

THE POLAR TIMES



National Oceanic and Atmospheric Administration

The Polar Times

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Secretary's Letter

Since we issued the last *Polar Times*, several contentious topics have surfaced. Did Admiral Byrd make it to the North Pole? The story has died down in the media, however, we felt compelled to present both sides of the issue. You will have to decide for yourselves. We are looking for *Letters to the Editor* on this one.

Is there really life on Mars as postulated by researchers who have examined an Antarctic meteorite found by Robbie Score in 1984? Strong cases are presented both pro and con. Robbie is heading back to 'the ice' this year to work in the Crary Laboratory in McMurdo and the meteorite hunters are returning to the field with new purpose in mind. I'm sure that this one will be revisited regularly in the future.

I have several volunteers who responded to my call for help in the last issue. I still have some very interesting projects that need to be addressed. Any one interested? Please write or telephone me.

Thanks to all who have contributed to this issue. There was a tremendous response this time. One of our members put the value of *The Polar Times* in perspective, "It is the only publication that offers a broad range of polar topics, well researched and boiled down to keep or members up to date." It is only as good as your contributions - pretty good from my perspective. Again thanks.

Sincerely,

Brian Shoemaker

Editor's Letter

We've dedicated five pages to the Admiral Byrd diary controversy. We've tried to present just the facts and the views of you who knew him. The Byrd controversy, Roberta Scores's

Mars Rock, the under-ice lake and much more make this issue another tribute to you who supply the information, articles and commentary.

Thanks.

Della Weston

Our Cover...

The first of six Navy R4D aircraft launches with a boost from Jet Assisted Take Off (JATO) for Little America V during "Operation High Jump" on Jan. 29, 1947. At the controls was CDR William "Trigger" Hawkes with RADM Richard E. Byrd as a passenger.

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Meteorite Shows Mars Once Supported Life, Study Says

The Columbus Dispatch, 7 Aug 1996, WASHINGTON (contributed by Peter Andeson)—Researchers testing a meteorite from Mars claim to have found evidence that primitive life once lived on the Red Planet. Other scientists, however, scoffed yesterday and said stronger evidence is needed.

NASA scientists and three universities report next week in the journal *Science* that chemical and microscopic tests of a rock from Mars detected organic compounds deposited in such a way that they could have come only from biological activity.

They also report seeing shapes that “resemble some forms of fossilized filamentous bacteria,” although much smaller.

Carl Sagan, a leading authority on the search for extraterrestrial life, called the findings “evocative and very exciting.” But, he said, the chemical compounds reported in the paper “are not evidence of life.”

“I want everybody to understand that we are not talking about little green men here,” said Daniel Goldin, administrator of the National Aeronautics and Space Administration.

He called the findings “exciting, even compelling, but not conclusive.”

Other scientists said the organic compounds could have been formed without life.

The scientists generally believe the rock came from Mars because its chemical composition matches that discovered by the Viking spacecraft that landed on Mars in 1976.

Past or present existence of life on Mars has been considered a possibility ever since studies by spacecraft landers showed that water was once present on the planet’s surface.

None of the Martian landers, however, found evidence that life exists on Mars, nor did the robot craft find chemical markers for life in soil samples.

The researchers say in the paper that a rock from space recovered in Antarctica contains organic compounds that could only have been deposited by biological activity.

The new findings center on a meteorite called Allan Hills 84001, the oldest of 12 pieces of rock that earlier studies confirmed as originating from Mars. It is thought the rocks were jolted away from Mars by some massive collision in ancient times and then drifted in space until they fell to Earth.

Thin slices of the rock, say the researchers, revealed organic molecules called polycyclic aromatic hydrocarbons, or PAHs. The

said PAHs can be formed only in two ways—by biological action, such as by microorganisms, or in the process that forms planets.

The researchers determined that the PAHs in the rock were deposited in cracks that occurred after the meteorite was formed, suggesting the molecules were deposited by later biological activity.

Also, the researchers said that within the PAHs they found particles of magnetite and iron sulfide, both chemicals that can be related to bacterial action.

Jack D. Farmer, a geologist and paleobiologist of the Exobiology Branch of NASA’s Ames Research Center in Mountain View, Calif., said the “vast bulk” of magnetite is inorganically formed and that “PAHs have no direct relationship to biology. They are not an indicator.”

“The conclusion is at best premature and more probably wrong. The PAHs are just not a reliable biomarker,” said John F. Kerridge, a planetary scientist at the University of California-San Diego.

“You should not go public with evidence that’s less than 100 percent sure. This is much less than 100 percent sure.” (See “Evidence of Life,” p. 4.) □

On “The Ice” 60 Years Ago

Soviet Ship Nears Mysterious Arctic Force

MOSCOW, Aug. 17.—News of what was declared to be the first exploration of a mysterious region near the top of the world where some unknown force is said to turn vessels off their courses was received in radio messages today from the Russian exploration ship Sadko.

It is in this zone that the legendary Gillis, or Gilles Land is said to exist and the messages asserted the Sadko expedition had sighted on the horizon what was thought might be this land.

The region of unknown forces lies

north of the 81st parallel, northeast of Northeastland, second largest Soviet scientists have reported that all vessels that previously tried to penetrate the region were turned mysteriously from their courses before they could enter it.

Sir Hubert Wilkins’s submarine Nautilus, records here indicate, swerved unaccountably westward as she approached the zone in 1931 and although she had been steering northeast she returned to Spitsbergen from the west.

The Soviet icebreaker Krassin, which reached a point near 81 degrees 30 minutes north latitude, likewise experienced an unaccount-

able change in direction, being turned to the southward. Soviet records show the steamer Knipovich reported a similar experience.

George Ushakoff, head of the Sadko expedition, said in a radio message:

“We crossed the southern border of the blank spot and approached the edge of the ice. We were surrounded by a heavy mist, and the visibility was so poor that we could not send out our planes for observation.

“However, for a few minutes the mist lifted, and we saw on the horizon what looked like land. We are remaining here in an effort to ascertain whether land really exists.”

Finder of Mars Rock Marvels At Its Cosmic Notoriety

The Washington Times, 9 Aug 1996, p. A3, DENVER (contributed by Peter Barretta Jr.)—Twelve years after finding a potato-sized meteorite in the Antarctic ice and wondering why it looked so different from the rest, Roberta Score is finally getting some answers.

About a month after leaving NASA's Johnson Space Center in Houston after 10 years to take a job in Denver, Miss Score is watching as her discovery spurs the debate about life on Mars.

"It's exciting," said Miss Score, who found the rock during a National Science Foundation meteorite-searching expedition in Antarctica in 1984. "It was a team effort. I hate the fact that I'm the only one getting the credit."

Miss Score said the discovery came almost by accident on a day that she and William Cassidy, the team leader, plus fellow crew members John Schutt, Scott Sandford, Robert Walker, Catherine King-Frazier and Carl Thompson were "just cruising around having fun."

The crew was in the Allan Hills area when Miss Score spotted a rock among the mammoth ice sculptures formed from colliding ice. She knew the rock was a meteorite because there were many in the area, but she

said it was different from the others.

"We knew it would be interesting," she said Wednesday in a telephone interview from her Englewood home. "The colors looked different. The rock looked very green. In actuality, it's gray, but it stood out in my mind that this was kind of weird."

So why has it taken 12 years to figure out what was weird about the meteorite?

Miss Score, who managed the Antarctic Meteor Lab at the Johnson Space Center, said the meteor, called Allan Hills 84001, originally was classified as a diagenite, which is a somewhat common rock composition. Two years ago, a former classmate of hers from the University of California at Los Angeles did more analysis, and the rock was reclassified as Martian.

"There are 12 Martian meteorites on Earth," Miss Score said. "This is the oldest, and it's just totally different from any others."

The 4-1/2-pound rock is thought to have formed on Mars 4.5 billion years ago before being blasted out of the planet 16 million years ago.

Scientists believe the meteorite may be able to prove there was once life on Mars because it contains minute objects that closely resemble fossilized bacteria that have been found on Earth.



Roberta Score

Associated Press

The small meteorite also has chemical compounds that scientists say could have been deposited by microbes living in the wet climate thought to have existed on Mars more than three billion years ago. □

EVIDENCE OF LIFE?

U.S. News & World Report, 19 Aug 1996, p. 49 (contributed by Brian Shoemaker)

Proponents cite four clues as part of the evidence the Martian meteorite once hosted life. Critics offer alternative reasons.

THE CASE FOR...

- Cracks in the meteorite are filled with disk-shaped globules of carbonate minerals. They are similar in size and texture to carbonates formed with the help of bacteria on Earth.
- Their chemical makeup is hard to explain unless living organisms are involved somehow.

- Tiny crystals of magnetite, made from iron and oxygen, are on the carbonate globules' rims. The crystals have the same shape and composition as magneto-fossils made by Earth-dwelling bacteria, which may have used magnetite to orient themselves with the Earth's magnetic field.

- Even amateurs can see these tube shapes, no bigger than one hundredth of a human hair's diameter, on the carbonate globules.
- At least one of them looks segmented—divided into sections like an earthworm. The nonsegmented shapes resemble very tiny bacteria found in Earth rocks.

- They were made on Earth when ancient organic matter like plankton decomposed. They are abundant in coal, which is made of the fossils of ancient plant life.
- Fresh cracks on the Mars rock contain PAHs that are unlike those seen in any other meteorite. □

Carbonate Globules

- If life existed in the carbonates, the globules had to form at low temperatures. A recent paper suggested the globules arose as very hot fluids interacted with volcanic rock.
- The globules could have formed through inorganic processes, as could the minerals in them.

Magnetite

- Magnetite is a common mineral and can form under many circumstances.
- Perhaps there are other ways magnetite formed these unusual shapes.
- The meteorite's crystals are 3.6 billion years old. The oldest magnetofossils found on Earth are only 2 billion years old.

Microfossils

- The Mars team admits this is its shakiest evidence. "Microfossils" could actually be dried clay or strange crystals or cracks in the surface.
- "It is suggestive, superficially, of fossils," says one expert, "but we have so many processes that could produce such a shape."

PAHs

- They could be present for other reasons, such as a meteorite's hitting Mars' surface and transferring them to the rock.
- Organic molecules not made by living creatures could have become buried, transformed into PAHs and then lodged in the rock that became a meteorite. □

Victims May Yield Clues to 1918 Plague

The Washington Times, 26 May 1996, p. D8, TORONTO (contributed by Peter Barretta, Jr.)—A research team plans to exhume seven bodies from permafrost in hopes of finding what caused a global epidemic that killed 20 million people in 1918 and 1919.

The 1918 epidemic was called Spanish flu at the time, but scientists didn't have any way to precisely identify what it was.

Marked by a sudden fever, chills, headache, malaise, muscle pain, pneumonia and rapid death, it killed more people than all the fighting in World War I.

The Canadian-led team believes the deadly virus could still be lurking in the lungs of the bodies preserved in nature's deep freeze on a Norwegian Arctic island.

They say special care is needed so the microbes don't revive once freed from their icy storage.

Records show that the men, miners in their 20s, died of an influenza-like illness that was ravaging the world. It reached even to Spitsbergen, above the Arctic Circle, where they were digging coal (see map at right).

Researchers hope that discovering and analyzing the microbe will help ward off similar outbreaks in the future.

"This biological and scientific knowledge could be earth-shattering," said team member Dr. Peter Lewin, a pediatrician at Toronto's Hospital for Sick Children and a researcher of ancient disease.

Team leader Kirsty Duncan, an assistant professor at the University of Windsor who researches geography and medicine, spent

three years trying to locate a far-northern gravesite of people who had died in the great pandemic.

After learning of the graves through the coal company that employed the miners, Miss Duncan got in touch with Spitsbergen church and government officials, who contacted relatives of the dead.

She won permission to proceed from the Norwegian ministry of antiquities last week, on the last day of a visit to Norway.

An expedition is planned for the summer of next year.

"This will be done with the greatest respect and dignity," Miss Duncan said, adding that extreme safety precautions will be taken so the microbe won't be unleashed again.

"It will be treated as a very deadly virus," she said. "When these bodies are exhumed, it's going to be done with all safeguards."

Her research team includes viral experts from the U.S. Centers for Disease Control and Prevention in Atlanta.

Dr. Lewin said two microbes in particular would be disastrous if exposed or released. One caused the 1918 pandemic. The other is smallpox.

"If you exhume that in the north, and the agent is viable, it would spread like wildfire," she said.

Although it killed more people than World War I, the mysterious bug wasn't preserved in any surviving tissue sample known to scientists. Samples from the far north appear to be a last chance to find the microbe. □

ARCTIC AIR DISASTER

More than 140 people died in the crash of a Tupelov 154 airliner short of where it was due to land on Spitsbergen island.



Plane Crash on Arctic Island Kills At Least 151

The Washington Times, 30 Aug 1996, p. A19, by Doug Mellgren, OSLO (contributed by Peter Barretta)—A Russian plane carrying coal miners to work at a remote, desolate arctic island smashed into a snow-covered mountaintop yesterday, killing all of the more than 140 people aboard.

In what the prime minister called the worst air disaster on Norwegian soil, the Tupelov 154 from Moscow crashed six miles from its destination—the airport on Spitsbergen, the main island in the Svalbard Archipelago about 400 miles north of the Norwegian mainland (see map above right).

The control tower at Longyearbyen lost contact with the plane around 10:15 am. on what officials described as a routine approach

to the airport.

Most of the passengers were Ukrainian men and their families, returning after time off to jobs at a Russian-run coal mine on the island. Waiting at the airport for them were 120 other miners, whom the plane would have taken home. After hearing the news, those miners were taken to a local town hall, where they spoke quietly to each other or sat in stunned silence.

The crash of the plane, chartered from the Russian carrier Vnukovo Airlines, was the latest in a series of deadly accidents that have plagued Russian airlines. The aging Tupelov—which carries more than half the passengers in Russia—is among the planes most prone to trouble in the Russian fleet.

"There don't appear to be any survivors," said Rune B. Hansen, the archipelago's acting governor. He said high winds forced rescue teams to leave the snow-covered mountainside, although some would return when conditions improve.

Norwegian Prime Minister Gro Harlem Brundtland sent her condolences to Russian Prime Minister Viktor Chernomyrdin. "The biggest air crash on Norwegian soil has hit the Russian people hard," she said in a telegram.

"It is not a difficult airport. It's on a piece of open land, and the airport has good equipment," Bjoerne Hattestad of Norwegian Aeronautical Inspection said by telephone. □

Lake Below Antarctica's Icecap May Hold Ancient Microbes

Wisconsin State Journal, 16 May 1996, p. 12A, by Peter James Spielmann, SYDNEY, Australia (contributed by John Ong)—Drilling miles into Antarctica's icecap, scientists have discovered a lake they say may contain microbes millions of years old, kept alive under a glacial seal.

Russian researchers who cored the icecap presented a report in The Netherlands last week, declaring that Lake Vostok exists. According to their drilling project, the 140-by-30-mile lake sits in the heart of Australian Antarctic Territory, next to Russia's Vostok science base.

Seismic and echo soundings indicate the lake's surface is 2.3 to 2.6 miles beneath the ice, they said, and its waters are estimated to be 1,600 feet deep.

Scientists, though not exactly sure why there is water beneath the ice, speculate that the weight of the glacier is forcing the lake down into a depression, liquefying it by pressure.

It also is possible that warmth from radioactive decay in the Earth keeps the lake from freezing—warmth that also may be keeping microbes alive.

"Scientists are fairly convinced that there will be live bacteria there with presumably some strange chemical processes that allow them to exist down there," Dr. Clive Howard Williams, manager of New Zealand's National Institute of Water and Atmospheric Research, said Wednesday.

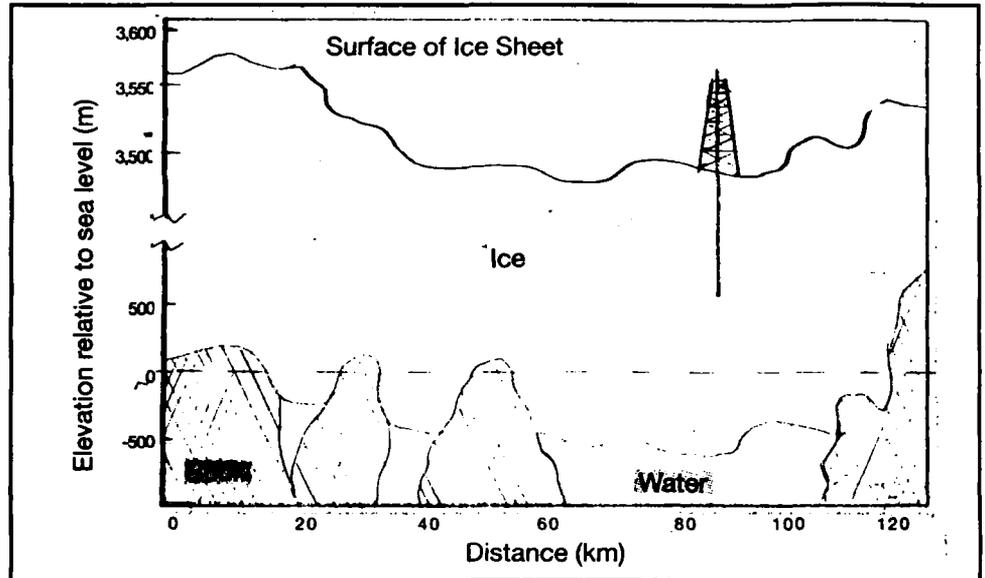
At last week's 20th Antarctic Treaty conference in Utrecht, Netherlands, scientists urged the Russians to be cautious with their deep ice-drilling project to avoid polluting the pristine subglacial lake.

The Russians said that during the 1995-96 scientific season they drilled within 500 yards of the lake, taking ice samples to study climate change over the eons. Work was suspended with the onset of winter.

French scientists who analyzed the Russians' ice samples found them to be as old as 420,000 years, leading researchers at the Utrecht meeting to estimate the lake has been sealed under the icecap for between 500,000 and more than a million years.

Scientists said it was fortunate the Russians did not drill into the lake, not only to avoid polluting it but also because the pressurized lake could have gushed like an oil well, destroying drill rigs and endangering the research crew.

"Certainly it's under great pressure, because it's under at least three kilometers of ice. And that pressure is one of the reasons



it is likely to be liquid," Rex Moncur, director of the Australian Antarctic Division, said Wednesday on returning from the Utrecht meeting.

Williams said microbes could be living in the lake similar to the way they live at the bottoms of deep oceans.

"There are bacteria living in these hot water vents and so on, without oxygen, that have peculiar processes that allow them to live at pressure and in these peculiar chemical en-

vironments," he told Radio New Zealand.

But excavating million-year-old microbes will have to wait until scientists can figure out how to do it safely and without polluting Lake Vostok.

About 60 other small subglacial lakes have been discovered in that region, and scientists will probably drill into them to perfect their sampling techniques. Scientists don't expect to tap Lake Vostok itself until the next century (see "Antarctic Ice Core," p. 7). □

Antarctic Ice Drillers Reach Record Depth at Vostok

Antarctic, June 1996, p. 54 (contributed by Peter Barretta)—Scientists drilling through the East Antarctic ice cap at Vostok Station, in a project supported by the U.S. National Science Foundation (NSF) and others, reached a record depth of 3,350 metres during this past Antarctic field season and extracted an ice core representing the past 400,000 years of climate history.

Russian, U.S. and French glaciologists at the Russian base are drilling the core to preserve samples of the Earth's atmosphere. The core will present an archive of past climate reaching much farther back in time than any other ice core. Antarctica's ice cap is the deepest and oldest in the world.

Some 30 researchers from the three nations will study Vostok's icy record, which stretches over four entire cycles of glacial advance and retreat. Drilling of this core

began in 1990; the researchers hope to extend the current record back to one million years or so with further drilling.

Studies of Vostok's ice have already shown a close link between climate over the past 200,000 years and changing concentrations of greenhouse gasses in the atmosphere. Ultimately, the research will help uncover how the earth's "climate machine" operated in the past and improve predictions of future climate.

A subglacial lake called "Lake Vostok" lies under the station, possibly sealed off from the atmosphere for hundreds of thousands of years. Researchers are now discussing the possibility of sampling this lake. Results on the Vostok ice core were presented at the American Geophysical Union's Spring Meeting May 20-24 in Baltimore. □

Antarctic Ice Core May Help Predict Start of Next Ice Age

The New York Times, 9 July 1996, pp. C1 & C10, by Malcolm W. Browne (contributed by Peter Barretta)—Ice that has lain undisturbed for hundreds of thousands of years is yielding clues that may foreshadow our own future when Earth's present warming trend gives way to a new era of glaciation and cold.

During the Southern Hemisphere summer, which concluded three months ago, scientists from Russia, France and the United States drilled deeply into the South Polar ice sheet at Russia's Vostok Station, recovering ice that formed some 400,000 years ago. The precious core samples of ice brought up from the depths, cylindrical samples totaling nearly two miles in length, include the oldest ice scientists have ever been able to analyze.

In recent years, two major drilling projects in Greenland have retrieved ice at great depths, but because snowfall in Antarctica, about an inch a year, is only one-tenth as heavy as snowfall in Greenland, a given depth of compacted snow in Antarctica represents an age 10 times as great as it would in Greenland.

"The longest continuous climate record we've got from ice cores drilled in Greenland is 110,000 years," said Dr. Todd Sowers, a Pennsylvania State University paleoclimatologist studying ice core samples that have just arrived from Vostok. "That didn't even get us back into the last interglacial period. The Vostok hole in Antarctica went on to penetrate an additional 150,000 years, taking us through the last interglacial period, the ice age that preceded it and on into the next interglacial period. During the past summer, we went deeper still, at least doubling the climate record and perhaps quadrupling it, for at least three climate cycles."

Glaciologists have not yet had time to determine the chronology of cold and warm periods represented by the latest Vostok samples, Dr. Sowers said, but they hope to present some detailed results at a meeting in England in August. One more season of drilling, beginning in the Antarctic spring next October, Dr. Sowers said, should complete the hole and allow the team to cut through

ice sediments to a depth representing 500,000 years in the past—a span encompassing at least three periods of global glaciation.

The hole at Vostok could be drilled even deeper, but Russian radar crews have identified a lake of liquid water, about the size of Lake Ontario, resting on bedrock beneath more than two miles of ice under Vostok Station. The water in the lake, kept liquid by geological heat and pressure, has probably been trapped for more than half a million years.

Tapping the lake with the present drill rig would contaminate it badly with drilling oil and other substances, which could damage any living organisms there. The international body that supervises all Antarctic research that might affect the continent's environment—the Scientific Committee for Antarctic Research, known as SCAR—is unlikely to approve any project that would contaminate the lake. The committee is expected to discuss the possibilities at a meeting in August at Cambridge University in England (see "Lake Below," p. 6). □

Jet Passengers Stranded 15 Hours in Arctic

A heart attack and an aircraft mishap gave the nearly 400 people an unexpected layover

The Columbus Dispatch, 2 June 1996, IQUALUIT, Northwest Territories (contributed by Peter Anderson)—A trip from London to Los Angeles turned into an arctic adventure when nearly 400 Virgin Atlantic passengers got a surprise 15-hour layover in the land of the midnight sun.

Flight 007 had to make an emergency landing Friday in Iqaluit (E-kal-i-weet) on Baffin Island, 1,000 miles north of Montreal, after an American passenger had a heart attack four hours into the flight, an airline spokeswoman said in London.

But as the Boeing 747 taxied to the terminal, the engine clipped a gasoline tank on the air strip and spilled fuel. No passengers were injured, but the jet was too damaged to fly on, Canadian authorities said.

"When it happened, the pilot was being marshaled by one of the ground crew who was not used to dealing with a 747," the airline spokeswoman said.

Virgin officials scrambled to get a chartered jet to the remote town of 3,700, located on Frobisher Bay.

Passengers included Prince Michael of Kent, cousin to Queen Elizabeth II, and Gary Barlow, a former member of the hit British

group Take That. Most found themselves quite unprepared for Iqaluit's 37-degree temperatures.

Many stayed at a local curling rink, where pizza, KFC, sodas and snacks were brought in, according to police dispatcher Rhonda Sampson.

The prince, however, did not have to dine on such common fare. He was whisked out of town on a First Air flight to Ottawa shortly after the midday landing, bumping local passengers from the flight, said an Iqaluit resident.

To pass the time, dozens of stranded people ventured out into the streets, wrapping themselves up in the airline's brightly colored blankets to ward off a stiff breeze.

"We're all wearing the latest fashions from Virgin," joked Alison Siviter of London as she walked with two other blanket-clad passengers.

"Everyone's been nice, but they look at us a little funny," added David Hedges, another Londoner.

Since the sun did not set until after 11 p.m., people had plenty of time to look around. Some 20 to 30 of them dropped by the Royal Canadian Legion Hall No. 4 to have a few

beers and hit the game room.

The chartered jet took off at 3 a.m. yesterday, an hour after sunrise, to take the passengers to New York. The heart attack patient, who stayed at the Baffin Regional Hospital, asked that no information be released.

Inhabited mainly by Inuit, Iqaluit is the main gateway for tourism throughout the eastern Canadian arctic. Baffin Island, near Greenland, is Canada's largest island. □

Arctic Retreat

The Fairfax (Va) Journal, 14 June 1996 (contributed by Peter Barretta)—Researchers in Canada announced that the permafrost which covers a vast area of the nation's far north is retreating. Larry Dyke, a scientist at the Geological Survey of Canada said a six-year study revealed that the permanently frozen ground in the Mackenzie Basin has retreated by 63 to 125 miles over the past 100 years.

The phenomenon is believed to be linked to a gradual warming of the earth that has raised the average temperature of the survey area by one-half to one degree Fahrenheit during the past century. □

Secretive Moscow Trial to Focus on Nuclear Waste in Far North

The Washington Post, 8 June 1996, p. A16, by David Hoffman, MOSCOW (contributed by Nathan Frank)—Russia is preparing to try a retired navy captain on charges that he released military secrets in a report for a Norwegian environmental group which was critical of the radioactive waste disposal problems in Russia's far north nuclear submarine fleet.

A lawyer for the captain said today that the case remains shrouded in secrecy to such an extent that the defense cannot even see the basic document on which the charges rest.

Alexander Nikitin, 43, was arrested Feb. 6. His case has attracted concern from environmental groups, who say that he has become a "political prisoner." President Clinton and French President Jacques Chirac reportedly raised the matter with President Boris Yeltsin at a meeting in April. Nikitin was working for the Bellona Foundation, a Nor-

wegian environmental group, when he was charged with treason for his work on the nuclear waste issue.

From the beginning, Russia's Federal Security Service has sought to keep the case under wraps, originally barring Nikitin from choosing his own lawyer on the grounds that the lawyer did not have proper security clearance. That was overruled by the Constitutional court and Nikitin selected Yuri Schmidt.

However, Schmidt told reporters today that Nikitin continues to be denied access to key information. He said that the case has been moved to a military court and that Nikitin is being accused of revealing military secrets based on an obsolete list maintained by the Defense Ministry.

The prosecution is basing its charges against Nikitin "not on the law, not on the constitution, but on an unpublished, obsolete, ineffective...order issued by the defense

minister," Schmidt told reporters.

Nikitin is being held on espionage charges that carry a possible death penalty. The charges came after he wrote a chapter of a report for Bellona concerning nuclear waste dumps in the far north. The report was intended to call attention to the problem before a summit meeting on nuclear safety that Russia hosted. The arrest came after the Federal Security Service spent months interrogating, searching and detaining people associated with Bellona.

Bellona officials have said the report was based on open sources. Schmidt said today that despite the efforts of some Russian authorities to confiscate copies of the report, it is available on the Internet.

"The only secret in this case is the near catastrophic situation regarding nuclear reactors, nuclear waste and used fuel in the northern region," Schmidt said. □

Sailor's Quick Action Halts Fire

All Hands, April 1996, p. 45, by JOC Brady Bautch (contributed by Peter Anderson)—The quick and daring actions of 20-year-old Airman Larry Moore, an aircraft handler from Mount Pleasant, Mich., assigned to Antarctic Development Squadron (VXE) 6, kept a fire from destroying fuel tanks and a ski-equipped LC-130 aircraft. Moore also prevented the loss of a snowmobile and a tracked vehicle on the Williams Field skiway at McMurdo Station, Antarctica.

Moore noticed the fire in the runway's fuels shack, about 20 feet from the runway's fuel-storage tanks. After reporting the fire to his supervisor, he grabbed a fire extinguisher and drove back to the burning fuels shack.

He saw the fire was out of control but quickly located a chain and tractor, hooked the chain to the sled the building sat on and quickly towed the blazing building away from the fuel tanks and aircraft.

"It just popped in my head that I had to get that building out of there or there [would] be mass destruction. Flames started coming out of the roof as I headed up to it, and that's when I got really scared. I thought I was going to be a dead man," said Moore, who has been in the Navy only nine months.

"That was a pretty brave thing to do—extremely brave under the circumstances," said Deputy Fire Chief Mark Puollman of the Antarctic Fire Department. □

Ancient Smelters Did Most Damage

Columbus Dispatch, 21 April 1996, p. 6B (contributed by Peter Anderson)—A study of Greenland ice cores shows that the environmental history of copper smelting is all backward—most pollution from the process happened before the Industrial Revolution.

The long history of copper smelting and the inefficiency of early methods combine to create the unusual situation, researchers from France's National Center for Scientific Research and the California Institute of Technology in Pasadena write in the current issue of *Science*.

Copper smelting began about 7,000 years ago, they point out, so the metal has been building up in the environment since then. Even though ancient producers created less pollution per year than do today's smelters, pre-industrial polluters had thousands of years to work.

In addition, ancient methods allowed as much as 15 percent of the copper being smelted to escape into the environment. Today, only about 0.25 percent of the copper in the ore escapes.

So, unlike most metals, which became much more concentrated in the environment after the Industrial Revolution began, the amount of copper pollution hasn't risen that dramatically. □

About Your Annual Dues

Some clarification is needed about annual dues contributions.

For ease of administration we ask for annual dues to be submitted at the end of each calendar year and we include a dues envelope for convenience of our membership.

Since many of you send in your dues several years in advance, we tag your contributions to our membership files in our computer. This tag prints out on your membership sticker that we place on the envelope for *The Polar Times*. If it reads "expires 1296," then your membership contribution is due by Jan. 1, 1997. If it reads "expires 1297," it is due in 1998. If it reads "expired 1295," you are in arrears! If in doubt, send in your contributions, and we will credit your account by advancing your expiration date.

Multiple year contributions are welcome as are donations. We are a tax exempt organization as defined by Sec 501(C)3 of the IRS Code. □

Byrd's North Pole Controversy

by Brian Shoemaker

Just as we were going to press with the last issue of *The Polar Times* we received numerous articles based upon the discovery of Admiral Byrd's "Lost Diary" and its purported revelation that Byrd fell short of his claim that he had flown over the North Pole. We were going to include some of these in the last issue, but since all of the articles were biased towards disproving Byrd's claim (some using the incident to throw aspersions on other aspects of his character) and none in his defense, we pulled the lot with the intent of presenting both sides of the story in this issue. To help understand the controversy, the reader is referred to the chart on page 12.

Since then I received a book for review by Lt. Col. William Molett reviewing Admiral Peary's navigation to the North Pole in 1909 (See Book Reviews, p. 22). Colonel Molett was a Master navigator in the Air Force and has navigated 91 missions over the North Pole in the 1950's. In addition, he taught polar

navigation in the Air Force for three years and is adept at spotting navigational inconsistencies by his students - both practical and theoretical. I was very impressed with Colonel Molett's thorough analysis of the Peary question and asked if he would take on the task of examining Byrd's navigational observations for the North Pole flight. He agreed on the condition that we publish his findings, pro or con.

A synopsis of his work is carried on page 10 together with earlier articles presenting the opposite side of the picture. I leave it to the reader to judge.

If, however, Byrd did not fly over the North Pole as he claimed, then Lincoln Ellsworth has the honor of being first; he flew in a lighter-than-air airship from Spitzbergen over the Pole to Alaska with Amundsen and Nobile three days after the Byrd flight. Who were the first to fly in fixed wing aircraft? This honor undoubtedly goes to the Russians who

had numerous flights over the pole in the late 1930's; the first being on May 5, 1937 by Pavel Golovin as a reconnaissance flight in support of the establishment of NP-1 Ice Station (see "Soviet Reveals," p. 9). Articles on some of these flights have been reproduced from the October, 1937 edition of *The Polar Times*. It is interesting to note that the Russians state they used Byrd's flights over the North and South Poles as models for their flights and, although they had examined his navigation closely, never disparaged his claim nor ever staked the claim of being first (see "Fliers Alight," p. 13). The next American flight over the pole was in 1946 by the USAF's 46th Recon Squadron.

As for the aspersions about Admiral Byrd's character, some of our members who have served with Admiral Byrd and knew him well have written *Letters to the Editor* as has the National Geographic Society which can be found on page 13. □

Notebook Casts Doubts on Byrd's Trip to North Pole

Pensacola News Journal, 10 May 1996, p. 4A, COLUMBUS, Ohio (contributed by Bill-Ace Baker)—As Adm. Richard Byrd closed in on his bid to become the first person to fly over the North Pole, the engine noise in the cockpit was so bad he had to communicate with his pilot by exchanging questions and answers in his notebook.

Now, a closer examination of that notebook suggests that the celebrated explorer never actually made it to the North Pole and that his claim to the contrary was a lie.

"It's quite clear to me he exaggerated and knew it," said navigation scholar Dennis Rawlins, who was commissioned by Ohio State University to study the diary. "I would say Byrd saw virtually to the pole from the height he was at, but this diary disproves his claim that he reached the pole."

Rawlins said Norwegian explorer Roald Amundsen should be recognized as the one who first flew over the North Pole, three days after Byrd's May 9, 1926, flight.

Ken Jezek, director of the school's Byrd Polar Research Center, said it was premature to conclude that Byrd did not reach the pole.

"I think that these are calculations and information that were taken on the fly and

really don't represent a conclusive navigational analysis of where he was," he said.

Byrd's weathered, 8-by-9-inch brown notebook was discovered in January by archivist Raimund Goerler in a box labeled artifacts at the research center.

The university, which plans to publish the notebook, released the findings Thursday to coincide with the 70th anniversary of Byrd's flight.

In a report to the university, Rawlins cited several entries that indicate Byrd and pilot-mechanic Floyd Bennett were concerned about an engine leak and turned around about 150 miles from the top of the world.

Rawlins determined that a line in the notebook that had been erased was a question by Byrd to Bennett: "How long were we gone before we turned around?" The reply, written below the erased question is, "8 1/2 (hours)."

"It also sounds like the turnaround was pretty sudden. And it doesn't feel like the words of someone who has just reached a great goal," Rawlins said.

Byrd reported in later statements, "At 9:02 a.m., our calculations showed us to be at the pole!"

Yet Rawlins notes that in the notebook, 9:15 a.m. was recorded as the time when Byrd was a few miles short of the North Pole.

The notebook, however, appears to have squelched a suspicion that Byrd had not even tried to reach the North Pole but instead had flown around Spitzbergen, Norway, Rawlins said. He also said it should restore Byrd's reputation for courage by documenting the "amazingly dangerous" flight.

Byrd and Bennett exchanged questions in the notebook and logged times and chart readings. Rawlins said the entries contrast sharply with Byrd's public account of the expedition.

"The disagreements between the two versions are multiple and nontrivial: they leave little doubt that Byrd knew...that he had not succeeded and that he was thus taking the honor of first reaching the Pole from Amundsen," Rawlins said.

Norwegians have long believed Amundsen was the first man to fly over the North Pole. They claim Bennett admitted as much more than half a century ago.

Susan Barr, historian for the state Norwegian Polar Institute in Oslo, said, "This has been well known for quite a long time." □

Polar Heroes In History's Cold Eye

New York Times, 12 May 1996, by Malcolm W. Browne (multiple contributors)—The cold light of history continues to damage the glamorous aura that once adorned the world's explorer heroes, and ticker-tape parades will probably never quicken hearts in this skeptical age as they did when the century was young.

The latest casualty is the almost superhuman image created during his lifetime by Adm. Richard E. Byrd. To his own generation, Byrd was dashing and aristocratic, courageous to a fault, a superb aviator, the first man to fly over the North and South poles, a supporter of the Boy Scouts of America, the inspiration for the book "Mister Popper's Penguins," and a all-around role model. A darling of the American press, Byrd was sponsored in his 1929 flight over the South Pole by *The New York Times*; he even timed his radioed arrival message to accommodate the newspaper's deadline.

Alas, recent research—including a 1990 book by the polar scholar Eugene Rodgers, *Beyond the Barrier*, and Ohio State University's release last week of passages from Byrd's own diary—suggests that Byrd was not the first man to fly over the North Pole. In reality, he was a smooth-talking liar, a terrible navigator, a victim of paranoid suspicions of subordinates, an air traveler so frightened of flying that he was frequently drunk while others did the piloting, and a man who never hesitated to take unearned credit. As Byrd himself often said, he was a practitioner of "the hero business," and that required salesmanship, often

to the exclusion of candor.

Doubts about the claims of polar explorers aren't new. Comdr. Robert E. Peary claimed that he was the first to reach the North Pole on foot, on April 6, 1909. But five days earlier, Frederick A. Cook announced that he had already reached the pole. The National Geographic Society, which sponsored Peary, continues to support his claim against Cook's, but spirited debates among polar scholars persist.

Few people today really care about conflicting and mostly forgotten claims of polar discovery, because the romantic age of exploration is past. After all, the world has seen men walk on the moon.

But in the 1920s and 1930s, they were heroes. And an explorer's heroic status depended as much on his personality, his demeanor and clever salesmanship as it did on real achievement. Competition between heroes was intense and bitter, because the stakes financial and social, were gigantic, and the support of major newspapers was critical in the process.

Why did Byrd's legend persist? A look at the three aeronautical explorers who seem to have a better claim than Byrd to having been first over the North Pole suggests an answer. These men were not ideal heroes.

They flew not in an airplane but (three days after Byrd's claimed trip to the pole) in a hydrogen-filled, semi-rigid dirigible—the *Norge*. The *Norge* was designed and built in Fascist Italy, piloted by a swaggering Italian colonel, Umberto Nobile, financed by Lin-

coln Ellsworth, the son of a wealthy American coal-mine owner, and crewed by Roald Amundsen—the dour Norwegian whose 1911 expedition conquered the South Pole.

The Good-Guy Requirement

Amundsen was not to everyone's taste. Though he had won the South Pole race, beating the English Navy explorer Robert Scott, he had not won the hearts of English-speaking people. The reason? He had violated some of the good-guy requirements of the "hero business."

For one thing, while Scott had refused to acknowledge that he was in a race at all, Amundsen showed an iron determination to win.

For another, Amundsen and his party used their sled dogs as food, as one dog after another tired to exhaustion. Amundsen returned triumphant from the pole, without any dogs left, but with all his men.

Scott, by contrast, disdained the use of sled dogs on his final attempt on the pole, using the pulling power of ponies and human beings instead. In the end, Scott and his men ate the ponies, and he and his four companions all died of exposure, starvation, bad luck and inadequate planning on the way back from the pole.

To romantics, Scott was the true hero and Amundsen the anti-hero, not because Scott was best but because he seemed to be the self-effacing brave man people wanted their hero to be, the kind of man many later took Byrd to be. □

Examination of Byrd's Navigation From the Flight to the North Pole

by LCol. William E. Molett, USAF (ret.)

Abstract

A long-lost diary of Admiral Byrd was found recently by Dr. Raimund Goerler, archivist at the Byrd Polar Research Center in Columbus, Ohio. On page 11 of this diary is an erased figure which can just be made out to be what is apparently a sextant altitude. Based on an analysis of this single erased figure, Dennis Rawlins has announced to the world that Byrd made a fraudulent claim to have reached the North Pole. According to Rawlins, Byrd was 146 nautical miles (bottom of page 15 of his preliminary report) short of where he thought he was at the time of this supposed sextant observation and, continuing on, he turned around over 100 miles short of the Pole. This author [Col. William

Molett] mends the erased sextant reading was just that—a figure Byrd did not use because he knew it was incorrect.

Introduction

Byrd took and recorded a sextant reading of 18 deg. 15 min. and 30 sec. at Greenwich Civil Time of 7h. 07m. (see chart p.12). For the same time at another place in his records, he recorded an altitude of 19 deg. 22 min. and 44 sec., a difference of 1 deg. 7 min. and 14 sec. in altitude. The 19+ degree altitude has been erased but still can still be read. If this erased figure was a true altitude at the recorded time, then Byrd manufactured ground speeds up to this time and all ground speeds and sextant readings after this time. If this

erased figure is ignored, then everything he wrote about the trip appears to be genuine.

Explanation for Discrepancy

In using a bubble horizon sextant, it is essential that the plane be flying straight and level at the time of the observation. Even small turns with the aileron or rudder can make for large errors in the sextant reading. For several years, Byrd had used this sea sextant, which he had modified for aerial use. In the air, because of aircraft motion, a single reading of the sextant cannot be relied on for accuracy. In the case of the 7:07 reading, the pilot (Floyd Bennett) may have made a small turn to correct to course, perhaps without

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even realizing he had done so and caused Byrd to make an erroneous reading. When Byrd wrote down the 19+ altitude, he realized immediately from his DR position that it was wrong and probably went back to an earlier reading of the set of readings, erased this erroneous reading and proceeded on. It is also possible that he first misread the altitude and then, with another look at the sextant, corrected the reading; this is a normal procedure to check one's readings. Whatever the reason, this erased altitude was not used by Byrd. All of the other readings were taken with apparently excellent accuracy. Byrd reported the air was not bumpy. Air over the Arctic Ocean is possibly the smoothest in the world. There are no mountains to give up and down movement to the air and, with the sun shining 24 hours a day, night temperatures and day temperatures remain much the same, which also contributes to smoothness in the air. Byrd's sextant readings seem almost too good to be true, but smooth air and careful observations of the sun would give him pretty accurate readings.

CONCLUSION

The erased sextant reading in Byrd's diary played no part in Byrd's navigation.

This author is awed by Byrd's careful planning and execution of this first flight to the North Pole. He went north on the 11E meridian and returned on the 15E meridian. He planned his takeoff time to give him his course by sunlines in the mid-portion of the flight



Doral Chenoweth III/Dispatch

William E. Molett has researched Adm. Richard E. Byrd's disputed flight to the North Pole in 1926.

and latitude by sunlines as he approached the Pole. About one hour after he started south, the sun crossed the 15 E meridian. At this time, Byrd asked Bennett to fly directly at the sun. The sun's shadow was directly down the middle of his sun compass, indicating he was exactly on his desired course. That he was [on] and remained on his course was confirmed when, at about 120 miles north of Spitzbergen, he spotted Grey's point almost dead ahead.

Byrd had helped design the drift meter he used for drift and ground speed. It is in-

conceivable that he could travel for nearly six hours and not detect that his actual ground speed was only 53 knots when he consistently computed it to be around 77 knots or higher.

Byrd made huge contributions to naval aviation and aviation in general. He was probably one of the ten best navigators in history. When he said he reached the North Pole in his trimotor aircraft, you can believe it despite criticism by non-navigators. □

LCol Molett was a USAF Master Navigator who navigated 91 flights over the North Pole in the 1950s. He taught polar navigation for three years and is adept at spotting manufactured navigational tracks.

Soviet Reveals Secret Flight to North Pole Made on May 5

Polar Times, Vol. 1/No. 5, 23 May 1937, MOSCOW—The Soviet Union's expedition encamped at the North Pole disclosed today that Friday's flight, which landed 11 men 13 miles from the top of the world, actually was the expedition's second polar flight.

On May 5, Prof. Otto J. Schmidt, leader

of the venture, disclosed [that] an airplane carrying four men made an exploratory flight over the pole, but owing to fog and poor visibility, made no attempt to land. This flight was not reported until after the successful landing of Friday.

Pilot of the May 5 flight was the noted

airman, Pavel Golovin. He took off from the Rudolf Island base, 560 miles from the pole, at 11:32 a.m. (2:32 a.m. EST), reached the pole five hours later and then returned to Rudolf Island. □

(If Byrd did not make the Pole, then Golovin was first to fly over the North Pole in a fixed-wing aircraft.—Ed.)

Three Supply Planes Fly to Polar Base

Soviet Craft Go 558 Miles From Rudolf Island to Camp in 7 Hours

Polar Times, Vol. 1/No. 5, 26 May 1937, MOSCOW—The three remaining airplanes of the Soviet North Pole Expedition, which had been delayed at Rudolf Island by storms on the Polar ice cap, have now flown the 558 miles to the Pole.

They took off at 11:15 last night (2:15 p.m. New York time) and seven hours later, at 6:15 this morning (9:15 p.m. in New York),

after an uneventful flight, they were circling over the Pole. They landed a few minutes later. The weather was reported to be fine.

The planes took the remaining twenty-nine of the expedition's total of forty-two persons, together with most of the food, scientific equipment and other supplies sufficient for a year for the scientific party of four men who will remain there.

The pilots are three of the Soviet Union's greatest fliers, Vassily Molokoff, A.D. Alexieff and I.P. Mazuruk. At the Pole they join another Soviet hero, Mikhail Vodopyanoff, who arrived with Professor Otto J. Schmidt and eleven other members of the expedition at the Pole last Friday (see "Fliers Alight," p. 13). □

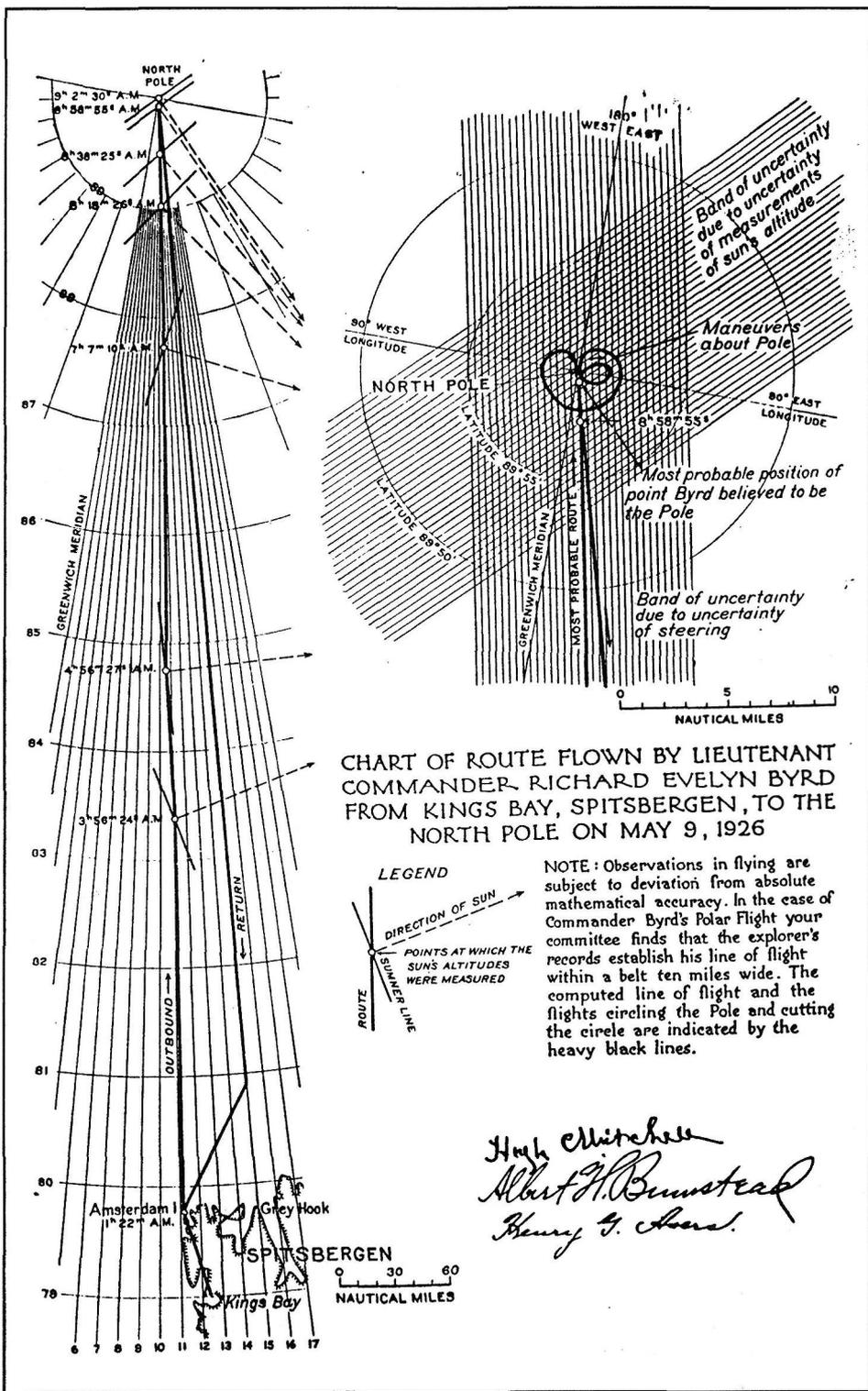


CHART OF ROUTE FLOWN BY LIEUTENANT COMMANDER RICHARD EVELYN BYRD FROM KINGS BAY, SPITSBERGEN, TO THE NORTH POLE ON MAY 9, 1926

Understanding the Issue

Navigational plot examined by the National Geographic Society Review Board of Hugh Mitchell, Albert Bumstead and Henry Asers confirming Byrd's flight. Denis Rawlins claims that Byrd's 7h07m position was falsified and that he turned around at about 88 degrees North. Rawlins' view is based on an erased figure in Byrd's working notes implying that the rest of Byrd's entries were falsified. LCOL Molett points out that the erasure was a bad sighting or a bad computation and that when Byrd discovered this, erased it, reshot the sun and proceeded to the pole. The rest of Byrd's navigation, both before and after this point is consistent according to Molett. If the flight was manufactured, Molett, states, he would have been able to determine this fact. (Diagram from *Skyword*, by Rear Admiral Richard E. Byrd, Putnam's Sons, 1928.)

Russians End Polar Flight at Vancouver

Pass Pole With Ice on Wings

Polar Times, Vol. 1/No. 5, October 1937, p. 7, PORTLAND, Ore.—(June 20, 1937) Soviet Russia's three transpolar fliers brought their huge monoplane to earth at 8:22 a.m., Pacific Time, today (12:22 p.m. Eastern daylight-savings time) at the army airport at Vancouver, Wash.

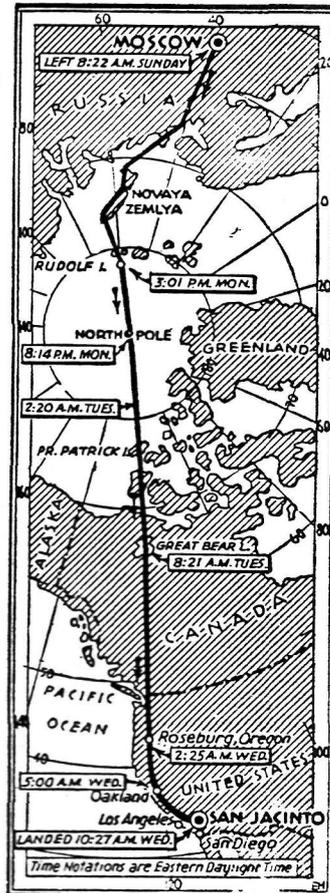
They fell approximately 600 air miles short of their goal, which was Oakland, Calif. The three left Moscow for their journey over the top of the world Thursday at 5:05 p.m. Pacific time (9:05 p.m. in New York). their flying time was 63 hours, 17 minutes, during which time they covered about 5,288 miles.

The Soviet fliers—Valeri Chkaloff, pilot; Georgi Baidukoff, co-pilot; and Alexander Beliakoff, navigator— their faces covered with stubble of whiskers but showing few signs of their weariness, were taken immediately upon their arrival to the quarters of Brig. Gen. George C. Marshall, Vancouver barracks commandant.

"We used the sun compass virtually all the way, and it worked very well."

Alexander Vassilievitch Beliakoff, the navigator, is the oldest member of the party—40. He is Professor of Air Navigation in the Military Air Academy and a "hero of the Soviet Union."

(See articles pp. 9-10.)



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Basically, *The Polar Times* is a compendium of recent articles on polar matters and historical glimpses of past exploration. It was designed to keep "Old Polar Explorers," armchair or otherwise, abreast of current activities in the polar regions.

Your support, however, is needed to ensure the future of our society. We encourage all who have an interest in the polar regions to become members of the *American Polar Society* and preserve our proud heritage of polar exploration.

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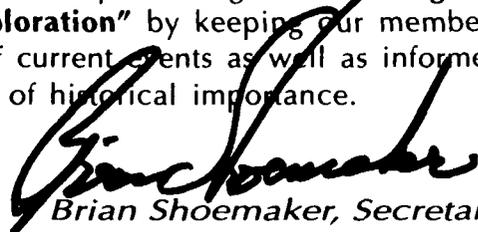
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The Polar Times

The first edition of The Polar Times was published in 1935. This issue and those that followed for the next 60 years chronicled exploration of the polar regions as it unfolded. The new Times is dedicated to preserving our “Heritage of Polar Exploration” by keeping our members abreast of current events as well as informed on issues of historical importance.


Brian Shoemaker, Secretary
American Polar Society

Fliers Alight on North Pole and Establish Soviet Air Base

Polar Times, Vol. 1/No. 5, 22 May 1938, MOSCOW—A Soviet airplane made a successful landing at the North Pole yesterday and established a permanent weather and scientific station as the first step in the long-cherished plan for regular air communication between Russia and America by way of the polar region.

After flying over Pole at 11:10 a.m., the plane went on fifteen miles farther where it made a perfect landing on a smooth area of an ice floe at 11:35 a.m.

The plane was piloted by M.V. Vodopyanoff. With him was Professor Otto J. Schmidt, head of the Northern Sea route, who for two years has been planning a polar weather station.

The successful landing brought to a successful climax years of preparation by Soviet scientists and airmen looking toward establishment of an air base at the North Pole and an ambitious program of polar exploration by airplane.

M.V. Vodopyanoff took his heavily loaded four-motored craft off the new landing field

at Rudolf Island at dawn. The landing was six hours, ten minutes later. Before coming down, the airplane circled the Pole many times looking for a landing field.

"Aboard the Soviet plane U.S.S.R. N-170 we crossed the Pole at 11:10 Friday morning. In order to obtain the best results, we passed a little beyond the Pole seeking a landing field.

"We are about twenty kilometers beyond the Pole and a little to the west of the Rudolf Island meridian."

Vodopyanoff declared in a statement that he had conceived the idea of establishing a Soviet scientific base at the North Pole and had been greatly influenced by the experience of Rear Admiral Richard E. Byrd. He outlined the idea to Professor Schmidt, who gave sympathetic attention and asked for a detailed plan.

Vodopyanoff spent all the summer of 1935 studying the writings of polar explorers, particularly those of Admiral Byrd, whose flights over both the North and South poles made his experience particularly valuable. □



Professor Otto J. Schmidt, noted Russian explorer, is seen here with one of his planes that landed the Soviet expedition near the North Pole. Four of the courageous crews that flew to the North Pole remained there and will stay for a year to collect weather and other scientific data.

From Those Who Knew Admiral Byrd

To the Editor:

The last time Dennis Rawlins purported to produce irrefutable evidence that an explorer had lied about his feat, the evidence turned out to be only the serial numbers on Admiral Peary's chronometer. Rawlins goes to great lengths to debunk the extraordinary accomplishments of famous polar explorers.

Gilbert M. Grosvenor
Chairman of the Board
National Geographic Society

To the Editor:

National Geographic accepts the polar claim of Admiral Byrd for lack of definitive evidence to the contrary. We are aware that instrumentation of the times may have been less exact than that of today, and that some have raised questions about his achievement.

Halsey Spruance
Spokesman
National Geographic Society

To the Editor:

I would like to respond to the article by Malcolm W. Brown, taken from the *New York Times* (May 12, 1996). I don't know where he got his information. I was a geologist on the U.S. Antarctic expedition (1939-1941). I had the privilege of knowing the Admiral quite well, as he interviewed me and accepted me as a member. I spent about a week at his house in Boston. The admiral they are talking about must be another admiral. Admiral Byrd was a gentleman, honorable, and his integrity was unquestionable. If he said he accomplished a goal, you can bet he did. As far as navigation, he was excellent, and if he made a mistake because of weather conditions, he said so and corrected it.

He joined the *North Star* at Panama, and I ate most meals at his table. As for being a drunkard and being afraid to fly—that's the wrong information. I was on many flights with him, and he was a cool-headed person and a real leader. Also, any credits he was given, he earned, and he also included others who were involved. He was also very considerate of the men under his command. I feel very privileged to have known the Admiral.

Charles Passel
Abilene, Texas

Dear Editor

The accomplishments of great men are often belittled by would-be heroes who present the negative side of life instead of the positive. The media finds it so easy to criticize and difficult to compliment.

Admiral Byrd's story and reputation of being a good leader, a good navigator and a good explorer has been questioned by individuals who strike below the belt. Will the professional disparagers in the future try to negate the flight to the moon as they have targeted the life of Admiral Byrd, especially the flight to the North Pole.

For four years I worked for Admiral Byrd - to train his sledging teams, to accompany him on his first Antarctic Expedition (1929-30), to prepare his supplies for the second expedition (1933-34) and to accompany him on many of his fund raising lectures. At no time did I find him a liar or ever drunk as reported in the *New York Times* on 12 may 1996.

On the contrary, he was always a gentleman, lived up to the good name of the United States Navy, was proud of his family and more than anything else was an inspiration and strength behind all Antarctic explo-

ration, discovery and scientific development. By his leadership and selection of good men like Lawrence McK Gould, Byrd's place in the world's history of exploration is at the top.

Norman D. Vaughan
BAE I 1929-30

Dear Editor:

I have read the article in the *New York Times* disparaging the character of Admiral Byrd. Having been a member of the Byrd Antarctic Expedition II, 1933-35, as a seaman on the BEAR, I say it is a lot of baloney.

Fear of flying!! Many people today would fear flying in the Arctic and Antarctic with equipment likely to fail, no Nav aids, no reliable weather enroute and no back up aircraft to search for him if he was forced down. He made the flights in spite of these possibilities. If he was afraid of flying, he never showed it!

Terrible navigator!! He was the foremost navigator of his day, a man who did a lot to advance aviation, as well as explore the polar regions. With his primitive equipment he found his way out and back safely. What is so terrible about that?

Did not pilot his plane!! Amundsen, Ellsworth and Wilkins did not pilot their planes. All of them picked the best pilots they could find. What's wrong with that? (Editor's note: Byrd did pilot the plane part of the time on the North Pole Flight. See *Skyward*, page 194).

Byrd bashers should try to duplicate his accomplishments before they try to criticize him.

Gordon Fountain
BAE II 1933-35

Air Guard to Assume Navy Squadron's Antarctic Mission

Antarctic, June 1996, p. 56 (contributed by Peter Barretta)—It has been decided that the Navy's Antarctic mission will transfer to the Air National Guard.

The Air Force will gradually increase its role over the next two years until it takes over entirely in the 1999-2000 winter season.

The Deep Freeze operation has 450 staff and seven LC-130 Hercules aircraft, specially fitted with huge skis for ice and snow landings. Until February this year, the squadron

also operated several Huey helicopters.

The Air National Guard's 109th Aircraft Wing, which will assume responsibility for the Antarctic flights, is based at Stratton Air National Guard Base in Scotia, New York. It has been flying in the Arctic since 1975 and in the Antarctic since 1988.

The Navy unit, VXE-6, is based at Point Mugu, California, and forward deploys its staff to New Zealand every October to February.

Virtually all of the missions flown by the unit are for the National Science Foundation, which pays the salary and maintenance costs of the unit.

The switch to the Air National Guard is forecast to save money by consolidating the programme within one unit and using more part-time personnel, who will make up half the unit.

Estimates of cost saving range from \$5 to \$15 million a year. □

House Lawmakers Push Bill to Protect Antarctica

AOLNewsProfiles, 18 April 1996, WASHINGTON (contributed by Peter Anderson)—House of Representatives members on Thursday pushed a bill to protect the Antarctic environment, which they hoped would spur five other countries—Russia, Japan, India, Belgium and Finland—to ratify the rules.

In a rare show of unanimity, Republicans, Democrats and the Clinton administration hailed the legislation that would ban exploration or development of Antarctic miner-

als, impose strict waste control rules and give scientific research priority over all other activities on the ice mass.

"It is important to remember that the scientific value of this great continent is directly tied to the pristine nature of its environment," said Representative Robert Walker, the Republican chairman of the House Science Committee who introduced the legislation.

"Conversely, much of the research done in the Antarctic is vital to the understanding of our global environment," the Pennsylva-

nian said at a committee hearing.

The committee is scheduled to vote on April 24 on the legislation, which would put into effect environmental measures attached to the Antarctic Treaty agreed to by 26 countries in 1991 and endorsed by the U.S. Senate in 1992.

"We're very pleased with the bill as it stands," said Eileen Claussen, Assistant Secretary of the State for Environmental Affairs.

The Senate has yet to take any action on a similar bill. □

Iceberg Armadas Evidence of Radical Temperature Changes

NAS Pensacola Gosport, 12 April 1996 (contributed by Bill-Ace Baker)—Icebergs sailed across the North Atlantic in massive numbers six times during our last great ice age. Each flo-tila lasted from a few centuries to a thousand years or more.

Research now shows that these iceberg armadas indicate how radically the earth's overall temperature can change in a brief period of time.

Gerard Bond, a geologist at the Lamont-Doherty Earth Observatory, notes, "The armadas of icebergs that have come across the North Atlantic are giving us a rather special view of sudden events we were not aware of from the studies of ice cores."

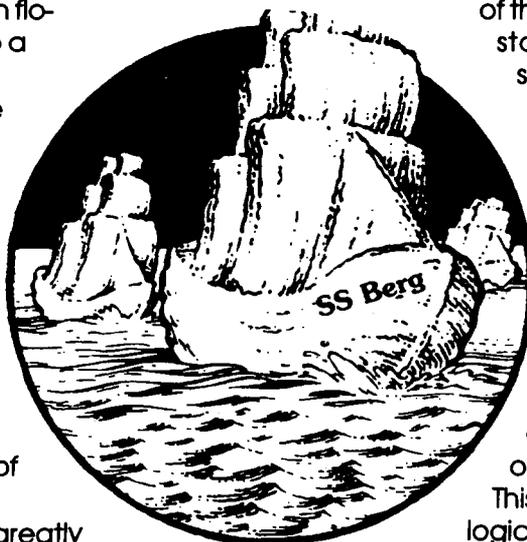
The sheer number of icebergs greatly diluted the North Sea's salty water. The lighter, fresh water remained on the surface, preventing the heat-laden salt water from distributing

its warmth. This disturbed a delicate global process of heat transfer, and the temperature quickly dropped. Analysis of cores from the floor of the North Atlantic reveals sand, limestone fragments and even fossils scraped from Canada. These deposits could only have been carried by fleets of huge icebergs.

"They were deposited instantaneously," says Bond, "and the only way that quantity of material could have been brought would be by the immense number of icebergs floating across the North Atlantic."

At least six of these armadas—each lasting centuries—occurred over a period of some 60,000 years. This is an amazingly short time, geologically speaking.

Today, the massive ice sheets that gave birth to these icebergs are gone, but scientists are still learning from those ancient ice fleets. □



Spy Plane Photos Used to Map Antarctica

America On-Line, 8 Aug 1996, by Maggie Fox (Contributed by Billy-Ace Baker and Peter Anderson) CAMBRIDGE, England—Aerial images of Antarctica taken by U.S. spy planes in the 1960s and de-classified by presidential order last year are delighting scientists trying to map the continent's climate and geology.

The 35-year-old photographs and radar images are helping them compare how the 2.5 miles thick ice sheets have thinned or changed and may provide strong evidence about climate changes due to global warming.

"It's just extraordinary," said Ken Jezek of Ohio State University, who is heading a project to compare modern satellite images with the old Cold War spy shots.

Although the images were taken for military reasons, they provide a wealth of information for environmental scientists.

The radar images provide more information than a photograph because microwaves penetrate clouds and show activity such as melting ice.

He said the old U.S. images provided a complete map of the Antarctic, a continent

twice the size of Australia.

One of the first things the researchers started looking for was evidence that the gradual warming of the Earth's atmosphere had started melting the huge ice sheets that cover Antarctica.

But Jezek said the photographs so far did not show this. "I don't believe we have any evidence for that," Jezek said.

Jezek said the high-resolution images have shown changes at the level of an individual crevasse, for example. "We have found remarkable changes in the ice shelf margins," he said. But he put much of this down to normal dynamics, such as a storm breaking off a narrow outcrop of ice.

President Clinton de-classified the images last year. "The data were in all sorts of weird archives," Jezek told reporters.

The film was processed by the U.S. Geological Survey at its EROS data center in Sioux Falls, S.D., and individual photographs are available, at \$8 apiece, over the Internet.

"Anyone can gain access to the data," Jezek said. "It's an international treasure." □

Q&A: The Eskimo Diet

The New York Times, 18 June 1996, p. C9 (contributed by Peter Barretta)—Q. If the United States Government food pyramid suggests limiting fat in the diet, why is it good for the Eskimos, who eat so much of it?

A. It was observed that Greenland Eskimos, whose diet is rich in unsaturated oils from ocean fish, rarely suffer heart attacks or strokes caused by blood clots. But their diet has its own health risks, like a much higher incidence of hemorrhagic stroke, and there is no firm evidence that following such a diet would improve the overall health of non-Eskimos.

The Eskimos eat almost exclusively animal food, including lots of fish. They consume very large amounts of two unsaturated omega-3 fatty acids called eicosapentaenoic acid and docosahexaenoic acid, which have an anti-clotting effect, among other benefits. Cold-water fish like salmon, bluefish and mackerel are especially high in these oils. The Eskimo diet leaves little room for other potentially harmful fats, especially saturated fats.

But the anti-clotting properties of the fish oils raise the risk of uncontrolled bleeding. It may also suppress some components of the immune system.

It has also been found that the milk of nursing Eskimo women in northern Quebec

is contaminated with a higher level of PCBs than that of women anywhere else in the world, because the fish and animal fat they eat is where the chemical, from industrial wastes, concentrates.

Fish or fish oils as a heart-attack preventative have not been backed up in scientifically controlled studies. One Harvard study, in fact, found that the amount of fish in non-Eskimo men's diets was not associated with any change in heart attack rates. □

U.S. Icebreaker Brings Food to 38 Russians

Wisconsin State Journal, 9 June 1996, SYDNEY (contributed by J.S.)—An American icebreaker is churning through pack ice in 24-hour midwinter darkness to bring tons of food and supplies to 38 Russians marooned at an Antarctic research base.

The U.S. National Science Foundation is sending its primary research ship, the 308-foot icebreaker *Nathaniel B. Palmer* to bring emergency rations to the Russians at Mirny base, which is due to run out of food around June 15.



The American Polar Society

The American Polar Society was formed in 1934 in response to public interest in the polar regions that was generated by the Byrd and Ellsworth Expeditions of the 1920s and 1930s. A newsletter, *The Little America Times* was published during the second Byrd Antarctic Expedition (BAE II) and Ellsworth's transcontinental flight.

Copies of *The Little America Times* were circulated throughout the United States and Canada, creating a great deal of interest in exploration and field science in the polar regions and generating a demand for a continuing publication dedicated to the Arctic and the Antarctic.

In response the American Polar Society was founded in 1934 by August Howard and others interested in polar exploration and research. In 1935, largely at his own expense, Mr. Howard began publishing *The Polar Times*, a semi-annual compendium of articles about the poles, culled mostly from newspapers, magazines and scientific journals. The newsletter was distributed free to members of the society who paid annual dues of \$1.

Most leading polar explorers, scientists and expedition members joined the society and *The Polar Times* has served as a chronicle of events in the polar regions since that time.

We encourage everyone to join the American Polar Society. Membership is open to all who are interested in the polar regions as well as "Old Polar Explorers". □

A Family's Bonanza in Yukon: The Contented Life

The New York Times, "International," 19 Aug 1996, p. 4A, by Clyde H. Farnsworth, DAWSON CITY, Yukon Territory (contributed by Peter Barretta Jr.)—"We did a whole bunch of dumb things but managed to survive the game," said Bernard Oud, a youthful-looking 56-year-old describing his last 20 years prospecting for gold in the Klondike.

Mr. Oud had owned a small lumber manufacturing business in Duncan on southeastern Vancouver Island, British Columbia.

Mr. Oud, who wears a two-ounce chunk of gold that looks like a big ball of spent bubble gum on his belt buckle, still works like a son of a gun, but only in the late spring and summer. He finds enough gold during days of the midnight sun to enjoy a leisurely winter in Yuma, Ariz.

"This is a land of opportunity," he said.

Although 100 years have passed since three sourdoughs found the nugget at Bonanza Creek that touched off the greatest gold rush in history, at least 125 small-time gold op-

erators still scabble for the gold that is left.

The stampedes, as the early gold seekers were called, have long since passed into history—and into the tales of Jack London and Robert W. Service—but gold continues to be Dawson's lifeblood. Last year, 73,658 ounces were mined in the Yukon, most of it within 50 miles of Dawson City.

That is still a far cry from the one million ounces a year miners brought out of the ground around the turn of the century.

The Ouds, like most of the other gold miners here, run a real mom-and-pop operation. Elsie and the children, now grown, help run bulldozers, excavators and other equipment that rip the frozen tundra, then dump gold-bearing earth into a hopper-fed sluicing system that separates the heavier gold from sand, mud, gravel, and stones.

Back in 1981, when gold was selling for around \$700 an ounce, the \$1.1 million profit they made had to be split with a partner. Working in recent years by themselves, the

Ouds have turned up several hundred ounces a year with gold prices at about \$400 an ounce.

"It's been a good living," said the Dutch-born Mr. Oud, who met his wife, also born in the Netherlands, as a young man in Duncan. "We're a very close family, and we've had a lot of fun over the years."

At the claim about a mile from their home they showed off a sluice box that, after a week of operations, contained up to \$40,000 worth of gold, mixed with a lot of dirt and gravel. The Ouds have their own furnace for melting the gold into bars, which they sell every couple of weeks in Dawson City to agents of gold-dealing companies like Engelhard Canada Ltd. and Johnson, Matthey Ltd.

Along with gold, they have also dug up old picks and shovels, gloves and boots, and even the teeth and tusks of a mastodon. A few years back, some neighbors came upon the world's best preserved example of equus lambei, an extinct Ice Age horse about the size of a dachshund. □

Depleted Ozone Layer May Begin Recovery Within 10 Years

The Washington Post, 31 May 1996, p. A3, by Paul Recer (contributed by Peter Barretta, Jr.)—Ozone-destroying chemicals are declining in the atmosphere for the first time, according to researchers who say that means the depleted ozone layer in the stratosphere, high above the Earth, could start recovering within 10 years.

"This is the very beginning of a change," said Stephen A. Montzka, a National Oceanic and Atmospheric Administration scientist. "This is the first step toward the goal of closing the ozone hole."

Montzka said ground-level measurements on three continents and on two Pacific Ocean islands detected a reduction in the concentration of industrial chemicals that erode the ozone layer. A report on the study is being published today in the journal *Science*.

"A detectable signal for ozone recovery is expected around 2005 or 2010," said Montzka, a researcher in the NOAA laboratory in Boulder, Colo., and the first of eight co-authors of the study.

Thinning of the ozone layer in the stratosphere is thought to be caused by some industrial compounds containing chlorine and

bromine. The most common chemicals include chlorofluorocarbons (CFCs), halons and chlorine-based solvents that have been used for more than 30 years as refrigerants, cleaning agents, spray propellants, foams and fire extinguishers.

Destruction of the ozone layer has been particularly severe over the South Pole. In recent years, measurements by satellite and ground instruments found that ozone concentrations declined to a third or less of normal in the polar region, forming what has been called "an ozone hole."

In 1987, 23 nations meeting in Montreal signed an agreement to phase out manufacture and use of ozone-destroying chemicals.

Amendments later added more chemicals to the list, and Montzka said tests now show the Montreal protocol is beginning to have an effect.

Montzka said his lab has been monitoring the chemistry of air samples collected in the continental United States, Canada, Australia, Antarctica, Samoa and Hawaii. Measurements of chlorine peaked in 1994, he said, and a decline was noted for the first time in 1995. □

Norwegians Cross Greenland in 185 Days for Record

14 June 1996, OSLO, Norway (contributed by Peter Anderson)—Two Norwegians have completed the world's longest unsupported skiing expedition, crossing Greenland in 85 grueling days, sponsors said on Friday. Rune Gjeldnes and Torry Larsen, both 24, reached Cape Morris Jessup on the northern tip of Greenland on Thursday after skiing about 3,000 kilometers (1,800 miles) across the permafrost.

A statement said Gjeldnes and Larsen beat the previous record held by Britons Ranulph Fiennes and Mark Schroud, who covered 2,172 kilometers on skis in an attempt to cross Antarctica a few years ago.

The Norwegians, who trained as navy commandos, specializing in survival under extreme conditions, parachuted onto a glacier on the south coast of Greenland on March 19 to begin the expedition. They had 1,320 pounds of supplies with them on two sledges, "The long journey across the inland ice was delayed in the first weeks by strong winds and poor ice conditions," the statement said. After some time Gjeldnes and Larsen managed to cover up to 70 km (45 miles) a day, thanks to sails pulling the sledges, it said. □

Young Explorer's Page



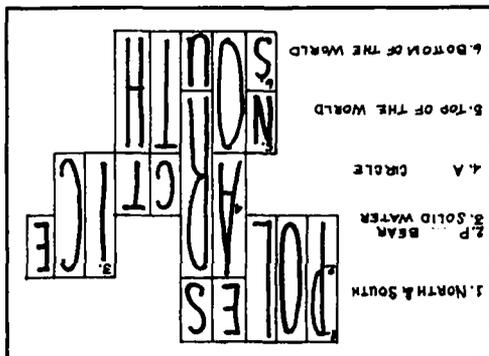
Collared Polar Bear Snubs Alaska

Alaska, July 1996, p. 13 (contributed by Peter Barretta)—She became known as No. 20365 after federal biologists captured her and hung a collar transmitter around her neck. That was May 1992, and the female polar bear was hunting for seals on the sea ice near Prudhoe Bay. She had two newborn cubs.

No. 20365, however, turned out to be unlike the hundreds and hundreds of other polar bears whose movements had been tracked via satellite transmission from radio signals sent out from their collars. The giant white bears' home range is usually within a few hundred miles, researchers say, but this one packed up her family, headed straight north—and just kept trekking across the top of the world. About 10 weeks after the collaring, she had put 1,600 miles behind her. She spent the winter of 1992-93 in northeast Greenland, then stayed there for the next winter before the collar batteries wore out. All in all, she was tracked for about 3,000 miles. Scientists are just now assessing all the data collected during those years.

No. 20365's aberrant behavior isn't enough to change established thinking about the animals' range and territory, but it is intriguing, said George Durner of the National Biological Service in Anchorage.

Could it be that NO. 20365 simply didn't like being captured and collared, and emigrated as far from Alaska as she could get? Durner: "It's a possibility, but we have no way of assessing that." □



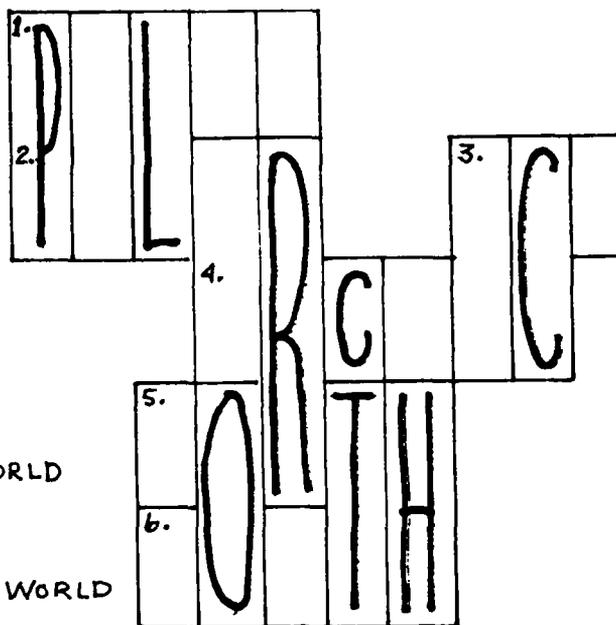
1. NORTH & SOUTH

2. P BEAR
3. SOLID WATER

4. A CIRCLE

5. TOP OF THE WORLD

6. BOTTOM OF THE WORLD



Q&A: Cold Eyes

The New York Times, 9 April 1996, p. C6, by C. Claiborne Ray (contributed by Peter Anderson)—Q. You see Antarctic explorers swathed from head to toe, except the eyes. Why don't the eyeballs freeze in very cold weather?

A. The orb of the eye is comparatively well protected both internally and externally against freezing. A prudent Antarctic explorer does wear goggles, but more for glare protection than cold protection.

Most of the eye is not exposed but is well insulated inside its socket in the head. Also, the body's reaction to extreme cold shunts much of the circulation of warm blood away from hands and feet and toward the essential systems of the body, the heart and brain. The head's copious blood supply also benefits the eyeballs.

And finally, though the eyeball is filled with two water-rich substances, the aqueous and vitreous humors, they both have relatively high percentages of sodium, potassium and chloride, constituents of the same salts used to melt snow. □

world's changing climate. Since one penguin looks pretty much like another, the scientist will be able to use this computerized tracking to follow the migration of individual birds. Scanners may be installed at bridges placed along well-worn penguin paths that also weigh individual animals as they pass. □



Penguins in the Arctic

New Zealand Antarctic Society, Antarctic, March 1996 (contributed by Billy-Ace Baker)—It is also no longer true to say that "there are no penguins in the Arctic." The newspaper *Lofotposten* reported on July 5, 1954, that a penguin had been seen by a farmer at Selsøyodden in Hamarøy. A writer in the *Norwegian Whaling Gazette*, while admitting that penguins and auks may easily be confused, thinks that the farmer may have been right in his belief that it was a penguin he saw.

Nine king penguins were released in Lofoten and Finmark in 1936, and in 1938 some birds of smaller species were released.

There have been several reports up until 1949 of penguins being seen in various parts of north Norway. □

Penguin Coding

The Fairfax (Va) Journal, 9 Aug 1996, p. A2 (contributed by Peter Barretta)—Bar codes similar to those used at supermarket checkouts are being glued to the beaks of penguins in the Antarctic to help provide clues to understanding the

OSU Gains New Set of Polar Diaries

The Columbus Dispatch, 3 June 1996, by David Lore (contributed by Peter Anderson)—More diaries of discovery—and another polar dispute—have found a permanent home at Ohio State University.

With debate over explorer Richard E. Byrd's Arctic flight diary still raging, OSU's Byrd Polar Research Center has agreed to archive the papers of the late Frederick A. Cook, who long claimed to have beaten Robert E. Peary in the land race to the North Pole.

"This is probably the greatest controversy in polar history," said Raimund Goerler, an archivist for OSU and the Byrd Center.

Cook, a surgeon and a veteran explorer, returned from the Arctic on Sept. 1, 1909, after two years "on the ice," claiming to have been the first to reach the North Pole on April 21, 1908.

But it was Peary—who said he reached the pole on April 6, 1909—who was credited with the historical first by most scholars, based on his reputation and his experience in the Arctic.

Debate as to which American first reached the pole continued well beyond the deaths of both explorers. Peary died in 1920, Cook in 1940.

A 1993 OSU symposium on the controversy persuaded Cook supporters to move the explorer's papers to Columbus from a small museum in Hurleyville, N.Y.

The Frederick A. Cook Society, which runs the Hurleyville museum, still will own the papers, but the items will be moved to Ohio State for what is expected to be a permanent loan, Goerler said. □

Four Frenchmen Reach North Pole After 55-Day Journey on Skis

The Columbus Dispatch, 30 April 1996 (contributed by Peter Anderson)—Four French army endurance specialists, making a rare trip on foot to the top of the world, have reached the North Pole after a 55-day trek on skis, the Defense Ministry said.

The four, pulling sleighs of up to 290 pounds, skied about 600 miles from the northern edge of Siberia and arrived at the North Pole on Wednesday.

"It was a daily battle—a battle against time," Adjutant Bernard Virelaude told France Info radio on Sunday at the end of his trip. □

Quest for the Origin of Time

South Pole Holds Clues to Universe

Pensacola News Journal, 12 May 1996, by William Mullen, AMUNDSEN-SCOTT SOUTH POLE STATION, Antarctica (contributed by Billy-Ace Baker)—Fifteen billion years after the Big Bang, at the deep-frozen southern polar axis of a tiny planet orbiting a small star in a medium-size galaxy, four telescopes are looking out, straining to see backwards into the creation of the universe.

The telescopes are at the center of Antarctica, several hundred feet from the South Pole, easily the most inhospitable place on Earth. From that unlikely vantage point they are taking human awareness through time and space to places it never has been.

Now that the austral winter has begun, its dark at the South Pole 24 hours a day; temperatures hover at 100 degrees below zero Fahrenheit or lower. It will be this cold and dark until October.

Although such conditions might be inhospitable for people, they are about as perfect as you can find on Earth for telescopes.

Every day from now until October, five wintering astronomers begin their work with a trudge up the ramp of ice that leads from the surreal, geodesically domed American polar science station.

The scientists say the work they are conducting at the South Pole holds the same sort of promise of national riches that Columbus' voyage produced for Spain.

The goal now is to gain knowledge about the first moments of the Big Bang, when time, existence and the universe began 15 billion years ago.

In the tiniest fraction of the first second afterwards, all matter, energy and light in the universe was contained in a single dot smaller than a subatomic particle. Every particle within that microscopic universe was hurtling away from every other particle at nearly the speed of light.

The universe was expanding so fast that at 1/100,000th of the first second, it already was the size of our solar system, 3.7 billion miles across.

In those earliest micro-moments, not even atoms existed, only wildly colliding subatomic particles—electrons, positrons, neutrinos and photons—in an expanding cosmic soup four million billion times denser than water.

With each particle trying to move away from every other particle at such blinding speed, the outer edges of the universe expanded away from its opposite edges faster than the speed of light.

The Big Bang itself is beyond our visible reach. But by measuring invisible wavelengths such as infrared, microwave and submillimeter radiation, the four South Pole telescopes are looking back at the evolving universe as far as 300,000 years after the Big Bang, barely a moment in the space of existence.

"Our game is building something that hasn't been built before," says Mark Hereld, a University of Chicago physicist and chief designer of one of the polar telescopes, SPIREX (South Pole Infrared Explorer).

"We're interested in the evolution of stars and galaxies. We take advantage of technologies."

The resulting machines are so complicated and experimental that the winter-over astronomers at the pole are mere junior partners to the enterprise. They are coached daily on telescope operations via satellite linkup on the Internet, getting their instructions from telescope designers, builders and other technical savants and theoreticians.

As pure science, the work polar astronomers are doing with their telescopes helps to satisfy humanity's seemingly innate need to understand its own existence. □

'American' Arrowhead Found in Siberia

The New York Times, 2 Aug 1996, p. A6, by John Noble Wilford (contributed by Peter Barretta)—Early Americans known as the Clovis people left a trail of elegant, fluted arrowheads at campsites far and wide, beginning about 11,200 years ago. These distinctive artifacts have appeared to archeologists to be a thoroughly North American invention, a technology Stone Age hunters developed after they migrated across the Bering land bridge from Asia to the New World.

Now, after years of searching, archeologists have found the first Clovis-style stone projectile point outside the New World, in Siberia. The discovery could provide important evidence relating to some of the thorny questions about the early colonization of the Americas.

In a report being published today in the journal *Science*, archeologists said the spear point, slightly smaller than a house key, was found near the Uptar River about 25 miles north of the Siberian city of Magadan. The site is some 1,200 miles from the Bering Strait.

During the most recent ice age, sea levels fell sharply and for several centuries dry land connected Asia and Alaska at the strait. There, the first people presumably crossed to America at least 12,000 years ago, probably much earlier.

The discovery was described by Maureen L. King, a doctoral candidate at the University of Washington and a staff archeologist at the Desert Research Institute in Las Vegas, Nev., and Dr. Sergei B. Slobodin, a Russian archeologist in Magadan. Dr. Slobodin began excavating the Uptar site 10 years ago. In examining his collection of artifacts last year, Ms. King noted that one of the stone points resembled the American points, which were named for Clovis, the town in New Mexico where the first specimens were found earlier this century.

"The implications are immense," Ms. King said of the new find. "This suggests that the technology associated with Paleo-Indians was not confined to the Americas."

It could, for example, have had origins in northeast Asia and been brought to the new World. It could have evolved independently in the two regions. Or it could have arisen in the New World and been communicated back to Asia by people who continued to travel back and forth between the two continents.

"We know that there were many migrations to the New World," Ms. King said in an announcement by the University of Washington, "but before this discovery it appeared that fluting had not crossed the land bridge in either direction."



Fluted points were found 1,200 miles from the Bering Strait.

Most of the spear and arrow points in Siberia followed a common pattern, each shaped like a willow leaf. The one fluted point, Ms. King said, is not the most beautiful "because it lacks the marks of fine workmanship evident in many Clovis points."

Fluting involved the removal of a flake or flakes of stone to leave a characteristic channel or groove from the base toward the tip. Archeologists do not necessarily agree with the belief that fluting served simply to make an easier fit in the shaft or with the possibility that it could have been purely esthetic.

The Siberian fluted point and other artifacts were found beneath a layer of volcanic ash that was dated as 8,300 years old. Radiocarbon dating of wood charcoal at the site produced the same age. The archeologist suggested that the tools could even be older, but other researchers doubted that the fluted point could be older than the fluted weapons prevalent in America 11,200 to 10,000 years ago.

Dr. C. Vance Haynes, an archeologist at the University of Arizona who specializes in studies of the Clovis culture, said the spear point was "an interesting find" that defied easy interpretation. He said the dating appeared to be firm, which meant the Siberian fluted point was nearly 2,000 years younger than New World specimens. He found it curious, he said, that only one fluted point showed up among all the other stone weapons.

"If I had found this point," Dr. Haynes said, "I'd be happy and showing it to my colleagues and saying, what do you make of this?"

As Ms. King conceded, the discovery is not expected to resolve the debate about when

people first migrated to the Americas, but it has raised hopes that digging deeper in Siberia could bring scholars closer to some answers. □

Iditarod's 'Dead Dog' Rule Rewritten

Swenson Fights Back and Wins

Alaska, August 1994, p. 13 (contributed by Peter Barretta Jr.)—Veteran Iditarod musher Rick Swenson isn't the kind of man to say "I told you so," but he is entitled to do just that according to many Alaskans.

Swenson was kicked out of the 1996 race when one of his dogs apparently strangled after getting tangled in lines while crossing overflow on the Yentna river. Changes to the 1996 rules mandated that in the case of a dog death, the musher would be withdrawn unless the incident resulted from "external force beyond the musher's control, such as a moose or snowmachine."

Swenson appealed and a panel decided last May, two months after the fact, that the rule was worded ambiguously and that he shouldn't have been pulled out. Public opinion had been almost uniformly on Swenson's side. Despite his withdrawal only a few miles into the 1,100-mile trail, at race finish he was voted the race's Most Inspirational Musher. In 20 previous Iditarods, Swenson had never lost a dog.

The so-called "dead dog rule" was controversial from the outset. It was written after a dog died in the 1995 race and was seen as an attempt to appease animal-rights activists who have tried to shut down the race. As a result of the Swenson incident, a new proposed rule would require mushers to take an eight-hour stop after any dog death and be penalized another 24 hours if the death was determined to be preventable. Many mushers think that's as bad as the 1996 rule.

"Penalizing a guy for having a dead dog is not the proper way to encourage dog care," Swenson told the *Fairbanks Daily News-Miner* after being cleared. Swenson said he won't enter the race again. "My heart just isn't into it. I'm starting to believe that the Iditarod is being run more for the sponsors than for mushers and dogs that are running the race." □

Tourists in Antarctica Outnumber Scientists in 1995-96¹

by Brian Shoemaker

A record 9212 tourists supported by approximately 1200 crew members traveled to Antarctica aboard commercially-organized tour vessels during the 1995-96 summer season - dwarfing the numbers of people on the continent involved in national research programs numbering an estimated 5000 scientists and support staff (See Accompanying Chart).

In addition Adventure Network International, celebrating its 10th season, flew 155 travelers and 20 staff into the Antarctic and Croyden Travel of Victoria, Australia offered a series of nine well received overflights carrying 2958 passengers.

Although there were tourist cruises to the South Polar region prior to 1990, prices were beyond the reach of the average traveler. It was the termination of the Cold War that provided the impetus for a dramatic increase in visitors; Russian ships became available to support the tourist industry. These vessels, including icebreakers, oceanographic research ships and tourist liners, have been built for operating from ice covered ports of the former

Soviet Union, have outstanding passenger accommodations and most importantly are staffed by crews who are adept at operating in ice covered waters. Prices went down and visitors to the region have increased dramatically.

There are 15 tour ships that ply Antarctic waters. These are chartered by 10 tour operators led by Marine Expeditions who sailed with 2872 passengers from Ushuaia to the Antarctic Peninsula and return (See Chart). In addition there are a host of organizations such as Elder Hostel, The Explorer's Club, Harvard Alumni Association that organize tours and subcontract with the tour operators for a discount. Prices range from \$ 2395 to \$ 55,000, however, it is difficult to compare since voyages vary in length, different locales are visited and group discounts can bring down prices.

All of the tours are accompanied by experienced scientists and field workers from the various national Antarctic research programs. They serve as lecturers on science, exploration, conservation and environment aboard ship and as guides afloat in zodiacs



BRIAN SHOEMAKER

SS Akademik Ioffe in Antarctica

and while ashore. Passengers who have experience in the field are encouraged to bring slides and are welcome to make presentations. All in all the tours are an intensive educational experience as well as an inspirational adventure. American Polar Society members would find the experience very worthwhile, particularly those *Old Antarctic Explorers* who now have the opportunity to show their spouses what they have been talking about for decades.

¹Information provided by International Association of Antarctic Tour Operators (IAATO).

ACTUAL SHIP TOURS — ANTARCTICA 1995-1996¹

<u>VESSEL</u>	<u>OPERATOR</u>	<u>TRIPS</u>	<u>PAX</u>	<u>TELEPHONE</u>
<i>Explorer</i>	Explorer Shipping	10	714	800-323-7308
<i>World Discoverer</i>	Society Expeditions	8	901	800-548-8669
<i>World Discoverer</i>	Zegrahm Expeditions	1	87	800-628-8747
<i>Kapitan Khlebnikov</i>	Zegrahm Expeditions	1	92	800-628-8747
<i>Kapitan Khlebnikov</i>	Quark Expeditions	4	403	800-356-5699
<i>Alla Tarasova</i>	Quark Expeditions	6	601	800-356-5699
<i>Alla Tarasova</i>	GMMS, Pty Ltd.	1	97	61 2-977-3749
<i>Professor Khromov</i>	Quark Expeditions	5	157	800-356-5699
<i>Professor Khromov</i>	GMMS, Pty Ltd	3	112	61 2-977-3749
<i>Professor Molchanov</i>	Quark Expeditions	6	192	800-356-5699
<i>Professor Molchanov</i>	GMMS, Pty Ltd	1	34	61 2-977-3749
<i>Hanseatic</i>	Hanseatic Tours	5	707	49-40-2391-1253
<i>Bremen</i>	Hanseatic Tours	4	539	49-40-2391-1253
<i>Akademik Ioffe</i>	Marine Expeditions	13	1,005	800-263-9147
<i>Akademik Vavilov</i>	Marine Expeditions	12	867	800-263-9147
<i>Livonia</i>	Marine Expeditions	3	110	800-263-9147
<i>Livonia</i>	Mountain Travel-Sobek	4	141	800-227-2384
<i>Akademik Petrov</i>	Marine Expeditions	10	381	800-263-9147
<i>Akademik Multanovskiy</i>	Marine Expeditions	10	368	800-263- 9147
<i>Akademik Shokalskiy</i>	Southern Heritage Ex	3	104	64-03-314-4393
<i>Marco Polo</i>	Orient Line	4	1,687	800-333-7300
TOTALS		113	9,212	

¹Data provided by International Association of Antarctic Tour Operators (IAATO).

The Day That Night Disappears

Summer Solstice Slides Into Alaska

The Washington Post, 21 June 1996, p. A-23, by Tom Bell, ANCHORAGE (contributed by Peter Barretta Jr.)—Joe Everhart, a bank manager in the Eskimo whaling town of Kotzebue, Alaska, made a decision two years ago that left him starved for sleep all summer. Everhart, who lived above the bank, ordered its dirt parking lot paved.

Children from all over Kotzebue flocked to the town's first plot of asphalt to roller skate and bounce balls. And this being Kotzebue, 33 miles north of the Arctic Circle, the children played all night long in the never-ending sunshine.

Starting June 2, the sun over Kotzebue circles the sky for nearly six weeks before setting.

"I'd come home at 2 a.m.," Everhart griped, "and there would be little kids in diapers running around, playing in puddles."

For Alaskans, summer brings more than just tourists and a respite from cold weather. It brings the sun, lighting up much of the state in 24 hours of daylight, warping people's sense of time and turning normal folks into pagan-like sun worshipers. The sunshine reached its peak today at 6:25 p.m. Alaska daylight time, the moment marking the summer solstice.

It's about time.

In Nome, the gold-rush town that likes to throw a party for almost anything, the sol-

stice brings a three-day holiday and the biggest parade of the year.

In Homer, located at the western end of the American highway system, people gather on the beach and pound drums around a bonfire. They build a sweat house at the edge of the high tide mark. When the high tide arrives, they leap from the sweat house into the frigid water of the Pacific Ocean.

In Barrow, the solstice is overshadowed by Nalukataq, the whaling festival held at the end of the whaling season. People gather on the beach to dance and play Eskimo blanket toss, and whaling captains hand out meat and muktuk (the whale's skin and first layer of fat).

"The concept of the longest day doesn't have any meaning for us," said Elise Patkotak of Barrow, noting that the sun rises in Barrow on May 10 and doesn't set again until Aug. 1.

When days are consumed by so much sunlight, time becomes irrelevant, said Lew Tobin of Nome.

For Ken Anderson, who changes commercial light bulbs in Anchorage for a living, all the sunshine costs him money. He finds it's almost impossible to sell his services to new clients.

"When it's light 24 hours a day," he said, "it's like trying to sell snow to the snowman." □



The American Polar Society membership lapel pins will make great Christmas gifts. They are a work of art, with an Emperor penguin and a polar bear against a background of sun riding low on the horizon of a pale blue summer sky. This is surrounded by brass lettering of the American Polar Society set in a field of black, symbolic of the six-month winter at each of the poles. Price is \$5. An order form is inside the front cover.

Thank You!

Obituaries

Harold G. Muchmore, M.D., Antarctic Veteran

By Brian Shoemaker

Harold Gordon Muchmore, 75, died November 14th 1995 at home in Oklahoma City after long illness.

He was a graduate of Rice Institute in 1943, received his M.D. from the University of Oklahoma Medical School in 1946 and an M.S. in Pharmacology in 1956. He was named Professor Emeritus of Oklahoma University in 1987.

During WWII Dr. Muchmore served with the Army and with the USAF during Korea where he was Commander of the 5th Epidemiological Flight. He was associated with the Veterans Administration and served the University of Oklahoma for over 40 years.

As a medical researcher, he focused on the study of internal medicine, microbiology and immunology. He also specialized in pharmacology, preventive medicine, public health and infectious diseases.

His research took him numerous times to Antarctica where he focused on studies of fungal diseases and on human immunity. This research led to the publication of over 100 papers and numerous presentations at national and international scientific conferences. He is famous among Antarcticans for distributing 'Killer Kerchiefs' among workers there - a handkerchief that stopped colds before they could start.

He is survived by his wife Donna and by four children Bruce Muchmore of New Jersey, Nancy Muchmore of Houston, Steven Muchmore of Chicago and Allan Muchmore of Oklahoma City.

Capt. John Richard Swadener: Deep Freeze I&II Aviator Dies

By Brian Shoemaker

John Richard 'Dick' Swadener, a retired navy captain and ferry boat master, died Monday, August 6 1996 of pancreatic cancer at his home in New Orleans. He was 68. Captain Swadener was born in Mishawaka, Ind. And lived in New Orleans for the past 21 years. He graduated from the Georgia Institute of Technology and studied at the Industrial College of the Armed Forces.

He served as an aviator in Antarctica from 1955 through 1958 with Antarctic Development Squadron Six (VX-6). He was personally selected by RADM George Dufek to navigate the flight of the first aircraft to land at the South Pole on October 31, 1956, joining the first party of Americans to stand at the 'Bottom of the Earth'. His personal photography from the pole during this event was selected for reproduction in a painting that hangs in the Naval Aviation Hall of Fame in Pensacola, Florida.

Captain Swadener was Commanding Officer of the Naval Air Station in Adak, Alaska from

CONTINUED ON NEXT PAGE

BOOK REVIEW: A Schoolteacher in Old Alaska: The Story of Hannah Breece

Edited by Jane Jacobs; Random House. 302 pp. \$24.

by Luree Miller

The Great Blizzard of 1996 was the ideal time to read *A Schoolteacher in Old Alaska*. The inconveniences of a couple of feet of snow in the District paled beside the adventures of schoolteacher Hannah Breece in Alaska. In 1904 she went into the Alaskan bush without telephone or radio contact, not to mention Gore-tex, granola or guidebooks. One winter at Iliamna, inland from Bristol Bay,

OBITUARIES CONTINUED FROM PREVIOUS PAGE

1973 to 1975 from which naval patrol aircraft made long operational flights over the Arctic Ocean and Bering Seas. He was a ferry boat master for the crescent City Connection Ferry Division for 18 years after his retirement.

He is survived by his wife, Nina Frances King Swadener of New Orleans; a son John Gregory Swadener of Austin, Texas; a daughter Leslie Anne Swadener, of New Orleans.

Howard F. Mason, Polar Radio Engineer for Byrd, Dies

by Peter Barretta

Howard F. Mason, one of the last two survivors of Admiral Richard E. Byrd's first expedition to the Antarctic in 1928-1930, died on 26 June 1996 at the age of 95, after hospitalization on three different occasions in the last 18 months. He is survived by his wife of more than 50 years, Genevieve E. Mason.

Mason was one of the five radio engineers and radio operators assigned to the Byrd Antarctic Expedition by the Navy Department and served in the over-winter party at Little America. The Byrd expedition had established the most extensive and advanced global communication system at that time.

According to Byrd's account in his book *Little America*, Mason was a very capable radio engineer and was a veteran of Byrd's Arctic Expedition of 1926, when he flew over the North Pole. Mason also had built and used radio sets in the Arctic.

Norman D. Vaughan, the lead sled dog driver for Byrd in the first Antarctic expedition, is now the sole surviving member of that expedition. Vaughan is 90 years old. In December 1994, he celebrated his 89th birthday by climbing Mount Vaughan, a peak named in his honor by Byrd after flying over the South Pole in November 1929. □

snow fell to accumulations of six feet or more. The temperature hit 45 degrees below zero inside her cabin. "Getting up in the morning was not delightful," she conceded.

After she built her own fire, Hannah swung a lantern on her arm, took a warm iron in her hands and, in the winter dark with a bitter wind howling, trudged up a steep trail to the schoolhouse. There she built more fires. It took hours for the schoolhouse to warm up. Fortitude like Hannah's was the norm for that fearless band of frontier teachers whose hair-raising adventures and inspiring accomplishments are largely unrecorded.

Fortunately, Hannah Breece entrusted her colorful memoir to her great-niece, Jane Jacobs, the widely acclaimed author of *The Death and Life of Great American Cities*. After 50 years of putting off work on the manuscript, Jacobs finally edited Hannah's heroic story and added a helpful introduction and an excellent epilogue that clarifies bureaucratic difficulties that the discreet Hannah either alluded to or left unmentioned. The result is that *A Schoolteacher in Old Alaska* is not only a good story, but good history. □

BOOK REVIEW: Robert Peary & Matthew Henson at the North Pole

by Brian Shoemaker

Author: LCOL William Molett; Elkhorn Press, Frankfort KY; 121 pp; \$19.95—Since the day that Robert Peary announced to the world that he had finally achieved the North

Pole on 6 April 1909 his claim has been disputed—first by Frederick Cook who claimed to have been there first and by others who have tried to prove that he never got there at all. Since then there have been numerous analyses, both pro and con, but none as thorough as Molett's.

Molett is eminently qualified to address the matter. He is a United States Air Force Master Navigator who has navigated 91 flights over the North Pole in the 1950s. He also taught navigation to Air Force fliers for three years and is adept at spotting inconsistencies in theoretical navigation projects of his students.

This book is not just about sledging speeds and celestial navigation; it is a thorough analysis of polar travel around the turn of the century. Peary's navigational methods were simple, enabling him to concentrate on traveling rapidly across the sea ice; Molett makes this easily understandable to the armchair navigator as well as presentable for professional review. He also explains the attention Peary paid to detail so that he could focus on rapid travel—everything from sledge construction, to clothes, to dogs, to food, to support parties. Above all he concentrated on the selection of men to accompany him to the Pole and back: four Eskimos, Ootah, Egingwah, Seegloo and Ooqueah, and Matthew Henson—arguably the best dog sled drivers and polar travelers in the world. He lauds the leadership role that Henson played in managing the Eskimo and in keeping up the pace, as critical to the success of the effort; Peary picked his lieutenant well—an inseparable team in both accomplishment and laurels. Molett concludes that they made it to the North Pole and that they earned the right to claim to have stood there first. □

Call for Volunteers: Spouses of Antarcticans

A research program is beginning study of the adaptive strategies and other reactions of spouses and families of Antarctic scientists, support and military personnel, and so forth, during the absence of the family member on the ice.

The husband-and-wife research team is at the University of British Columbia in Vancouver, Canada. Dr. Peter Suedfeld, an environmental psychologist, has done field research on how expedition members have adjusted to working in the Antarctic and the High Arctic. Dr. Phyllis Johnson Suedfeld is a professor in Family Studies whose work has included research on family adaptation to novel circumstances.

Both believe family plays an important role in the sojourner's adjustment and that pro-

longed absence of an adult family member in turn affects activities and interactions of the family. There is little systematic information about the impact of these influences. Spouses of Antarctic travelers are asked to volunteer to fill out a mailed questionnaire which asks how the family dealt with daily life—emergencies, child care, finances, employment, family celebrations and traditions, contact with the extended family, social activities, etc.—during and after deployment to Antarctica.

If you would like to participate or wish to receive more information about the study, please contact the Drs. Suedfeld at School of Family & Nutritional Sciences, University of British Columbia, Vancouver, BC V6T 1Z4, CANADA, or call 604-822-4300. Their e-mail address is pjohnson@unixg.ubc.ca. □

BOOK REVIEW: Cold Comfort: My Love Affair with the Arctic

by **Brian Shoemaker**

Author: **GRAHAM ROWLEY**; McGill-Queen's University Press, Montreal; 255 pp; \$29.95.

Explorer, archaeologist, anthropologist, dog sled driver, and *Eskimo at Heart*, Graham Rowley captures the way of life of the end of an era of Arctic exploration. *Cold Comfort* is an engaging personal account of a man who adapted to the lifestyle of the Inuit before they were significantly influenced by modern lifestyle. He and several companions traveled to Northern Baffin Island and Foxe Basin as part of a small British expedition to the Arctic in 1936: he as the archaeologist of the expedition.

Apart from completing the map of Baffin Island's coastline and discovering new islands offshore, *Makotenaq*, as Rowley was affectionately named by the Inuit, excavated the first pure Dorset site near Igloodik, establishing the Dorset culture beyond a doubt. More importantly he involved the Eskimo in his

research, engaging them in his excavations and instilling in them an appreciation of a culture that preceded theirs.

Above all the book captures a way of life that was dramatically changed with the large influx of people during and after the Second World War. He portrays the Eskimo as kind, sensitive and generous to a fault - a means of coping in an extremely harsh environment. He adopts their lifestyle and presents it as his own and is in turn adopted into a society as one of their own - a mutual love affair.

It is a compelling story, extremely well written with outstanding photographs and very good maps that make it easy to follow the travels of the author. I strongly recommend it.

(Postscript: I telephoned the Dr. Rowley in late July to ask some questions only to speak to his answering machine. He returned my call, however, from Igloodik where he was spending the summer excavating Dorset artifacts from the same hole that he started excavating in the late 1930's.) □

LETTERS TO THE EDITOR

To the Editor:

Enjoyed your article on the view from Neptune's Window. Couldn't see the mainland from there during my trip on the *loffee* in early February 1995 (was one of the marathoners). Keep up the good work.

Tom McNally

To the Editor:

I take issue to the claims of the VXE-6 flyer that the squadron explored 80 percent of Antarctica.

Mildred Grary
(phone call, 7/29/96)

(We are trying not to take issue with claims to fame by various individuals and organizations. We publish what may be of interest to our readers, whether or not it is controversial. Hopefully that will open a forum. In this case, we were trying to help the squadron organize its reunion.—Ed.)

To the Editor:

I would like to comment on Irv Grit's description (in the Spring-Summer 1996 issue of *The Polar Times*, p. 13) of explorers' methods to reach the North Pole.

He states that Admiral Byrd flew to the North Pole in an *amphibian* (which is either a twin-float seaplane or flying boat or plane fitted with floats or pontoons). Actually, Byrd flew on 9 May 1926 in a ski-equipped Fokker trimotor monoplane named the *Josephine Ford*, which

is a fixed-wing aircraft, while the dirigibles *Norge* and *Italia* were lighter-than-air airships.

Peter Barretta Jr.
Colonel USAF (Ret.)
Alexandria, Va.

To the Editor:

How many other old friends from the Arctic and Antarctic have lost touch due to their constant moving around and busy lives? Your membership list of the American Polar society would probably help many of them make contact again if it were to be printed and distributed to members. This member suggests you do it. The annual dues are low, so charge for it if need be.

Folger Athearn

(Readers, would this be helpful to you?—Ed)

To the Editor:

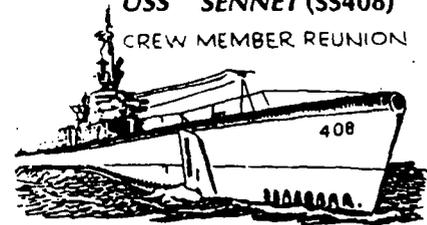
I want to tell you again how much I appreciate the fact that you had the interest and the zip to reactivate the American Polar Society and *The Polar Times*. You've done a great service, and I hope you are setting it up for continued operation for many, many years. It is too important to be allowed to die.

Congratulations and thanks for taking on the job.

RADM Jim Reedy
Former Commander
Operation Deep Freeze

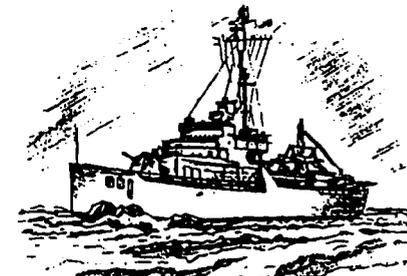
ANNOUNCEMENTS

OPERATION HIGH JUMP
USS SENNET (SS408)
CREW MEMBER REUNION



OPERATION HIGH JUMP
TASK FORCE 68
50th Anniversary Reunion
Oct. 10-13, 1996 • Norfolk, Va.
Contact: Don Leavitt
2109 Grand Ave., Morton, PA 19070
Or call or fax 610-461-1623

CGC EASTWIND WAGB 279
Reunion in Boston-24-26 May 1997
Contact: Earl T. Ellis Jr.
37-C Jefferson Drive
Maple Shade, NJ 08052
609-667-0320

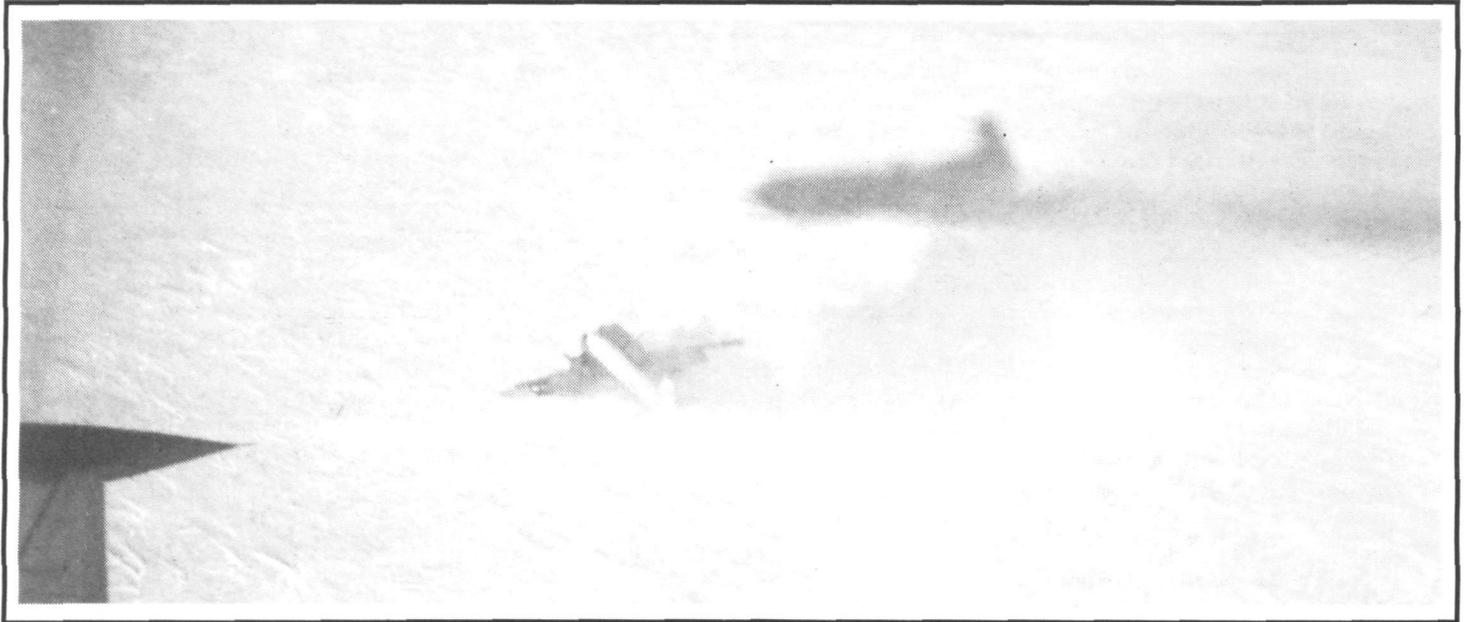


U.S.C.G.C. BURTON ISLAND
(WAGB-283) Reunion
Operation Deep Freeze
April 28-May 2, 1997 • Reno, Nev.
Contact: Greg Reel
4900 NE Park Lane, Kansas City, MO 64118
816-454-7991

USS GLACIER AGB-4
ASSOCIATION
Reunion in Myrtle Beach, S.C.
Oct. 1-5, 1997
Contact: Jerry Seeney
11612 River Road
Chesterfield, VA 23838
1-804-590-1606

If you are planning a reunion, let us know as soon as possible so we can publish the details in a timely fashion. Better still, we will publish "inquiries of interest" in reunions, for members of polar expeditions. Then, after the celebration, we will carry an article with the details of the get-together.

FIRST POLAR LANDINGS



USAF PHOTO

The shadow of a USAF C-124 hovers protectively over a U.S. Navy R4D during the historic first landing at the South Pole on Oct. 31, 1956. The R4D was flown by LCDR Conrad "Gus" Shinn, with Captain William "Trigger" Hawkes as co-pilot and Rear Admiral George Dufek as observer. The crew also included navigator Lt. John R. Swadener, radioman William Cumbie, and mechanic John Strider.



USAF PHOTO

The crew of USAF C-47 gather in front of aircraft after the first landing at the North Pole on May 3, 1952. Col. Joseph O. Fletcher, leader of the flight, is in the front row, far right, in sweater. Standing is Dr. Albert "Bert" Crary, with mustache (who later became the first man to stand at both poles). Pilot LCol William Benedict is standing, center row. Other crew members include A1C Robert L. Wishard, radio operator, and SSgt. Harold Turner.