

# The Antarctic Sun

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

## Safety first

### Laying the groundwork for a new Pole station

By Josh Landis  
*The Antarctic Sun*

Life at the South Pole depends upon two things: a steady supply of food and fuel, and reliable shelter and equipment. A seasonal deluge of LC-130 flights ensures the first requirement. The second has been harder to maintain.

A few years ago, the National Science Foundation appointed an external panel to review the U.S. Antarctic Program. While it declared the program scientifically and politically well-established, it had serious concerns about the structures that house and protect people in Antarctica, particularly at the South Pole.

It said many facilities were "far below the standards that we demand in our most basic working and living environments within the U.S. ... [M]any fail to meet fundamental safety criteria and construction codes and are becoming a growing impediment to the continued

See "South Pole"—Page 4



Lines and arches delineate the form of the new South Pole power plant. Photo by Josh Landis.



## Tunnel vision

*Framed by the glaring light of the summer sun, miner John Wright assesses a hand-dug tunnel carved to test digging methods. The final passageway will be 2,000 feet long and house the new water and waste systems for South Pole Station. Photo by Chris Rock.*

## Fishing for antifreeze

By Aaron Spitzer  
*The Antarctic Sun*

Inside a small orange hut on the frozen surface of McMurdo Sound, a group of researchers huddled near the rim of a gaping hole in the 10-foot-thick ice. As a gas-powered winch reeled in a thin steel cable, the form of a giant fish appeared from the aquamarine depths.

"This may be the largest one we've caught this year," said Kevin Hoefling, peering down through the icy water. He slowed the winch and the group leaned in closer. A betting pool quickly placed the creature's weight at around that of an average-sized man.

In a few seconds the seawater sloshed and the fish's head appeared—enormous and prehistoric, with protruding eyes and powerful jaws lined with inward-angled teeth.

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**Amundsen's secret tool / Page 3**

**Getting wired / Page 7**

**As clean as the driven snow / Page 9**

**Living large-format / Page 10**

*"Fish"—from Page 1*

Its massive, muscular body was wrapped in a whitish-gray skin of scales. Its fins folded and unfolded like translucent Japanese fans.

The creature was *Dissostichus mawsoni*, known colloquially as the giant



Graduate student Andor Kiss prepares to dissect a 110 pound *Dissostichus mawsoni* on a table in the old aquarium building. The fish was caught earlier that day in a hut near the ice runway. Photo by Aaron Spitzer.

Antarctic cod.

A few moments after breaking the surface, the mawsoni was wrestled off the hook and laid out and measured on a long wooden tray. Dripping with icy-cold seawater, the fish was then hoisted onto a nearby scale.

It turned out to be smaller than expected. At 110 pounds it was hardly a record. In past years, researchers in McMurdo Sound have reeled in cod topping twice that weight.

But the mawsoni was still the largest of the five that was caught that day. The others—slimmer versions of this motley monster—were all released back into the ice hole, where, after taking a moment to

get their bearings, they quickly swam down and away.

Antarctic cod—and many of their smaller cousins—are the subjects of ongoing research by the husband-and-wife team of Art DeVries and Chris Cheng-DeVries, both scientists at the University of Illinois.

Art DeVries, a McMurdo institution himself, has been traveling to the Ice for more than three decades, examining the mechanism by which Antarctic fish avoid freezing.

Swimming in a sea that is below 32 F, the cold-blooded creatures run the constant risk of ice crystals forming in their blood. Once a single crystal enters, others can nucleate around it, precipitating a potentially deadly chain reaction.

While subsurface seawater stays

liquid due to its high salt content, fluids in fish don't share the same advantage. What they do have, as Art DeVries discovered years ago, is antifreeze.

Fish antifreeze isn't like the antifreeze in your car, explained Cheng-DeVries. It doesn't lower the actual freezing point of the fish's blood. Instead, she said, "it inhibits the preferred direction of growth of the ice crystals."

Ice crystals, she explained, are laid out like flat hexagons. They expand when other hexagons interlock on their six exposed sides, forming a pattern like that on a soccer ball.

But in the supercooled waters of the Antarctic, fish in the family notothenioid—

which includes the giant mawsoni—generate a substance called antifreeze glycoprotein, or AFGP. AFGP circulates in their blood and beats any ice crystals to the punch, surrounding them, binding to their sides and thus arresting crystal growth.

This discovery has taken the DeVries' research in a range of different directions.

According to Cheng-DeVries, they're still studying how AFGP binds to ice—an odd act in the molecular world. "Most proteins interact with other proteins," she said. "These guys interact with ice."

In a completely different vein, the researchers are also conducting genetic studies of AFGP to help determine when Antarctica began the dramatic cooling trend that converted it from a mild environment to the ice continent of today.

According to Cheng-DeVries, notothenioids evolved AFGP as a response to that climatic shift, while non-adaptive species died out. By calculating when AFGP arose, the timing of the continental cold snap can be better determined.

A third avenue of inquiry involves the formation of AFGP in embryos. Because the fish spawn and fertilize their eggs externally, the eggs must develop antifreeze early on, to protect them from their frigid surroundings.

According to Cheng-DeVries, that mystery will likely bring the research team back to McMurdo Sound during Winfly next season, so they can follow the fish eggs throughout their developmental cycle.

As for the 110 pound mawsoni hauled in on the winch, it has come to the end of its cycle. Giving its life to science, it goes into a long trough called the "fish coffin," in which it is transported from the fishing hut back to the old aquarium at the edge of McMurdo Sound.

There, it is dissected and its blood syringed into a collection of vials. Its eyeballs, kidneys, liver and spleen are extracted and preserved in liquid nitrogen to await analysis. And finally, of course, from its muscular sides are carved giant white fillets, which go to the galley for dinner. ●

## Just one week left to summon your muse

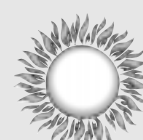
for the Antarctic Sun's Creative Writing Contest

Two categories: **Poetry** (max. length 30 lines) & **Fiction** (max. length 500 words)

Entries must have some Antarctic content.

Entry deadline: December 18, 5.30 p.m.

Enter via Email to [sun\\_news@mcmurdo.gov](mailto:sun_news@mcmurdo.gov), or in our office in McMurdo's Building 155.



# Letters to the editors

## Amundsen flush with success

In the December 5 edition there was a blurb in "Cold Hard Facts" [p. 5] about the Coriolis Effect on draining water in the Southern Hemisphere. The blurb tended to play down the Coriolis effect on relatively small amounts of water.

Be advised that the Coriolis effect played a very important but little-known role in Amundsen's efforts to be the first to reach the geographic South Pole. Since there were no satellites, GPS or cell phones in 1911, how was Amundsen able to locate and pinpoint the pole with such accuracy?

What Amundsen did was to take a flush toilet with him. As he progressed across the polar plateau, he would flush the toilet and observe the direction that the water took as it exited the bowl. The closer he got to the pole the less he saw of a Coriolis effect in his daily flushings.

While on the polar plateau, moving in a southward direction, the Coriolis Effect in the flushing toilet definitely took a clockwise

course. Upon reaching the exact geographic south pole the water in the toilet bowl went straight down when the toilet was flushed.

To prove his calculations Amundsen went past the pole for a certain amount of distance in the direction of grid north and when he again flushed the toilet the Coriolis Effect returned but this time in a counterclockwise motion.

When he retreated and repeated the process the water again went straight down and he erected a tent on the location. In the tent Amundsen left the toilet bowl and a letter addressed to King Haakon of Norway.

Prior to Scott's arrival, almost a month later, the toilet bowl and most of the tent had filled with drift snow. Scott was so demoralized by being beaten to the pole, he never thought to dig out the tent or to thoroughly examine its contents.

—Billy-Ace Baker

*Billy-Ace Baker is an Antarctic program veteran with a sense of humor.*

## Correction

In the December 5, 1999, issue Laurence de la Ferriere of France was wrongly identified as the first woman to ski solo to the Pole.

In fact, Liv Arnesen of Norway was the first woman to ski solo and unsupported to the Pole during the 1994-1995 summer. The Sun regrets the error.



**Treaty violation?** Temporarily impaled by a power drill, this festive penguin was one of the holiday decorations that went up around McMurdo Station last week. Photo by Jeff Inglis.

## The week in weather

### Palmer

H/ 38 F

L/ 26 F

- Min Wind Chill: 0 F
- Max Wind: 28 mph

### South Pole

H/ -26 F

L/ -31 F

- Min Wind Chill: -74 F
- Max Wind: 16 mph

### McMurdo

H/ 36 F

L/ 19 F

- Min Wind Chill: -20 F
- Max Wind: 30 mph

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**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>

## The Store now has:

Holiday Snacks  
Fritos  
Pringles  
Dips  
and lots of candy!



Also out:

Penguin mouse pads and magnets



*"South Pole"— from Page 1*

conduct of world-class research."

The panel concluded that the entire station needed to be improved, and the National Science Foundation came up with a two-part plan to accomplish that goal.

Part one is a \$25 million environmental and quality-of-life upgrade focusing on three goals: installing new fuel storage tanks, constructing a new power plant, and building a new garage.

In time, these structures will be completely buried by snow, with only the new South Pole station building and science modules on the surface.

The work to date is "on-schedule and within budget," according to NSF construction project manager Jerry Marty.

The Antarctic Sun will detail the second phase of the South Pole project in next week's issue. ●

*The old fuel storage system consisted of nine 25,000-gallon rubber bladders laid out under a long arch.*

*"They had no secondary containment system, no leak detectors and represented an inefficient use of space," said NSF project manager Jerry Marty. Photo courtesy of NSF.*



*Today there are 45 10,000-gallon steel tanks that are completely contained, have leak sensors and are protected by a fire suppressant system. Photo courtesy of Chris Rock.*



*Heads bowed before a corrugated cathedral, construction workers Chris Craver and Chuck Speidel work on an entrance to the new power plant arch.*

*Brown-outs and black-outs were a dangerous side-effect of the growing station population. Ultimately, four new generators will be installed, allowing the new station to produce up to one megawatt of electricity.*

*The power plant is scheduled to be online in January 2001. Photo by Josh Landis.*



*The review panel called the old garage "crowded, poorly ventilated and seriously contaminated with grease." Built in the 1970s, the single-level structure has room for roughly two large vehicles. In some cases mechanics' hours were limited to protect their health. Photo by Josh Landis.*

*Facilities, maintenance and construction manager Carlton Walker points out various aspects of the new garage to NSF project manager Jerry Marty, Office of Polar Programs director Dr. Karl Erb and NSF science representative Richard Hirsch.*

*A 10 year veteran of the Antarctic program, Walker manages the construction crews at South Pole Station. "It looks nicer than most garages in the States," Hirsch said. Photo by Josh Landis.*



*Carlton Walker, the facilities, maintenance and construction manager at Pole, exits the new garage by the bay doors.*

*The building has an additional level and five times more room than the old garage. Photo by Josh Landis.*

## Our Antarctic Week

### Monday

Antarctic IMAX movie, 8:30 p.m., Galley  
Burger bar delivery only, 6-8 p.m., call x2413

### Tuesday

Yoga, 8-9 p.m. (new hours), Chapel

### Wednesday

Karaoke, 8:30 p.m., Gallagher's

### Thursday

Movie night, 8 p.m., Coffee House.  
Cartoons 8-8:30 p.m., Raising Arizona 8:30-10:30 p.m. Free Fanta and popcorn

### Saturday

Beach party, 8:30 p.m., Playhouse, Bldg 64. Live band and DJ

### Sunday

Art show, 1:30-4:30 p.m., Galley

*If you have an item for the weekly calendar, e-mail us at [sun\\_news@mcmurdo.gov](mailto:sun_news@mcmurdo.gov), call 2407, or drop by our office in Building 155.*



## Hosing around

*Julian Ridley and Katy Burke get a chance to play firefighter at McMurdo's fire department's open house last week. Moments later, they found themselves wrestling with a hose pumping more than a hundred gallons of water per minute. Photo by Josh Landis.*

## Faces on

*What job would you most like to have in Antarctica?*



"A geologic videographer."  
**Tom Piwowarski**  
real job: materials



"A meteorologist."  
**Muriel Vanderdonckt**  
real job: high-energy geophysicist



"Historic site overseer."  
**Brandon Miller**  
real job: recreation/materials



"The beer god."  
**Rodney Prescott**  
real job: Kiwi cargo handler

## A visit to Vostok

Al Sutherland, McMurdo Station's NSF representative, flew to Russia's Vostok Station recently to look at the station's facilities. Sutherland said NSF is exploring stationing some U.S. personnel at or near the station when drilling begins again in Lake Vostok.

The Soviets and Russians have already drilled through much of the ice sheet between Vostok Station and Lake Vostok. The lake itself is formed by the melting of the East Antarctic Ice Sheet, 4000 meters of ice above the lake.

Safe methods for drilling into the lake are now being explored, Sutherland said. Concern is based around the fact that modern drilling techniques would introduce foreign material into the pristine water.

In addition to the development and testing of super-clean drilling methods, NSF is exploring possible locations for research sites.

Sutherland took photographs and walked around the station during his 15-minute visit to Vostok. He was on a routine resupply and personnel-transfer flight.

Two trips are scheduled from McMurdo to Vostok later in the season, transferring additional Russian personnel to the base. During those trips, other American officials will look at the station as well.

Sutherland's visit was short enough to prevent him from entering any of the buildings, but his impression was that Vostok was similar to the old Williams Field. He noted that the buildings weren't new and modern, but neither were they the run-down mess rumors had suggested.

The departure was also a bit exciting. The high altitude and rough runway surface caused the first takeoff attempt to fail. For the second attempt, the pilot asked Sutherland to step to



*Vostok Station's science center—the equivalent of McMurdo's Crary Lab. Financial problems in Russia have crippled its Antarctic program. Photo by Al Sutherland.*

the back of the aircraft.

"I moved to the tail of the plane and we took off immediately," Sutherland said. ●

## French skier makes slow progress

It's been slow going on the polar cap for Frenchwoman Laurence de la Ferriere, who is attempting a solo ski traverse from the South Pole to the Dumont d'Urville station in Adelie Land.

According to a report published in the Antarctic Non-Governmental Activity News, de la Ferriere, who departed from Pole on November 23, was only 120 miles into her 1,500 mile journey as of December 7. During the first week she was able to progress a mere 24 miles, leaving her within sight of South Pole Station for several days.

Pulling a 300-pound sled, de la Ferriere was slowed by large sastrugi and record-cold temperatures near

Pole. She also suffered from altitude sickness and experienced winds too weak to fill her parasail.

She then decided to lighten her sled, removing all but 30 days of supplies-enough to reach the Concordia camp at Dome C, where she plans to await resupply before progressing to Dumont d'Urville.

From December 4-6, she managed to advance nearly 90 miles. She will have to maintain a similar rate to reach Concordia before her supplies are exhausted.

De la Ferriere's journey has been fraught with difficulties from the outset. A three-week weather delay stalled her, first in Punta Arenas, Chile, and then at the private Patriot Hills field camp in Ellsworth Land, where she was awaiting a flight to Pole.

De la Ferriere was the first Frenchwoman to ski solo to the Pole, during the 1996-97 summer season. ●



### Check out the Sun websites of the week:

<http://www.geocities.com/weatherhebguy/>  
Everett Hubbard's site has some information about McMurdo Station.

<http://www.theice.org>  
Robert Holmes's site is a wide variety of information on the U.S. Antarctic Program, including some old-timers' stories.

<http://www.70south.com>  
Brendon Grunewald keeps an eye on things relating to Antarctica going on around the world.

# Out on a wire:

## Electronics techs keep McMurdo grounded

By Jeff Inglis  
The Antarctic Sun

Airplanes are flying and weather reports are coming in. Making it all possible are a small group who have their feet firmly planted on the ground.

Behind the scenes of the weather and air-traffic-control operations in Antarctica is an unsung team of electronics technicians who keep all the equipment running properly.

They're part of the Aviation Technical Services contingent in McMurdo Station. Led by Mike Rugg, the team has two major elements.

Out at the airfield, there are the "Ice Elecs," who keep the radios and navigational instruments working for the proper operation of the airport. They also maintain the weather equipment that records conditions at the runway, which often differ greatly from the situation in town.

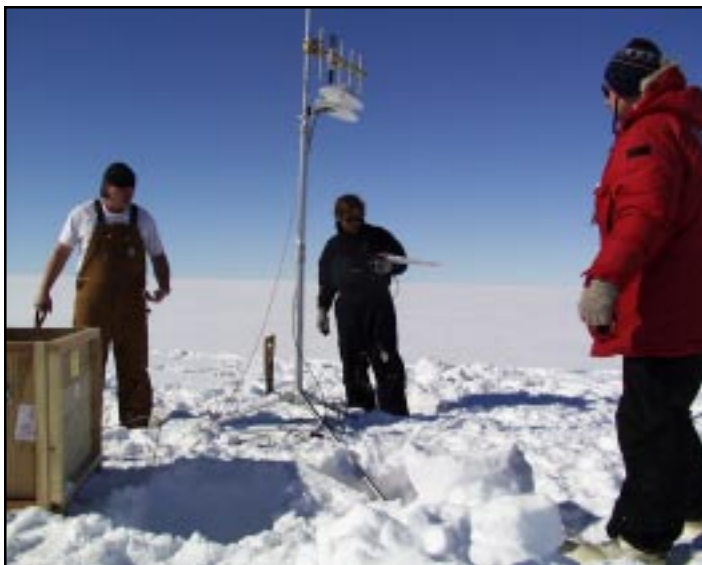
And in MacTown, there are the "Mac Elecs," who work with the air-traffic-control and weather instrumentation here and across the Ross Ice Shelf.

"It's probably the best job on the continent," said Jon Shields, the supervisor of the team in town.

They travel to Williams Field and automated weather system sites, he said, to install and maintain equipment. They also have some flexibility about where they work. Devices need to be checked in a number of nearby locations. Shields likes being able to choose where he'll stop by next.

Like a lot of material in Antarctica, the equipment isn't necessarily all that modern, but it's functional and durable, which is more important.

A few years ago, one team's members invented and built an instrument for the air traffic control group. There's no book for it, and no spare parts. But it's still working.



Jon Shields, Scott Newell and Steve Clark install an automated weather system on the Ross Ice Shelf. The system is part of a network of similar instruments which measure weather conditions around McMurdo. Photo by Jeff Inglis.

Even for things which do have manuals, the parts occasionally aren't handy. Technicians sometimes have to look at the spare bits and pieces they have lying around and make repairs with them.

In addition to repairs, the electronics technicians have recently been installing automated weather stations around the Ross Ice Shelf to help meteorologists measure and predict weather at McMurdo and the airfield.

They put in 10 stations last week after waiting two weeks for the weather to clear enough to fly. One of them took seven hours to put in, drilling and chipping through ice, but most of them take between 60 and 90 minutes, since they're installed in snow.

In preparing to move the airstrip from the sea ice to Williams Field, the runway technicians have been setting up and testing the navigational aids pilots need to land and take off.

"Things have been going pretty well," said Larry Lainey, the team leader at the runway.

Lainey is happy that they now have two control towers and two navigational beacons. It means they've had a spare of each this season, and will have a spare when the move to Williams is complete.

But the crucial difference, Lainey said, is that they can have both runways fully functional at the same time when the move is taking place. In previous years, they've had to take down the control equipment at the sea ice runway, move it to Williams, and set everything up again.

Now they can set things up at Williams Field ahead of time and be ready when the move happens.

Weather is a factor in this, too. While the buildings are being dragged to their new location, they have no heat. This can cause problems trying to use the equipment right away in the new site.

"Electronic equipment works a whole lot better when it's had a chance to warm up and get to a stable temperature," Lainey said.

The electronics technicians have an unusual job, in that if they do their work properly, nobody knows they work; all the instruments just run well. But when things go wrong, they're the ones in demand. Usually things work well, but it's rarely just one piece of gear which goes down at a time.

"Everything breaks at once," Shields said. But then, usually, it gets fixed quickly and the technicians can return to maintenance, upgrades and new installations. ●



Steve Clark attaches a directional radio antenna to an automated weather system. The small, remote weather observatory transmits temperature, humidity and windspeed data every 15 minutes. Photo by Jeff Inglis.



# Reclaiming the Ice

## McMurdo's remediation team aims to clean up the continent

By Josh Landis  
The Antarctic Sun

It was a calm, overcast morning on the McMurdo Ice Shelf. It was the kind of day where two people could hear each other whispering twenty feet apart. But on this day there was no whispering. Instead, the six people gathered were wearing earplugs as a gasoline-powered jackhammer shattered the silence and the ice around them.

"Give me a hand over here," Bill Gilmore yelled out to Stacey Cannon. They jammed their heavy metal bars under an exposed metal drum and tried prying it loose. It wouldn't budge.



Remediation technician Stacey Cannon and environmental engineer Bill Gilmore try to free some frozen debris. Photo by Josh Landis.

McMurdo's environmental remediation team was hard at work on one of the debris sites around Pegasus airfield. Gilmore, an environmental engineer, and his team identified 34 locations this season by helicopter and ground surveillance, and were finishing up one of the last ones. Remediation technicians Stacey Cannon and Kim Wolfe assist, along with general assistants who are also tapped to get the job done.

"There's nothing like digging up 37 year-old trash," said Gilmore, looking at a Schlitz beer can dated 1962 and an equally aged chunk of sausage, still frozen, still pink.

On a site like this, the team becomes

*The remediation team works at excavating what appears to be a dump dating from the Navy days. Forgotten camps and other sites buried in the McMurdo Ice Shelf have yielded an array of debris from decades past. Photo by Josh Landis.*



part garbage collectors and part archaeologists. But their overall clean-up mission doesn't just focus on drums and buried trash on the ice shelf. Their sights are set on any and all offending matter to be found on the Antarctic landscape.

The remediation program is driven by the Antarctic Conservation Act, but not bound by it. Members are required to meet certain requirements with regard to historical waste and debris, but it's effectively self-regulating.

In the last two years the remediators have removed or processed tons of debris and contaminated earth that accumulated since the earliest days of U.S. occupancy on and around Ross Island. It's a history filled with environ-

mental neglect.

"When the Navy was here, nobody paid any attention to this stuff," Gilmore said. "The NSF has shown an interest in cleaning up, and I think they're happy with what they've seen so far."

Last season the team collected contaminated soil and debris from 11 different locations. It was either retrograded to the U.S., processed locally or used to build containment berms between fuel tanks.

This year Gilmore and his team have targeted seven sites, and in the future the sky—and the Ice—is the limit.

"We've proven ourselves locally," Gilmore said. "Next we want to go continental." ■



Gilmore and general assistant Eric Barnes heft a barrel that was left at Pegasus runway in the 60s. Filled with ice, they're often too heavy for one person to lift. Photo by Josh Landis.



# PROFILE

## 'Where our souls feel best'

By Aaron Spitzer  
The Antarctic Sun

One moment Stuart Klipper is balancing atop his camera box, aiming a wide-angle lens at a sunbathing seal.

The next moment he's hunched over in the snow, hands bare, working quickly to thread in a new roll of film. Shooting in panoramic format, Klipper is forced to change roles every four shots—prompting friends to joke that he's a professional camera re-loader.

His body of work suggests otherwise. Klipper is a photo artist, and the Antarctic is one of his foremost models. For more than a decade he has been coming south, capturing in sweeping portraits the continent's stark and awe-inspiring landscapes.

Klipper's visit to the Ice this year will complete work he's conducted during his last three stints in Antarctica, in 1989, 1992 and 1994—every time as a member of the NSF's Artists and Writers Program.

"This is going to flesh out the final coda of a book I've been working on," he said. "I'm trying to capture the evanescent quality of the human presence down here."

That quality became clear to Klipper during a visit to the Dry Valleys a decade ago. He was walking alone south of the Taylor Glacier when it struck him like an epiphany: "I'm the only damn thing alive here."

His awareness "about the marginality and the transience of this little bit of life that's down here" is reflected in his photographs. Visually, they are huge and hauntingly spare. Many are studies in sea and ice and sky, nearly colorless and betraying few signs of life.

In one, the sprawling black surface of the Dumont d'Urville Sea is crenellated by tabular icebergs and overhung by a brooding sky. In another, the chiseled sea ice edge near Cape Royds recedes to the vanishing point.

His pictures are not just about physical landscape. "I'm dealing with more incorporeal things—states of being, the placement of one's soul," Klipper said. "There's a real bias in my work toward the reflective and evocative."

To convey that sensibility, Klipper employs a Linhof Technorama—a wide angle camera with a 105-degree range of view, ideal for capturing Antarctica's vastness.

As a photographer, he sees his role as that of an observer, not a self-expressionist. He tries not to over-intellectualize the act of taking pictures. "When you're out there, you're in the realm of Zen experience," he said.

On a recent Spryte journey over the sea ice near McMurdo Station, Klipper was in full Zen mode, shooting, reloading, shooting again—capturing the way shadows throw sastrugi into high relief, the way spectral corona encircle the sun, the way blue pressure ridges rear up before the black backdrop of Little Razorback Island.

Klipper is the most recent in a rich tradition of photographers to draw inspiration from the otherworldliness of Antarctica. Almost since the first human set foot on the Ice, the continent has been captured on film.

Many Heroic Age expeditions included professional cameramen, and some of them—most notably Frank Hurley with Mawson and Shackleton, and Herbert Ponting with Scott—left a body of work that endures as both history and art.

Photographers have also figured large in the Artists and Writers Program, which each year brings a range of creative talent to the Ice. Photographers from past seasons have included Neelon Crawford, Jody Forster, Eliot Porter and James Barker—an ethnographer whom Klipper counts as a close friend and confidant.

Photography, like most things, is complicated in polar environments. While trying to reload film inside the Spryte,

meltwater dripped into Klipper's camera, precipitating a minor emergency. At another point his camera's electronics froze, requiring a delay inside a hut to warm it up.

Overall, though, it was a productive day of shooting, with visits to the Penguin Ranch, Weddell World and the Dellbridge Islands. It's the kind of day Klipper wishes he could have full-time on the Ice, but the whimsical weather this season has proved a frustration, often grounding him in McMurdo for long stretches.

Born in the Bronx and now a resident of Minneapolis, Klipper's art has taken him to both ends of the Earth and many spots in between.

His first experience at high latitude was during a trip to Greenland in 1976. Other ventures have taken him to Arctic Canada, Alaska, Iceland and Norway. In 1987, he was part of a private sailing trip from the Falklands to the Antarctic Peninsula.

For Klipper, Antarctica, in its emptiness and stillness, is a sanctum for introspection. "It's a place where you can stand back far enough to get a clear handle on everything," he said. "This is the place where our souls feel best to be." ●

