

# THE GREAT OUTDOORS



Naturalist Geraldine “JD” Massyn holds up a piece of black brash ice, pointing out that without air trapped inside it the ice looks clear and colorless. This piece of ice would have been under many thousands of years of pressure. An iceberg-sized segment would appear blue. Wilhelmina Bay. Photo: Author

## **South Pole Summer**

*Author escapes our mild winter for the summer “warmup” at the South Pole*

By J. Morton Galetto

My husband and I recently returned from a three-week trip, during which two weeks were spent in the Southern Ocean with the intent of experiencing Antarctica, the seventh continent. For many travelers this became their seventh continent of visitation out of the seven worldwide, and so it was for us as well. I suppose because of the remoteness of the South Pole few people ever get there. We were fortunate to have the chance.

Our expedition was a lecture and field trip excursion. It in no way resembled the Heroic Age of Antarctic Exploration, a title given to the 25-year period from 1879-1922! Arguably the most famed expedition was Norwegian explorer Roald Amundsen's, who sought to be the first ever to reach the geographic South Pole. He began his polar visits in 1897 as first mate and eventually led a party of five there in 1911.

We followed many of the sea routes that Sir Ernest Henry Shackleton had sailed on his own polar expeditions, while suffering none of the hardships! Our boat did not become trapped and crushed in ice, as did his ship the *Endurance* on its Imperial Trans-Antarctic Expedition in 1914-1917. Nor did we need to camp out on the ice awaiting a thaw, or cross 800 miles in

essentially a rowboat after losing our ship.

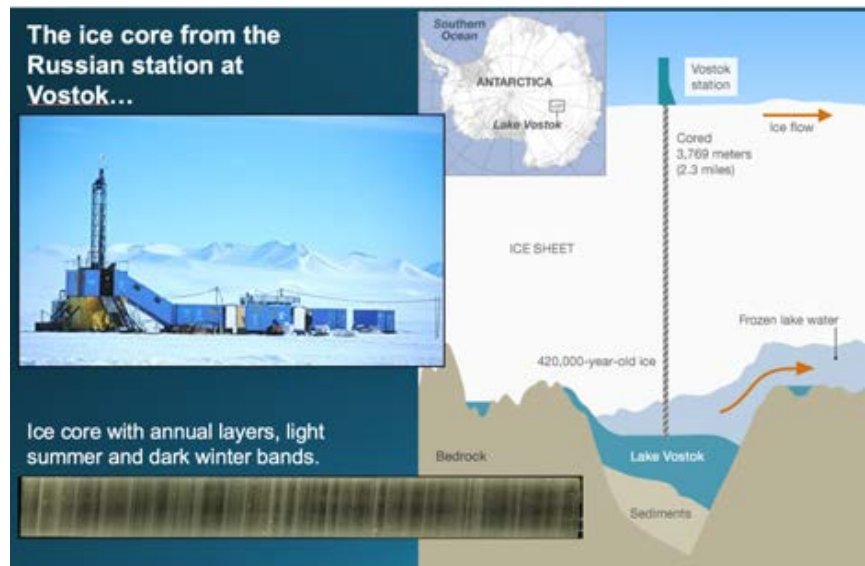
We did however learn a great deal in the lap of luxury on our trip arranged by the Abercrombie and Kent travel company. Each day we had nearly five hours of enrichment lectures, especially when we were making two-day passages and not going ashore. Our primary lecturers were accomplished experts in their fields. These are a few of the key educators:

Geologist Dr. Jason F. Hicks, originally from England and currently with the Denver Museum of Nature and Science, gave us perspective on the creation of the continents beginning with the supercontinent Pangea some 200-300 million years ago. This supercontinent later broke up into a large northern continent called *Laurasia*, made up of North America and Eurasia, and *Gondwana*, composed of the southern continents of Antarctica, India, South America, Australia, and Africa. The world's ocean currents, as we know them today, are formed by the placement of these continents.

When I was a child the concept of Continental Drift was just a theory. Today the preponderance of empirical data from ancient rock samples and their magnetic characteristics allows

scientists to accept the movement of the continents as a given. The field is known as paleomagnetism; it allows researchers to reconstruct the jigsaw puzzle of continents as they once interconnected.

Hicks helped us to understand the position of Antarctica and the islands to its east: the Falklands (or depending on your politics the Malvinas), South Shetlands, and South Georgia; all of which are an extension of the Andes Mountain Range that remained behind as South America continued its movement westward.





*Geologically ice reveals a lot about the past. Scientists take glacial core samples that are 3000 meters long, revealing 123,000 years of history. Samples can show past temperatures, precipitation, atmospheric conditions, volcanic eruptions, desert sand storms, pollen, sea-surface productivity, forest fires and more. The National Ice Core Laboratory in Lakewood, Colorado stores cores at -15 degrees Celsius. Top Jason Hicks, PhD lecture slide. Bottom National Ice Core Laboratory.*

As his lectures continued we gained understanding of climate change, sea level rise, and an emerging economy which offers hope that we are moving into the age of renewable energy sources. Renewables may ultimately give us a handle on slowing down and potentially halting global warming.

Canadian marine mammologist Pierre Richard lectured about whales, seals, and dolphins. He honed our identification skills and led deckside and land observations.

Historian and story teller Robert Caskie of South Africa brought alive the Shackleton Endurance expedition as our 466' French ship *Le Lyrial* (launched 2015) cruised along the same sea routes in the Southern Ocean.

Ornithologists Dr. Patricia Silva of Uruguay, Argentine Dr. Marco Favero (Expedition Leader), and Rich Pagen of the USA, were on board as well. Silva has worked on penguin research and is the editor for IAATO (an international organization dedicated to the protection of Antarctica) and the Save the Albatross Campaign.

The expedition featured photography expertise as well. World-renowned wildlife photographers Michelle Valberg of Canada and Richard Harker of the United States gave presentations on composition, settings, background, and post-production. Michelle's presentation on photographing the spirit bear was spellbinding. They too were on hand to answer questions as we tried out our newly acquired tips or photographic skills.

United States Commander Susan Kilrain, Naval test pilot, aerospace engineer, and two-time pilot of the space shuttle, did a four-part lecture on life as an astronaut and her journey to achieve that status. She continually drew parallels between the exploration of space and Antarctica, along with the sheer vastness of these experiences.

Professional dogsled musher Silvia Furtwäger shared her passion for

racing. She has competed in the Iditarod, the Yukon Quest, and Volga Quest. Raised in Germany, she now resides in Norway where she runs her dogs in two eight-hour shifts a day, preparing them for competitive races. Sled dogs were a component of early Antarctic exploration and her presentation offered a great deal of information from a different perspective.

In upcoming articles I hope to elaborate on some of what we learned. I look forward to sharing information on Antarctic creatures and their characteristics: after all who doesn't want to learn more about penguins?

Coming from a visit to this frozen land it seems fitting that we discuss some of what we learned about ice. South African Geraldine "JD" Massyn, an expedition leader, yacht master, rescue specialist, and naturalist for over 30 years took us on tour in Wilhelmina Bay. She cut the motor on our inflatable Zodiac so that we could listen to "brash ice" – a patch of accumulated small fragments of floating ice - releasing air; it was as if we were in a giant glass of champagne. Glacier ice is formed under great pressure from the weight of consecutive snowfalls; because of the cold environment it can be thousands of years old. As it melts



the air is released and causes popping noises because it is pressurized.

We saw stones and boulders floating in icebergs. The earliest of explorers saw this material and theorized that there was indeed land associated with this world of ice. And the ice comes in many forms, from both salt water and fresh water. The freshwater ice on land is caused by precipitation, primarily snow, and because of distance from the equator and the local cold ocean currents it seldom melts. Over the course of several years the snow becomes granular and is formed into balls called *firn*. The compaction results in pressure, then the creation of glaciers, and eventually icesheets.



*Many icebergs are massive; note the size of the Zodiac (far left). The younger ice is above the water. In 2021 Iceberg A76 broke away from the Filchner-Ronne Ice Shelf. When it calved it was the world's largest floating iceberg: 110 miles long and 16 miles wide and shaped like a giant ironing board. It was*



*1,670 square miles, larger than Rhode Island. It has now broken into three large bergs. Wilhelmina Bay - Photo: Author*

The downhill movement of ice caused by glacial weight creates what appears to be a frozen river. Where ice meets the water it sometimes morphs into a cliff which often breaks off under its own weight, called *calving*, and creates rumbling earthquake sounds that echo in the coves or bays. You don't only hear these rumbles but you also feel the reverberation, and you might see a wave pass over becalmed waters. Somehow these events touch your soul, and it's hard not to get teary eyed when confronted with the awesome power of nature.



*Glacier cliffs "calve" or shed icebergs off their face. These are recently-shed icebergs on the water's surface. Neko Harbor - Author*



*Some glaciers flow seaward from compaction and pressure, like this Drygalski Fjord glacier. Others perch on mountains. Author*

Among the phenomena we saw there are ice shelves that are perched on water. In fact rivers of water move beneath the land-based ice. There are also perched glaciers on land that don't touch the water.

The amount of air in the ice defines the color. Ice itself is actually blue but only large pieces of glacier ice are seen as having that pigment, because the human eye perceives blue only when the chunk of ice is large enough for us to register it. When "JD" held up black ice, which is ice with no air that is colorless, it looked like a piece of fine crystal. It gives that impression because it is relatively small.

Conversely when ice has incorporated a lot of air it reflects back all the colors of the spectrum and is perceived as white. The bluest ice on a glacier or iceberg is on the bottom, because it is older,

under greater pressure, and has few air bubbles.



*These icebergs seem like sculptures floating on the surface of the bay; however, ninety percent of a berg is underwater. The denser, older ice is out of sight and holds less air. Wilhelmina Bay. Photo: Author.*

Ice is also classified by size; an *iceberg* must protrude at least 16.5' above the water, and don't forget that only one tenth of that iceberg is visible! Don't believe me? By way of illustration drop an ice cube into water, keeping in mind that polar ice is denser than refrigerator ice. Then there are *bergy bits*, three to eight feet above the water. Ice broken into less than a meter in height is a *growler*, named after the noise it makes against ship hulls. And lastly there is *brash* – less than a meter in size.

The sea ice is what is formed in winter. Because the Southern and Northern

Hemispheres are seasonal opposites our January trip was basically in their summertime. Icebergs and sea ice are the captain's concern, and it was winter sea ice that trapped and destroyed Shackleton's ship. One must choose the season for a safe visit to Antarctica!

I feel inadequate to do justice with words in sharing how very massive this icy environment appears and how dwarfed you feel in comparison. There is no frame of reference for size, just grandeur. Zodiacs look like a flea on a massive dog and our huge ship itself appears rowboat-sized from shore.

The majesty, allure, and addictiveness of Antarctica is beyond even the most masterful of writers' prose.



*A huge arch off the bow of the ship. The captain estimated it to be 60' above the water 180' across. Remember that 90% of the berg remains below the water. Author*

*Note: You may wish to return to the January 11, 2023 edition of SNJ Today in which Magic Carpet Travel featured cruising Antarctica. The itinerary detailed there closely follows our experience and can be found at [snjtoday.com](http://snjtoday.com).*