurdo Sound. Ernest Brooks II, President, Brook Institute of Photography, said, "Norbert is a true visionary with a magnificent sense of balance and design." For a partial resume of this most remarkable man, said by the Chicago Tribune to "combine the eye of the artist with the training of the marine biologist," turn to the bottom of page *2.*

We still have calendars! Please buy! See page 2!

You have not missed a Newsletter! The last issue, August No. 5, should have been August No. 1, as our calendar year starts with Midwinter Day and goes to the next Midwinter Day.

One thing we are trying out here is getting more inputs from more people for the Newsletters, so you will find some new names. In some cases, as in Robert Schwarz and Caroline Alexander, we will give you a thumbnail sketch of them, although with all the print Caroline is getting, you should know who she is. Plan now on attending the opening of her Shackle-ton exhibit at the American Museum of Natural History in New York City in early April next year. Our Society hopes to have a big shindig with an internationally-known authority on Shackleton speaking to us.

I am walking out on the Society again, but just for the winter season. I leave with great happiness, leaving this entire column in the hands of the very capable Kristin Larson. When I hear the call of the Antarctic, I must answer, as I know there will be a day when that call won't be coming in over my telephone line, as I will be seventy-five on our day of departure from Ushuaia. I have to stand on the deck of some ship, with my mouth agape, gazing again and again at the beauty of the Lemaire Channel; I have to stand on the shoreline of Circumcision Bay, Petermann Island, and wonder about Dr. Jean-Baptiste Charcot's POURQUOI PAS being tied up there; I have to stand again at Capt. Larson's crumbling stone hut on Paulet Island, and relive in my mind the incredulous story of Dr. Otto Nordenskjold's expedition; I have to go out to the hangar at Whalers Bay, Deception Island, and visualize what it had to be like for my old co-worker, Sir Hubert Wilkins, taking off from that very beach in front of me for the first-ever Antarctic flight; I have to stand on the burnt-out ruins of the Almirante Brown Station and wonder what in the world was in the mind, if anything, of the doctor who had the audacity to burn down the station, located on one of the most peaceful scenes in the whole world, the placid waters of Paradise Bay rimmed with beautiful, majestic mountains. I love to stand in the foot prints of Antarctic history. It will be a great winter/summer for me. And I will miss Christmas. Ha! Ha! Ha!

LAST CALL FOR ANTARCTIC CALENDARS FOR THOSE CHRISTMAS STOCKINGS. We ordered fewer calendars this year in order to get out of the begging business, but we still have sixty left, as we go to press. Order tout de suite, as we are pulling out of Maine, which is our 1998 distribution center, in mid-November, and we don't want to have to dump a load on Ruth's lap as we fly south. Mail your order, with check ($11 each) payable to Antarctican Society, to Ruth at 905 N. Jacksonville St., Arlington, VA 22205-1325. Some of you were disenchanted last year when the Kiwis started the week on a Monday, but they have their act back together, so the week starts on Sundays. Again the calendars are very nice, and the price is a real bargain, as we buy bulk and only mark them up pennies. Make our day - buy us out, NOW!

NORBERT WU - CINEMATOGRAPHER, PHOTOGRAPHER, AUTHOR - SPECIALIZING IN UNDERWATER PHOTOGRAPHY AND WILDLIFE: Biographical Sketch. In the course of his worldwide travels, Norbert Wu has been bitten by sharks, run over by an iceberg, stung nearly to death by sea wasps, and trapped in an underwater cave. He has photographed under water in nearly every conceivable locale, ranging from the freezing waters of Arctic and Antarctic waters to the coral reefs of the tropics. His writing and photograph} have appeared in numerous books, films, and magazines, including *Audubon, Harper's,*

International Wildlife, Le Figaro, National Geographic, Omni, Outside, Smithsonian, and the covers of *GEO, Natural History, Time,* and *Terre Sauvage.* He serves as contributing editor to *Photo Techniques, Nature Photographer,* and *Scuba Times.* The author and photographer of seven books on wildlife and photography, his photographic library of marine and topside wildlife is one of the most comprehensive in the world. He has worked as chief still-photographer for Jacques Cousteau's Calypso; as research diver for the Smithsonian Tropical Research Institute; and as cinematographer for numerous television productions. His background includes degrees in electrical and mechanical engineering from Stanford University and doctoral studies at the Scripps Institution of Oceanography. He is a technical, certified nitrox and rebreather diver, both of which allow extended bottom times and other advantages underwater. He co-authored the feature article on marine biodiversity in Encyclopaedia Britannica's 1996 *Yearbook of Science and the Future,* and he was recently awarded a National Science Foundation (NSF) Artists and Writers Grant to document wildlife and research in Antarctica. His recent projects include filming the revolutionary new *Deep Flight* submersible for National Geographic Television, filming tiger sharks for Survival Anglia, and filming attacking great white sharks for the PBS series Secrets *of the Ocean Realm.*

NSF NAMES NEW HEAD OF POLAR PROGRAMS. (John Lynch). The National Science Foundation (NSF) has named physicist Karl A. Erb to head its Office of Polar Programs. Erb will assume his new position on November 2, 1998.

In 1986, Erb joined NSF as a program manager in the physics division after a sixteen-year career in research and education at Yale University, Oak Ridge National Laboratory and the University of Pittsburgh. From 1989 to 1993, under two presidential science advisors, he oversaw the area of basic research in science and engineering at the White House Office of Science and Technology Policy. Erb has served as Senior Science Advisor at NSF since 1993. As part of the senior NSF management team, he has considerable familiarity with the management of polar programs. His experience has included representing NSF in the National Science and Technology Council review of the U.S. Antarctic Program, that resulted in the 1996 White House affirmation of the importance of the program to the nation.

Erb is recognized for his research in experimental nuclear physics, particularly in the areas of heavy-on science and nuclear molecular phenomena. He received his masters and doctoral degrees from the University of Michigan, and his Bachelor of Arts degree from New York University. He is a Fellow of the American Physical Society and the American Association for the Advancement of Science. He was recently recognized for his work in the public sector with the Presidential Meritorious Rank Award.

BONDING AT THE SOUTH POLE. Through a very circuitous route - Liberty Graphics in Liberty, Maine - we made contact with some awfully nice people at the South Pole, and they made our summer by e-mail communicating. The station leader, Robert Schwarz, a German, has provided a couple of inputs for this Newsletter. One, as you will see, is quite technical on one of their most glamorous studies, the AMANDA, and the other on one of their most fun activities, the 300 Club. Through Robert, we were able to borrow a video he made from within the old South Pole station last October, which was shown at the 40th reunion of those of us still living from the 1957-58 wintering-over crew. Looking at it, we're not even sure that we wintered over at the place!

The good thing about all the communicating we did was the great camaraderie that developed between us. There seems to be a bonding just because we all had experienced a winter at the Pole. Robert has a great, sincere love for history, history of the South Pole, and he hopes to extend his most elaborate and fantastic website — (http: //alizarin.physics.wise.edu/rschwarz) on the South Pole to include history.

He sent us an extensive annual summary of South Pole construction highlights for the last thirty years. We're not sure about this, but the interest might be out there for a symposium/reunion of just South Pole people, and, should it come about, it will be because of nice people like Robert Schwarz.

There is also another group of South Pole bonders - Tom and Gloria Hutchings, South Pole alumni, who are continuing their South Pole interests with The Antarctic Connection, P.O. Box 538, Jackson, NH 03846 — www.antarcticconnection.com . Gloria worked at the South Pole in the early 1990s in logistics, and Tom worked as a construction coordinator for ASA. In fact, he is still involved as a state-side contractor doing some "test builds." They also operate what amounts to a ship's store, and you can buy Antarctic baseball caps and other goodies from them. And they are sort of a South Pole Unofficial Clearing House, dispensing news on what goes on at the station, as well as monthly summaries of their weather. Their menu can be found by pushing the right buttons on http://www.listbot.com/. They have so many checks and balances confirming who you are that I threw my arms up in hasty retreat and signed off, but those of you with patience might want to join their club for "the chosen frozen."

AMANDA (Antarctic Muon and Neutrino Detector Array) - A telescope at the South Pole looking at the Northern Hemisphere (Dr. Gary Hill and Robert Schwarz). AMANDA is a neutrino telescope located at the South Pole. Instead of using light (Photons) like normal telescopes or radio waves like radio telescopes, it is using neutrinos. Neutrinos are subatomic particles and a lot of facts are still unknown about them. But it is known that their interaction with matter is very weak. This makes them very interesting, as they can escape from regions surrounded by dust or gas that would attenuate all optical or radio radiation. Thus, we can learn about regions where we may have no other observations available. The origins of these high energy neutrinos are unknown, but they are believed to be produced in very high energy particle interaction in objects like the cores of active galaxies, binary X-ray systems and near super-massive black holes or supernova explosions.

The weakness of the interaction makes neutrinos very hard to detect, because to detect a neutrino you need it to interact with matter. However, given a lot of neutrinos and a large target (like the entire earth), a reasonable rate of interactions is possible. Those neutrinos that interact with the earth produce muons, which, if produced close enough to the detector, may be sufficiently energetic to travel the remaining distance and be detected.

However, the interaction of cosmic ray protons and nuclei with the earth's atmosphere also produces lots of muons, some of which will travel down through the ice, and trigger the detector in much greater numbers than the neutrino-induced muons. So the detector works by using the entire earth as a filter for the atmospheric muons, i.e. we look down toward the center of the earth. That way we are sure any muon we see was produced by a neutrino. So we are actually observing the northern skies with a detector at the South Pole.

How does the detector work? So far there are 17 strings with about 550 PMTs (Photo Multiplier Tubes) in the polar ice cap. PMTs are light-sensitive devices. If they are hit by light (even a single photon), they give out a measurable electrical signal. The AMANDA-A array consists of four strings down to 1000m, with 20 PMTs on each string at the lower section of the string with a spacing of 20m between each PMT. The AMANDA-B array goes down even to nearly 2500m, and consists of four older strings like the A ones, six with 36 PMTs per string and a spacing of 10m between each PMT, and three new ones with 42 PMTs.

When charged particles travel through an optically-transparent medium like air, water, or, in our case, ice, and their speed is higher than the speed of light in this medium

the so-called Cerenkov effect occurs. The particle emits light, creating a cone-like shock wave in the same way a supersonic aircraft produces a sonic boom. Now, if this light cone travels through the array, different PMTs are hit by the light at different times. By analyzing the data one can reconstruct the trajectory of the muon and hence of the neutrino. A two-dimensional analogy would be a boat traveling on a smooth surface of a lake, with the waves created by the boat hitting a number of buoys on the surface. One would just measure the arrival times of the waves at each buoy, and thereby infer the path the boat took.

The times of arrival of the light cone at each PMT allow the determination of the muon path; this direction is closely correlated with the original neutrino path, and thus we can do directional astronomy. Our aim is to look for areas in the sky where we got a lot of neutrinos, and hopefully find correlation with astronomical objects. (For more information go to the AMANDA homepage - http://amanda.berkeley.edu)

300 CLUB (on a cold night in July - actually it was 21.07.97 — Robert Schwarz). Today twelve people joined the famous 300 Club, which means 300 degrees Fahrenheit temperature difference. The temperature outside finally dropped again below -100 F (73.4 C - with wind-chill it was -150 F and -100 C). We heated the sauna up to over 200 F, and got warmed up. After a couple of minutes we all ran outside just wearing boots, like nature created us. The moon was high up in the sky, and around every body was a cloud of steam. It was a lot of fun, and we took a couple of pictures of the steam clouds. Then we ran back to the sauna. We were out for a good minute, and it wasn't too bad, so we decided to make a run for the geographic pole. After warming up in the sauna and getting the cameras ready we went bursting out into the polar night again. One hand was protecting the "wing wang," and three of us were running to the Pole. The first half of the trip was good, but the breathing was quite hard because of the cold air and the altitude of 3000m (10000 ft). The last thirty meters I would have rather turned around, but there were only 30m of 230m (one way) to go. I looked around and two gasping figures were following me. We touched the pole and turned around. Now it would have been nice to have a nice warm parka or such stuff. But there were 230m back to the top of the hill in front of the entrance, and then down to it and back inside the dome to the sauna. I thought what a stupid thing to do, run around naked at -100 C (-150 F) wind-chill at South Pole in the middle of the night. Gasping for air I had to walk a couple of steps. The sweat on the back and butt was frozen and cracking during running. The dome was closer, but still about 100m to go. The cold was getting very, very intense, and you only wanted to get back in. I can't really describe the feeling. On one side you really didn't feel any pain (not until you were back to the sauna), but on the other side you could feel the freezing cold, not a slowly creeping cold you normally feel with clothing on; the cold was just there, all over you. There was the slope down to the entrance through the door, up the stairs back into the sauna. It was still at 200 F (93 C), but it felt cold, and even the hot wood felt cold. My ears were white, and I had to cough for a couple of minutes, but then we took the victory shots of all of us in the sauna and in front of it. Now, nearly 24 hours later my ear; are still glowing in the dark, but they feel already much better. It was great fun, and next time we'll probably do it again, not running to the Pole, but just running outside. It was a lot of fun, and my ears are back to normal.

SOUTH POLE STATION MODERNIZATION - A Project Update provided by Jerry W. Marty, NSF Construction and Operations & Maintenance Manager for South Pole Station. This year NSF's South Pole Modernization Project (SPSM) enters its second field construction season, and is proceeding on schedule and within budget. The modernized station will be an elevated facility (see architects' rendering) that is designed to accommodate 110 personnel (46 scientists and 64 station operations personnel). The flexible

design will allow for expansion to accommodate 150 people should future growth be accessary. The project will also provide infrastructure upgrades for fuel storage, garage/shops, and a new 750 kW power plant capable of expansion to 1 megawatt peaking capability.

The design efforts are scheduled to be completed this coming March, and procurement and delivery of materials is proceeding smoothly. First stop for the approximately 20 million pounds of construction material (purchased and shipped over a period of several years) is the USAP cargo processing facility at Port Hueneme, California. From there consolidated crates are transported to McMurdo Station on the annual re-supply ship, and then flown to the South Pole by LC-130 Hercules aircraft. It is estimated that the project will require 800 LC-130 flights to South Pole throughout the duration of the project.

This coming season the construction work force, which includes added personnel to support the construction population, will be 80, and the winter construction crew will be 18. The primary focus of the construction effort during the summer months will be the replacement of the existing nine rubber fuel bladders (25,000 gallons each) with 45 new steel tanks (10,000 gallons each). Also this summer, the new garage/shop facility building (shell only) will be constructed, and its interior will be completed during the winter months.

Construction of the new power plant will begin in the summer of 2000 and be completed the following year. Construction of the SPSM elevated facility will begin in 2001, and the total project will be completed in 2005. The SPSM project budget is $153m with $19m remaining to be funded.

CAROLINE ALEXANDER COMES TO CENTER STAGE. We became aware of Caroline Alexander last spring when she wrote our Society and said that she was the curator of a new exhibit on Shackleton to be held at the American Museum of Natural History in New York City, an exhibit which will officially open in early Aprill 1999. Recently she wrote an article in the November 1998 issue of the National Geographic Magazine on "Epic of Shackleton." And the October 26th issue of TIME Magazine has an article on her new book, *ENDURANCE, Shackleton's Legendary Antarctic Expedition,* which should be published by Knopf and out on the streets by the time you read this. And a previous work, a children's book on Shackleton entitled *Mrs. Chippy's Last Expedition* was her grand entrance into Shackleton Mania. One might say that there is now a strong umbilical cord between Squam Lake, Holderness, New Hampshire where Caroline lives on True Farm, and Sir Ernest's grave site at Grytviken, South Georgia.

But who is this woman who has taken over center stage with Sir Ernest? We asked her, "Who are you, anyway?", and her reply was, "I'm Anglo-American (dual citizenship), and a classicist by training. I received my doctorate at Columbia University. My area of specialization is Homeric epic, which obliquely equips me for the Shackleton epic! I am a freelance writer. I lived and taught in East Africa for some years. I have written for the *Smithsonian, National Geographic, Outside,* et al. The new book on the ENDURANCE expedition is my fifth book."

AMERICAN MUSEUM OF NATURAL HISTORY IN NEW YORK CITY PRESENTS THE ENDURANCE: SHACKLETON' LEGENDARY ANTARCTIC EXPEDITION, APRIL 10, 1999 - MID-OCTOBER 1999 (Caroline Alexander), "October 26, 1915; Latitude 69, 8 S; Longitude 51, 28 W; Temperature 0 to -15. I shall ever remember vividly this afternoon. The dogs, instinctively conscious of the imminent peril, set up distressed wails of uneasiness and fear. Sir Ernest, standing on the poop, calmly surveying the movements of the ice, and giving an occasional peremptory order ... At 6 p.m., the pressure develops an irresistible energy ... the ship groans and quivers, windows splinter, whilst the deck timbers gape and twist. Amidst these profound and overwhelming forces, we are the absolute

embodiment of helpless futility." (From the diary of Frank Hurley, photographer of the ENDURANCE)

The story of how Sir Ernest Shackleton and his men survived as castaways in Antarctica is one of the very greatest in the annals of exploration. After five months on disintegrating ice floes, the 28 men took to the three lifeboats they had salvaged. Eventually two open-boat journeys were made under appalling conditions; the second of these — a winter journey skirting the notorious Drake Passage in the 22-foot JAMES CAIRD — is considered to be one of the most remarkable in maritime history.

On board the ENDURANCE was a talented Australian photographer, named Frank Hurley. When the ship went down, he dove into the icy water to retrieve a hermetically-sealed cannister containing his glass plate photographic negatives. Shackleton, relaxing his rule that only two pounds of gear be allowed for each man, allowed Hurley to save his best images. Hurley's diary entry for November 9, 1915, records that he and Shackleton spent the day "selecting the finest of my negatives from the year's collection." They selected 120, destroying the remaining 400, so that Hurley would not be tempted to retrieve them again. The chosen negatives survived ice, open seas, and burial under the snow of a desolate island.

On April 10, 1999, the American Museum of Natural History in New York City will present *The ENDURANCE: Shackleton;s Legendary Antarctic Expedition,* a comprehensive exhibition of Hurley's salvaged ENDURANCE photographs. The exhibition, which will run through mid-October 1999, will also display the few artefacts to survive the expedition — including the 22-foot-long JAMES CAIRD, which in the winter of 1916, battled sixty-foot waves to rescue all of Shackleton's men.

PENGUIN PRATTLE by Kristin Larson

NEW OLD PRATTLE. Much new news to report on this month. Not only are we at the threshold of a new Antarctic field season with its uncharted discoveries, fresh faces, and unimagined anecdotes; the Office of Polar Programs has a new Director, and the South Pole is embarking on an all new look. One thing is not new, Antarctic's weather still challenges even the best-laid plans; foils the most accurate weather forecasts; and leaves dozens "grounded" in New Zealand. Hurry-up-and-wait has been a common refrain for many early season travelers to McMurdo this October. Thus no matter how we travel to Antarctica, or in what type of structure we take refuge, Antarctica's weather holds us both captive and captivated. Could it be this lack of predictability that makes us yearn to return?

SCIENCE HIGHLIGHTS (with help from NSF's Office of Legislative & Public Affairs). After being stymied by weather and ice conditions for the past two years, the Cape Roberts project will again attempt to collect cores from the Ross Sea floor. This international team, which involves scientists from the United States, New Zealand, Italy, the United Kingdom, Australia and Germany, plan to drill through their sea ice platform and 170 meters of water into the underlying sea floor. Sediments and fossils in the collected cores should provide information about conditions 25-70 million years ago. This period is of particular interest because it may have been the last time that earth experienced temperatures as warm as those expected over the next few centuries.

This December and January a big balloon will circle the Antarctic continent at an altitude of approximately 120,000 feet, born on circumpolar air currents for about two weeks before being parachuted to the ice for recovery. The balloon is supplied and launched by NASA, and its payload will measure temperature variations in cosmic microwave background radiation. Details about these relic photons left over from the beginnings of the universe will help scientists discriminate among various models of the cosmos.

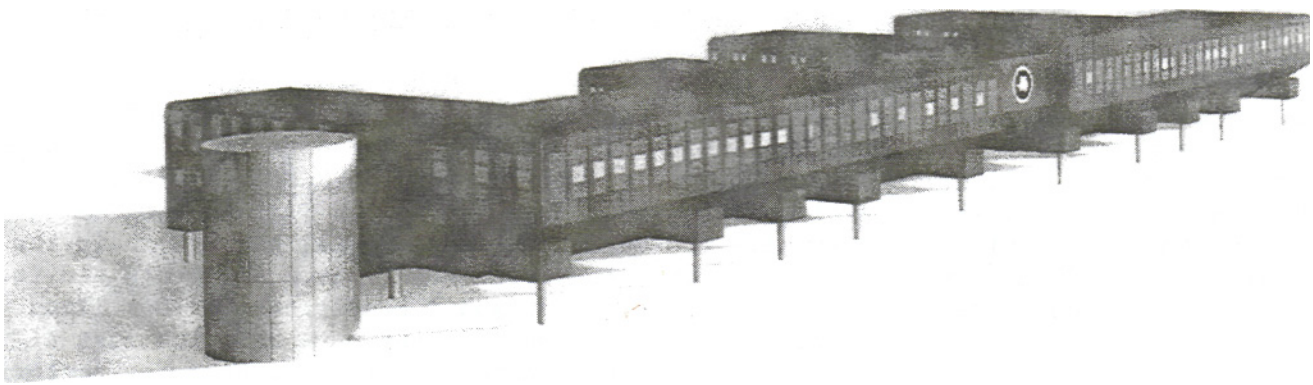
In conjunction with the Argentine Antarctic Institute, U.S. researchers will be excavating Mosasaur and Plesiosaur fossils and searching for Hadrosaur fossils on Vega Island near the Antarctic Peninsula. The fossils provide important information about the geographic distribution of these marine reptiles. In particular, because Hadrosaurs were large land-dwelling, plant-eating dinosaurs, the Antarctic demonstrate a significant land bridge between the Americas and Antarctica, and also provides evidence of a complex and extensive plant ecosystem on land in the region which was then at a high southern latitude, not unlike its current position.

Ice core drilling will continue this year at Siple Dome, in West Antarctica, where a 1,000-meter core will be extracted and examined for clues about past climate conditions. Also at Siple Dome, researchers will try to determine the dynamics of ice flow, a topic critical to understanding the stability of the ice sheet. The West Antarctic Ice Sheet, which rests on thin continental crust, may be an important contributor to a future global warming-induced sea level rise.

The R/V LAURENCE M. GOULD will have its first full season this year. The research vessel will embark on cruises in support of ultraviolet research, Long Term Ecologica] Research, marine geology and geophysics, as well as providing logistic support to Palmer Station. The 230-foot long ship is capable of breaking ice one foot thick.

PENGUIN PAPARAZZI. Seventh Continent news: CBS will make programs for evening and weekend morning shows, and "60 Minutes." Also on-site to catch breaking stories will be staff from The Washington Post, the Knight-Ridder news service, the New Scientist, and USA Today's weather editor.

LIKE BEING THERE. A new interactive CD-ROM entitled *Wildlife of the Deep Antarctic* takes you and your armchair into the midst of Antarctica's penguin and seal colonies, and nudges you up to the edge of the frozen sea as giant killer whales rise out of the water, only inches away. Two "ice veterans" share their best images (both video and photos), which are accompanied by sounds, narration and natural history notes. The only thing missing is wildlife odors...smart choice! The CD is available from MastroMedia by phone (760-434-6110) or on the worldwide web (http://www.antarctica online.com).



Architectual Design (Ferraro-Choi & Associates)
of the new South Pole Station (see pages 5-6)