On the Web at http://www.asa.org
January 30, 2000

The Antarctic Sun

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

NAVCHAPs take a load off

MacTown gears up for the Greenwave

By Sun staff

The merchant vessel Greenwave will pull into Winter Quarters Bay later this week on its annual resupply visit, kicking off a frenzy of activity at McMurdo Station. At the center of that whirlwind will be the NAVCHAPs.

Members of the U.S. Navy Cargo Handling and Port Group, the NAVCHAPs are "combat stevedores." Based in Williamsburg, Virginia, they are tasked with loading and unloading Navy ships in harbors from Korea to Kenya. McMurdo is but one of their exotic ports-of-call.

Each year for well over a decade, the Department of Defense has loaned the NAVCHAPs' services to the U.S. Antarctic Program.

"They really look forward to doing it every year," said Jackie Samuel, ASA's supervisor of operations at Port Hueneme. "They volunteer for the mission."

In fact, according to Lt. Ron Griesenauer, the head of operations for the NAVCHAPs, the number of volunteers this year exceeded the spaces available.

By the time the Greenwave arrives, 60 of the stevedores are slated to be in McMurdo. About half of them newcomers and half returnees.

Another four will meet the ship in New Zealand and accompany it down to the Ice, preparing the cargo for unloading.

Divided into seven-member "hatch" teams, the NAVCHAPs will

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A walk through the valley

Geologist Michael Zeig turns his back on a sandstorm stirred up by a helicopter's rotor. He was part of a team that spent three weeks in the Dry Valleys studying magma formations. Photo by Josh Landis.

Nomad has a nose for meteorites

By Josh Landis
The Antarctic Sun

When Crary Lab supervisor Robbie Score picked up a meteorite in the Allan Hills in 1984 she set the stage for a frenzy of scientific excitement and analysis that, more than ten years later, would change the way people think about the possibility of life on other planets.

Meteorite ALH84001 made its way into headlines around the world and ignited hot debate over whether it was a priceless clue to extraterrestrial life or just a misidentified chunk of space rock.

Now the search for meteorites and their secrets is getting help of the non-human kind. Researchers from Carnegie-Mellon University are conducting the latest field test of Nomad, a self-controlled, automated rock hunter.

"For the first time ever a robot exhibited the intelligence to make scientific observations in the field, found and correctly classified material from outer space," said Dimi Apostolopoulos, systems scientist at Carnegie-Mellon's Robotics Institute and principal investigator of Nomad's latest trial.

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It's an accomplishment he and others hope will change the way scientists look for meteorites here and in other parts of the solar system.

Nomad brings together all of the technology needed for it to independently locate, photograph, analyze and record the location of meteorites. The latest test at Elephant Moraine, which was Nomad's second trip to Antarctica, was considered a success.

"From a technical standpoint we fulfilled most of our goals," said Apostolopoulos.

Nomad's system of identifying meteorites has several steps. First, the machine uses a high-resolution digital camera to spot possible meteors lying on the ground, then photographs them closely for telltale signs like charring and aerodynamic contours.

Nomad then uses a spectrometer to determine the chemical makeup of the rock. It works by shining a light on the object, and analyzing the reflection. Based on the way the light bounces off, Nomad knows what elements are present and can make an educated guess as to whether it's a product of the Earth, or space.

Nomad then tells scientists what it thinks of the rock. One recent message read, "ALERT!! ALERT!! I have discovered an interesting rock. Target 4 has a meteorite probability of 0.352245. Waiting for user command to resume the search. Classifier finished."

Nomad properly identified three meteorites and found a fourth, but incorrectly classified it as an Earth rock.

It was the kind of glitch that's expected in this stage of the research.

"We encountered many problems but we resolved most of them," said Apostolopoulos.

In addition to spotting promising rocks, Nomad also has an automatic navigational system that keeps it away from crevasses and other dangers.

The team chose Elephant Moraine, about 160 miles northeast of McMurdo, because it's a place where ancient ice is pushed up and exposed to the wind. Meteorites that fell to the Earth long ago are funneled into the area, and as wind ablates the ice, they're left lying on the surface.

After Nomad is done with all its analyses it records the GPS location so a person can come along and pick it up later.

With a top speed of just over one mile per hour, the 1,500 pound Nomad doesn't exactly fly across the terrain. But it's designed to work tirelessly for 24 hours a day, without any human intervention. NASA, which has funded the development and testing of Nomad, hopes a similar robot could be used one day on a mission to another planet.

Ben Shamah, a Carnegie-Mellon research engineer, monitors Nomad on a trial run near Williams Field. The robotic meteorite hunter contains all the technology needed to locate and analyze potential space rocks. Photo by Josh Landis.

"No other robot has found meteorites by itself before," said Ben Shamah, a research engineer with Carnegie-Mellon.

"Even broader than meteorites, an autonomous search of this size has never been done before," said software engineer Kim Shillcut, also with Carnegie-Mellon.

But Nomad is not meant to completely replace people.

"The hope is to have an assistant to help humans with their search for meteorites," said Shamah.

And that assistant could be wholly employed on a planet far away one day. If all goes as planned, a refined descendant of Nomad could be blasting its way into space in five to 10 years.

"Nomad has set the standard for planetary science rovers," said Apostolopoulos. "Nomad's achievement is ... one of these events that shifts our thinking and opens new directions and opportunities."

Letters to the editors

Happy trails

To Fleet Ops and the Heavy Shop:

We love you. Thanks for keeping the roads and vans drivable and safe for our daily sojourn onto the ice, the transition and around town. We don't know each and every one of you, but we do know that you do incredible and creative work in a very challenging place. Truly amazing: Finding parts that are not there, making a road reappear when it seems destined for the sea, quietly making this place work. Somehow, you have been here all season for us. And we thank you. Enjoy your upcoming summer or winter.

—The folks at Shuttle Ops

Protest decision announced

The U.S. Court of Federal Claims ruled Friday that the award of the Antarctic support contract to Raytheon should stand.

The court, which has jurisdiction over federal contracts, held that the National Science Foundation's "award was an appropriate exercise of discretion, and neither arbitrary nor capricious."

The judge's decision determined that while ASA and Raytheon had scored similarly in the evaluation, NSF had chosen the contractor it thought would offer the best value to the program. According to the court, the evaluation process involved technical knowledge and detailed understanding.

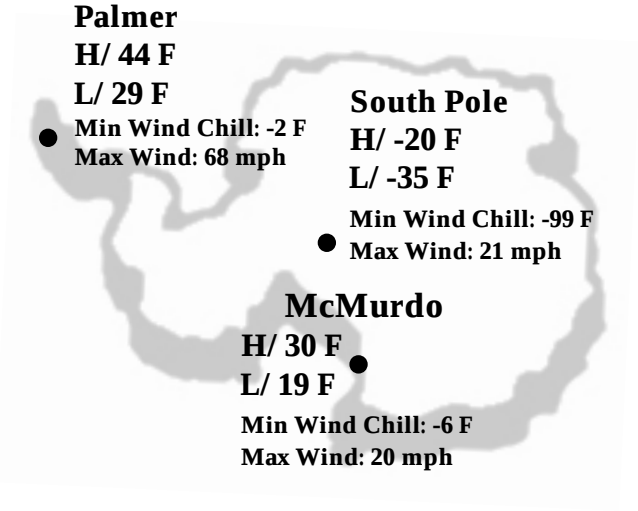
The decision was complex enough that the court would not set aside the award which resulted from it.

Raytheon officials in McMurdo said the company is ready to begin the hiring process with full communication with ASA employees.

However, lawyers for all parties are not yet sure if the protective order remains in place. Until this is known, Raytheon will remain unable to discuss salaries and compensation with ASA employees, and ASA staff cannot reveal proprietary information to Raytheon.

ASA has the right to appeal the ruling, but it is not clear yet if it will exercise that right.

The week in weather



Hut-footin' it

Hiram Henry holds the lead in last week's Scott's Hut Race as Gary Rochford keeps up the pressure from behind. Henry finished the 4.5-mile run first, in 28 minutes and 9 seconds. In a separate running of the race for the Coast Guard, Dirk Krause finished in 27 minutes and 43 seconds. Photo by Jeff Inglis.

The Antarctic Sun, part of the United States Antarctic Program, is funded by the National Science Foundation. Opinions and conclusions expressed in the Sun are not necessarily those of the Foundation.

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Publisher: Valerie Carroll, Antarctic Support Associates.

Editors: Jeff Inglis
Josh Landis
Aaron Spitzer

Contributions are welcome. Contact the Sun at sun_news@mcmurdo.gov. In McMurdo, visit our office in Building 155 or dial 2407.

Web address: http://www.asa.org

Store Hours during Ship Offload

Sunday, February 6: 6:30-8 p.m.
Monday, February 7: closed
Tuesday-Thursday, February 8-10: 6:30-8 p.m.
Friday, February 11: closed
Saturday and Sunday, February 12 and 13: 6:30-8 p.m.
Monday, February 14: closed

There will be ***NO LIQUOR SALES*** *during vessel offload, estimated to be February 6 through 14.*

Schedule subject to change. Watch for notices!

Station Updates

South Pole Station

By Tracy Sheeley

We are entering the final two weeks of our summer season at South Pole Station, but work continues at full speed.

The new power plant project is on schedule, with three major milestones accomplished. The final framing panel was placed on January 22. The last arch ring went up on January 26. Framing for the personnel passageway and vertical tower have also been completed.

Backfill operations are in progress for all these areas. Work will continue on the new power plant and the dark-sector laboratory over the winter.

The tunnelers had a successful season, and will return next summer to complete their work.

In science news, AMANDA and PICO have accomplished their goals this season—the final hole was completed on January 24 and the detectors have been deployed. The DASI telescope has begun collecting data, mapping the irregularities in radiation left over from the creation of the universe. Ten scientists and two technicians will spend the winter at Pole collecting data.

Dave Zybowski checks the pH of the water in the greenhouse at South Pole Station. Soon the greenhouse will serve its largest-ever winter population, 50 people. Photo by Jeff Inglis.

The South Pole once again has had the honor of hosting some very distinguished visitors in the past few weeks. On January 16, astronauts James Lovell (Apollo VIII, Apollo XIII, Gemini VII and Gemini XII) and Owen Garriott (Spacelab and Skylab II) toured the station. They were presented with U.S. flags flown at the geographic pole during a welcoming ceremony. They each provided presentations on their experiences that were enthusiastically received by the South Pole population. Bad weather at Patriot Hills detained them at Pole for a few days, so a lot of people were able to meet them.

On January 24, the five members of the British Women's Expedition skied in to our station, completing a grand total of 638 miles. These women also participated in an expedition to the North Pole in 1997, giving them the honor of being the first all-female group to reach both poles.

Station population will remain high through February 15, at which point our summer season will close, and we will leave the station in care of 50 winterers.

Palmer Station

By Bob Farrell

Palmer Station is hosting the Laurence M. Gould research vessel at the conclusion of a successful three-week summer LTER cruise this week. Members of each science group will remain on station until the end of March to continue their local research.

It's been a busy summer season at Palmer with our 21-person support staff working with six on-site science groups. We've had the privilege of having a sound artist, a writer and two talented photographers join our community. There has been an outstanding exchange of talents and ideas this season through numerous lectures and presentations by community members.

Palmer has hosted six cruise ships and two yacht visits so far this summer, with seven more planned for February. These visits are a change of pace for the station and a great experience for the enthusiastic visitors.

The station will remain busy with science and construction until May, when winter remodel efforts will begin in earnest. Winter construction plans include a complete remodel of the GWR berthing and recreation areas, replacing the three- and four-person rooms with double rooms and the completion of our new medical facility and upgrading of the other facilities.

For our friends on the continental side moving into the winter, we'd like to wish you all the best for a happy and productive winter season.

"NAVCHAPs"— from Page 1

work in 12-hour shifts, two shifts per day, for about nine days straight.

In that short span of time, they'll handle approximately 22 million pounds of cargo—about 11,000 tons. More than half of that will be offloaded at MacTown, and the rest will be packed up and returned to the United States.

Included in the cargo coming to McMurdo will be 61 new trucks and other vehicles, 60 milvans of food, and tons of construction material for the new South Pole Station.

Being shipped back aboard the Greenwave is everything from 20 tons of ice-coring equipment to the wreckage of the Twin Otter aircraft that crashed at AGO-6 earlier this season.

Most of the NAVCHAPs will work on the ship operating cranes, connecting chains and performing myriad other tasks. Others will help out on station, loading the containers being sent back north.

Two NAVCHAPs will devote their time to paperwork, documenting the thousands of items offloaded and onloaded.

New Zealand Defence Force longshoremen will also provide a hand, helping to guide cargo onto trucks for its trip from the ice pier up to McMurdo's cargo yards.

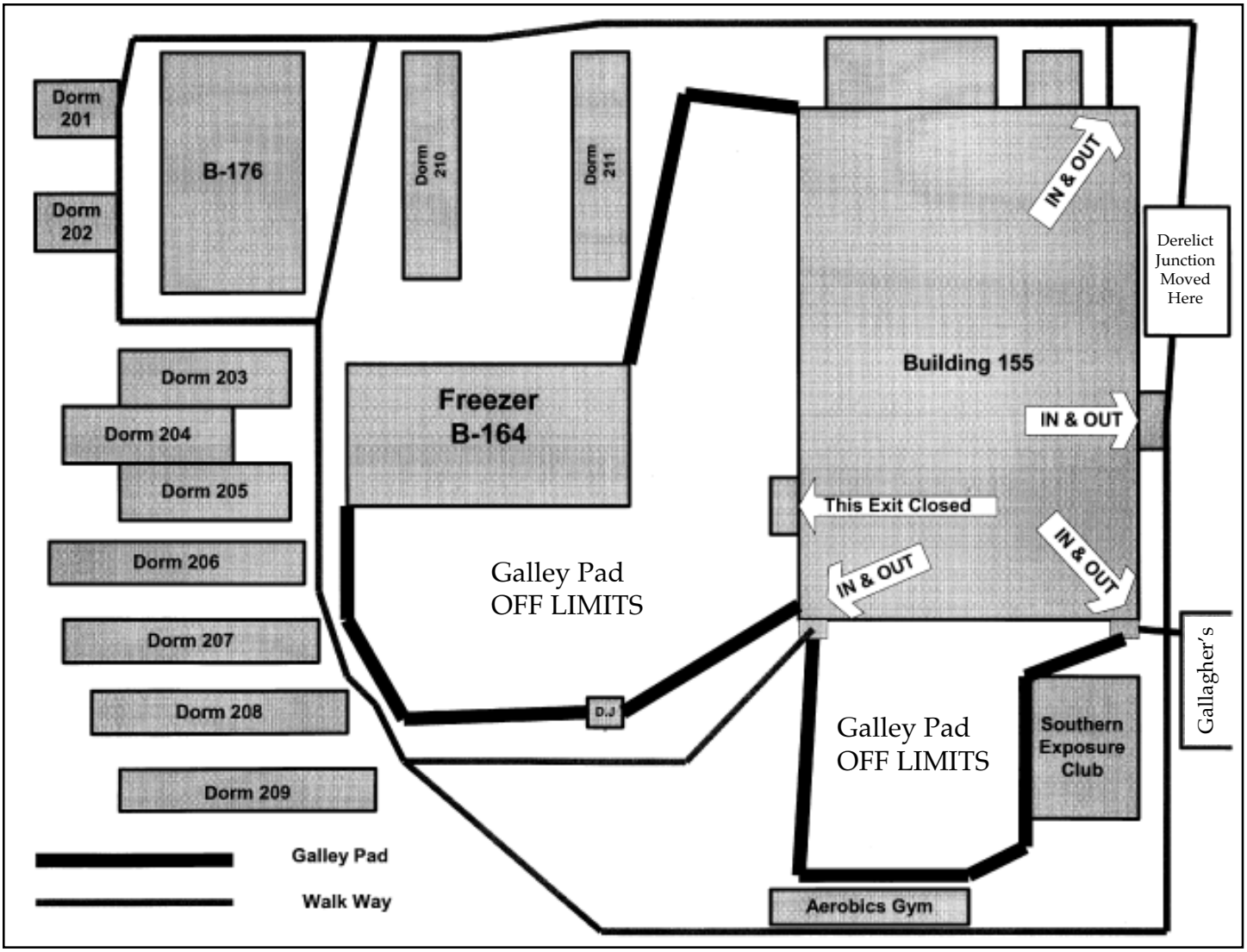
When the Greenwave is in McMurdo, time is precious, Samuel said. The vessel rents to the Antarctic Program at more than $33,000 per day, and thus every day the NAVCHAPs save in unloading cargo is money saved, too.

NAVCHAPs also save the program money. According to Samuel, if it weren't for the Navy stevedores, commercial longshoremen would have to be hired. The standard union wage for such dock work is $36 per hours. As well, commercial hatch teams are larger and work shorter shifts.

The Greenwave is expected in McMurdo by Saturday. It sailed from Port Hueneme on January 12 and is due back March 16.

When the ship is in port, the ice pier and the road down to Hut Point will be closed to pedestrians. Also off-limits will be the area between the dorms and Building 155 and several other cargo yards.

Below: A map of the area around Building 155 as it will be marked during ship offload. Note the relocation of Derelict Junction to the front side of Building 155, outside the Galley. Also note the closing of the doors on the dorm side of Highway 1.



Our Antarctic Week

Today
Science lecture by Norbert Wu: The Resident Orcas of McMurdo Sound. Two showings: 8:30 p.m. and 9:30 p.m. Please only come to one show. 8:30 folks, please leave quickly to let the 9:30 folks in!

Monday
Super Bowl Monday, 11 a.m., kickoff at noon, Gallagher's. (Evening re-broadcast, 7 p.m., Gallagher's)
Brass Quartet and Shackletones concert, 8:30 p.m., Chapel

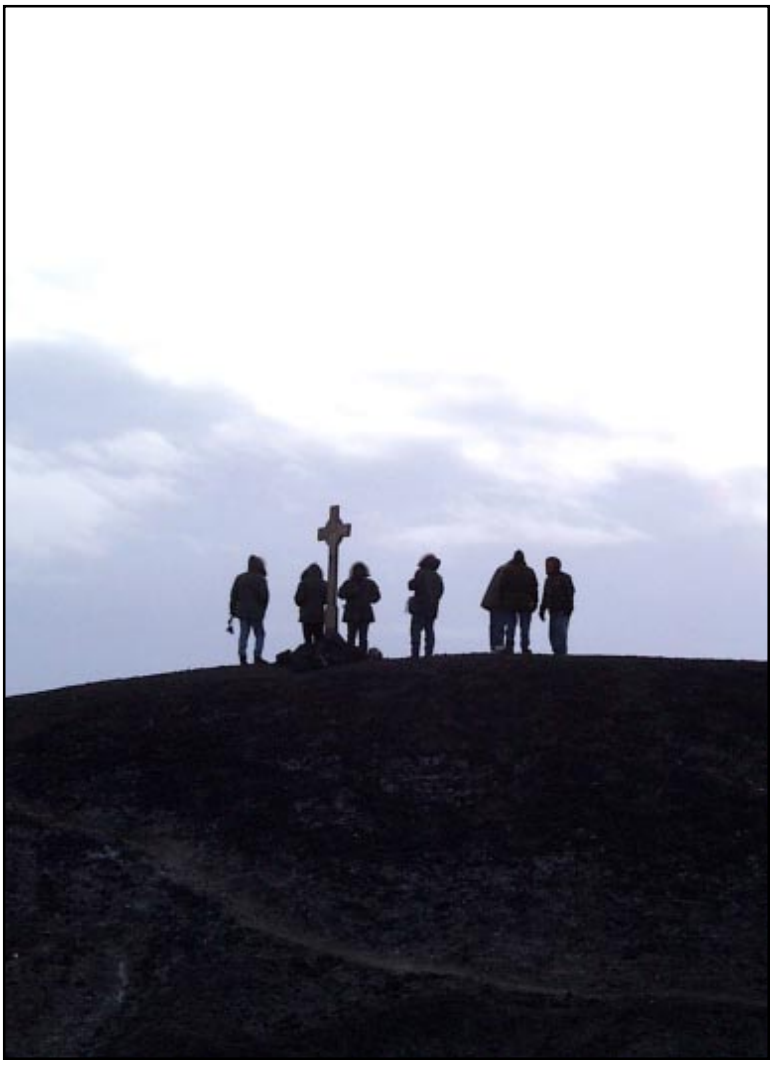
Tuesday
Ob Hill hike, 7:30 p.m., meet outside the Galley. Champagne and certificate at the summit!

Wednesday
Travel Bingo, 8 p.m., Gallagher's. Get your passport stamped! $200 grand prize (for your travel fund!)

Thursday
Movie night: American Pie, 8 p.m., Coffee House
February birthday bash, 8-9 p.m., Coffee House. Bring ID for free drink and cake!

Friday
Town briefing on vessel operations, 8:15 p.m., Galley
Flea market, 8 p.m., Playhouse. Clean out your closet! Sign up with Rec to get a table.

If you have an item for the weekly calendar, e-mail us at sun_news@mcmurdo.gov, call 2407, or drop by our office in Building 155.



In the shadow of Scott

Members of the New York Air National Guard look over McMurdo Sound from the top of Hut Point. Open water has allowed penguins, seals and whales to come close to shore. Photo by Aaron Spitzer.

Faces on HIGHWAY 1

If you could take home any vehicle from Antarctica, which would you choose and why?

"Truck 321. I've been driving that thing for four years and I want that truck."
Don Brogan
supply

"A C-130 to finally get me out of here."
Karla College
supply

"The Chalet's tracked van, because it's so darn cool."
Aniko Safran
help desk

"The Terra Bus. It would be the most eye-catching, and very intimidating."
Anthony Castagna
fire department

Shonda Murray sends a ball back to the bowlers before picking up the pins it knocked down. Usually by the time the ball arrives at the top of the lane, Murray has retrieved the pins and is well out of the way. If bowlers forget to check for legs behind the pins, the pinsetters can find themselves victims, rather than helpers. Photo by Jeff Inglis.

Pinsetting for dollars

By Jeff Inglis
The Antarctic Sun

Housed in the basement of McMurdo's Building 63 are two bowling lanes, one of a few remaining manually-set alleys in the world. The exact number is difficult to know, because they are so small and so rare.

The lanes were the site of last week's bowling tournament final match, won by the Freshies, with the help of the people behind the pins.

Several McMurdo residents are pinsetters in their spare time, earning minimum wage and tips from bowlers. It's a rough job, involving constant bending and lifting in a confined space, moving speedily so as not to delay the bowlers, and also avoiding the 10- to 16-pound balls which hurtle down the lanes.

There aren't all that many pinsetters today. In earlier days of bowling, fallen pins were collected by hand and re-set in place individually, often by young people, called "pin boys."

At the end of World War II, there was a shortage of willing pin boys. Technology offered another solution, automated pinsetters. These were often cheaper to run, since one or two people could service numerous lanes at once.

"It's very rare to find people who manually set the pins anymore," Jim Dressel, editor of Bowler's Journal International, said in a phone interview.

See "Bowling"—Page 8

Above: Each pin that falls is more work for the pinsetters. During each hour of a three-hour shift, they might re-set as many as 400 pins, and pick up a 10- to 16-pound ball up to 80 times. Photo by Jeff Inglis.

Left: Tom Piwowarski watches down the lane for the next bowler. He has already prepared fallen pins to be re-set when the frame is finished. Photo by Jeff Inglis.

"Bowling"—from Page 7

The machines themselves are also of interest.

"They're antiques and they're very valuable," said spokeswoman Jackie Twa of Brunswick, the corporation which made the pinsetting trays used at McMurdo's lanes.

Despite the lack of replacement parts, "you could sell them for a lot of money and buy a new center," Twa said.

Dressel was surprised to learn of the existence of McMurdo's artifact.

He recalled that in the 1940s and 1950s there were a number of bowling alleys installed in military bases around the world.

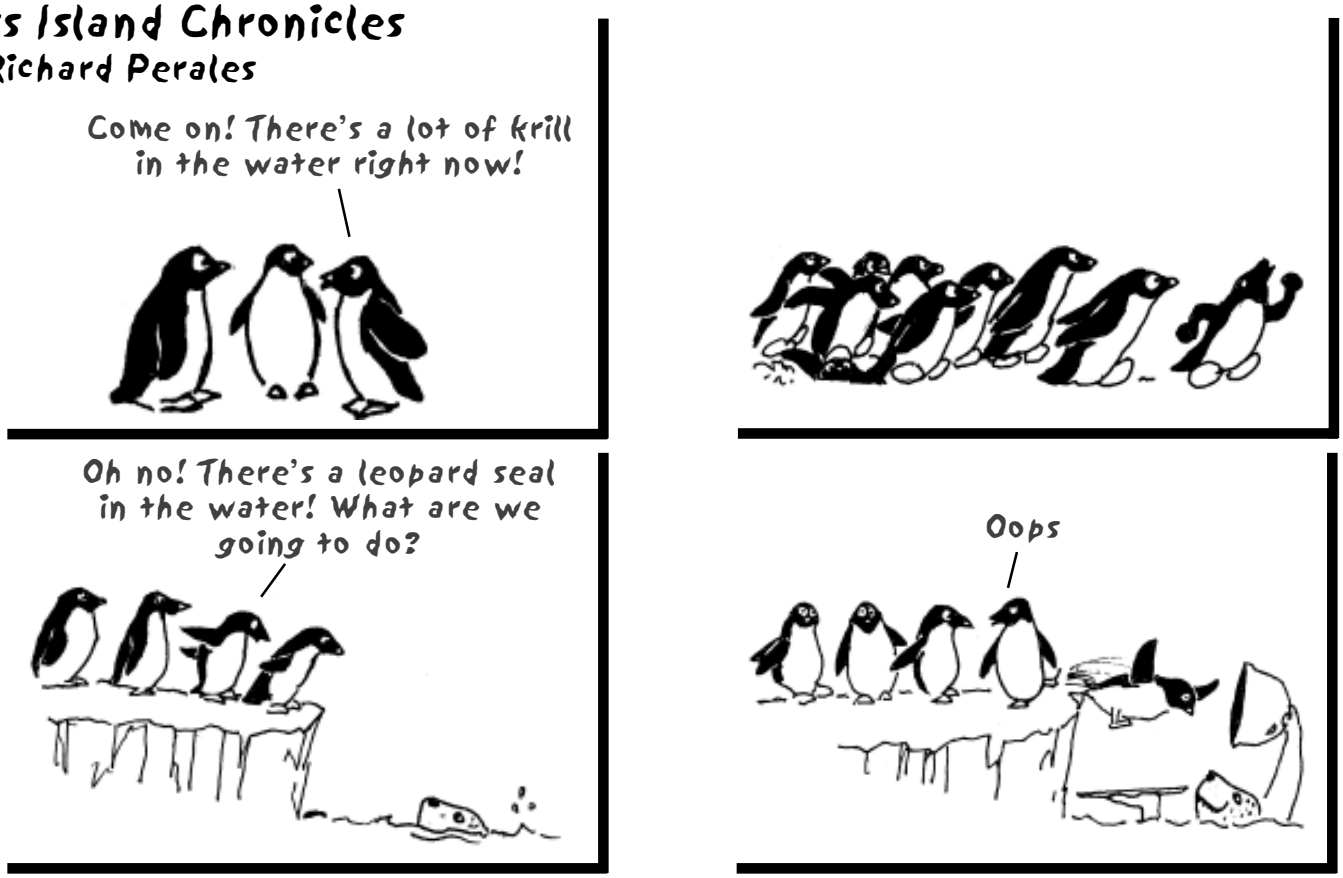
But the automated setters used by most bowling centers nowadays were first introduced in 1945 by AML, Dressel said. Brunswick started making them in 1950, he said.

The manual pinsetters in Building 63 carry the following information on the manufacturer's label: "Style B-10, Brunswick-Balke-Collender." The machines are serial numbers 1023 and 1028.

The company changed its name from Brunswick-Balke-Collender to Brunswick Corporation on April 18, 1960, according to Linda Haschke, a marketing representative for Brunswick.

Left: When nobody shows up to bowl, the pinsetters make more work for themselves. Lisa Keller bowls a game while another pinsetter works. After her game they will switch places so the other can bowl. Photo by Jeff Inglis.

Ross Island Chronicles
by Richard Perales



An ear to the ground

Antarctica's listening post for nuclear blasts

By Doug Quin
Special to the Sun

One of the many intriguing science projects taking place at Palmer Station is not involved with Antarctic ecology, per se. Rather, it is a facet of the monitoring protocol of the Comprehensive Nuclear Test Ban Treaty, or CTBT, for short.

Charles "Buck" Wilson, Kay Lawson and Dan Osborne from the Geophysical Institute at the University of Alaska in Fairbanks are on station to install and test an array of infrasonic microphones. These listening devices are designed to pick up very low frequency acoustic signatures of underground nuclear tests, from anywhere in the world.

Infrasound is generally understood to be the part of the audio spectrum that lies below the range of human hearing, i.e., less than about 16Hz, or cycles per second. When a nuclear device is detonated, the explosion produces an extremely low, powerful sound which travels all around the planet. The array in the Palmer Station area is one of several strategically-placed listening posts around the globe as part of an international effort to verify treaty compliance.

Since their arrival in mid-January the "CTBTs" have been busy troubleshooting their gear, putting pieces together and positioning the microphones at different locations in the area. Three rigs have been deployed: at Old Palmer (identified as "Brit"), Torgersen Island and behind Station in "the backyard."

Kay Lawson checks a GPS meter while setting up the listening array. Photo by Doug Quin.

The tripartite arrangement of the array is an essential aspect in localizing a sound. By measuring the difference in signal arrival times to the microphones, in a process known as triangulation, the scientists can accurately identify a point of origin. This information can be extremely accurate, particularly when correlated with recordings from arrays elsewhere. Buck and his crew brought an extra unit, as a backup. With all the equipment working, they decided to place this last component of the array at Janus Island—thereby extending the triangular configuration.

While the application of the CTBT technology serves an important role in maintaining world peace, there are also "sidebands" of acoustic activity from the natural world that may be perceived through this lens.

When not keeping watch on the state of nuclear weaponry, Dan Osborne is following natural infrasound. From sonic booms issuing from the aurora to "sprites" associated with lightning strikes, there is a world of sound that lies out of our range of hearing.

One of the interesting "tests" of the CTBT arrays has been the lower frequency booms associated with glacial calving. At Loudwater and Arthur Harbor Coves, I experienced a physical sensation, or impact, from a couple of large-scale events.

On the one hand, my ears tuned in to the vibrations that I could hear, while I could also feel the ice fracture—a pulse that slammed against my body like a sudden gust of wind. It is this range that shows up as a trace, a coherent infrasonic wave, on the special data recorders that Buck, Dan and Kay use.

Steve Dunbar and I decided to tag along, lend a hand and learn a bit more about a different dimension of the soundscape—infrasound. Rob Edwards took the CTBTs and their gear in one boat, accompanied by wildlife photographer and environmentalist, Gary Braasch. U.S. News and World reporter Charlie Petit joined us in our Zodiac.

Together, we worked our way through the brash in the approach to Janus Island. A light, beaded snow fell and visibility was limited. The swell around Janus was several feet. The landing and offloading of equipment proved to be a challenge and we found ourselves working a surge to jump ashore—only to try and gain footing on slippery rocks, covered in an emerald green seaweed.

The batteries for the microphone and data collection unit weighed 70 pounds each! A few brown skuas circled and displayed when we approached their nests. It was warm and we soon broke into a good sweat.

The microphone itself is a modest size—less than 20 cm in diameter. One of the interesting problems in gathering low frequency sounds is that ambient noise from wind can mask and obscure what you are seeking.

In order to work around this problem—which is perennial for all sound recordists—the solution involved running out lengths of porous, soak hoses. Low frequencies can be detected through this material and there is a certain noise reducing quality that makes them especially useful for this application.

For all the high-end technology, this was a garden-grade, hardware store item: albeit a particular brand and qualified to treaty specifications. The hoses radiated, like tendrils, from the hub of the microphone, in a cruciform plan along the rocks. The total extent, or footprint, is nearly 30 metres. We helped Buck and his team secure the hoses, while Dan tested the data flow and Kay took detailed GPS readings. Within an hour, it was all working well.

Steve, Charlie and I then split off to have a listen underwater on the far side of DeLacca Island. It was pretty quiet—no seals, whales or even any iceberg activity, just the din of the sea state.

Doug Quin's website address is www.antarctica2000.net.

PROFILE

Feeling Antarktissimo

By Charlie Petit
Special to the Sun

Palmer Station, just north of the Antarctic Circle on the peninsula's so-called banana belt, may be the least Antarctic of America's outposts on the continent. But for a brief interlude on January 18 the station's 40 residents were in the most Antarktissimo place in the world—if you don't count Belgium.

That's because a live broadcast by the Logos Quartet of Ghent, Belgium, of its newest composition, Concerto Antarktissimo, resounded throughout the station via satellite link to its all-call loudspeaker system. With voice, flute, clarinet, violin, and a fiddle made in the style of Mali in Africa, the quartet filled the air with its own avant garde version of what it sounds like down here. The entire station fell silent as the composition swelled, squawked, and trilled from the speakers. Men and women who spend most of their time keeping this place running, or on such science as scrutinizing penguins, gathering microbes from the ice, and measuring the sun's radiation, agreed one and all that they have never heard anything quite like it.

Doug Quin and Steve Dunbar explore the islands near Palmer Station in search of unique sounds. Photo courtesy Charlie Petit.

To be sure, the concerto, with interludes of silence broken by eruptions of vocalization and instrumental mimicry of seals and penguins, didn't much resemble the music more commonly played on the stereos around here.

Bob Farrell, station manager, said, "It was neat that they did it live, and some of the sounds really were like the ones we hear. I wish we could have heard it while we were outside."

It was not for everybody. "Bizarre,'' was one comment. But the clear majority got a big kick out of the 15-minute lunchtime broadcast.

"I like this kind of music, to tell the truth,'' said Rob Edwards, laboratory operations supervisor and a pretty fair banjo player. "It stretches the idea of musical sound. Some people think you should take it seriously, when all you need to do is enjoy it."

The unusual hookup was a thank you to Palmer resident Doug Quin. A specialist in recording the actual sounds of the natural environment—he has a Ph.D. in acoustic ecology—he is here as part of the National Science Foundation's Artists and Writers Program.

The concert, he said, "was clever, original, and charming.'' In the Internet log he is keeping of his stay here, Quin wrote, "It was a wonderful sensation to be standing in the hallway listening to music from the Tetrahedron Hall (in Ghent) while looking out over the icebergs and porpoising penguins in Arthur Harbor. Different sensory worlds—as if in a dream!"

This is the second time Quin, of Petaluma, California, has been in Antarctica on the artist's program. Last time he went to McMurdo, in 1996. He arrived at Palmer on the Laurence M. Gould research vessel December 8 with his assistant, Steve Dunbar. Since then they have jumped into a Zodiac inflated boat nearly every day to explore the many islands nearby. There they have met a boisterous collection of residents.

The deep rumbles of elephant seals, bickering din of Adelie and Chinstrap penguin rookeries, trilling of seals underwater, and harsh cries of darting skuas all went into his collection of tapes. Also into it went such non-living noisemakers as Marr Glacier, rumbling and crashing new icebergs into Arthur Harbor. To augment the area's innate symphony, Quin set up a wind harp on the biology lab to harvest ethereal tunes from the prevailing westerlies.

All the while, a lot of the rest of the world has gotten a share of the sounds that brought him here. Quin has been live on National Public Radio, plus outlets around the world including stations in New Zealand and Germany. On New Year's Eve Belgium got a listen as it relayed to its listeners a live interview with Quin from Palmer Station mixed with his recorded material. Earlier in his visit, on December 18, Quin took part in a live discussion of his work down here with an exhibition in Antwerp. Joining that discussion were members of the Logos Quartet in Belgium, who have been friends of Quin's for 20 years. They were so charged up by his subsequent Antarctic Peninsula millennium show that they reciprocated with their new musical ode.

The musicians, formally of the Stichting Logos Foundation Center for New Music Production, are Karin De Fleyt (flute), Joachim Brackx (voice), Godfried-Willem Raes (clarinet), and Moniek Darge (voice, fiddle from Mali, violin). It is yet to be learned what reaction, if any, Palmer's natives will have should they some day hear the enthusiastic interpretation of their vocalizations by these artists from a far-off continent.