In the Wake of Mawson #1873
8 January - 6 February 2018

MV Akademik Shokalskiy

Expedition Team

Samuel Blanc (Expedition Leader, Lecturer and Zodiac driver)
Dr Nikki Rumney (Hotel Manager and Zodiac driver)
Agnés Breniére (Lecturer and Zodiac driver)
Dr Dean Miller (Lecturer, Guide and Zodiac driver, compiler of slide show)
Dr David Harrowfield (Lecturer history; guide; compiler of Log & Captain's Blog; wine steward)
Jenny Ridgen (NZ Government Representative - Department of Conservation)
Connor Arcus (Chef)
Bruce Thomason (Chef)
Dr Suzanne Knapp (Hospital)

Crew

Captain Igor Kiselev
Chief Mate Nikolay Velichko
2nd Mate Evgenii Berzovskov
3rd Mate Dimitri Danilenok
Chief Engineer Nail Makhmutov
Chief Electrical Engineer Oleg Zlenko
Chief Stewardess Natalya Ivanova

Day 1: Monday 8 January
Invercargill, New Zealand

At long last our expedition, with 46 of us all keen to visit the Sub-Antarctic islands and to experience the wonders of Antarctica, is about to get underway. Some of us had arrived in the southern city of Invercargill on the fertile plains of Southland yesterday and the remainder today. Apart for a fast moving front with rain and wind last evening, today was beautiful and we were soon comfortably settled in the Kelvin Hotel. The expedition team had arrived from Christchurch on Sunday.

At the Kelvin Hotel we enjoyed meeting fellow passengers and Nathan Russ who first visited Antarctica when nine years old and became Head Chef when 18. Nathan has for the past decade been Operations Manager for the company. The ship's Hotel Manager Nikki from Cairns Australia and seasoned Antarctican and Expedition Leader, Samuel Blanc, who has wintered at the French Antarctic station, Dumont D'Urville, was introduced along with the New Zealand Government Department of Conservation Representative, Jenny Ridgen and other members of his team.

A special welcome was extended to the two Enderby Scholars, Lucy from Australia, with a background in botany and ecology and Ellen from Dunedin, NZ who when just five, began a dead bird collection, is a science writer and presently a Masters student at the University of Otago. The objective of the Scholarships is one of "Keeping alive the *Spirit of Enderby*".

Three Australians, Melissa Houghton, an entomologist, along with Kristen Gardner and Aimee Bliss, both water quality scientists, will leave the vessel at Macquarie Island and study post-eradication of pests.

We then enjoyed in the Level One restaurant, a sumptuous buffet in the true Southland and Kelvin Hotel tradition. Highlights included hot ham, roast lamb and beef, baked salmon, chocolate brownie, summer pudding with berries, lashings of whipped cream and of course fruit Pavlova, with the famous desert, first appearing in an early Kiwi recipe book. Sorry Australia, but it's apparently true. Restaurant Manager Brendon and other staff saw to it that we had a very enjoyable meal.

Other members of our expedition team enjoyed a fine meal of blue cod, chips and salad at The Anchorage Restaurant in Bluff 30km from the city. Nestled below Bluff Hill, this is an interesting little town with a close knit community, which could easily have been the subject for a Steinbeck book.

Along one side of the main street are salt tolerant shrubs and oyster shells are spread beneath old fishing boats; now high and dry. The oyster fishery is good for the local economy and provides employment. A large oyster shell with sailing ship was a project of the Bluff History Group in 2013, which has since published their first Bluff newspaper.

And of interest was a large mural (by Kirsten Karaitiana) on the wall of a building stating;

Beneath the sea the oysters
Rock gently in their beds.
(by poet Cilla McQueen).

Most of us opted for an early night as from breakfast in the morning it will be full-on as our expedition gets underway.

Day 2: Tuesday 9th January
Southward bound. Bluff and Stewart Island
Noon position - Bluff: Latitude: 46o 35.624'S; Longitude: 168o 20.342'E

From Hints to Travellers 1889. On sea sickness.
"To avoid this, a comfortable but not excessive meal, should be taken shortly before embarking…, Having eaten with moderation the traveller, immediately the ship is under way, should get comfortably into his berth, and having well covered himself with rugs and, if possible, had a hot water jar placed at his feet, ought to adopt the horizontal position and compose himself to sleep… If however, sea-sickness supervenes, one of Rigollot's mustard leaves moistened with water may be applied and kept tightly pressed for about ten minutes over the stomach, and a teaspoon of the following taken every half hour; Dilute hydrocyanic acid, thirty-two drops; bicarbonate of potash one drachm; water two ounces. Small pieces of ice dissolved in the mouth, also relieve sea sickness."

We rose to a calm morning with a high vail of cloud, a temperature of 12oC and 3.8 kn. Breeze.

After breakfast, we met Heritage Expeditions lecturers Dean and David, who arranged conveyance of our luggage to the ship. Many of us with David, then visited the Southland Museum and Art Gallery, while others viewed the Botanic gardens or chose to shop.

At the museum we met the Curator of the Tuataraium, Lindsay Hazley, who has 30 years' experience of breeding and rearing Tuatara (these are not lizards), in artificial environments. Our visit began with a presentation in the Theater, The Roaring Forties, which focused on New Zealand's Sub-Antarctic Islands, followed by one on the Tuatara and a close encounter with live animals in the Tuatarium.

The oldest animal named Henry born at the close of the 19th century had arrived at the museum in 1970. He is reputed to be 120-150 years old and has two girlfriends, Mildred and Lucy. The species which is the only surviving member of the Order of Sphenodontia, has ancestry dating back 225 million years and all species except the Tuatara declined and eventually became extinct about 60 million years ago.

Lindsay pointed out many interesting features, such as the pineal (third) eye and one animal which laid very few eggs over two-three seasons. Several were fed live huhu grubs and they tended to sit with food in the mouth for a while conserving energy, and they then retreated to burrows. The burrows are in a much warmer environment of 5-6oC – more than the natural environment outside, with 23oC the threshold.

There were many excellent galleries with a recent one displaying beautiful portraits in oils on canvas by Chinroui of Ka Uri- descendants. Nearby were two magnificent Mere pounamu (greenstone weapons of a Chief) and a Toki poutangata (greenstone ceremonial adze), found in sand hills on Ruapuke Island by Peter Tipi in the 1960s. The Maori Gallery was beautifully laid out and the Awarua Gallery portrays, 130 years of Southland rugby including when Southland beat the French on 10 July 1979, with 12 points to 7.

The Beyond the Roaring Forties exhibition featured many artefacts and displays covering the ship wreck and castaway-era with death, starvation, despair, and making do with resources, unsuccessful attempts at pastoral farming, and secret stations during World War II. A Rata forest became alive with a grunting sea lion, which was so realistic that it frightened a visitor.

There was something of interest for everyone and the shop and café received many visitors.

We left at noon for the Kelvin where an excellent lunch was enjoyed and we were then escorted by David in a coach to Bluff. After a brief passport check, we arrived at our blue and white vessel, to be welcomed by Nikki our enthusiastic and competent Hotel Manager and found our luggage already in the cabins.

A few notes on our expedition ship and her naming will be of interest.
The 72m (236ft) *Akademik Shokalskiy* is one of five ships of the same class built in Turku, Finland, as research vessels, with our ship constructed in 1984 and listed on the Russian Register as KM ice class.

The ship has a bunker capacity of 320 tons for the two 1560 HP (1147kWt) engines achieving 12 knots and while cruising comfortably manages on one engine10 knots. Originally built for oceanographic work, it is owned by the Russian Federation Far Eastern Hydro Meteorological Research Institute in Vladivostok where it is Registered No. 179. In addition to Captain Igor it has 21 Russian crew.

Of interest is the naming of the ship. On Main Deck (Level 3) a panel by a portrait of Y.M. Shokalskiy, refers to “a highly respected academic CCCP 1856-1940, [who] lived a long and amazing life.” Dr Shokalskiy, was associated with several prominent scientists and the great Arctic explorer Fritjof Nansen. His primary interests were in the fields of geography, oceanography and cartography. He compiled works titled “Oceanography” and was a respected President of the [Russian] Geographical Society.

After settling in our cabin, we became familiar with the ship and enjoyed afternoon tea with excellent muffins and a glass of orange. At 3.30 p.m. we had a compulsory briefing with Samuel in the lecture room. This began with an introduction of staff, with each person briefly speaking, followed by important housekeeping rules outlined by Nikki. Finally there was an introduction to lifejackets, procedure for abandon ship drill and the use of a different type of self-inflating life jacket worn during Zodiac operations including procedure when using a Zodiac.

The mooring lines were released at 4.45 p.m. and with the Pilot on board we departed Bluff with a light swell at 5 p.m. Good views were of the Tiwai Point aluminium smelter using electricity from the Manapouri power station, the rocky shore with behind, native flax and introduced Marram grass. Foveaux Strait was reached at 5.15 p.m.

The pilot launch *Takitimu* 11 drew up alongside and it was exciting to see the Pilot clamber down the ladder with a rope grasped in each hand. Once on the *Takitimu 11*, the launch driver then lost no time in pulling away from our ship. We were now on the way.

After passing through Foveaux Strait we headed on a southerly course, that would take us off the east coast of Stewart Island or Rakiura as it is also known. The Stewart Island landscape in many places covered in scrub and bush and patches of weathered granite rock, was obscured by low cloud and fog. Birds identified by Gil, included Brown Skua, Grey-headed, Shy and Southern Royal Albatrosses, Prions, Shearwaters and a New Zealand Fur Seal.

At 5.45 p.m. we had a simulated abandon ship drill and reported to our lifeboat, where the engine was briefly started and the drill successfully concluded.

Stewart Island is New Zealand's newest National Park and fortunately has no predatory stoats. It was named for William Stewart in 1909 a crewman on the *Pegasus* and has a rich flora and birdlife. The interesting human history for the island includes early Maori, sealers, the Ross Sea whalers in the 1920s, miners, saw millers and fishermen. We had excellent viewing of seabirds including Albatrosses, Little Blue and Fiordland Crested Penguins and of Dusky Dolphins.

The sea in the strait began to pick up and soon our ship was rolling gently. The bar which opened for an hour and a half provided an opportunity to meet fellow passengers and at 5.30 p.m. *The Spirit of Enderby* passed by on its way to Bluff.

When in the lee of Stewart Island although well off the east coast, the evening meal was served at 7.30. The meal began Gremolata prawns and for the main, a choice of honey soy, glazed New Zealand Salmon served with rice and Asian greens or slow roasted lamb shoulder, served with a medley of roasted vegetables and greens. The final was vanilla panacotta with fresh strawberries. It was an excellent meal also beautifully plated.

With an early ETA expected for The Snares, the rest of the night was spent quietly and we are hoping for a good view of the islands early tomorrow. We continued along the east side of Stewart Island and with a southerly front forecast, most of us decided to retire early.

Photo credit: A. Breniere

Day 3: Wednesday 11th January
The Snares, en-route to the Auckland Islands
Noon position - Latitude: 48o 28.372'S; Longitude: 166o 35.511'E
Air temperature: 15oC Water temperature: 13oC

10 January 1912. Cecil Maddigan meteorologist AAE

"We carted the gear on sledges up to near the hut would be, about two hundred yards away, and tobogganed back on the sledges down the slopes…this was a great sport"

The good ship rocked and rolled a little during the night and by 5.30 a.m., we were off North East Island, the main island of The Snares and at 48o01.367S 166o37.333'E. Broughton Island was visible to the south-east. We were 100km south of the southernmost point of Stewart Island.

Large flocks of Sooty Shearwaters also referred to as Titi or "mutton birds" was heading out to sea for fish. A few Buller and Salvin's (nest on Broughton Island) Albatrosses, the occasional Sooty Shearwater or Titi as known to Maori, Cape Petrel, Common Diving Petrel and other species, were about.

The Snares Islands formed of granitic rock, have a highest point of 152m, cover 328 hectares, a mean annual temperature of 11oC and an average rainfall of 1200mm per year. The position of the island group is listed as 48o01'S and 166o35'E.

The main island was discovered independently on 23 November 1791 by Capt. George Vancouver *HMS Discovery* and by Lieutenant William Broughton *HMS Chatham*, both of the Vancouver Expedition. The subsequent sealing era decimated the population and a small group of 3-4 convicts here for seven years, lived in five huts, grew potatoes and they were rescued in 1818.

The pest-free island group requires a permit to land, and has attracted science parties from the Universities of

Canterbury and Otago, along with the National Institute for Water and Atmospheric Research (NIWA). Only 10 people a year are allowed to land and this includes members of two families who take rock lobster (crayfish).

We had a nice pink sky, before the sun rose at 6.05 a.m. Samuel had already called us and Nikki announced that an Orca (possibly two), a large male, was seen near the ship. It was a fine morning with blue sky, scattered clouds and an air temperature 15oC.

The Zodiac operation using four boats, each equipped with four-stroke 60HP engines, began at 6.15 a.m. Two hours was spent on the water and cruising off-shore, we enjoyed excellent views of the rocks, some with nice colouration, the zoning of vegetation adapted to salt-laden air with, *Olearia lyalli*, the tall 'tree-daisy' with leathery-like leaves prominent which is spread over 80% of the main island, along with a further 'tree-daisy' *Brachyglotis stewartiae*. Other plants included Cook's 'scurvy grass'; a mega herb (the term was introduced by Lyall on James Clark Ross's expedition 1842); a shore *Veronika* with small white flower, and large *Poa* or tussock grass, this mostly on higher areas.

The many birds seen included, Snares Crested Penguins *(Eudyptes robustus)* of which there are 25-30,000, Buller Albatrosses nesting on grassy ledges on cliff faces, gatherings of Cape Petrels, Giant Petrels fighting as they tried to outdo each other with a dead penguin, Brown Skua, the small black endemic black, Snares Island Tomtit, Arctic Terns and some of us had good sightings of the small brown endemic Snares Islands Snipe. The Sooty Shearwaters, a burrowing Petrel on the higher areas of the main island and the most prominent bird species, with a calculated 2.7 million pairs (1971) and probably nearer 3 million, had mostly flown before dawn. Samuel said there is an abnormally high number of endemic species.

Excellent viewing was also enjoyed of New Zealand Fur Seals resting on rocks and with exception of at least one jelly fish seen, masses of tube-like free-swimming fire salps *(Pyrosama)*, was observed. This tunicate is up to 10cm long, they were whitish-grey, had an exterior covered with small hooks and an opening of a siphon at one end of the inner tube. One predator is the sunfish, which swims vertically with the mouth permanently open.

A further interesting observation by Ellen, Kristian and Aimee, was of a small Diving Petrel being attacked by a Brown Skua. The petrel avoided the predator by diving below the surface and the skua went in search of other prey.

Visits were made to three caves and a major highlight was an excellent view of the famous "penguin slide" and slide they did, with large numbers of Snares Crested Penguins commuting over granite surface worn smooth, perhaps over hundreds of years.

We were amused to see penguins about to enter the water, then change their plan, slide in the process and with the next incoming swell, take advantage of this to run down the slope and dive into sea before the water retreated. Some penguins stranded in the kelp, managed to extricate themselves. In places, penguins were calling continually and from on nests on adjacent headlands, the hoarse, braying calls, of Buller's Albatross were heard. On reaching Grafton Rocks, we then turned back.

We had certainly enjoyed a very special outing, with fine natural history observations, enhanced by rarely experienced calm conditions. Earlier there had been nice light for photography and Justin was able to try out his large and heavy Nauticam, with ultra-wide angle lens of 15o and external light. Soon after 8 a.m. we were all aboard and enjoying a late breakfast with fruit, a pancake and some nice crispy bacon.

We soon left The Snares and began our journey towards Auckland Islands. Little was done during the morning and many of us enjoyed a lie down. The sea was fairly calm, the morning sunny and the ship was performing

nicely.

Today lunch was available at 1 p.m. and we enjoyed chicken drum sticks, chips and a very nice salad with a good selection of spring vegetables.

Samuel called us to the lecture room at 3 p.m. when he gave an excellent Introduction to the Auckland Islands. Geographic location, geology, botany, and animal life was discussed, also the various phase of human history including the creation of the various Reserves and the most recent, conservation, tourism (the first Permits were issued in 1989) and bio security requirements in preparation for our landing tomorrow.

Vacuum cleaners were then put in the Bar/Library area so we could clean our clothing, footwear and back packs etc. so that we transport nothing to the island. Tomorrow further measures will be undertaken with this focused on use of the disinfectant Virkon, for boots, tripods and walking poles.

It had been a very interesting and restful day and by late afternoon, the sea had calmed and at 5.30 p.m. a pod of Dusky Dolphins was seen off the bow.

The bar opened at 6 p.m. and Kirsten recorded with watercolor pencils, her impressions on her first visit to The Snares and that of entering a cavern with darkness, light and colour from red algae.

Dinner which included for the main, delicious Jem fish with Israeli couscous salad or whole roast ribeye was available at 7.30 p.m. This evening the ship was rolling slightly again and we prepared our equipment for a day out tomorrow.

Photo credit: A. Breniere

Day 4: Thursday 11th January
Enderby Island (Auckland Islands)
Noon position: Latitude: 50o 30.352’S; Longitude: 166o 16.802’E

Air temperature: 17oC Water temperature: 12oC

We arrived at Port Ross, 460 km south of Bluff around 1 a.m. It is named after the famous English Arctic and Antarctic explorer, James (later Sir) Clark Ross, who visited here in November 1840. Originally it was named Rendezvous Harbour by Dumont D'Urville, leader of the French expedition, but later renamed by Charles Enderby.

The island which is 4.5km long and 2-3km wide, was formed from a secondary flow from the Ross Volcano (the other being Carnley Volcano) and many of us on deck early, were fascinated with the spectacular columnar basalt cliffs with prominent jointing, topped by Rata forest and *Dracophyllum*, along the south side of the island. The rock has formed in this way during rapid cooling of the basalt lava.

The morning was one scattered cloudy and a light breeze creating a ripple on the sea. A few meters away, three curious, female sea lions, surveyed the big blue monster that had during the night, entered their domain. By 7 a.m. the temperature was 12oC and nesting shags were clearly visible in an area on top of the cliff. The light was excellent for photography, crepuscular rays from the sun obscured by light cloud and a rainbow, added to the pleasure of experiencing this beautiful locality.

We enjoyed a hearty breakfast and by 9 a.m. using two Zodiacs, the first of us was ferried ashore and we changed from gum boots to hiking footwear, leaving unwanted boots etc. in the 1888 boat shed (nearby a "finger post" is from 1889) and pointed to the site of the main castaway depot.

Chris Muller accompanied by five research staff, spoke briefly on their work which has since November, focused mainly on the Yellow-Eyed Penguin, with an emphasis on population and breeding success. There are 1700 breeding pairs in total, with about 300 breeding pairs on Enderby Island which appear to be "doing okay". Work concerning the New Zealand (Hooker's) Sea Lion has included, recording and marking, about 300 pups (last season 325) born on Enderby Island this season. The main breeding population is on Dundas Island in the Aucklands.

After a brief talk by Samuel, 19 long walkers accompanied by Nikki, Agnes and Dean, set out on their 10-11 km hike that would take them around the east end of the island, and the remainder of us followed on the 1.3 km board walk to the north side of the island, a little later.

We saw three Southern Royal Albatross on distant nests, A few Yellow-Eyed Penguins, flowering Rata, Gentians including a deep purple variety, *Casinia* with the small white flowers and a late flowering orange *Bulbinella rossi*, the others having finished flowering. Plant communities on top of the island, was also of interest with each plant such as small gentians, finding a niche in the sub-alpine environment.

On reaching the end of the boardwalk, we enjoyed seeing the wild Southern Ocean crashing over a platform of volcanic rock while further west along the coast and on a ledge high above the sea, was four nests of Light-mantled Sooty Albatross with two pairs, each having a small grey fluffy chick. This was a treat and provided the photographers amongst us, with better shots than for two Snipe that outwitted the photographers. Andrew C. decided it was easier to simply observe and enjoy, which brings the author to the following excerpt, from Hints for Travelers 1889.

"The traveler need not be discouraged if unable to secure completeness, for some of the greatest [photographic] journeys have been made with very inadequate resources."

Later Andrew C. was fascinated with seeing an Auckland Islands Teal, conceal itself from a predatory Skua. It hid

under kelp with the head on a side and watching, before the Skua thought better of it and left. This was real Sir David Attenborough material.

Some nice examples of the tall pink flowering mega herb, *Anisotome latifolia*, was enjoyed and other birdlife included good observations of the Auckland Islands Shag, Pipit, Tom Tit, Brown Skua and Bellbirds.

The Stella castaway depot was of special significance to Ellen, the great, great, great, great granddaughter, the site of the Enderby settlement farm house, where her Mother's ancestor, Sarah Ann Cripps, along with her husband Isaac (29) and children, were sent from Hardwicke on 7 July 1850 for a week, "for a change of air". Ella was named after great, great, Grandmother Ella Franklin, the daughter of Sarah Cripps.

Today part of a small cast iron stove from the farm house, that may have been burnt or dismantled, is all that remains and the Cripp family eventually left Hardwick in August 1852. Although we had a brief look around in the immediate vicinity, there was no sign of the stock yards.

The long walkers enjoyed good views of the Derry Castle Reef, where the barque with a load of grain from Geelong Australia was wrecked 20 March 1887. Fifteen were buried near here and many of us viewed the original wooden grave marker in the Southland Museum and the more recent memorial plaque, near the grave site. There were eight survivors (including one passenger) who subsisted on grain and shellfish for 92 days, as the Stella castaway depot was found to contain only one jar of salt.

Bird sightings was plentiful with Red-crowned Parakeet and a variety of other interesting birds including, Dotterel, an Auckland Islands Cormorant observed collecting twigs for a nest, Auckland Islands Tomtit, Brown Northern Skua, Kelp Gull, Arctic Tern, Auckland Islands Teal, Yellow-Eyed Penguin and a New Zealand Falcon that stood out clearly in the upper dead branches of a Rata tree. There were beautiful plants such as *Anisotome*, *Casinia* and *Plantago*. The *Gentians* were very prolific and it seemed there was a greater concentration than seen by the short walkers.

It would be difficult to determine the most special aspect of today, as there were many. For Melissa the Rata forest was an unusual yet unique experience with a carpet of flowers from the canopy, an "ethereal experience". However, also for Melissa, Kirsten and others, having three Yellow-Eyed Penguins approach those in the group, where they sat quietly for 15 minutes was a very special moment for all - probably one never to be repeated in one's lifetime. They concentrated on the visitors to their land and then quietly, as did a further 8, then continue on their way.

Today was certainly a rare event in one's lifetime. Late in the day the sun shone brightly on the fascinating landscape we had spent the day on. This was however, not an end to our activities for the day as we will see.

Many of us in the bar-library, enjoyed going through our photos, and at 5.30 p.m. the bar opened. Dinner this evening was at 6.30 p.m. and soon after 8 p.m. we again boarded the Zodiac for a further addition to an already wonderful day.

The evening was beautiful and the sea, with a slight ripple on the surface, as we headed to Erebus Bay and positioned the ship opposite the landing area. All of us went ashore and David spoke briefly on the history of Hardwicke, after which escaping squadrons of sand flies, we followed a board walk to the Cemetery. It was very peaceful and one could not help but be moved by the place, which contained those whose families never saw again. Small native orchids, three green and one blue, were by the track and some nice photos were taken.

Returning to the start of the board walk, we all went for a nice walk through the Rata forest to inspect the "Victoria

Tree" with the 1865 inscription. This is the oldest physical remnant related to efforts to address the plight of shipwrecked victims in the Sub-Antarctic Islands. The "Victoria Tree" was created when an area of trunk was chiseled back to create a smooth working surface and was originally visible from the open sea.

More photos were taken and although no feral pigs were seen there was a lot of fresh rooting. Then it was back to the boulder beach at the landing and most was on board by 9.45 p.m.

With more activity planned for the morning and while the good weather lasts, we had an early night.

Day 5: Friday 12th January
Auckland Island – Musgrave Inlet; Tagua Bay
Noon position: Latitude: 50o 49.344'S; Longitude: 166o 16.365'E
Air temperature: 13oC Water temperature: 15oC

We rose this morning to a calm sea and all feeling much refreshed. At 5.45 a.m. the engine was started and soon we were on our way to the open sea and heading south toward Musgrave Inlet, named after Captain Thomas Musgrave of the Grafton washed ashore in Carnley Harbour in January 1864.

The morning was calm, temperature 13oC at 6 a.m. and low mist hung around the hills. Of interest were a large number of Giant Petrels busy with the carcass of presumably a small dead whale as too large to be a seal. By 6.20 a.m. we had passed the last of the islands and were in the open sea off the east coast of Auckland Island.

With breakfast over, five Zodiacs were launched and from 8–10.30 a.m., we enjoyed a superb cruise along two sides of the inlet. The first attraction was a Rockhopper Penguin colony beneath high cliffs below which were enormous basalt boulders. Some time was spent observing them jumping with both feet together, over the uneven surfaces and amongst kelp beside the shore, was large jellyfish with a purple center and common at other Sub-Antarctic Island localities. The light was ideal for photography.

We inspected a large cave although this was unable to be entered and further distinctive calls came from other Rockhopper Penguins along the shore. On the cliff faces were flowering *Anisotome*, *Stilbocarpa* and *Poa.*

We then crossed the inlet to the entrance and moved along the south side. In the water were numerous small red crustaceans and there was brief hilarity, when one retrieved by Kristen, was put in a boat. A Sooty Albatross with chick, 11 Cormorants and chicks, White-Fronted Terns and Kelp Gulls was observed and interesting jointing in the basalt rock.

A highlight was however, being able to enter three caves. The first had spectacular colours from minerals in the rock and we wondered how long the soil took to form on the rock and then be able to support large Rata and *Dracophyllum* trees. The second cave can only be described extraordinary, as the roof had collapsed and there was the amazing contrast between the green of vegetation about the rim, to the brown shades of the rock walls. Mike and David recalled how in 2014, when an opera singer sang an Aria, recorded by a member of the party on their cell phone. The third cave was long and very dark. The roof of this had the most amazing papers of white with brownish patches. The cave also had the most superb acoustics.

We then had a short crossing of the inlet to the ship which was reached at 10.15 a.m. The anchor was lifted and we began a two hour journey south past gently sloping hillsides with an olive-green to brown landscape ending in black cliffs, as we proceeded to Carnley Harbour which we entered at 12.20 p.m. Of interest were two rafts of Shearwaters, also sightings of Sooty Albatross and a pod of dolphins, although they were two far away to identify.

Following an excellent chicken green curry for lunch, two Zodiacs were put over the side and most of us took the opportunity of going ashore at Tagua Bay. This had a boulder beach and shells included limpets, the small paua (Haliotis Virginia) and various snails and mussels.

After securing the Zodiacs, we scrambled up to a terrace and made out way through Rata and other vegetation on a track that although having a few boggy areas, was generally easy walking. A Tui and a few Bellbirds was present however there was no sign of the New Zealand Falcon or Yellow-fronted Parakeet, which have been previously seen here.

The World War II Coastwatcher station is in total disrepair. Boards, window glass and rusting iron are scattered about the site. A few tins in the derelict were labelled Oatmeal, Rolled Oats, Tapioca, Raisins, Sultanas, Apples and Tea. David and Agnes who interpreted for the French folk with us, then gave a brief outline on the history of the station. Most of us continued the short stretch to the lookout hut that has been restored by the Department of Conservation. Here a large male sea lion was present and a female which decided to head back to the sea.

Soon we were again at the landing and back onboard. The anchor was lifted and we went up the harbour to inspect from the ship, the site of the wreck of the Grafton in January 1864.

This is one of the epics of small boat survival and came down to leadership of Musgrave and Raynal. Our position was 50o47.612'S 166o02.730'E and the ship now turned and we were heading back down Carnley Harbour. A large shoal of crustaceans ("krill") such as observed earlier was seen and we slipped past the dramatic virginal landscape, to begin our journey to Macquarie Island. A small pod of dolphins was seen off the Auckland Island east coast but not identified. The day continued to be fine and sunny; rare for this part of the world.

Our visit to Auckland Islands had really been superb and was rounded off with great frivolity in the Bar/Library, followed by a beautifully plated meal, with very tender lamb strap and excellent Chatham Islands Blue Cod and both cooked to perfection. We will of course have to watch our waistlines and the expedition is not even a week underway.

Photo credit: A. Breniere

Day 6: Saturday 13th January
Southern Ocean en route to Macquarie Island
Noon position: Latitude: 53o 08.091'S; Longitude: 161o 49.319'E
Air temperature: 16oC Water temperature: 11oC

Having a northerly and following sea last night, meant that we have slept well and made excellent progress as we cross the Southern Ocean. Two whales were seen at 51o24.977'S 165o15.221'E but not identified.

We enjoyed a lie in and surfaced to a fine sunny morning and a confused sea with scattered white horses. At 8 a.m. we were over 3800m of water and at 52o39.888'S 162o48.323'E. Several albatross were accompanying us and included Wanderer, Southern Royal and Light-Mantled Sooty. Other birds were Cape Petrel and Shearwater.

At 9 a.m. Samuel advised we hope to reach Macquarie Island at 11 p.m. The ship although rolling a little still has a following sea.

David gave the first lecture at 10 a.m. 'Lost in the Mists', focused on Sir Douglas Mawson's Macquarie Island party in 1912-13 along with life on the island including personality problems and achievements.

It was, however, not a happy party as there were frequent clashes and the leader Ainsworth was unsuitable, as was Sawyer, one of the wireless operating staff. A shortage of food did not help matters and we were not all that enthusiastic at the idea, of eating Elephant Seal hearts stuffed with herbs then roasted, along with liver or kidneys. Extensive collections of seals, birds, plants and geological specimens were made, there were new soundings made off-shore, valuable meteorological records and the entire island was carefully mapped and the geology described.

By late morning we were over water 4200m in depth, on 230.8o, doing a respectable 12 knots and rolling up to 10o with the occasional roll in excess of this.

Agnes then gave her first lecture ‘Seabirds of the Southern Ocean’ at noon, when she described many of the birds we are likely to encounter. This was a timely and informative presentation as we already have a variety of birds about the ship.

Some of the aspects we learned, included a long life span (Royal Albatross can live up to 60 years), low breeding success, that they tend to be pelagic and spend much of their time at sea, are long distant travelers, have different sizes and social behavior, different methods of breeding and the various families mentioned was supported with excellent images taken by Agnes and Samuel.

Following lunch an important hour was spent on our bio-security before landing at Macquarie. During our time on Enderby and Auckland Islands, many of us picked up seeds in our clothing and footwear. It was therefore essential that none of these was transported onto Macquarie Island.

Arrangements were then made for us to obtain postcards although these will follow us home later as the Australian resupply vessel is not due at Macquarie until March.

We have on board people who have led and still lead an interesting life. One such person is John who lives at Port Douglas. Not only does he grow mangos which he slices, dehydrates and freezes, with sufficient to last all year, but he is also very much involved in Great Barrier Reef Legacy. Since 1995 he has undertaken the tagging and tracking of Minke Whales which head south to beyond Tasmania, White-Tip Reef and Tiger Sharks, Green Turtles and the Mollusc, the Chambered Nautilus. A remarkable photograph showed 26,000 Green turtles on a Raine Island beach.

Later in the afternoon we headed to the Lecture Room for a presentation by Dean; one of our staff. After a short trailer, we were treated to Dean’s one hour documentary “54o South Australia’s Sub-Antarctic – Journey to the edge of nowhere”.

The documentary focused on Dean’s field work during the 61st ANARE (Australian National Antarctic Research Expeditions) when he worked as a seal scientist and walked everywhere over the island during the course of this work. He found “Macquarie Island is a living test tube for the Southern Ocean” and that the west coast in particular, is “rugged and wild, yet full of life”.

A highlight was his visit under demanding conditions to Hurd Point with its population of 1.5 million Royal Penguins. It was over an 80 hour return journey, during which around 100 hours of film was obtained with his Sony EX1 Camera, although was edited back to one hour. It was an amazing and highly professional production with Dean providing much of the script.

Melissa, who departs the ship tomorrow, then spoke of her work during the rabbit eradication programme. This cost the Tasmanian and Federal Government AUD$26 million and was carried out in collaboration with New Zealanders led by Keith Springer, a former New Zealand Scott Base Manager.

There was an estimated 150,000–170,000 rabbits on Macquarie and these were destroying vegetation by grazing, destabilizing land including albatross breeding sites and were having an impact on burrowing birds and invertebrates. The work which involved five years of planning and five of baiting also had 22 dogs.

Melissa is now returning to “Macca” for post-eradication monitoring of sites with invertebrates. Other work relates to burrowing petrels.

Given the rolling of the ship, Bruce, Connor and the stewardesses, did a magnificent job with a further excellent

meal. The tender rib-eye steak with garlic prawns and duck fat potato was only part of an overall great nice menu for Ice Culture. With the ship taking some large waves, most of us secured our effects and had an early night. Tomorrow promises to be an excellent one for activity and new experiences.

Day 7: Sunday 14th January
Macquarie Island
Noon position: Latitude: 54o 34.145'S; Longitude: 158o 55.963'E
Air temperature: 13oC Water temperature: 10oC

Last evening we anchored in Buckles Bay at 11 p.m. It had been a dream run from Auckland Island and except for a little rolling during the night, we had a good rest.

This morning we rose to an overcast day with occasional light rain with the wind up and the ship rolling with the swell. The temperature 13oC and our position 54o30.268'S 158o56.745'E. North Head and the green hills stood out prominently in 1911, this setting was soon familiar to Mawson's five men, who would spend two years here; the location of his northern most base for the Australasian Antarctic Expedition 1911-14.

Macquarie Island has a long and very interesting human history with numerous ships having been wrecked on the island's exposed, rocky coastline. This history began with the discovery by Captain Frederick Hasselburgh the 11th of July 1810 and finding of the remains of an earlier ship. A gang of sealers with supplies was put ashore and at the time it was then estimated that there were between 200,000-240,000 seals, with in the first 18 months 120,000 skins taken. Between the years 1810-1819 there are a staggering 207 recorded ship visits.

In the 19th century Emerald Island was supposed to exist south of Macquarie, however, various searches for it were unsuccessful and the island may have in fact been an iceberg.

On 11 December 1911, Mawson had arrived at Macquarie Island from Hobart, on the *SY Aurora*. He wrote *"Macquarie Island…was sighted on December 11…This habitable island has a length of over 20 miles and greatest breadth of 3½ miles. The chief vegetation is tussock grass and Kerguelen cabbage, but it abounds in a truly wonderful population of birds and animals. At one time it was a favourite haunt of the valuable fur seal, but for fifty years or more only odd specimens have been seen. The ruthless slaughter by the early settlers is responsible for this almost complete extermination. Sea elephants, however, are numerous, the bulls being met with up to 20 feet in length and weighing some 2 tons."*

Much has been written about Macquarie Island however, it is useful to remind ourselves of a few facts.

Macquarie Island has an approximate length of 34km, a width of 5km, an area of 128km2 and an annual rainfall of 905mm. In 2016, 1200mm was recorded. It rains for 308 days of the year hence the nickname of "The Sponge". Mt Hamilton (433m) is the highest point.

On Macquarie the rocks are mostly 10-30 million year basalts which include pillow lavas formed when super-heated lava is cooled very quickly under the ocean. Every rock on the island was formerly on or deep below the sea bed. Of those formed at depth, the rocks are 2-12 million years old and some can be seen at Sandy Bay. On the plateau in the north are ultramafic rocks formed at least 6km below the earth's surface.

Geologically, the island is highly significant, as it is the only known area of oceanic crust in relatively pristine condition and independent of any other continent. The World Heritage rating was based on this unique geology. Along the coast rock "stacks" are remnants of a former coastline.

The island is rich in bird life with Antarctic and Fairy Prions, Northern and Southern Giant Petrels; Grey, White-headed and Blue Petrels, Macquarie Island Shags (Blue-eyed cormorants), Light-Mantled Sooty, Wanderer and Grey-Headed Albatrosses and Northern (Brown) Skuas.

Insects are abundant, however, in contrast, there are only 45 vascular plants (have vessels conducting fluids – water plus mineral salts and food) of which three plants, are endemic to the island. Because the island is too far south, there are no trees or shrubs and the flora is dominated with mega herbs, tussock grasses and ferns. Prominent plants include the tussock (*Poa foliosa*); Macquarie Island "cabbage" (*Stilbocarpis polaris*) and the Macquarie Island daisy (*Pleurophyllum hookeri*).

As Sir Douglas Mawson summed up Macquarie when he wrote in 1919
"This little island is one of the wonder spots of the world."

At 9.15 a.m. (7.15 a.m. Aussie time) our Australian friends Melissa, Kristen and Aimee with their gear, climbed into a Zodiac and were taken by Samuel to the landing where they were met by AAD staff and a quad bike. The wind was up to 23 knots however, sea conditions were not too rough although from the ship, we could see waves breaking on the rocky shore.

Connor drove a second boat and both then returned with two Tasmanian Parks and Wildlife Service Rangers (Head Ranger Andrea Turbott and Penny) accompanied by, Emry, a Bureau for Meteorology, technical engineer, and Cliff, the storeman. There are at present, 25 staff on the AAD station.

At 9.40 a.m. we lifted the anchor and proceeded south to Sandy Bay (54o34.053'S; 158o56.067'E), also on the east coast of the island and anchored. Soon King and Royal Penguins were seen swimming about the ship and we had good views of their method of locomotion.

We assembled in the Lecture Room at 10.10 a.m. for a briefing from Samuel who gave an introduction concerning the history and features of Macquarie Island. An interesting aspect is that on Bellingshausen's landing 28 November 1820, there was no naturalist and most of what we know of the island, including the first map drawn, was from the artist Pavel Mikhailov. Many wild dogs and cats were reported and two flightless parakeets (now extinct) were taken from the island.

Andrea then explained the protocol for our landing and stressed biosecurity which is of even greater importance since the eradication. Samuel then outlined what we hope to do and the weather expected over the next two days.

Lunch today was at noon and after tucking into a fine dish of pasta with carbonara sauce, the landing operation was underway by 1.15 p.m. We had no sooner arrived than the rain was falling. This did not dampen our spirits as we were about to enjoy a special experience. Andrea gave us a briefing and we were then left to our own and to make the most of our visit to Sandy Bay.

One could not help but immediately become as part of the local penguin and Elephant Seal domain. There were two clusters of Elephant Seals lying side by side like logs at a saw mill. From time to time a large male would challenge another as they competed for space and presumably warmth. Their attitude can be best described as "violent", for they proceeded to grunt and thump the chest against the opposition's while at the same time, emit a deep resonating sound from the inflated proboscis. Perhaps they had returned to the same beach where they had been born and were simply cementing their claim?

King and Royal Penguins were everywhere and they came to us. We had an excellent opportunity to observe the

birds at close quarters and a good photographic record was obtained. The sound of 40,000 Royal Penguins at the nearest large colony was deafening and we wondered how each bird on leaving the colony to go fishing, how on return it knew where its home was.

Overall there is 1.7 million of the species at “Macca” as Macquarie is affectionately known. With egg-laying now over, there were numerous well developed chicks about one month old and near the colony eggs which had a faint bluish tinge, had been dropped with the contents eaten by Skuas. A well-developed Skua chick near the excellent board walk was about a month old.

We could also see the extent to which eradication had resulted in regeneration of the tussock, *Anisotome* and other plants. Staff member David H. said he had noticed an increase in growth since his last visit a year ago and that the island appeared much as he remembered it from the first visit in 1993.

The King Penguins were sitting on eggs and small chicks were seen from time to time. Adult birds were also at various stages of moulting and many were content to sit where they were. Others were sleeping. The moulting process takes 4-6 weeks and the birds tended to huddle in a group without moving, although the occasional bird was seen removing old plumage. We were also able to enjoy at close quarters other birds such as Giant Petrels, Skuas and Kelp Gulls and birds in flight included Sooty Albatross and a white morph, Giant Petrel.

This was nature observation that could not be better and we agreed that there was no substitute for seeing wildlife in the natural environment. While photographs are a good record, as Andrea said, they are “only a memory” and perhaps Jane’s comment “This is the most amazing place I have ever seen” was typical for many of us. Jane and Warren have always been “wildlife enthusiasts”. There was so much to see and enjoy. Even on the course sandy beach were bones of long dead penguins, seals and interesting pebbles, from Macquarie’s distant geological past.

By 5 p.m. and a bit damp, we were all on board, the wind and swell were up and the ship then relocated to Buckles Bay. On return of the last Zodiac to the ship at 5.30 p.m. a pod with five Orca whales was seen.

Some amusing comments from a previous expedition relate to Elephant Seals and penguins.

‘I did not expect to find a clone of my boss and such a big mouth. I took a photo’
‘Makes you want to go on a diet’
‘Elephant Seals have come to bed eyes’ and
‘The Royal Penguin colony reminds me of Beijing’

The bar was a very lively place this evening and the dinner this evening was superb as always. The smoked salmon blinis with dill crème fraiche followed by either the Chicken Marbele or Denver leg steak followed by lovely sticky date pudding which rounded the day off perfectly. Those who enjoyed the Denver steak all agreed that it was the finest venison that they have ever had.

This evening we have 25 knots of wind blowing and five new guests from the station, who are travelling with us to Antarctica – Dr Cath King; Jess Holan; Cath Dickson; Ro Hannaford and Dr Julie McIness. They arrived like bumble bees in their fine yellow and black jackets and had been working on soil remediation and the effects of climate, Skua research and the *Azorella* cushion plant. It had been a fantastic day and more are looked forward to.

Photo credit: A. Breniere

Photo credit: D. Miller

Day 8: Monday 15th January

Macquarie Island – Buckles Bay, Lusitania Bay and Southern Ocean – en route to Antarctica

Noon position: Latitude: 54o 43.054'S; Longitude: 158o 51.969'E

Air temperature: 8oC Water temperature: 9oC

We had a reasonably comfortable night and this morning it was fine with a temperature of 3oC and westerly blowing up to 40 knots at 8 a.m. with a good surf breaking along the beach. Occasionally the ship rolled to 20o.

Following discussion by Samuel with the Captain, the anchor was lifted and before 9 a.m. the ship relocated to shallower water, although surf was still breaking along the beach.

The aim was to try and go ashore at 9.30-9.40 a.m. and while assembled along the deck, one or two Orca was seen. However although the anchor was lifted and the ship changed position, intermittent swells coming in and occasionally of two metres, made it too risky and it was better to be safe than sorry. The landing was called off and at 10 a.m. and with the islands green landscape to starboard, we headed south on a two hour journey to Lusitania Bay, home to 100,000 breeding pairs of King Penguins.

Lusitania Bay along with Lusitania Anchorage was named in February 1822 after a 30 ton sealing vessel, by Captain Langdon RN. The infamous New Zealander, Joseph Hatch, placed here in 1899, an oil processing plant, with a shed containing three steam digesters. Coal-fired and using steam, these operated like a giant pressure cookers and with men working 12 hour shifts, up to 2000 penguins could be processed at a time with each providing ½ litre (one pint) of oil.

By 1894 the colony was almost non-existent. Three years ago one digester toppled over and as Rodney Russ once said, “Eventually the digesters will rust away and the penguins will have the last laugh.” Perhaps as one of the guests said, “Perhaps an irate penguin kicked it over.”

The anchor was lowered in 30m of water at noon and we were then able to visit the bow and enjoy watching the penguins and their antics about the ship there were scores of them. This was our final opportunity to perhaps see the species and certainly in such large numbers. Some were lying briefly on their side or back and all were curious at our presence. Using their flippers, they were able to gain an extraordinary speed when swimming and on starting often left a large trail of bubbles.

Lunch today was pizza with three excellent varieties – vegetarian, chicken and meat accompanied by a nice fresh salad and finishing up with sultana muffins. By 3 p.m. the engine was started, the anchor raised and with the ship now beginning to roll a little, we prepared to head towards Hurd Point at the bottom of the island. Thirty minutes later, we were facing the Southern Ocean and will do so for the next three days.

Samuel advised that the wind from the west is expected to reach 25 knots today and will rise to perhaps 30 knots tomorrow. This will strike us on the beam and we accordingly organised our cabins and decided to have as much rest as possible.

Today the Iceberg Sighting Competition was announced. The rules are simple – must be the size of a double-decker bus above sea level; it must be sighted visually and not by radar and no Staff or Crew can enter and bribes are unacceptable.

At 5 p.m. many of us assembled in the Lecture Room and enjoyed hearing from each of the scientists who joined the ship yesterday, a brief account on their work and this was followed by the very good documentary on the eradication programme in which Melissa who left the ship yesterday, was part of the dog handling team.

Only a small group gathered in the Bar/Library and this evening, the ship was rolling only slightly. After an excellent expedition dinner, as with last evening most of us retired early to the cabin. Quote for the day. One of our guests requested “dry lemonade” to which Jan standing nearby said “it’s an empty lemonade bottle”

Photo credit: A. Breniere

Day 9: Tuesday 16th January
Southern Ocean
Noon position: Latitude: 57 o 44.933'S; Longitude: 155 o 26.409 'E
Air temperature: 6 oC Water temperature: 5 oC

198 years ago today, Admiral Thadeus Bellingshausen discovered Antarctica – 16/17 January 1820

We rolled a bit during the night, although this was not too unpleasant this morning at 8 a.m. it was blowing about 30 knots from the north-west. There was a confused sea with a few white horses and the occasional splash over the bow. Our course was 213.4o and position 57o12.050'S 156o07.233'E.

The water and air temperature was 6oC and a brief spell of fog over the sea indicted we may be approaching the Convergence. Birds sighted included a Wandering and Southern Royal Albatross and a small fast flying prion.

At 9.45 a.m. we assembled in the Lecture Room for the excellent documentary The Silence Calling, based on the 50 year Australian Antarctic programme history compiled by Tim Bowden. This is an excellent book and the film as with the book traces the many developments including an era with huskies that will not happen again.

At noon we assembled in the Lecture Room for a presentation by Samuel on "Penguins". This was a superb lecture supplemented with excellent photographs, mostly by Samuel who began with a history of early sightings by Vasco de Gama and Ferdinand Magellan both of whom did not know what they were, the French explorer, Jean Baptiste Bouvet, who reported penguins 33 years before the British mariner James Cook. Cook, however, during his voyages of discovery, described seven of the 18 species of penguins and the French explorer, Dumont D'Urville, went as far as naming a penguin after his wife Adéle; now the Adelié Penguin. The oldest description of a King Penguin is from 1768 by Thomas Pennant.

This was followed by discussion on the evolution of penguins with the fossil record indicating ancestors lived on land 30-40 million years ago. These were two metres high and weighed about 100 kg with fossils found on the

Antarctic Peninsula and in North Otago New Zealand.

We then learned about the biology and ecology of some of the various species, where they are found, and adaption to life in water, such as having heavier bones, the special uropygial gland which produces as oily substance transferred by the beak for waterproofing and the thick plumage over a layer of fat. Aspects of reproduction, physiology, diet and predation were covered.

At conclusion of the lecture, we were asked if we would be prepared in our life time, to be like an Emperor Penguin and fast for eight years, walk 40,000 kilometres and like an Adelié be able to scratch our head with a foot.

At 1.15 pm we were ready for lunch and today an excellent beef stew with a pastry was served along with the usual fresh salad and a cake slice for desert. Most of us then had a rest as the sea is still rough and striking the ship on beam.

Soon the Antarctic Convergence will be crossed. This is a waving curve continuously encircling Antarctica and which varies in latitude seasonally, where cold, northward flowing Antarctic waters meet the relatively warmer waters of the sub-Antarctic and lies in the zone of westerly winds. The Convergence is essentially a temperature and salinity boundary of the Southern Ocean and is a feature of great interest to oceanographers and biologists. The water temperature falls to about 4oC and with the air temperature warmer, there is often a period of fog over the water surface and may also have a concentration of sea birds. The boundary moves north or south according to the season.

The Antarctic Divergence a further important oceanographic feature, is the region near 60o South of the Antarctic Polar Front where high salinity North Atlantic deep water, upwells from 2500m to just below the surface and mixes with low-salinity Antarctic surface water. This oceanic boundary lies at 60-65o South below the eastward flowing Antarctic Circumpolar Current and the westward flowing Antarctic Coastal current.

Our final lecture for the day was given by David and focused on the Unveiling of East Antarctica, the region to which we are heading.

The lecture was very detailed and covered 185 years of history, beginning with the notion put forward by the Egyptian geographer Ptolemy in 150 AD that the world was symmetrical and that it should contain a southern continent of “unknown south land – Terra Australis Incognita” or Antarktikos to balance the land in the north known as Arctic after the constellation, Bear. The lecture was concluded with the International Geophysical Year 1957-1958.

Of interest is that 198 years ago today, the Russian Admiral Thaddeus Bellingshausen on 16/17 January, discovered Antarctica. This was confirmed on 6 February when he wrote

“Behind icy fields of small ice and islands, is to be seen a continent of ice, whose edges are broken off perpendicularly, and which stretches as far as the eye can see, becoming higher towards the south in the same way as the coast.”

The Bar/Library attracted a small number of enthusiasts and some of us indulged in the game Yahtzee.

The evening meal was again a treat with the option of having either duck breast with potato gnocchi or chicken cordon bleu with soft polenta and honey mustard cream sauce. As always, Bruce and Conner cooked a superb meal and with the sea picking up, many of us headed to the bunk.

Day 10: Wednesday 17th January
Southern Ocean, first icebergs and Humpback Whales
Noon position: Latitude: 61 o 14.402'S; Longitude: 161 o 55.817'E
Air temperature: 3 oC Water temperature: 5 oC

We had a rough character building ride last night, but could have been worse and at 3 a.m. we were in the waters that come under the jurisdiction of the Antarctic Treaty. This means that no waste or any other materials can be discharged into the sea.

At 4.00 am. the first iceberg was picked up on the radar at 60o01'S 153o18'E.

This morning at 7.40 a.m. we were at 69o40.683'S 152o175.34'E. on a course of 216.3o and doing 11 knots. Wind was blowing at 31 knots from the south-west and a lone Southern Royal Albatross was seen.

Because of the conditions and to make it more comfortable for breakfast the Captain changed course to a south-east track on 218.5o. We were now near the East Indian Ridge and water depth was 2557m. At 9.30 a.m. we changed course again to 211.2o for Commonwealth Bay and may arrive tomorrow evening. An improvement in the weather is forecast.

The documentary Frozen Planet was shown at 10.40 a.m. although some of us also preferred to have a rest. Most of us however enjoyed the usual fresh salad and chili con carne for lunch and at 2.30 p.m. the first episode of Longitude was screened.

Longitude
Longitude is a geographic coordinate that specifies the east-west position of a point on the Earth's surface. It is an angular measurement, usually expressed in degrees and denoted by the Greek letter λ. The prime meridian is assigned the value of 0 Degrees and runs through Greenwich England. The Meridian for the west of the prime meridian is measured in degrees west and likewise those to the east of the prime.

In the 18th Century the only way to navigate accurately by sea was to follow a coast line all the way which would get you from Europe to the West Indies or the Americas. Observing the sun or stars would give you latitude, but not the longitude unless done in conjunction with a clock that would keep time accurately at sea but no such clock existed.

The British Parliament then set up a substantial prize to find the longitude. In the film, 18th Century. John Harrison builds a marine chronometer for safe navigation at sea and in the 20th Century. Gould is obsessed with restoring it and devotes his life to the project, with his marriage failing in the process.

With calming seas, it was a good chance to catch up on some sleep and to tidy the cabin. Soon we were, however, on the Bridge and enjoying at close quarters, our first iceberg and whales. One berg was well off the port bow and the other with a slightly con cave surface, had distinctive ice layers and a cavern and crevasse with the most superb electric blue ice. Waves were washing along the side and in places the berg was undercut.

Numerous small pieces of ice were in the water along with a flock of 14 Antarctic Prions and two Sooty Shearwaters. Many photographs were taken and the position when we passed the berg was 62o13.259'S 150o44.366'E. Jane won the prize for Time and Ronny for Latitude. Dr Suzanne won the staff competition for Time – 6 p.m.

We enjoyed excellent views of the two Humpback Whales seen before the berg and included a flipper, tail fluke and under surface with markings clearly visible. We expect to see bergs on a daily basis and certainly more whales.

Photo credit: A. Breniere

Day 11: Thursday 18th January
Southern Ocean
Noon position: Latitude: 64o 40.566'S; Longitude: 147 o 31.813'E
Air temperature: 3oC Water temperature: 1oC

Our third day at sea and this morning we had a grey sky with wind from the west reaching 42 knots. At 8 a.m. we were at 64o08.47'S 148o14.950'E. The air was at 3o, water at 1o and a small number of birds about – Wandering and Light Mantled Sooty Albatross; Antarctic Prions and Sooty Shearwaters. Dean observed several whales blowing, although these were too far away to identify.

At 9.30 a.m. we assembled in the lecture room for a briefing given by Samuel. This began with an introduction and short movie on IAATO (International Association of Antarctic Tour Operators) and reference to the 1991 Protocol (Madrid) for Environmental Protection, to the Antarctic Treaty with objective to protect the natural environment plus its science and aesthetic values.

We then had outlined ice charts and the present ice situation. These were very well explained and we had a better idea on what we expect to be confronted with. The darker the colour the heavier the sea ice on the surface.

The region Terre Adelie which comprises the French sector was then discussed followed by what we hope to achieve over 5-7 days, in the region of the Mertz Glacier, Cape Denison with Mawson's Huts and the French station Dumont D'Urville.

From here to the Balleny Islands is 1000km which gives some idea of the immensity of even this small area of

Antarctica. So it is fingers crossed and it seems the weather may be kinder to us and to quote Captain Igor, *"We go, we look"*. The staff then organized for us an appropriate Antarctic jacket size and these were distributed before lunch.

By noon the sun was beginning to appear although the wind was still at 37 knots. We were moving along nicely at 10.3 knots, we had a nice berg passing on the starboard side with a small deep blue bergy bit, beyond reach of cameras on the Bridge. A further two bergs were well off to port.

Why the ice is blue.

Glaciers, shelf-ice, and icebergs, often exhibit crevices and cracks omitting large areas of deep, iridescent blue, such as we saw yesterday and can be enhanced by low cloud or fog.

Snow particles which can be reflecting or refracting, appears white because air trapped between ice crystals scatter reflecting all wave lengths of sunlight back into our eyes and seen by us as white. Compacted ice deep in a glacier or glacial ice sheet retains small air bubbles which scatter light allowing for the penetration of sunlight deep into the ice. Ice crystals absorb six times as much light at the red end of the spectrum and since the ice ab sorbs most of the red light, only the blue end of the spectrum remains reflected back at us to see.

Bird life this morning has included a dark brown Northern Giant Petrel; Campbell's Albatross, fast flying small prions. Later the first Antarctic Petrel and Antarctic Fulmar was seen – many birds for each. However just before 1 p.m. a pair of Humpback Whales of which one was white, passed close to the ship. The position recorded by Dean was 69o50.71 S 147o18.71 E.

We had a good lunch with chicken legs and chips and after a rest the Sea Shop opened at 2.15 p.m. giving us an opportunity to obtain a suitable memento.

At 4.45 p.m. David gave his second presentation on Sir Douglas Mawson - Stalwart of the heroic-era.

This began with Mawson's early life and education followed by his service on Shackleton's British Antarctic Expedition (1907-09) when Mawson participated in the first ascent of Mt. Erebus and then as a member and near the end, as leader, of the Magnetic Pole Party.

Mawson's AAE was then the focus and was considered appropriate since we hope to visit Mawson's huts. Mawson's marriage to Paquita Delprat and his participation as a Major during World War 1 followed. He returned to the University of Adelaide where he was appointed Professor of Geology.

Mawson and his expeditions, has been the subject of many books and a list of some were given. To conclude the presentation, reference was made to David Day's book and of his debunking of Mawson.

By late afternoon there was still an occasional roll of the ship. However, winds are supposed to move to the east tomorrow and the weather should be better. This evening the sea had calmed a lot. Over a beautiful dinner which included Pavlova for desert, where else could one gaze out a dining room window and see majestic icebergs.

All going well tomorrow will be an expedition day, so here's hoping for visits to Mawson's huts and the station Dumont D'Urville. Part 2 of Longitude was shown and about 9.15 p.m. three, or possibly four, Orca was seen.

Day 12: Friday 19th January

Southern Ocean – Ice edge, towards Commonwealth Bay

Noon position: Latitude: 65o 49.703'S; Longitude: 142 o 45.059'E

Air temperature: 2oC Water temperature: 0oC

At 11.30 p.m. last evening we reached the ice edge and were off what is left post calving, along the coast from the Mertz Glacier. However visibility was not good and the ship turned back at midnight. We had hoped to creep into Cape Denison, past B09B perhaps from the Ross Ice Shelf.

At 7 a.m. we were at 65o46.631'S; 144o41.869oE. The air was at 2oC, water 0oC and there was no wind to speak of. Well to starboard we saw two bergs, one having three blue caverns. A Fin Whale was also noticed.

We had a much calmer night and at 7.30 a.m. the ship was making steady progress over a calm sea with no ice and in foggy conditions. We now began moving west to north-west, for a further attempt around the outer (northern) end of the B09B berg that originated from the Ross Sea and to a new way point at 1pm.

During the evening, a comedian added to the white board, a penguin with binoculars, saying "Quick there is a ship. Push the ice back in!"

At 9.45 a.m. Dean gave an exceptional lecture on whales. This began with considering what is a whale? They belong to the Order of Cetacean which has two sub-Orders – Mysticeti the baleen whales and Odontoceti the toothed whales and dolphins.

Discussion then focused on evolution from a land animal from a land carnivore 50 million years ago with evidence including, traces of body hair, production of milk and vestigial bones in the body that once represented hind limbs and a pelvis. Whales then adapted to life at sea with flippers evolving from forelegs and development of rear flukes for vertical movement. A blowhole on top of the head is for breathing and vertebrae are fused to the skull to enable swimming.

Today the whales have evolved into the baleen whales which filter food and toothed whales that are carnivores. Adaptions include throat pleats, the ability receive sound via the throat region, echolocation mainly in deep divers such as the Sperm Whales in which spermaceti, a waxy substance, is thought to regulate buoyancy during deep dives and large vessels become flush with blood and rich in oxygen that in contrast to diving when the heart slows, then aids surfacing.

Dean then explained reproduction with females having several mates during the season. Migration to winter to warmer waters of the Pacific is a time when the breeding takes place.

Diet was then discussed, with baleen whales known to consume large quantities of krill (*Euphasia supeba*), other zooplankton and copepods while toothed whales primarily eat fish and Orca for example, fish.

Interesting statistics were shown for several types of whales and excellent diagrams indicated specific features such as the dorsal fin and the type of blow displayed by various whales. This will aid out identifications. Dean's lecture finished with two wonderful films in which he appeared, featuring the tagging of small whales and of a pod of Orca that persevered before taking a Humpback Whale calf.

At 11.35 a.m. a number of Adelie Penguins, the first of several small groups were seen, before many of us attended a documentary titled Mawson – Science and Survival. Mawson was very much one for science and knowledge but realized the need to push boundaries of endurance to achieve this goal. This was an excellent production (2012) and included wonderful film shot by Frank Hurley. The AAE paved the way for Australia's claim for 42% of Antarctica (6 million km2).

After lunch the sea was still calm and on the Bridge the value of radar was evident. With B09B and smaller icebergs that appeared out of the fog, we endeavored to find a passage to Cape Denison. Changes in our track were conveyed by the Captain to the helmsman and also to one of the screens on the chart table.

By mid-afternoon there were pieces of ice and larger bergy bits either side of the ship and the fog was still with us. We had a good view of seven Adelie Penguins on a floe and several Snow Petrels also provided interest. One could spend hours enjoying the ice as we move further south.

Later in the day we were making steady progress toward Commonwealth Bay. There were still occasional large pieces of ice present and we hope to arrive at the bay about 2 a.m. tomorrow. The afternoon had been a relaxing one with the opportunity of enjoying fresh air out on deck or to work on one's expedition diary and photo record.

At 6 p.m. snow flurries were coming and going so they not settle long and thirty minutes later, a large berg was to port. An interesting berg as it had a very undulating surface, suggesting it may have come from a glacier. One end had three large caverns. A further berg to starboard was a well-worn example with several Adelie Penguins. We were this time at 65o50.251' S and 142o45.003 E.

The evening meal was superb and Connor was congratulated for his broccoli and blue cheese soup, as was Bruce with the gorgeous salmon and braised beef; whichever dish one chose.

By 8.30 p.m. we had floes passing the ship and we were changing position again with a further approach to the south being tried again in the morning.

And so ends another wonder expedition day.

Quote for the day

"Of magic doors there is this. You do not see them, even as you are passing through."
Anon

Photo credit: A. Breniere

Day 13: Saturday 20th January
Southern Ocean – Ice floes en route to Commonwealth Bay
Noon position: Latitude: 66o 01.335'S; Longitude: 148o 57.151'E
Air temperature: 2oC Water temperature: -1oC

On 20 January 1912, a start was made to build the hut at Cape Denison.

Last evening heavy ice was encountered about 9 p.m. and at 10.30 p.m the ship turned off the engine, and we drifted on largely ice-free water. There was a light fall of snow and we enjoyed a comfortable night. This morning with an east wind forecast, we continued the voyage as we try and find a way into Commonwealth Bay and to Cape Denison.

It was foggy again and the sea had scattered growlers and small pieces of ice. At 7.25 a.m. there was an excellent view of a Fin Whale passing the bow at 65o48.560'S; 142o 48.327'E. A few Adelie Penguins were seen as we made our way at 8.6 knots. Some of the crew enjoyed a snow fight.

At 9.45 a.m. Samuel assembled us in the Lecture room where with the use of ice maps, he explained what we have been doing and that of three large icebergs, one 50 km long, has been grounded for last past decade. The ice is moving north and fortunately we have no wind today and we can expect 20-25 knots from the east.

Agnes gave a very appropriate lecture at 10.30 a.m. titled, 'Icebergs – cathedrals of ice'. The lecture began with discussion on the three types of ice – glaciers on land, sea ice in the water and permafrost which is frozen ground.

About 10% of the land area is ice with Antarctica having 13 586,000 km2. We then learned how snow which is 90% air, turns to granular ice, followed by Firn, then glacier ice which has 20% as air bubbles. The role if waves, tides, weight of the ice along with the amount of snow and ice accumulation all contribute to formation of an iceberg.

The International Ice Patrol Classification, was mentioned with following brash ice of a few centimeters thickness, to growlers – greater than 1m; bergy bits 1-5; small ice bergs 5-15; medium icebergs 15-45; large ice bergs 45-75 and very large ice bergs 75 +.

Ice shelves mentioned included the Ross Ice Shelf 472,960 km2 followed by the Ronne at 422,420km2. Icebergs originating from ice shelves and glaciers are described according to one of four quadrants in which they have originated. The largest so far calved from the Ross Ice Shelf in March 2000. It was 10,900km2, and estimated 2,271 000 000 tons and measured 995km x 37 km. The extent of ice below the surface of the sea depends on various factors such as density, compression and temperature. About 7-9/10ths is below the water, so a berg with 20m above the surface can have 250m ice below.

The lecture concluded with reference to 97% of salt water and only 3% of fresh water being on Earth. Icebergs and glaciers amount to 68.7% and ground water 30.1%.

At 11.15 a.m. we began to move into an area of concentrated ice with very nice birds, Adelie Penguins and seals. Two flocks of beautiful Snow Petrels had 10 and 30 birds, a flock of 5 Antarctic Petrels and seals which included three Crabeater, one Weddell and when by the ice edge, an excellent view of a Leopard Seal (a second was seen later) that from the colour of its excrement, may have been feeding on krill. Samuel pointed out that it is unusual to see a Leopard Seal so far from the coast, as they normally are close to penguin colonies.

Most of us if not on the Bridge, were in the bow or along the decks. Excellent photos were obtained of the wildlife. At 1 p.m. a further four Crabeater Seals was seen.

As the sun was trying to break through and after an excellent lunch with delicious hot soup and bread rolls, at 2.15 p.m. five Zodiacs were put over the side and we had a most enjoyable cruise amongst ice floes. As we left the ship a Minke Whale briefly appeared and while amongst the floes we had a good view of Orca. The pod included two males, one having an enormous dorsal fin and three females. At first the Orcas headed in the direction of our Zodiacs but then turned away.

We also had exceptionally good views of Adelie Penguins, with at least 40 on one floe and showing the least concern when we pulled up beside the floe. Samuel was interested to observe two from last year's breeding season, each with a white chin and line just below the eyes.

After four days on the ship it was good to have an hour on the water amongst the floes with the beautiful shades of blue. Numerous Snow Petrels flew about and three were seen eating small ice fish that live beneath the floes. Other bird sightings included a Giant Petrel, Wilson's Storm Petrel and Antarctic Petrels. On our return to the ship, at 3.30 p.m. five Crabeater Seals were seen.

At 5 p.m. we turned north and were clear of the ice. We will then head west in the direction of the French Dumont D'Urville Station.

Being Saturday, there was music and much frivolity in the Bar this evening with Wally and Dean giving a demonstration of pole dancing. A beautiful iceberg with caverns at the water line attracted the attention of many of us.

To conclude today's entry it is interesting to see we have two artists with us. In the very early days, an artist was always an important person in the expedition team and much of what we know from expeditions such as that of Ross in 1841, is through the efforts of the artist. Elizabeth has been completing with water soluble ink pencils, a wonderful record of plants and the landscape on the sub-Antarctic islands we have visited. Mike has his interest in birds, and has been using traditional water colours.

Overheard on the bridge:
Captain – "*Do you have a plan?*"
Samuel – "*Yes*"
Captain: "*I like this one*".

As always we had a beautiful meal which included Barramundi an Australian fish and beef rib eye steak. At 10 p.m. the ships engine will be stopped and we will drift until tomorrow, thereby having a comfortable night.

Day 14: Sunday 21st January
The ice edge with Orcas and Emperor Penguins
Noon position: Latitude: 66o 06.815'S; Longitude: 140o 44.755'E
Air temperature: 0oC Water temperature: 0oC
St. Agnes Day in France and Barbora's birthday. Congratulations

Anniversary of the first landing by Dumont D'Urville 178 years ago 9 pm. 21 January 1840

Light snow had fallen during the night and we had a comfortable evening. The engine was started at 6.45 a.m.

and course now set was 233.3o

At 7.45 a.m. our position was 66o04.932'S 141o33.717'E, the temperature was 0oC and wind 14 knots although was expected to increase to 20-25 from the east during the afternoon. A whale seen to blow, was too far away to obtain positive identification.

By 8 a.m. we had numerous large icebergs, each emerging as a ghostly shape out of an overcast horizon. Each berg has something different about it, not one is the same and they have been a source of fascination over the last few days.

An hour later we were alongside the ice edge and had begun moving to north of the French Antarctic station.

An hour later we were alongside the ice edge and had begun moving to north of the French Antarctic Station. The morning proved to be a most wonderful time for nature. Numerous Adelie Penguins with some in groups on floes or swimming were seen and as we skirted along the ice edge with in places extensive brash ice and large areas of floes, bergy bits and the occasional small to large ice berg.

At 10.45 a.m. Samuel sighted our first Emperor Penguins one of which was swimming and we were able to obtain good photos of them. A further molting emperor was seen at 11.30 a.m. and in total, between 10-15 emperors, many of which were swimming. In addition, Gil thought he may have sighted a further five, some distance away. Other birds seen were a Cape Petrel and a Skua.

It was wonderful outside on the deck and as light snow fell, we enjoyed the pristine, fresh air and almost feeling as if a part of the very special vista of ice before us and just as the explorer Ernest Shackleton who wrote in 1909,

"We are now reveling in the indescribable freshness of the Antarctic that seems to permeate one's being".

This has to be one reason why many of us have been drawn back.

At 12.15 a.m. five Orca were sighted to starboard and gave us superb displays of their swimming on the surface with excellent views of the mammals colour and for one male, its huge dorsal fin, as we began our dance to the Orcas with Starboard to Port, Port to Starboard, as we moved across the Bridge from one side to the other, or around the deck.

By now it was snowing lightly and the wind was up as predicted. The Captain stopped the engine so that we could enjoy lunch in comfort and we did just that with excellent salad, Monkfish (a bizarre-looking deep water species), tartare sauce and very good waste line enhancing chips.

At 2.15 p.m. we began to go west and a short time later were treated with the presence of an Emperor Penguin on the ice edge. Many photos were taken of the magnificent specimen.

By now we were over water with a depth of only 150-200 m which probably explained the presence of some wonderful large tabular bergs, which appeared out of the mist and light snow. Layers of ice were prominent in one ice face and some bergs were so large, they faded into the mist from which they had appeared.

At 3.30 p.m. we left Australia's Antarctic Territory and were briefly in the Territory of France – Terra Adelie, which has a coastline of roughly, 300km and is about the same area as France.

At 4 p.m. we joined Samuel in the Lecture Room for his special anniversary lecture titled, ‘a glimpse at the French History in the Southern Ocean and in Antarctica’.

The lecture began with outlining the early notions on the presence of a southern continent. It then traced the 1675 expedition of Anthony de la Roche followed by the first French scientific expedition in 1738 by Bouvet de Lozier, also the first expedition to report on Antarctic penguins that looked like a duck and swam like a fish. In 1822 a landing was made on Bouvet Island now named BuvetØya and in 1772 Kergulen reached Ile de France.

Other early mariners included Marion du Fresne who was followed by Dumont d’Urville who persuaded King Louis Philippe to sponsor an expedition that should go further south than James Weddell had. The first landing was made on an island and the region was named by d’Urville Adelie Land on behalf of his wife Adele, then the Adelie Penguin was named after the region,

France was not active in Adelie Land for some time until after finding a newspaper in the street, the region was then reclaimed by Paul Emile Victor. Commandant Jean Baptiste Charcot then agreed to lead an expedition to Greenland and one to Antarctica and a key person was Yves Valette who had contact with Mawson, concerning a suitable location for the proposed French station. On the third attempt a station was established at Port Martin in February 1950. Here studies included the Adelie Penguin.

On 23 January 1952 the station was burned down and seven wintered over in a small hut by a newly discovered Emperor Penguin colony. Each day the men were visited by a single Emperor Penguin and later a book Seven Men and One Penguin was published. A new station opened 12 January 1956 for the IGY, was rebuilt in 1966 and in 2005 as a collaborative venture with Italy, the station Concordia was built on the Polar Plateau; 1100km inland and at 3000m elevation where a record temperature of -82oC has been recorded. In winter it is completely dark with magnificent starry skies.

Unfortunately heavy ice has prevented us seeing the French station, but that is Antarctica and what a day we have had. At 5.25 p.m. we moved south then east to find the ice edge, two Minke Whales were observed and about 7 p.m. we aimed to try and go around the berg B09B.

During the social hour, two large icebergs passed with one, it seemed, beside the windows of the Bar/Library. Samuel arranged a de-brief to take place in the Bar/Library. Emperor Penguins he said are seen by very few people and the birds observed today, were all moulting adults or close to moulting. One had found sufficient snow to form a shelter and seemed content to be in a home that may have had him there and fasting for two weeks.

Dean then spoke of the Orcas as Type 2 and distinguished by an oval patch behind the eye. They appeared to be interested in the ship, were porpoising together and may have been a family with four cows and one bull that were seal hunting. Today we have not seen any seals and Samuel remarked that Crabeater and Weddell Seals tend to keep out of the wind. This was an observation made by men on Scott’s Northern party in 1912 and Shackleton’s Ross Sea party in 1915-16.

This evening we may enter Commonwealth Bay. We had a lovely dinner with chicken and seafood and celebrated Barbora’s birthday with a beautiful cake and Happy Birthday sung by the staff.

Some of us watched a DVD in the Lecture Room and many decided to retire early.

Photo credit: A. Breniere

Day 15: Monday 22nd January
Southern Ocean – Ice edge & whales
Noon position: Latitude: 65o 56.1'S; Longitude: 144o 35.3'E
Air temperature: 2oC Water temperature: 0oC

Engagement of Dean and Nikki, congratulations. The Antarctic rumour has it, that Dean apparently has offered to do the gardening, cooking and housework.

About 1.30-2 a.m. when trying to enter Commonwealth Bay from the north-east, we encountered heavy ice up to two meters high. We then turned west and went around B09B and apart for the occasional encounter, had a pretty restful night. Three Emperor Penguins were seen.

Sometime during the night the phantom white board artist drew a few penguins with igloos and asking "would you like a room with or without an en-suite?"

A Humpback Whale was seen just before 8 a.m. and three Minke Whales before 9 a.m. It snowed again during the night and this morning it was fairly calm with the air temperature at 0oC. Two large icebergs with uneven top surfaces had perhaps calved from glaciers rather than ice shelves and birdlife included a Giant Petrel and an Antarctic Fulmar. Our position at 8 a.m. was 65o56.021'S 143o36.501'E.

The sea remained calm and numerous birds were about including a White morph Giant Petrel, Mottled Petrels, Snow Petrels, Cape Petrels and a flock of 14 Antarctic Petrels. The Snow Petrels are always a favourite, with their brief rapid flight followed by gliding. Some large icebergs were to starboard and an excellent sighting at 9.45 a.m. was of four Minke Whales at 66o05.471'S 144o10.615'E.

With good weather Andre the Bosun, was busy with a snow shovel as he cleared snow that had frozen to the foredeck.

A further Minke Whale was seen at 10.05 a.m. followed at 10.20 a.m. by a whale that was not identified. We were now moving through small floes and areas of brash at 6.7 knots. A grey sky had descended with a slate grey sea and gentle swell. The only birds seen were a few Adelie Penguins (one a yearling), a Giant Petrel and a few Snow Petrels. A bull Orca was seen at 11.15 a.m.

At 11.45 a.m. Dean gave his second lecture on mammals, which this time focused on 'Seals – Biology and Ecology'. Again the lecture was well presented in a clear and informative way and supplemented with good photographs.

After a brief introduction on what are seals, the three families were now discussed. These are the eared seals, true seals and walruses with the latter only found in the Arctic.

Seals like whales, evolved from a land animal which has been named *Puijila darwini*, around 23 million years ago. It had heavy limbs that then evolved into flippers for locomotion in water.

Characteristics of the true seals or *Phocidae*; eared seals or *Otariidae* and the walrus or *Odobenidae* was then discussed along with the physical features, how the mammals by thermoregulation using an efficient circulatory system, store energy and keep warm.

We then learned about the high fat content in the mile of true seals, their reproduction and the extraordinary adaptions that enables them to dive to great depths. These include the lungs being compressed under pressure, the ability for blood and muscles to store oxygen and less blood going to the extremities such as the flippers.

Key aspects of the Antarctic seals was outlines with this including the size and weight for both male and female, their preferred habitats, diet, way of life, estimated populations predators and range. We have on the ship an excellent book A Complete Guide to Antarctic Wildlife by Hadoram Shirihai. This has much information on the various species.

Dean had barely finished his lecture when Samuel advised a Blue Whale and a Humpback Whale were to starboard. This caused a mass exodus from the lecture room. The position was 65o53.978'S; 144o43.522'E. Some of us had a good view of the colour and immense bulk for the Blue Whale which moved beyond the ship as we cruised along the ice edge. Snow Petrels and Wilson's Storm Petrels were observed taking small ice fish and at 12.50 a further two Humpback Whales were seen some distance off the Port bow at 65o56.810'S 144o46.617'E.

Lunch today was a very tasty corn risotto with slivered almonds and blueberry muffins and as we continued south, a further whale was seen by the ship at 1.35 p.m.

Having enjoyed a magnificent time with a superb iceberg with gorgeous blues, an arch through we could see further bergs, Orca putting on a great display and 40 Snow Petrels on the berg, we then turned south at 2.15 p.m. There were two pods of Orca along with a pair of Minke Whales at 66o04.182'S 144o54.889'E. It had been a magnificent few hours of nature and an experience most of us are unlikely to have again.

At 2.30 p.m. Samuel announced that a further group of Orca was heading in our direction. And they duly arrived with at least 20+ which Agnes suspected were Type A and 3+ Minke Whales which appeared to be hunting the Orca. Dear said Orca will bump a small Minke to break the jaw. The whale will then be unable to close the mouth and subsequently drowns. The position for this sighting was 66o05.868'S 144o58.214'E. At 3.15 p.m. a further 12 Minke Whales was seen along the port side. Samuel suggested that because the water was about 300m and fairly shallow, there would be a good supply of food.

By 4 p.m. the day was fining up and a beautiful light was on the horizon, with a few distant bergs and a gently rolling sea with scattered floes, interspersed with patches of brash ice. It really is a magic part of the world. As Andrew C. said, it has a similar feeling to being in the outback as there is a remoteness and vastness.

We continued around the ice edge seeing 13 Crabeater Seals, a further three Minkies and later at 6.30 p.m, a fine specimen of a Weddell Seal. There were Snow Petrels fishing, a further nice iceberg with blue shades and two Antarctic Fulmars. At 5.15 p.m. a Humpback Whale provided excellent viewing at 66o07.122'S 145o36.304'E. It was a beautiful early evening to be in the bow with a light breeze and the glorious freshness that Shackleton wrote about. What a splendid day it had been.

Needless to say, the Bar/Library was full of activity this evening. Much discussion on the day, images taken and a special highlight that none of us expected was the announcement of the Engagement of Dean and Nikki. After champagne we enjoyed a superb dinner with monk fish and curried lentils or pork pieces with couscous and a dessert of apple and ice cream.

This evening we continued on an easterly course as ice coming in has meant that we are unable to do anything else as hoped. There was a beautiful evening light and a very special gathering was held in a Zodiac on the aft deck, with Wally as a guest.

Comment on PA
Dean. "*There are whales on the stern*!"
Samuel. "There are whales everywhere!"

Day 16: Tuesday 23rd January
Southern Ocean – Ice edge & whales.
Noon position: Latitude: 65o 51.735'S; Longitude: 151o 52.343'E
Air temperature: 3oC Water temperature: 0oC

We had an early start to the day with a wake up from Samuel who said "Blue Whales around the ship. If you want to see a blue whale, now is the time to do it." He had already spent 18 hours on the Bridge yesterday.

Many of us some still in night attire, arrived on the Bridge for a rare opportunity in our life to see not only the World's largest animal, but perhaps the largest that has ever lived.

We were at 65o52.773'S 150o28.366'E. There was a calm sea with a slight swell, a sky with strato-cumulus clouds and an air temperature of 1oC. The water over the Virik Bank was around 95m with some 2000m around the feature on the ocean floor. We were also not far from the ice edge.

For an hour we stood transfixed at the huge bulk of the four Blue Whales that had a big bushy blow and left an enormous "footprint" as they sounded with a great splash. Some of us were lucky to see one of them turn on its side, revealing the white skin beneath the body and others saw what resembled a large tree truck lying on the surface.

Then it was back to lie down briefly before breakfast, with a sausage, tomato and boiled eggs, or fruit with blue berries; whichever one preferred.

By 9.30 a.m. we were at the ice edge and Samuel called us to the Lecture Room for a briefing. Samuel with use of recent satellite ice maps carefully explained changes in the ice over the last three days. It was quite clear that

in spite of good attempts by the Captain after consulting with his officers and Samuel, there was no safe way and at risk of being trapped, had we entered Commonwealth Bay. Although *L'Astrolabe* the new French icebreaker had managed to discharge cargo, it had difficulty in leaving and had in fact given good advice to us.

And so after our so far furthest south at 66o20', we unfortunately had to depart the region and head east towards the Balleny Islands and to check the ice edge for wildlife.

Our next wonderful sighting was a superb iceberg with seven or more caverns at the base by the water's edge and surrounded by large floes of old ice. One of the caverns had opened through to the other side. This was at 65o56.416'S 151o39.187'E. Numerous Snow Petrels were about and at 11.25 a.m. yet a further berg and many Antarctic Petrels was passed.

Then it was back to the Lecture Room for a wonderful presentation by Mike Potts. Mike began by speaking briefly about the subject and his photography of Hummingbirds in Ecuador and other parts of South America.

Because the birds are small and fast, they are difficult to film. There are also problems such as steep wooded slopes and deep dark valleys and because of this a special high speed Sony phantom camera used at 1000 frames per second (normally 25 fps) equaling 40 times slower and 89 gigabytes each minute was required.

Mike described unique features of the birds which have over 300 species and then played a superb one hour documentary with narration by Sir David Attenborough. This was titled Stars of the Bird World. Hummingbirds - Jeweled Messengers.

The documentary began with reference to the evolution of flowers 60 mya (million years ago) and how they depended on insects such as butterflies for pollination. There were climatic problems such as cold nights and damp mornings – insects are cold blooded, and it is not known when birds took over. This was possibly on plateaus of Brazil 30 mya.

The bill was adapted to take nectar, legs and feet were reduced and flowers developed on the ends of branches. It was interesting to hear that the brilliant colours are created by air bubbles in the plumage and these combine with the angle of sunlight to produce the iridescence.

The hummingbirds have a heart rate of 400 beats per minute although this slows to 40 at night and 6 mya bird size was reduced to 2 grams for some species with an egg the size of a pea. We all enjoyed and learned much from the documentary, with some of us having seen a previous showing with Birds of Paradise filmed by Mike.

Soon it was 1 p.m. and lunch with Connor doing us proud with a fine plate of aubergine and chips.

We did not have to wait long before something new to add to our already very special day. At 2 p.m. Samuel reported four Humpback Whales off the ice edge. There were two pair at 65o50.486'S, 152o42.214'E and also present was a pod of Orca with perhaps five whales. On the water was a flock of Antarctic Fulmar.

We were again treated to magnificent displays with the tail fluke when diving, spy-hopping, a single flipper above the water and the great white undersurface of the throat and body, visible just below the surface. Those in the bow had a very special view of the entire body as a pair passed just under the surface in front of the ship. Barnacles on the head could be clearly seen.

Once again we returned to the Lecture Room for a presentation by David. The lecture titled 'from BANZARE (British Australia New Zealand Antarctic Research Expedition) to ANARE (Australia National Antarctic Research

Expedition)', was the third of his lectures on Sir Douglas Mawson.

It began with the lead up to the BANZARE then focused on the two expeditions (October 1929-January 1930 and November 1930-March 1931) the science undertaken, cementing Australia's claim and problems between Mawson and Captain John Davis, who was replaced by Captain William McKenzie for the second BANZARE.

The lecture was concluded with honors bestowed on Mawson, his death on 14 October 1958, and the formation of ANARE first led by Dr Phillip Law and now known as Australian Antarctic Division. Australia has three main bases in East Antarctica, named Mawson, Davis and Casey, along with Law Base near Davis.

At 4.30 p.m. we had yet a further large and interesting berg at 65o52.406'S 153o41.372'E that attracted our attention. Resting on top was an estimated 4-6000 Antarctic Petrels that first appeared as a brown stain on the snow; quite a rare and remarkable sight. The bird is known to molt on icebergs and huge "squadrons" took off as the ship made several circuits. As the birds left feathers were seen coming off and Dean suggested because the berg had a sloping top, that the birds may have been keeping out of the wind. Other birds we saw this afternoon included Sooty and Campbell's Albatrosses, Skua and Giant Petrel.

We all agreed that this as with yesterday had been a fantastic day and many of us then watched the documentary on the Adelie Penguin, titled Ice Bird. The film although a few years old is still an excellent production and gave us a good in-site into the biology and ecology of a penguin that we have seen many of in the last few days.

Only a small number was in the bar this evening and most were resting before dinner. It had been a fantastic day. Many of us looked forward to an early night however soon after 9 p.m. Samuel announced "Humpbacks feeding by the ship".

We headed to the Bridge and there must have been about 25 of the huge black mammals feeding and performing as they do. There were great opportunities to get even with "point and shoots" images of flippers, flukes, the underside, and many of us just enjoyed the rare opportunity of watching these fabulous creatures. According to the Bridge chart, the water was about 2800-3000m deep and the position was 65o59.138'S 155o36.817'E. David H recalled seeing about the same number in the area in January 2017 and perhaps is a local population?

With a chill in the air, it was a magical way to end the day with also Light-mantled Sooty Albatrosses and Giant Petrels for company.

Perhaps when on my printed page you look
Your fancies by the fireside may go homing
To that land where you bravely endured.
And if perchance you hear the silence calling,
The frozen music of star-yearning heights,
Or, dreaming, see the seines of silver trawling
Across the sky's abyss on vasty nights,
You may recall that sweep of savage splendour,
The land that measures each man at his worth,
And feel in memory, half fierce, half tender,
The brotherhood of men that know the South.

Apologies to Service – D[ouglas]M[awson]

Reproduced from Going to Extremes by Jonathan Chester.
Robert Service was a poet who lived in remote parts of Canada

Photo credit: A. Breniere

Day 17: Wednesday 24th January
Southern Ocean and Balleny Islands
Noon position: Latitude: 66o 13.520'S; Longitude: 161o 15.816'E
Air temperature: 4oC Water temperature: 2oC

As forecast, a brisk east wind was blowing at 28 knots this morning and the sea had a few white horses. It was not cold and 3oC. At 7.45 a.m. we were over 2700-2800m of water and at 66o8.539'S; 159o35.480'E.

One Humpback Whale had been sighted, a flock of ten Snow Petrels was by the ship and eight bergs were on the horizon with a few bergy bits nearby. One of the icebergs was tabular and two more were "blocky" and tilted to one side; in a similar way to the berg seen yesterday with the flock of birds.

We assembled in the Lecture Room at 10 a.m. for a presentation by Agnes titled, 'Sea Ice – the 8th Continent'.

Agnes began with a brief recap on the types of ice and then told us how frozen seawater covers 7% of Earth's surface, is 12% of the world's oceans and for Antarctica, doubles the continents size in winter.

The various forms of sea ice were now described and how its formation is governed by air and water temperatures, extent of wind and also salt content. The first ice is frazil when crystals form, followed by grease ice, "nilas" or sheets of ice, pancakes, that combine to form ice sheets and that the ice can form at the rate of 4 km2 a day.

Sea water freezes at -1.86oC with 35 grams of salt per liter of water. During its formation brine extends down wards to form "brinacles" and these if they come in contact with living organisms, will kill them.

Various terms for sea ice were explained, such as the importance of sea ice for life including emperor penguins, polar bears, seals and humans and also the consequences for animals and humans including coastal erosion, for travel, commerce and the extent to which the albedo or amount of radiation is reflected by the amount of whiteness of the surface and how this can also change ocean currents.

By mid-morning the sun was out the first time in days and at 11.30 a.m Young Island in the Ballenys, was visible over the bow. Today we had an earlier lunch at 12.30 p.m. in preparation for arrival at the remote islands. We left Australia's Antarctic Territory and were now in the Ross Dependency, administered by New Zealand.

We arrived off Young Island the most northern of the Ballenys at 2.15 p.m. The islands are at 66o55'S; 163o20'E. The three large islands were named for merchants who had supported Ballenys expedition. There are a further two small islands in the group, along with the Balleny Seamount (308m) to the north. All the islands are of volcanic rock, are glaciated, and trend north-west to south-east for approximately 100 nautical miles. The highest peak is 1524m, with this on Sturge Island.

They were discovered by John Balleny, commander of the sealing vessel *Eliza Scott*, on 11 February 1839 and named in his honour by Captain Francis Beaufort, Hydrographer to the Admiralty. An accompanying vessel the *Sabrina* commanded by Thomas Freeman, was caught in a storm and neither ship nor crew were seen again.

Balleny was the second to land south of the Antarctic Circle (the first was Bellingshausen who named Peter 1 Island) and on return to England with only 200 seal skins, he faded into obscurity.

They were next seen by James Clark Ross with the Erebus and Terror in 1841, later by Robert Falcon Scott and in 1936, during the *Discovery 2* expedition. In 1958 the French expedition visited and in 1963/64 the NZ/US Balleny Islands Expedition, when a landing was made.

We progressed down the west coast of Young Island and were seeing a wild landscape and superb glacial geomorphology "in action". The island was topped by an ice cap and ice filled short valleys with icefalls, crevasses and steep slopes to terminate in as an ice cliff by the sea. In places where there were shallow, valley-like recesses in which cirques were forming, on three occasions they reached the coast as massive lobes of ice such as a piedmont glacier that terminated in a coastal ice cliff. Above the ice cap, cloud, white as reflected from the ice below, merged with a dark grey sky.

The coastline could best be described as forbidding or hostile. A few icebergs were along the coast and a few Antarctic Fulmars and Snow Petrels took advantage of the wind that was at times keeping us in doors.

Near the end of Young Island and at 5.30 p.m. a mighty blast from the ship's horn signaled we had crossed the Antarctic Circle at 66o33.002' South and we were now in the Antarctic region. A small group with Andrew C. nearest the bow and accompanied by the bumble bees, Jane, Andrew P. and one or two others, indicated to all of us on the Bridge, that they were the first to make the "crossing". Julie N. marked the occasion by transforming her red-tinted hair into a number of "whale blows".

We then adjourned to the Bar/Library for the reading of the oath by Dean and all present received the mark of the penguin, applied by Samuel and David.

'By anyone's standards this event is an auspicious occasion-very few people have crossed the Antarctic Circle by ship. So on this occasion we want to both celebrate the occasion and acknowledge its importance.

Today each one of us joins a unique group of explorers that have gone before us, not only showing us the way, but giving us courage to follow and to make our own destiny. We follow explorers such as Sir James Clark Ross, Robert Falcon Scott, Sir Ernest Shackleton, Roald Amundsen, Sir Douglas Mawson, Richard Byrd, Sir Edmund Hillary and others who pioneered new routes south of the Circle. Today we acknowledge them and their efforts.

Crossing the Circle also carries with it responsibility-a responsibility that those explorers who went before us took seriously which is part of the reason that we are here today. They advocated for the protection of these lands and wildlife that inhabited them, ensuring that future generations would have them to enjoy.

So today as we cross the Circle, I would like each of you to take this vow and receive the Mark of the Penguin-as evidence that you have crossed the Antarctic Circle and have taken the pledge which I am going to ask you to say after me.

Having endured the privations of the Roaring Forties, the rigors of the Furious Fifties and the ice-strewn waters of the Screaming Sixties to cross the Antarctic Circle, pay homage to those early explorers who have not only shown the way, but have demonstrated what it means to advocate for the continued protection of Antarctica and its wildlife and history.

I … hereby pledge that in accepting the Mark of the Penguin will, until I take my last expedition, advocate to everybody, even those who will not listen, the importance of the Antarctic and its wildlife and history.

Would you please step forward and receive the Mark of the Penguin.'

By 6 p.m. we were off Borradaile the next island in the chain, this also has an ice cap and it was decided that the ship would remain here for the night. The island was named after one of seven merchants who supported Balleny. Samuel and two staff checked a potential landing on a small mixed sand and shingle beach and if the weather is calm we may make a landing early in the morning.

This evening we enjoyed an excellent meal and most of us opted for an early night.

Photo credit: N. Rumney

Day 18: Thursday 25th January

Balleny Islands – Landing Borradaile Island, Zodiac cruise Sabrina Island

Noon position: Latitude: 66o 54.918'S; Longitude: 163o 16.191'E

Air temperature: 8oC Water temperature: 1oC

We drifted off Borradaile during the night and at 6 a.m. were woken by Samuel, saying conditions were good for us to make a landing. The sun was just starting to light up the south end of the ice cap on Borradaile Island and the fresh morning air is best described as being pristine. It was an absolutely perfect morning for our activity.

Borradaile Island which is at its highest point 381m, received its first visitors when Captain Freeman from the *Sabrina*, landed here in 1839. He collected some pebbles and was then lost with his pebbles, crew and the ship. The second recorded landing was by an ANARE expedition which called on the *Wyatt Earp* 29 February 1948, during a "running survey" with soundings of the Ballenys. One person who landed was Dr Phil Law Director of Antarctic Division.

Like the other islands, Borradaile is volcanic with basalt lavas and the spit has formed on top of rock which extends into the sea on the north end. In cross profile, near where we landed it is higher on the east side.

A rare landing

The first Zodiac left at 6.30 a.m. with staff, on the 15 minute journey to the spit. Here poles were set up to provide a route five meters away from resting Weddell Seals of which there were 31 this morning. Also present was one Adelie Penguin and one Chinstrap Penguin, the latter species, being the first seen on our expedition. On the well-rounded black and brown pebbles forming the beach at our landing, was some brown and red seaweed and Samuel said at times the sea washed over the spit.

By 7.45 a.m. when the first of us were stepping ashore, many were soon lying or kneeling in snow to obtain images of the seals and penguins. At least one sleeping Weddell Seal was heard "singing", this was a very special experience and one new to most of us.

After a group photo of us just 700m north of the Antarctic Circle was taken by Samuel, from a Zodiac at the seaward end of the spit, it was time to depart and by 9 a.m. we were soon on the ship and enjoying breakfast with fresh croissants. A total of 45 guests and all the staff made a landing and if many did not notice, a very good Mawson "look-alike" complete with baklava, made a brief appearance.

After breakfast the anchor was lifted and we then made our way south along the west side of Buckle Island. This had a similar topography to Young Island, with areas of black volcanic rock showing through ice and snow however for those without view finders on their camera, the brightness of the sun, made it difficult trying to obtain a good photo record.

Soon we could see the Eliza Cones; three volcanic stacks off shore and then Sabrina Islet and the Monolith; an impressive rock spire about 363ft high (110m).

At 11.45 a.m. the anchor was dropped and at 12.30 p.m. Bruce provided us with his own bread in the form of superb ciabatta rolls, with fillings of prawns and salad; Thai chicken balls and beef with plum sauce for lunch.

Photo credit: S. Blanc

A Zodiac excursion

Many of us then got in to our landing kit for a one hour Zodiac cruise. By now wind from the north-west was getting up and with it a choppy sea. Our mission was to inspect the two penguin colonies on Chinstrap and Sabrina Islets.

We began by viewing the predominantly Adelie Penguin colony along the north side of Chinstrap Islet and could not get over the height at which the penguins were commuting to and from their nesting areas. Duncan in Connor's boat remarked "They have got a bird's eye view up there." In 1965 and 1984, there were 10 breeding pairs and Adelie Penguins in 2000, had 2298 breeding pairs recorded.

In places the snow had green algae and was brown from wind-blown scoria dust while at the water level were huge black boulders about a meter wide. On one corner there appeared to be columnar basalt and further along before the north end of Sabrina Islet next reached by us, was a beach of well-rounded cobbles.

Turning into the west-facing bay on Sabrina Islet, we kept well clear of the beach and surroundings which has an ASPA (Antarctic Specially protected Area) No.104. Here there is a small colony of Chinstrap Penguins with 202 adults and 109 chicks recorded in 2000 compared to 3707 breeding pairs of Adelie Penguins present in 2006.

In the water were huge blocks of ice moving in the swell and clearly not a place to try and land; even if necessary to do so. A row of Chinstrap Penguins were walking along the shore and at one end was 25+ Weddell Seals. As we continued to the base of the Monolith, a Leopard Seal showed interest in the Zodiacs and from time to time as it drew ever closer, raised its large head above the water while at the same time, was doubtless looking for a further meal. A flock of Cape Petrels that breed here was also seen.

By now the wind had increased and Samuel suggested it was time to head back to the ship. Nikki advised that an Adelie Penguin tried to leap into her boat "and nearly took me out. All I saw was these big eyes" before the penguin thought better of it and left. In Connor's boat Jane, who already fairly damp from a wave, did a valiant act by moving forward to lie prone on top of the cover in the front. All was well until the bow suddenly dipped and

Jane again received another drenching from a wave that passed over her. Jane took it well and there was much laughter.

We arrived back at 2.30 p.m. At 3 p.m. the anchor was lifted and we then made our way past the southern side of the Monolith and Sabrina, enjoying seeing the storm swept islets from a new perspective, while a Light-mantled Sooty Albatross and a few Snow Petrels kept us company. The water was very shallow with in one place only 30m depth and as little as 20m in places.

Of great interest, was an isolated “large outcrop” named Scott Cone and an iceberg with an arch and what appeared to be the start of the berg fracturing into several not so small, blocks of ice and too large to be bergy bits. These would be of similar shape and size, which we have seen over the last few days.

As we proceeded along the east side of Buckle Island, the landscape was made even more dramatic by cold air from the north-west which was spilling over the top of the island and down the east side. Above and to the north were lee wave clouds that form from the Fohn effect. Dense cloud concealed the highland ice cover although we did see three large heavily crevassed glaciers.

Sir Raymond Priestley, a geologist with Shackleton’s 1907-09 and Scott’s 1910-13 expeditions passed by here in 1959 and wrote “Rock slopes are precipitous and at intervals glaciers spill over to end as piedmonts…”

Nearing the end of Buckle Island, one of the most interesting finds was made by reference to photographs in staff David’s 1964 edition, of the book Balleny Islands. Although two may be one, three separate Adelie Penguin colonies were photographed from the ship and we continued to add to our photographic record of the expedition with ice-scapes, cliffs and the blows from two Humpback Whales were seen.

We had a wonderful evening in the Bar/Library and there was much enthusiasm for Tasmanian cider with some Antarctic ice. Bruce and Connor again did us proud, with a fine meal and as always it is not easy to make a choice.

We completed the southward journey off the east coast of Buckle Island and expected to have out first view of the southernmost island of the Ballenys named Sturge about 10.30 p.m. On reaching the north end of the island, the second engine was engaged and course was changed to put us on coursed to Cape Adare and depending on the ice front, this may change slightly.

It had been a great day. When Wally and Enderby scholars, Lucy and Ellen, were asked about their favourite aspect, they were unanimous in saying it had to be the landing on Boradaille Island. Samuel paid a fine compliment to the staff and all of us looked forward to an early night.

Photo credit: A. Breniere

Photo credit: A. Breniere

Photo credit: A. Breniere

Day 19: Friday 26th January
Southern Ocean – En-route to Cape Adare
Noon position: Latitude: 69o00.064'S; Longitude: 169o 51.74'E
Air temperature: 3oC Water temperature: 0oC

We all enjoyed a very comfortable night and this morning, the sea was calm, and sky cloudy with just a band of pale yellow and blue along the horizon. At 8 a.m. the temperature was 2oC, we were progressing nicely at 11.8 knots with Cape Adare expected about midnight. Our position was 68o28.287'S; 168o11.38'E.

At 9.45 a.m. we attended an excellent briefing by Samuel. This began with a recent ice map which clearly showed, the correct decision was made to leave the region of Commonwealth Bay. We then traveled 870km (probably 1000 with the ice edge included) to the Balleny Islands. Close watch was kept on the forecast and we crept in between two low pressure systems.

Samuel then discussed the distribution of Chinstrap Penguins which are mostly confined to the Antarctic Peninsula and some island groups including BouvetØya, Laurie, the South Shetlands and Peter 1. Perhaps those on the Balleny Islands, is a sub-species.

We then had a brief introduction to the Ross Sea and Cape Adare, including the discovery by James Clark Ross on 11 January 1841, the Ross Dependency (1923) and boundaries administered by New Zealand, on behalf of Britain. Finally there was an interesting discussion on the Marine Protected Area (MPA) that came into force 1 December 2016. The MPA is in place for 35 years and will then be reviewed and possibly extended.

At 11.45 a.m. the first of six episodes for The Last Place on Earth was screened. This production is based on the best-selling book by Roland Huntford, which originally appeared as Scott and Amundsen and was subject to considerable controversy.

The sea continued to be calm, the sun was out and 13 well-weathered bergs were scattered about the ocean.

During the afternoon plans were put in place to mark Australia Day and this began with including excellent lamingtons for lunch. Then at 2.30 p.m. we assembled in the Lecture Room for a presentation titled 'The Power of Poo', which concerned research undertaken by Julie M. (AAD party) on Black-browed Albatross. Widely distributed, Julie undertook research on South Georgia, Kerguelen, Macquarie, Falklands and in Chile. The work for her PhD considered all the Sub-Antarctic Islands, with sampling of 1500 birds over a period of three years. Adelie Penguins studied at Mawson involved 500 birds and for both species, DNA in excrement was analyzed to establish the diet which included a lot of jellyfish and also considered fisheries interaction.

The fourth time for us in the Lecture room today was to view a documentary titled "Antarctic Pioneers". Introduced by Dean and also with a good attendance, the film was narrated by renowned photographer Frank Hurley, who completed his commentary a few weeks before his death. Hurley a veteran of expeditions led by Mawson and Shackleton, he went to considerable effort to obtain movie footage which has stood the test of time and although in black and white, still conveys the true feel on what the Southern Ocean, Antarctica and its wildlife are like. The establishment of Australia's first stations at Hurd and Macquarie Islands and Mawson was particularly interesting.

Australia Day

We then moved into costume creation in the Library/Bar as part of our Australia Day commemoration. This went off very well. Nikki was a koala, Dean with a cardboard Akubra and whip, as an outback stockman, Justin in a wet suit as a platypus, Wally was a Tasmanian Devil and we also had Steve Irwin, an Immigrant, along with three Vegemite ladies and a Ned Kelly etc.

There were three bottles of Macca "homers" (home brew) and a bottle of wine available for the first winner. The best costume as judged by David (staff) was that of Tanya, aka Snow Petrel, a Wimbledon tennis champion, her racquet also a guitar. Mike won the best joke for his "marine science joke. "How do you circumcise a whale? You send down four skin divers". The Weetbix eating contest with five contestants required to eat and swallow one Weetbix without a drink was won by Diana the Wombat, which even had a carrot and a permit. Other events included tossing a cake of soap into a bucket, won by Duncan.

At 7 p.m. the Antarctic Continent came into view and many of us were soon on the Bridge for our first glimpse. The Adare Peninsula followed at 7.10 and we were by now at 70o13.242'S; 170o56.244'E and doing a good 11.6 knots. At 7.40 p.m. we entered a belt of scattered floes.

Bruce and Connor put on a marvelous Australia Day dinner with Terakihi Fish or slow roasted pork for the main and many of us then enjoyed the evening on the Bridge or out on deck and as Dean said, "we did not think we would see ice floes again."

Many of us were out and about, enjoying a truly pristine Antarctic evening. Beneath a grey sky, slightly tinged with yellow, one could make out beneath this and above the horizon, a long band of pale yellow tinged blue and grading into a rich apricot; a legacy of the slowly setting sun. In this could be seen the outlines of great peaks in the Transantarctic Mountains and Glaciers.

Ice floes with beautiful shades of blue were reflected in surrounding pools that almost had a metallic sheen and to welcome us, a few Adelie Penguins came and went, along with a Leopard Seal seen by Agnes then at 10 p.m. the sun burst forth like a sphere of white hot metal to light up the ice and water below.

We could not have wished for better and the temptation was to stay up all night. Many of us did spend some time in the bow and on the Bridge to see the midnight sun slowly set behind the mountains at 12.28 a.m.

Day 20: Saturday 27th January
Cape Adare – landing; A landing also on an ice floe and the polar plunge, furthest south
Noon position: Latitude: 71o07.385'S; Longitude: 170o 22.527'E
Our furthest south was 71o18.05'S; 170o11.79'E
Air temperature: 4oC Water temperature: -1oC
Marc's birthday, congratulations.

Many of us had very little sleep. There was too much happening and we were having the time of our lives.

About 1 a.m. we were moving through heavy ice with floes 200-300m wide. Captain Igor had already been on the Bridge since 7 p.m. Ice conditions improved and more open water enabled the ship to move closer to our objective. The Captain said to Samuel "*We go. We go*".

We encountered fog from some time after Midnight to 4 a.m. which soon lifted and the sun rose at 4.15 a.m. By 6 a.m. the bright sunlight and calm conditions indicated that a landing could go ahead.

Over the Adare Saddle at the head of Robertson Bay was Mt Herschel (3335m), while on the Admiralty Range Mts. Minto (4165m), Adam (4009m) and Sabine 3718m) were all prominent. Many of these peaks were named by Ross after officers in the British Admiralty. Earl Minto for example, was the First Sea Lord of the Admiralty. Mt Sabine was the peak first seen by early mariners as they approached the continent and many made reference to the peak in their diaries and the ship log books.

It was unusual to see the tops completely clear of even a wisp of cloud. Such was the clarity of the sky. Great glaciers such as the Murray Glacier were snaking down valleys, to end in an ice-filled Robertson Bay.

It will be useful to convey briefly, the history of discovery for this amazing place.

On 11 January 1841 James Clark Ross with the ships *HMS Erebus* and *HMS Terror* entered for the first time, a vast ocean since named the Ross Sea. He also discovered and named Cape Adare on the end of the Adare Peninsula and named this after Viscount Adare; Member of Parliament for Glamorganshire England. The large embayment alongside the peninsula was named Robertson Bay, after Doctor John Robertson, Surgeon, on *HMS Terror*.

The following day, Ross and his ships continued a short distance south passing steep cliffs of volcanic rock below snow covered slopes on the peninsula. The cliffs were named Downshire Cliffs, at the request of Commander Francis R.M. Crozier of *HMS Terror*, for the late Marquis Downshire, in England.

Ross then landed on an island further south, they named Possession Island, and the large region of high mountains, was named the Admiralty Mountains and the region Victoria Land, after the British Sovereign Her Majesty Queen Victoria. Ross then continued further to near the bottom of the Ross Sea where a "high island" now named Ross Island, was discovered with two volcanoes they named after the ships. Mt Erebus was observed at the time to be erupting.

In 1895 the first landing here, may have taken place along the north side of Ridley Beach. This was not however the first landing on the continent. Research of an early sealers log book, indicates a landing was made many years earlier, along what is now the Pennell Coast. In 1899 the first winter to be spent on the continent was here was led by Carsten Borchgrevink with a further nine men, of the British Antarctic (Southern Cross) Expedition 1898-1900 in 1899. Ridley Beach was named by Borchgrevink, after his mother's maiden name.

The highest point on the Adare Peninsula, Mt Hanson, was named in 1899 for 28 year old Norwegian Nicolai Hanson, biologist on Carsten Borchgrevink's British Antarctic (Southern Cross) Expedition, who died during the expedition.

A continental landing

Samuel was soon on the PA advising that a brief continental landing would be made. We then hurriedly dressed in our landing kit and by 6.30 a.m. we were being shuttled ashore to a landing on a beach of black and brown volcanic pebbles. The pungent aroma of the colony was experienced well before we landed.

Adelie Penguins were commuting to and from the sea while beyond on an old beach ridge, were scores of penguins with creches, containing chicks in fluffy brown down. Above, Skuas circling over the colony were on the lookout for any chick that had strayed from the nest. The colony which is the largest in Antarctica has 400,000 pairs.

At the base of the cliff behind our landing, was The Knoll. From here a steep track winds up to the top of the peninsula and about 400m over the top, is the grave of Nicolai Hanson. This is the most accessible route to the top of the peninsula, and it is thought Hanson's coffin was dragged up here on a sledge. At his request, he was interred, in front of a large glacial erratic boulder.

Unfortunately the time available, presence of the penguins and the distance to walk around the edge of the colony meant, there was no possibility of visiting the historic huts in ASPA 159. These were seen about two kilometers away from the ship. After each of us had enjoyed about 20 minutes ashore, we headed back and were soon having breakfast with nice hot pikelets.

The ship lifted the anchor depositing on the deck in the process, some interesting red and brown seaweed and a quantity of pebbles. These had a coating and appeared to have been on the sea bed for some time. They may have been dropped from melting ice off the ice foot and deposited by the Robertson Bay current, or at a time of earlier sea level.

We then left for deeper water and back past large icebergs grounded off Cape Adare. At the end of Cape Adare, was the last of two volcanic "stacks" named Gertrude and Rose. They are similar to those we saw at the Balleny Islands, with the larger of the two, Gertrude, having toppled or been knocked over by a berg some years ago.

For staff member, David, the landing this morning was filled with nostalgia. It was a flashback and like coming home. The first visit was from the icebreaker *USCGC Glacier* in 1981, when he led a three member party that tented for several weeks on Ridley Beach. Two further expeditions followed, including assistance with surveying, his field work concerning research on the wind and geomorphology of the area, and assistance to the Antarctic Heritage Trust, including historical archaeology. Today was his 8th landing.

Photo credit: A. Breniere

Photo credit: A. Breniere

On the ice and a polar plunge

At 10 a.m. using two Zodiacs most of us were shuttled to a nearby ice floe. Here we revelled in the fresh Antarctic air, enjoyed the vista around us and discussed our landing on the continent. More was to follow, for at 11 a.m. 17 of us, including our two chefs from a total of six only male participants, joined the Antarctic Polar Plunge Club when they leapt into water at -1.5oC. The number could be a record for Heritage Expeditions. Stars of the event had to be Nikki, who left from the platform at the top of the gangway and closely followed by Connor in his birthday suit.

In addition to Skuas, Snow and Giant Petrels, there were a number of mammals. A pod of about 20 Orca was seen along with three Minke Whales, two Leopard Seals and two Weddell Seals, while on Ridley Beach, an Elephant Seal, which has been previously reported at the locality.

Gazing at the majestic Admiralty Mountains which gradually diminished, we said farewell to Antarctica, then headed on a course north-east and slowly made our way from the ice. A low pressure system is ahead of us with bad weather promised for two days at sea and wind of 40-45 knots. We hope to go around the system to the west and try to avoid the discomfort due to be with us on the 29th. Campbell Island our next landfall is about four days and 1120nm (2100km) away.

After lunch there was a brief snow flurry from the north-east and apart for a few clusters of Adelie Penguins, usually about 5-7, on floes and about 20 Crabeater Seals were seen. By now the ice floes were more scattered and soon the Adare Peninsula was lost in cloud.

Soon after 4 p.m. snow was again falling and fog had descended. We were making good progress at 6.4 knots and over 2400m of water. However at 4.40 p.m. Lucy and Jane sighted on one of the last ice floes, a young Emperor Penguin heading south – Happy Feet? This was passed at 70o40.105'S; 170o47.693'E

A reduced group of patrons had much hilarity in the Bar/Library, with facial disguises, trivial pursuit and celebrating Marc's birthday. This was followed by a lovely meal including a very special birthday cake for desert. Out on deck this evening was also very special with beautiful soft light and many of us made the most of it as in a day can expect wild seas and little sleep. Today would have to rate as one of the best on our expedition.

Photo credit: A. Breniere

Day 21: Sunday 28th January
Southern Ocean – En-route to Campbell Island
Noon position: Latitude: 66o56.844'S; Longitude: 170o 39.010'E

Air temperature: 3oC Water temperature: 0oC
Chef Bruce's birthday, congratulations.

We had a very comfortable night and still some distance before the Antarctic
Circle. This morning the sea was calm with only six knots of wind and a temperature of 3oC. At 8 a.m. we had spells of fog and light sleet was occurring, an iceberg was off the stern and the only bird life was a solitary Mottled Petrel. Our position was 67o40.320'S 170o45.594'E. The sun was trying to break through and our speed was a good 12.4 knots.

Our first lecture today was given by David who spoke on 'Carsten Borchgrevink and the British Antarctic (Southern Cross) expedition 1898-1900'. Although chapters appear in books and papers in journals, there are only three books published on the expedition.

The presentation began with an introduction to Borchgrevink and his participation on Henryk Bull's whaling expedition in 1895, when a landing was made on Ridley Beach.

The lecture then covered preparations for Borchgrevink's expedition and interesting images had examples of food taken by the party, aspects of science achieved and the unhappy aspects of the expedition with the British "element" keeping largely to themselves and the Norwegians likewise.

At times there were close calls with the hut nearly burned down, carbon monoxide poisoning from the stove, knife pulling, and close calls when climbing steep terrain. However, considerable scientific achievements were achieved in meteorology, magnetism, gravity and zoology.

Borchgrevink in spite of his failings achieved much as the leader of the first expedition to spend a winter on the continent. He did not received recognition until later in life and in retirement kept largely to himself. His book 'First on the Antarctic Continent' published soon after the expedition, does not necessarily provide an accurate record. Louis Bernacchi's book 'To the South Polar Regions' is better, as is his edited and unchanged personal diary 'That First Antarctic Winter'.

One of the most poignant and sentimental inscriptions amongst all the graffiti on the walls of the hut was left by 23 year old Kolbein Ellifsen who wrote beside the pencil drawing of perhaps his mother, on the hut ceiling above his bunk,

Alle klokker bringer fjernt
Bud fra gamle dager
Alle blomster vender sig
Og ser med suk tilbake

All the bells distantly bring
Tales from days past
All the flowers turn
With sighs they reminisce
(Translation checked courtesy Ina from Norway)

We returned to the Lecture Room at noon when Dean showed an excellent short documentary compiled during his 2011 expedition on the *Spirit of Enderby* when Mawson's Centenary of the AAE was commemorated. Dean was a guest presenter for the Sunday Night programme. He said the expedition reinforced "how ever changing Antarctica is in terms of ice and weather and how it is part of the romance and what calls us back." Outstanding

images showed the birth of a New Zealand Sea Lion, of a Minke Whale and also Mawson's hut.

David then gave a brief presentation titled 'Perpetuating Mawson's memory'. The various huts at Cape Denison along with the contents of the main hut was shown and after background work done at Mawson's huts, an outline of the Mawson's Huts Foundation and work that has been achieved was outlined. Stamp covers made for the recent Foundation Expedition was offered for sale.

At 2.30 p.m. the Sea Shop opened as a last opportunity to provide a memento of the expedition along with the opportunity to obtain a first day stamp cover as a donation to the Mawson's Huts Foundation.

At 3.15 we returned to the Lecture Room with a recap on key aspects in the last few days. Samuel began with whales and seals and Dean provided useful additions. Cape Adare was then discussed with details on the mountains we saw and the historic site, with David giving further detailed comments on the geology, geomorphology and human history. Samuel using weather maps then explained what we are likely to expect in the next two-three days and how the Captain will try and make travel easier for us.

A very nice congratulatory message from Rodney who founded Heritage Expeditions was then read and by the time we left the Lecture Room, the sea was already beginning to get agitated. We then had a short rest before returning to the Lecture Room for a presentation by Agnes titled 'Who Owns Antarctica'.

This was an excellent lecture on a very complex and detailed subject. What made the presentation good and held the audience attention were the clear diagrams and careful explanations.

The background to how the claimant nations obtained their part of the continent was mostly based on history of those nations along with Decrees and geographic position.

The background to the International Geophysical Year (1 July 1957-31 December 1958) along with the major area for research, particularly in upper atmosphere physics, which involved 50 countries in the Arctic and Antarctic was then covered, followed by the setting up of SCAR (Scientific Committee for Antarctic Research), led to the Antarctic Treaty being signed in Washington on 1 December 1959 and coming into force on 23 June 1961.

Agnes then focused on the Regulation of Antarctic Mineral Resources signed in Wellington in 1988, the Conventions, Articles in the Treaty, Annexes and the Environmental (Madrid) Protocol which remains as it is for 50 years. This had been a very useful lecture as evident from the question time.

Late this afternoon, we had a good number of various albatross species following the ship. Included was the Black-browed, Light-Mantled Sooty and Campbells, but none of the great albatrosses. Other birds were Giant Petrels and Shearwaters and a Humpback Whale was also seen.

We had a quiet time in the bar and a lovely meal befitting of Bruce's birthday. Jenny and Suzanne made a cake and to give the galley staff time off, remaining staff then took over cleaning up. Most of us then made sure all was secure in our cabins and prepared for an early night.

Day 22: Monday 29th January
Southern Ocean - En-route to Campbell Island
11.30 position: Latitude: 63o09.585'S; Longitude: 170o 12.448'E
Air temperature: 3oC Water temperature: 1oC
Ro's birthday, congratulations.

The days are moving fast now and one week today, we dock in Lyttleton. We still have a few interesting days to look forward to and of course Campbell Island will soon be our next stop. The sea was much calmer than expected last evening and this morning just a quiet roll beneath a grey sky and with more birds expected.

At 9.45 a.m. David spoke to a smaller audience, on the 'Exploration of the Ross Sea Part A' which focused on the years from discovery by Ross to the mid-1930s.

The lecture began with discovery of the Ross Sea by Ross and then focused on early plans for exploration, including the Geographical Congress in London 1895, expeditions of the heroic-era 1895-1917.

The development of whaling in the 1920s was then discussed along with details of new innovations such as the explosive harpoon in the 1860s, whale catches, and life on whaling ships including injuries and diet.

The first plans for tourism in the Ross Sea was planned by Captain Stenhouse of Shackleton's Ross Sea party he planned to use a new Swedish vessel *Stella Polaris*, that would take people from Auckland to Campbell Island and then visit the Ross Ice Shelf and the historic huts of Shackleton and Scott. Because of the Great Depression, the scheme never eventuated. During WWII the ship was commandeered by Germany, to provide recreation for U-Boat Officers. It was then returned to the owners, sold, and is now a hotel and restaurant in Japan.

Part 2 of 'Exploration of the Ross Sea' deals mostly with the expeditions of Richard Evelyn Byrd and flight, before concluding with the new era of science started by the IGY.

At 11.30 a.m. the acclaimed documentary Ice and the Sky, by Luc Jaquet (who produced March of the Penguins 1 and 2), was screened.

Now in his 80's and when 23, Claude Lorius became fascinated with snow crystals. This led his outstanding career as a glaciologist with his first Antarctic expedition, taking place 300km inland from Dumont D'Urville Station in 1956, in preparation for the IGY 1957-58. It was a 28 day trip with American Tucker Sno-cats, to the site for the proposed underground Charcot station, where tunnels were dug to provide storage for supplies. Science began almost immediately and data was sent by radio to Dumont D'Urville.

While at Charcot Station, M. Lorius studied snow crystals and observed variations between those deposited in winter, to those in summer – "a nugget was in a pile of ore [and] the quest for knowledge kept us sane" he said. He began pondering as to how climate evolved and over a decade did 22 missions. By 1965 he was analyzing air bubbles and was looking for evidence of dust and radio-active elements which had been introduced to the Upper Atmosphere.

By the 1970s human activity on the planet was suspected and a new science station was set up with Russian scientists at Dome C on the Polar Plateau and established snow was accumulating at 10cm/yr. Research then moved to the Russian underground Vostok Station where -90oC was recorded. He was then 52 years of age. Drilling continued in 1984 with Russians and support from the US National Science Foundation. This was at the height of the "Cold War". Ice cores were stored at -57oC and the Russian drillers operated to over 2000m depth with 20 tons of ice 150,000 years old returned to France for analysis.

The final hole at Vostok led to retrieval of 3603m of ice spanning 420,000 years and from this the first bubble of C02 and Methane was analysed, leading to the discovery that there were four eras of glaciation. There proved to be a link between temperature and C02 levels and sea levels were found to have varied to 120m. Results were later confirmed by scientists around the world.

Part 2 of the Last Place on Earth was screened at 3 p.m. with Amundsen now appearing in the series. At 5.30 p.m. we assembled in the Lecture Room for an excellent lecture given by Dean. This was titled ‘Macquarie Island Fur Seal Research program’ and was undertaken by Dean for two months each summer of 2008-09 and 2009-10. The aim of the work was to “document and understand the unique recovery process” of the species.

Dean began by explaining that it was an interesting but not unique situation but did relate to recovery of species from intense human intervention. Mawson had already pointed out that if nothing was done, the fur seal population would be lost forever.

In 1810-20 200,000 skins were taken by sealers and this prevented re-colonization. ANARE became established in 1948 however, the first seal pup on the island, was not born until 1954; 134 years later, following cessation of commercial activity. Annual research was begun in 1986 however this unfortunately ceased 3-4 years ago.

The three types of fur seals were then explained along with features of each species. These are the New Zealand Fur Seal; the Antarctic Fur Seal and the Subantarctic Fur Seal which is distinguished by a pale chest. All interbred and by 1964 there was a 4.6% increase for the New Zealand Fur Seal.

The migration routes for the three species were explained using excellent graphics and as the population stabilized the hybrids became physically stronger, which suited the males.

Three beaches were selected and on a daily basis, aspects were recorded for each seal. This included tagging and insertion of a TPIS micro-chip. From the breeding it was found that Antarctic Fur Seals had a 60% increase; Sub-Antarctic 10-20% and hybrids a 30% decrease as original species separated out.

The diet was also of interest and included Mycotophid fish – 90% but very little squid. Foraging was done along the sub-Antarctic Front north of Macca. The poo examined was sieved and a sad aspect was the presence of small pieces of plastic that were thought to have been ingested by fish.

The large amount of data on a spread sheet went to the South Australian Research and Development Institute, who will examine and assess the recovery situation.

This evening the bar opened slightly later. We had a lovely meal with roast beef or fish and superb lemon cheese cake, especially for Ro’s birthday.

Her colleagues from Macca gave a book, Ro the Great Vegemite Ranger, done on the computer by Julie and which tells the story about how Ro ran out of Vegemite, lost weight and was being observed by various animals until she then found her Vegemite and was saved. Mike did a fine water colour painting for Ro, which featured a Wandering Albatross with in the background, a Light-mantled Sooty Albatross. The staff marched into the port dining room with a cake and sang Happy Birthday.

This evening the sea has got a little rougher as the wind was blowing about 35 knots. Many of us had an early night.

Day 23: Tuesday 30th January
Southern Ocean – En-route to Campbell Island
Noon position: Latitude: 59o48.070’S; Longitude: 169o 22.717’E
Air temperature: 5oC Water temperature: 7oC

It is highly likely that no one slept last evening. This morning the wind and sea were up and waves were at least 6

meters with this increasing considerably as the day moved on. The ship was only making 5 knots over water 4600m deep and the wind was blowing at 50 knots, at times reaching 60 and course was changed at 7 a.m.

Lectures were cancelled and from time to time, the sun tried to break through cumulus clouds. Most of us decided it would be a day to remain in the cabin and spent time resting. It was full marks to the Chefs who managed to put on a nice colorful salad, hot buns with tuna filling and also provide some nice cookies.

By Noon, the wind was blowing at 60 knots (112 km/hr) and 11 on the old Beaufort scale, once used on sailing ships and based on the extent at which sails filled out in the wind.

At 3.30 p.m. the third episode of The Last Place on Earth was screened for a small audience.

Waves were crashing over the stern and the few birds off the stern included Sooty Shearwaters and Southern Royal Albatrosses. By the end of the day waves were higher.

A small group was in the bar but most of us remained in our cabins until dinner time when we settled into a fine meal of roast turkey and duck, then retired to the cabin for the night.

Photo credit: A. Breniere

Day 24: Wednesday 31st January
Southern Ocean – En-route to Campbell Island
Noon position: Latitude: 56o31.516'S; Longitude: 168o 48.742'E
Air temperature: 6oC Water temperature: 8oC

It was good to get up to a calmer sea with wind at 8 a.m. 20 knots. The sun was up and our position 57o16.044'S; 168o40.912'E. The air temperature outside was 4oC and it was enjoyable observing a pair of Southern Royal Albatrosses using air currents in the troughs, as they swept across the ocean.

Although Campbell Island is a few hours away yet, some information on the locality is included here.

The island is the dissected remnant of a volcano. Basement rocks are schist and are overlain by Cretaceous sandstone, conglomerate and carbonaceous mudstone. In the Palaeozoic era (dating from 2mya) the island was glaciated. The island has wonderful botany with an Upper alpine zone, Lower alpine zone and a sub-alpine zone. This has become home to Southern Royal Albatross, Campbell Island Snipe, Pipit, Teal and many other species.

Campbell Island was discovered on 4 January 1810, by the same mariner who discovered Macquarie Island; Captain Frederick Hasselburgh of the whaling ship *Perseverence*. It was named after a Sydney-based company owner Robert, Campbell. The name of the impressive harbour we entered was also taken from the ship. Hasselburgh was drowned in the harbour, together with Elizabeth Farr, a young woman of about 23 and born on Norfolk Island, along with a 12 or 13 year old Sydney boy, George Allwright.

The island became a seal hunting base and the seals here, were almost totally exterminated. The first sealing boom was over by the mid-teens of the 19th Century and the second brief spate of sealing was in the 1820s. John Balleny's expedition called here in 1838.

In 1874 the French scientific expedition led by Captain J. Jacquemart and many localities were named at this time. The expedition later returned under A. Bouquet de a Gyre to examine the Transit of Venus. A technician M. Juris died from typhoid and is buried on a small headland at the head of the harbour. Other explorers followed.

In the late 19th Century, the island became a pastoral lease and sheep farming took place, along with a few cattle, until expiry of the lease in 1931; a casualty of the Great Depression. During WWII a Coastguard station operated and after the war, the facilities were used as a meteorological station until 1958, when a new station was established at Beeman Cove. This became fully automated in 1995, and the post office here also closed.

The island is now gazetted as a scenic reserve and with removal of cattle and sheep in the 1970s and 1980s, brown rats were exterminated in 1992. The island was declared pest free in 2003 and was the largest rat eradication in the world. It is now a UNESCO World Heritage Site administered by New Zealand's Department of Conservation. Wildlife and flora have recovered considerably since the eradication.

At 9.45 a.m. Part 4 of The Last Place on Earth was screened and followed at noon with Samuel's excellent presentation, 'Wintering Over in Antarctica – 15 months at the French station Dumont D'Urville'. Here Samuel did a summer followed by winter and then left the station at the end of the following summer. The trip south on *L'Astrolabe* involved six days travel at sea and four in ice.

We next had a "tour" of the station which in summer had 80 residents and 26 for the 2006 winter. His bedroom was only two meters wide and four meters long. The ages of the team, was between 21 and 65.

The climate was discussed including the record wind of 212 km/hr and there was 140 days when it reached 100 km/hr in less than 10 seconds. This did not make his work as a biologist any easier.

Field work included banding, census and blood samples for several species, including in winter when a study was made of the Emperor Penguin. A wonderful experience included the visit to Samuel's office of an Emperor chick he took outside, so it could be reunited with the adult. The chick began calling and the sound recognized by a parent, resulted in the baby being taken back to the colony.

Following lunch, we returned to the Lecture Room and were given a briefing in the form of an Introduction to Campbell Island. Samuel outlined the history for the islands, the geology and botany and then wildlife followed by the eradication programme.

Episode 5 of The Last Place on Earth was screened and at 4.30 p.m. David's lecture 'An Introduction to the Ross Sea Part 2' was given.

The lecture began with Admiral Richard E. Byrd 1928-30 expedition, the first of five mounted by Byrd. This marked the introduction of a new era with aircraft and included Byrd's flight in 1929, to the vicinity of the Geographic South Pole.

The flights by Lincoln Ellsworth with the Polar Star, culminated with on Ellsworth's third attempt, completion of the first Transantarctic flight from Dundee Island to the Bay of Whales.

All of Byrd's expeditions were conducted on a grand scale and included in addition to aircraft, a variety of over snow vehicles, dogs and even during the second expedition, cows that enabled fresh milk in the diet. Extensive science was undertaken in many fields along with aerial photography and the commencement of the USN Operation Deep Freeze using ice breakers and continues until this day.

At 5 p.m. five-six Hourglass Dolphins was seen at 55o 20'S; 168o 50'E. These were the first dolphins that we had seen for nearly three weeks.

This evening there was much hilarity in the Bar/Library, when a trivial pursuit contest took place. Dean did an excellent job as compere and together with Samuel, they read questions and results. There were four teams - Screaming sixties; GPs; Weddells and Orcasome. Orcasome won the contest and received three bottles of fine wine. In the pole climbing contest, this was won by John, who according to Connor "displayed some skin".

After an excellent meal, we had an early night in preparation for breakfast at 6 a.m. and the first of two days of activity on Campbell Island.

Day 25: Thursday 1st February
Southern Ocean – Campbell Island, two Zodiac cruises; Col Lyall
Noon position: Latitude: 52o33.052'S; Longitude: 169o 09.700'E
Air temperature: 10oC Water temperature: 11oC

We had a very good rest last night on a calm sea and today all looked forward to getting off the ship for a few hours. The *Akademik Shokalskiy* arrived at the entrance to Perseverence Harbour before 7 a.m. We had a good view of the interesting landscape, of a pair of Light-Mantled Sooty Albatross flying around the ship and a beautiful red sunrise on the horizon.

This morning we had breakfast at 6 a.m. and while the ship was positioned near the entrance to Perseverence Harbour, by 7.30 a.m. five Zodiacs were launched. We then enjoyed two hours along the south shore of the harbour. There was much to see. On slopes above the shore line, tussock grass gave way to *Hebes* and above dense scrub of *Dracophyllum scoparium*, then *Poa litorosa* or tussock grass, to the highest slopes. Plants in flower included a few *Anisotome latifolia*, and *Hebe* with small white flowers.

The landscape was of great interest with good evidence of past glaciation, including former-ice-filled cirques with outflow streams and eroded cliffs of lava flows that may well have had spectacular ice falls. Water has played a great part in modifying the Campbell Island landscape.

Several caves and dykes, were in the basalt lava flow. We saw a beautiful exposure of columnar basalt, which had cooled at a different rate to the lava and with interesting colours and layers of tuff with breccia. Alison who is

“into rocks” said she took about 30 photos. In the sea was several large purple jellyfish about the size of a medium dinner plate, drifting within the brown sea weed and around 20 fur seals including a young pup with its nice dark brown coat, were seen and two female New Zealand Sea Lions.

The birdlife was also interesting and included the endemic Campbell Island Cormorant and Snipe and Light-Mantled Sooty Albatross of which we had a good viewing of five nests with adults and on three of these, well advanced chicks. Some of us saw an adult fly in and immediately when alighting on the nest site, the bird’s mate flew off. The Snipe was seen making good use of the long beak, to dig soft ground under the *Acaena minor*, as it looked for food.

Soon we were back for an earlier lunch at 12.30 p.m. At 2 p.m. we visited Camp Cove to see “the loneliest tree in the world”. The Sika spruce was planted by Lord Ranfurly about 115 years ago. It has yet to be established, why the tree was planted and at the location in particular. In spite of branches having been pruned as “Christmas trees” during the former met station occupancy, the spruce has survived and the immediate surroundings are now the domain of sea lions, of which a large male in residence made us aware of his presence.

From here we continued along the shore to Tucker Cove which also a haul-out for sea lions, although none were present today. Of interest here was the site of the former homestead with only the large Shacklock range sitting in isolation. A year ago, the grass had been trimmed from around the stove and already regrowth was over 30cm high.

The whole site which once had a substantial farm homestead has little evidence today. A few bricks were in the water that may have been from the chimney and two bottles found last season, and placed on the back by the beach, have since disappeared. It is not known what happened to the farm house and peat below the grass may conceal foundations. The lease for farming which began in the 1890s expired in 1931 and no further farming of sheep took place.

Also of interest here were four well advanced Giant Petrel chicks and in the sea, pieces of orange, yellow, white and dark brown chert, most likely associated with a deposit of limestone nearby. The same material in the form of flaked artefacts was found during an archaeological excavation a few years ago on Enderby Island.

One must ask whether early Maori traveled in their waka further south, then located and exploited the stone for tools. This is always possible as about 500 years ago and on the basis of dendrochronology, the climate in South Otago (NZ) was calculated by a New Zealander Dr Holloway, to be similar to that today for the North Island East Coast.

The small headland was seen where the young French technician M. Juris who died from typhoid in 1874, has his grave and the ornate cross was removed a few months ago for conservation.

We were now taken to the site of the former meteorological station for the afternoon walk to Col Lyall at 270m elevation. The afternoon was perfect with a light breeze and nice sunshine. The boardwalk to Col Lyall has to be one of the most special activities for our expedition and when beyond Beeman Hill, one could see the two WWII Cape Expedition huts in scrub beyond Camp Cove. It is interesting to note that no lookout hut, such as at Ranui and Tagua on Auckland Island, has in spite of searches never been found. In recent years a few books based on diaries kept by Coastwatchers have been published and are interesting reading.

The botany was especially interesting with small flowering green and brown orchids, flowering Gentians and other plants. The *Anisotome latifolia* was in flower but as with the purple daisy *Pleurophylum speciosum*, these were nearly finished. There were no examples of *Bulbinella rossii* as the mega herb finished flowering in

December. The Hebe seen during the morning Zodiac cruise and the ground cover Ever-lasting daisy *Damnamenia vernicosa* had small white flowers. Introduced flowering Buttercup and Clover, were seen by station buildings.

Once at the first observation platform, we began to see albatross on their nests and other birds were present on nearby hill slopes. This gave us a great opportunity to sit and observe these magnificent birds, along with others in flight. As the afternoon passed, the mates of birds sitting on either late eggs or young chicks were joined by their partners and provided for us the wonderful courtship displays for which albatross are well known. By early evening activity had increased, with gamming and vocalizations from both birds, which was an experience many of us are unlikely to witness again and had to be a highlight of our expedition.

Agnes also reported seeing a family of Teal with an adult female and four chicks. She saw a Yellow-eyed Penguin and many of us heard one calling in the *Dracophylum* scrub. A number of Snipe was seen.

Quote of day.
An observation by driver Connor, on the Snipe seen this morning was that
“It flew - just like a bird!”

Photo credit: A. Breniere

Photo credit: N. Rumney

Day 26: Friday 2nd February
Campbell Island – Northwest Bay, Zodiac cruising and Col Lyall
Noon position: Latitude: 52o33.039'S; Longitude: 169o 09.748'E
Air temperature: 10oC Water temperature: 12oC

We all slept pretty well last night and the morning began with a nice and very bright sun rise. As predicted the westerly started, with wind being funneled down the harbour at 20-25 knots.

At 9.30 a.m. the Zodiac operation began with 13 long walkers accompanied by four staff (Nikki, Dean, Connor and Jenny), being shuttled to Camp Cove, for the start of their six to eight hour hike.

After 10 a.m. a one hour 3.5 km Zodiac cruise using two boats, was made around the head of Perseverance Harbour. This trip was delayed briefly while a heavy shower of rain passed and the wind that had picked up eased. No Teal were seen, however, Agnus said they had a good view of a mother and young sea lion lying on a rock. Everyone was back on board by 11.45 a.m. just as a spell of light hail arrived.

By noon the day was still sunny however the wind was now blowing 37 knots and for those on board, it was a good chance for photography of hills around the harbour.

About 2 p.m. a further walk to Col Lyall took place and attracted 26 of us along with some staff. This was our last opportunity to enjoy once more, the beautiful wild life and vegetation of the island. The wind however picked up and the harbour had waves with scattered white horses. Some of us decided to have a further visit for an hour to the wharf landing site, to try and spot a Teal or Snipe or to stroll around the complex of remaining huts.

Samuel said at 3.30 p.m. the wind gusted to 52 knots and was still strong at 4.30 p.m. when it was on the Bridge instrument, showing 18.7 m/sec or around 100 km/hr along with brief rain from time to time. A few Sooty Shearwaters and a Giant Petrel were about but no albatrosses. Dedication to bio security was evident when a crew member, was taken ashore. As soon as he entered the Zodiac, he said to Samuel "Boot inspection?"

Experiences on the long walk

The long walkers had an interesting start to their trek. Soon after being put ashore a good shower occurred, such is the climate on Campbell Island, after leaving the landing place, they were confronted with a steep creek with overgrown scrub and of course water.

On arriving at the top of the first ridge, the group was confronted with literally “hundreds of square meters of the purple daisy”. Lucy said “the views of the landscape were stunning” while Connor who had done the walk once before, could not get over the extent of growth of the tussock now “over two meters high”. Where to place one’s feet was not easy.

Lunch was enjoyed at a beach of flattened white pebbles and several saw what appeared to be either fossils in the limestone that resembled large leaves, or a pattern that remained when the sediment was laid down. Two sea lions visited also a Teal, two Snipe (one deceased) and three juvenile Elephant Seals seen at Northwest Bay.

Ella completed the walk in socks and sandals and Lucy said “going up two my knees in mud, I thought was quite good, as I didn’t touch the bottom.” Dean who went in up to his waist “in a round bog filled with mud” admitted “Jane had to pull me out.” Everyone was back at the landing site by 5 p.m. after an interesting day with wind and occasional rain squalls. On being collected, six including four of the Macca party, headed up the boardwalk to Col Lyall.

A return to Col Lyell

Today there was a further opportunity to revisit Col Lyall and by 8.15 a.m. Dr Susanne, Andrew C, Martine, Justin, Mike and the Bumble Bees, were back at the ship. Marie-Evelyne found it very windy as did the albatrosses, with some huddled low in tussocks to avoid the wind. Suzanne said “the albatrosses were dancing a merry dance. It was fantastic.” For Mike, “during the last one and a half hours, we saw great flight displays of birds, circling as they were trying to land. The light was good, with cloudscapes and squalls coming through. The landscape had a golden light and with the birds in the foreground, it was good for photography.”

For Andrew C. he found, “Being swooped on by an albatross is a little more significant than by a magpie. I am sure they were using us for target practice” and for Martine, a highlight on two occasions, was seeing four adult Yellow-eyed Penguins and two chicks.

Everyone had a thoroughly enjoyable day which was a fitting end to a great expedition. After a great couple of hours in the Bar/Library, the evening meal was beautifully cooked although some of us amused with an error wondered if “Road chicken…” on the Ice Culture Menu, was meant to mean “road-kill”.

For our last evening at Campbell Island everyone had an early night.

Photo credit: A. Breniere

Day 27: Saturday 3rd February
En-route to Lyttelton
Noon position: Latitude: 52o19.124'S; Longitude: 169o 17.946'E
Air temperature: 10oC Water temperature: 11oC

We had a good sleep last evening and rose to a calm morning and scattered cloud. The wind had eased considerably and the harbour was fairly calm.

Preparations now began to prepare for the end of the expedition. Boots and other clothing had to be checked, life jackets returned along with, our Antarctic jacket issue. The expedition is really close to an end now. Samuel in his weather forecast said we can expect 20 knot wind today which could increase to 30-35 this afternoon, with the ship rolling tonight and tomorrow. At 10.15 a.m. we departed from Perseverance Harbour and course was set for Lyttelton, with about 1000km to go. On leaving we could see where Ross's ships went aground on a shoal and probably when high tide. On the land behind, the area of tussock grass, where the temporary observatory was set up. Soon the brown hills with their areas of gentle contours would be left behind.

Bosun Andre and a sailor lifted the anchors and we were on our way. The anchor raising was quite an involved performance and was undertaken while at the same time, being in communication with the Bridge. The final operation was to wind the "Devil's claws" to lock the anchor chain links at the top of the "hawse pipes" on which the covers were tied down.

Two penguins were sighted near the ship and once our cabin was secured many of us went out on the decks to enjoy the departure and bird life. As we reached the Heads at 10.35 a.m. a flock of Sooty Shearwaters was of interest and numerous Campbell Island Cormorants, were heading out to sea on a fishing trip. The ship was then turned to Port and we continued past, the wonderful landscape, with gently rolling slopes ending at sheer cliffs along the east coast. In these high rock faces, layers of volcanic rock were visible with waves crashing at the base.

Many birds kept us occupied with our cameras and John obtained an excellent shot of a Grey-Headed Albatross, eating a purple jelly fish although, as he said “I am not sure how much would be of food value.” A raft of the Campbell Islands Albatross was noticed, along with the main breeding colony where birds could be seen with the naked eye. It was however, the beautiful Southern Royal Albatross gliding over the waves that will long be remembered. The size of these majestic birds seemed much smaller in flight, to when we viewed them on the nest, although we had a great appreciation for the wing span and one could spend hours enjoying the birds.

Good photographs were obtained of cormorants which flew a few meters from us with legs and feet appearing to be used as flight stabilizers. There were also large numbers of Cape Petrels to complete an excellent hour for bird observations and making this one of the best of on the expedition. A course at 017.1o was now set direct for Port of Lyttelton.

By 11.25 a.m. we had cleared the end of the island with its rocky topography that given the opportunity, many of us would have liked to explore. The ship began to roll a little and by now the wind was blowing at 13.5 m/sec or nearly 30 knots. At noon we were making good speed at 11.8 knots over 102m of water with the depth steadily increasing.

For lunch freshly made buns with a Thai meat filling was enjoyed and by 1.30 p.m. Campbell Island had slipped over the horizon.

The afternoon was spent quietly until 5 p.m. when we had an enjoyable hour in the Lecture Room. Dean shared with us examples of video clips on his work concerning filming in conservation. Journals he had found “too boring” and that these were not getting the message across. Now with media opportunities such as Facebook and YouTube, there are opportunities that previously were unheard of. Nine videos focused on a range of topics.

Whale of a time that screened on Sunday 7, considered the Dwarf Minke Whale. This new species was discovered in 1981 and studied intensely by Dr. Alistair Birkell. In one day there was the remarkable close contact with 50 of the mammals which are thought to feed in Antarctica and have become the target of “research whaling” by Japan.

Imagine a place was a short clip concerning the Great Barrier Reef, which is visible from outer space.

How climate change is impacting on the environment and people, was the focus of an Australian Geographic Expedition to Greenland. The Adventure for Change expedition covered over 5000 km’s during which a fragile and delicate ecosystem was examined this also shown in “Field Notes” In peaks in three weeks, 14 scientists and adventurers surveyed “rare cloud communities” and how they have adapted to survival in isolated conditions.

The Monolith, the largest single coral community on the Great Barrier Reef and is perhaps 1-2,000 years old, is dying in the north from leaching due to increased warming of the ocean. John Rumney has for the past 42 years studied this magnificent feature which is rapidly dying, and has led to the formation of the Great Barrier Reef Legacy. Also concerning the Great Barrier Reef, a film clip, for the flood, focused on efforts to gain support from Leonardo di Caprio. Meanwhile, Australia’s rock band Midnight Oil, pledged support for the Great Barrier Reef Legacy which is a major science project, worth being associated with and as John said, coral reefs world-wide have to be considered.

The final conservation film titled a well-known fact #48, showed how coconuts kill more people than sharks.

By now a further day had passed and we were invited to bring our favourite photos to the Bar/Library. After dinner we had a quiet night as the ship was beginning to roll.

Day 28: Sunday 4th February

En-route to Lyttelton

Noon position: Latitude: 48o03.074'S; Longitude: 171o 23.605'E

Air temperature: 16oC Water temperature: 15oC

The sea was reasonably calm, most of us slept well and we rose to a cloudy morning. By mid-morning the ship was rolling a little, although was expected to ease mid-afternoon.

At 10 a.m. the Lecture Room was packed for a presentation by Justin, who was Photographer of the Year in Australian Geographic.

Justin's title was titled, telling a story through photography. He began by saying that we "live in a moving world and can relate to video, but it is good to stop and contemplate for a single moment, then have time to reflect on that moment. Still photography still has a place."

He began photography with his father, when 14 and using a Mikonus underwater camera. His work now is mostly concerned with underwater photography. For the first part of the presentation, we were shown the Tasmanian kelp forest of which 95% off the east coast of Tasmania, has disappeared.

In 2016 one could dive and look at "giant beanstalks" of kelp which has bladders with air to raise it to the surface, in order to have light for photosynthesis. The under story has red algae and other plants. In total there are around 1500 species of kelp and 500 species of red algae. It is, Justin said, "an overlooked habitat" and most of the giant kelp forest off Tasmania has gone.

We saw some amazing images of animals such as, an endemic seadragon with eggs and learned that the giant kelp is important for abalone, sea urchins and rock lobsters. Unfortunately with warmer water temperatures, the kelp weakens and dies. Kelp washed ashore is worth a $700/ton. It is harvested, hung up, dried then shredded, before being exported to Norway and Scotland, where the alginates are used in such products as shampoo, toothpaste and fertilizer.

In the course of filming a research project, Justin had an unexpected experience in which masses of spider crabs were being preyed upon by a huge octopus.

We then had the privilege of viewing a selection of outstanding images, which included two King Penguins taken through openings in the hull of the ship, Young Island, albatrosses at Col Lyall the second day and a Teal with "leading lines" of kelp. The aim was to try and get interesting behaviour and the 15mm lens was used to advantage when shooting an image above and below the water surface.

Following Justin's presentation, we saw the final results of the photo competition of which there were three categories judged by Agnes, Justin and Dean. These were Funny, Scenery and Wildlife and the task of selection was not easy. The winners received bottles of excellent wine.

The compiler of this log had among his favourites the Bull Elephant Seal with its tongue out, the bedraggled Royal Penguin chick surrounded by adults and the breaking wave with a Cape Petrel. Each image had a special feature and we were fortunate to have Justin in the selection panel.

By late morning we were making good progress with both engines at 12 knots and over 1315m of water. Our position was south-east of Chaslands in Southland on our course of 016.7o. It was still windy and blowing at 18.2

m/sec or approximately 36 knots.

At Noon, Part 6 of the Last Place on Earth was screened. Scott has been beaten to the South Pole and Petty Officer Evans has died. By 1.30 p.m. we were 260 km off the east coast of Stewart Island, and tomorrow should expect less swell.

We returned to the Lecture Room at 3 p.m. for a presentation by Samuel on the Russian Far East.

This region is still largely unknown. Few people visit and there is limited access. It is a vast area of 17 million km2, has 11 time zones and 143 million people.

The first region discussed was the Sea of Okhotsk which covers an area of 1, 600,000km2. There is wonderful wildlife including birds with one colony having 10 million birds and sea lions that attain a weight of 1.2 tons. Cold air from Siberia which makes up Central Russia and also from the Arctic, means that sea is cold and frozen six months of the year. Seals abound and are made up with four species – Spotted, Ringed, Ribbon and Bearded Seals. There are also Grey Whales that only feed four months of the year and have to compete with oil rigs. In the north is Taiga forest which covers 50 mKm2 and tundra with brown bears and other animals.

The Kamchatka Peninsula with 1000km of coastline borders on the “ring of fire” and has 300 volcanoes, of which around 30 are active. The highest of these is Klyuchevskoy; 4850m. There are six species of salmon which spawn at different times, an eagle with a nest 2.5 m in diameter and 4m high, and the largest population of brown bears of which, 500 are killed legally each year and perhaps as many as 1500 are poached for trophies and the Asian market. The total population is 10-15,000. Sea otters also abound and a census is done by foot counting and Zodiac.

The Chukotka Region by the Bering Strait and Wrangel Island in the High Arctic was now discussed. A most interesting variety of wildlife is seen here with ground squirrels that have lived underground over 90,000 years, are adapted to temperatures from 37oC to -3oC and their blood temperature is slightly below 0oC with the heart beating at one per minute. The very old history, early and modern settlements and the people are a special feature of this most interesting expedition, when one can sample walrus and reindeer soup, along with jam made from vitamin rich berries of different colours and meet the people.

On Wrangle Island if one is lucky, a Bowhead Whale which has a huge head forming 40% of the body mass and can break ice 60 cm thick may be seen. There are also Polar Bears, walrus and Musk Ox; beautiful wild flowers, Arctic Fox and Lemmings. A truly wonderful place well worth visiting and further information is available at Heritage Expeditions web site.

At 5 p.m. Mike treated us with a second presentation which on this occasion featured New Guinea’s birds of paradise and a film titled Attenborough in Paradise.

The filming was done 20 years ago with help of the two cameramen Mike and Richard Kirby, who shared the work doing four months each. A key member of the party was the sound recordist named Dickie Bird and it took two-three weeks for each species, just to obtain two minutes of quality film. Even before the expedition began, £10,000 had to be paid for excess baggage from Manchester to Port Moresby. Filming was done in regions with low-land forest, to high areas of 2000m+ elevation in upland regions, where it was cooler and with no mosquitos.

They had already seen New Guinea natives with multi-coloured plumes from birds taken with a three-pronged arrow, and with considerable assistance from a New Guinea man with climbing skills, who could get a fine line over a high branch, before pulling up a heavier line, and a minder who quietly kept an eye on what the film team

were doing, they set up hides and platforms 50m up in trees, for each species. They worked from the very early dawn and had to film from three points. This was also the days before video.

The birds are thought to have evolved from species in Asia and by way of a chain of islands they gradually diversified. Because of the height in the trees and perhaps an absence of predators, the various species developed. Of particular interest was the family of bower birds, with their intricate bowers and collections of acorns and flowers.

David had first tried to see the birds in 1967 and 40 years later, tried again with this time success. All the major groups of birds of paradise were filmed and we were very pleased to have had a second opportunity to see the fruits of Mike's labours in recording natural history, with perhaps the world's best known promotor of wildlife; Sir David Attenborough.

The bar opened and many laughs will doubtless result from a limerick contest to be discussed tomorrow. This evening everyone was busy packing so as to have an easier day tomorrow.

Day 29: Monday 5th February
En-route to Lyttelton
Noon position: Latitude: 44o09.872'S; Longitude: 173o 04.346'E
Air temperature: 18oC Water temperature: 19oC

We had an excellent calm night and this morning on our final day at sea, were off the South Island and closing on Banks Peninsula, discovered by Captain James Cook over 200 years ago.

At 8 a.m. we were at 44o40.113'S; 172o51.684', over 80m of water on the continental shelf and the air temperature was 16oC. Well to port was Cape Wanbrow and David H. home town Oamaru, just south of latitude 45o while we enjoyed seeing two albatrosses, one a Southern Royal, the other perhaps a Northern Royal, flying around the ship. Taiaroa Head Dunedin has an important Northern Royal breeding colony.

We returned to the Lecture Room at 10 a.m. for a most interesting presentation by Dean and John of Great Barrier Legacy a non-profit fully tax deductible organization.

The reef is about the area of Italy and consists of 3000 coral reefs, 600 continental islands, 1625 species of fish and 133 species of sharks and rays and has 600 types of soft and hard corals. It covers an area of 314,400 km2 and is 2399 km long.

The main problem is one of bleaching which is affecting plate and branch corals. The corals have algae within the polyp tissues and with the water temperature having increased by around 2oC, the algae become toxic, leading to death of the organisms. The bleaching problem is also a global one.

Clearly more research is needed which can lead to better education supported by multi-media. Unfortunately at present tourism operators are not acknowledging there is a problem, which is perhaps understandable as they do not want their businesses to suffer.

The objective e of Great Barrier Legacy is to create the reefs only independent research institute which will include a floating laboratory. Mention was made of valuable support by the Northern Escape Collection. Over 21 days with the vessel *Flying Fish* carried out five transects from near shore to the outer face of the reef during which time, 30% was found to be bleaching and a totally new species was discovered. Within two days a free symposium to which the public was invited, stimulated interest also at media level.

Now it is hoped to obtain a new vessel that will cater for ten research teams that will undertake a range of projects including for example, super corals, physiological aspects, reef health aspects and fish populations.

The lecture concluded with discussion on the effects of run-off from farms is linked to vast numbers of larvae produced by the Crown of Thorns predatory starfish.

For the remainder of the morning we settled our on-board accounts and by noon Banks Peninsula named after Joseph Banks, Cook's botanist, was clearly visible.

The final episode for The Last Place on Earth was shown at 2.15 p.m. after which David provided brief comments on the controversy concerning the Scott family and Roland Huntford's book.

At 3 p.m. we assembled on the stern for group photographs. In the distance there was a large ship heading south. Meanwhile we enjoyed the balmy afternoon with great views of the peninsula with brown hills and only a few green spaces on farms. Maori settled in many of the bays and when Europeans arrived, one of the first things they did, was to fell much of the native forest for timber. Today a few pockets of bush remain and on many hillsides, can be seen large Totara tree trunks, relics of past forest which covered much of the peninsula.

At 3.30 p.m. a pod of Dusky Dolphins were sighted and at 4 p.m. we assembled in the Bar/Library to hear results from the Limerick competition with fine bottles of wine awarded. This was followed at 4.30 p.m. with a final debrief on the expedition. The slide show done by Dean was superb and we then had a chance to obtain a copy.

An excellent farewell dinner was presented by Bruce and Connor. For the record we enjoyed

Starter – Antipasto platter/Seafood chowder
Mains – Roasted blue cod with wasabi potato, basil butter, &, buttered peas OR
Lamb back strap with roasted rosemary vegetables & red wine jus
Final – Sticky date pudding with caramel sauce & vanilla bean ice cream

A great evening was had by all and we can now look back of our journey of 4828 nm/8941 km as one of the very special months in our life. In addition we saw 75 species of birds and 23 species of mammals. After dinner and with the entrance to Lyttelton Harbour at Godley Heads, now prominent off the port bow, certificates for crossing the Antarctic Circle and for the Polar plunge were awarded. It was a beautiful still summer evening.

To conclude, this expedition record, David H. sincerely thanks everyone who advised interesting sightings of wildlife etc. and most of all, for their company on what was a very happy and successful expedition.

I must go down to the sea again
To the lonely sea and the sky
And all I wish is for a tall ship
And a star to steer her by

(Apologies to John Masefield)

Group Photo #1873

Photo credit: Dean Miller