www.polar.org/antsun
October 29, 2000

The Antarctic Sun

Published during the austral summer at McMurdo Station, Antarctica, for the United States Antarctic Program

Curtains for the Playhouse

Workers watch as gusts of wind flatten the remains of Building 64, also called the Playhouse. They had been tearing down the 1950s-era Quonset hut (*see story on page 6*) when a powerful storm hit McMurdo Station. Bad weather and whiteout conditions grounded flights for three days straight, as winds reached nearly 60 miles per hour. Photo by Josh Landis.

QUOTE OF THE WEEK

"It's socially unacceptable."

- Photographer and filmmaker Norbert Wu, on unpartitioned toilets in dorm 203B, where he and his crew stayed for a month.

INSIDE

Waste not wanted

By Jeff Inglis
Sun staff

McMurdo Station is the largest human settlement on the continent of Antarctica. More than 1,000 people will call it home this summer.

It's an around-the-clock operation that generates sewage 24 hours a day. That waste is piped into the ocean less than 200 feet from the shoreline.

Two researchers are studying the impact the sewage outflow has on the McMurdo Sound ecosystem and on the quality of drinking water at the station.

John Lisle and Jim Smith are examining samples of ocean-floor sediment, the seawater, Weddell seal feces and McMurdo's drinking water for evidence of human bacteria and viruses.

The first two are primary sources for a baseline indicator of how much pollution the sewage is introducing into the slow-moving ocean off McMurdo Station.

Seal feces help show the degree to which human bacteria have become part of the ecosystem, possibly causing disease in the seal population.

The drinking water studies are the first to test for viruses in McMurdo's fresh water supply. The station's water is regularly tested for bacteria and other contaminants, including lead.

see Waste on page 5

News In BRIEF

Antarctic flyers win national recognition

The 109th Airlift Wing, New York Air National Guard, was awarded one of five Air Force Chief of Staff Team Excellence awards in September. The award recognizes team performance in a large-scale, inter-agency project, according to Chief Master Sgt. Charlie Lucia.

The project for which the Air National Guard unit won the award was its successful transition from the Navy to the Air Force of command of Operation Deep Freeze.

"The challenge for us was to have the mission completely transferred to us from the U.S. Navy in a three-year period," Lucia said. "The goal was to reduce the cost of the mission to the NSF."

The award is a national award, given to the top teams out of all government agencies and departments, as well as civilian contractors, who deal with the Air Force.

"It's only the second time that an Air National Guard unit has received the award," Lucia said.

The 109th's project required coordination of the air wing with NSF, the Coast Guard, NASAand other federal agencies as well as multiple civilian contractors, including former lead contractor Antarctic Support Associates, Lucia said.

Lucia was careful to point out that the success of the Air National Guard in Antarctic flying should cast no shadow on the Navy's VXE-6 unit, which flew for the Antarctic program for over 50 years.

South Pole Station opens

Amundsen-Scott South Pole Station's winter season ended Monday, with the arrival of two LC-130H Hercules at the station closest to Earth's axis.

The planes dropped off 78 people to start the Pole's summer season, and brought back four of the winter-over crew, according to air services representative Jennica Burk.

As of Saturday, the station's population was 162, after a winter with the population of about 50 people.

According to planning documents, the station will be home to more than 200 people for most of the summer season, with construction crews occupying a large share of the sleeping space on the station.

The crews will continue work on a multi-year project to build a new set of station buildings and support equipment, highlighted this year with a new power plant and a above-snow structure which will house personnel in the coming winter season.

NSF gets record budget boost

President Clinton has approved a multi-agency spending bill that gives the National Science Foundation its largest budget increase ever. The Senate passed the fiscal year 2001 agreement earlier this month.

It sets aside $4.424 billion for the NSF, $526 million more than the previous budget.

"The funding recommended in this bill will benefit the nation by enabling new discoveries and innovations across the frontiers of science and engineering," said Rita Colwell, NSF Director.

"This increase also puts us on the path towards doubling the NSF budget in five years," she added. It's a goal endorsed by more than 40 lawmakers.

The Polar Programs component of the spending agreement – which includes the U.S. Antarctic Program – amounts to $275.6 million.

took an act of Congress

ICE MEDALS GO TO THOUSANDS

By Josh Landis
Sun staff

The challenge of living and working in Antarctica varies from job to job, but in the eyes of Congress, it's all worthy of recognition.

The Antarctica Service Medal was created by Congress in 1960 for "each person who serves, or has served, as a member of a United States expedition to Antarctica."

It can take up to a year from the end of a season for a participant to receive the medal, although future processing times will likely be shorter. Civilian workers for the 1999-2000 U.S. Antarctic Program are scheduled to have theirs delivered to their home addresses sometime this austral summer.

Unlike most medals, it is awarded to non-military people and members of the Armed Forces alike. The regulations simply require that a person spend 30 days or more south of 60 degrees south latitude on a government-affiliated mission. The time can be on a station or a ship – a month straight or cumulative.

"Working down there is a challenge, and this is a way of recognizing that," said Nadene Kennedy, National Science Foundation polar coordination specialist.

Only one medal is awarded per person, regardless of how many times they head south. Those who spend a winter in Antarctica receive additional bars to pin above the award.

The NSF processes the awards for all civilians, passing them to the U.S. Antarctic Program contractor – currently Raytheon Polar Services – or a science event's principal investigator for distribution. The military manages its own distribution.

The medal is struck in bronze and shows a man dressed in a parka, bracketed by the words "Antarctica" and "Service." The figure's clothing is modeled after the uniform worn by Adm. George Dufek, who was the operational leader of the Deep Freeze expeditions of 1955-57.

On the reverse side are the words, "Courage, Sacrifice, Devotion." The ribbon has its own significance. The black and dark blue outer bands comprise five-twelfths of its width, symbolizing five months of Antarctic darkness. ■

web sites of the week

South Pole sites

• www.southpolestation.com
Bill Spindler's site about history of the South Pole, current news and future plans.

• www.spole.gov
The official web site of Amundsen- Scott South Pole Station, which is housed on a server at the Pole and is only available during its window of satellite connectivity.

• oae_99.tripod.com
Juan Reyes spent last summer at Pole and has created this web site about his experience.

The cat in the Cat
Dave Carpenter spent Saturday dressed as "Tigger" for Halloween. Here he drives a forklift moving cargo around McMurdo Station. Photo by Jeff Inglis.

Corrections

In last week's Science Roundup, the Sun stated the International Trans-Antarctic Scientific Expedition (ITASE) would be traversing parts of East Antarctica. ITASE will be based at Byrd Surface Camp and journey in West Antarctica.

The article on the American Polar Society incorrectly named two men as being in the first party to winter at the South Pole. Dick Bowers and Charlie Bevilacqua were part of the crew that began building the first station there in1956.

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the week in weather

around Antarctica

McMurdo Station
High: 21F/-6C
Low: -27F/-33C
Windchill: -81F/-63C
Wind: 58 mph/93 kph

Palmer Station (Saturday)
High: 35F/2C
Low: 28F/-2C
Wind: 5 mph/8 kph

South Pole Station
High: -40F/-40C
Low: -74F/-59C
Avg. temp: -58F/-50C
Wind: 21 mph/34 kph

around the world

Saturday's numbers

Bangalore, India
High: 87F/31C
Low: 62F/17C

Helsinki, Finland
High: 46F/8C
Low: 41F/5C

Rio de Janeiro, Brazil
High: 74F/23C
Low: 67F/19C

Kingston, Jamaica
High: 90F/32C
Low: 76F/24C

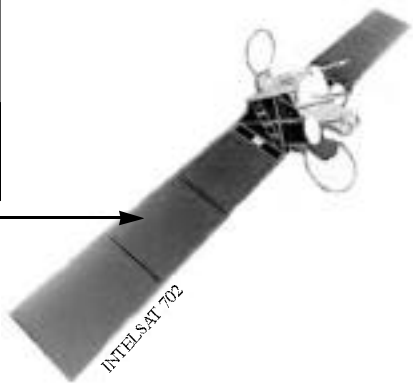
Truth or Consequences, N.M.
High: 60F/16C
Low: 38F/3C

Yakutsk, Russia
High: 8F/-13C
Low: -10F/-23C

CPR

The Antarctic Fire Department is holding American Heart Association CPR certification courses 7 to 9 p.m. Mondays at the firehouse. Free.

heaven hookup



Antarctica's link with the outside world gets an attitude (and longitude) adjustment

By Josh Landis
Sun staff

As McMurdo Station settled in for another night of sleep on Monday, a delicate and complex maneuver was taking place high above the Pacific Ocean. The satellite that connects the station with the rest of the world was being repositioned in its orbit. It was a four-day process that would be watched by people from Antarctica to Ames, California, from Japan to Juneau, Alaska. INTELSAT, the corporation that controls the satellite, was moving the "bird" aside to make room for a new one.

> "Any time you're nudging a satellite there's a risk of losing control."
>
> *- Jim Johnson, head of information technology, McMurdo Station*

The INTELSAT 702 satellite soars through space more than 22,000 miles above the Equator. It's moving at a blazing speed, but because it keeps perfect time with the Earth's rotation, it appears to be standing still. And it's not alone. Astring of geostationary satellites hovers permanently over roughly zero degrees latitude, channeling information all over the world.

But the one that matters most to U.S. Antarctic Program is 702.

"It's critical," said Information Technology head Jim Johnson. "We would feel a major impact without it."

All the phone calls we make, every e-mail we send, each television program we watch through the armed forces network and every web page we browse goes through 702. There are science events with full-time data uplinks. NASA engineers are continuously linked to the high-flying data carrier.

Without it, we would all but lose our voice to the outside world. There is a backdoor through another satellite that links up to Christchurch, but the connection stops there.

It's understandable, then, that the information technicians watched the repositioning very carefully. The first half of the process was a controlled burn. Small rockets on the satellite fired to change its course. The second part involved stopping the craft's movement.

"Any time you're nudging a satellite there's a risk of losing control," said Johnson. "You could over-burn and go too far. There are a number of things you have to be concerned about."

From this spot on the globe, 702 is "visible" just three degrees above the horizon. Even a slight movement north could put it out of view, and McMurdo would fall silent.

Johnson and senior communication technician Bruce Blackburn waited patiently as INTELSAT shifted 702's location one degree to the west.

"I was sleeping lightly, half-expecting my pager to go off," Blackburn said.

A recent mishap that affected South Pole Station had reminded everyone how much was at stake. One of the four satellites Pole relies upon began tumbling in space. NASA was able to gain control of it before it wobbled out of its orbit.

see Link on page 7

orbiter info

- INTELSAT 702 was launched into orbit June 17, 1994.
- It orbits 22,366 miles (36,000 kilometers) above the Equator.
- It moves 6,900 mph (11,105 kph), but appears stationary relative to Earth's rotation.
- It generates 3.3 kw of electricity from solar power.
- INTELSAT built the first global satellite communication system in 1969.
- It carried pictures of the Apollo lunar landing that year.

Waste

from page 1

The three major indicators the pair are looking at are fecal coliform bacteria, a common indicator of water quality used in judging safety of beaches and shellfish, clostridium perfringens, a bacterium associated with human sewage, and human enterovirus, which is found in human feces.

Seal exposure

Lisle and Smith will compare the genetic material in bacteria in sewage and in similar bacteria in seal feces to see if the human bacteria are exchanging genetic information with bacteria in seals.

"Nobody knows if seals normally have clostridia," Lisle said. He said they are also trying to find some seals that would not have been exposed to human waste, to give them a baseline level of clostridium bacteria in seal feces.

They hope to learn whether human diseases are being transmitted to the seals.

Two teams of researchers studying Weddell seals in McMurdo Sound are helping the pair by collecting samples of seal feces.

Outfall sampling

Science support diver Rob Robbins is collecting samples of water and the ocean floor around the sewage outfall.

Previous work has shown clostridia in sediment layers containing fecal coliform, and defined the physical extent of the pollution from the sewage outfall.

One of the problems was the concentration of waste in a location where the water doesn't do much to dilute it.

"There aren't very high current speeds here,''Smith said.

The end of the pipe, Robbins said, is 180 feet offshore in an area where the bottom is 60 feet deep. The pipe is raised four feet off the sea floor.

The sea urchin *Sterechinus neumayeri* camouflages itself with debris from the ocean floor. In the center of this photo, one tries to hide under a panty liner near McMurdo Station's sewer outfall. Photo by Rob Robbins.

Since the new Crary aquarium was built five years ago, it flushes 250 gallons of cold seawater through the system each minute, Robbins said.

It used to be that the pile would grow over the course of a season to the height of the pipe. Now, Robbins said, with the increased flow from the aquarium in Crary, the waste has spread more thinly over a large area.

"Now it's this huge field of effluent. It's mostly poop out there," Robbins said. "Most of the pieces are about as big as your fingernail."

Robbins talked about the spiny sea urchins that like to try to camouflage themselves with debris from the ocean floor. Normally, they use other animals or bits of coral or other normal sea-floor debris. Near the outfall, though, Robbins said, "You see them with pretty interesting things."

"I like diving at the outfall," Robbins said. "You see things you'd never see anywhere else."

Drinking water quality

The sewage plume extends beyond the intake for McMurdo's water supply, but this has not been a problem in the past.

"The drinking water quality's always been fine," Smith said. But they are testing the water in a new way.

"This is the first time that viruses have been looked at," Lisle said.

Both are clear, though, about the outfall's role in transmitting contagious disease on the station.

"You can't get the Crud from the sewer," Smith said.

The samples of drinking water will be sent to the University of Arizona for analysis of viral presence; the results will not be available until the scientists return home.

Sewage treatment

"With the Antarctic Treaty, all the treaty signers are held to various standards for pollution and waste," Smith said.

Some Antarctic bases do treat their waste already, including an Australian base, Smith said. New Zealand is planning to build a sewage treatment plant at Scott Base. McMurdo's current macerator system meets the treaty requirements.

"Doing sewage treatment down here is a real challenge," Smith said. Other places, he said, use big lagoons or oxidation ponds.

"You can't have that here. It'd just freeze solid," he said.

Blasting began last week for McMurdo's new sewage treatment plant, which will be running in 2003, said NSF facilities manager Frank Brier. The sludge from the plant, Brier said, will be sent back to the U.S. for disposal. The water leaving the plant will be treated to kill viruses and bacteria to prevent further pollution of the ocean.

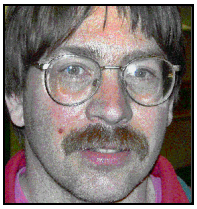
"What is discharged (from the plant) is not drinkable but it's clean," Brier said. ■

Highway One

The continent's population is growing with each arriving flight. WIthin weeks most stations and camps will be close to their summer peaks.

What are signs of overpopulation in Antarctica?

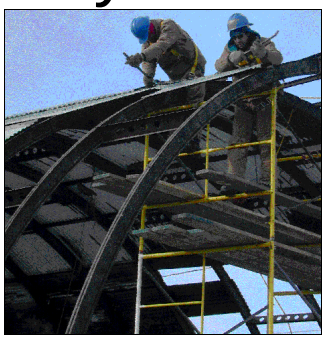
"When people are competing for bug juice."
Ginger Alferos
galley



"Sunrise."
P.J. Charpentier
winter-over computer guy

"When there's more people in the costume closet than are in the galley at lunchtime."
Lynn Sprowles
recreation

Playhouse yields to communications building



Charlie Blackmer, left, and Chris Craver strip metal sheets from the roof of the old playhouse. Photo by Jeff Inglis.

By Jeff Inglis
Sun staff

Construction crews this week tore down the McMurdo Station playhouse, also known as Building 64, with a little help from the wind in Thursday's storm.

Built in 1958, it was one of the original station buildings. It was the same age as the gym, the bowling alley/ceramics room and cargo building 73. The Mechanical Equipment Center, building 58, was also built that year.

The metal Quonset hut known as the Playhouse was used for many things during its life.

It was used as a steel shop during the construction of the Crary Lab, a warehouse for the station store, winter storage for heavy equipment, and a home to the general field assistants in the 1980s, McMurdo operations manager Bill Haals said.

He also remembers when the building was shortened by about 15 feet, resulting in an informal name change for Building 64.

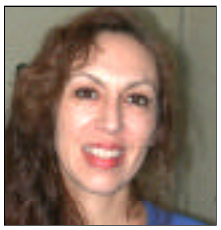
"It was called 'Building 63 and fifteen-sixteenths,'" Haals said.

The playhouse was also used as a temporary

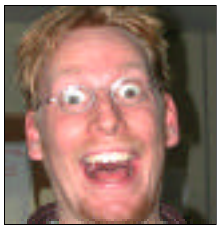
see Playhouse on page 8

Guess whose tattoo?

Match the tattoos to their owners.
See next page for answers



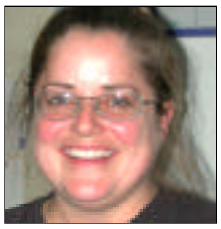
Robin



Eric

Cicely

David



Karla

Kat

Pauli

Rob

Josh

d-r-r-r-r-uuuumroll...

The following matches tattoos to owners, gives location of the tattoo, name of the tattoo parlor if available and a brief explanation for the tattoo.

Eric Sturm, 24. Right arm. St. Louis. "It was kind of a Mother's Day present. My mom loves my tattoo."

Robin Lovato, 41. Upper left thigh. Got tattoo in Christchurch at Down Under Tattoos. "Roses. I have a passion for them.''

Cicely Wingate, 25. Back.. Moscow, Idaho. Cicely had been on crutches for eight weeks after knee surgery and needed a "release."

David McPike, 23. Back. Denver. Bolder Ink. He got the idea "from fantasy novels I used to read. I wanted something kind of surreal."

Karla Hardy, 33. Lower back. The Emporium in Denver. This is Karla's third eagle tattoo. "It's kind of addictive. I love eagles."

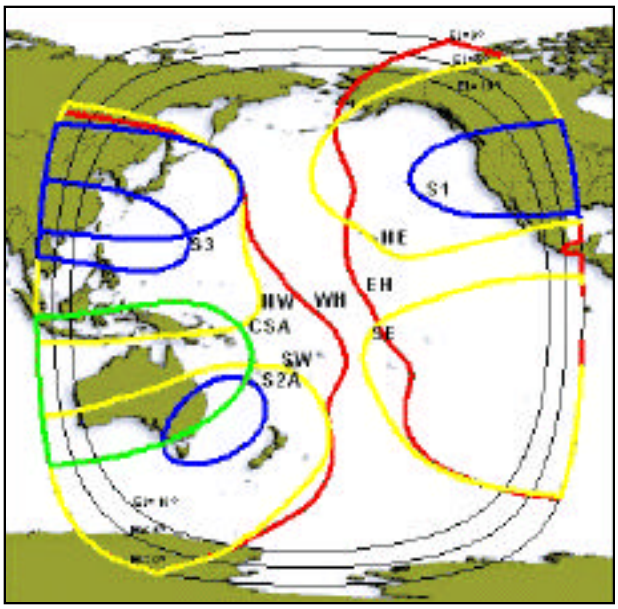
Kat Locke, 28. Lower back. Atlanta. "I knew I wanted it. I waited three years for it. The time was right."

Pauli Dietsche, 32. Upper back. Talkeetna, Alaska. This "symbol for eternal life" is Pauli's second tat - too and covers his first, a symbol for the Klingon Empire from Star Trek, a mark he explains this way: "I was young. I was drunk."

Rob Yeomans, 29. Right arm. Christchurch. It's homemade. "My mate got the same one on his chest." Neither tattoo is complete, how - ever. Their needle broke before they could finish tattooing each other. Yeomans' tattoo reads "Hard" rather than "Die Hard."

Josh Morton, 19. Chest. Painless Steel, Missoula, Montana. "I got the joker because my name is Josh. 'To josh' means to joke. Plus I like the design."

Link



A map shows 702's "footprint," spanning from the Arctic to the Antarctic. McMurdo Station lies at the outer limit of the satellite's southern range. Image courtesy of INTELSAT.

from page 4

But at McMurdo there were no emergency pages. The repositioning of 702 went as planned. The only glitch was a 15-minute interruption in Internet service, which Johnson said could have been caused by the move.

The satellite is just one point in the transfer of information to and from McMurdo.

On this end, it all gets funneled into a microwave dish behind the Berg Field Center. From there the data's transferred a little over 20 miles south to Black Island. It then travels via a 36-foot (11-meter) dish up to the satellite. Solar cells, wind turbines and generators supply the electricity needed to power the link. It's surprisingly little.

The power needed to support the link is surprisingly little, about the same amount used by an electric space heater.

"We pull about 1,500 watts pretty well full time, which is about the amount of power used by an electric space heater," Blackburn said.

Regardless of where in the pipeline it is, all the data must be bundled into a package that can be carried by a high-speed, digital connection. The U.S. Antarctic Program pays for a T-1 line that ends up in Brewster, Washington. When the information arrives, it's split into its various forms and shuttled on to the final destinations.

It's a long way from Antarctic communication of less than a decade ago, when there was no e-mail, no web surfing, and the only hope of a phone call from McMurdo involved a ham radio patch and all sentences ending with the word, "Over." ■

OUR ANTARCTIC WEEK

Sunday Oct. 29

• Science lecture: "Dry Valleys LTER: Where are we after eight years?" W. Berry Lyons, 8 p.m., galley

Monday Oct. 30

• Movie Night – "Mystery Man," 8 p.m., galley

Tuesday Oct. 31

• Lecture and discussion, "The Reality of Dreams," with Jack Haller, 8 p.m., Coffee House

Wednesday Nov. 1

• Science talk: Dry Valleys LTER. W. Berry Lyons, 7:30 p.m., Crary conference area

Thursday Oct. 26

• Acoustic night, 8 p.m.,Coffee House

Friday Oct. 27

• Swing dance lessons, 7:30 p.m., gym

Saturday Oct. 28

• Scott Base "P" party: come dressed as something starting with the letter "P," 8 p.m., Scott Base

Playhouse

from page 6

heavy shop in 1982-83 after fire destroyed the regular heavy shop.

"It's been used for a lot of different things," said McMurdo construction coordinator Woody Haywood.

Now, however, the area will be used to build a communications center, consolidating Internet, telephone and satellite operations. Those facilities are now spread throughout town.

"We're creating a new building that will be the hub of communications at McMurdo," Haywood said.

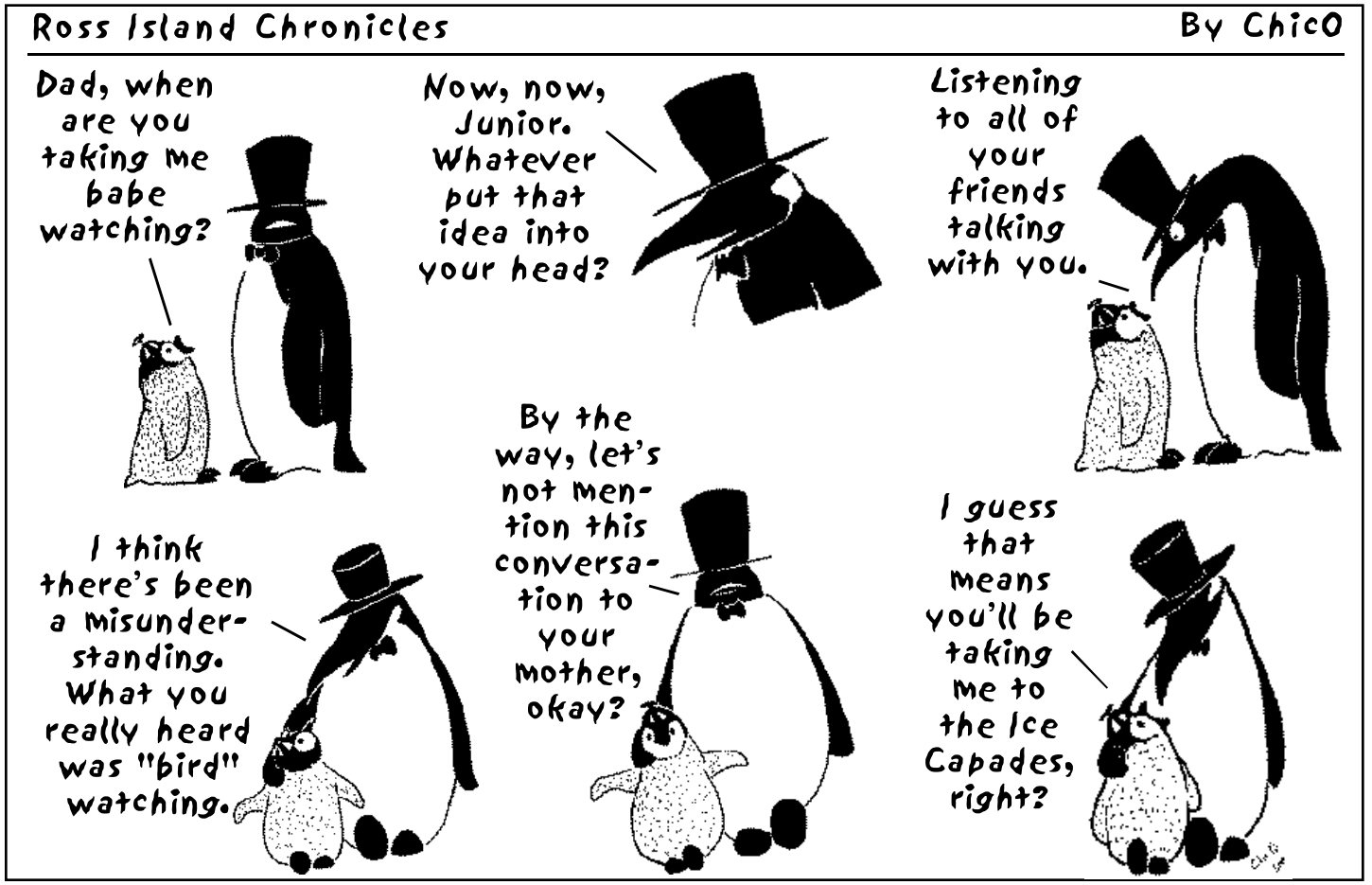
> "We're creating a new building that will be the hub of communications at McMurdo."
>
> *- Woody Haywood, McMurdo construction coordinator*

Construction on the new building will begin during the winter. Until then, the workers will clear the site and prepare it for new construction.

The workers, Haywood said, haven't found any material of historical significance, though he said they might when they tear up the floor later in the season. He said the crew would help preserve anything they find.

"When we do find some of that old stuff we just throw it in the bars so people can look at it," Haywood said.

The workers are on the South Pole construction crew, working while they're in town, before heading to the Pole. When they go, Haywood said, McMurdo construction workers will complete the project. ■



Coolest CAMP AROUND

By Beth Minneci
Sun staff

With measures of dread and enthusiasm, each year 450 people, or about one-third of U.S. Antarctic Program participants, undergo 30 hours of outdoor survival training.

In what's commonly called Happy Camper School, field guides teach students skills such as building snow shelters, using radios and recognizing signs of hypothermia. Then they leave campers to fend for themselves overnight, armed only with cold weather clothing, sleeping bags, freeze-dried meals and tiny gas stoves.

"This is not boot camp,'' lead instructor Ted Dettmar tells his students, in an effort to make them feel at ease. "We're not here to make you miserable."

Still, it's a harsh test. Temperatures routinely fall below zero Fahrenheit at the camp, located on the ice shelf about five miles from McMurdo Station. "It's tough,'' says camper Chuck Kurnik, who shivers uncontrollably while trying to light a stove for hot water. "The cold is relentless. That's the thing.''

The course is required before a person can go to field camps. In addition to practice with survival kits, the experience makes people aware of their mental capacity in a survival situation, Dettmar says. ■

"This is not boot camp. We're not here to make you miserable."

- Ted Dettmar, field safety instructor

Below: Brett VandenHeuvel and David Story rest on a snow bench inside a quarry, the den left after snow blocks are dug out. Right: A camper cuts a snow block that will be used to build a wall for wind protection.

Above: Instructor Ted Dettmar demonstrates a Whisperlite gas stove, which is stored in survival kits. Right: Chuck Kurnik melts snow for drinking water.

Above: David Story saws slabs for his snow cave, or Quinzhee hut. Right: Icicles melt off Justin Reese's beard as he crawls inside a canvas tent. Body heat from four campers and a stove are making the steam.

Profile

Norbert Wu

Woos the world with pictures

By Beth Minneci
Sun staff

One of the world's most accomplished underwater photographers is about to show off what goes on underneath Antarctic ice, and what happens on top of it.

People who packed the McMurdo Station galley Oct. 22 watched Norbert Wu's work-in-progress, "Under Antarctic Ice,'' due to air on PBS's *Nature* next fall.

The footage included close-ups of penguins jetting through the dark ocean water, starfish wriggling on the ocean floor and orcas spy-hopping through breaks in the sea ice.

But what Ice locals will most relate to are the above-the-ice scenes. Clad in the familiar red parkas with silver, rectangular patches, McMurdo residents tell the camera why they're here.

Wu shot local dialogue to capture what he calls the "excitement and urgency" of summer at McMurdo. The clips will be an integral part of the film. Wu says the people segments were difficult for him to do.

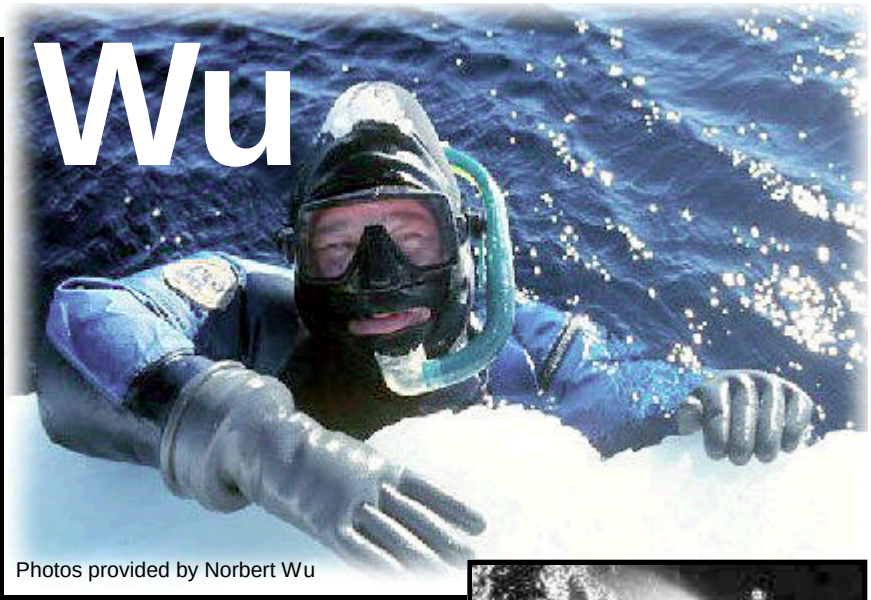
"We've been calling it the glue that holds the story together," Wu says of the McMurdo footage. "That's real work for me because I'm used to just going out and seeing an underwater scene and documenting that."

In an excerpt from one of his books, Wu claims to have an aversion to work. But his credentials and reputation indicate otherwise.

On film he has captured marine life in a range of communities, from tropical waters to the Artic and Antarctic.

Wu's writing and photography have appeared in magazines such as *National Geographic*, *Outside*, *Audubon* and *Omni*. He's the author of several books on wildlife and photography, and only recently started making films.

The NSF awarded Wu three Artists and Writers grants, in 1997, 1999 and this year. Last year he started the movie. This month he recorded more footage, and in January, he is scheduled to return to finish the film.



Photos provided by Norbert Wu

Meanwhile, in the next couple of months, he'll travel to fulfill a Pew Marine Conservation Fellowship. This is a three-year project in which Wu has proposed to document the state of coral reefs and fisheries worldwide and produce a book that shows the most endangered areas of the planet.

In November and December he'll go to Sardinia, Patagonia, Thailand and may return to the Arctic.

People who work with him say he is an overachiever, an intense and particular person. He is known for having high standards for himself and others, and for snubbing people who don't.

Diver Christian McDonald worked with Wu in Antarctica this month and in 1999.

"I enjoy (working with him); some people don't," McDonald said. "He's very demanding and he demands a lot out of himself and his people. That can be a challenge.''

The result is always rewarding, McDonald said.

Wu, 39, grew up in Atlanta. He started exploring the oceans in Florida when he was a kid. His underwater photography career, however, started just 10 years ago.

As a child Wu wanted to become a marine biologist. But later he turned to a more "pragmatic" choice of engineering. At Stanford he earned bachelor's and master's degrees in that field.

Along the way his passion for marine studies grew. He worked as a computer engineer for nine months in Silicon Valley before a school contact turned him onto a diving job with a research institute in Panama.

"I was all over it," Wu said.

After that he took pictures in New Zealand while working on Jacques Cousteau's research vessel *Calypso*. A trip to the Arctic followed. Since then he has dived in oceans around the world.

In Antarctica, Wu and his crew have been exploring spots around Ross Island. Because the water around Antarctica is isolated, marine life here is like nowhere else.

And working from McMurdo Station, with its hot meals and warm beds, has made capturing Antarctic life on film easier than working at a field camp.

"Diving out of McMurdo is pretty cool,''he said. ■