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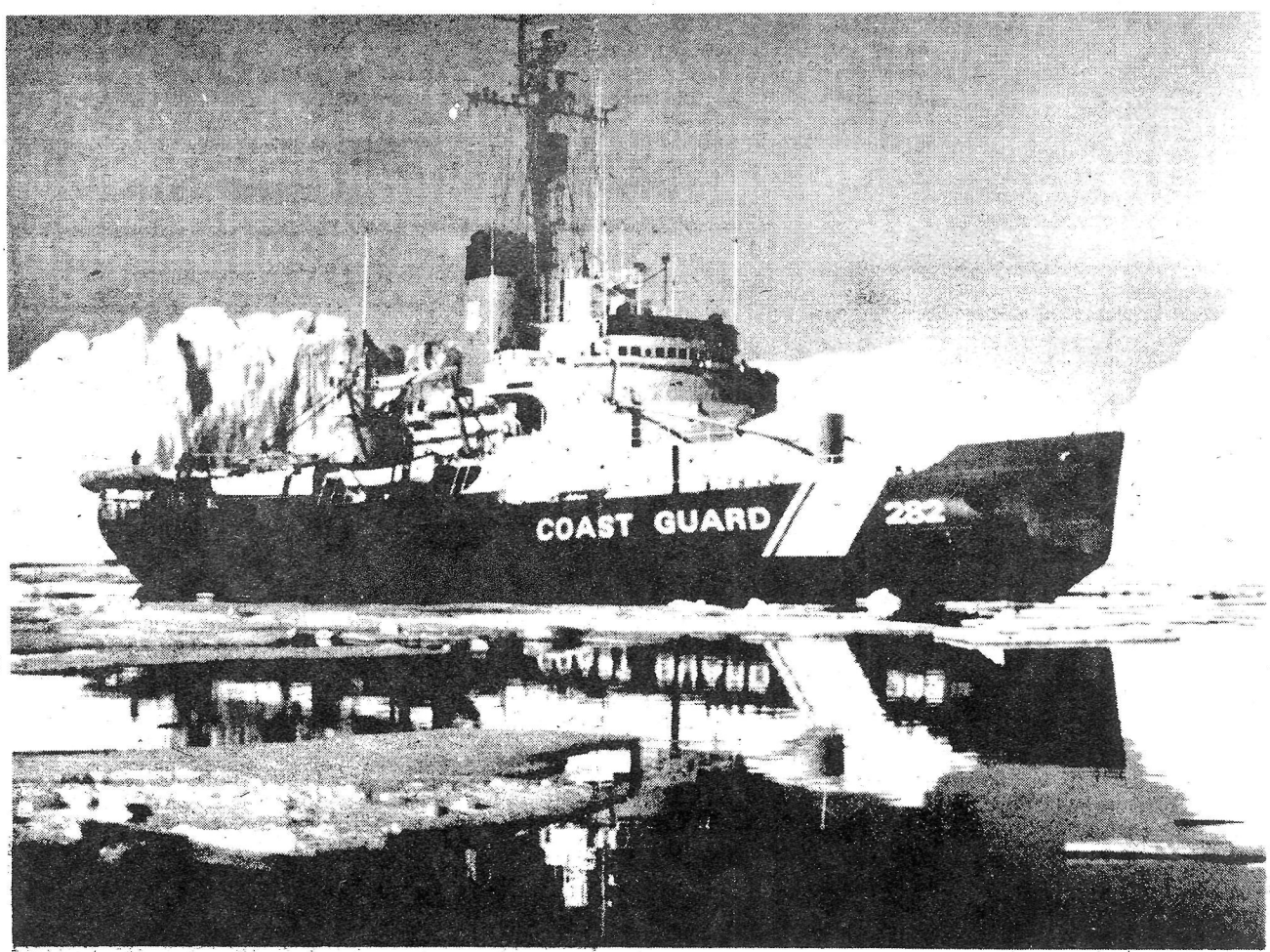
THE POLAR TIMES



Coast Guard Cutter Northwind moves slowly through a maze of icebergs in Melville Bay, Greenland

National Oceanic and Atmospheric Administration

The Polar Times

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U.S., Soviet scientists to share data

by Paul Jenkins
Associated Press

Scientists from the United States and the Soviet Union will sit down to a pizza dinner Monday in Dutch Harbor, ending a month of oceanographic research in the resource-rich Bering Sea.

For the third time, scientists from both nations will share data collected in the research. This year, the scientists worked together aboard the 8,000-ton Academician Korolve under provisions of a 1977 agreement to gather and share chemical and biological data.

The nations also agreed to share any information on pollution and the nutrients that make the frigid sea a giant seafood smorgasbord.

This year, 16 American scientists and 13 tons of gear joined about 30 Soviet researchers and 150 crew members to cruise the vast northern sea between Alaska and the Soviet Union.

"The cruises in general have been very productive. I think it's one of the best scientific exchanges between the two countries," said Bob Putz, regional director in Alaska for the U.S. Fish and Wildlife Service. "It's above politics. It's data gathering and research."

Putz said information is needed about the sea because of its rich food potential and the likelihood of its development by the oil industry.

"It's important to develop baseline data," he said. "It protects both industry and conservation groups in the future."

Putz was one of two U.S. negotiators who ironed out the details for the 1977 agreement that led to the joint voyages.

Since then, U.S. scientists have joined with their Soviet counterparts on two of three voyages. In 1981, a lack of funding kept U.S. researchers at home, but the Soviets shared data from the voyage anyway, Putz said.

The first cruise cost the U.S. government about $77,000 "not counting the salaries of the scientists," Putz said. "This one should cost in the neighborhood of $200,000."

"The Soviets have picked up the cost of the vessel," and that amounts to an investment of about $2 million just for the ship, Putz said.

While it may appear the United States is getting the best of the deal, Putz said the Soviet Union is eager to participate because it finds valuable data gathered by U.S. scientists.

"I think it's fair to say we have a little advanced technology in oceanographic research. I don't think they are dissatisfied. We certainly know we're not."

So far, the research has turned up several interesting pieces of information about the sea, he said.

"We have found minor levels of contaminants and contaminant-like substances. What's surprising is the amount of airborne contaminants that gets into the sea from the ocean-air interface," he said.

He said about a third of the contaminants in the sea come from the air.

Scientists also found a current from the Pacific Ocean that was unknown before, and discovered diverse organisms that were not known to be in the sea, he said.

When the research vessel arrives in Dutch Harbor, scientists and crew members will be treated to a pizza dinner requested by the Soviet seamen.

Putz said the pizza request caught the U.S. by surprise and presented logistical problems.

"There were no facilities to serve 200 people pizzas all at once in Dutch Harbor," he said, adding that equipment for the dinner will be flown in from Seattle. The dinner is being sponsored by a national pizza restaurant chain, he said.

The Polar Times

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AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are $2.00 a year or $5.00 for 3 years, which entitles members to receive THE POLAR TIMES twice a year.

The American Polar Society is classified as a tax exempt organization *under Code Section 509 (a) (2).*

U. S. President commemorates 25th anniversary of Treaty

December 1, 1984, marked the 25th anniversary of the signing of the Antarctic Treaty, which established the legal framework for the area south of 60°S. The treaty, signed by 12 nations* in Washington, D.C., in 1959, stipulates that the continent should be used for peaceful purposes only, prohibits military activities except for those that support research, and guarantees free access and research rights. The treaty entered into force on 23 June 1961.

In recognition of this anniversary, leaders from around the world sent messages to the scientists and support personnel in Antarctica. The following is the text of the message sent by President Reagan.

"I am delighted to send greetings to all the scientists and station personnel of every nation in Antarctica as we mark the twenty-fifth anniversary of the Antarctic Treaty, sometimes called the Washington Treaty.

On December 1, 1959, in Washington, D. C., the twelve nations then active in Antarctica pledged themselves to an imaginative experiment in international cooperation and understanding. The Antarctic Treaty, signed that day, reserves a major region of our planet exclusively for scientific research and other peaceful endeavors. The Treaty bans all military activities, including testing of weapons in Antarctica, and prohibits nuclear explosions and the disposal of radioactive wastes there. It guarantees the freedom of scientific research and establishes a consultative mechanism to allow the treaty system to meet new challenges and adapt to new circumstances. To achieve these objectives, it embodies unique conflict-avoidance provisions permitting countries which disagree over the legal status of Antarctica to work together harmoniously.

"Now, a quarter century later, we can all take pride in the accomplishments and vitality of this important treaty system. It has fully realized its objectives of maintaining Antarctica as an area free of conflict and devoted to peaceful international cooperation. Membership in the treaty system has continued to expand and, within this system, effective steps are being taken to ensure that new activities in Antarctica are managed in a responsible fashion and do not threaten Antarctica's environment. The Antarctic Treaty represents an outstanding example of how countries with diverse political perspectives and interests—East and West, North and South—can work together for the benefit of all.

"The Antarctic Treaty incorporates and extends to the realm of international relations the spirit of practical cooperation which scientists working in Antarctica have displayed from the earliest explorations onward. It is fitting, therefore, to commemorate the twenty-fifth anniversary of the Treaty by saluting the scientists and station personnel whose exciting and important work in Antarctica continue to reflect the universal ideals reflected in the Treaty. I commend your commitment to the search for knowledge and send my best wishes to all of you for a productive season.

"Signed, Ronald Reagan."

* The original 12 signatory nations, which became the original consultative nations when the treaty entered into force in 1961, are Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the United Kingdom, Soviet Union, and the United States. Since 1961 these nations have been joined by four additional consultative nations (Poland, Federal Republic of Germany, India, and Brazil) and 16 acceding nations (Czechoslovakia, Denmark, Netherlands, Romania, German Democratic Republic, Bulgaria, Uruguay, Peru, Italy, Papua New Guinea, Spain, China, Hungary, Sweden, Finland, and the Republic of Cuba).

The Polar Times

No. 99 *DECEMBER 1984*

Arctic science bill signed by president

By SUSAN FISHER
Northland News, Fairbanks

FAIRBANKS—It's been a long battle, but the United States finally has a formal scientific research policy for its Arctic and subarctic regions, a move designed to strengthen and coordinate research and focus attention on Alaska.

President Reagan signed the bill into law at his California ranch while he was on vacation in August.

"After Alaska's 20-year effort to obtain a federal Arctic science policy, which was begun by (former Alaska) Sen. (Bob) Bartlett, we have finally achieved the attention we need to better understand the region and to help ensure the safe and responsible development of its natural resources," said Sen. Frank Murkowski, R-Alaska, in a prepared statement.

Murkowski sponsored the bill in 1981, and the resulting product is a House-Senate compromise.

The National Science Foundation is designated the leader of an interagency group to be represented by all federal agencies contracting Arctic research. The interagency group is to review and screen intended research to avoid duplication.

A five-member commission will oversee Arctic/subarctic research, and among its duties will be recommending areas needing more research. One member is to represent the people of the Arctic; three will represent the scientific or academic community; and one member shall represent the private sector with interest in resource development.

All five are to be appointed by the president, and a Murkowski aide said it may be another year before the commission is fully operating. The law does not specify a headquarters site.

"We have been saying for so many years that research on Arctic subjects, or subarctic subjects, performed by the federal government needed a greater amount of coordination because it was a piecemeal type of enterprise. Each agency's doing its own work in the Arctic, uncoordinated among themselves, uncoordinated with the state of Alaska," said Juan Roederer.

Roederer is director of the Geophysical Insitute.

"It will take several years for (the commission) and federal agencies to pay more attention—when I say more attention, I really mean more money to solve the many, many scientific problems that are still outstanding and which are necessary for both the development of the north and the preservation of the north," Roederer said.

Ancient campsite found on Slope

By HAL SPENCER
Associated Press Writer

ANCHORAGE—The discovery of bone fragments, spear points and tools at an ancient North Slope campsite indicates that hunters roamed Alaska's frigid Arctic region nearly 6,000 years ago, an archaeologist said.

John E. Lobdell, an archaeologist at Anchorage Community College said he discovered the campsite last summer about eight miles south of Oliktok Point on the Beaufort Sea. The site is about 35 miles northwest of Prudhoe Bay.

"We have found similar spear points previously on the North Slope. But we have never before found dateable bone fragments as well," Lobdell said.

Lobdell said he and an assistant discovered the artifacts while doing environmental studies for Arco Alaska, Inc.

"What this find tells us is that people were successfully utilizing the far Arctic coast and near coastal areas for caribou and bird hunting," he said.

Routed by Walruses

Two arctic explorers, chased out to sea by angry walruses and saved from a crushing ice pack by rescuers in a helicopter, prepared yesterday to resume their journey through Greenland's ice-choked waters.

John Anderson, 40, a Danish architect, and Boas Madsen, 32, a Greenland hunter, were lifted from pack ice by helicopter Friday to the remote post of Danmarkshaven, rescuers of the Greenland Command said. The two kayakers, on a search for archeological remains and the bodies of three Danish arctic explorers lost while mapping an expanse of northeastern Greenland in 1907, signaled for help when angry walruses forced them to paddle 50 miles out to sea into the ice.

JULY 29, 1984

Volcano in Antarctica Jolted By Series of Large Eruptions

WASHINGTON, Oct. 11 (AP) — The world's southernmost active volcano, Mount Erebus, has been jolted by a series of eruptions, the National Science Foundation reported today.

One eruption sent incandescent lava 2,000 feet into the air over the volcano in Antarctica, the strongest incident there since Mount Erebus was discovered in 1841, the agency said.

Huge plumes of smoke were also sighted, as well as black ash covering one slope of the mountain, which can be seen from McMurdo Station, the main United States scientific outpost on Antarctica.

Towering 12,450 feet, Mount Erebus is the largest of five known volcanoes in Antarctica.

Observers reported a number of small tremors on the mountain in 1982, but there had been no expectation of a violent eruption because no excess pressure seemed to be building inside the mountain.

Britain Said to Turn Over Antarctic Base to Chile

LONDON, Dec. 9 (AP) — Britain handed over one of its Antarctic bases to Chile in an unpublicized agreement with the Chilean Ambassador in London early this year, The Sunday Observer reported.

There was no immediate official confirmation of the report.

The weekly newspaper said that the base on Adelaide Island, about 1,000 miles south of the Falkland Islands, is in a sector claimed by Britain, Chile and Argentina and that the transfer has provoked "sharp protests from nationalist extremists in Argentina."

Bridging the gap: study of Beringia

By SUSAN FISHER
Northland News, Fairbanks

FAIRBANKS—The Bering land bridge—it's a centuries-old mystery, and likely one that won't be solved for many years. When did the land bridge disappear? Did man cross the bridge into North America, and when?

David Hopkins, a geologist with the U.S. Geological Survey, wrote "The Bering Land Bridge" in 1967, and later collaborated on "The Paleoecology of Beringia" in 1982. Both books examine "Beringia," a region stretching from Siberia to Canada, with the Bering Strait roughly the center.

He came to Alaska in 1943 at age 20, and most of his career with the USGS has centered on Alaska. This past semester he was a visiting professor at the University of Alaska-Fairbanks.

The idea of a "land bridge" once connecting Asia to North America is ancient, first suggested in 1590. Since then, geologists, biologists, archeologists and anthropologists have examined how plants, trees, mammals and people came to be distributed in unlikely areas.

Hopkins said a land bridge did exist, but there is no direct evidence about when it submerged.

Scientists have long studied continental drift, when millions of years ago the continents were shaped and connected quite differently, and Asia and North America were joined.

Hopkins thinks there was a broad river valley in what is now the Bering Straits, and that the sea level rose at a time when the region was subsiding. "While we don't know how, we know when it happened," he said. The presence of the Arctic ringed seal in the Pacific 3.5 million years ago is a "signal of the opening of Bering Strait," he said.

It is likely the sea level rose and fell, at times opening and closing the land bridge. "About 18,000 years ago, the sea level starting coming up fast," an indication that glaciers were melting.

Boats may have been a possibility for the migration to North America. It's been learned in recent years "that the aborigines reached Australia 35,000 or 40,000 years ago. There's never been a time when man could reach Australia without crossing 70 miles of open water.

"We don't require dry land to explain the first arrival of humans" in North America, he said.

If there were humans on North America more than 35,000 years ago, they became extinct. Man was not equipped to live in the tundra and colder climates until around 30,000 years ago, Hopkins said.

"Most American Indians are quite different from the people in Asia," Hopkins said. He speculated the people who dispersed into North America 12,000 years ago were the Athabascans, and they moved eastward into Canada. They represent a second-wave migration.

An earlier migration perhaps 30,000 years ago may account for the ancestors of other Indian groups in the Americas.

"The Athabascans are different from other Indians, both in language and blood type, and in tooth morphology and skull morphology," he said, and they are different from Eskimo and Aleut peoples.

Eskimos and Aleuts may be descended from a third wave migration. That group may have lived in northeastern Siberia 10,000 years ago, crossing the Bering Sea 4,000 years ago to occupy coastal regions and moving eastward to Greenland.

"Certainly someone was present 12,000 years ago and moved on to North America," Hopkins said, but while 12,000 is a "definite," 30,000 years could be a "maybe."

"I favor the idea that people showed up around Beringia," around 30,000 years ago, he said.

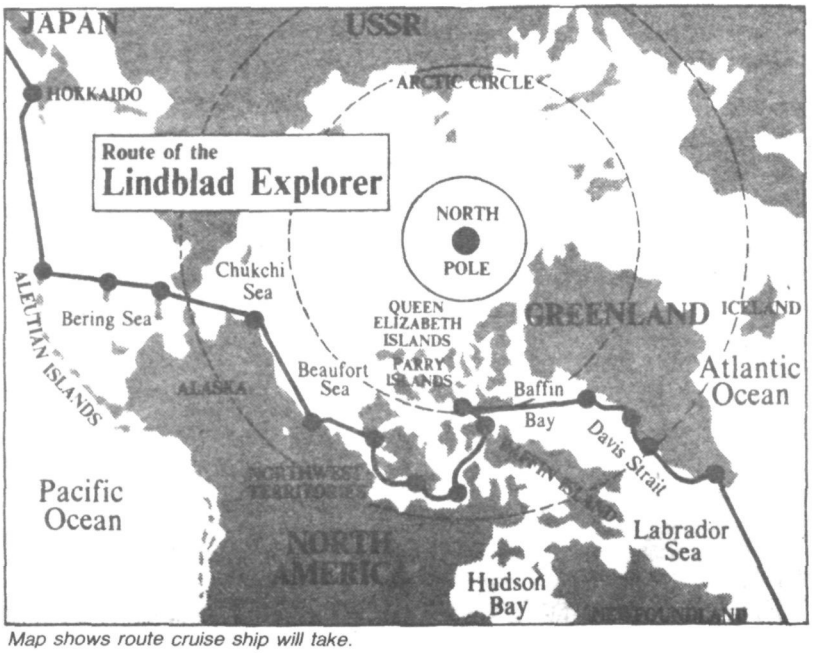
Those who crossed may have been bands of hunters from northeastern Siberia. The theory is that as man learned to dress, hunt and live in colder climates, he moved into those new territories.

Discoveries near Moscow unearthing burials revealed a great number of ivory buttons, in such a fashion to suggest trousers and tunics. The clothing appears sophisticated. "That's one of the things you need to live in the Arctic," said Hopkins.

These Siberian residents were mammoth hunters, evidenced by findings of shelters built from mammoth bones and hides. Did they move into North America more than 12,000 years ago?

On the Soviet side, the sites are excellent, but there is doubt about the dating. On the American side, there is evidence of altered mammal bones, which might suggest butchering or altering by humans—"but the doubt is if man had anything to do with it," Hopkins said.

"The only way we will find a truthful model is to keep playing with them," Hopkins said.



Map shows route cruise ship will take.

Cruise ship navigates Northwest Passage

Associated Press

Barrow — A 250-foot cruise ship with 98 "sophisticated travelers" and 98 bottles of Dom Perignon champagne aboard has become the first passenger vessel ever to navigate Canada's ice-choked Northwest Passage.

The cruise aboard the Lindblad Explorer cost each passenger $16,900 to $23,000. That entitled them to see an abundance of arctic wildlife, including polar bears, bowhead whales and migratory birds.

It also entitled them to the risk of getting stuck in the treacherous pack ice that until now has been navigated only by specially built ice breakers and commercial ships and barges.

"It was the only time that we advertised a cruise that would or would not make it," said Mike Grossman, vice president of Salen Lindblad Cruising Inc.

The ship did make it, despite a three-day encounter with heavy pack ice in Canada's Resolute Bay. A Canadian Coast Guard ice breaker in the area provided an escort, and the Explorer reached open water a day before it docked Sept. 11 in Barrow.

The 4,790-mile journey from St. John's, Newfoundland, Canada, took 23 days, traveling a route pioneered by explorer Roald Amundsen from 1903 to 1906.

The ship is continuing along the western Alaska coast and Aleutian Islands and is expected to arrive at its destination of Yokohama, Japan, by Sept. 29, Grossman said.

The New York-based company sends "sophisticated travelers" on cruises to such places as the Antarctic and the Amazon River, offering "a combination of expedition and luxury," Grossman said

The Northwest Passage cruise was filled up quickly by passengers ranging in age from 22 to 87.

"We had 98 bottles of Dom Perignon aboard that were opened the minute we hit Point Barrow," Grossman said.

Archeologists to study 'natural whale trap'

Associated Press

Yellowknife, Northwest Territories — Large herds of beluga whales migrate every summer to the mouth of the Mackenzie River, at the northwest extremity of Canada, to feed on an abundance of small fish.

It is a dangerous dining spot.

The shallow, heavily-silted estuary is a natural whale trap and native people of the Mackenzie Delta have traditionally used it to advantage.

Back in 1848, the explorer Sir John Richardson recorded watching 200 Eskimos set out in a line of kayaks from Kittigazuit village, at the river mouth, after a herd went by upriver.

Shouting and banging their paddles, the hunters drove the alarmed whales into narrow channels and on to shoals where they became easy prey to harpoons.

Several such hunts over a season were enough to sustain a large Eskimo population in the delta — estimated at more than 2,000 people a century ago.

Almost nothing else is known about these people.

Measles and influenza brought by European whalers wiped them out and knowledge of their history and social structure died with them.

All that remains are the sites of ancient Eskimo villages, which are quickly eroding into the Mackenzie River.

"Within 10 years almost nothing will be left," says Chuck Arnold, chief archeologist at Yellowknife's museum, the Prince of Wales Northern Heritage Center.

"The accumulation of silt at the river mouth is pressing the earth down, so the sites are sinking," he says.

"Also, ice scouring and the wave action of the ocean are having a serious effect."

Arnold is leading an archeological expedition to the delta this summer before all is lost.

He has chosen Richard's Island as a starting point, the most southerly and likely the oldest of eight known village sites.

The most northerly site, Kittigazuit, was excavated in 1969 by Robert McGee, an archeologist from the National Museum of Man, so Arnold knows something of what to expect.

"We know they lived in semi-permanent houses made of driftwood and covered with sod, with up to three families to a house."

The study promises to be an uncomfortable one.

The delta is notorious for its mosquitoes and Richard's Island is a denning ground for grizzly bears.

"We have our bug spray and firearms," says Richard Stromberg, Ph.D. student at the University of Toronto and field director of the project.

"The main thing is to keep the kitchen clean and burn the garbage every day (so as not to attract bears)."

Burning garbage will be one of the duties of the field crew — six Indian and Inuit students hired not just to dig and help run the camp but also to study archeology and related sciences.

The study program is new to the North. Most scientists hire only graduate students from southern universities.

But five years ago two young archeologists — Ellen Bielawski of Yellowknife and Sally Cole of Toronto — broke the tradition by hiring high school students from communities across the Northwest Territories to help in their archeological study of Somerset Island in the High Arctic.

They founded the Northern Heritage Society, based in Yellowknife, and continue to run the field school on Somerset, digging by day and giving classes by night.

"Scientific research is only half the program," says Paul Parker, field coordinator at the Somerset school.

Satellite Link to Pole

A new satellite link has reduced the time it takes to obtain scientific data from the South Pole from months to hours.

An expedition team from NASA's Goddard Space Flight Center in Greenbelt, Md., recently completed the project. The satellite link will revolutionize communication in the region, said Michael Comberiate, a Goddard engineer who developed the idea.

According to Anthony Comberiate, a communications specialist who accompanied his brother on the six-week expedition, scientific data previously collected in winter months had to be stored on magnetic tape until the weather became warm enough for shipment by aircraft.

Other forms of communications, including short-wave radio and microwave, are hampered by the extreme weather conditions in the region.

The South Pole is a scientifically important region because it holds many clues to the history of the earth's climate below its icy surface and provides information on global weather patterns and ice movements, Anthony Comberiate said.

The Anchorage Times,

Permafrost

Soil which is frozen the year round is common in Alaska and is called permafrost. This material is often a mixture of soil — organic and inorganic matter — and ice, which is insulated from the warm air and sun during summer months by a layer of vegetation or tundra on the ground above it.

Arctic construction techniques have adapted to permafrost by leaving it undisturbed as much as possible. For example: when buildings must be constructed on permafrost, pilings of low heat conductivity are used to keep the building and the heat it emits, up off the ground and out of the permafrost. The permafrost remains frozen, the pilings remain secure and the building is safe from settling.

Permafrost underlies most of the surface of the northern regions of the state. There is some permafrost in the southeast quadrant of the Anchorage bowl. Wherever you see black spruce, trees which are often tilted a various angles because the ground they grow on has heaved due to thawing and freezing, you can suspect the presence of permafrost.

Mary Pat Murphy of The Times

Soviet-owned Big Diomede Island can be seen across the Bering Strait from beach on the island of Little Diomede

Bering Strait boundary frequent source of conflict

The Anchorage Times

Since 1867, when the maritime boundary between United States and Soviet Union was established in the Bering Strait, occasional straying of ships — and numerous land crossings over an ice bridge that forms between the Big and Little Diomede islands — have brought the two superpowers to territorial confrontation.

While the butting of superpowers is always potentially explosive, most accidental invasions have been settled with little consequence.

In 1947, for instance, a group of 27 people from Little Diomede Island, in American territory, sailed across the 2½-mile waterway in skin boats and landed on the Soviet's Big Diomede Island. The group was held 46 days before being allowed to return to their homeland, unharmed but unhappy over their detention.

But tensions may be mounting in the Bering Strait, which narrowly separates Alaska and the Chukhotski Peninsula. Both superpowers want to expand fishing, oil exploration and seabed mining there. And as these activities are stepped up, supply ships passing near the Diomede islands — such as the recently captured Alaskan vessel, Frieda K — run the risk of accidental border clashes.

The Soviets tolerate no territorial invasion, as the downing of an errant South Korean commercial jetliner a year ago proved.

In an attempt to avoid potentially disastrous confrontations with the United States, the Soviets notified American diplomats in January that it wants to clarify the maritime boundary in the Bering Strait and other areas.

Chilean Gives Birth To Boy in Antarctica

Associated Press

SANTIAGO, Chile—A Chilean nurse has given birth to a son at an Antarctic air base, the Air Force announced. He was the first Chilean born in a national campaign to settle Antarctica.

An Air Force statement said Juan Pablo Camacho Martino weighed 8 pounds, 5 ounces, after a normal delivery on King George Island Wednesday. He and his mother, Ana Maria Martino de Camacho, were "in perfect condition," it said.

Camacho and her husband, a surgeon at an Air Force hospital in Santiago, and their two other sons are among six volunteer families sent last March to live at the base for two years.

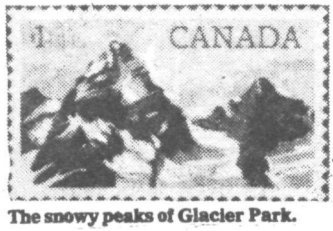
Q. *Why don't penguins' feet get intolerably cold?*

A. The penguins' feet *do* get cold, nearly freezing; in fact, the temperature of their toes has been measured at just about 32 degrees Fahrenheit. The birds have evolved a remarkable temperature control system in which blood warms the feet, but only enough to keep them functioning. The system is most efficient among the penguins of the Antarctic. The emperor penguin, for example, spends most of its life with its bare feet in direct contact with ice, snow or freezing water. If its feet were maintained at the same high temperature as the rest of its insulated body, precious heat would be lost quickly through conduction or convection. So the penguins evolved an anatomical arrangement in which arteries carrying warm blood toward the toes run side by side with veins carrying cold blood back in the opposite direction. The returning blood absorbs heat from the outflowing blood, and because of this efficient heat exchange, the circulation can be reduced to a level just high enough to keep the foot tissues alive. These foot tissues have special traits; they can survive with slowed circulation and conduct nerve impulses even when extremely cold. Also, penguins' feet, like those of ducks and other birds that spend time in cold water, are made up of lots of tendons and a minimum of musculature, and cold tendons are not as uncomfortable as cold muscles.

Q. *Why are icebergs white instead of clear, like ice cubes?*

A. Icebergs are huge chunks, often weighing a million tons or more, that have broken or "calved" off polar glaciers or ice shelves. Glaciers, in turn, are compressed snow. As the snow became packed ever more densely over the course of 50,000 years or so, which is the estimated age of the ice in many big icebergs, tiny air bubbles were trapped inside. These air bubbles give icebergs their snowy color.

Along with a tour of the country, Canada is also providing a striking summit view of Glacier National Park. The stamp shows the ice-covered peaks, sheer mountain walls and narrow valleys. The park is famous for its wildlife, especially bears. The new $1 stamp is the latest addition to the series of high value definitives on Canadian national parks that began with Fundy and Kluane in 1979 and continued with Waterton Lakes



The snowy peaks of Glacier Park.

'Deep Freeze' Begins 30th Season

NAVY TIMES NOVEMBER 5, 1984

McMURDO STATION, Antarctica — Naval Support Force, Antarctica, recently began another season at the bottom of the world with its 30th deployment here.

Nearly 800 military men and women are spending the austral summer season (October through February) here, providing logistic support to the U.S. Antarctic Research Program. The program, established 30 years ago, is administered by the National Science Foundation's division of polar programs.

NSFA, popularly known as Operation Deep Freeze, is the parent command for the overall military support efforts. Berthing, communications, transportation, food service, engineering, utility, maintenance and resupply services are all under Operation Deep Freeze control.

McMurdo Station is the largest and most advanced of four year-round U.S. stations in Antarctica. It serves as the headquarters and distribution center for Operation Deep Freeze. At McMurdo, Navy people receive and distribute supplies and scientific equipment to remote inland science stations around the continent. In addition, people participate in constructing and improving facilities here.

Operation Deep Freeze was established in 1954 to provide logistical assistance to the Antarctic portion of the International Geophysical Year, an ambitious scientfic cooperative program undertaken in 1956 and 1957 which emphasized a free exchange of scientific information between nations despite differing political stances.

The Navy was assigned to support the program because of its resources, mobility and extensive Antarctic experience, forged by noted polar pioneer, Adm. Richard E. Byrd.

Today, Operation Deep Freeze continues to build on the heritage of leadership and technical innovation in the Antarctic. Assisting NSFA during this season's massive science support effort is Antarctic Development Squadron 6 (VXE-6), the air arm of Antarctic research based at Naval Air Station, Point Mugu, Calif.

Additional support comes from U.S. Army personnel, U.S. Coast Guard icebreakers Polar Star and Glacier, U.S. Air Force C-141 "Starlifter" jet transports, units of the Royal New Zealand Army and Air Force, a Military Sealift Command cargo ship and fuel ship Maumee.

When the summer support phase ends in late February, Operation Deep Freeze's "winter-over" contingent of 67 people will remain on the ice to maintain McMurdo throughout the seven-month winter. The winter-over personnel will later prepare a runway to accommodate the arrival of the next sumer support aircraft that traditionally signals the start of a new season.

Antarctica takes up an area of the world larger than the United States and Mexico combined. An almost completely desolate mass of snow and ice, Antarctica is the world's highest, coldest and driest continent. It averages 6000 feet in elevation, and as a virtual desert, receives only one to two inches of precipitation a year. Summer temperatures around McMurdo average 27 degrees Fahrenheit.

The R/V *Hero*, which is based at Palmer Station, is a research vessel owned by the National Science Foundation.

NSF recognizes P. Lenie

In November 1984 Captain Pieter Lenie, master of the R/V *Hero*, received the National Science Foundation (NSF) Distinguished Public Service Award in recognition of 12 years of service to the U. S. Antarctic Research Program (USARP). Peter E. Wilkniss, Director of NSF's Division of Polar Programs (DPP), presented the award to Captain Lenie during a ceremony aboard *Hero*, which was docked at Port Hueneme, California. The award is the highest honor conferred by NSF on individuals or organizations for exceptional service to the Foundation.

The award ceremony marked the end of a long, successful career for the ship and its master. Captain Lenie, currently an employee of the NSF antarctic support contractor ITT/Antarctic Services Inc. (ITT/ANS), retired after *Hero* made its final trip from the Southern Hemisphere to the United States (see this issue of the *Antarctic Journal* for a list of *Hero*'s last cruises). Also attending the ceremony were Albert Betzel, NSF/DPP ocean projects manager, Robert Becker, ITT/ANS program director, and Mark Eichenberger, ITT/ANS deputy director, Hero/Palmer Station systems.

As an integral part of USARP since 1968, *Hero*, a 38-meter-long wooden ship, has transported personnel and supplies to Palmer Station, the U. S. station in the Antarctic Peninsula, and served as the principal research platform in the waters near the Antarctic Peninsula. Captain Lenie, a 45-year veteran seamen, became the master of the *Hero* in 1972. Over the next 12 years he navigated the ship through the isolated and partially charted waters. Under his direction, the ship became a diplomatic asset to the United States. In spite of Antarctica's harsh environment and the sometime complicated political environment, Captain Lenie built a record of scientific and logistic cooperation with ships, stations, and personnel of other Antarctic Treaty nations.

Because of Captain Lenie's skills and dedication, *Hero* provided a safe working platform for scientists in many fields. Working aboard *Hero* in waters close to shore, geologists and paleontologists gained important information about the geologic and tectonic history of the Antarctic Peninsula, the Scotia Arc, and southernmost South America. For marine biologists Captain Lenie provided support critical to the successfully completion of studies of the physiology, life history, and ecology of krill, as well as other aspects of antarctic marine ecosystem.

During *Hero*'s return voyage to the United States, the ship stopped briefly in Santiago, Chile, where Captain Lenie and his crew were honored at a reception held by the U. S. ambassador to Chile. Messages praising the accomplishments of Captain Lenie and the *Hero* were received from the American embassies in Chile and Argentina. Among these laudatory statements was a speech made by Rear Admiral Carlos Quinones, Chilean National Oceanographic Committee. He stated, "When the volumes are written about the expeditions and contributions of the *Hero*, such work will have to include the name of its captain, Pieter Lenie, whose life has close ties to that of his ship. . . . Chile owes the scientists of the National Science Foundation many studies, research, and results; for its universities and the National Geology and Mining Service could not have achieved anything without a 'Hero' to berth them and a 'Lenie' in command."

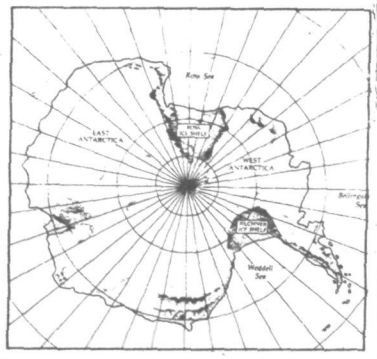
In the NSF citation, Erich Bloch, Director of the National Science Foundation, commended Captain Lenie for his extraordinary services to the nation

Greenland will depict a catfish on its 10-krone stamp Oct. 11.

Queen

Greenland will issue a red 280-ore and blue 380o stamp depicting Queen Margrethe Feb. 7. The stamps, which were drawn and engraved by Czeslaw Slania, were printed by intaglio in sheets of 100 by the Danish Post and Telegraph Printing Office. Ordering data is available from Gronlands Postvaesen, 100 Strandgade, Box 100, DK-1004 Copenhagen K. Denmark.

Did Ancients Map Antarctica?



Similarity of early and modern maps challenges accepted theory.

By WALTER SULLIVAN

FOR years a few imaginative authors have argued, based on 16th century maps, that the ice-covered continent of Antarctica was discovered and mapped by an ancient civilization, perhaps one from another planet. The latter proposition was dismissed by most geographers and historians as preposterous.

Nevertheless, a careful comparison of information appearing on the maps with what is now known of the continent has led a leading geologist and polar specialist to propose that the outlines of Antarctica may, in fact, have been known long before Columbus reached America.

The generally accepted view is that Antarctica was first sighted in 1820 by American seal-hunters as well as by British and Russian explorers.

The suggestion that it may have been discovered many centuries earlier has been made by Dr. John W. Weihaupt, vice chancellor for academic affairs at the University of Colorado at Denver. His analysis appears as the lead article in the Aug. 28 issue of Eos, the Proceedings of the American Geophysical Union.

Dr. Weihaupt, a specialist in seismic and gravity studies and planetary geology, conducted research at a number of Antarctic stations beginning with the International Geophysical Year of 1957-58.

Interviewed by telephone recently, Dr. Weihaupt was reluctant to speculate on how the rough outline of Antarctica might have become known to early mapmakers, saying he was not a maritime historian. He suggested, however, that Bronze Age seafarers from the Mediterranean, trading along the east and west coasts of Africa, might have ventured farther south than previously believed.

A Peaking Period of Warming

From 2,600 to 9,000 years ago, he said, the world was warmer than at any time in the last million years, except for the period between the last two ice ages. Polar ice was presumably reduced, making high latitudes more tempting to explore.

Dr. Weihaupt says that, assuming the outline of Antarctica was known to early cartographers, the source of their information "remains unanswered." Even crude mapping of a large continent would require a knowledge of navigation and geometry presumably beyond the ken of primitive navigators.

Speculation on prehistoric discovery of Antarctica began in 1956, when a map of the Atlantic Ocean purportedly drawn in 1513 by a Turkish admiral named Piri Re'is was shown by a Navy cartographer to Arlington H. Mallery, an engineer. Mr. Mallery was known for his thesis that Vikings reached American shores five centuries before Columbus.

The map supposedly contained information from voyages made by Columbus. It showed the western bulge of Africa with considerable accuracy and what seemed a crude outline of the opposite coasts of the Americas. Those coasts continued unbroken around the southern extremity of the Atlantic, where Antarctica's Queen Maud Land is now known to lie.

This was taken by Mr. Mallery as evidence that the continent at the bottom of the world was already known American cartographers had seen the map as early as 1932, but little attention had been paid to its possible implications regarding Antarctica.

Mr. Mallery's argument was picked up by Prof. Charles H. Hapgood, a historian at Keene Teacher College in New Hampshire. Professor Hapgood had published a controversial book arguing that off-center accumulations of polar ice sometimes caused gradual, but radical changes in the axis of the earth.

His analysis of the Piri Re'is map was published in 1966 under the title "Maps of the Ancient Sea Kings — Evidence of Advanced Civilization in the Ice Age." He also cited several other early maps upon which Dr. Weihaupt now bases his argument.

They are the Orontius Finaeus world map of 1531, the Gerhardus Mercator world map of 1538 and a map of the Americas produced by Ptolomaeus Basilae in 1540.

Professor Hapgood proposed that the Orontius Finaeus map showed the coast of Antarctica as it would appear if the continent were not covered with ice, as may have been the case between the last two ice ages.

The suggestion that Antarctica had been mapped by some civilization that thenvanished won few adherents among historians and geographers.

Two years after the book appeared, however, Erich von Däniken, a Swiss hotel-keeper turned writer, carried the argument one large step further. In his book "Chariots of the Gods?" he proposed that the maps were derived from aerial views obtained by visitors from beyond the earth.

Virtually Complete Outline

Dr. Weihaupt said he ignored the Piri Re'is map as of questionable authenticity. He concluded, however, that the Orontius Finaeus and Mercator maps, through their resemblance to the actual outline of Antarctica, suggest that man's knowledge of that continent may date from a time somewhat earlier than that century," or at least three centuries before the continent's modern discovery.

Both maps show virtually the complete outline and details of a continent that, like Antarctica, is centered on the South Pole.

Generations of scholars have debated over who discovered Antarctica. The American candidate has been Nathaniel Palmer, captain of a sealing sloop from Stonington, Conn. American and British sealers had begun hunting south of Drake Passage below Cape Horn and on Nov. 17, 1820, Palmer sailed farther south and may have sighted the tip of the Antarctic Peninsula.

The British candidate is Edward Bransfield of the Royal Navy, ordered to explore the area for an outpost to control the south side of that critical waterway between the Atlantic and Pacific. Britain gives Jan. 30, 1820, as the date of Bransfield's discovery.

Two weeks earlier two Russian ships under Adm. Thaddeus von Bellingshausen may have sighted the ice-covered Princess Martha Coast.

Multinational exploration of Antarctica and probing of its ice cover have now produced relatively complete maps of the continent as it would appear free of ice.

Deep fiords would exist where ice streams now reach the sea. An archipelago comparable to the Philippines would lie south of Drake Passage

The Ross Ice Shelf, an apron of ice 1,000 feet thick and as large as France, would be an open gulf.

The Orontius Finaeus map shows such a gulf, suggesting the possibility it was free of ice at some prehistoric time. Dr. Weihaupt cites polar specialists who suspect the Ross Ice Shelf may break up into icebergs and vanish if the climate warms and he proposes this may already have happened after the last ice age.

Some ancient Greek philosophers suggested that, to make the world symmetrical, there should be a large land mass at the South Pole to balance the northern continents.

The New York Times

Wintering Team Off to Antarctic

The icebreaker Shirase left Tokyo for the Antarctic Wednesday morning with a 48-member wintering team which includes two Chinese scientists.

The Japanese expedition team is scheduled to build Japan's third base in the South Pole region and make scientific observations.

Relatives and friends saw off the 26th Japanese expedition at Tokyo's Harumi pier as the 11,600-ton icebreaker, manned by a crew of 174, left on its second trip to the Antarctic following its maiden voyage last year.

The expedition led by Sadao Kawaguchi will start building Japan's third base at the northern foot of the Sor-Rondane mountains about 600 km. west of Japan's first and main Showa Base.

The icebreaker will enter a bay about 160 km. north of the mountains to airlift a construction crew of eight men and building materials. It will then head for the Showa Base where the new wintering team will relieve the 25th wintering expedition. The Shirase will return to Tokyo late next April.

For the first time, two Chinese scientists are joining the Japanese expedition. They are Gao Dengyi, 44, from the Beijing-based Atmospheric Physics Institute of the Academy of Sciences of China, and Li Guo, 28, of China's National Antarctic Survey Committee.

Composer

Greenland honored the composer of its national anthem, Henrik Lund, on a 5-krone stamp issued Sept. 6. The stamp depicts Lund, the first stanza of the anthem and a scene of the Lichtenau Fjord. The issue was engraved by Arne Kuhlmann and printed by the Danish Post and Telegraph Printing Office using the intaglio method.

China Will Send Team of 50 on Antarctic Expedition

By CHRISTOPHER S. WREN
The New York Times

PEKING, Oct. 19 — China is sending a major expedition to Antarctica next month as a first step toward establishing a permanent research base there.

The team will include 50 men, most of them scientists, who will establish a summer camp. Other support members, including the crews of an oceanographic vessel and a navy supply ship, will swell the total number of participants in the five-month expedition to 500.

Their destination is an area of Antarctica 600 miles below the tip of South America that was claimed by Britain, Chile and Argentina before a treaty of 12 nations froze all territorial claims in 1959. Seven other nations have since joined the Antarctic treaty, including China, which joined last year.

"Our main task is to set up a Chinese camp in Antarctica for general scientific experiments," said Chen Dehong, the commander of the expedition. "The purpose of going is to learn about Antarctica, to study it and to contribute to the peaceful use of Antarctica."

Meeting with a small group of journalists today, Mr. Chen and Guo Kun, the leader of the team setting up the station, conceded that other countries had a head start in exploring the continent.

"There have been 16 countries and more than 40 stations, so we will learn from them and get their experience," Mr. Guo said.

Designed to Enhance Prestige

The expedition to Antarctica is part of the broader visibility that China has assumed in trying to catch up with the rest of the world since emerging from the xenophobic seclusion of the Maoist years. The project seems designed to enhance the international prestige of Chinese scientists, and consequently China itself, as much as to pioneer new discoveries.

The party and leadership have paid great attention to this first expedition to Antarctica, Mr. Chen said.

The Chinese Government is investing 10 million yuan, or about $3.7 million, in the expedition, which is a considerable expense at a time when financial resources for the country's modernization drive are being carefully allocated.

Mr. Guo said that the expedition would leave Shanghai on Nov. 15 and take about 25 days to reach Antarctica, stopping in Argentina for fuel and water. It plans to return to China sometime next April.

The expedition will travel in a 511-foot oceanographic ship, which will carry out research in the waters off Antarctica, and in a 440-foot-long naval ship that will be responsible for supply and rescue, Mr. Guo said.

Because neither ship has an ice-breaking capability, the expedition plans to keep to ice-free waters and arrive in time for the expedition to work during Antarctica's summer season.

After a facility is surveyed and built Mr. Guo said: "We will leave the station there and send another team next year. As conditions grow better, we will make it into a permanent camp."

Women Not Included

No women are included in the Chinese contingent, Mr. Chen said, because the route will be long and conditions hard.

When reporters asked why that should deter them, Mr. Guo said that while some had applied to go: "Women scientists, in terms of physical condition, have limited strength. But we have already sent a woman scientist to Antarctica."

He was referring to Li Huamei, a geologist who has done research at a New Zealand station.

The expedition will look into Antarctic resources, particularly krill, or tiny shrimp-like crustaceans indigenous to the cold waters. Mr. Chen, who is deputy director of the state bureau of oceanography, estimated that one billion to five billion tons of krill was native to the Antarctic waters. There is interest in krill as a potential source of food.

Mr. Chen said that the Chinese scientists would also pursue research in meteorology, geophysics, geology, biology and ocean hydrology.

"We are going mainly for scientific research," said Mr. Chen, who plans to celebrate his 55th birthday in Antarctica. "Many people in the world have been to outer space, but we have very little knowledge of Antarctica. The area has great importance for us."

Antarctic Volcano Erupts

WASHINGTON, Oct. 19 (UPI) — The world's southernmost active volcano, ice-clad Mount Erebus in Antarctica, has been jolted by several major and unexpected eruptions that began in September and produced minor earthquakes, the National Science Foundation reported today.

The quakes were felt at McMurdo Station, The United States' main Antarctic base, about 25 miles from the volcano.

Psychology on Ice

Cold is often *not* the greatest problem to those who "winter-over" at the South Pole, according to Guy Guthridge, manager of the National Science Foundation's Polar Information Program.

"The romantic image of the Antarctic is of wide open spaces, a sparsely populated last frontier. At the South Pole, none of those things matter. The cold is not what bothers you. It's actually the enforced small quarters you share with all those other people.

"The challenge at the South Pole is *not* how to keep buildings warm, *not* how to collect data—we've mastered that. But people are still struggling with how to live harmoniously with fellow beings there.

"We have a really good record," says Guthridge. "We've successfully introduced women to the wintering routine—but every year is different. Every year we have a distinct set of personalities.

"Sociologists tell us we usually end up with two leaders: the *assigned* leader and the *psychological* leader, the person with the strongest personality, perhaps the most liked. This usually works out well."

Psychiatric screening, says Guthridge, is required of all prospective winter-over personnel in the United States Antarctic Research Program run by NSF.

BY MIMI GEORGE AND GILL CRACKNELL
Lewis, George and the Explorer

Radio transmitter epoxied to a chinstrap penguin.

Greenland to note catfish

A catfish (Anarhichas minor) will be featured on a 10-krone stamp to be issued by Greenland Oct. 11.

Designed by Jens Rosing and engraved by Arne Kuhlmann, this issue was printed in three-color intaglio by the Danish Post and Telegraph Office.

Antarctica baring life's tiny secrets

by Karen R. Long
Newhouse News Service

CINCINNATI — Scientists are trying to determine the age of tiny plants living beneath the surface of Antarctica as a clue to how microorganisms might survive harsh climates in other parts of the solar system.

The National Aeronautics and Space Administration recently assembled 19 experts in Cincinnati to discuss what they know about the plants, which have optimum growing conditions that occur for about only 36 hours in a given year.

According to Smithsonian botanist Mason E. Hale, these unusual plants probably grow less than one ninth of an inch every century and spend much of the year in a freeze-dried, dormant state.

Hale estimates that lichens dwelling within Antarctic sandstone are at least 10,000 years old. Lichens are composite plants of 90 percent fungi and 10 percent algae — the textbook example of symbiosis in nature.

The experts are pooling their talents in geology, botany, microbiology, biochemistry and astrophysics in an effort to solve the mystery. At their gathering here, they decided to use carbon-dating in their attempt to learn the ages of the plants — an unusual approach to something still alive.

"Nobody has had to use carbon to date live organisms before, but that's going to start to change," says Christoper P. McKay, an astrophysicist with the Extraterrestrial Research Division of NASA-Ames Research Center in California. He believes conditions in Antarctica are the closest on Earth to those on Mars.

The Antarctic organisms live in pores a quarter-inch beneath the sandstone surface. It is believed that particulates of silicon and other airborne matter settle into the pores, clog them and gradually form a shellac-like seal.

For plants to live this long is extraordinary, says E. Imre Friedmann, the Florida State University biologist who discovered the miniature ecosystems in Antarctica in 1975.

He will lead a nine-member team in December into Antarctica's ice-free, dry valleys, so inhospitable that scientists considered them virtually sterile until Friedmann's discovery. The temperature drops to 75 degrees below zero, and years often pass before the temperature goes above freezing. The lack of snowfall makes this area one of the most arid deserts on the globe.

The organisms take shelter inside the north-facing rock, which can be warmed 18 degrees above the air temperature by the sun. They live in distinct layers in the sandstone pores, forming a microscopic "tropical rain forest."

Friedmann got the idea to look inside the Antarctic rock after years of studying the biology of the Negev Desert in Israel.

His notion was too far-fetched to attract the necessary research funds to pay for a trip to Antarctica, so he showed researcher Wolf Vishniac a piece of Negev stone and asked him to look for similar specimen on a 1974 expedition. Vishniac, who was killed in a fall on the trip, did obtain a sample rock that was sent to Freidmann.

Scientist found black, white and green layers of organisms inside. Now Vishniac's widow, Helen, of the University of Oklahoma, studies the Antarctic yeasts as part of the expert group, which is composed of scientists from Europe, Israel and the United States.

On another expedition, Friedmann relayed via satellite a year's worth of data, which was analyzed by NASA's McKay and James A. Nienow. They calculated the organisms were freeze-dried and dormant from February through most of November. But during the Antarctic summer, November through January, there were a few hours when conditions allowed the plants to grow.

There were about 120 hours a year, approximately five days, when the sunlight was strong enough to heat the rocks, and about 72 hours when the drought was broken by snowmelt on the rocks. But there were only 36 hours a year when both conditions were present, McKay reported.

It is speculated that the lichens could be the last survivors of the era 40 million years ago when Antarctica was still part of the southern continental mass and still had a temperate climate.

Dinosaurs lived north of Kotzebue, two geologists say

Associated Press

Fossilized footprints and skin impressions of a prehistoric beast are evidence that duck-billed dinosaurs 30 feet long roamed the semi-tropical swamps of northern Alaska some 100 million years ago, scientists say.

The footprints and impressions, discovered along the Kokolik River in northwest Alaska, about 150 miles north of Kotzebue, are believed to be the northernmost evidence of dinosaurs ever found in the Western Hemisphere.

Geologists Gary Strickler and Henry Roehler found the fossils six years ago as they searched for coal in the region. Their find just became public with the printing of the their article in the Journal of the Alaska Geological Society.

"We don't publish very fast," Strickler said in a telephone interview with an Anchorage newspaper Wednesday. Strickler lives in Colorado.

The geologists identified the dinosaur as being from the family of "unarmored, herbivorous hadrosaurs, or duck-billed dinosaurs."

The animals weighed several tons and were amphibians, they said.

"The fossils provide limited evidence for a warm, temperate to subtropical climate and a swampy, forested landscape," they said.

Strickler said when the geologists stumbled onto the fossils in 1978 they were unsure of what they had found.

"The dinosaur footprints were obvious," Strickler said. "There was no question in our mind when we found them."

The skin impressions, however, were less obvious.

"It was a little exciting," Strickler said. "I've never found a dinosaur before."

Anchorage paleontologist Diana McKinne said the fossilized footprints likely endured over the centuries because soft sediments were quickly filled by harder substances, creating an enduring mold.

"This guy could have been squishing through the mud in a swamp and it could have rained and filled (the prints) with coarser sand," she said.

Scientists find frosty evolution

Chicago Tribune

Evolution isn't just a warm-weather activity, say researchers who are challenging the predominant theory that most plants and animals got their start in the tropics.

Geologists from Ohio State and Kent State universities say they have found certain species of clams, crabs and other animals that apparently evolved along the Antarctic coast and later migrated northward to more temperate climates.

"The prevailing thought was that the high latitudes were a kind of dust bin where perhaps only a few species were able to make it," said William Zinsmeister, a researcher with Ohio State's Institute of Polar Studies. "Apparently, the Antarctic acted like a holding tank, for some reason, and these animals were kept there until something allowed them to escape or migrate northward."

Zinsmeister and Rodney Feldman of Kent State reported their findings in the journal Science.

Norway Mounts Major Antarctic Expedition

Norway has mounted its most extensive Antarctic expedition in 25 years. In about 3 months' time, a 100-man strong team, led by researcher *Olav Orheim*, of the Norwegian Polar Research Institute, will leave Norway in one of the Coast Guard's newest vessels for the Southern Polar region. During the Antarctic summer months of January and February, the team will study conditions both on land and at sea.

Olav Orheim states that the expedition is a clear indication that Norway wishes to intensify her activities in the Antarctic, on the basis of increasing international interest for that region and its vast potential of minerals and other resources.

The Antarctic treaty is due for reassessment in 1991 and the key to political influence in the Antarctic areas is to carry out research or other activities. Few people now believe that any commercial exploitation of possible oil and gas reserves in the southern Antarctic is possible, but Orheim believes that Norway can contribute with her knowledge and expertise in both polar research and petroleum technology. Although it is uncertain whether oil drilling can be carried out in the Antarctic, this expedition can help to pave the way for Norwegian industry and Norwegian know-how, says Orheim. The team will carry out marine-geological and geophysical investigations. It will dig 150 million years into history by investigating continental drift and will study the ice masses to see how they were formed. In the Antarctic icebergs, there are reserves of fresh water worth millions of dollars. The expedition will also study the possibilities of towing the icebergs to parts of the world that have scarce resources of clean water.

Hans Egede Medal Awarded to Lloyd

Trevor Lloyd, Emeritus Professor of Geography at McGill University and formerly both Chairman of the Board of Governors of the Arctic Institute and first Editor of *Arctic*, was selected by the Royal Danish Geographical Society as the recipient of the Hans Egede Medal. The Medal, given for outstanding contributions to polar research, was first awarded in 1921 on the bicentenary of Egede's arrival in West Greenland as a missionary and explorer.

The 1984 award is given in recognition of Dr. Lloyd's studies of northern Canada over many years and his comparative studies in other northern countries. The presentation was made on 10 April by H.R.H. Prince Henrik of Denmark at a special meeting of the Royal Danish Geographical Society in Copenhagen.

Some other recipients of the Hans Egede Medal include Roald Amundsen, Knud Rasmussen, Eigil Knuth, H.G. Watkins, Sir Vivian Fuchs, and Paul Siple.

★ The USSR Embassy Press Office in Ottawa reports that the remains of a mammoth have been found under a 500-metre layer of ice in the arctic archipelago of Severnaya Zemlya. The find was made as scientists were drilling through the Vavilov ice cap, the site of a permanent glaciological laboratory. The mammoth remains have been in the ice for approximately 11,000 years.

★ Another item from the USSR reports that the number of polar bears in the Soviet Union is on the increase. A den count on Wrangel Island revealed more than 400 maternity dens this year. Polar bears are a protected species under Soviet law.

Arctic Haze Mystery

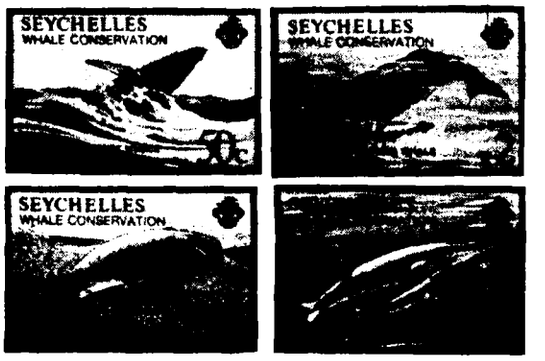
Even the rare air over the North Pole is now polluted by smog. In winter, the southward movement of the polar air front allows polluted air from the Northern Hemisphere to cover the North Pole with an Arctic haze that can reduce visibility to as low as about three miles.

Recently, scientists from the United States and Europe have been cooperating in a study of samples of the particulate matter responsible for Arctic haze, which were gathered by six aircraft flying over the North Pole. Much of the haze consists of sulfuric acid, but black carbon is also present, leading the researchers to call the haze a "combustion aerosol." The interesting question now is whether the combustion responsible for the haze comes primarily from human air pollution or from volcanoes.

High concentrations of trace elements such as nickel, lead and zinc seem to link the Arctic haze to certain smelters deep in the Soviet Union. However, some material from the aircraft samples seem to be traced to the volcano El Chichon, which erupted in 1982.

Studies of Arctic ice could help to resolve the issue. In any case, according to a report in Nature, further studies of the Arctic haze could provide a useful — but not lethal — way to predict the effects of nuclear war on the Earth's climate.

LINN'S STAMP NEWS



Whale conservation

Seychelles will issue four stamps in November or December promoting whale conservation. Alex Jardine's designs show: humpback whale (50c); sperm whale (2 rupees); right whale (3re); and blue whale (10re). House of Questa printed the set using lithography.

Arctic Science Prize Goes to Robert L. Rausch

The Arctic Science Prize sponsored by Alaska's North Slope Borough was awarded in July to Dr. Robert L. Rausch, Professor of Animal Medicine at the University of Washington medical school. The award, which includes a check for $10,000, will be presented at the September meeting of the North Slope Borough Assembly in Barrow.

Dr. Rausch began his northern career in 1949 as Parasitologist at the Arctic Health Research Center in Fairbanks, working there until the center closed in 1974. During his tenure there he rose to the position of Chief of the Infectious Disease Section. Since 1978 he has been at the University of Washington.

Quiet and Calm of Summer Belie Danger Lurking Nearby

By HOWARD W. SERIG JR. NAVY TIMES

CGC NORTHWIND — It would be difficult to imagine a more placid scene than the one from this icebreaker as it slowly makes its way through a seemingly endlessly maze formed by huge icebergs drifting off Greenland's west coast.

Except for Northwind's wake, there is not a ripple on the surface of Baffin Bay, and the 24 hour-long Arctic summer sun blazing from a crystal blue sky belies the howling winter storms that dominate this region most of the year. Strangely, the only sound to be heard this evening is the skirl of a bagpipe. Strains of "Scotland the Brave" emanate from the fantail where Cmdr. Paul Monette, the ship's executive officer, has come up for a few minutes to practice his playing.

As in past years Northwind has been sent to these Arctic waters to provide an ice escort for resupply ships bound for the U.S. Air Force's northernmost base at Thule and to assist in a variety of scientific missions. The convoy of three cargo ships bringing fuel and heavy stores can reach Thule only during the relatively ice-free summer weeks. Last year all three ships got stuck in four- to eight-foot thick ice and had to be rescued by Northwind.

Sometimes the most difficult part of the ship's mission is getting to and from the ice. Since leaving her home port, Wilmington, N.C., in early July, Northwind has steamed northward 3000 miles through the Atlantic and into the Davis Strait that separates Greenland and Labrador. Because the icebreaker's rounded hull is especially designed for sliding through ice, the ship tends to roll violently in rough weather — sometimes up to 50 degrees. When this happens even the most experienced of the ship's 175 crew members can succumb to seasickness.

"It's a miserable time for the crew," acknowledged Northwind's commanding officer, Capt. Bill Caster. "Everything that can come loose, including human bodies, will come loose," he explained, pointing to a corner of his cabin where, during a recent storm, he managed to securely wedge himself after being thrown out of his bunk several times.

But unpleasant as things can get at sea, it is unlikely that many of ship's crew would want to trade places with any of the 250 Air Force men and women who operate the early warning radar installation at Thule. During Northwind's three-day stop at this remote port, off-duty base personnel were invited by Caster for a day-long cruise giving members of both services ample opportunity to compare notes. Adjusting to life in a desolate environment that includes bitter cold and cyclone force winds during most of the year, as well as three months of constant darkness, can be difficult.

"Many of our people need help adapting to these conditions for the two years they are up here," said AF Capt. Paul Damico, the base morale officer. He is kept busy devising activities to keep one's thought's off the bleak surroundings. "If you were to stick around until next week," he said, "you could join us in our annual mountain-top golf tournament." Just arriving at the tournament is something of a challenge. Contestants either climb the near vertical slopes of nearby Mount Dundas or fly to the summit by helicopter.

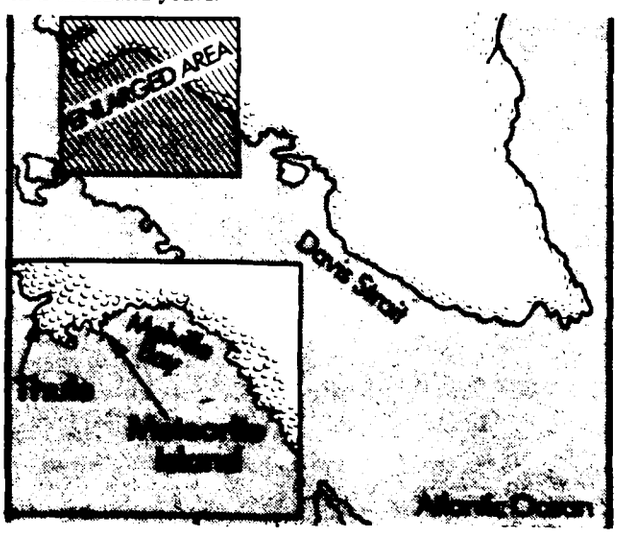
A day after leaving Thule the ship arrived at Melville Bay 65 miles to the south. Along its 200-mile shoreline a rim of sandstone and granite peaks rise steeply from the water. Sandwiched in between, numerous large glaciers — some measuring several miles across — flow out into the ice-clogged bay. They are typical of the thousands of glaciers along Greenland's 10,000-mile coastline fed by billions of tons of ice that comprise five-sixths of the islands.

One of the primary reasons for visiting Melville Bay was to drop off two Danish scientists from the Copenhagen University Observatory at the village of Savigsivik on Meteorite Island. It was here in 1894 that Eskimos led Arctic explorer Adm. Robert Peary to the largest meteorite ever discovered. Weighing 34 tons, the Cape York meteorite, as it was later named, was removed by Peary and eventually transported to the American Museum of Natural History in New York. Since additional meteorites were discovered nearby, scientists have continued to search for other traces of the asteroid during the brief summers.

Dr. Anders Englebrecht, one of the Danish scientists, expressed optimism that the expedition would be successful. However, living with the 50 Polar Eskimos on the island, who are among the world's northernmost inhabitants, is an experience in itself. Their life, which includes a diet of whale blubber, seal and walrus meat, is simple but harsh. Venturing out among the ice floes the men of the village hunt as their fathers before them did — with kayak and spear — sometimes for 72 hours at a stretch. "For them the summer hunt is everything," Engelbrecht said. "Only if it is successful will there be enough meat for the winter."

Soon after transporting the two scientists and their equipment ashore by ship's helicopter, lookouts spotted an unusual sight. A group of Eskimo men and women were standing on a large ice floe directly ahead of the ship. As Northwind slowed to a stop, crew members aboard the ship waved and snapped pictures. Some were surprised to see the brightly colored nylon parkas worn by several of the Eskimos and the outboard motors on their nearby boats — all indications of a more familiar way of life.

Even so, the real measure of these villagers' lifestyles cannot be judged by such casual observations during this short Arctic summer. For in October, when the sun begins to disappear and polar winds lash Melville Bay, the crew of Northwind will be back in Wilmington. Then for the Eskimos it will be a matter of survival — almost unchanged in a thousand years.



AAT introduces new series

Australian Antarctic Territory introduced a new series of definitives July 18. The set of five stamps is the first of several planned issues which will reproduce photographs showing examples of the scenic beauty of the Antarctic continent.

This series will progressively replace the existing Ships of the Antarctic definitive stamps.

Australian Antarctic Territory stamps are intended primarily for use by personnel at the Australian National Antarctic Research Expeditions' (ANARE) research stations in Antarctica (Davis, Mawson and Casey) and at the ANARE station on Macquarie Island.

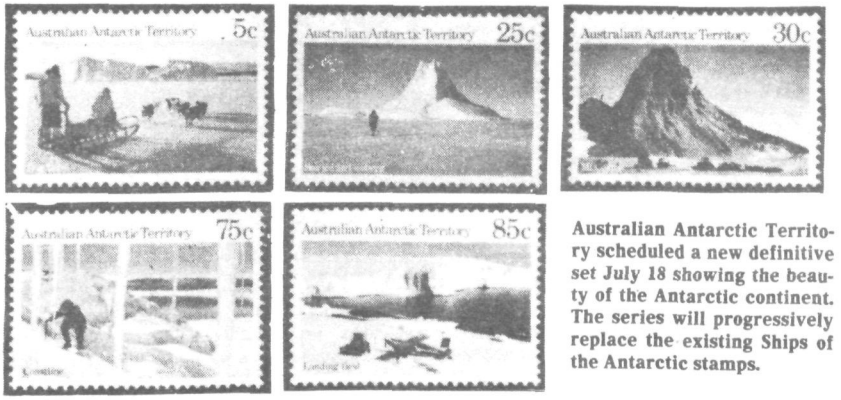
Additionally, the stamps will be available from post offices in Australia. Australian Antarctic Territory stamps are valid for postal use on mail posted in Australia as well as the Australian Antarctic Territory.

The new definitives were designed by Garry Emery of Melbourne from photographs by the Antarctic Division, Department of Science and Technology, Kingston, Tasmania.

Cambec Press printed the stamps in sheets of 100 (two panes of 50) using photolithography.

The 5¢ denomination shows a dog team. Mawson is the only ANARE station to maintain dog teams, dogs having been phased out at the other ANARE stations in the 1960s in favor of modern transport.

Dog teams at Mawson are used mainly for journeys across sea ice in areas that would be impassible to heavier vehicles.



Australian Antarctic Territory scheduled a new definitive set July 18 showing the beauty of the Antarctic continent. The series will progressively replace the existing Ships of the Antarctic stamps.

Sea ice and an iceberg are featured on the 25¢ value. The sea surrounding the Antarctic continent freezes over in winter, sometimes entrapping icebergs like the weathered giant which appears on this stamp.

Mount Coates, depicted on the 30¢, is in the David Range near Mawson Station. Only the uppermost part of the mountain is visible, the rest being buried beneath the Antarctic ice sheet.

The 75¢ stamp shows a view of the Antarctic coastline, looking from behind a colonnade of icicles formed across the entrance to an ice cavern.

The rugged ice formations in the foreground are the result of the ice sheet buckling and breaking up under pressure as it flows towards the sea.

An aircraft is depicted on the 85¢ on a landing field of sea ice near Mawson Station. The plane, a Pilatus Porter, is used mainly for ferrying supplies, aerial photography and making radar soundings to test ice thickness.

LINN'S STAMP NEWS JULY 23, 1984

Did you know?

Stamps of the Australian Antarctic Territory are valid for postage in Australia.

Alaska trivia Resource book

Associated Press

Juneau — The state Department of Natural Resources has produced an answer to a trivia player's prayer — "Special Report 36" — otherwise titled "Alaska's Resource Inventory, 1984."

The 62-page summary contains 14 maps and will be printed in a number of languages for distribution to potential Pacific Rim trade partners, Gov. Bill Sheffield said.

Among other things, the book says:

• Sand and gravel are the most heavily mined materials in Alaska. In 1983, $120 million worth of sand and gravel was mined, compared to $67 million worth of gold and $18 million worth of coal.

• Eight world-class deposits, each containing more than $1 billion in strategic or other important minerals, have been found in Alaska. Since 1979, mineral production has doubled in Alaska, and development expenditures have tripled.

• Alaska contains more than 17,000 square miles of glaciers, innumerable lakes and six of the 30 largest rivers in the United States, yet water is not always available to meet the needs of Alaskans.

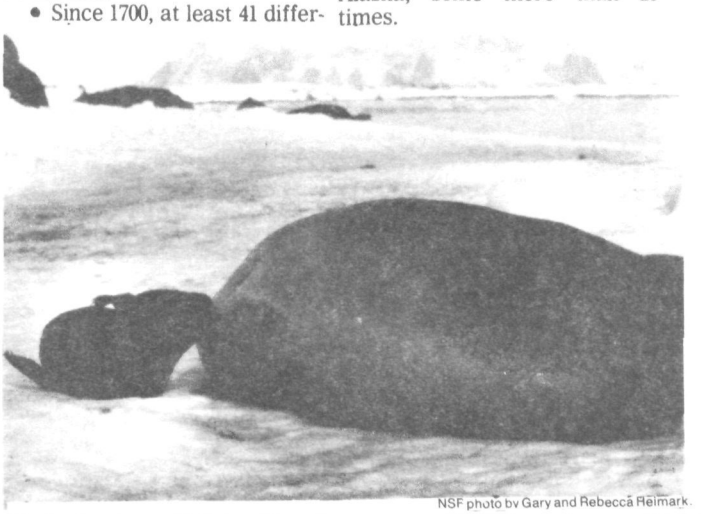
• Half the estimated U.S. coal resources and one-sixth of the world's coal may be present in Alaska, but limited accessibility has curtailed exploration and development.

At the present rate of energy consumption in the United States, Alaska contains at least a 300-year supply of coal.

• About 20 million acres of soil are suitable for farming in Alaska, but the state has to import most of its food.

• Alaska contains 16 percent of all the forestland in the United States, most of it in the state's Panhandle.

• Since 1700, at least 41 different volcanoes have erupted in Alaska, some more than 25 times.



NSF photo by Gary and Rebecca Reimark.

Elephant seal cow with 2-day old nursing pup—one of the first pups born near Palmer Station in 1983. This photograph was taken 16 October 1983.

History

THE MYSTERY OF THE ANDRÉE EXPEDITION

By Warren Asa

A perilous adventure ended in tragedy for three daring Swedes who challenged the Arctic in a balloon.

BOYS' LIFE ✠ OCTOBER 1984

NOWADAYS, A FLIGHT across the Arctic is nothing special. Before 1900, however, when airplanes were still science fiction, such an adventure would have been an incredible feat of bravery — or of foolishness.

A good example of both, perhaps, was the flight of the *Eagle*.

In July 1897, three daring men set off from Spitsbergen, 400 miles north of Norway, in a hydrogen-filled balloon. Casting their fate to the polar winds, they dreamed of reaching the North Pole.

With them, they had neither modern equipment nor any hope of rescue should disaster strike.

For the first 17 hours the journey went well. Expedition leader Salomon Andrée, an engineer, and his companions, Knut Fraenkel and Nils Strindberg, took turns standing watch, eating and sleeping.

Silently, they drifted northward, becoming the first humans to enjoy a birds-eye view of the Arctic wilderness.

But before the day was through, an awful knowledge came to the balloonists. They realized that as the northern air got colder, the balloon's hydrogen gas was losing its lifting power. To make matters worse, moisture soaked the rigging and froze, making the balloon heavier.

On the second day, gravity started to win the battle. Each time the balloon advanced 500 feet or so, the gondola would drop to the ice below with a horrible "thump."

Throwing out ballast (weight) helped, but not enough. For two sleepless days, this nightmarish seesaw ride continued.

Then, on a warm morning, the Eagle rose to a great height, and hydrogen had to be released. Later, 64 hours after the journey began, the balloon dropped to the ice once more, never to rise again.

The men knew that to survive, they had to find their way back to civilization. They readied a sledge and a boat, and some gear for camping and hunting. Then they began the difficult task of pushing their load across miles of ice.

In their diaries, the adventurers recorded some of the events of the following weeks. Surprisingly, they wrote with humor and optimism.

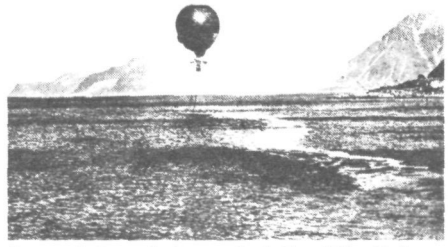
In one entry, Andrée describes their success with fishing and with hunting polar bears: "We have a walking butcher shop all around us."

On Sept. 17, the men caught sight of icy White Island, situated between Franz Josef Land and Spitsbergen. This gave them their bearings, though they had no intention of staying there.

Instead, they hoped to ride south in a shelter they had built on an ice floe. But the floe broke up, and on Oct. 5, the men returned to White Island.

For the next several days, Andrée and his men camped, hunted and wrote in their diaries.

On Oct. 8, Andrée wrote of how thankful he was to be on solid land. And then the writing stopped.



A spectator photographed the lift-off from Spitsbergen's Virgo Harbor in July, 1897. Long ropes, intended to slow the balloon, dangle below the gondola.

(From left) Fraenkel, Strindberg and Andrée push a crude sledge across the Arctic ice. This painful trek lasted for two months.

As the years went by, various expeditions tried to find the lost men of the *Eagle*. Not until 1930, however, were their bodies discovered.

Strindberg had died first, probably in an accident. He was buried under rocks. The others lasted only a few days more.

What killed them? Certainly not starvation, for the men had plenty of food. Some suggest hypothermia, because the expedition had been unprepared for the Arctic winter. Or, perhaps they caught the disease *trichinosis* by eating partly cooked bear meat. Fumes from their stove might have suffocated them inside their shelter. No one will ever know for sure.

As expeditions go, the Andrée flight was not terribly important. Yet the world has not forgotten. The bodies were buried in Sweden with honors. Remnants of the expedition were preserved in a museum in Granna, Andrée's birthplace. The adventure was made into a movie, "The Flight of the Eagle."

Probably the most haunting reminders of Andrée and his ill-fated voyage are the travelers' own photographs. Before being processed and printed, the eerie images lay in their icy grave for 33 years. ✠

Andrée and Fraenkel observe the wrecked balloon. This photographic plate and the shot of the sledge were discovered with their bodies 33 years later.

Obituary: David M. Tyree

On 25 August 1984 Rear Admiral David M. Tyree, USN Ret., died of pneumonia at Portsmouth Navy Hospital in Portsmouth, Virginia. Among the posts that he held during his more than 40 years of naval service were Commander of the Naval Support Force, Antarctica, and U. S. Antarctic Projects Officer from 1959 until 1963. Since his retirement from the Navy in 1963, he had been a consultant in Washington, D. C.

By the end of the International Geophysical Year (1957-1958), scientists around the world recognized that their efforts would be enhanced if antarctic research, as an international cooperative effort, could be continued indefinitely. In 1958, the year before Admiral Tyree assumed his post as Commander of the Naval Support Force Antarctica, Admiral George Dufek had received word that the President of the United States had approved the continuation of the program. Consequently, when Admiral Tyree relieved Admiral Dufek in a ceremony aboard the USS *Glacier* on 15 April 1959, the U. S. antarctic program was already in transition from a temporary endeavor to a more permanent science program.

During his 3 years of service with the antarctic program, Admiral Tyree helped bring about changes that served as the foundation for the present U. S. Antarctic Research Program. In 1966 Henry Dater, staff historian of the Naval Support Force, Antarctica, wrote the following about Admiral Tyree's tour of duty with the program:

"Deep Freeze 62 was Admiral Tyree's last full season in the field. He could look back with satisfaction on the transition he had thus far guided. The new Byrd Station was dedicated on February 13, 1962, and the nuclear reactor at McMurdo first went critical on March 4, although the power was not turned on until July. The LC-130F ski-equipped airplane had demonstrated its usefulness and economy in the supply of inland stations, as well as its ability to support field activities hundreds of miles from McMurdo Sound. Two Navy icebreakers, *Glacier* and *Burton Island*, had penetrated the Bellingshausen Sea and became the first ships to explore the Eights Coast in February 1960. *Glacier* and *Staten Island* repeated the feat the following season. Perhaps most striking of all developments was the new mobility given the scientists that increased the scope of summer field investigations." (Henry Dater, 1966, "Organizational Developments in the United States Antarctic Program, 1954-1965," *Antarctic Journal of the United States*, Volume 1, no. 1, p. 30).

When Rear Admiral James R. Reedy succeeded Admiral Tyree in November 1962, the program had begun to resemble today's program. After the change of command ceremony, which was held at the South Pole, Admiral Tyree returned to the United States and served as the U. S. Antarctic Projects Officer until 1963, when he retired.

Admiral Tyree's accomplishments were not limited to the antarctic program. A graduate of the U. S. Naval Academy in Annapolis, Maryland, he also had a master's degree in chemical engineering from the University Michigan. During World War II he served aboard several ships. In 1942, he was a gunnery officer aboard the *Lexington* when it was sunk during the Battle of the Coral Sea and later was a gunnery officer aboard the *Hornet* during the Battle of Santa Cruz. As a member of the staff of Admiral Richmond K. Turner, then commander of amphibious forces of the Pacific Fleet, he participated in the last part of the campaign for the Solomon Islands.

After World War II, he commanded the attack transport *Rencille*, when, under the auspices of the United Nations, the ship served as the site for cease-fire negotiations between the Netherlands and Indonesia. In November 1950 he took command of the battleship *New Jersey*,

John Tuck Jr. Is Dead at 51; Helped Build Outpost at Pole

By WALTER SULLIVAN

The New York Times / Aug. 18, 1984

John Tuck Jr., who as a young naval reserve officer helped build the first American outpost at the South Pole and then served as its military commander, died Tuesday at the University of Massachusetts Hospital in Worcester. The cause of death was not disclosed. He was 51 years old.

In 1957, Mr. Tuck, then an ensign in the Navy, was among a group that became the first to reach the South Pole on foot since the ill-fated journey of Robert Falcon Scott in 1911-12. After they built a station there, most of the group departed, leaving behind nine scientists under Dr. Paul Siple and nine Navy support personnel commanded by Ensign Tuck.

As the winter night closed in, Dr. Siple, in a radio-telephone interview, described the group as "18 men in a box." He was given the news that Adm. Richard E. Byrd, his long associate, had died a few days earlier.

The camp was established as part of a network of stations that conducted global observations in the International Geophysical Year of 1957-58.

A year later, Ensign Tuck became the first man to spend two winters at the bottom of the world.

Mount Tuck Named for Him

Mr. Tuck graduated from Dartmouth College in 1954 and went on active duty in the Navy's Civil Engineering Corps. He served aboard the icebreaker Edisto in the Arctic before volunteering for Antarctic duty. He was in charge of the sled dogs at McMurdo Sound before flying to the Pole. Mount Tuck in Antarctica was later named in his honor.

After leaving the Navy he became a professor of geography at the University of Wisconsin and, subsequently, at the University of Georgia. Since 1976 he had been living in Deerfield, Mass., where he served as an educational consultant and investments manager. He was a trustee of the Hoosac School in Hoosick, N.Y.

He leaves his wife, Margaret Werner Tuck; a son, Jonathan P. Tuck, and a daughter, Kathleen L. Tuck, both of Deerfield, and a half brother, Edward Tuck 2d of Avon, Conn.

David M. Potter 3d; Aeronautics Expert Invented Flow Meter

David M. Potter 3d, an inventor, explorer and founder of the Potter Aeronautical Corporation of Union, N.J., died on Sept. 29 at Warren Hospital in Phillipsburg, N.J. He was 79 years old and lived in Martinsville, N.J.

He invented a flow meter that measured the flow of liquids. The invention was important to the development of rocket engines for ballistic missiles and the United States space program because it made possible the measurement and distribution of liquid oxygen used as a propellant for rocket engines.

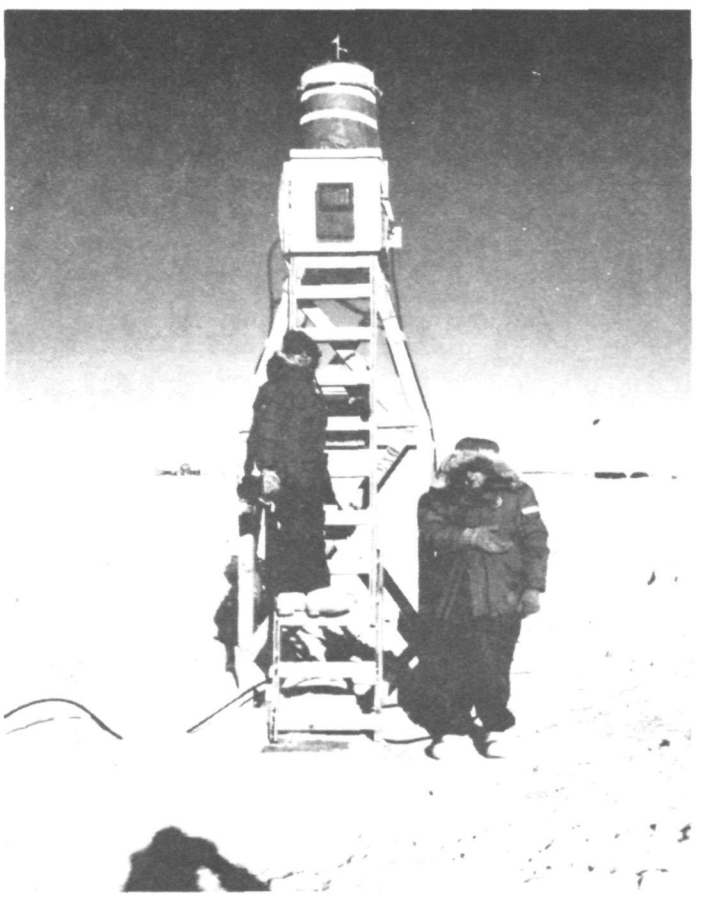
The instrument is now used throughout the world to measure the flow of liquids, including oil from wells in Saudi Arabia and Venezuela.

In 1959, Mr. Potter was awarded the Longstreth Medal by the Franklin Institute in Philadelphia for his invention of the flow meter.

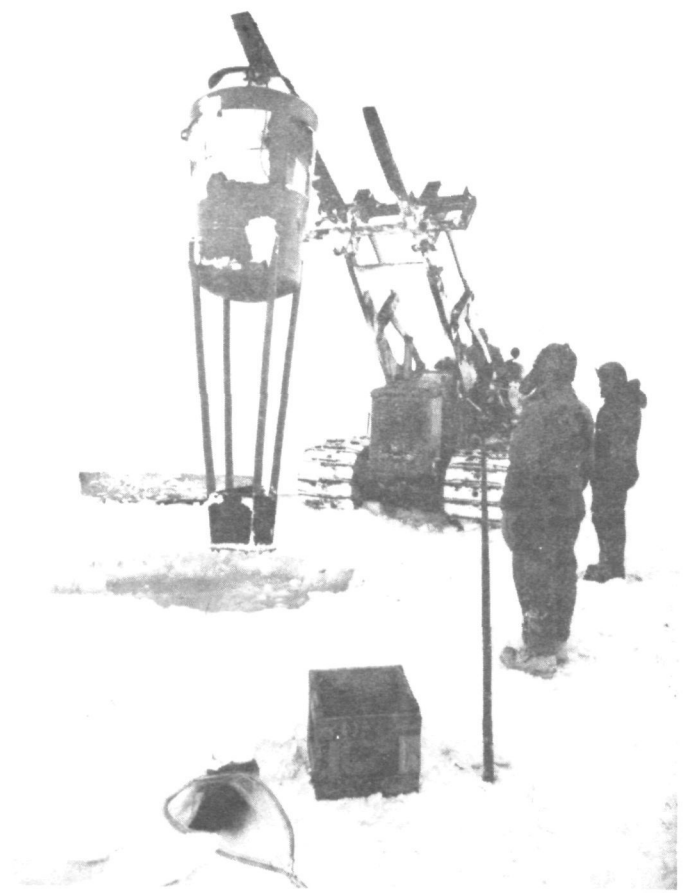
Mr. Potter was a life fellow of the Explorers Club in New York City. He was a member of expeditions led in the 1920's by Prof. William H. Hobbs of the University of Michigan to study the North magnetic pole in the Arctic.

A totally albino Weddell seal pup was sighted twice at Nelson Island.

A recently awakened Weddell seal is surrounded by cape pigeons as the water level rises around it.



University of Florida automated telescope at the south terrestrial pole.



Support personnel place the under-ice observation chamber in an isolated area of McMurdo Sound for study of Weddell seal behavior.