The Antarctic Sun

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November 3, 2002

Journey south remembered

Photo by Melanie Conner/The Antarctic Sun

A small crowd gathers at Scott's Discovery Hut on Saturday night, just as they did 100 years ago to cheer Robert Scott and his companions on their departure to attempt reaching the South Pole. From the hut, Scott, Ernest Shackelton and Edward Wilson crossed the sea ice and the Transantarctic Mountains seen beyond to reach 80 degrees, the most southern point any man had been. See page 7 fora story about the centennial and page 4 for excerpts from Scott's diary.

Polar opposites attract scientists

"The Antarctic. So unarctic. So Antarctic"

– A poem published by Rod Mallory, *In Hard Times*, 1963.

By Melanie Conner
Sun staff

Early Greek geographers called it Ant-Arktikos, meaning opposite of the Arctic. They hypothesized that a landmass existed to the south to balance the known land in the northern hemisphere.

Just as the Greeks imagined, in the 19th century the existence of Antarctica was confirmed and mistaken similarities between the ice caps have whirled around the world ever since.

Both places are white, cold, snowy and remote regions where longitudinal lines converge and half of each year is dark while the other half is light. But the North and South poles are more opposite than they are similar.

Antarctica is a collection of glaciers on

See Opposites on page 12

Seeking life in Vostok's deepest ice

By Kristan Hutchison
Sun staff

Clear as diamonds and fragile as glass, the most carefully guarded cargo leaving Antarctica last year was 40 feet of ice core from Lake Vostok.

The 12-meter core wasn't the first shipment from the ancient, ice-capped lake, but it may be the most important, revealing what lies in the waters below.

"This ice is very precious and is the best template today of the chemical and biological content of the lake," wrote Jean Robert Petit, a senior scientist at the Laboratoire de Glaciologie et Geophysique de l'Environnement in Grenoble, France, where the ice now resides.

In 1998 the Russians drilled two miles (3.3 km) of ice from above Lake Vostok before halting a few hundred meters from the liquid lake water. When researchers began to look at the ice core, they realized the bottom of core was not the usual accumulated snowfall compressed into ice, but lake water that had frozen to the ice above as it slid over the lake. If anything lived in the lake it might be trapped in those final feet of ice core.

"The closer you can get down to the lake itself the stronger your argument is that that ice is truly representative of what's in the lake," said John Priscu, a researcher at Montana State University. "That's why we're striving to get this real clear ice from the

See Vostok on page 11

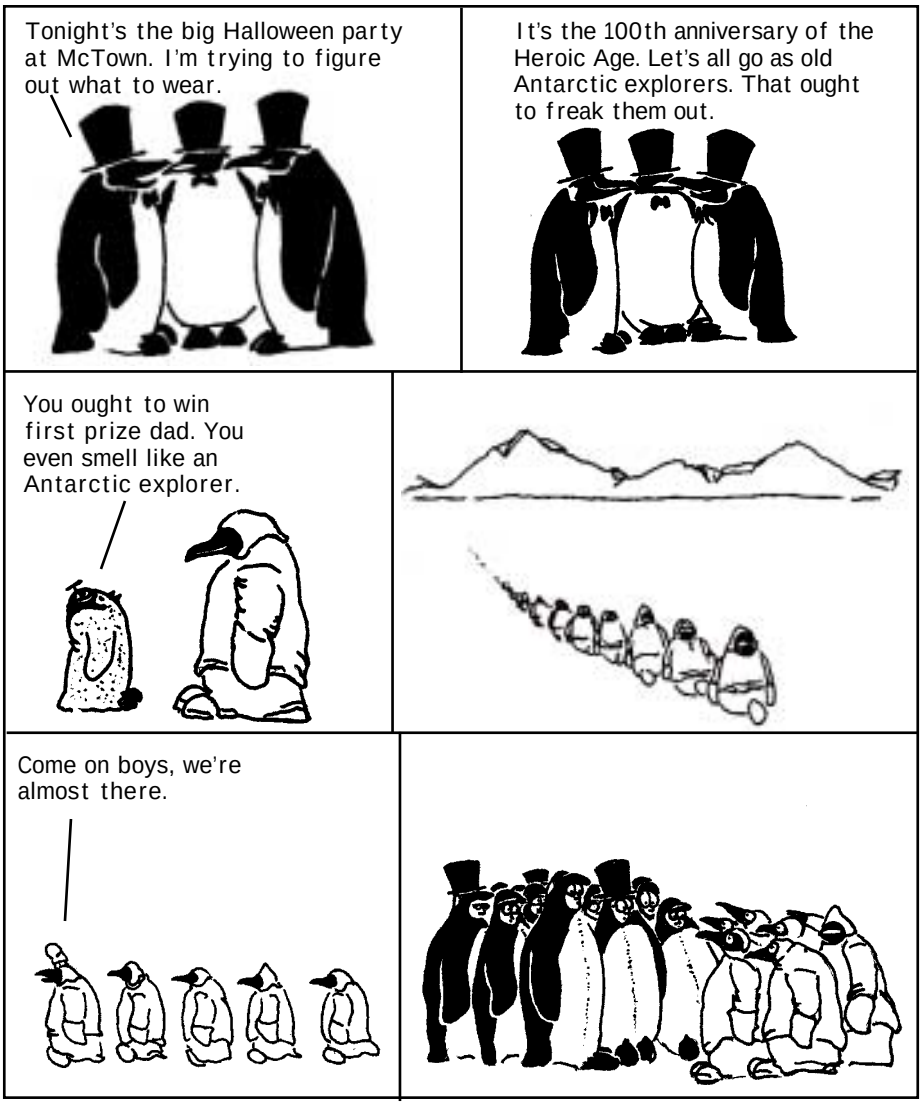
INSIDE

Quote of the Week

"It's just too early to start counting down."

— An Antarctica worker about going home in four months

Ross Island Chronicles By Chico



Cold, hard facts

Science projects

Projects by discipline: Aeronomy and astrophysics, **30**; biology, **40**; geology and geophysics, **23**; glaciology, **16**; ocean and climate,**15**; artists and writers, **6**.

Projects by station: McMurdo, **80**; South Pole, **23**; Palmer, **18**; *LM Gould,* **13**; *NB Palmer,* **6**.

Number of deploying scientists and team members: McMurdo, **270**; South Pole, **117**; Palmer Station, **26**; *NB Palmer*, **35**; *LM Gould*, **35**.

Largest field camp this season: **Onset D**

Longest running science projects: **Art DeVries** started as a graduate student in **1964**. The **Siniff/ Garrott** study of Weddell seals started in **1968**.

What does Antarctica have in common with Indiana, and the Negev desert of Israel: **global thunderstorm monitoring**

Sources: Online Science Planning Summary, Andy Young, Robbie Score

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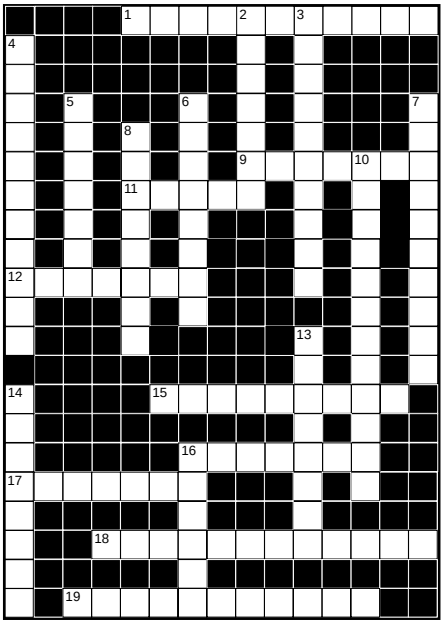
Web address: www.polar.org/antsun

Katabatic Krosswords: All about biology

Across
1. Extraction of water
9. The brain case
11. To throw out, usually indigestible material
12. Subconscious act due to inherited pattern
15. Pertaining to odors or sense of smell
16. Usual or natural dwelling space
17. Wasting away of an organ
18. Backward from the tongue
19. False feet

Down
2. To cut
3. Becoming fitted to an environment
4. Pertaining to land
5. Central portion of a cell
6. Science dealing with offspring
7. Loss of blood from a broken vessel
8. A plant that lasts two years
10. A lower animal without vertebrae
13. An abrupt hereditary change
14. Substance that accelerates a chemical reaction
16. A crossbred animal or plant

Solution on page 8



Squares too small? No pencil to erase your mistakes? Try our interactive online puzzle at www.polar.org/antsun

Terminating T3

Not the movie, but that tired, tepid, toasted feeling

By Kristan Hutchison
Sun staff

Usually it's penguins or seals that get to waddle around wearing sensors, but this year at least 35 people will, too.

They've volunteered to be poked with needles, swallow pills and occasionally wear thermometers in uncomfortable places as scientists try to find an easy cure for Antarctica's extreme version of the mid-winter blues.

"We used to call it the winter-over syndrome or cabin fever," said Dr. Larry Palinkas, director of the research team and a vice chief at the University of California San Diego School of Medicine.

Photo by Kristan Hutchison/The Antarctic Sun

Dr. Christian Otto takes a blood sample from study subject Gregory Cowan in Christchurch, before they deploy. It will be compared with blood samples taken after Cowan has been in Antarctica.

Officially called Polar T3 Syndrome, the sluggishness people experience in Antarctica is more than a malaise, said Palinkas.

More than half the people who stay through the Antarctic winter go through actual physical changes. Their metabolism generally increases about 40 percent. In the cold, the human body uses so much more thyroid hormone that it can't produce it fast enough. The result is a deficit of T3 and T4 thyroid hormones, which regulate the metabolism and are relevant to the functioning of the brain, kidney, heart and some reproductive organs.

As their hormone levels change, people become forgetful, depressed and tired. Typically people feel some change soon after they arrive on the Ice in October or November, as their bodies adapt, Palinkas said. Their mood and energy level improve mid-season and peak near the end of the summer, then drop again in mid-winter.

"As the winter goes on these can be more of a drain on your energy," Palinkas said.

They'll stare into space for minutes at a time in what is called the "Antarctic stare." By the end of winter they may be, in Antarctic lingo, "toast."

Palinkas wants to determine whether the hormone changes are caused by the cold or the darkness. He believes it is at least partially temperature-related, since the changes first show up at the beginning of the summer when there is 24-hour sunlight. But other environmental characteristics could also play into the symptoms.

"It could also easily be a factor of the darkness, because that can affect your hormone level," Palinkas said. "In fact, isolation can affect your hormone level."

To help differentiate the causes, next season he will try treating T3 syndrome with light therapy, similar to treatments for Seasonal Affective Disorder.

Whatever the cause, this season he's doing a trial on two other possible treatments. One is a thyroid hormone replacement, thyroxine, which he found useful in treating T3 syndrome in previous Antarctic studies. The other is an over-the-counter nutritional supplement, tyrosine.

Tyrosine is an amino acid most people eat regularly as part of protein. A component of thyroid hormones, it is thought to help transmit nerve impulses to the brain, improve memory, increase mental alertness, and promote healthy functioning of the thyroid, adrenal and pituitary glands.

"It may be a little like drinking 20 cups of coffee, but without the jitters," Palinkas said.

Palinkas aims to have at least 50 participants in the study. At any given time a third of them will be taking tyrosine, a third will take the thyroid replacement hormone thyroxine and a third will take placebos. During the months of November, January, February and August they'll be given computerized tests designed to measure their level of alertness, response time and rate their feelings. The tests are the same ones used to monitor astronauts at the International Space Station.

"A lot of these things, because of the type of measures we're studying, they're not really perceptible by the person themselves," Palinkas said.

The study is still looking for 15 more wintering volunteers before Nov. 15. Volunteers will be paid up to $100 for their involvement and can join by contacting Dr. Christian Otto at the McMurdo medical clinic or Dr. Will Silva at the South Pole.

Depending on the study results, wintering could become a much easier and more enjoyable experience for many people.

"If things bear out then people going down could get supplements just to prevent that general lassitude people get," said Otto, who is both overseeing part of the experiment and participating as a test subject.

"Thyroid hormone research as it applies to cold environments is something that's been studied for several decades," Otto said. "Looking at it from a preventative point of view is very unique."

People in northern polar regions could benefit as well.

Dave Weimer, a McMurdo power plant technician participating in the study, said he had symptoms similar to T3 Syndrome when he spent a couple winters in the Arctic. In January and February, the deepest, darkest months of the arctic winter, he found his attitude changing.

"It did depress me a lot. Little things would aggravate me," Weimer said. "I felt a tendency toward, I don't want to say violence, but an elevated aggressiveness."

The best treatment he found was to stay active, which was easy since he was working as a dog mushing apprentice near Kotzebue, Alaska.

The study may have applications even further afield, for people living in the cold, dark confines of space.

"The Ice is considered one of the most important or best analogs to life in space," said Palinkas.

Perspectives

The journey south begins 100 years ago

By Sir Robert Scott
Excerpts from his 1902 journals in "Voyage of the Discovery"

Nov. 2 — … "We are off at last. By ten this morning the dogs were harnessed and all was ready for a start; the overcast sky was showing signs of a break in the south. Every soul was gathered on the flow to bid us farewell, and many were prepared to accompany us for the first few miles. A last look was given to our securings, the traces were finally cleared, and away we went amidst the wild cheers of our comrades. The dogs have never been in such form; despite the heavy load, for the first two miles two men had to sit on the sledges to check them, and even thus it was as much as the rest of us could do to keep up by running alongside. One by one our followers tailed off, and by noon we three were alone with our animals and still breathlessly trying to keep pace with them. Soon after lunch we saw a dark spot far ahead, and about 5 p.m. we made this out to be our supporting party; we caught them up just as they were rounding the corner of White Island, and learnt that they had had very bad weather which had confined them to their tents. Relieving them of some of their loads, we camped, whilst they pushed on to get the advantage of a night march."

Nov. 3 — …At 2 p.m. we came up with Barne's people. They are doing their best, but making very slow progress. The difficulty is the slipperiness of the windswept snow, the surface being particularly hard amongst the sastrugi opposite the gullies of the island. They can get no hold with their fur boots and find their leather ski boots dreadfully cold for the feet; the result is that they scarcely cover a mile an hour. I have told Barne to go on quite independently of us."

In this manner we journeyed slowly to the south outside of White Island, the parties constantly passing and repassing; it was impossible at this part to keep together, as men and dogs took the march at quite a different pace. To add to the slowness of our journey, the weather proved very unpropitious, for the wind constantly sprang up and obliged us to camp, and we were forced to lie up during the greater part of the 8th and 9th, whilst a heavy blizzard passed over us.

On the 9th I wrote: "The wind still blows with exasperating persistence, though the sun has been peeping out all day; it adds to the trying nature of this inactivity to watch the sun pass pole after pole of our tent and to know that the supporting party are cut off from their slow daily progress. We are now south of the Bluff, and cannot be more than eight miles from the depot. Tonight the wind is dying; the cloud mantle on the Bluff has vanished, and for the first time for many days one can catch a view of the western lands.

On our outward track we have kept rather too close to the White Island, and consequently have had to traverse a good many undulations; it was curious to watch the supporting party dipping out of sight on what appeared to the eye to be a plain surface…

Nov. 10 — At one o'clock sighted the depot, and were soon camped beside it, when the wind died away, the sky cleared, and we have again the whole splendid panorama of the northern and western mountains in full view.

On the march today a small snow petrel suddenly appeared hovering above us, and later it was joined by a second; these are the first birds we have seen since the departure of the skuas in the autumn, and form a very pleasant reminder of summer. We are left in wonder as to why they should be so far from the sea…

The 12th proved a misty, raw, cold day – not a happy omen for our start – but we got away betimes, and with a cheer set off for the first time on a due south course. The dogs were in such high feather that they quickly caught up the men, and little by little we had to increase their load until they were drawing no less than 2,000 lbs. When we camped for the night we had made 11 ½ miles and, in the slightly misty weather, already appeared to be lost on the great open plain. I note in my diary: "The feeling at first is somewhat weird; there is absolutely nothing to break the grey monotone about us, and yet we know that the mist is not thick, but that our isolation comes from the immense expanse of the plain.

Nov. 13 — Sights today showed us to be nearly up to the 79th parallel, and therefore farther south than anyone has yet been. The announcement of the fact caused great jubilation, and I am extremely glad that there are no fewer than fifteen of us to enjoy this privilege of having broken the record. Shackleton suggested that all should be photographed, whereat the men were much delighted, and we all gathered about the sledges with our flags fluttering over us. Then half our supporting party started to return, bearing the good news of our present success, and the other half stepped out once more on a due south line, with the dogs following.

On the 13th and 14th we pushed on to the south in spite of thick snowy weather which followed the fine morning of the 13th, and during those two days we managed to add fifteen miles to our southing.

Nov. 15 — A beautifully bright, calm morning; the sun shone warmly on our tents, making them most cheerful and comfortable within. To the north the land has become dim, to the west we have the same prospect of distant, detached snow-covered ranges, and in all other directions the apparently limitless snow-plain.

We were very busy this morning making arrangements for our last parting: the loads had to be readjusted, the dog-harness attended to, observations taken, and notes of farewell written. All this was not finished till after noon, when many willing hands helped us to pack up our tent and make all ready for our final start. If former moments of parting have seemed unpropitious, the same cannot be said of to-day: the sun shone brightly on our last farewells, and whilst behind us we left all in good health and spirits, it is scarcely to be wondered at that our hopes ran high for the future. We are already beyond the utmost limit to which man has attained: each footstep will be a fresh conquest of the great unknown. Confident in ourselves, confident in our equipment, and confident in our dog team, we can but feel elated with the prospect that is before us.

Don't forget to write
This page is generally set aside for personal experience or science columns up to 800 words. Submit one to The Antarctic Sun at AntSun@usap.gov.

around the continent

PALMER

Roof-ripping rainstorm

By Tom Cohenour
Palmer correspondent

Rain storms aren't part of most people's image of Antarctica. But Palmer Station, on the Antarctic peninsula, gets hit with several drenching downpours each austral summer. Standard issue gear for people deploying to Palmer includes heavy-duty rubber bib-style Helly Hanson pants and coat with hood, rubber gloves,and rubber boots.

This isn't the usual high-tech Gortex day-hiker kind of rain gear. We're talking about heavy-duty, Maine lobstermen, work-hard-in-them-all-day-every-day kind of solid dependable rain gear you need for survival on an iceberg-strewn ocean coastline.

"They don't breath, but they sure keep that cold rain out," said carpenter Jeff Gustafson about his Helly Hansen's.

Palmer Station recently weathered another rain storm with winds commonly gusting to 60 knots (70 mph) throughout the four-day siege. Temperatures hovered close to +37F (+2.9C). Precipitation totaled 0.9 inches (23mm). Taken individually, those stats won't raise many eyebrows. But mix them all together and try to take a walk in it. Instant wetness results. A 70 mph wind will literally force rain through a heavy Carhart work jacket.

When the temperature goes down a few degrees, rain drops turn into jagged bullets of ice slashing at exposed flesh. Brave souls venturing out shuffle along with their coat hoods up and their heads down, protecting their faces from the sting. No-one lingers. Working outside is nearly impossible and is definitely a safety hazard.

There are times adverse situations dictate immediate action; the raging storm brought about one of those events. Gusting winds worked the screws loose on the sheet-metal roof panels of the chemical storage locker. With sudden violent force, the wind ripped the panels completely off.

Fortunately, the roof edge flashing acted as a hinge and flopped the metal roofing over alongside the building. Had the sheets of steel flown loose instead, they would have been deadly instruments of destruction slicing anything in their path. A few heroic individuals endured the raging wind and rain to secure the panels with cargo straps all the while knowing the potential, for very serious injury should the flashing break loose and the panels get caught by the wind.

Following the four-day storm was a brilliant, sunny, calm day. Just the kind of weather perfect for repairing a roof in shirt sleeves, sunglasses, and slathered with tanning oil.

Photo by Tom Cohenour/The Antarctic Sun

Palmer residents secure a piece of metal roofing that blew off a milvan during a storm last week.

Photo by Jonathan Berry/Special to The Antarctic Sun

The first flight of summer lands at the South Pole Oct, 26, breaking eight-and-a-half months of isolation. It carried new people, fresh produce and other cargo.

SOUTH POLE

First flight, finally

By Judith Spanberger
Pole correspondent

South Pole Station welcomed in the summer season on Saturday, Oct. 26, 2002. The temperature was a balmy minus 61F. Two planes made it in bringing fresh fruit and vegetables (also known as "freshies"), mail and approximately 100 people. A crowd of 25 to 30 winterers were waiting at the fuel pits to greet friends from last summer and new arrivals and to help carry bags. Most people need some time to adjust to the altitude, so it's become tradition that the winterers carry bags to the dome.

We stood on the flight line by the fuel pits, lined up in anticipation, watching for the plane to come into view. We could hear the roar of the props getting closer and louder and then there she was, lights shining through the fog created by the heat of the engines, slowly making her way to the fuel pits and to us. We all spontaneously began shouting, clapping and hugging each other.

Cheers and smiles and more hugs until the plane finally stopped. We stood and watched as the first foot stepped out of the plane onto the skiway, and a new face came into view. The first new face we'd seen in eight and a half months. Then another foot and another face and people were coming off the plane like ants out of an anthill.

See Pole on page 6

the week in weather

McMurdo Station
High: 22F/-6C Low:-6F/-21C
Wind: 46 mph/74 kph
Windchill: -44F/-42C

Palmer Station
High: 37F/3C Low:10F/-12C
Wind: 77 mph/123kph
Melted precipitation: 0.9 in/2.3cm
Snowfall: trace

South Pole Station
High: -13F/-25C Low:-64F/-54C
Wind: 45mph/72kph

Pole

From page 5

What joy at seeing the faces of friends we hadn't seen in so many months! What a pleasure to see a familiar smile and to hear "You look good! I can't tell you wintered at all!" What gracious friends we have! How exciting the fresh energy and the realization, finally in a tangible form, that we had made it.

We had really made it. The winter was OVER. We had survived, and at that moment there on that flight line with the props spinning and our friends around us we knew we'd not only survived our winter, but we'd done it well. Ah…. and we hadn't even eaten any of the fresh food yet.

Photo by Jonathon Berry/The Antarctic Sun

At the end-of-winter ceremony, winterers josh each other good-naturedly, as they celebrate a season completed.

Brian Stone, National Science Foundation representative in McMurdo, Col. Joel Maynard and Jim Scott, senior Raytheon representative on the Ice, came to congratulate us on making it through in one piece. Three of our comrades had to leave on the first plane due to illness or family emergency. Stone, Scott and Maynard held a short, but nicely done awards ceremony in the passenger terminal for them as they waited to board this first plane. On the very tails of so much excitement and joy we began to experience our goodbyes.

The second plane came 45 minutes after the first one landed and we once again watched new faces, wide-eyed and energetic, come into our world. We followed this crowd to the dome for the annual awards ceremony. Our little galley slowly filled up with people. Jim Scott lined up the mementos in preparation for distribution: a very nice embroidered micro-fleece shirt, baseball cap, patch and medal. In a galley packed to the gills we were called up one by one to receive our awards. The gifts and medal themselves are very nice to have, but the real reward was the clapping and cheering that each one of us received from our fellow winterers. What better way to say "Good job! You did it!" than the hooting, teasing and clapping of your peers?

Later that night we held our final winterer party in the New Elevated Station's galley. The winter band, the JPX, played a two-set show and rocked the house. We danced, got re-acquainted and proudly showed off our work in the new station. It was a great deal of fun for us all and a nice way to say hello and goodbye.

Monday morning the station had transformed itself into summer mode, the turnover process barely noticeable. The quiet protective shroud of the winter had been shed like a child throwing off bed covers on Christmas morning. People were bustling about busy with their tasks as if they'd been here for months. How quickly the baton is passed when there is such a short summer season in which to accomplish so much.

It's been odd walking around this place that has been our home and that has transformed so much and so quickly. Did we really just spend eight-and-a-half months here in this place? The reality that it's truly over is gradually sinking in. There isn't much time for contemplation. I suppose that will have to come later. For now we are busy passing on information, packing our things, choosing what to take and what to leave behind, having our last chats with our winter friends and reliving some of our winter escapades, saying goodbye to people we may never see again and making travel plans. Our heads are turning away from this place to the world beyond it.

To the summer crew and the winterers of this coming winter we wish you well. We send along our hopes for few bad weather days, freshies and mail on every flight, an endless supply of beer and the chance to have the experience of a lifetime. Fare thee well. And an especially fond farewell to the spirit of Antarctica itself that will always be here to influence us to grow and change in ways we never thought possible. A heartfelt "thanks."

Carry on.

Continental Drift

What do you wish you had packed?

"Probably a girl. I think that's all I really want more than I have...I'll check skua."
Daryl Cobabe, South Pole plumber from Folsom, Calif.

"I forgot one of my photo album supplies that I need to complete the album of my trip through Chile (last year's post-season trip) which I've been putting together in my spare time."
Brenda Walker, *Palmer administrative coordinator from Denver, Colo.*

"If I could change anything, I left a bunch of sausages in my car in my aunt's garage in Portland."
Paul Rohweder, McMurdo sheet metal worker from Bellingham, Wash.

A century of exploration

Antarctica's first trek 100 years ago falls short of goal, but allows others to succeed

By Mark Sabbatini
Sun staff

It wasn't, by all accounts, a fun trip.

Disease, hunger, squabbling and pathetically slow progress marked the journey, which fell far short of its intended destination. Even history has not been entirely kind, as the journey has never quite ranked among the most memorable Antarctic treks. But experts say Ice dwellers ranging from historic explorers to modern-era janitors owe the expedition a debt of gratitude.

Exactly 100 years ago Robert Falcon Scott, Ernest Shackleton and Edward Wilson set out on the first expedition across Antarctica, after establishing a base at what is now McMurdo Station. Their 93-day trip made it less than halfway to the South Pole, but Scott captured the essence of some modern-day thinkers in a journal entry as the trio set a southern distance record into unmapped territory.

"It has always been our ambition to get inside that white space and now we are there so the space can no longer be a blank," Scott wrote when they crossed the 80th parallel on Nov. 25. "This compensates for a lot of trouble."

A short ceremony to commemorate the Nov. 2, 1902, departure of the expedition was held Saturday at McMurdo's Hut Point. Still standing at the point is a drafty hut intended by Scott to store goods from his ship *Discovery*, but which ended up serving as a shelter when the party was forced to spend the winter there.

When Scott departed the continent in 1904 he wrote no one was likely to see the large wooden cross erected outside the hut again. Instead the area became the launching point for a number of successful expeditions and today is Antarctica's most populated spot.

"Even though they didn't get very far south, even though by their standards it was fairly disappointing, the information they came back with was significant for later expeditions," said Ted Dettmar, a former safety instructor for the U.S. Antarctic Program who has long been considered an expert in Antarctic history.

Being the first to attempt a lengthy trek across the continent meant making mistakes and discoveries others would learn from, said Donal Manahan, dean of research and professor of biological science at the University of Southern California.

"It set the whole concept for the Heroic Age of sledging, at least in the McMurdo area," he said.

That era would be marked by explorers pulling 250 pounds each on sleds in extreme cold 12 to 15 hours a day for months on end "knowing that if you didn't pull you would die," Manahan said. Discomfort and death would still result, but subsequent successful explorers would carry enough rations to help stave off cold and illness, and know about the mountains and other hazardous terrain they were up against.

Shackleton, who clashed bitterly with Scott during the journey, may have been motivated by the conflicts to strike out on his own during future, more famous expeditions, Dettmar said. He said Roald Amundsen, leader of the first expedition to reach the South Pole, studied Scott's journey closely and "was willing to learn from people he recognized as experts."

The success of subsequent journeys resulted in greater notoriety than Scott's inaugural expedition. The 100-year anniversary of the British naval officer's journey to McMurdo Sound garnered some attention from his home country, including a visit by Princess Anne in February, but it appears no events are planned to observe the beginning of the journey on the continent.

"Although this was a major achievement in 1902, it was soon overshadowed by Shackleton's *Nimrod* expedition (which reached 88°23'S in 1909) and of course by Amundsen and Scott's journeys that reached the Pole," wrote Paul Cooper, the mapping and geographic information manager for the British Antarctic Survey, in an e-mail.

Many of the lasting impacts came before or after the actual trek, including the establishment of McMurdo Sound as a base of operations. Manahan said Scott's role in that was largely influenced by James Ross' voyage in 1839 when he penetrated to the Ross Ice Shelf, spotting and naming the landmark mountains now known as Erebus and Terror.

"The famous exploration of Ross set the stage for Scott and Scott's famous exploration set the stage for us," Manahan said.

See Centennial on page 8

Photo courtesy of the Royal Geographic Society

Before and After: *Ernest Shackelton, Robert Scott and Edward Wilson (left to right) as they set off on their southern journey in November 1902 and when returned three months later.*

Photo courtesy of the Alexander Turnbull Library, Wellington

Centennial

From page 7

When Scott arrived in early 1902 he found an anchorage in Winter Quarters Bay that allowed access to both the sea and the continent via the ice shelf, Dettmar said. The explorer was looking for a site to put a permanent structure, as well as allow access for his ship and land expedition, but it also turned out to be an ideal site for long-term occupation.

"My interest is being in an area where we can explore interesting local phenomenons and McMurdo is just the crossroads of that" Dettmar said. "You're not too far away from the huts. You're right underneath Mount Erebus, which is always fascinating. You're next to the ocean, so you see the open water and sea life... (and) there are interesting local features such as the IMAX crevasse to explore – under proper supervision, of course – right across from the Transantarctic Mountains."

The expedition

Scott, Shackleton and Wilson set out on the morning of Nov. 2, 1902, catching up to a support party that had departed a few days before. By Nov. 13 they set a new record for southern travel by crossing the 79th parallel, but the difficulties of the journey also became quickly apparent.

Dettmar said it's likely most members aboard the *Discovery* doubted the trio would actually reach the Pole, in part because there were so many unknown factors. Among them was the terrain.

"When they got far enough south they realized all those mountains were in front of all of them," he said. "That was just tough. No one knew all that until that point."

Progress was slow and the 19 dogs they brought to haul the sleds became weak and sick, possibly from a diet of rotten fish.

"They had to put the dogs on the sled and pull them as well," Manahan said.

Ginny Figlar/National Science Foundation

Provisions left at Robert Falcon Scott's hut at Cape Evans

The first dog died Dec. 9 and "the others had no hesitation in eating their comrade," Scott wrote. Four more dogs died by Dec. 20.

In late December, after crossing the 80th parallel, Wilson noticed Shackleton had swollen gums and other symptoms of scurvy. Wilson himself was suffering from snowblindness. All three were also suffering the effects of inadequate rations. On Dec. 30, at 80 degrees 12 seconds south, they decided to turn back.

The return journey was much more perilous, with the remaining dogs dying rapidly and all three explorers developing signs of scurvy. By mid-January Shackleton's symptoms were chronic as he was spitting blood and unable to help haul the sledge. On Jan. 18 he was unable to travel, forcing the party to camp for several days, and near the end of their journey Scott and Wilson would be forced at one point to carry him on the sledge.

On Feb. 3 lookouts finally spotted the party and helped them return to the *Discovery*.

Their close call would be experienced by others, including Shackleton during his *Nimrod* expedition, and in each case the landmark established by Scott would serve the same purpose, Manahan said.

"What's so important about Hut Point is getting back to Hut Point was a matter of life and death," he said.

Other accomplishments

The 93-day trek was only a small portion of the more than five years that Scott devoted to the *Discovery* mission between the planning stages and the ship's return from McMurdo Sound. Plenty of other advancements occurred during the voyage, beginning with the ship itself.

Previous ships that traveled to the polar region were modified war ships, Manahan said. The *Discovery*, which is still afloat, was custom made for polar research.

"It was built for warmth. It was built for strength and it was built for science," he said.

A number of scientific firsts were accomplished, including the first meteorological readings using weather balloons. Wilson, a zoologist, was among the busiest members during the winter of 1902 as he gathered meteorological and animal data. Others would spend their time gathering biological and geologic samples and data.

Many of the more than 40 people aboard the *Discovery* also played significant roles in shaping Antarctic history.

In March of 1902, a month after the *Discovery* arrived in McMurdo Sound, a blinding snowstorm caused a sailor to fall to his death over a precipice. A dozen others who were part of the party were stranded by the storm.

"The sailor who led others through the storm and back to the ship and safety was Frank Wild," Dettmar said. "Until that moment Wild was just a minor member of the expedition."

Wild was credited by Scott with saving the party. He became the most experienced Antarctic hand of his time, accompanying Shackleton on his *Nimrod* mission and taking charge of the 22 men left on Elephant Island when Shackleton went for help after the sinking of the *Endurance*.

Such outcomes could not, of course, be anticipated during the hardest days of the *Discovery* expedition. But being able to view them in hindsight is what gives historians and other Antarctic observers an appreciation of the mission.

"Perhaps the main significance of the Heroic Age is that it took place," Cooper wrote. "These tremendous journeys achieved results that we could get in a day's flying in a Twin Otter, or in a few minutes observation from a satellite. What they did was to set the scene for Antarctica as a continent for science - you could call these intensely nationalistic expeditions the precursor of the Antarctic Treaty."

Answer to crossword from p. 2

Frozen to the core

National Ice Core Lab keeps thousands of years of ice in stock

By Mark Sabbatini
Sun staff

All the king's horses and all the king's men had it easy. Imagine putting the pieces of a 450,000-year-old ice block together again.

Now imagine a work area where the temperature is always –13F and you have a good idea of how John Rhoades spends his workday at the National Ice Core Laboratory in Denver. He helps preserve one of the world's most unusual collections: 13,000 one-meter-long tubes of ice carefully extracted from Earth's polar regions.

"I'm in there six hours typically on an eight-hour shift," he said.

The laboratory offers a first-hand look at hundreds of thousands of years of history from some of the world's most mysterious places. Researchers ever-so-carefully gather and send the ice here, then have pieces cut out with band saws, examine them in on-site labs and arrange to have samples sent worldwide. At the same time they expect to have their frozen treasure maintained in perfect condition for years to come.

"Our number one focus is to keep the place cold and organized," said Eric Cravens, an assistant curator at the lab.

Rhoades, another assistant curator at the facility, is the only worker with extensive experience drilling ice cores in Antarctica, having put in three seasons on projects outside of his lab work. He is also known as a good "puzzler" – someone who can put the pieces of frozen history back together accurately – a necessary skill since the ice cores can fragment in the field as well as being sliced up in the lab.

"Sometimes the pressure in the core was so bad the core would literally explode when we got it to the surface," he said, referring to a season at Siple Dome where the ice was particularly "brittle." He said bubbles in the ice several hundred meters down made it fragile – a problem that can happen anywhere – shattering some cores into as many as 50 pieces.

Four employees and two interns work at the 8,000-square-foot laboratory, which is run by the National Science Foundation and the U.S. Geological Survey. An 80,000-cubic-foot freezer features row after row of floor-to-roof shelves stocked with ice cores sorted by area, age and date collected.

"That's the bottom of the Greenland ice sheet," Cravens said, pointing to one of the thousands of identical aluminum-coated cardboard tubes housing the ice cores. A few aisles over are samples of ice up to 450,000 years old from Lake Vostok ("pretty

See Icecore on page 10

Photo by Melanie Conner/The Antarctic Sun

"It's amazing how stupid you can get in the cold."

—Eric Cravens, assistant curator at the National Ice Core Lab

Eric Cravens, assistant curator at the National Ice Core Lab, holds up a piece of ice taken from above Lake Vostok. The clear ice is coated with brown kerosene used as a drilling fluid.

Icecore

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boring stuff," Cravens jokes) and tucked away on a far shelf are samples drilled at Little America V during the International Geophysical Year in 1957 when the first year-round research stations opened in Antarctica.

The NICL collection is divided about evenly between Antarctica and Greenland, with a few cores from the South Cascades in Washington. The Greenland ice sheet has a theoretical maximum age of about 250,000 years, while Vostok holds the honors for longevity in Antarctica.

Reading ice cores is both a simple and complex process. At its simplest level, researchers can count layers of ice like rings on a tree to determine its age. Lighter areas generally signify clear ice and colder seasons, while darker colors indicate warmer periods where higher concentrations of dust managed to infiltrate and cloud up the ice.

At a more complex and microscopic level are numerous projects examining ice samples for evidence of life, atmospheric conditions of the past, volcanic activity, detailed climate data and other information. Trapped gas molecules, dust particles and other elements provide the clues.

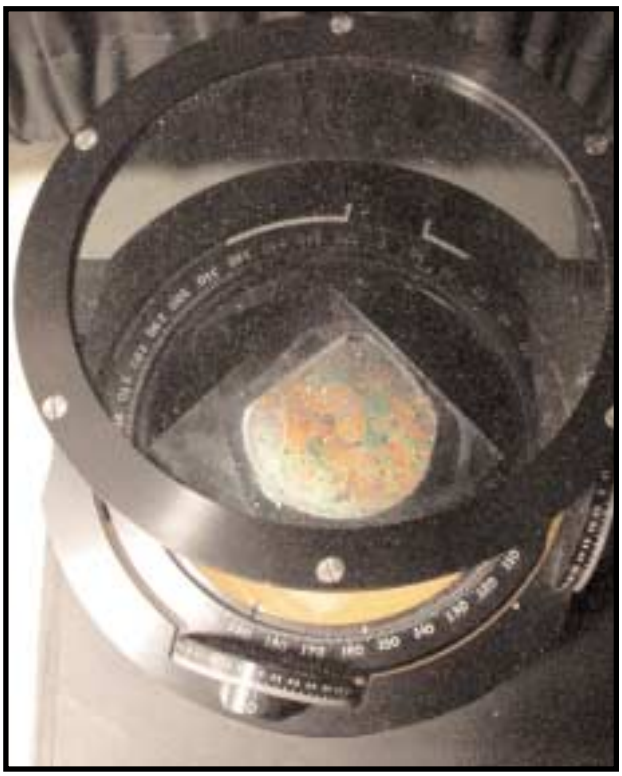
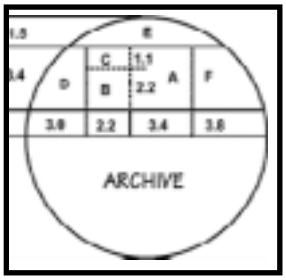


Photo by Melanie Conner/The Antarctic Sun

Viewed through a polarized lens, a slice of clear ice becomes a mosaic of color. Below, a butcher-style diagram shows the standard cuts made into the ice core.



The laboratory workers don't perform any research on the samples, although they are knowledgeable enough to discuss them in great detail. But for Rhoades, who has forgotten most of the geology he learned in college while becoming an expert in glaciology and climatology, the things he enjoys most are working in the field and cutting up the cores at the lab.

"For me it's the challenge of trying to get accuracy for the scientists," Rhoades said.

The biggest problem is probably ensuring all of the measurements and depths recorded in the field are accurate, Rhoades said. Being off a mere four inches (10cm) near the surface can result in significant inaccuracies when ice is extracted further down, since 1,000 years worth of layers can be compressed into a meter of ice at the bottom of the sheets.

There's also the matter of making sure everyone involved knows which end of the ice core is up – otherwise history is literally inverted.

An attempt to standardize collection and storage procedures has started during the past few years, but Rhoades said it will likely be several more years until they take effect. A conference attempting to solidify such standards is scheduled next year in Milan, Italy.

"It's going to be fairly important, I think, for the ice core community and the world," he said. The "community," he added, probably numbers about 200 to 250 people worldwide.

The lab monitors the shipping of the cores carefully. Those from Antarctica are brought in cold storage cases to Port Hueneme, Calif., then brought by freezer truck to Denver – with a second empty truck following in case the first fails.

Preserving the integrity of the ice cores at the lab requires skill and extremely precise, reliable equipment, since any amount of thawing can seriously alter their makeup. The main storage area is kept at –35C (-31F) to slow the inevitable changes in the cores over time to a virtual standstill. An attached lab area at –22C (-13F) has band saws and other tools to dissect portions of the cores, plus research space for scientists and others studying the ice.

The freezer has several layers of backup. A generator comes on within 30 seconds of a power failure and other safeguards can keep it running indefinitely if necessary.

The amount of time people can spend in the freezers varies and the workers and researchers keep an eye on each other, Cravens said.

"When you're working in there for an extended period of time it's amazing how stupid you can get in the cold," he said.

The freezer has an unusual, but somewhat familiar smell visitors often have trouble identifying. The reason, Cravens said, is a fluid used when drilling ice cores is also used in paint, nail polish "and in very small quantities for banana flavoring."

The sample sizes sought by researchers can vary from a short, stubby piece to one a few centimeters wide that extends along the entire length of the core. A committee of five or six people reviews and approves requests to examine core samples, with anywhere from 20 to 50 submitted in a typical year.

Those with NSF-funded grants to do core research are essentially automatically approved, but a member of the general public will have a tougher time gaining access, said Todd Hinkley, acting technical director of the center.

"People off the street, we'd turn them down flat" if they simply walked in and asked to examine the cores, he said, "but we'd also tell them 'We're not turning you down, we're telling you how to do it through the board.'"

Those wanting a more informal look at the lab and an overview of ice core research will have an easier time. The lab encourages and offers tours, with students, seniors, glaciologists and "people from Indiana on a road trip" among the recent visitors, Cravens said.

"Last year we gave tours to over 1,250 people," he said.

The number of people who do research on ice cores is relatively small, but they realize their work may have a significant effect, such as uncovering the true potential threats of global warming or being able to predict weather patterns decades into the future. It's one of the reasons lab workers want people to know about the research performed in their freezer of ice.

"Global warming isn't a policy," Rhoades said. "It's something that's happening that could affect a billion people."

Vostok

From page 1

bottom; it is different physically."

The deepest Vostok ice core was left in a snow cave at Vostok Station until last season, when it was flown to McMurdo and then shipped in a freezer-box to Christchurch. There it was transferred to a commercial container ship, which carried it to Marseilles. The freezer box of core was loaded in a truck and driven to Grenoble.

"Since this ice is very precious, a considerable care has been taken and the National Science Foundation, Dave Bresnahan, supervised, organized and took care of each step of the transportation," wrote Petit. "The ice arrived in Grenoble in perfect state."

At an April conference at the National Science Foundation in Washington, D.C., the heads of science programs for America, France and Russia agreed to split the core equally between the three countries. They also set aside two segments of core, each a meter long, for further studies. A three-nation call for proposals to study the final two cores will be launched at the end of this year, Petit wrote.

"Nobody has a full core of Vostok," said Eric Cravens, curator at National Ice Core Lab in Denver, Colo., where about 700 meters of ice from early Vostok shipments is stored in silver tubes.

The U.S. received every third meter of the earlier shipments of Vostok ice, which came from higher up the core. In the freezer room, Cravens pulls out a two-foot piece of that ice and holds it to the light. The core is coated in a brown sheen from the kerosene the Russians used as a drilling fluid. It's like looking through a dirty window. The inside of the core itself is like glass. This particular piece is formed from about four crystals, Cravens said.

Photo by Melanie Conner/The Antarctic Sun

Tubes of Vostok ice core stored at the National Ice Core Lab in Denver.

The Vostok cores in stock at the National Ice Core Lab go down to 11,913 feet (3,610 meters).

"We have a little bit from the bottom, but not the super deep stuff," Cravens said.

The super-deep stuff remains in Grenoble, where the Russian and French scientists have started to select their samples and analyze it for signs of life.

"The analysis is very delicate and difficult, because the accreted ice is incredibly clean," Petit wrote. "Since the ice contains almost nothing, it is very difficult to prevent the contamination from our environment during analysis."

In Russia, Sergey Bulat and his colleagues are working with four segments of the super-deep accreted ice core from different depths at the Division of Molecular and Radiation Biophysics, Petersburg Nuclear Physics Institute. They have just started looking for bacteria in the new segments.

While the DNA work is done in Russia, the Russians and French are collaborating to decontaminate and meltwater process the samples using their own techniques in a "clean room" at the lab in Grenoble.

Those same techniques brought them results with earlier samples of accretion ice from further up the core. In that ice they found evidence of three bacteria which all were similar or related to those found in hot springs and hydrothermal vents. They also demonstrated the presence of many diverse bacterial contaminants, mostly from drilling fluid.

The Russian discovery is supported by French research and implies the lake may be warmed by geothermal activity.

"If this emerging picture is correct, Lake Vostok could harbor a unique assemblage of organisms fueled by chemical energy much like that observed in deep-sea vent systems," wrote Priscu.

Priscu has also found microbes in the Vostok ice core, though of a different kind than the Russians. His research team received 16 Vostok ice core samples last year, including six from accreted ice further up the core. He and other American scientists are still waiting for sections of the deep Vostok core to be brought back to the U.S. Priscu requested 11 more samples of Vostok core, including some of the deepest accreted ice.

"It should have some unusual things in it, but they're probably down near the bottom," Priscu said.

The microbes Priscu and his colleagues found so far are garden-variety, similar to those found in the soil anywhere on Earth. He theorizes those microbes were carried in the air and transported down to the lake water with the layers of snow.

The microbes may survive within the ice in a web of microscopic tunnels, believes Buford Price, a researcher at the University of California, Berkeley. He plans to test his theory using slices of the Vostok ice core.

Salt, acids and other chemicals in the atmosphere fall down with the snow and become part of the icesheet. As anyone who's sprinkled salt on an icy sidewalk knows, salt melts ice by lowering the freezing temperature. That's also why seawater takes longer to freeze than freshwater lakes.

The salts and acids in Antarctic ice act the same way, Price points out. Wherever three ice crystals meet, a salty or acidic solution collects in the threadlike crack, forming a permanent liquid channel. And where there's liquid water, life can exist, provided some nutrient is available. In this case, microbes in the channels can extract energy from the salt or acid.

"It's a hostile environment, these veins. They're filled with some harsh reagent that would poison a higher life form, but microbes that we know exist on Earth have learned to live in some extreme environments, whether hot or cold, salty or acidic or even devoid of oxygen," Price said.

Price will look at the frozen Vostok ice samples through a fluorescent microscope, hoping to see threads of microbes to confirm his theory. Based on studies of similarly cold environments in the ocean and soil, Price expects some or all of the microbes he finds in the ice will be in a nearly dormant state.

He'll try to revive some, placing thin slices of the ice on an agar medium with a sparse food source and leaving them at differing temperatures for several months. Some will be left in an atmosphere devoid of oxygen. If things work out as he predicts, the microbes will begin to revive and reproduce, leaving a growing colony where each vein meets the agar medium. A match of the locations of the colonies with the exit points of the veins would be proof that the microbes had existed in the veins.

The discoveries of life in the Vostok ice core have changed Priscu's view of Antarctica's barren plains of ice. He found about 50 microbes per cubic centimeter of ice. Extrapolating that across the Antarctic continent, where the microbes could just as easily live, it's possible that Antarctic ice holds as much biological carbon as the world's unfrozen freshwater, Priscu wrote in an article titled "Earth's Icy Biosphere."

"Clearly, Antarctica contains an important global carbon reservoir that has been neglected by scientists in the past" Priscu said.

"When I would fly over Antarctica I used to look down and think 'What a dead place,' but now I look down and think there's a lot of life in it."

Opposites

From page 1

top of a landmass with surrounding islands, while a circumpolar ocean current isolates the continent from warmer waters. The continent is surrounded by sea, on which the only non-microscopic life depend: seals, penguins, skuas and other sea birds. Ninety-eight percent of Antarctica is covered by snow and ice, making it inhospitable to plant life. Yet the glaciers themselves seem alive with their constant oozing, creeping, contracting and growing – like slugs making their way over rocks.

Composed of icebergs and pack ice, the Arctic is mainly an ocean surrounded by land and supports ecology such as polar bears, birds and flowers. Warm Alaskan summers also create tundra on top of permafrost, or permanently frozen soil.

At 90 degrees south the geographic South Pole is ceremoniously marked on the featureless ice plateau with a red and white, candy-striped post, topped with a silver orb and surrounded by flags of the Antarctic Treaty Nations. By contrast, the North Pole is unmarked. Instead, located somewhere on or below sea ice and surrounded by open water, it is often inaccessible.

However, for scientists working in opposite regions the differences grow in complexity far beyond ecological and geological differences.

In the Arctic indigenous people live on the perimeter of a frozen sea. The people first migrated there thousands of years ago. They've adapted to Arctic weather, learning to use the resources of the land and sea. They eventually became colonized, acquired land and profited from its oil.

Photo by Josh Landis/National Science Foundation

Penguins, the best known animal in Antarctica, are not found in the Arctic.

Village science

Barrow, Alaska, located at 71 degrees north, helps support the most northern research facility in the U.S. Unlike the institutionalized science stations in the Antarctic, Barrow is a Native village - people have neighbors, children and pets. There are hotels, stores, amateur hockey teams, weekend movies at the local high school and an airport with two flights a day from Anchorage and Fairbanks.

"You're hunting seals offshore while kids are watching from the shore," said Mike Castellini, a University of Alaska at Fairbanks seal researcher, who has worked at both McMurdo Station and Barrow. "You are conducting science in someone's back yard."

Antarctica is absent of a marketplace and a traditional community structure. Leaving family and friends behind, those traveling to Antarctica do so carrying mementos of home and photos of loved ones and pets stuffed in duffel bags with 75 pounds of personal gear. Living in dorms and eating in a dining hall, most aspects of day-to-day living and science logistics are handled by the National Science Foundation's United States Antarctic Program.

"It's easier here (Barrow) because there is a community in place," said Matt Irinaga, logistics coordinator for the Barrow Arctic Science Consortium and former grantee and logistics person in the Antarctic. "We don't have military support. It's a remote village, but it's linked well to the outside world."

Station Science

Though Alaska still calls itself the Last Frontier, Antarctica is more of a frontier today. When scientists go into the field they become explorers.

"In the Arctic you can travel on small glaciers by foot," said glaciologist Mark Meier. "But in Antarctica it has to be done with remote sensing and ground control."

Going into the field requires toting along a survival bag with a camp stove, sleeping bag, food and other emergency supplies.

Castellini agrees, "In Antarctica, everything is at an expeditionary level. It has a huge, massive infrastructure and it's all expedition based."

Photo by Denver Holt/Special to The Antarctic Sun

Snowy owl chick in the arctic tundra, where many birds come to nest.

Early Antarctic explorers were also on scientific missions. In 1902, Robert Falcon Scott of Great Britain collected scientific data along his route to the South Pole. He and his men also launched hot air balloons to take atmospheric readings 820 feet above the Ross Ice Shelf and were able to verify the existence of vast glaciers extending south.

Antarctic research has the advantages of a continent dedicated to science and owned by no nation. The Antarctic Treaty, first signed in 1959, states that no country shall make territorial claims and that the continent should be dedicated to "peaceful purposes only." Scientific results and data "shall be exchanged and made freely available."

All land and ice shelves below 60 degrees falls under the Antarctic Treaty, while anything north is subject to international law.

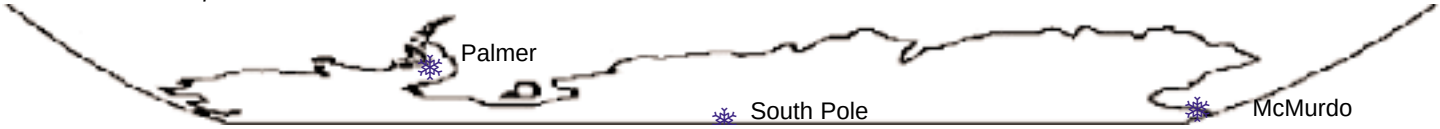
But in Alaska, researchers answer to more entities. Most land is owned either by Native corporations or local, state or federal governments and often scientists must obtain permits to research. All science is subject to local review.

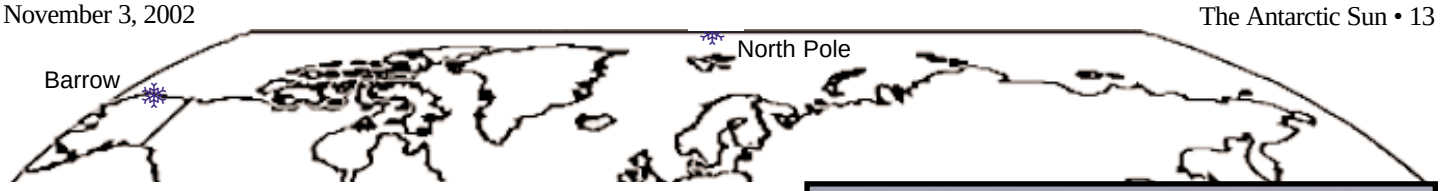
"There is no such thing as the Arctic Treaty," said Castellini.

The Arctic is not dedicated primarily to science. Science often competes with other interests, from oil drilling to subsistence hunting.

One of the rules in Arctic research is not enforced by government agencies nor is it punishable by law, but a violation does have repercussions. The crime: vio-

See Opposites on page 13





Opposites

From page 12

lating Native traditions.

"One of the big differences here for the scientists conducting work in the Arctic - particularly in Barrow – is the need to be sensitive to subsistence activities like hunting," said Irinaga.

In Barrow the Inupiat have traditions to follow, rituals to learn and, according to Castellini, formal ways of dissecting whales, seals and other animals.

"You have to follow the rituals – the elders must be listened to," he said.

The customs in Barrow that Castellini refers to are known as "tek" – traditional environmental/ecological knowledge or traditional Eskimo knowledge. Simply stated it's the "way of knowing."

"Natives have been considered scientists long before modern science evolved," said Irinaga. "Traditional Eskimo knowledge implies there was a lot of knowledge stored long before GPS units and VHF radios. They had to rely on their ability to read sea ice and weather conditions,"

Castellini describes the difference between traditional linear Western ways of gaining knowledge and circular Native ways.

"The goal is knowing about birds, not counting the numbers," said Castellini. "The whales and the seals give or present themselves to hunters."

Scientists rely on evidence, data and a strict scientific review process.

"We don't accept information, unless it's in one of these journals," said Castellini, pointing to the surrounding bookshelves in the Crary Lab library at McMurdo Station. But the Native knowledge is passed from each generation to the next by oral traditions.

"If I say there are 'X' number of birds, they would say, 'My grandfather told me there are more birds today,'" explained Castellini, "But this information is just as valuable. Being told by your grandfather is proof."

But ancient Native knowledge that speaks of wind, wildlife and sea ice doesn't exist in Antarctica. Neither do polar bears.

Photo by Todd Chandler/Special to The Antarctic Sun

The polar bear is a symbol of the arctic, and the most dangerous predator for both seals and scientists.

Watching for bears

The presence of large predators often makes arctic science dangerous. When Castellini studies seals in the Arctic he carries with him advice from elders and a gun.

"Up there, we have to watch for bears. Here we watch for severe weather conditions," said Castellini.

Although Irinaga carries a 12-gauge shotgun when working in the field, he claims the first round of defense against bears is diligence, watching for them and placing a trip wire around the camp.

"The pack ice acts something like a giant conveyor belt, transporting polar bears around," said Irinaga of the dynamic sea ice structures in the Arctic. "Typically they stay on the sea ice and hunt seals, but when the pack ice comes in, we go on high alert."

Because the bears and the Natives hunt seals, the Arctic seals are wary of anyone approaching them. Antarctic seals are the opposite. With no above-surface predators their behavior is generally docile and curious. Scientists can walk right up to the large carnivores and easily handle their pups.

Science you can use

Like polar bears, science data in the Arctic receives the immediate attention of local governments because both impact the community. Legislation is often based on scientific discoveries and lawyers define court cases by the data collected.

For example, Arctic bowhead whale tissues, such as blubber, meat and organs are being tested for certain contaminants. Villagers eat the whales, so a possible outcome of this study is to learn that some parts of whale may not be safe to eat.

"It's as if lawyers are sitting in our camps to know the numbers because they are basing a case on the information we obtain," said Castellini, "In Antarctica, results go straight into the scientific community."

For the Arctic villagers, who live within a science community, science is a part of daily life.

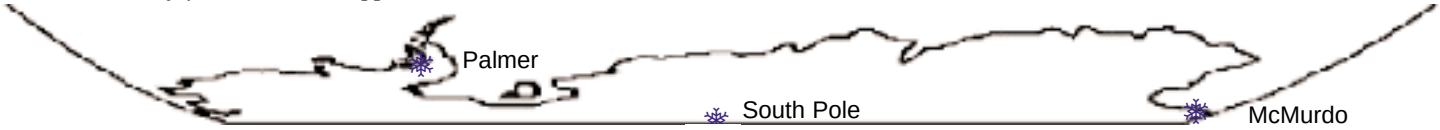
"As far as global warming goes – as the ice in the Arctic melts back, people lose hunting areas…there is a direct link to science," said Castellini.

In the North, scientific data detour to legal circles before completing the scientific review process. Antarctic data have a direct conduit to the worldwide science circles after leaving the un-owned, uninhabited, un-arctic continent of ice.

In the end, the frozen poles are always a world apart.

Photo by Ginny Figlar/National Science Foundation

Lacking land predators, Weddell seals are unafraid of humans and easy for scientists to approach.



Profile

Story and Photo by Melanie Conner/ *Sun staff*

Looking up to Barnes

Martin Barnes strides cheerfully in and out of modest cubicles in his Denver office with coffee mug in hand. With his lanky gait and wide smile one could mistake him for an NBA star, but Barnes is a former war photographer, a father, a husband, a skier and a very tall man.

"They were the shiniest, fanciest, leather shoes you could ever imagine."

- Don Atwood

At 6 foot, 6 inches tall, Barnes can be spotted around McMurdo Station carrying a small teddy bear named Jamba and wearing black patent leather shoes.

Upon arriving in Antarctica, he realized that he mistakenly left some shoes behind, leaving him on station with only bunny boots and a pair of black patent-leather shoes.

"They were the shiniest, fanciest patent leather shoes you could ever imagine," said his supervisor, Don Atwood.

In what some would call luck and others fate, Barnes found, in the recycle clothing bin, a pair of size 14 boots for his size 13 feet.

Barnes didn't forget to pack Jamba, the toy named after the Swahili word for "friend." Jamba belongs to a classroom from Greenwood Elementary School in Greenwood Village, Colo. The school has sent the bear around the world and then used the travels to study geography. Barnes promised to photograph Jamba in the Antarctic so the class can add the photo to a collection of Jamba photos from around the globe.

Jamba and Barnes will be in McMurdo running the Polar Education courses until late November when Barnes will return to the ski slopes of Colorado.

A member of the National Brotherhood of Skiers, Barnes mentors new skiers and is viewed as father figure to ski students.

"There's about 10 people who call me dad and they are not my children," said Barnes. "I've known them for years and their children call me grandpa."

According to Barnes' wife Cynthia, Barnes loves social situations and groups of people and has a penchant for putting people at ease.

"One of my nicknames for him is 'Mr. Goodbar' because he is always trying to help other people, counsel other people, give advice to other people that will help them solve their problems," wrote Cynthia in an e-mail.

"He has been everywhere but Antarctica," said Marty Barnes about Jamba, the stuffed bear. Barnes agreed to take the bear to the Ice for a school in Colorado as part of a geography course. Here he sits in his office with the bear.

Although Barnes' wife describes him as a social butterfly, Barnes also enjoys grabbing freedom by the handlebars of his motorcycle and getting out of town, stopping mainly to eat and sleep. For Barnes, the longer the ride, the better.

"Sometimes I'll leave Denver at noon and be in Louisville, Kentucky, by 5 p.m. the next day," said Barnes. "It's nothing for me to take off and meet my friends for coffee anywhere in Colorado."

His love for cross-country motorcycle riding dates back to the Vietnam War.

"I owned a small Honda motorcycle in Vietnam," said Barnes "I lived in Saigon and worked in Long Behn, the largest military build-up and supply depot in Vietnam – about a one-hour drive."

During his hour-long commute from Saigon Barnes said he was shot at a couple of times, but he "just turned off the lights and booked."

Barnes turns introspective and his speech becomes softer as he talks about his days in the Vietnam War.

"I had it easy. I spent three to four days in the field at a time and then the chopper would come get me out," said Barnes of his roles of combat and investigative photographer. "I always knew that in four days my environment would change and I could sit down, drink a beer and not worry too much about getting shot at or mortared."

After completing two one-year Vietnam tours, Barnes returned to the states. He studied photography and eventually met his wife, Cynthia. The two moved to Germany together, he re-entered the armed forces and continued his work as a photographer. In 1981, the couple had a baby boy they named Martin the 2nd.

"The photography there was fun, it was recording history," said Barnes.

On March 1, 1987, Barnes retired from the military and began a new career in public relations for the U.S. Army recruiting office in Denver and later worked in various corporate offices.

Eventually Barnes was hired in June 2002 to work as an education coordinator for those working in Antarctica. Barnes coordinates education classes on the Ice, such as geology, history and music and arranges people to get college credit.

"When Don asked me if I wanted to go to Antarctica, I took it as a joke," said Barnes. "But they needed a new education coordinator and voila – there I be."