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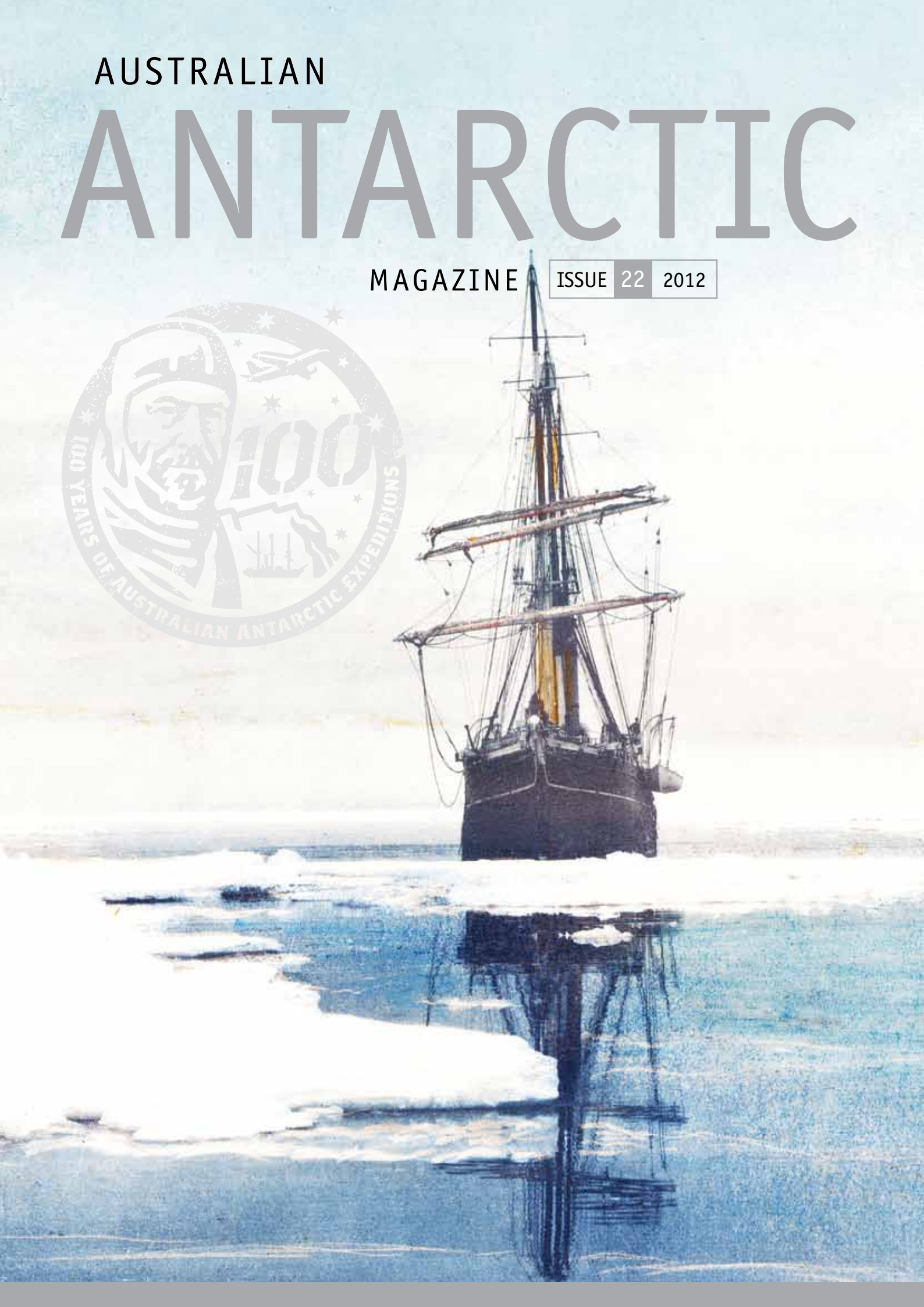
ISSUE 22 2012



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The Australian Antarctic Division, a division of the Department for Sustainability, Environment, Water, Population and Communities, leads Australia's Antarctic program and seeks to advance Australia's Antarctic interests in pursuit of its vision of having 'Antarctica valued, protected and understood'. It does this by managing Australian government activity in Antarctica, providing transport and logistic support to Australia's Antarctic research program, maintaining four permanent Australian research stations, and conducting scientific research programs both on land and in the Southern Ocean.

Australia's four Antarctic goals are:

- To maintain the Antarctic Treaty System and enhance Australia's influence in it;
- To protect the Antarctic environment;
- To understand the role of Antarctica in the global climate system; and
- To undertake scientific work of practical, economic and national significance.

Australian Antarctic Magazine seeks to inform the Australian and international Antarctic community about the activities of the Australian Antarctic program. Opinions expressed in *Australian Antarctic Magazine* do not necessarily represent the position of the Australian Government.

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Australian Antarctic Division

ABOUT THE COVER

This issue's cover features a hand-tinted photograph of the *Aurora* from the collection of Frank Fletcher (photographer unknown).

CELEBRATING 100 YEARS OF AUSTRALIA IN ANTARCTICA


DEAN LEWINS

The Mawson's Huts centenary team pose for a photograph on Proclamation Hill on 16 January 2012. The stainless steel time capsule in the foreground, which contains a message from the Prime Minister and other objects and messages relevant to today's Antarctic program, will be opened in 2112.

This year Australia celebrates 100 years of exploration and science in Antarctica. While Australians, including geologists Sir Edgeworth David and Douglas Mawson, had visited the continent prior to 1912, the Australasian Antarctic Expedition (AAE) of 1911–14, led by Mawson, was the first Australian-led and organised expedition to the Antarctic continent.

The landing party of the AAE spent their first night ashore at Commonwealth Bay on 8 January 1912. Their main living hut and workshop were constructed between blizzards over the following weeks, before an 'annexation ceremony' on 25 February. On 16 January this year, 26 modern-day expeditioners paid tribute to the men of the AAE and their achievements, at the Mawson's Huts Historic Site.

Australian Antarctic Division Director, Dr Tony Fleming, read a message from the Prime Minister, which acknowledged the significant contribution to science that stemmed from the AAE. The message was sealed in a time capsule, which also contained Australian children's visions of Antarctica in 100 years time, as well as books and objects relevant to today's Antarctic program. The time capsule will be opened in 2112. Dr Fleming, himself a descendent of 'heroic era' Antarctic expeditioners, also reflected on the scientific legacy of the AAE, which helped drive and define today's modern Antarctic program (page 2).

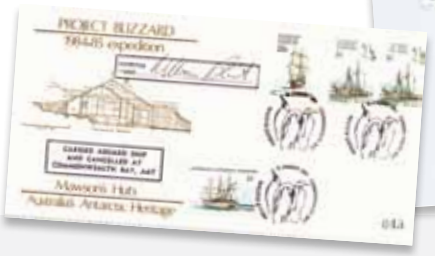
This commemorative issue of the *Australian Antarctic Magazine* focuses on the changes and achievements in Australia's Antarctic program over the century. Among these is the exploration and acquisition of the Australian Antarctic Territory (42% of Antarctica), the formation of Australian National Antarctic Research Expedition(s) (ANARE), the founding of Australia's three Antarctic stations, the development of a world-class Antarctic science program, and the emergence of the Ice Class 1 ships which facilitated sovereignty and science. Central to our achievements has been the Antarctic Treaty, and the defining characteristics of Australian Antarctic expeditioners – strength of leadership, commitment to peace and science, and the spirit of adventure.

This issue also looks at the importance of writing, art and photography in communicating Antarctica to the world, and providing a creative outlet for expeditioners during months of isolation and darkness. Almost 100 years since its inception, the AAE's 'newspaper' *The Adelie Blizzard* has been published for a modern readership. Through *The Adelie Blizzard*, through the work of thousands of expeditioners over the decades, and through the conservation of Mawson's Huts, the spirit of the AAE continues.

In the words of historian Tom Griffiths, during the Commonwealth Bay commemoration ceremony, 'the voices of the original expeditioners resonate in our hearts and minds with growing power, and their vision continues to inspire us.'

Let us hope that our actions and vision in Antarctica today, inspires those who come after us and who open the commemorative time capsule in 2112.

WENDY PYPER
Editor



CORRECTION

In the last issue of the magazine we reported that the 'first letters' with a Cape Denison postmarker were stamped at Mawson's Huts, Commonwealth Bay, in December 2010 (Issue 21: 7, 2011). In fact, this was the third postmarker to have been issued and used at Cape Denison. The first two were issued by Australia Post for use by the Project Blizzard teams that visited Cape Denison in the summers of 1984–85 and 1985–86 to conduct conservation work on the huts. The first postmarker was dated 16 January 1985 and referenced Commonwealth Bay, and the second was dated 8 January 1986 and referenced the anniversary of Mawson's landing at Cape Denison. The Editor thanks Project Blizzard Expedition Leader, William Blunt, for correcting the record and providing copies of the postmarkers.

Marking a centenary in Antarctica

On the occasion of the centennial service for the Australasian Antarctic Expedition, held at Commonwealth Bay, Cape Denison, Antarctica.
16 January 2012

Antarctica and great explorers go hand in hand. First came James Cook, arguably the greatest of them all. His circumnavigation of the then unknown Antarctic continent in the 1770s lay to rest the myth of a great southern land.

After Cook, other great explorers ventured south into the waters that we have sailed over these last few days: Bellingshausen, Wilkes, Ross and Dumont d'Urville to name just a few. Yet those expeditions barely glimpsed the Antarctic continent. Then Douglas Mawson strode on to the stage.

He was a giant figure in the 'heroic era' of Antarctic exploration. Mawson, who had previously been south with Shackleton, put together an expedition with a distinctly Australasian flavour. While Scott and Amundsen (and indeed much of the world's press) were focused on their race to the south pole, Mawson headed to the completely unexplored vast spaces of East Antarctica.

In their wooden ship, the SV *Aurora*, the men of the Australasian Antarctic Expedition were truly heading off the edge of the map when they sailed from Hobart in December 1911. A grand adventure for 'the young sons of the younger son'. It was to be a defining moment for our newly-born Federation.

But the Australasian Antarctic Expedition wasn't just about discovering new lands. It boasted a scientific program that was unparalleled in the history of Antarctic exploration. Mawson was first and foremost a scientist, and he knew the value of Antarctica for scientific discovery.

Mawson couldn't have done this alone. The Australasian Antarctic Expedition was very much a team effort. He had enormously capable men under his command, including his second in command, Captain John King Davis; and the leader of the western party, Frank Wild. It is important on this day that we recognise all the members of the Australasian Antarctic Expedition. Too often they are forgotten men, lost in the shadow of Douglas Mawson. So let us acknowledge them now.

The staff of the Adélie Land Station here at Commonwealth Bay, led by Dr Douglas Mawson: Messrs Bage, Bickerton, Close, Correll, Hannam, Hodgeman, Hunter, Hurley, Jeffryes, Laseron, Madigan, McLean, Mertz, Murphy, Ninnis, Stillwell, Webb and Whetter.

The staff of the Queen Mary Land Station on the Shackleton Ice Shelf, led by Frank Wild: Messrs Dovers, Harrisson, Hoadley, Jones, Kennedy, Moyes and Watson.

The staff of the Macquarie Island Station, led by George Ainsworth: Messrs Blake, Hamilton, Sandell and Sawyer.

And lastly the Ship's Party, under the command of Captain John King Davis: Messrs Blair, Gray, de la Motte, Gillies, and the unrecorded seamen of the S.Y. *Aurora*

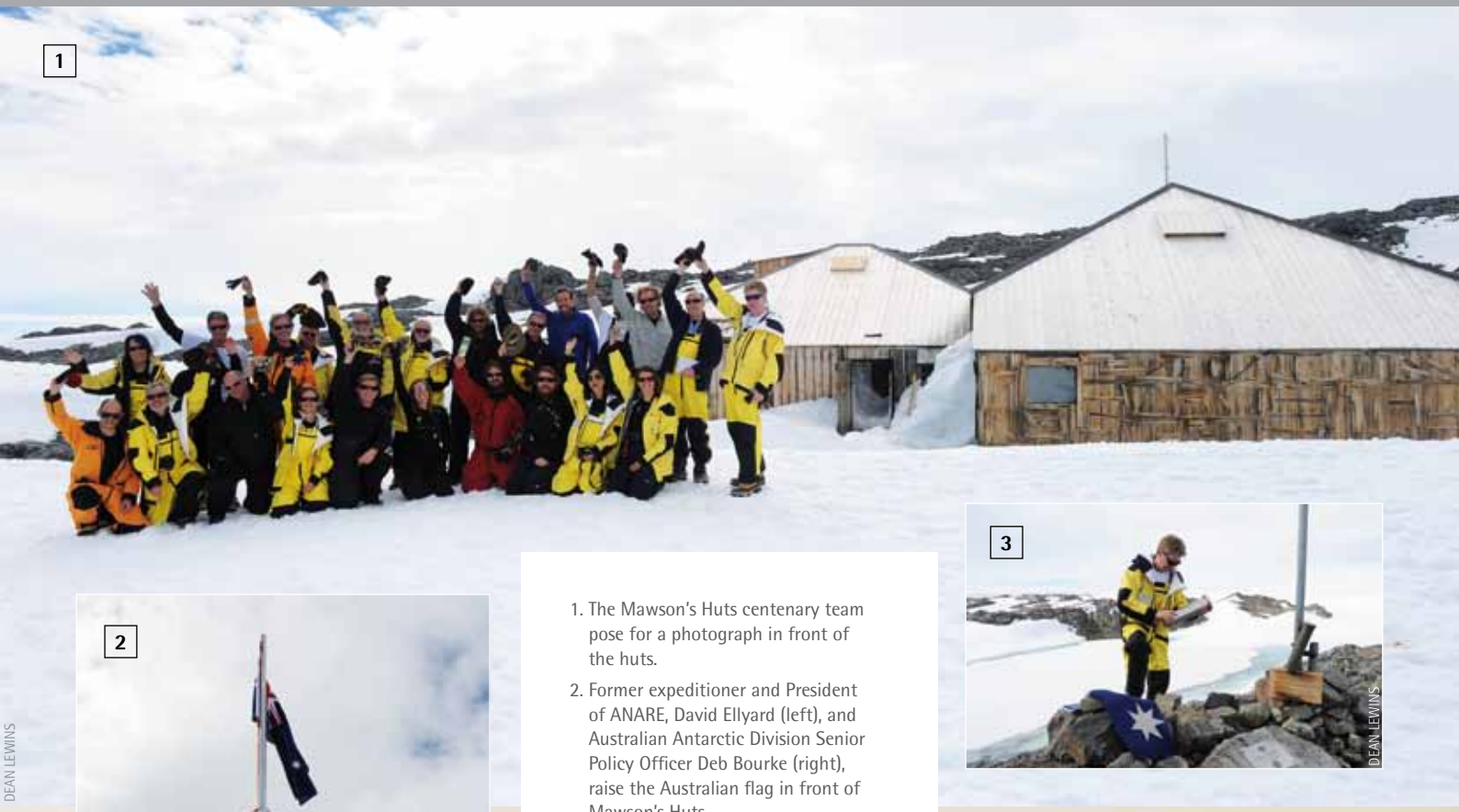
I had the privilege of meeting many of their descendants in Hobart a few weeks ago. Clearly those early explorers are not forgotten by their families, and nor should they be forgotten by us.

Sadly, the expedition was not without tragedy. We remember today Dr Xavier Mertz and Lieutenant Belgrave Ninnis who died during the Far Eastern Sledging Party's trip. We gratefully acknowledge and salute their invaluable contribution to Australia's first Antarctic expedition. As it says on their memorial cross, 'they died in the cause of science'.

Mawson was driven by an unswerving conviction of Antarctica's significance to scientific research. He was determined to convince government that this wild, untamed land was a treasure trove to be studied for its secrets of what may lie ahead for the planet. Surely placing science at the centre of Antarctica's future is the greatest gift from the heroic era of Antarctic exploration.

Antarctica and its surrounding ocean has become a globally unique region where many nations come together to undertake science for the public good. In the years since those early explorers made their first faltering steps in Antarctica, our research has taught us much about the continent and how its physical and biological systems function. With this has grown an awareness of the extraordinary degree to which Antarctica and the Southern Ocean drive global change.

Antarctica holds most of the world's fresh water in its frozen plateau, and the Southern Ocean is the globe's largest sink for carbon. Changes in climate, which are generally most manifest in our polar regions, have the potential to impact all of our lives. The knowledge we gain from doing science in the Antarctic and the Southern Ocean is critically important for us to understand and respond to global change.



DEAN LEWINS

DEAN LEWINS

1. The Mawson's Huts centenary team pose for a photograph in front of the huts.
2. Former expeditioner and President of ANARE, David Ellyard (left), and Australian Antarctic Division Senior Policy Officer Deb Bourke (right), raise the Australian flag in front of Mawson's Huts.
3. Australian Antarctic Division Director, Tony Fleming, places a time capsule at Proclamation Hill above Mawson's Huts, to mark the 100th anniversary of the AAE landing at Commonwealth Bay.

Australia's Antarctic Science Program reflects these pressing issues and has placed Australia at the forefront of Antarctic science. Truly, Antarctic science is more relevant to the Australian public than ever before.

Sir Douglas Mawson could be justly proud of the science legacy he left for Australia and would undoubtedly approve of our overarching ambition to value, protect and understand this very special and remote region.

Many developments have taken place since 1911 in the world's attitudes towards Antarctica. Perhaps chief amongst these was the entry into force in 1961 of the Antarctic Treaty, and the subsequent development of the Antarctic Treaty System, including the 1991 Madrid Protocol that banned mining in Antarctica.

The steady trend has been towards increasing participation in Antarctic affairs by the international community. The geopolitical landscape in Antarctica today is much more complex than in Mawson's time, with Malaysia recently becoming the 49th contracting party to the Antarctic Treaty. While this increasing complexity presents some challenges, it also affords great opportunities for collaboration with other nations to further the world's knowledge.

It is very much in keeping with Mawson's vision and legacy that Australia continues to be a natural leader in East Antarctica where our stations and science are focused, and where Mawson's life's work led to the proclamation of the Australian Antarctic Territory.

Today, the men and women of Australia who continue to come to Antarctica do so with the same drive and dedication to science and the spirit of peaceful international cooperation that Dr Douglas Mawson and his men brought with them.

I am frequently asked - what is the enduring legacy of those early expeditioners? My answer is unequivocal – they laid the foundations for an entire continent to be devoted to peace and science, where nations work together in a spirit of collaboration. What a wonderful legacy they have left us! We must be ever vigilant to ensure that we preserve this legacy and hand it on to our grandchildren.

TONY FLEMING
Director, Australian Antarctic Division

CENTENARY VOYAGE BLOGS

ABC journalist, Karen Barlow; historian and former Australian Antarctic Arts Fellow, Tom Griffiths; and National President of the ANARE Club, David Ellyard, each kept blogs of their voyage to Commonwealth Bay and the centenary celebrations. Read their blogs at:

http://blogs.abc.net.au/news/in-mawsons-footsteps/

http://ceh.environmentalhistory-au-nz.org/category/aae/

http://anarensw.weebly.com/david-ellyard-aae-report-2012-voyage.html

LIFE AND DEATH IN THE HOME OF THE BLIZZARD

1

SWAINE STUDIO

3

EDGEWORTH DAVID

Mawson's Huts sit on Antarctica's most windswept shore. A bare 60 m inland from the frigid waters of the Southern Ocean, the striking Baltic pine-clad and Oregon-framed timber building is nestled on the rock of Cape Denison, unbowed by a century of near-constant blizzards.

Under a still blue sky Cape Denison is an enchanting wilderness: Adélie penguins cry from their rocky nesting sites near the tiny harbour, seals dot the ice onshore and skuas hover overhead. Behind the hut, the Antarctic ice sheet rises steeply towards the polar plateau. At its worst, this is one of the most terrible environments on earth, a place where blizzards drive blinding snow for weeks on end in the cold and dark of the fierce Antarctic winter.

Near the hut is spread the detritus of one of the most remarkable expeditions ever mounted. The plume extends windward north and contains boots, scraps of clothing, timber, empty tins, bleached seal bones and parts of a stove, among hundreds of other artefacts of the Australasian Antarctic Expedition (AAE).

Further afield lie several smaller huts, testament to their scientific work: the remains of a tiny astronomical observatory – the Transit Hut; the Magnetograph House; the standing ruin of the Absolute Magnetic Hut; the scattered remains of a weather station. On the skyline of a western ridge, a memorial cross to the men who gave their all stands watch over the historic site.

Douglas Mawson was born near Bradford, Yorkshire, on May 5, 1882, the second son of Robert and Margaret Mawson. The family moved to Australia when the lad was two and he completed his education at Sydney's Fort Street Model Public School. His headmaster noted the leadership and organisational skills which would hold Mawson the man in great stead: 'If there is a corner of this planet of ours still unexplored, Douglas Mawson will be the organiser and leader of an expedition to unveil its secrets'.

Mawson met Ernest Shackleton as the explorer passed through Adelaide late in 1907 en-route to lead the British Antarctic Expedition. The young scientist offered his services to the expedition at no cost. It was on this expedition that Mawson was to learn lessons and make friendships that would last throughout his lifetime.

Mawson's first experience of the harshness of polar travel came in March 1908 when he was part of a six man party (led by his former university lecturer, Australian geologist Edgeworth David), which set off to make the first ascent of the nearby active volcano Mt Erebus. In October that year, Mawson was one of a three-man manhauling party (also led by David) who set out to locate the South Magnetic Pole and claim it for 'the British nation'. After a brutal journey, they reached the vicinity of the pole in mid-January and took one of the photos of forlorn men around a British flag, so typical of the era. They were plucked from the coast by the expedition's ship on February 4. In four months they had covered 2028 km.

The hardships of the trek did nothing to dissuade Douglas Mawson from further Antarctic exploration. Indeed the idea of his own

2

FRANK HURLEY

1. Douglas Mawson's leadership and determination were evident from a young age. His Headmaster at Fort Street Model Public School predicted: 'If there is a corner of this planet of ours still unexplored, Douglas Mawson will be the organiser and leader of an expedition to unveil its secrets'.
2. AAE expeditioners raise the flag after completion of the Main Hut at Commonwealth Bay, 1912.
3. On 16 January 1909, as part of Shackleton's British Antarctic Expedition, (L-R) Alistair Forbes Mackay, T W Edgeworth David and Douglas Mawson arrived at the South Magnetic Pole after a three-month journey.
4. Douglas Mawson dressed to receive his knighthood on Monday 29th June 1914, at St James Palace throne room.
5. John Hunter (left), Alfred Hodgeman and 'Robert' Bage wash up in the living quarters of the Main Hut, 1912.

'We were soon inside a beautiful, miniature harbour completely land-locked. The sun shone gloriously in a blue sky as we stepped ashore on a charming ice-quay – the first to set foot on the Antarctic continent between Cape Adare and Gaussberg, a distance of about 2000 miles.'

Douglas Mawson, *The Home of the Blizzard.*

expedition seems to have been formed amid the suffering. 'During the long hours of steady tramping across the trackless snowfields, one's thoughts flow in a clear and limpid stream, the mind is unruffled and composed and the passion of a great venture springing suddenly before the imagination is sobered by the calmness of pure reason,' he wrote.

His initial plan was nothing if not ambitious. It required the raising of thousands of pounds, the purchase of a ship, the recruitment of personnel and the organisation of tonnes of supplies to support several dozen men at four bases in unknown country for up to two or even three years. From the moment of conception to the day of sailing was to be less than two years.

In London in January 1910, the ambitious 27-year-old began to push his plan to explore the Antarctic coastline. Robert Scott, then planning his ill-fated British Antarctic Expedition, declined Mawson's offer to lead an additional four-man western party. Instead, Scott offered to pay Mawson £800 for two years work with his expedition – with the promise of a place as one of the team to push to the South Pole. Mawson was more interested in science. 'I told him there was no hope of my joining,' Mawson noted.

Back in Australia, Mawson met Paquita Delprat, who was to become his wife. Mawson and Paquita conducted their courtship in the latter half of 1910, with his planned expedition looming larger in the wings. He proposed in December, with the promise they would wed on his return. For Paquita, it was to be a long wait.

The AAE sailed from Hobart on December 2, 1911. It was a Saturday and a vast cheering crowd had turned out to farewell the *Aurora* and the 31 men of the expedition from Queens Wharf. Roald Amundsen was less than two weeks from the pole. Scott was 40 days into his own doomed trek, six weeks from the pole and four months from death. The map of the Antarctic coast was perhaps one-tenth complete.

After setting up a wireless relay station on Macquarie Island, the *Aurora* headed south and on January 8 found itself off a mile-long rocky outcrop in the middle of Commonwealth Bay, nearly 3000 km south of Hobart. It was the first spot even remotely suitable for a base they had seen and it looked perfect. It had easy access to the polar plateau via a gently sloping moraine and a sheltered boat harbour. Mawson's relief at finding a suitable landing site was immense.

The men quickly erected their prefabricated timber hut at the head of Boat Harbour and gladly moved from their tents at the beginning of February. The building known today as Mawson's Hut is an amalgamation of two huts once intended for separate bases – a larger living quarters and a smaller workshop section. The men's bunks lined the walls of the living hut, a kitchen table and stove sat at the centre. Mawson enjoyed the privacy of a small room.

Winter brought the cold, the dark and a worsening wind, beyond anything experienced by humans before. Wind-driven snow buried the hut under deep drifts.The strongest gust recorded reached 320 km/h and winds of 160 km/h were unremarkable. Gusts blew men from their feet, scattered equipment and made travel over even the shortest distances unbearable. As the outside temperature plunged to -40°C, the men discussed the possibility of the hut being blown away, or of the roof bursting outwards. It would have meant certain death for all.


7

DAVID KILLICK

Mawson planned six journeys of exploration of varying lengths and overlapping itineraries to set out in early November 1912. His own Far Eastern Party would be the strongest with the most ambitious and dangerous task ahead. Mawson, Xavier Mertz and Belgrave Ninnis were to map the most distant sections of unknown coastline east of Cape Denison.

Hidden crevasses were a constant danger for the party. There were several anxious moments early in the trip when men, dogs or sledges broke through. On one occasion Ninnis saved himself by flinging his arms out as he dropped through the lid of a five-metre-wide crevasse they had unknowingly pitched their tent on. On another, a sled was barely saved when it jammed in the top of a crevasse.

On December 14 the party was in high spirits. They had cut their load to two sledges and were making good progress. It was clear and warm, just -6°C and they were just a few days from turning for home. Disaster struck early in the afternoon as they crossed yet another crevasse. Mertz skied across and Mawson rode across on his sledge. Ninnis, on foot, broke through the snow bridge without a sound. Mertz looked back and raised his hand in puzzlement. Mawson turned around. There was nothing to see but a hole in the snow.

Mertz and Mawson peered into the darkness of the crevasse. A dog and a food bag were just visible on a ledge 50 m below, but nothing else. After hours of calling they surrendered hope and Mawson read the burial service. Gone with Ninnis were their best dogs, most of their food, their main tent and its supports. They were 500 km from the hut. They had six weak dogs, a spare tent cover with no poles, their sleeping bags and 10 days food for a journey of at least 30. Mawson wrote in his diary: 'May God help us'.

The pair pondered descending to the coast, but dismissed it as too dangerous across the grain of the crevasse fields and with the sea ice too uncertain. Instead they decided to follow the contour of the inland route, killing and eating the dogs as their food ran out.

By New Year's Day, 160 km from the hut, Mertz was weakening, wracked by hunger, the hard travel, the poor diet, the constant cold and the damp conditions of their makeshift tent. 'Things are in a most serious state for both of us,' Mawson wrote in his diary. 'If he cannot go eight or ten miles a day, in a day or two we are doomed.' Mertz died on January 8.

Mawson took stock. He was alone. The skin was coming off his body, his lips were split and cracked, he was suffering from conjunctivitis, his fingertips were frostbitten and festering and he was weak and debilitated. Without hope of reaching safety, he was determined to push on at least so his body could be found and his diary tell their story.

January 15, the date set for the return of the exploratory parties came and went. Two days later, Mawson crashed through the lid of a large crevasse, dangling helplessly above the abyss as his sledge behind him edged towards the lip. He considered slipping from his harness to end his suffering and thought regretfully of the food he'd left uneaten. With all his remaining strength, he pulled himself hand over hand up the rope to safety: 'Never has anyone so miraculously escaped,' he wrote. He fashioned a rope ladder to make the task easier in future.

The snow surface gave way to rough and slippery blue ice, making travel in his fur boots impossible without the crampons he'd abandoned to lighten his load. He fashioned some substitutes with screws and nails and finally managed to reach the supply depot at Aladdin's Cave on February 1. He was forced to wait for a break in the weather to chance the last nine kilometres to safety.

Mid-afternoon on Saturday February 8, 1913, Douglas Mawson staggered back to within sight of the hut. By little more than the stubbornness of his own will he had survived alone in the harshest environment on earth for 32 days. But


6

DEAN LEWINS

8

ROD LEDINGHAM

6. The Mawson's Huts Foundation in partnership with the Australian Antarctic Division has been running a conservation program at the Mawson's Huts Historic Site since 1997. The roofs of the Main Hut and smaller, attached workshop (seen here) have been overclad with baltic pine and the interiors are being cleared of snow. Artefacts within the hut are being treated by materials conservators and replaced in their original positions.
7. Artefacts on Dr Archie McLean's bunk inside the Main Hut, catalogued by the Mawson's Huts Foundation conservators in 2005.
8. Memorial Cross, erected in memory of Lieutenant Belgrave Ninnis and Dr Xavier Mertz. It was constructed by Alfred Hodgeman and Francis Bickerton from broken radio masts of Oregon pine, bolted together with heavy strips of brass to withstand hurricane winds.

from the heights of the plateau two kilometres from the hut he could see the *Aurora* on the horizon, steaming away, unable to wait any longer for a party feared lost.

Mawson recovered slowly from his ordeal in the company of a handful of men who volunteered for a second year south. Once official traffic had been sent by their intermittent wireless link, he was able to pass occasional messages back to Paquita:

'Deeply regret delay. Only just managed to reach hut. Effects now gone but lost most of my hair. You are free to consider your contract but trust you will not abandon your second hand Douglas.'

She replied:
'Deeply thankful you are safe. Warmest welcome awaiting your hairless return.' On December 13, 1913, the *Aurora* returned to Cape Denison. The men battened down the hut's skylights, stuffed bagging down the chimney and left a note for future expeditioners to make themselves at home. Mawson was in no doubt of the hardships the AAE had taken on: 'The climate, and consequently the exploration of Adélie Land, proved to be the toughest tasks on any yet known Antarctic land – or for that matter of any land'.

On his return to Australia, Mawson was greeted as a hero by the public and the press. In the two years two months and 25 days since his departure the scientist-explorer had entered the first rank of Antarctic heroes: alongside Amundsen, Scott and Shackleton.

On landing in Adelaide, Mawson's first appointment was a long-awaited reunion with his fiancée. A wedding date was quickly set and the couple were married a month after his return. The reception had an Antarctic theme, with an iceberg atop the wedding cake and decorations featuring the *Aurora*, penguins and sled dogs. Mawson was later knighted for his achievements.

In the cause of science, the men of the AAE quietly made breakthroughs in Antarctic geology, biology, meteorology, magnetism and oceanography. The expedition sent sledging parties across 2600 miles of unknown country and the *Aurora* sailed 3000 km of unmapped coastline. The party used radio successfully for the first time on the continent. The results of their scientific work filled volumes: daily observations of temperature, barometric pressure, humidity, snow fall, wind speed and direction, daily magnetic and tide observations, hard-won against the cold and wind. They described the geology and plant and animal life of Cape Denison and Frank Hurley produced more than 2500 magnificent still images and a documentary film. The expedition laid the foundation for Australia's modern Antarctic program and its claim to 42 per cent of the frozen continent.

Since 1997, the Mawson's Huts Foundation – in partnership with the Australian Antarctic Division – has worked to ensure the huts the AAE left behind would survive to see their centenary. It was not always certain. Intital engineering reports suggested the thinning timbers of the Main Hut's roof was on the point of collapse after decades of ablation by wind-driven snow. By overcladding the roof with baltic pine that threat has been averted.

The interior of the huts have also received careful attention from conservation specialists on the series of expeditions carried out by the foundation. Prime among the many tasks has been a comprehensive program of environmental monitoring to track the effect of works on the microclimate within the hut. Ice and snow which has built up inside the huts has been painstakingly removed, revealing rich seams of artefacts below, which add to the understanding of the AAE. A conservation laboratory has been established at the field camp one kilometre from the huts to help materials conservators stabilise the condition of artefacts onsite.

An expedition to the site in the 2011 summer, to continue the work of the Mawsons Hut's Foundation through the Centenary year, was postponsed due to a large iceberg blocking access to Commonwealth Bay. The expedition is expected to sail at the end of 2012.

DAVID KILLICK

Thirty-one men participated in the Australasian Antarctic Expedition (AAE) to the Antarctic continent, with many more involved in supporting the expedition on board the *Aurora*. Among the better-known personalities were Belgrave Ninnis and Xavier Mertz, who both died during the Far-Eastern sledging expedition led by Douglas Mawson. Frank Hurley carved out an illustrious career as a photographer in Antarctica and subsequent World Wars. Rhodes Scholar and meteorologist, Cecil Thomas Madigan, led the group that remained behind to wait for the return of Mawson's Far Eastern Party and went on to have a successful career in geology. Frank Wild led the AAE's Western Party and subsequently joined Shackleton's voyage on the *Endurance*, when it was crushed by ice in the Weddell Sea. But who were some of the lesser-known heroes of the AAE; also known as 'Mawson's Men'? Researcher, librarian and information manager, KYLIE QUINN, finds out.

Mawson's Men

Four Sydney residents of Mawson's 1911–1914 Australasian Antarctic Expedition (AAE) gathered in the Presbyterian section of Gore Hill Cemetery on a dismal day in May 1922. Dr Sydney Jones, Dr John Hunter, Charles Laseron and Walter Hannam were farewelling Dr Archie McLean, a man they deeply admired. Their reunion under different circumstances would have been a cheerful affair. Mawson's expeditioners were united by the Australian sense of humour, their understanding of Antarctic perils, their explorer's curiosity, and the desire to unlock the scientific secrets of Macquarie Island and the Antarctic continent. The death of the expedition's Chief Medical Officer was a time to remember his commendable achievements and to consider their own Antarctic contributions and what their futures would be.

Dr Archie McLean, the AAE's Chief Medical Officer, fondly referred to as 'Dad'.

Dr Archibald Lang McLean

Upon his return from Antarctica, Fivedock Public School presented McLean with a pen, demonstrating pride in their past student's achievements. Graduating from Sydney University in Arts and Medicine, McLean worked briefly as Resident Medical Officer at Lewisham and Coast Hospitals, before joining Mawson's AAE with fellow medical graduate, Dr. Sydney Evan Jones. McLean was assigned to Mawson's Main Base, and Jones to Frank Wild's Western Party. Although separated by over 1600 km of hazardous coastline, they worked together enroute, providing veterinary care of the sledge huskies and performing autopsies on those that died on the voyage.

McLean's non-medical duties included cooking and mess duties, lighting the range, and contributing to the construction of the Main Hut. He took meteorological and tidal observations and assisted with the erection of the wireless masts. McLean was the first to record electrical effects – he noticed St. Elmo's fire, a discharge of electricity on the points of the nephoscope.

Bacteriology and physiology were McLean's research focus. He studied changes in the blood and general health of his comrades by taking monthly blood smears and swabs from the ears, nose and throat. He determined that it took about six weeks for expeditioners to acclimatise and that during periods of constant exercise the red blood cell count rose dramatically. Interested in the physical and psychological wellbeing of the expeditioners, McLean was affectionately called 'Dad'.

McLean made significant contributions to sledging journeys. Initially venturing south with Eric Webb and Frank Stillwell, he then made the arduous 400 km eastern journey with Cecil Madigan and Percy Correll. They traversed sea ice and a dangerous glacier tongue to map the coastline east of Main Base and climb Aurora Peak. They named Penguin Point after the Adélie penguin that startled them on their arrival. Madigan and Correll completed a geological survey, while McLean collected lichens, algae and mosses, and studied a variety of birds.

When Mawson's sledging party was overdue, McLean selflessly remained at Main Base with five others to find their missing members, while most Antarctic expeditioners departed on the *Aurora* as planned. McLean performed varied tasks in this unexpected second year. He treated Mawson's injuries and transformed him from

FRANK HURLEY.

The support party for the Southern Sledging Party (L-R): John Hunter, Herbert Murphy and Charles Laseron, 1912.

near death to a full recovery over the ensuing two months. He cared for Jeffryes, who suffered from periods of paranoia and delusions. He kept the biological log and helped Mawson to sort biological specimens for inclusion in John Hunter's collection. He also edited the seven editions of *The Adélie Blizzard* – a witty publication of expeditioners' verse, articles, letters, and short stories, designed to lift morale during the winter.

After the AAE McLean attended Mawson's wedding and sailed to England with Mawson and his new bride, Francisca Adriana (Paquita). McLean assisted Mawson in writing *The Home of the Blizzard* and the AAE's scientific work, and his contribution was well regarded. John King Davis, Master of the *Aurora*, also relied on McLean's literary expertise while penning his book, *With the "Aurora" in the Antarctic, 1911-1914*. While in England, McLean met his wife, Eva Maud Yates. He also served in the Royal Army Medical Corps, but was discharged with appendicitis.

While recovering his health in Australia, McLean worked at the Gladesville Hospital for the Insane, and continued with his Medical Doctoral thesis *Bacteriological and other researches in Antarctica*, which gained him the University Medal and the Ethel Talbot Memorial Prize. This outstanding work included bacteriological investigations, physiology, immunity, dietetics and psychology in Antarctic conditions.

McLean's altruistic conduct in Antarctica continued when he rejoined the war effort, as a Captain with the Australian Imperial Forces. Having established a medical post at Peromme on 31st August 1918, McLean treated 200 men in 18 hours of constant work under intense artillery fire, earning the Military Cross to add to his British War Medal and Victory Medal. During his recovery from being gassed he assisted in collating a medical history of the war. He was discharged on medical grounds, having contracted pulmonary tuberculosis while performing medical duties. He became the Medical Officer for the Red Cross War Chest Farm Colony at Beelbangara, but his tuberculosis worsened and he died aged 37.

His loss was widely felt, being reported by newspapers across Australia and in *The British Medical Journal* and *The Medical Journal of Australia*. His outstanding contribution to polar medical research set the standard of exceptional quality that today's doctors follow. He provided expert treatment to patients during his work in Australian hospitals, to Antarctic expeditioners, and to service personnel during the War, saving thousands of lives – including Mawson's.

McLean's funeral was attended by his Antarctic comrades, Hunter, Laseron, Hannam and Jones, who all lived long lives and made significant individual contributions. The men agreed with Reverend Maynard Riley's description of McLean:

'He gave his life to his fellow men. As a student he was zealous and accurate, and in Antarctica he revealed some fine traits....When his research work was taken and considered, many in the future would thank God that he lived.'

FRANK HURLEY

The inventive Dr Sydney Jones, doctor for the AAE Western Party, who later pioneered psychiatric treatments involving plants and animals.

Dr Sydney Evan Jones

Although Adelaide born, Jones grew up in Queensland, where his academic excellence was recognised with the Lilley Medal for the highest results in the state. Graduating in medicine from Sydney University, Jones completed a year as resident medical officer with the Royal Prince Alfred Hospital, before becoming the doctor for Mawson's eight-man Western Party. Like McLean, Jones's duties were not confined to medicine; he helped construct the hut named 'The Grottoes', and an igloo for the magnetic observatory. He contributed to *The Glacier Tongue*, the station's publication of poetry and articles. He was plumber, brazier, tinsmith and cook, and worked the acetylene plant. Thoughts of marrying Olive Booth, whose image hung beside his bed, sustained Jones during the most difficult times.

Walter Hannam operates the wireless at Cape Denison.

Jones made crucial contributions to the success of sledging journeys. His inventiveness and persistence were illustrated by his experiments with glaxo, a powder made from milk and cream, which produced a high energy biscuit. This enabled more life-sustaining food to be carried on sledging journeys. In August 1912 Jones and five comrades set out in -37°C to lay a depot of provisions for the summer sledge journey. During this trek, five anxious and uncomfortable days were spent sheltering from the elements – they could hear the avalanches over the 160 km/h wind gusts.

In November, Jones, George Dovers and Charles Hoadley sledged past the Helen Glacier and discovered a group of rocky islets. They named Haswell Island, which was rich in bird life – an emperor penguin rookery, Adélie penguins, silver-grey petrels, Wilson and Antarctic petrels, Cape pigeons, and skua gulls stealing unattended eggs. Jones described the sound from the penguin rookery as similar to sports spectators at an exciting game. They reached Gaussberg, then returned to The Grottoes, having made scientific advances and charted 643 km of coastline. Jones Rocks and Jones Ridge are Antarctic landmarks named in his honour.

After his Antarctic experience, Jones was a doctor at Parramatta, Rydalmere and Callan Park psychiatric facilities in Sydney. Jones's interest in psychiatry may have been inspired by McLean's challenges in caring for Jeffryes during his year at Main Base, or his own psychological adjustment to life without his wife, Olive, who died from post natal complications in 1916. Jones provided psychiatric care for many returned Australian soldiers who were traumatised from their experiences of war. By the end of 1918, 941 service personnel had been successfully treated and reintegrated into the Australian community.

Jones is described as a pioneer of psychiatric treatments, using a holistic approach that included psychoanalytical therapies and the use of plants and animals in patient care. Jones became the Medical Superintendent of Broughton Hall in 1925, until his death in 1948, and is credited with creating a hospital of teaching excellence. Jones's early intervention approach was followed by other psychiatric clinics in the 1930s. Broughton Hall's Evan Jones Lecture Theatre was named in his honour. Jones also led the neurology and psychiatry section of the British Medical Association (New South Wales Branch) and helped establish the Australasian Association of Psychiatrists, illustrating his commitment to improving psychiatric practice.

John Hunter, the AAE biologist who later became a doctor, was the most highly decorated member of the AAE for his subsequent war-time and academic achievements.

Dr John George Hunter

Attending the same high school and University as McLean, Hunter was the Main Base Party's biologist. His valuable contribution to the expedition was recognised in the naming of Mount Hunt and Cape Hunter. Hunter's collection of samples included mosses, lichens, insects, red and brown star-fish, marine worms, jellyfish, pteropods and small fish.

Hunter's utmost respect for McLean's personal and professional attributes may have influenced his decision to return to Sydney University and become a medical practitioner. On graduation in 1916, Hunter worked in surgery and medicine as a resident at the Royal Alexandra Hospital for Children. He married nurse Clarice Mary Walker, before joining the Australian Army Medical Corps. Like McLean, he served in England and France and was the recipient of medals for his outstanding service, including: British War, Victory, War, Australian Service, King's Jubilee and Coronation medals. During World War 2 he was a Major in the home militia, responsible for staff and medical duties.

Hunter's civilian positions included that of general practitioner at Mascot and Botany, assistant physician at Sydney Hospital, honorary physician at Royal South Sydney Hospital, and lecturer of medical ethics at Sydney University. From 1929 he was secretary of the New South Wales branch of the British Medical Association (BMA), organising the BMA's first post-graduate course for medical practitioners. He served as Australasian secretary of the World Medical Association and chaired the Australian Council of Social Service (1961–64). He was crucial to the formation of the Australian Medical Association (AMA), drafting its code of ethics. He was awarded


FRANK HURLEY

Frank Hurley trims John Hunter's beard. Other figures (L-R): Bage, Stillwell, McLean, Madigan, Hodgeman and Laseron on the bunk.

the BMA (Australia) gold medal and in 1957 was appointed CBE. As a demonstration of the high regard felt for this committed doctor, the AMA created the JG Hunter fund, providing scholarships in his honour, and his portrait hangs in the AMA's Canberra office. He died in 1964, sadly missed by Clarice and their five children.


AAE

Charles Laseron was John Hunter's scientific assistant on the AAE and a fine singer. He later collected art and geological specimens for the Sydney Technological Museum and published scientific works on Australian molluscs as well as essays, books and drawings.

Charles Francis Laseron

Hunter's assistant in Antarctic science was Charles Francis Laseron. Laseron was educated in Lithgow, then at St. Andrew's Cathedral Choir School as scholar and chorister. No doubt his singing skills accompanying the gramophone were appreciated when entertainment was required, along with the vocal skills of Hunter, Hurley, and Correll. 'The Washerwoman's Secret', an opera composed by Laseron, was the cause of much raucous laughter.

Laseron's father could not afford university fees, so Laseron obtained a diploma in geology from Sydney Technical College, while working as a college lecturer. On graduation he became a collector with the Sydney Technological Museum (now the Powerhouse Museum), obtaining leave when joining Mawson's expedition, and to serve in World War 1. While in Antarctica his work was to obtain, prepare and preserve biological specimens.

Laseron, Hunter and Herbert Murphy's sledging journey provided support for Edward ('Robert') Bage's Southern Sledging Party. Achievements from their trek included the collection of specimens of granites and gneisses, and discovering nests of the silver grey petrel. Laseron's second sledging journey examined the coast east of Commonwealth Bay with Frank Stillwell and John Close. Laseron collected eggs, skins and took photographs, and the team were successful in completing their allocated survey work, specimen collection and data collection. Having endured the perils of nature, it was a man-made hazard that almost claimed their lives – the men received carbon monoxide poisoning from their stove while cooking breakfast in a dug-out snow shelter. Laseron's Antarctic experiences were published in 1947 in *South with Mawson*.

Like many from Mawson's expedition, Laseron joined the Australian Imperial Forces. After two weeks on the Gallipoli Peninsula he was wounded in the right foot and ankle by a sniper's bullet.

Although physically recovered in three months, Laseron was diagnosed with neurasthenia, and discharged on medical grounds. His wartime experiences were published as *From Australia to the Dardanelles*, and he wrote many newspaper articles. In World War 2, Laseron's contribution was as an instructor in map reading and topography – presumably he honed these skills in Antarctica. In this capacity he applied to patent the invention *Improved sun compass*.

Laseron contributed to the geology and art collections of the Sydney Technological Museum. His interest in geology preceded the AAE; he had published a paper on the Shoalhaven district (1906), and geology and palaeontology papers. As manager of the museum's art collections, Laseron published *Descriptive guide to the collection of old pottery and porcelain*, and was largely responsible for the creation of the New South Wales Applied Art Trust. He resigned in 1929 after a lengthy dispute with the museum curator, Arthur Penfold. Laseron established an antiques business, and auctioned books, coins and stamps, becoming a highly respected authority on philately.

In later life Laseron was a clerk for the Colonial Sugar Refinery Company, while continuing to write. His six publications on Australian malacology (the study of molluscs) are kept in the Australian Museum, Sydney. He completed 20 essays and over 2000 drawings and described hundreds of new species, making him a pioneer in this field. A new genera and species of molluscs have been named after him. He was an honorary correspondent of the Australian Museum and in 1952 the Royal Zoological Society of New South Wales made him a fellow. His books, *The Face of Australia* (1953) and *Ancient Australia* (1954), were well reviewed in


FRANK HURLEY

Frank Wild, Charles Dovers and Dr Sydney Jones on the roof of "The Grottoes".

the *Sydney Morning Herald* and *The Argus* for making the beauty of the Australian landscape of scientific interest to lay readers.

Laseron wrote the 1958 obituary for Sir Douglas Mawson in the *Australian Journal of Science*, his own obituary appearing in that journal the following year. He was recognised as a scholar of note in the scientific community and was described as having led a full life, much loved by his wife Mary Theodora Mason and their two children.


FRANK HURLEY

AAE wireless operator and mechanic, Walter Hannam, established the foundations for the first radio communications from Antarctica.

Walter Henry Hannam

Like Laseron, Hannam lacked a university education – he obtained his science diploma from the Technical College in Sydney and worked as a gas and hydraulic engineer in his father's business, Hannam & Company.

Appointed to the AAE as wireless operator and mechanic, Hannam established the wireless telegraphic system on Macquarie Island and on Mawson's Antarctic base. Although the wireless masts were ready in early October 1912 and Hannam managed to send a message to Sawyer on Macquarie Island, a mast was destroyed by 322 km/h winds on October 13, causing further delays. Hannam created the foundations for the first radio communications from Antarctica, and his successor, Jeffryes, established reliable two-way messages.

Hannam had an enquiring and inventive mind. While establishing the Macquarie Island base the *Aurora* lost an anchor, so Gillies (the *Aurora's* Chief Engineer) and Hannam designed and constructed a replacement. The Main Base expeditioners conceived, and Hannam created, the gauge with which they measured snow drift. His continued ingenuity in civilian life was probably inspired by his cold Antarctic experiences, including his patent *Improvements in rapid type electric water heaters for bath and other domestic service*.

Hannam and Francis Bickerton were responsible for preparing the midwinter feast. Fortunately, by this stage in the expedition, Hannam's repertoire of dishes extended beyond the stew, biscuits and cocoa that comprised his culinary knowledge at the expedition's outset. Hannam continued work at the hut during the sledging season, as magnetician and general handyman. The three islands in the eastern part of Commonwealth Bay were named Hannam Islands by Mawson, in appreciation of Hannam's valuable contribution to the expedition. The Australian Antarctic Division's Walter Hannam Building also honours him.

During World War 1, Hannam served in England as a Lieutenant with the Australian Motor Transport Corps, and in France as Corporal with the Australian Wireless Section. His medals included the Star, Victory, and General Service medals. He was discharged due to arthritis in his knees.

Hannam established his own electrical and mechanical engineering business in Mosman, where he lived with his wife. He continued to be passionate about wireless communications and was a founding member of the Wireless Institute of Australia. Hannam is described as being hard working, obliging and persistent. His warm and friendly personality was valued by Mawson, and an asset to the expedition.

Mawson's Men

Mawson received a knighthood for his achievements, while the efforts of members of the land parties were rewarded with the Kings Silver Antarctic Medal. They had survived Antarctica, the land with the lowest mean temperature and the highest wind velocity on earth.

Most men chosen by Mawson exceeded his expectations in being hardy, amicable and reliable. Personal attributes common to Jones, Hunter, Laseron, Hannam and McLean included being inventive, courageous, optimistic and generous. They were diligent in their work and highly committed to their field of expertise. Although each man made important and unique individual contributions during, and post, their Antarctic experiences, they were proud to be labelled by *The Argus* as 'Mawson's Men'.

KYLIE QUINN

Attaining the South for the progress of civilization

In 1910 Douglas Mawson began making preparations to lead an Australian Antarctic expedition. He proposed to explore the sector lying between 160° to 90° east longitude, known to geographers as the 'Australian Quadrant'. He believed that Antarctica had a role to play in developing the sciences, which would lead to 'the progress of civilization'. Unveiling the secrets that lay in the far reaches of the globe was the ambition of the adventurer-scientists and in the early decades after Federation, the acquisition of the Australian Quadrant became the ambition of the nation.

Before the First World War, Mawson and the Australian scientific community keenly pursued their twin goals: conducting Antarctic science and persuading the Australian Government to bring the Australian Quadrant under its control. Australian scientists feared the need to appeal to a foreign power for permission to enter the region to Australia's south. The scientists were well aware that French Adélie Land sat in the middle of the Australian Quadrant and that its boundaries had never been delineated. If the Australian Government did not act quickly, then Australia could forfeit its future opportunities in the region.

The Australian Quadrant was almost unknown when Douglas Mawson began organising the Australasian Antarctic Expedition (AAE). No explorer had ever landed there, although American explorer, Charles Wilkes, had sailed around its coastline in the early 1840s and French explorer Dumont d'Urville had sighted and taken possession of a small piece of the coastline for France and named it Adélie Land after his fiancée. Mawson's proposal for an Australian expedition received the backing of the Australian scientific community and was embraced enthusiastically by Australians generally, including the Australian Government. Popular support, however, had to be translated into funds to equip the expedition.

The Melbourne *Argus*, began promoting the expedition as 'a national undertaking', calling on all Australians to support it. At times enthusiasm reached dizzying heights, even amongst the most sober. In one instance, Professor Orme Masson, President of the Australasian Association for the Advancement of Science, was reported by *The Argus* as saying that if the expedition were successfully organised, with Mawson in command, the results would be 'something creditable to himself and Australia, or he would leave his bones at the South Pole'.

FRANK HURLEY

Mawson asserted sovereignty over the African Quadrant from Proclamation Island on 13 January 1930.

Little did Professor Masson realise how close to the mark his words would become. While Mawson survived the expedition, his two companions, Belgrave Ninnis and Xavier Mertz, perished on the way back to Main Base at Cape Denison, Commonwealth Bay, after discovering George V Land.

The Prime Minister, Andrew Fisher, threw the Government's support behind the expedition and stood together with Alfred Deakin, Leader of the Opposition, and the Governor-General, Lord Denman, in lauding the first Australian expedition. The Prime Minister believed in the aims of the expedition as a quest for knowledge and that Australia, as a 'young nation', should become engaged in scientific research in the Antarctic. The Australian Government provided the sum of £5000 and, together with donations from some of the State governments, the expedition received £23 500 in official funds.

The 1911–1914 AAE was the first Australian organised and led expedition. It sailed out of Hobart on the *Aurora* on 2 December 1911. The Aurora's Captain was John King Davis who, like Mawson, was a veteran of Shackleton's *Nimrod* expedition (1907–1909). While the AAE comprised chiefly Australian science graduates, it had a distinctly international flavour. Mawson's companions who discovered and claimed George V Land were not Australian: Xavier Mertz was a Swiss ski champion and Belgrave Ninnis was a lieutenant in Britain's Royal Fusiliers. The expedition also attracted British and American donations as well as scientific equipment from continental Europe.

In March 1912, after completing the construction of the Hut at Cape Denison, Mawson flew the Union Jack and the Australian flag and took possession of the Australian Quadrant for 'the Empire and for Australia more particularly.' Mawson then organised seven teams to fan out across the Australian Quadrant to ensure that as much of it as possible as explored and mapped. Mawson and his companions claimed George V Land, which lay at the extreme east of the Australian Quadrant, while Frank Wild and his team,

exploring from their base at the far western portion of the Australian Quadrant, claimed Queen Mary Land.

Mawson returned from Antarctica on the eve of the Great War and quickly began writing an account of the expedition and the results of the scientific research. The AAE would be hailed in 1932 by J. Gordon Hayes, a leading polar historian, as 'the greatest and most consummate expedition that ever sailed for Antarctica.' In 2003, a modern British Antarctic explorer, Ranulph Fiennes, would declare that Mawson's expedition 'was one of great success in terms of geographic and scientific discoveries.' Its results continue to inform contemporary science. Mawson and the AAE had achieved international fame and had given Australia an international profile that was not connected to war. By claiming the Australian Quadrant, Mawson had established the foundations for the future Australian Antarctic Territory.

After the Great War, Mawson and the Australian scientific community began their intensive lobbying of the government to bring Mawson's claims under Australian control. With possible constitutional issues to be considered, it was not until the 1926 Imperial Conference that a recommendation was made that, in addition to the Australian Quadrant, Australia should also have under its control the adjacent 'African Quadrant' – portions of which had already been claimed by British whaling ships' captains in the 19th century. Before that ambitious proposal could be put into effect, however, a formal three-step process had to be followed. The first step was to advise the world at large of the British Empire's interest in the region. The second step was to send an officer with a Royal Commission to assert sovereignty on the spot, and the final step was to perfect the claims through the issuing of appropriate legal instruments in order to bring the area under Australian control.

1

1. Macpherson Robertson was a generous benefactor of the BANZARE voyages. His support was acknowledged by the naming of Mac. Robertson Land in the Australian Antarctic Territory. (Photo circa 1930)
2. The AAE (1911-14) had an international flavour with Mawson's party including Swiss ski champion Xavier Mertz and British lieutenant Belgrave Ninnis – seen here with Herbert Murphy erecting a tent, with Mertz's Swiss flag in the background.
3. Douglas Mawson (in the balaclava) and the men of the BANZARE expedition, on the deck of the *Discovery* in 1931.
4. Mawson (with hat raised) takes possession of the territory explored by the AAE (1911-14) from the site of his old Main Hut at Commonwealth Bay, King George V Land, on 5 January 1931.
5. ANARE expeditioners continue to enjoy the fruits (or rather chocolate) of Macpherson Robertson's generosity.

2

XAVIER MERTZ

3

Mawson was chosen to lead the British, Australian and New Zealand Antarctic Research Expedition, which became known by its acronym, BANZARE. He was given a commission from King George V that would allow him to extend British sovereignty over an area that stretched from 160˚ to 45˚ east longitude, an area that would later be titled the Australian Antarctic Territory. The British Government provided Scott's old ship the *Discovery* as the research vessel. There would be two cruises. The first would depart from Cape Town in the Antarctic Summer of 1929–1930, to take possession of the African Quadrant and conduct scientific research.

Having sailed some distance around the African Quadrant, the BANZARE ascertained that the coastline of the entire Quadrant was unbroken. Therefore, Kemp Land and Enderby Land, both 19th century British discoveries, were all part of the same territory. On that basis, Mawson felt confident about extending British sovereignty over the entire African Quadrant, since it already possessed an informal British title. On 13 January 1930, a group of men, led by Mawson, landed on Proclamation Island and claimed full sovereignty of the region, including a new stretch of coast that Mawson named Mac. Robertson Land. Macpherson Robertson, known generally as MacRobertson, the Melbourne chocolate 'king', had been the BANZARE's generous benefactor, making a contribution of £10 000. The men erected a flagpole and secured it by stacking rocks around its foot. They attached a tablet to the pole, facing south, and Mawson read the proclamation. Three cheers were given for the King and 'God Save the King' was sung. All posed as Frank Hurley took a photograph.

Mawson had taken an aeroplane with him in order to conduct aerial reconnaissance. However, he could only use it when the weather conditions allowed. When land was seen from the air, the appropriate rituals were observed, as when he and Lt Campbell of the Royal Australian Air Force flew over the Enderby Land ice cap on 25 January 1930 and dropped a flag attached to a short mast a few miles inland, reading a proclamation at the same time. Mawson later recalled that 'we could see the flag lying extended on the ice slopes below.' The first BANZARE cruise had fulfilled its goal, despite the *Discovery* sailing in heavy ice and considerable wind, forcing it to travel 'slowly up and down' or to remain in the cruel and heavy hummocky ice, which reminded Mawson of a miniature model of New York.

Despite the onset of the Great Depression, the Prime Minister James Scullin had made it clear that Australia was glad to have been involved in the expedition because it had 'done so much to add to the world's knowledge of those remote regions.' But, if another cruise was to be sent, MacRobertson's generosity would have to be called upon again. Despite the evidently straitened times, he did not disappoint. Donations from other Australian manufacturers also bolstered the Government's contribution. The principal tasks of the second BANZARE were to complete mapping the Australian Quadrant and to investigate the area between Adélie Land and Queen Mary Land, to conduct science and to investigate the extent of the fauna, notably whales and seals, for possible future exploitation.

Smooth sailing in the Antarctic could never be guaranteed, no matter how well planned the itinerary might be. But Mawson was not particularly concerned that the 'unusually heavy pack-ice' would make it 'impossible to hoist flag' on land already defined by him in 1911. On 4 January 1931, however, Mawson was able to land at Cape Denison, the site of his old Main Base, at Commonwealth Bay, and on the morning of 5 January he took formal possession of the entire territory that had been explored by the AAE. A copy of the proclamation was sealed in a metal container and deposited at the foot of the iron flag pole. Mawson's published diary entries reveal the terrible conditions under which the BANZAREs achieved an astonishing feat of geographic and scientific investigation.

The final step of the process to bring the Australian Antarctic Territory under Australia's control was concluded in 1936 after the proclamation of the 1933 *Australian Antarctic Territory Acceptance Act*. The *Sydney Morning Herald* published a commentary on its significance, which hailed the prospect of 'commercial riches', whaling being one of them. However, the article went on to suggest that of 'even greater importance than the whaling industry to Australia is the key which meteorologists believe lies in the Antarctic to the vagaries of the weather'.

The passing of the *Australian Antarctic Territory Acceptance Act* also saw the passing of an era of exploration led by Douglas Mawson, who had dominated Australia's Antarctic ventures. Australian explorers had provided a special service to their nation by facilitating a sovereignty claim over the Australian Antarctic Territory. Mawson and his fellow scientists had recognised the strategic importance of the region south of Australia and its potential for scientific research that would benefit human kind.

It now became the job of the Government to take over the reins and to establish institutional mechanisms and set goals for Australia's Antarctic program. On 6 April 1948, Cabinet approved that 'some permanent machinery be set up for handling all arrangements for Antarctic expeditions' – and ANARE (Australian National Antarctic Research Expedition) was born.

Today Australia, through the Australian Antarctic program, continues to explore the role of Antarctica in the progress of civilisation from its three continental stations – Mawson, Casey and Davis; all named after men who spent much of their lives realising Australia's ambition to be in Antarctica.

MARIE KAWAJA

Dr Marie Kawaja is an Australian Research Council Postdoctoral Fellow at the Australian National University, Canberra. She is currently writing the political and diplomatic history of the Australian Antarctic Territory.

4

FRANK HURLEY

5

PHILLIP SAW

Founding Mawson

Australia's first Antarctic station

Australia claimed some 42 per cent of the Antarctic continent[1] by the mid 1900s, but this ambitious claim was tenuous to say the least. It was based largely on the exploration voyages of Douglas Mawson in 1911–14 and his BANZARE voyages of 1929–30 and 1930–31.

A great deal of Antarctic coastline had been examined. Some land-based coastal exploration had been achieved during the AAE, and the BANZARE voyages had covered much territory to the west of the future Australian claim, although they had made only four brief landings due to the inability of Mawson's wooden ship *Discovery* to penetrate the pack ice. Claiming territory depended on certain formalities, including building a rock cairn, raising a flag and reading a proclamation. On the first BANZARE voyage this was only achieved on Proclamation Island off the coast of Enderby Land in January 1930.

Other efforts to claim land bordered on farce. There were the flag and proclamation cylinder lobbed up on to rocks from a ship's boat near the Murray Monolith (which unfortunately rolled back into the water), and Sir Douglas' use of the expedition's Gypsy Moth float plane to fly inland and heave over a Union Jack onto the featureless ice below, while reading the proclamation aloud from the front seat of the little biplane, piloted by Stuart Campbell. On the second BANZARE voyage Mawson and four of his men landed briefly at Scullin Monolith, where they erected a flag and repeated taking possession on 13 February 1931.

One of the key conditions of territorial claims involved what was defined as 'a sufficient display of authority' in the area in question. This included exploration, science, fishing, whaling – in other words actually being there and doing something. By 1946, Australia was doing precious little of that. Sir Douglas Mawson, however, was on the case and was urging the Australian Government to consolidate Australia's Antarctic claims. With concern about Norwegian exploration in Antarctica during the 1930s, and USA interest in the 1940s, an interdepartmental Executive Committee on Exploration and Exploitation held its first meeting in January 1947 (with Sir Douglas Mawson acting as an adviser) to plan what might be done.

On 9 July 1947 ANARE (Australian National Antarctic Research Expedition) – the 's' was added later – was formed to create research stations on Heard and Macquarie islands, and to send a ship to the Antarctic continent to try and find a suitable site for an Australian station. Group Captain Stuart Campbell was appointed the Leader of ANARE and a young physics lecturer at the University of Melbourne, Phillip Law, was appointed Senior Scientific Officer.

A flurry of action saw three voyages scheduled for later that year. Two subantarctic stations were planned; one on Heard Island and the other on Macquarie Island. The only ship that could be found for this task was a former World War II LST (Landing Ship Tanks). The vessel could be run up on a hostile shore, a landing platform lowered from its blunt bows, and tanks, troops and other equipment quickly got ashore. How it would fare in the Southern Ocean no one really knew. While HMAS *LST 3501* voyaged first to Heard Island and then to Macquarie Island, an attempt would be made to send another ship, the improbably named HMAS (no less) *Wyatt Earp* south to the Antarctic continent to carry out scientific work and try and find a suitable location for an Australian station.

Wyatt Earp, a converted Norwegian herring trawler of only 270 tons, had been used by the American explorer Lincoln Ellsworth to support his attempts to be the first to fly across the Antarctic continent – achieved in 1939. He named the ship after his boyhood hero, the gun-slinging Marshall of Dodge City. After his continental flight he gave the ship to his deputy leader, Sir Hubert Wilkins, who in turn sold it to the Australian Government (with Sir Douglas Mawson's support). It was the last time an official Australian Antarctic expedition would go south in a wooden ship with sails – although it did have a diesel engine. ANARE's new Chief Scientific Officer Phillip Law voyaged on *Wyatt Earp* to conduct experiments into cosmic rays in southern latitudes. It rolled abominably, and Law

1. Supplies from Kista Dan being unloaded, including a barge caravan (top right) and the Auster 200 (top left) which was later destroyed in a storm.

2

PHILLIP LAW

2. Huge slabs of floating ice building up around *Kista Dan* threatened to crush the ship as she tried to make her way into Horseshoe Harbour in February 1954. The ship was freed with explosives and crowbars.

3

PHILLIP LAW

3. The flag raising and official naming of Mawson station by Phillip Law, 13 February 1954.

4

5

PHILLIP LAW

6

DAVID EASTMAN

4. The *Wyatt Earp* arriving in Hobart for her final voyage with American explorer Lincoln Ellsworth on February 4,1939. The ship proved unsuitable for Australia's Antarctic needs.
5. Mawson station in 1957, three years after its establishment.
6. The first ANARE leader, Group Captain Stuart Campbell, on Heard Island, December 1947.
7. Phillip Law attempts to rescue a Weasel from the sea ice at Mawson, 1954.
8. Mawson station today.

7

PHILLIP LAW

later wrote that Captain Cook's ship *Resolution* 'was twice as big and I venture to say twice as comfortable'.

HMAS *Wyatt Earp* was totally unsuitable for its mission and as Phillip Law said, 'as an icebreaker this ship was a gnat'. After two false starts the ship finally sailed on 7 February 1948, far too late in the season to do any useful work and unable to penetrate the pack ice to reach the continent.

Clearly the establishment of a continental station would have to wait for a suitable ship, and that could be many years away. Group Captain Stuart Campbell was a born adventurer and could not bear the thought of the routine boredom of running the Heard and Macquarie island stations indefinitely, and resigned. Phillip Law succeeded him in 1949 and headed the Antarctic Division for the next 17 years, coordinating ANARE's scientific programs and personally leading the exploration of 5000 km of uncharted Antarctic coastline.

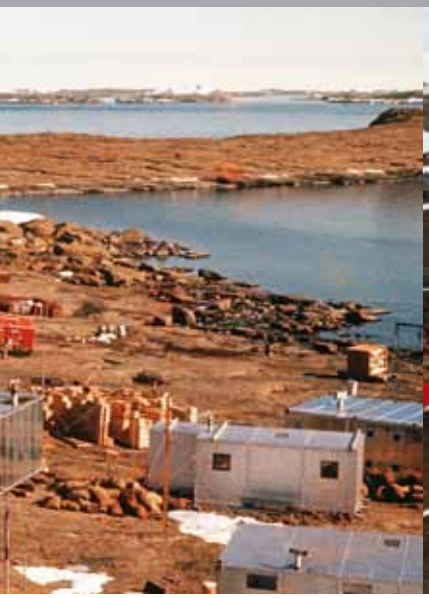
But it was not until 1953 that a suitable steel, ice-strengthened ship, the Danish-built *Kista Dan*, could be found, which could breach the Antarctic pack ice and establish Australia's first mainland Antarctic station. But where would this be? Law knew that it was essential to build a station on solid rock, rather than on the moving Antarctic ice sheet, which would inevitably break off the coast as an iceberg, taking the station with it. Options were narrowed considerably when Law gained access to aerial photographs of the Antarctic coastline, taken by the United States Navy during Operation High Jump, in the summer of 1946-47.

Law was particularly interested in a part of the Mac.Robertson Land coast, between longitudes 60°E and 70°E, to the west of Australia's Antarctic claim. Here, the aerial photographs revealed outlying rocky islands, a small area of exposed rock on the mainland nearby, and interesting looking mountains close to the coast. Best of all, Law, peering at the black and white photographs through a magnifying glass, thought he could determine the rocky arms of what might be a natural harbour.

In 1953 the Antarctic Division's charter of the *Kista Dan* brought the establishment of Australia's first Antarctic station a step closer. But first, the Macquarie and Heard island stations would have to be resupplied. The logistics were formidable, as *Kista Dan* would have to carry supplies for Heard Island and building materials and all supplies (including a team of husky dogs) for the new Antarctic station. Law convinced the Executive Planning Committee that the best site for the station was most likely Mac.Robertson Land. Because of the long return journey from Melbourne via Heard Island to the Mac.Robertson Land coast – some 8000 nautical miles – it was necessary to take on resupplies of fuel and fresh water somewhere along the route. Fortunately the French government agreed to provide both from their scientific station at the Isles de Kerguelen, about 300 nautical miles north-east of Heard Island.

On 4 January 1954 the Minister for External Affairs, Richard Casey, farewelled *Kista Dan* from Melbourne, on what would be a voyage of high adventure, near disaster, and ultimate success.

After leaving Kerguelen on 24 January, heading for the coast of Mac.Robertson Land, *Kista Dan* entered loose pack ice on 1 February and made relatively good progress. The following day Captain Petersen called Law to the bridge saying he could see rocky islands ahead. Law climbed to the crows nest and was exhilarated to see not rocky islands, but the peaks of the Framnes Mountains, recognisable from the aerial photographs he had studied so closely in Melbourne. When *Kista Dan* entered a small polynya of open water, Law arranged for floats to be fitted to one of the two Auster aircraft carried



8

JAMES BUNK

on board, and took off with pilot Doug Leckie for an aerial reconnaissance. Law later wrote:

'From 3000 feet altitude the view was superb, but disheartening. My elation of the morning vanished. Ahead were several miles of pack ice and beyond it some open water. But this open water, that I thought would extend to the coast, continued for another 3 miles before it was replaced by fast ice – a blue-grey expanse of solid, unbroken ice, smooth and polished, with no snow cover – that stretched on for some 16 miles to the shore.'

However Law was delighted to see that the ship had been spot on track to reach the site viewed from the Operation High Jump photos. Not only that, the harbour (later called Horseshoe Harbour) and its rocky shoreline looked, from the air, an ideal location for the new station.

In later years Law realised they were unlucky to strike so much fast ice so late in the season, which usually breaks out in late January. But bigger problems were soon encountered.

Captain Petersen told Law that he thought it would take him at least a week to break *Kista Dan* through the fast ice to the coast. With the summer season fast slipping away, Law was concerned that they would not have enough time to put up the pre-fabricated huts and unload all the equipment in the time left. He decided to unload some of the stores on the fast ice and use three Weasels (over-snow tractors) to get to Horseshoe Harbour and begin work, while the ship broke her way through. On 5 February Law and Leckie took off in one of the Austers (its floats now replaced with skis) to land near Horseshoe Harbour for a closer inspection of the station site. Law: 'We landed on the blue, pebbly, highly polished ice and our skis clattered and bumped as we ran on towards an iceberg about a third of a mile ahead. The friction of the skis on the glassy ice was so low that we showed little sign of slowing down and the wall of ice ahead began to loom frighteningly close. Just as I was envisaging all sorts of dramatic results of an impending impact with the iceberg, Leckie took the desperate measure of putting the plane into a ground loop. As we spun around and around, still clattering onwards, the extra friction of the edges of the skis pushing sideways across the surface had the desired effect and we came to rest a bare 30 yards from the 60-foot wall of the berg face.'

Law was able to walk across the fast ice, still filling Horseshoe Harbour, to the planned site for Mawson station, sketching and taking photographs. Meanwhile Bob Dovers and two Weasels were on their way across the ice towards the coast. *Kista Dan* was making slow progress through the ice, and the normally equable Captain Petersen was objecting when asked to re-load some of the cargo put down on the ice. Later that day Dovers radioed to say that one of his Weasels had broken through the ice and that rescue efforts had failed, and that he planned to move on to a rocky island for the night. The following day the wind picked up to gale force, and on 7 February – to complicate matters – the fast ice started its annual breakup, with huge slabs of floating ice building up around *Kista Dan* and threatening to crush the ship. The Captain got so worried about the safety of the ship at one point that he ordered all ANARE personnel on deck. But disaster was averted. Law: 'We had survived one of the major hazards to an Antarctic ship. Thank God for a welded steel ship with close frames and thick plates!'

Kista Dan had to be dug out of its icy embrace with crowbars and explosives. The breakout of the fast ice enabled the ship to make better progress so that by 11 February *Kista Dan* had pushed her way through the encircling rocky arms of Horseshoe Harbour. Unfortunately the ship spent the night broadside to the wind, and in the morning Law was appalled to find that the two Auster aircraft on board had been wrecked by high winds – a bitter blow to the further exploration of the coast.

Unloading could now take place over the sea ice, with Weasels pulling sledges on to the station site, including specially designed barge caravans that could shelter workers before the prefabricated huts could be erected. On 13 February Law raised the Australian flag between two red barge caravans and officially named ANARE's first continental station Mawson, 'in honour of the great Australian explorer and scientist Sir Douglas Mawson'.

Meanwhile the RAAF fitters had worked miracles and patched together a flyable Auster out of the remains of Austers 200 and 201. There were no flaps and no tail fin, but fly it did. Captain Petersen jokingly named it Auster 200.5.

By Wednesday 17 February unloading was completed and all hands then helped with erecting the huts in which the 10 pioneering expeditioners would live for the next year. By 23 February Captain Petersen was concerned that *Kista Dan* might be frozen in, and the ship had to be broken out by everybody wielding crowbars and picks. Finally the ship broke free, sounded her siren, and as the 1954 wintering party waved farewell from the shore, *Kista Dan* slowly began to break her way out towards open water.

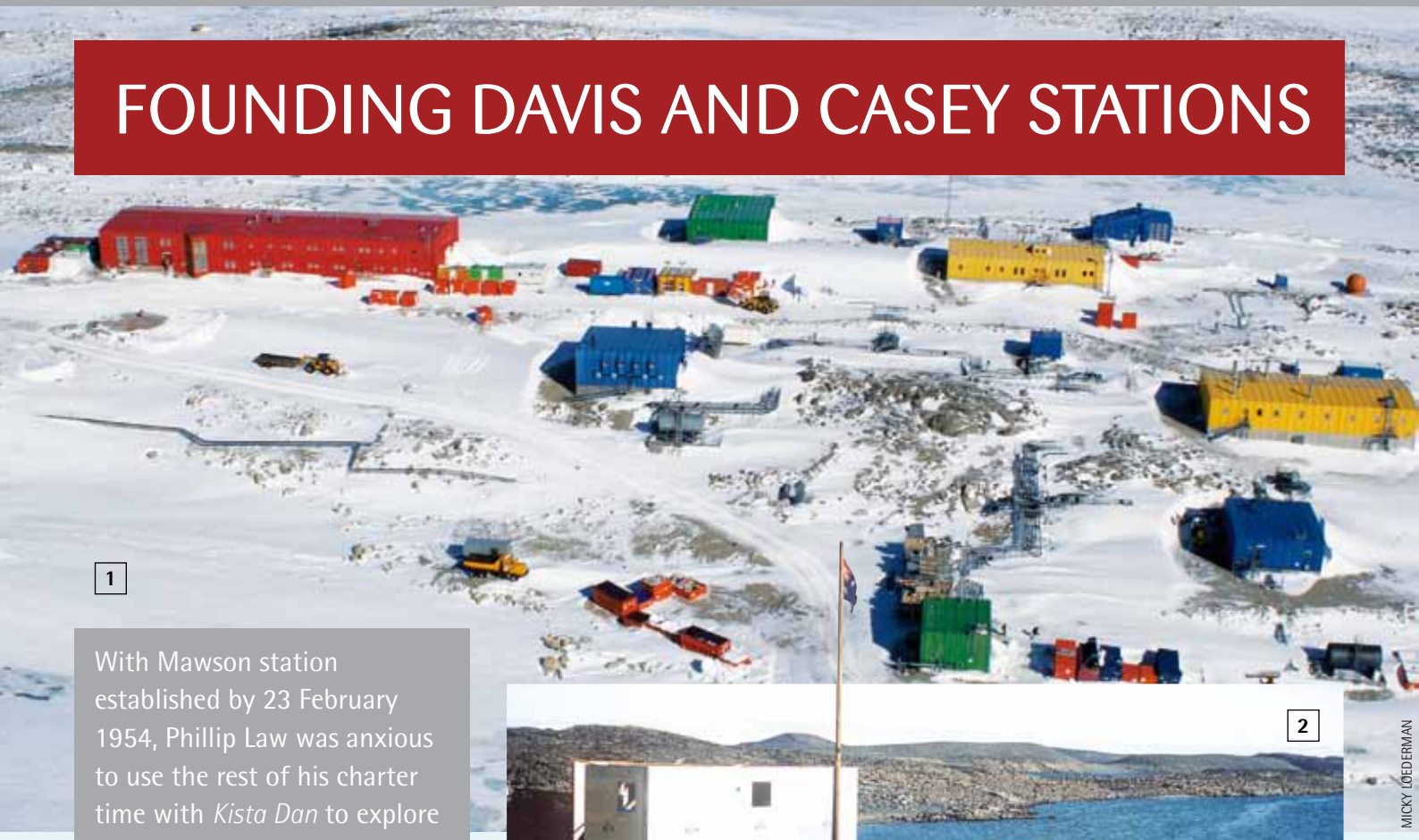
Against all the odds, Australia finally had its first station on continental Antarctica.

TIM BOWDEN

Tim Bowden is the author of the ANARE Jubilee History, *The Silence Calling – Australians in Antarctica, 1947-97* published by Allen & Unwin.

[1.] Following a British Order in Council in 1933, the subsequent passing of the Antarctic Territory Acceptance Act by the Australian Parliament that same year, and proclaimed in 1936.

FOUNDING DAVIS AND CASEY STATIONS



1

MICKY LÖEDERMAN

With Mawson station established by 23 February 1954, Phillip Law was anxious to use the rest of his charter time with *Kista Dan* to explore the Antarctic coastline to the east and try and locate sites for further Australian stations.

2

AAD

1. The 'new' Casey station was opened in 1988 and was the first Australian station to be completely rebuilt and modernised during the extensive re-building program of the 1980s. Today's Australian stations provide a great degree of comfort and safety.
2. The founding of Davis station, 13 January 1957.
3. Wilkes station in 1961, gradually disappearing under ice.
4. The first Casey station (REPSTAT) in January 1969 showing the rounded profile of the tunnel (access corridor) which connected the buildings behind.

Davis

Unable to land on the Scullin or Murray monoliths, they continued east through the grounded icebergs on the Fram Bank, which extended out from Cape Darnley. Law was particularly keen to get to the Vestfold Hills, a huge area of rocky terrain on the north side of the Sorsdal Glacier, remarkably free from snow in the summer. This 412 square kilometre expanse of low rocky hills and spectacular fjords had been discovered, and a landing achieved, by the Norwegian whaling captain Klarius Mikkelsen in 1935. Lincoln Ellsworth landed next in 1939 and the area was extensively photographed from the air by the United States' Operation High Jump in 1946-47. Law wanted to see it for himself.

Captain Petersen was less keen. He wanted to go home and resisted Law's plans, saying exploration was not part of the ship's charter. Law challenged him with telegrams to the Lauritzen Line and the Antarctic Division, and had his way. Although later known as 'the Riviera of the South' because of the amount of sunshine and settled weather there, it was cloudy, gloomy and threatening to snow when Law and four companions moored their ship's boat to some fast ice, and set foot on the mainland on 3 March 1954. Conscious of Law's determination to stake Australia's claims in Antarctica at every opportunity, his Deputy Leader Dick Thompson had prepared an Australian flag lashed to a short pole: 'We struggled ashore, built a cairn out of rocks, planted the flag on its pole, while Phil took our picture. Then I took pictures of him with the flag, and a cine film of the three of them waving their caps like a trio of scat singers.'

They had to moor their boat to a section of fast ice offshore because of the shallow, shelving nature of the coastline. This proved a problem when Law returned on *Kista Dan* in January 1957 to set up Davis station in time for the International Geophysical Year (IGY). The Vestfold Hills in summer was more reminiscent of a chunk of the Simpson Desert transplanted to Antarctica, and apart from finding a location where the ship could get reasonably close to the coast, Law was dismayed to find that the snow banks he hoped could provide water for the new station through the summer had all melted.

On 12 January Law was about to give up when he found a small sandy beach leading to a flat terrace, which looked promising, and unloading began. By 20 January Davis was established enough for *Kista Dan* to sail. Only five men would winter there, with no doctor. However it was hoped that a Beaver aircraft from Mawson could fly in and evacuate a patient in the event of a medical emergency.

3

PHILLIP LAW

4

BRIAN RIEUSSET

Casey

In 1957, the United States took 17 days to build a station for the International Geophysical Year (IGY) on Clark Peninsula, on the coast of Vincennes Bay, Wilkes Land. Named Wilkes Station in honour of the American explorer Charles Wilkes, it was unfortunately placed in a hollow to be out of the wind. Consequently, by the end of its first year of operation snow drifts had built up to the roofs of the huts, and some could only be accessed through trapdoors on their roofs!

At the end of the IGY in 1958 the Americans wanted out, and Phillip Law saw an opportunity to get a third station for Australia. He would have preferred a straight handover, but the Americans wanted a shared station. There were problems about which nation's flag should take precedence over the other, solved by having two flagpoles. There was an Australian leader with an American deputy, but it quickly became apparent that this arrangement was unsatisfactory. In 1959 Australia took over effective control of the now almost invisible station, with all of its buildings submerged in snow and ice. Its entombed huts and rubbish dumps today pose one of Antarctica's most intractable clean-up dilemmas.

It was clear that Wilkes was not a long-term prospect for Australia, and in 1963 Cabinet approved funding for a Replacement Station, code named REPSTAT (*Australian Antarctic Magazine* 15: 24-26, 2008). The name stuck for the station's entire operational life, despite officially being named Casey station on its completion in 1969. (Davis station had to be closed from January 1965 for four years to defray the expense of building REPSTAT.)

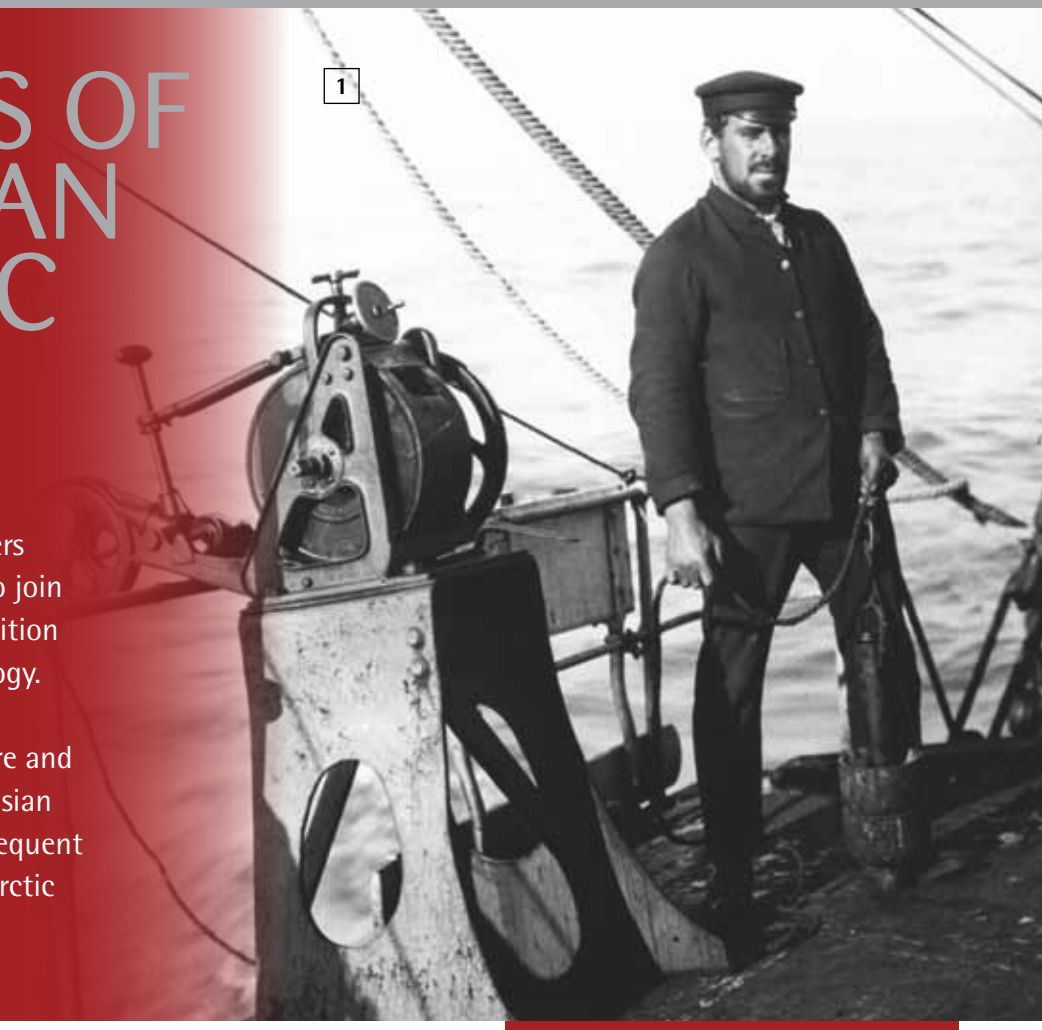
With the Wilkes disaster in mind, REPSTAT's designers made sure it would never be overcome by drift. It was built about five kilometres from the buried Wilkes on metal stilts down the slope of a hill, so that the drift would blow underneath it. Unfortunately, scaffolding piping was all that could be afforded, which immediately began to rust. The wind proofing was assisted by a corrugated iron tunnel, which ran down its entire length like the leading edge of an aircraft wing, and deflected the blizzards over the top of the linked huts, and underneath them.

Those who lived in REPSTAT were fond of it in an eccentric kind of way. Also designed to be fireproof, the predominately metal structure shuddered noisily as the blizzard howled around the guy wires that anchored it to the rock. Only nine months after it was completed, a blizzard blew away six sections of the tunnel. The tunnel was also unheated, and so cold in winter that 'Casey tunnellers' returning from a shower would get back to their dongas with their wet hair frozen solid! Plumber Rod MacKenzie, who worked on its construction, said it looked 'like Alcatraz sitting up amongst the rocks'.

REPSTAT lasted 19 years before its rusting stilts and deteriorating panels caused it to be completely dismantled (unlike its predecessor Wilkes, still entombed in the ice) and construction of 'New' Casey station began in 1979. It was opened in 1988, and was the first Australian station to be completely rebuilt and modernised during the extensive re-building program through the late 1980s and 90s.

TIM BOWDEN

100 YEARS OF AUSTRALIAN ANTARCTIC SCIENCE



As a geologist, Mawson's fascination with Precambrian rocks in the Flinders Ranges of South Australia led him to join Shackleton's 1907–09 *Nimrod* expedition to investigate Antarctic glacial geology. His experiences on that expedition inspired him to systematically explore and study Antarctica during the Australasian Antarctic Expedition (AAE) and subsequent British Australian New Zealand Antarctic Research Expedition (BANZARE).

1. *Aurora* First Officer, F.D. Fletcher, with a Lucas sounding machine, which was used to delineate major features of the Southern Ocean sea floor, including trenches, rises and continental slopes, during the AAE.
2. Douglas Mawson (left), Dr William Ingram and James Marr inspect a haul from the Southern Ocean during BANZARE.

The AAE's scientific effort was based in four places. Three of these were on land at Macquarie Island, Cape Denison, and the Shackleton Ice Shelf in Antarctica – with sledging parties taking the research inland. The fourth was on the rolling deck of the former whaling ship *Aurora*.

In Antarctica and on Macquarie Island, collections and/or observations were made in investigative fields including biology, cartography, geology, glaciology, geomagnetics, meteorology, medicine and atmospheric research. Among the expedition's achievements were the first satisfactory photographs of the aurora australis, quality data on the location and movement of the south magnetic pole, collections of seabirds and their eggs, radio transmission of meteorological data from Antarctica via Macquarie Island to Melbourne, and mapping of Macquarie Island and parts of the Antarctic coastline and inland Antarctica.

While the shore parties were to explore the land and ice around their bases, Captain John King Davis and his men were tasked with exploring a much larger area in the Southern Ocean. The 1872–1876 *Challenger* expedition had been the major Antarctic oceanographic venture up to then, but the seas crossed by the AAE had never before been subjected to dedicated marine science study.

Under Davis's supervision in London, the *Aurora* was transformed into a ship of science. From the British naval hydrographer John Parry, Davis secured deep-sea sounding record books, along with advice on the use of *Aurora's* two sounding machines. Subsequent mapping of the sea floor south of Tasmania was the most systematic yet attempted. The exercise resulted in the discovery of a large undersea plateau to the south and south-east of Tasmania now known as the South Tasman Rise.

To obtain biological specimens from the ocean depths, a steam windlass and deep sea dredging equipment were fitted at the end of *Aurora's* first Antarctic voyage, in 1912. The ship carried a variety of trawls and nets designed for sampling selectively from different parts and depths of the ocean.

Mawson also had John Hunter – the main biological collector – dredging for biological specimens, with considerable success, in the shallow waters of Commonwealth Bay. His collection from the voyage included six specimens of the rare Ross seal and a large collection of external and internal parasites from birds, seals and fish. The specimens and sea floor detritus brought aboard opened up a whole new world of glacial ebbs and flows and evolving life forms and ecosystems down the ages.

The early 1930s saw Mawson's BANZARE to east Antarctica, from Enderby Land to Oates Land, collecting scientific data on land and sea, including geology, meteorology, zoology and botany. Publication of the expedition's reports ran to 13 volumes and was not completed until 1975, indicating the scope and scale of the scientific work undertaken on this expedition. As the 1930s ended and war embraced the world, scientific study of Antarctica was forced to take a back seat.

When peace resumed Douglas Mawson returned to his quest to promote the Antarctic and a scientific expedition aboard the *Wyatt Earp* was assembled and a team of scientists recruited. Among them was Phillip Law, a physics lecturer at Melbourne University.

FRANK HURLEY

3. Modern-day marine biologist Ty Hibberd (far left), sorts specimens brought up from the Southern Ocean sea floor in a laboratory onboard the *Aurora Australis* in 2010.

DOUG THOST

His task was to coordinate the program of scientific research and to make observations on cosmic rays from the ship. Meteorology and geology were to be the main focus for the scientific program, as they were the priorities of a Government which already sensed that Australia's climate was profoundly influenced by its proximity to Antarctica. And so it was that in 1947 Australia's National Antarctic Research Expedition (ANARE) was born.

By the time the International Geophysical Year (IGY 1957-58) was proposed, Australia had been involved in scientific research in Antarctica for almost 80 years, albeit on an opportunistic and uncoordinated basis. IGY made Antarctica the focus for concerted and collaborative research and for this purpose a number of nations built research stations. Although Australia's Mawson station preceded the IGY by three years, many new Antarctic stations were opened during its course, including the United Kingdom's Halley station, Japan's Syowa station and several stations opened by the former Soviet Union. IGY was characterised by a focus on the physical composition of Antarctica, its ice cap and the atmosphere above it (*Australian Antarctic Magazine* 12: 4-5, 2007). Australian biological research had to wait quite a few years before it was treated seriously.

In December 1956 *Kista Dan* sailed for the Vestfold Hills (where Davis station was subsequently established in 1957). Scientific work centred on geophysics and Antarctica's structure, the ice sheet, and upper atmospheric physics, and it was at this time that glaciology entered the program. Phillip Law was of the view that Australia produced more valuable scientific data than almost any other nation on account of the fact that 'we were the only ones, apart from the British, who'd had enough experience beforehand to set up a decent scientific program'.

Government support for IGY science was a turning point for Australia, despite the prevailing view that during the pre-IGY days Australian interest in the Antarctic served sovereignty and not scientific objectives. Development of science was much advanced by both Mawson and Law being scientists of high standing. Each in his own way ensured that Australian science in Antarctica would become an increasingly valuable currency in the Antarctic Treaty and its associated instruments.

Australian contributions to upper atmospheric physics, geology and glaciology, as well as its support of the Commonwealth Trans-Antarctic Expedition (1955–58), enabled it to be regarded as a significant force in Antarctic science.

IGY changed the world's perspective about Antarctica by introducing the central theme of the Antarctic Treaty that Antarctica is to be used for the peaceful pursuit of science.

The Treaty enshrines the principle of scientific cooperation and collaboration in Articles II and III and these remain defining characteristics of Antarctic science. In the decades following IGY and particularly since 1991, when the

4. Dr Phillip Law (left) and Sir Douglas Mawson (second from left), seen here in 1954 with General Riser-Larsen and Captain John King Davis (right) at the Oriental Hotel in Melbourne, played significant roles in the advancement of Antarctic science.

5. Australia has had a long-standing focus on ice sheet, sea ice and cryosphere research, which today comes under the umbrella of Antarctic climate science. Ice cores (pictured) are an important part of this research, providing information about past climate.

Antarctic Treaty Consultative Meeting declared 1991–2000 as the Decade of International Scientific Cooperation, collaborative research has increased 13-fold, while the number of scientific papers published world-wide has doubled. If science has become the currency of Antarctica, Australia has played a strong role in maintaining its value.

Australia's current Antarctic research program has certain characteristics that set it apart from those of other long-established Antarctic nations and which are materially responsible for the significant contribution Australia has made to the Antarctic Treaty System. Although it is one of the oldest national programs, the intellectual environment in which the program has evolved has not been stable. For the first 20 years of its existence (1948–1968) the Australian Antarctic Division was a part of the Department of External Affairs, which had little core interest in science. Between 1968 and 1987 the Antarctic Division's home changed several times, sometimes quite rapidly, within various manifestations of the Department of Science. However, a focus on science was maintained and, with the advent of the Antarctic Science Advisory Committee (ASAC) in the early 1980s, financial support was provided to enable participation of university scientists in the program, boosting the Antarctic science workforce. ASAC is a committee established by and reporting to the Minister charged with overseeing Australia's Antarctic research program. From July 1987 to the present day the Antarctic Division has been in the Environment portfolio rather than the Science portfolio, but a focus on science continues.

Australia's program of scientific research in Antarctica was initially driven largely by the enthusiasm of those in charge, though it is fair to say that the world's fascination with physics provided the driver for most research until the 1970s. First the Australian Academy of Sciences and later ASAC provided advice on the strategic directions for the science program, but it was not until 1995 that the first science strategic plan was prepared. Prior to 1995 much fundamental work was conducted on the ice sheet and cryosphere generally, setting the foundations for the present focus on high-latitude climate science. Early work on penguins (mainly after 1970) and in marine biology, laid important foundations for Australia's commitment to the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR).

The first strategic plan for science was developed in 1995. Subsequent plans in 2000, 2005 and 2011 sharpened the focus on those areas of science of direct relevance to the Government's positions on environmental protection, Southern Ocean fisheries science and cetacean biology and conservation. These are areas over which the current Department of Sustainability, Environment, Water, Population and Communities has policy carriage. Strong research themes now include high latitude climate science, marine ecosystem conservation in support of CCAMLR, and environmental protection in support of the agenda of the Committee for Environmental Protection.

In the future we can expect to see the development of remote sensing technologies replacing and supporting field observations that have characterised Antarctic science since Mawson's time. Satellites, which started to observe Antarctica only a little over 30 years ago, are allowing observations to be made across vast swathes of Antarctica, with sensors that can accurately measure surface elevation, surface temperature, surface roughness, sea ice extent and concentration, and track the movement of icebergs.

Advances in microelectronic devices, which can be affixed to seals and penguins, are now enabling significant advances to be made in understanding ocean currents and water properties. Small video cameras mounted on the heads of seals allow detailed examination of seal diet and hunting behaviour, with only minimal intrusions while the apparatus is fitted and retrieved. New sensors will enable new variables to be observed, such as the pattern of patchiness of biological productivity in relation to seal feeding locations. Such devices will likely become smaller, such that the day will not be far

6. On 16 January 1909 (L-R) Alistair Forbes Mackay, T W Edgeworth David and Douglas Mawson arrived at the South Magnetic Pole after a three-month journey.

7. Harold Fletcher (L) and Robert Falla (R) prepare specimens on board *Discovery*.

away before they can be fitted to small fish and even invertebrate species.

The next few decades will see the emergence of ever bigger science with increasing numbers of agencies and research teams collaborating and contributing equipment and expertise. While issues of sovereignty and the politics of Antarctica are never far away, the world has woken up to the fact that Antarctica is no longer a remote, far-away place visited only by adventurers and explorers, but is very much the canary in the global coal mine and also the powerhouse behind much of the world's weather and ocean quality. Australia can be truly proud of its record of scientific research in Antarctica, which has established the basis for much of what is yet to come.

Information about AAE science in this article was collated from The Home of the Blizzard website http://www.mawsonshuts.aq/index.html . The subsequent text (from BANZARE to today) was modified from a chapter written by Professor Michael Stoddart, former Chief Scientist, Australian Antarctic Division (1998-2009), for the new book *Australia and the Antarctic Treaty System: 50 Years of Influence*, published by UNSW Press in September 2011.

A timeline of scientific highlights

1907–1909 **Ernest Shackleton's British Antarctic Expedition (Nimrod Expedition)** to Cape Royds.

- The scientific team, which included Douglas Mawson, carried out extensive geological, zoological and meteorological work.
- Australian geologist, Edgeworth-David, led Douglas Mawson and Alistair Mackay to the Magnetic South Pole (arriving 16 January, 1909).
- Edgeworth-David published two volumes on the geology of the expedition.

1911–1914 **Douglas Mawson's Australasian Antarctic Expedition** to Cape Dennison, Commonwealth Bay.

- Routine scientific and meteorological observations were conducted at Cape Dennison and auxillary bases at Macquarie Island and Shackleton Ice Shelf.
- Accessible rock formations of Wilkes Land were examined and the first discoveries were made of a meteorite and a chondrite in Antarctica.
- An extensive program of marine science onboard the *Aurora* documented new marine species.
- Scientific observations on geology, oceanography, zoology, botany, meteorology, tides and terrestrial magnetism were published in an extensive series between 1922 and 1942.

1929–1931 **Douglas Mawson's British, Australian (and) New Zealand Antarctic Research Expedition** to Heard Island, Kerguelen Island and the Antarctic coast.

- 13 volumes of reports, on geology, oceanography, meteorology, terrestrial magnetism, zoology and botany were produced between 1937 and 1975, from primarily ship-based research (and use of an aircraft).
- Significant tracts of the Antarctic coastline were mapped.

1947–1997 **Australian National Antarctic Research Expediton(s)**

- ANARE established its expedition headquarters on Macquarie Island on 25 May 1948.
- The International Geophysical Year 1957–58 defined the role of science and the way it is conducted in Antarctica today – internationally coordinated scientific and logistic programs and long-term observatory

8. The light detection and ranging (LIDAR) instrument at Davis investigates temperature, winds and the structure of the middle and upper atmosphere.

9. Scientific divers support a range of projects investigating the impact of human activities on the environment, set up in response to the Protocol on Environmental Protection to the Antarctic Treaty.

studies. Research included upper atmosphere and cosmic ray physics, meteorology, seismology, glaciology, and gravity and magnetic studies.

- Deep drilling commenced on the Law Dome ice cap in 1972–73. It was the start of long-term ice core studies investigating past climate and ice formation and movement.
- The *Nella Dan* supported the biggest combined marine biological experiment ever undertaken – BIOMASS (Biological Investigations of Marine Antarctic Systems and Stocks), which began in 1980–81 and ended in 1991. Fifteen ships from 11 countries were involved. The experiment marked the start of a long-term commitment to Antarctic marine research.
- From the late 1980s the science program began to move from discipline-based science to multi-disciplinary science in support of Australia's policy interests in Antarctica. This included establishment of the first Human Impacts program in response to the Protocol on Environmental Protection to the Antarctic Treaty, and establishment of the Antarctic Marine Living Resources Program in support of the Convention on the Conservation of Antarctic Marine Living Resources (which entered into force in 1982).
- The Antarctic Science Advisory Committee was established in 1985.
- The ice-breaking *Aurora Australis* was launched on 18 September 1989; purpose-built for resupply and marine and sea ice research.
- The first traverse around the head of the Lambert Glacier to measure ice movement was conducted in 1993–94.
- Biologists at the Australian Antarctic Division were the first to successfully breed krill in captivity in the 1990s.

1998 – today

Australian Antarctic program

- The multi-disciplinary approach to research continued with the establishment of the Ice, Oceans, Atmosphere and Climate Program to inform the work of the Intergovernmental Panel on Climate Change.
- Pioneering studies of the stratosphere led to the Davis LIDAR (light detection and ranging) program which, since 2001, has been investigating temperature, winds and the structure of the middle and upper atmosphere.
- The Antarctic Cooperative Research Centre was established in 1995 and evolved into the Antarctic Climate and Ecosystems Cooperative Research Centre in 2003. The advent of the CRC led to a significant increase in the amount and scope of marine research.
- The Agreement on the Conservation of Albatrosses and Petrels entered into force in 2004. ACAP aims to conserve albatrosses and petrels by coordinating international activity to mitigate known threats to albatross and petrel populations.
- During the International Polar Year (IPY; 2007–09) Australia led major programs of research in biology (Census of Antarctic Marine Life) sea ice and climate science (Sea Ice Physics and Ecosystems eXperiment) and biological incursions into Antarctica (Aliens in Antarctica). Australian scientists were prominent in many other programs.
- A link between Australian and Antarctic climate was established using ice cores from Law Dome.
- Major marine science voyages (BROKE, BROKE-West) were conducted to estimate krill abundance and distribution in the Southern Ocean, which contribute to krill fishery management through the Commission for the Conservation of Antarctic Marine Living Resources.
- Remote sensing technology is increasingly used to study the Antarctic ice sheet and bedrock topography and geology.
- A new Australian Antarctic Science Strategic Plan, approved by the Australian Government in 2010, will direct the next 10 years of scientific research, from 2011-12 – 2020-21. The plan will deliver specific scientific outcomes in support of Australian policy in Antarctica. For details see www.antarctica.gov.au/science

Antarctica without borders

1

PHILLIP LAW

During the International Geophysical Year of 1958–59 twelve countries had been active in Antarctica. Scientists had spread out around the coast, and inland, establishing stations and field camps and undertaking research in a wide range of disciplines. They ignored any borders that appeared on maps and, by mutual agreement, undertook their scientific work with a spirit of cooperation. The fact that the entire continent was without a governance regime and that there were simmering tensions with respect to differences of view over sovereign claims was conveniently ignored.

At the conclusion of the IGY it was clear that scientists would want to return to the Antarctic—the surface had barely been scratched. It was also clear that governments held strong aspirations to pursue their strategic interests, including the problematic issue of protecting their sovereign positions. These had become cemented in the decades following the territorial claim of Great Britain in 1908, and the subsequent claims of six other nations, including Australia's.

However, in the post World War 2 environment, uncontrolled pursuit of national interests would serve no-one. The pressure to settle the so-called Antarctic Problem heightened with overlapping claims in the Antarctic Peninsula, the emerging competition of Antarctic interests between the US and the USSR, and the evolving 'Cold War' tensions. Options constituting a condominium arrangement, or signalling internationalisation of the Antarctic, were firmly rejected. Each of the nations involved insisted on participation in whatever arrangement would be invoked, but without detriment to their interests.

1. During the International Geophysical Year (note the IGY logo on these snow cats), scientists ignored any borders that appeared on Antarctic maps and undertook research with a spirit of cooperation. The 12 nations that had been active during the IGY worked to continue what the IGY had started, resulting in the signing of the Antarctic Treaty on 1 December 1959.
2. The 2003 Antarctic Treaty Consultative Meeting in Madrid.

2

ANDREW JACKSON

The Antarctic Treaty System supports scientific collaboration in Antarctica. Here a Twin Otter flies over flags of countries participating in Antarctica's Gamburtsev Province project.

BAS

At the initiative of the United States, diplomats from the 12 nations that had been active in Antarctica during the IGY, met in Washington to explore the options for managing the competing interests and ensuring that scientists could pursue their work in peace. A series of meetings between 1958 and 1959 resulted in agreement to hold formal negotiations. These negotiations ended with signature of the Antarctic Treaty on 1 December 1959.

By contemporary standards of international law the Antarctic Treaty is a remarkably short document—just 14 articles. Perhaps its brevity is its success as it focuses on critically important principles for the region: peace, cooperation, non-nuclearisation and free exchange of scientific results. These are all solid foundations for the Treaty and have endured in the subsequent 50 years. But the cornerstone is Article IV which deals with the issue of territorial sovereignty—and it does so elegantly by preventing new claims and setting aside arguments over the existing ones.

As a nation with the largest territory in Antarctica, Australia took particular interest in the ways in which the differences of view over this potentially destabilising issue could be accommodated. And it was here that Australia came to play an important role with the personal intervention of Richard Casey, Australia's Foreign Minister. The result broke the deadlock between the countries and, ultimately, delivered a formula that ensured that no country would be disadvantaged. Peace would be maintained and the status quo on sovereignty would be preserved. While the US had provided the setting for successful negotiations, Australia had provided the diplomatic solution.

Article IX provided a mechanism for the Parties to develop measures to further the principles and objectives of the Treaty. It also required that a meeting would be held in Canberra within two months of the Treaty's entry into force—the mention of a specific capital for such purposes is highly unusual in an international Treaty and has been regarded as de facto recognition of Australia's role in the negotiations.

The Treaty came into force on 23 June 1961, and in July that year the 12 nations came together in Canberra for the first Antarctic Treaty Consultative Meeting (ATCM I). At that meeting, in what is now Old Parliament House, Prime Minister Robert Menzies addressed the delegates, saying: 'All the nations concerned have agreed that this is not a place of war, but this is a place of scientific research, of study, of enlarging the boundaries of knowledge, of friendly cooperation'.

By June 2011, with the number of Treaty Parties having quadrupled, ATCM XXXIV celebrated the Treaty's 50th anniversary. At that meeting in Buenos Aires, Richard Rowe, Head of the Australian Delegation, reflected on the achievements, saying: 'The Antarctic Treaty shines a light on the quality of international relations where cooperation and consensus are the keys to success…any differences of substance have melted away in the warmth of good relations. Between us we have developed, from small beginnings, the most effective system for managing the Antarctic'.

In June 2012 Australia will, for the third time, host the Treaty meeting. ATCM XXXV will be held in Hobart and will underscore the continuing importance of the Antarctic Treaty to Australia's engagement in Antarctic affairs and set the scene for the next 50 years of the Treaty.

ANDREW JACKSON
Honorary Fellow, ACE CRC

Evolution of the Antarctic Treaty System

SANDRA POTTER

1. The Antarctic Treaty System addresses the preservation of historic sites, such as the Mawson's Huts Historic Site at Cape Denison, seen here in 2011.
2. The Antarctic Treaty System allows for the inspection of other nations' stations and ships.

TOM MAGGS

With the 1961 entry into force of the Antarctic Treaty, the stage was set for the development of practical measures to implement the Treaty's objectives. The Treaty negotiators had carefully avoided discussion of prescriptive measures for specific activities—to do so would have impeded agreement to the head instrument. However, from the first Antarctic Treaty Consultative Meeting, attention was turned to implementation.

The context for this came from Treaty Article IX which provided for meetings at which the Parties could consult and outlined the kind of issues that should be addressed, such as facilitation of scientific research, cooperation in Antarctica, exercise of the rights of inspection, questions relating to jurisdiction, and conservation of living resources. This list was not exhaustive and as the Treaty matured, the Parties took a very broad interpretation of what could be discussed.

Thus, the Treaty can be regarded as the framework for a System constructed of practical measures. So commenced the elaboration of what has since been termed the Antarctic Treaty System, an amalgam of related 'instruments' and 'institutions', at the heart of which is the Antarctic Treaty and its essential principles. The instruments detail measures relating to a wide range of actions, and an evolving network of institutions underpin specific functions.

The first significant instrument to be adopted was the 1964 Agreed Measures for the Conservation of Antarctic Fauna and Flora. The Parties then moved to address sealing and adopted the 1972 Convention for the Conservation of Antarctic Seals, which entered into force in 1978. In 1980, further negotiations resulted in the adoption of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), which entered into force in 1982. Attention then turned to the issue of mineral resources. Notwithstanding the lack of interest in exploring for minerals the Treaty Parties addressed the issue and in 1988 adopted the Convention on the Regulation of Antarctic Mineral Resource Activities. This Convention did not enter into force, being overtaken by the 1991 adoption of the Protocol on Environmental Protection to the Antarctic Treaty, which provided comprehensive environmental rules and entered into force in 1998.

Complementing these Treaty-level instruments, the Parties adopted numerous Recommendations, Decisions, Resolutions and Measures, addressing matters as diverse as radio communications, air safety, tourism management, exchange of information, collection of meteorites, the conduct of inspections, protection of environmentally important areas and preservation of historic sites and monuments. The various conventions and related instruments are given practical

3

PHIL TUCAK

3. The 1972 Convention for the Conservation of Antarctic Seals protects Antarctic seal species such as these Weddell seals.

effect through the domestic law and administrative procedures of the Treaty Parties.

The Treaty System is also considered to embrace relevant institutions. These include the Antarctic Treaty Consultative Meeting (ATCM), the primary forum for the exchange of views and the development of the instruments, and the Committee for Environmental Protection, which advises the ATCM on the implementation of the Environmental Protocol. The Antarctic Treaty Secretariat, established in 2004 and based in Buenos Aires, supports these bodies. The Commission for CAMLR addresses issues relating to marine living resources and is supported by the CCAMLR Secretariat, which has its permanent headquarters in Hobart. Other bodies affiliated with the Treaty System include the Council of Managers of National Antarctic Programs and the Scientific Committee on Antarctic Research, which provide expert advice.

The Treaty System continues to grow as additional measures are adopted at each ATCM and at the annual meetings of the Commission for CAMLR. In addition, membership of the Treaty increases as new Parties accede to the Treaty or the related conventions. For example, on 31 October 2011 the number of Treaty Parties grew to 49 with the accession of Malaysia which, at the Hobart ATCM in 2012, will for the first time be able to participate in discussions about governance of activities in the Antarctic.

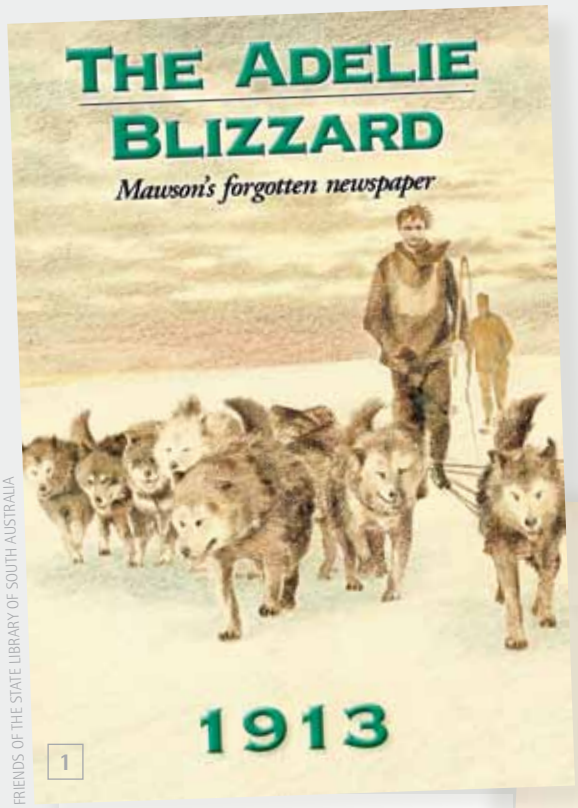
In June 2011, at the meeting in Argentina, the Antarctic Treaty Parties recognised 50 years since the entry into force of the Treaty. This was a celebration of achievements, including the evolution from a single Treaty in 1961 to a wide ranging System that addresses significant issues while keeping the Treaty's fundamental principles at its core. The June meeting was also an opportunity to consider the future work program to expand the Treaty System; by encouraging further growth in membership, strengthening the institutions, and elaborating the suite of instruments that provide for Antarctic governance.

ANDREW JACKSON
Honorary Fellow, ACE CRC

The Polar Press

A century of Australian Antarctic 'Newspapers'

For a continent that is frequently likened to an enormous blank page, Antarctica generates an inordinate amount of writing. This takes the form of published material, including expedition accounts, scientific articles, explorer biographies and travel narratives; unpublished but systematic records, such as station reports and logs; and also more personal, ephemeral responses which may never have more than a few readers.



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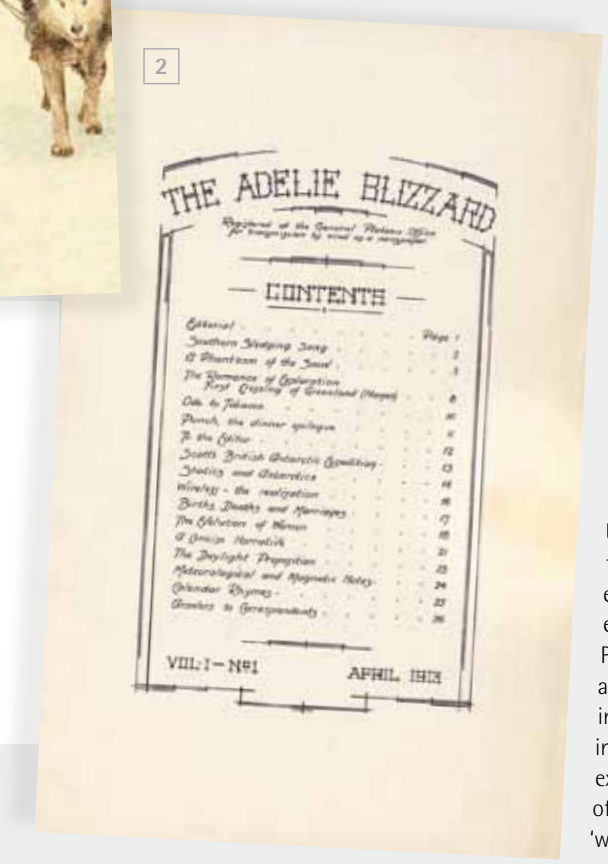
FRIENDS OF THE STATE LIBRARY OF SOUTH AUSTRALIA



2

1. The facsimile edition of *The Adelie Blizzard* published by the Friends of the State Library of South Australia. Five editions of the newspaper were produced between April and October 1913.
2. The contents page of the first issue of *The Adelie Blizzard* published in April 1913. The line under the masthead reads: 'Registered at the General Plateau Office for transmission by wind as a newspaper'.

People who visit the continent, even those who rarely pick up a pen back 'home', seem seized by the urge to express themselves in the extraordinary environment of the far south.

In the 'Heroic Era' this usually took the form of handwritten diary entries, but more recently options have proliferated, with websites, blogs and tweets providing ways to broadcast individual impressions and experiences to a community outside the Antarctic station.

One genre of polar writing sits intriguingly on the borderline between private reflection and public record, and between the personal and the group response: the polar 'newspaper'. The scare-quotes are required not only because the concept of a 'newspaper' produced by a handful of isolated expeditioners who are already all too aware of each other's 'news' is, on the face of it, a ludicrous one, but also because the publications that can be classed under this term are often hybrid forms – part magazine, part literary anthology, part report, part mock-newspaper. Their explicit or implicit claim to the title of 'newspaper' is always parodic – they deliberately mimic the wording and format of a newspaper specifically to highlight the incongruity of this idea in an Antarctic context. But polar newspapers – and there have been many over the years – also serve a number of serious functions. At their best, they occupy leisure time, both in their production and consumption; allow self-expression and creativity; foster a sense of group identity and cohesion; create a sense of temporal regularity in a place where time can seem highly homogenous; and memorialize expeditions and communities.

The polar newspaper had its beginnings in the Arctic, rather than the Antarctic. The earliest known example was produced by a British expedition led by William Edward Parry in 1819-20 – the first time a ship deliberately overwintered in the polar regions. As he relates in his published journal of the expedition, Parry considered 'want of employment' to be among the 'worst evils' his men could face, and to

The Antarctic newspaper evolved into the station yearbook in the late 1970s, such as this 1977 publication from Davis. The yearbook features a varnished wooden cover, with typed pages containing black and white photographs, illustrations, cartoons and maps. The content includes the history of Davis station, stories about field trips, explanations of the scientific research, lists of movies watched, humourous diary extracts and more.

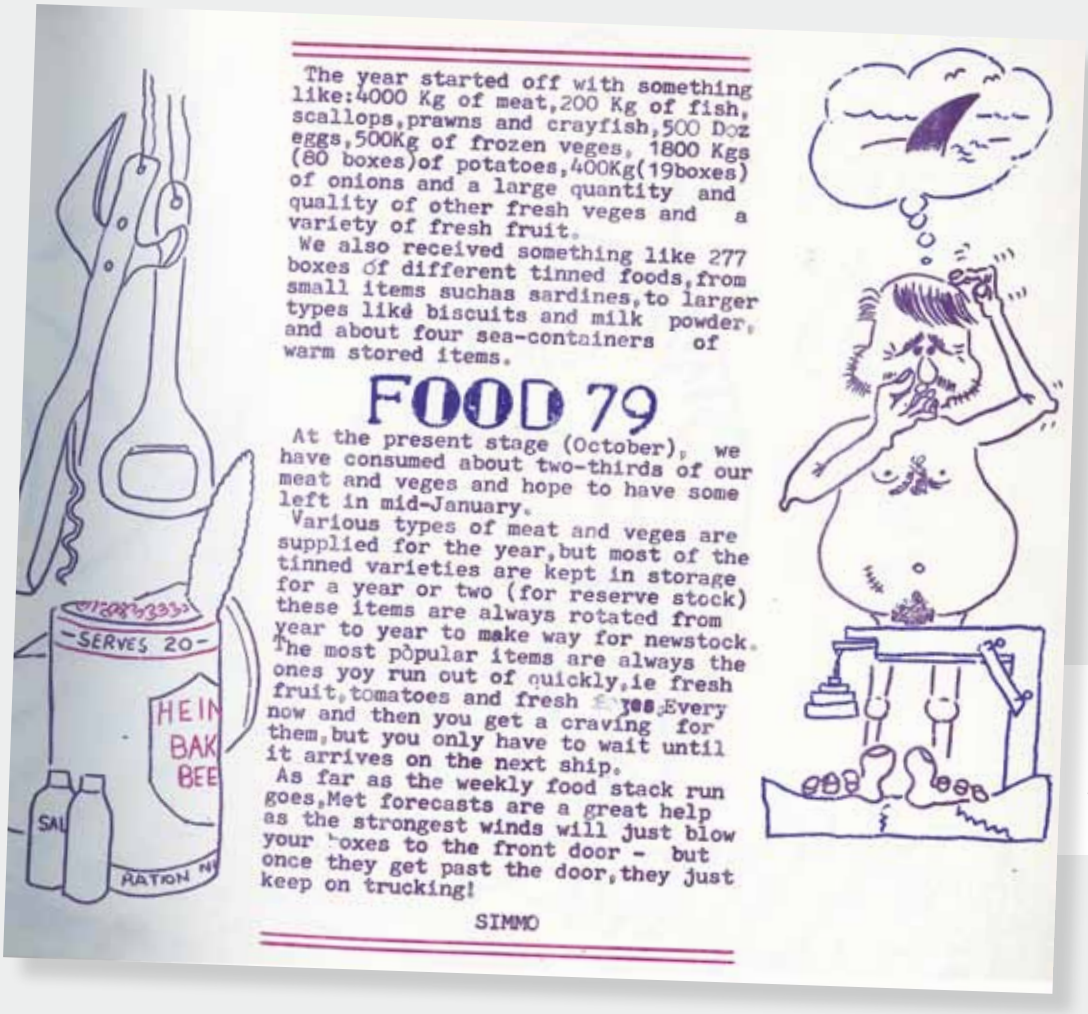
combat it launched the *New Georgia Gazette*, along with regular theatrical performances, as a source of diversion and amusement. Multiple hand-written copies were produced, featuring items such as accounts of activities onboard, reviews, poetry, letters, mock-advertisements and announcements. Later Arctic expeditions, including those searching for the lost Franklin expedition, took up the idea. Towards the end of the century, Fritjof Nansen, attempting to reach the North Pole, encouraged the men of his ship the *Fram* to produce a newspaper, printing excerpts from it in his account of the expedition, *Farthest North*. When exploration turned towards the far south, so did the newspaper tradition, with Robert F. Scott's two expeditions producing the well-known *South Polar Times*, as well as two other short-lived publications – the *Blizzard* and the *Adélie Mail & Cape Adare Times*; Ernest Shackleton's *Nimrod* expedition turning out a shipboard number, the *Antarctic Petrel*, in addition to the *Aurora Australis*, the first book 'published' in the continent; and Erich von Drygalski's German South Polar Expedition issuing *Das antaktische Intelligenzblatt*.

The last but by no means the least of the Heroic Era Antarctic newspapers was *The Adelie Blizzard*, produced by the Australasian Antarctic Expedition (AAE) main base in the winter of 1913 (the Western Base men had their own publication, *The Glacier Tongue*, but unfortunately this does not seem to have survived). The AAE newspaper had been initiated the previous year, but delayed by preparations for the summer sledging season. As it turned out, this season was far more eventful – and traumatic – than anticipated: two expeditioners, Xavier Mertz and Belgrave Ninnis, died during a sledging journey, with the remaining member of the party, AAE leader Douglas Mawson, arriving at the base close to death. By this time, most of the men had departed on the relief ship, with six (including one newcomer to the tight-knit group) left in wait for the delayed sledgers. Thus the winter of 1913 saw only seven men in the hut, with no preparations for another season needed, and their leader debilitated by his experiences. In such circumstances the threat of 'polar depression' loomed. While most of the men kept diaries, the primary function of these (in addition to the keeping of a record) was to provide a place of privacy where the individual could escape from the group, vent frustrations and express personal fears, desires and pleasures. A newspaper, produced and read by the whole community, met quite a different need, and was a welcome morale-booster when the winter drew near. The first of five issues – 26 foolscap pages long – was released not long after the autumnal equinox.

Mawson, who had acted as editor in the winter of 1912, was in no shape to continue this duty in 1913. Even the task of making a start on the official account of the AAE (the book that became *The Home of the Blizzard*) was proving trying. The editorship was taken over by the chief physician, Archie McLean, who held an arts degree as well as medical qualifications. In his first editorial, McLean announced the purpose of the newspaper as he saw it: 'the crystallisation of our ideas, an additional means of social enjoyment, and, incidentally we hope, to voice the spirit of the Australasian Antarctic Expedition.'

The Adelie Blizzard was produced on a typewriter, with occasional hand-drawn illustrations and decorations. Only one copy was produced; this would be read aloud on its release, and then passed around the men. All contributions – which included some left over from 1912 – were anonymous. The content was diverse, including historical and scientific articles, comic illustrations and jokes, book reviews, editorials, meteorological reports, accounts (often amusing) of events and people on base, poetry, short stories, play scripts and, unusually, news.

Of all the early polar newspapers, *The Adelie Blizzard* came closest to actually being a newspaper. The innovative – if intermittent – use of wireless technology, relayed via Macquarie Island, meant that the men could receive information from the outside world, which they printed alongside items of local interest in a segment entitled 'Statics and Antarctics'. Mawson also used the wireless to promote *The Adelie Blizzard*. Maintaining the spirit of parody, he sent a message to Australia in 1913 announcing the publication of the 'first real newspaper' in



The year started off with something like:4000 Kg of meat,200 Kg of fish, scallops,prawns and crayfish,500 Doz eggs,500Kg of frozen veges, 1800 Kgs (80 boxes)of potatoes,400Kg(19boxes) of onions and a large quantity and quality of other fresh veges and a variety of fresh fruit.

We also received something like 277 boxes of different tinned foods,from small items suchas sardines,to larger types like biscuits and milk powder, and about four sea-containers of warm stored items.

FOOD 79

At the present stage (October), we have consumed about two-thirds of our meat and veges and hope to have some left in mid-January.

Various types of meat and veges are supplied for the year,but most of the tinned varieties are kept in storage for a year or two (for reserve stock) these items are always rotated from year to year to make way for newstock. The most popular items are always the ones yoy run out of quickly,ie fresh fruit,tomatoes and fresh eggs.Every now and then you get a craving for them,but you only have to wait until it arrives on the next ship.

As far as the weekly food stack run goes,Met forecasts are a great help as the strongest winds will just blow your boxes to the front door - but once they get past the door,they just keep on trucking!

SIMMO

-SERVES 20-

HEIN BAK BEE

SAL

RATION NO

An example of the content and illustration in a 1979 yearbook from Davis.

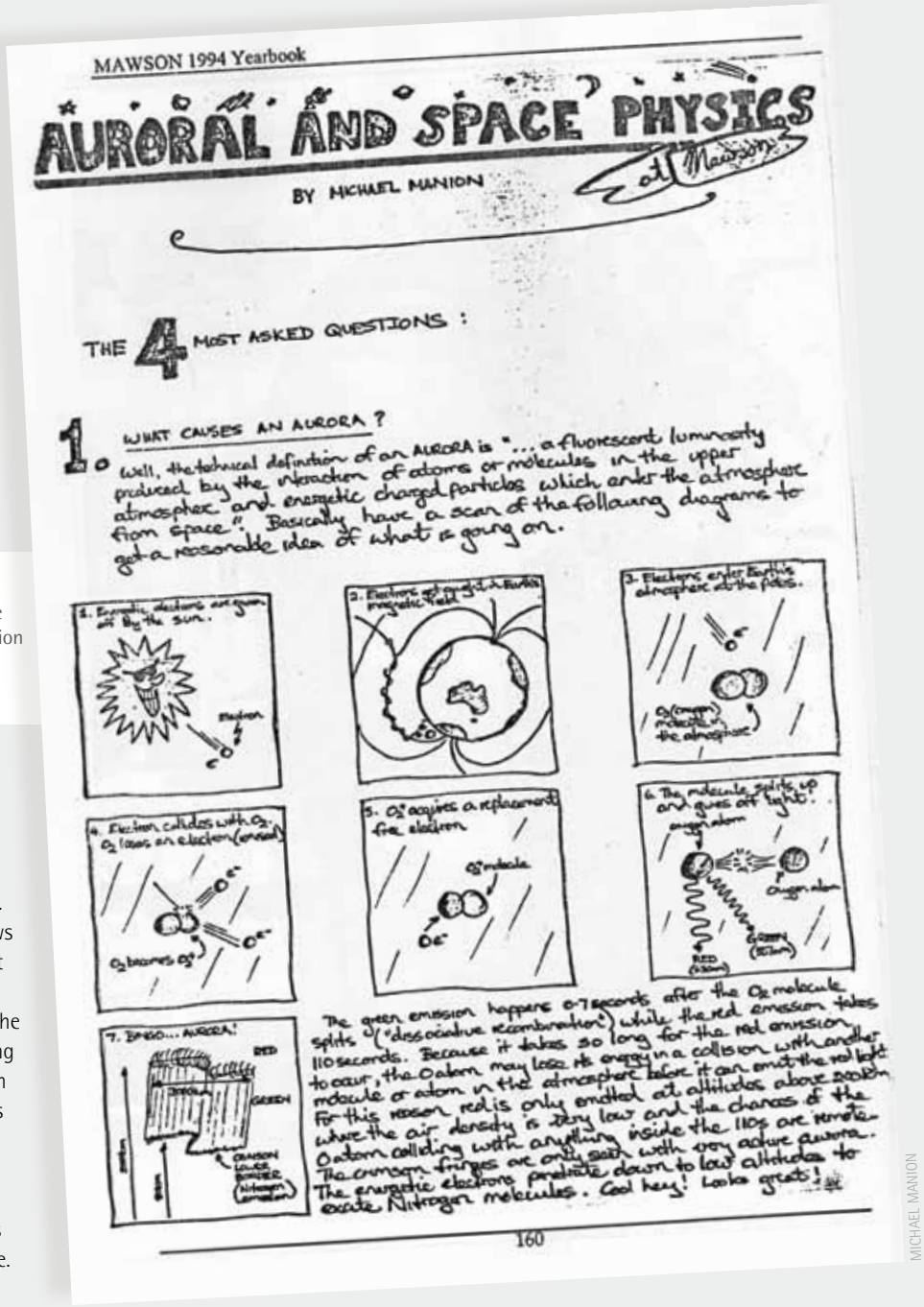
Antarctica, and asking for honorary membership of the press association – a request that was readily granted. Going along with the charade, a liquor company inquired whether an advertisements for their schnapps could be placed in the newspaper, but were rebuffed due to lack of payment.

Not all of Mawson's men were keen to contribute. One of the 1913 expeditioners, Frank Bickerton, was hounded so much by McLean that he finally wrote an article ('Cornered!') about that very experience. And by the time the final issue appeared, in October 1913, all including McLean were having trouble summoning the enthusiasm to write. But on the whole the newspaper seems to have brought much pleasure to the AAE men.

Several earlier polar newspapers, including Parry's *Gazette* and Scott's *South Polar Times*, had been published on the expedition's return. *The Adelie Blizzard* was conceived with the same aim in mind: several diary entries of 1912 mention this idea, and in June of 1913, Mawson and McLean had signed an agreement outlining future publication plans. But a number of factors, including the declaration of war, prevented them turning to this task until mid-1916, by which time both were heavily involved in the war effort. With Mawson in Liverpool working for the British Ministry of Munitions, and McLean in London on leave from his post as a medic in France, the two men worked to edit the newspaper (a process begun in Adélie Land), cutting out and inserting content, adding illustrations (by the marine artist J. van Waterschoot van der Gracht), removing obscure or potentially offensive references, and evening out the lengths of the issues. They were soon ready to approach London publishers. While Mawson favoured William Heinemann, McLean objected to his German birth, and instead submitted a fair copy of the newspaper to Smith, Elder & Co., who had published the *South Polar Times*. They politely rejected *The Adelie Blizzard*, observing that the AAE had not captured the public imagination in the manner of Scott's more glamorous expedition. Turning to another publisher, Andrew Melrose, in November 1916, McLean was informed that any AAE publication would be overshadowed by the just-returning men of Shackleton's remarkable *Endurance* expedition. At this point, understandably, he gave up. Nonetheless, in a letter to Mawson, he expressed his confidence that if the newspaper were not published at this time, it would be 'some day'.

While *The Adelie Blizzard* languished in Mawson's personal papers, eventually becoming part of the archives held by the Mawson Collection at the South Australian Museum, the tradition of the Australian Antarctic 'newspaper' did not stop with the AAE. Over half a dozen periodical publications sprang up in Australian bases in the early ANARE years.

It is difficult to pinpoint the first ANARE newspaper, because these informal documents may not always have been deposited in the records of the Australian Antarctic Division. One candidate is *Hardships: The Macquarie Island Paper*, 'incorporating' the *Buckles Bay Times*, which began in early 1957. It believed itself to be 'the paper with the world's smallest circulation' (although *The Adelie Blizzard* has a far better claim). Noting that '[t]he first issue of an Antarctic newspaper is little short of momentous,' the opening editorial encourages all members of the community to contribute, 'be it in humour, verse, story, limerick or what-have-you'. In this way, the editor (O.I.C. Harry Black) predicts, the 'hardships' of Macquarie Island will 'hold greater interest for us and for our families and friends when each issue is avidly scanned upon the return of our expedition to Australia'. The first item is a poem 'About the Title', listing alternative suggestions for the paper's name: *Time and Tide, Mercury, Alcohol Thermometer, Picnic Papers, Southern Lights, Macquarie Blood*. The issues – produced on typewriter with hand-drawn cartoons, decorative titles and the occasional


MAWSON 1994 Yearbook

AURORAL AND SPACE PHYSICS at Mawson

BY MICHAEL MANION

THE 4 MOST ASKED QUESTIONS :

1. WHAT CAUSES AN AURORA ?

Well, the technical definition of an AURORA is "... a fluorescent luminosity produced by the interaction of atoms or molecules in the upper atmosphere and energetic charged particles which enter the atmosphere from space". Basically have a scan of the following diagrams to get a reasonable idea of what is going on.

The green emission happens 0.7 seconds after the O_2 molecule splits ("dissociative recombination") while the red emission takes 110 seconds. Because it takes so long for the red emission to occur, the O atom may lose its energy in a collision with another molecule or atom in the atmosphere before it can emit the red light. For this reason red is only emitted at altitudes above 200km where the air density is very low and the chances of the O atom colliding with anything inside the 110s are remote. The crimson fringes are only seen with very active aurora. The energetic electrons penetrate down to low altitudes to excite Nitrogen molecules. Cool hey! Looks great!

160

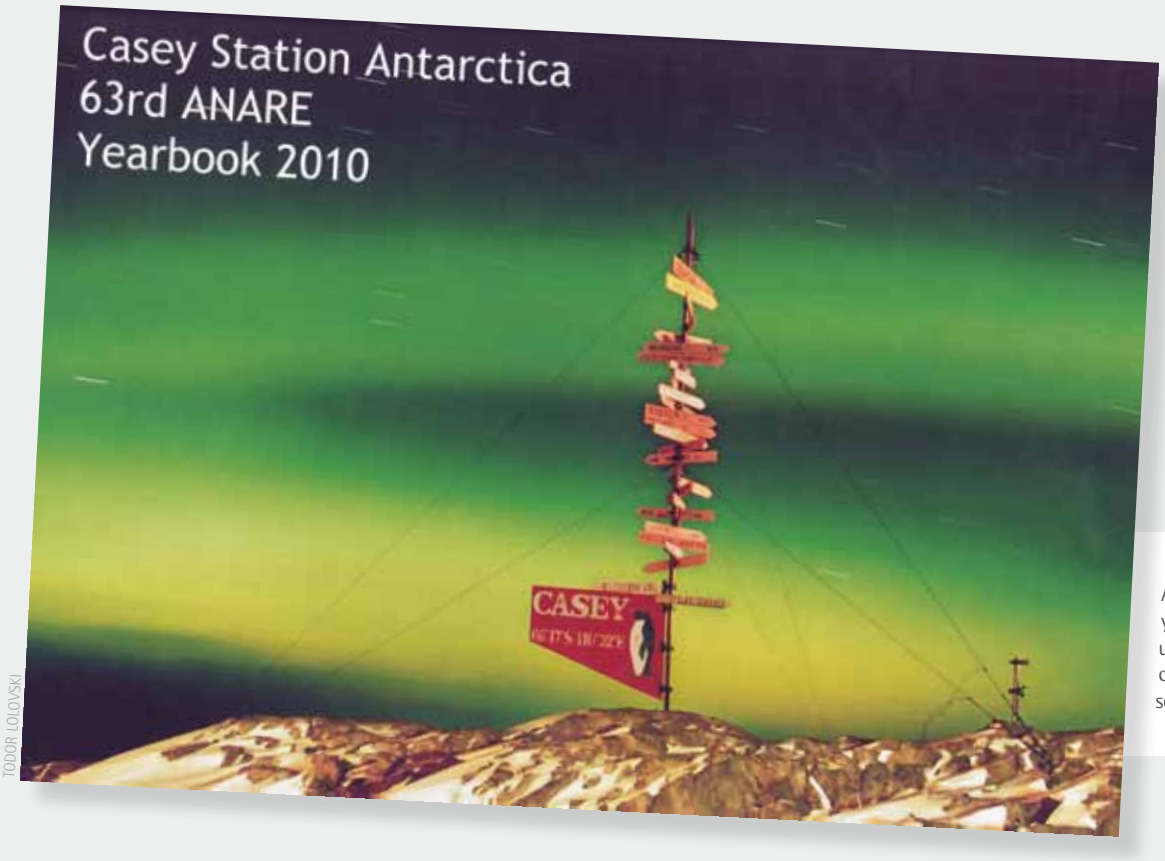
MICHAEL MANION

An explanation of the science of aurora in the Mawson station yearbook of 1994.

photograph – are not very different in content or tone from *The Adelie Blizzard*. Items include poetry, sports reports, 'News and Views', advertisements ('For sore feet after hiking try Seal Wallow Balm'), book reviews, regular columns, and letters to the editor. Although the newspaper, according to its opening editorial, had 'its tongue in its cheek', it nonetheless included serious articles on medical, scientific, historical and topical issues. Unlike the AAE men, however, the ANARE expeditioners had the technology to print numerous copies of their newspapers, rather than only one. Seven issues of *Hardship* were produced in 1957 – all only a handful of pages long – and another eight issues, considerably longer, appeared in 1960.

Meanwhile, at Mawson station, expeditioners were hard at work on the *Antarctic News and Rumdoodle Exposés*, which after just one issue was rechristened the *Katabatic*. Its issues were short (two to seven pages) but regular, appearing monthly from April 1960 to January 1961. This organ prided itself on its frankness: 'No secrets – we tell all – if you see your name this issue, use your friends' next issue.' Two years later the station community produced a 50 page 'scrapbook' featuring cartoons, poems and photographs 'to record all the humerous [sic] and gruesome events that here occur', but no paper; and two years after that the *Mawson Anabatic* appeared – a single long publication, but still adopting the newspaper or magazine format, and featuring similar content to earlier publications. It included 'Mawson's What's What' 1964, a series of reports on people and activities on station designed for expeditioners to draw on when, after their return, they are 'plagued by requests' to go on world tours, recounting their 'stirring stories of courage and of the invincibility of the spirit of man'. Sentiments that might have been used seriously in *The Adelie Blizzard* were by this time the source of self-deprecating humour.

Davis's first periodical was the *Midnight Sun*, which ceased after only three issues in the first half of 1963. Its front page boasted a circulation of nine men, fifteen dogs and five pups, its 'Honoured Patron' was a dog called Blizzard, and it was 'Wholy [sic] set up and Printed at Number 3 Bilgewater Lane, Davis (Opposite the Glacier)'. Wilkes station was remarkably productive given its relatively short lifetime as an Australian Antarctic base. The *Windmill* – a 'quixotic magazine grinding out a lot of corn' – was launched in March 1960, joining a 'select and unique brotherhood' of earlier Antarctic newspapers. It continued monthly until December, treating its readers to gossip columns, sporting reports, poetry (including an 'Ode to Alcohol') and discussion of controversial issues such as 'the question of women in the Antarctic'. The following year produced the *Wilkes Hard Times*, which was based on the *Windmill*; it was nominally a monthly publication, but only one issue appears to have been produced in 1961. Bernadette Hince's *Antarctic Dictionary* references a 1963 issue,



TODOR LOLOVSKI

A modern-day yearbook produced using an online creative publishing service.

which does not appear to have been deposited in the Australian Antarctic Division's archives. Casey's first newspaper is likely to have been *The Antarctic Waste, incorporating Drift Magazine*, which appeared late on the scene in April 1970, presenting itself as 'the official newsmedia of Casey station', announcing its intent to 'lampoon certain aspects of ANARE', and advising expeditioners past, present and future not to take offence. The 'Casey Publishing Company' was soon 'swamped' with contributions. The editorship of the *Antarctic Waste* was passed on between issues, which appeared quarterly. This Casey newspaper had its tabloid elements: 'Auntie Floe's Personal Problem Page' was a regular feature, and the second issue boasted a 'Full Page, Lift Out, Unclad Female Sex Symbol' – although the centrefold is not quite what the description leads its readers to believe.

During the 1970s, the Antarctic newspaper disappeared – or rather it evolved into a related genre, the station yearbook. Again, the genre had no precise beginning, with several one-off publications in the 1950s and 1960s having elements of the yearbook. According to the Antarctic Division's collection, the earliest self-identifying yearbooks began appearing in the late 1970s and early 1980s, and have continued semi-regularly ever since at the four Australian stations. They are linked to the earlier ANARE newspapers by their similar content: editorials, lists of personnel (with nicknames and photographs), historical and scientific reports, insights into the various tasks undertaken on station, cartoons and jokes, reviews, poetry, accounts of midwinter activities, maps and charts of wind, temperature and/or day-length. They also share with the newspapers the many hours of voluntary labour necessary for their production.

In their layout, the yearbooks have altered along with developing technology. Typewriters were replaced by word processors, which are now giving way to online software that enables copies to be printed professionally outside Antarctica. But, despite significant changes in availability and modes of communication – from the telexes (or 'WYSSAs') and short, unreliable, expensive telephone calls of the 1970s and '80s sent by high-frequency radio, to today's easy access to email and social-networking websites – the station yearbook tradition has stayed strong. The purposes it serves are not made redundant by the availability of cheap, instantaneous communication. The primary purpose of the yearbook stated in editorials and forewords is little different to that of the earlier newspaper: as the editor of the Davis yearbook of 1993 asserts, they are "both an aide-mémoire for ourselves as well as a stimulus to the interest of our friends and families." But, as with the newspaper, it is easy to think of other uses of the yearbook: to provide a pleasant, creative leisure activity in the latter months of winter – one which potentially involves all on station; and to establish a community identity, by sharing experiences, events and interests, including in-jokes and pen-names that only fellow expeditioners will appreciate. While private diaries and public blogs serve particular functions for the individual, the yearbook asserts the station community as a cohesive group.

In a fitting end to the 100-year history of the Australian Antarctic newspaper, Archie McLean's prediction for *The Adelie Blizzard* – that posterity would rectify its neglect by British publishers – has proved accurate. In 2010, the Friends of the State Library of South Australia published the AAE newspaper in facsimile form, and it is now available for the enjoyment of a readership very different from the one its original contributors anticipated (copies can be ordered at http://www.australianapublications.org.au/book.php?bid=45). McLean was confident that *The Adelie Blizzard* would one day be published, but it achieved more than this: it established a cultural tradition in Australian Antarctic bases that, a century later, shows no sign of abating.

ELIZABETH LEANE
School of English, Journalism and European Languages, University of Tasmania

In the footsteps of McLean, Jones and Whetter:
100 years of Australian Antarctic medical practice

1. A winter afternoon in the living hut at Commonwealth Bay. (L-R) Dr Xavier Mertz in charge of Greenland dogs (reading); Archie McLean, Chief Medical Officer and bacteriologist; Cecil Madigan, meterologist; and John Hunter, biologist.

FRANK HURLEY

From the outset, the Australasian Antarctic Expedition 1911–14 (AAE) was recognized by Antarctic historians as an important expedition. In 1928 J. Gordon Hayes wrote: 'Sir Douglas Mawson's expedition, judged by the magnitude both of its scale and of its achievements, was the greatest and most consummate expedition that ever sailed for Antarctica'.

Considering publication of the AAE Scientific Reports continued until 1947, this is high praise. Medical reports and comment, appearing as appendices in *The Home of the Blizzard* (1915), and the 1919 AAE Scientific Report *Bacteriological and other Researches* bear testimony to the lesser known achievements in human studies and medicine. As a plethora of meetings, books, lectures and events celebrate the centenary of AAE, it is timely to review 100 years of Australian Antarctic medicine from the inaugural practice on AAE by its three doctors, McLean, Jones and Whetter.

Mawson had wintered with Shackleton's British Antarctic Expedition 1907–09 (BAE), and this experience may have influenced his attitude to selection of expedition staff, especially doctors. As Mawson stated: 'In no department can a leader spend time more profitably than... selection...for a polar campaign the great desideratum is tempered youth.'

BAE had two competent doctors, Marshall and Mackay, both with strong and difficult personalities. Marshall had clashed with Mawson, and twice Shackleton had threatened to shoot Mackay. Mawson was with both doctors on the first ascent of Mount Erebus, and had travelled with Mackay and Edgeworth David over 2000 km in 122 days to the vicinity of the South Magnetic Pole. Marshall was navigator and cartographer with Shackleton when they got to within 180 km of the South Pole. The first two doctors chosen for AAE could not have contrasted more with those on BAE.

2. A mock operation for medical training purposes, Macquarie Island, 1971.

BILL EDGAR

3. A Burroughs Wellcome & Co Ltd (Australia) Ltd Sydney medical chest used by the British, Australian and New Zealand Antarctic Research Expedition (BANZARE).

ROBERT REEVES

Archibald Lang McLean and Sydney Evan Jones graduated from the University of Sydney in 1910. McLean was 25, had completed a BA (Hons) in French four years earlier, and while a Resident at Lewisham and Coast hospitals in 1911, completed his ChM (Master of Surgery). Jones was two years younger and was a Resident Medical Officer at Royal Prince Alfred Hospital in 1911.

As Chief Medical Officer of the Main Base at Cape Denison, McLean carried out his medical duties well and performed significant bacteriological and human physiological studies, leading to the award of an MD (Doctor of Medicine) in 1917. He was affectionately known by the group as 'Dad'. In 1979 the last survivor of the Main Base group, Eric Webb, remembered McLean as an 'industrious collector of blood samples and something of a father-confessor to all'. McLean stayed a second year and nursed Mawson back to health after his epic journey as well as continuing biological studies and editing *The Adelie Blizzard*, an AAE newspaper. Jones was a most effective Medical Officer at the Western Base on the Shackleton Ice Shelf. He was unable to complete the bacteriological research due to contamination of the culture media, but was involved in sledging trips. This included leading an 11 week, 330 km trip to Gaussberg.

Mawson originally planned for three bases and found difficulty in recruiting a third doctor. Leslie Hatton Whetter, a 1910 graduate from the University of Otago, New Zealand, was a late recruit. AAE records state he was 29 but recent family research suggests he inflated his age by five years. Given ice conditions and the potential for delays in establishing bases at three sites, two days before landing at Cape Denison Mawson combined two groups and named Whetter as Surgeon at Main Base, a role subsidiary to McLean. Whetter's only recorded medical work was giving a chloroform anaesthetic to the dog Caruso. Although he helped with meteorological observations and was a member of successful sledging parties, he was essentially the 'collector of ice', which he did badly. His nickname was 'Error'. Continual clashes with Mawson led the leader to record in his diary that 'Whetter is not fit for a polar expedition. I wish I had minded his mother's cablegram warning me.' Webb, a fellow New Zealander, suggested 'Whetter, having been recruited for an independent role as MO of a third wintering party, always felt a bit odd, in which being a New Zealander amongst Australians may have shaded his thinking.'

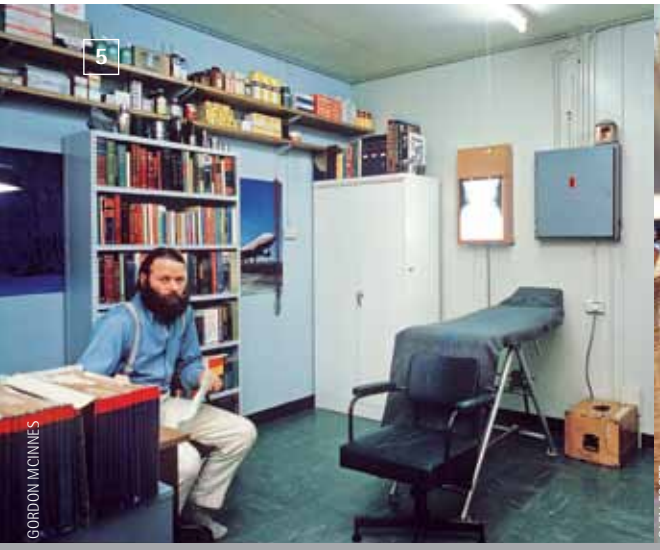
The doctors' post-expedition careers reflected their life and work on AAE. McLean completed his MD, edited *The Home of the Blizzard* for Mawson, saw military service in WWI and was awarded a Military Cross. Gassed several times in France, he died prematurely of tuberculosis in 1922. Tributes to him revealed a popular doctor with qualities that were very rare. Laseron, who was also on AAE, wrote: 'Dad, to have known you is enough to have made life worth while...' Jones specialized in psychiatry and founded the first psychiatric clinic for voluntary patients in Sydney, becoming its superintendent, creating a garden and zoo in the grounds for the patients' therapy, and was a pioneer in the treatment of mental illness in Australia. On his time in Antarctica he was always reticent. Whetter served in the Great War with the New Zealand Medical Corps, was a doctor in Samoa, and from 1923 practised medicine in a 'semi-retired way' in an isolated community at Matakana, New Zealand. He and his wife were very private people and established an extensive, showpiece garden on a large property, although locals regarded him as an eccentric with many hobbies.

As most indoor activities of the 18 men on AAE had to be performed in 90 square metres of the two huts forming Main Base, there was no dedicated medical area. Fifty five boxes of medical supplies for the voyage, bases and sledging parties, and an additional set of veterinary medicines for the dogs had been loaded on the *Aurora* in Hobart. Burroughs Wellcome medical chests and Allen and Hanbury surgical instruments, which were supplied to most world-wide expeditions of the era, were the mainstay of AAE. The opening sentences in the medical reports of McLean and Jones – 'the health of the expedition was remarkably good' and 'there was a marked absence of serious illness during the whole period of our stay [Western Base]' – and the ailments and accidents listed, suggest few medicaments were used. Influenza, skin infections, frostbite, minor

5. Dr Peter Gormly in the medical consulting room at Casey, 1973.

6. Dr Steve Karay examining microbiological specimens under the microscope, Casey, 1975.

7. Casey doctor, Eve prepares a patient



casualties during hut building, snowblindness, dysentery, and haemorrhoids were common. The deaths of Ninnis in a fall down a crevasse in December 1912 and Mertz in January 1913, while sledging with Mawson on the Far-Eastern Journey, were serious and tragic. Likewise the psychosis suffered by Jeffries, recruited as wireless operator for the second winter, seriously taxed McLean, the debilitated Mawson, and the rest of the group. It was not until 1969 that Cleland and Southcott considered that the illnesses of Mertz and Mawson were explicable as being due to hypervitaminosis A, from eating husky liver after most other food supplies had been lost. Evidence from assays of husky livers in 1971 and later reviews in 1978 and 1997 give strong support to Cleland's hypothesis, although we shall never know the truth.

McLean achieved creditable research results despite the primitive conditions in the hut (which had an ambient temperature of 4–7° C), little equipment (slides, spirit lamp, centrifuge, microscope, incubator heated by a kerosene lamp and sterilizer), materials stored under the snow, reagents mislaid for months, overgrowth of media with moulds, and lack of availability of subjects. McLean made a substantial collection of bacteriological specimens from ice, soil, mud, mammals, birds and fish. Monthly human throat, nose and skin swabs were also collected, together with blood pressures, haemoglobin and cell counts, nail and hair growth, immunological, psychological, dietetic, and general health observations. His first Australian Doctorate for Antarctic medical research was highly rated with the award of a university medal, an editorial in the *Medical Journal of Australia*, and much comment on its literary style as well as its scientific content.

Mawson's next Antarctic foray was as Leader of the British, Australian, New Zealand Antarctic Research Expedition 1929–31 (BANZARE). Two summer cruises performed extensive research in Antarctic regions and extended geographic discoveries made on the AAE. William Wilson Ingram was Medical Officer and assisted with the biological research. After the expedition he was considered by Mawson as the ideal doctor for such a research undertaking and highly praised, but his medical report was less favourable; three pages of comments on a few medical conditions – influenza, dental, lacerations, minor burns, sprained joints, and prophylactic use of orange juice and milk, with most of the report about a case of scurvy and rickets. This latter case being the cat on board that was initially fed tinned supplies, more latterly fresh meat from the biological specimens, until he recovered completely at Kerguelen, where he obtained his own food from a mouse plague.

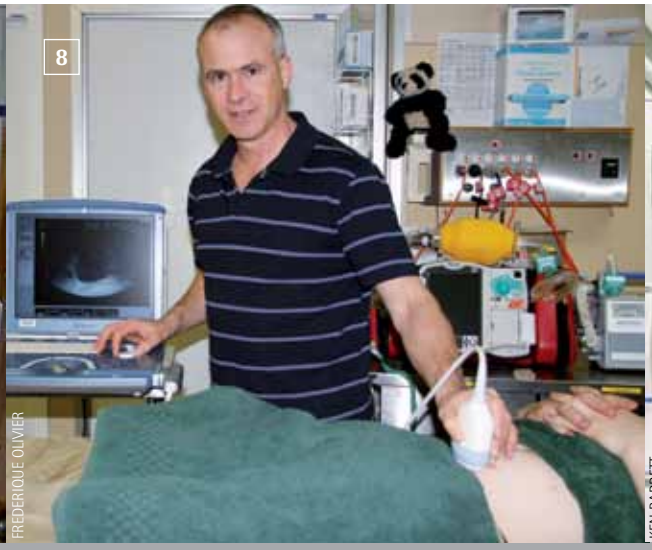
The dramatic changes in technology that have advanced Antarctic logistics and research over the past 100 years have also altered medical practice in the Australian Antarctic program. However, wintering personnel are just as physically isolated today as were Mawson's groups, albeit for a shorter time, and are subject to the same harsh environment. Those organizing the medical services for the newly established Australian National Antarctic Research Expeditions (ANARE) in 1947 learned and incorporated much from AAE, much less from BANZARE.

For the first 17 years of ANARE there was no Head Office medical support. From the appointment of a Head Office doctor on the staff of the Australian Antarctic Division in 1963, a highly specialized and efficient Polar Medicine Unit has evolved; not prominent until a well-publicized serious health or medical event occurs. The Unit's critical functions include recruitment of wintering, field and voyage medical practitioners; medical, dental, laboratory and surgical training; preparation for deployment; provision and maintenance of medical supplies and equipment; and comprehensive medical and dental screening of those going to Antarctica. As McLean found, the close nexus between health care and research has led to the Australian Antarctic Division conducting a comprehensive, multidisciplinary research program in human biology and medicine over decades, with the award of a number of doctorates. Collaboration between the Antarctic Division and many centres of research, both in Australia and overseas, has maintained high standards of research and many publications in peer-reviewed journals.

The introduction to McLean's thesis is an important document for all those contemplating or planning medical research in Antarctica. The pitfalls of such research are clear and have been experienced by many doctors over the past 60 years. McLean's attempts at immunology certainly played a part in a significant Antarctic immunology program being performed over 30 years, some 60 years after AAE. Personnel in

Merfield (right),
for an X-ray (2005).

8. Dr Glenn Browning uses a three-dimensional ultrasound machine, installed at Mawson station in 2009 to collect images for specialist diagnosis.



9. The 'containerised medical facility' – surgery in a shipping container.

Antarctica have an altered immune response, although no specific disease states have been found. Despite the altered immunity, research on Australian stations has shown that personnel are still able to produce antibodies to specific antigens, an important fact should influenzas or other infectious diseases get to Antarctica.

McLean observed a marked slowing down of finger-nail growth on AAE. Donovan repeated this experiment in 1975 at Davis and found no slowing, suggesting modern polar technology lessened the effects of environmental extremes on human physiology. Further work by Gormly and Ledingham confirmed the 1975 study but found a high rate of toe-nail growth, which they attributed to the hot-house environment of modern insulated footwear. Repeated studies are often necessary. Vitamin D research in 1991 showed no lack of Vitamin D. More sophisticated work 15 years later showed Vitamin D supplementation necessary. Similarly, photobiological research on UV in the 1980s suggested UV was not a problem to those working in Antarctica and using protection, but more recent studies showed expeditioners are subject to much greater UV levels.

Mawson had difficulty in recruiting doctors for the AAE and this has been a recurrent problem for the Australian Antarctic Division and its search for 'super generalists'. The key to the success of Australia's Antarctic medical support is the appropriately trained, generalist procedural medical practitioner – on station or on ship – who is capable of dealing with a broad spectrum of medical possibilities, from appendicectomy and craniotomy, to treatment of trauma and the diverse range of mind and body ailments in between. The 1976 wintering year saw doctors recruited from South Africa and Switzerland, and for the first time a woman wintered on Macquarie Island as doctor. It was not until 1981 that the first woman wintered at an Australian station on the Antarctic Continent as the Davis doctor. With the increase in female graduates from Australian medical schools, medical recruiting by the Antarctic Division improved. However, the numbers of doctors, both male and female, with suitable skills and willing to spend a winter in Antarctica is still limited, and is the Achilles' heel of the Australian Antarctic program. Despite this, the increasing standard of health care in Antarctica is in part a reflection of community attitudes and the expectations of groups in Antarctica and their families in Australia, as well as technological advances.

Telemedicine has been used successfully between Australian Antarctic stations and Head Office since the 1960s. The first wireless contact between Antarctica and the rest of the world took place on the AAE, with a wireless station being established at Cape Denison and a relay station on Macquarie Island. However, contact with Australia was very variable. Today, satellite communication links from Antarctica to medical practitioners at the Australian Antarctic Division, who have wintered in Antarctica, and medical and dental specialists around Australia, enable critical e-health support on a store and forward telemedicine basis, via narrow bandwidth networks. This allows telephone consultation and digital transmission of X-rays, ultrasound and clinical images 24 hours a day. In response to changing scientific needs, the Polar Medicine Unit has also designed and used a 'containerized medical facility' (in a shipping container) so doctors can deal with life-threatening medical and surgical emergencies on chartered research vessels sailing in Antarctic waters.

In the wake of McLean, Jones and Whetter, some 500 medical doctors have joined the Australian Antarctic program and provided a complete medical service in Australia's most remote medical practice. Today's doctors are just like those on the AAE, with skills additional to their medical ones. This may be in research fields or a wide array of activities that assist the scientists and support personnel in the isolated groups. Few doctors have not enjoyed their Antarctic sojourns. Most look back on their time on the beautiful, harsh and icy continent of Antarctica, or on the animal-rich subantarctic sanctuaries, as stimulating and rewarding. Testimony to this is the number of doctors who return for subsequent expeditions.

DESMOND LUGG[1] and JEFF AYTON[2]
[1]Head Polar Medicine, AAD 1968–2001
[2]Chief Medical Officer, AAD 2002 – present

Drs Lugg and Ayton are currently writing a book on the centenary of Australian Antarctic medical practice.

Breaking the ice

In the 100 years between 1911 and 2011, there have been vast technological changes in the naval architecture of polar shipping.

W.J. LITTLE

Dundee Steam Whalers such as the *Aurora*, pictured here at Hobart, Tasmania, were made of wood with strong internal framing. This allowed the ship to withstand the pressures of the ice when steaming through or when beset.

The first polar ships relied solely on the wind for propulsion. They had no advantage over the sea ice, which was also propelled by the wind, thus entering the ice was an extremely risky undertaking, if attempted at all. The Scottish developed the first true ships that could navigate in ice, having been involved in the Arctic whaling ventures from 1750. This Arctic whale fishery was mainly centred on the port of Dundee where, in 1857, a steam engine was trialled in a whale ship. The success of this saw Dundee become the leading Arctic whaling port, and the rise of a new breed of ship design known as a Dundee Whaler. The ships looked much the same as their sailing counterparts, the only external addition being a tall, slim funnel indicating the presence of an engine.

The Dundee steam whalers were, for the era, the best ships for ice navigation. As the only real polar vessels available, they became the leading technology that allowed the 'heroic era' of Antarctic exploration to commence.

The *Aurora*, built at Dundee in 1876, spent her first 10 years as one of the Dundee whaling fleet. Like all Arctic whalers she was made of wood, which allowed the ship to withstand the pressures of the ice when steaming through or when beset. This was very clearly demonstrated in January 1915 when the *Aurora*, under the command of Joseph Stenhouse, was beset and drifted with the ice for 312 days, after landing the Ross Sea party of Shackleton's Imperial Trans-Antarctic Expedition.

Steel and iron ships as were available in 1911 were not ice-strengthened. Before welding of steel plates became common-place, the plates were held together by rivets. These rivets could be broken by the action of the ice on the ship if they were not flush enough with the plating. The plates also buckled under ice pressure and the subsequent leaks were unrepairable at sea. The steel ship would therefore literally come apart, so the early heroic era explorers made do with wood.

The *Aurora* was built of oak and the heavy hull frames were braced and stiffened by two tiers of horizontal oak beams, on which were built the tween deck and main deck. The engines and boiler were situated aft. Wooden ships such as the *Aurora* also had timber sheathing over the hull planking to above the water line. This extra skin protected the hull from ice damage and could be later removed and replaced with new sheathing in dry dock. The *Aurora's* sheathing was tough greenheart (*Lignum vitae*) lined with fur in between the hull planking and the sheathing. Originally rigged as a barque, John King Davis had *Aurora* re-rigged as a barquentine, which allowed the vessel to be worked by a smaller crew. Another advantage of the Dundee Whaler was that as a commercial vessel it had a large hold for cargo; an important requirement for delivering the shore parties of Antarctic expeditions. On her first voyage south the *Aurora* had every available space taken up with timber for the living huts and an air tractor in a crate on top of it all.

WENDY PYPER

On the Bridge of the *Aurora Australis*.

HOSUNG CHUNG

The *Aurora Australis* has the power to push up on to ice and crack it, while her hull shape directs the broken ice around and underneath the ship.

Despite being 40 years old *Aurora* was well adapted for the job in hand, and under John King Davis' management she was refitted and upgraded with a steamship-style bridge deck and steering. This gave better visibility for the helmsman and the communication of orders. The *Aurora* was fitted with a compound steam engine, rated at 98 nominal horsepower, which gave her a speed of six knots. Despite the all-important engine for ice navigation, the *Aurora* was in essence sailing ship, and one that could sail well, as she demonstrated on her passage from the United Kingdom to Hobart in 1911.

The last wooden ship to be used by an Australian expedition was the Antarctic veteran HMAS *Wyatt Earp*, in 1947, for the first Australian National Antarctic Research Expedition (ANARE) season. Although this vessel had served the American explorer adventurer Lincoln Ellsworth well on his four Antarctic expeditions, she had very limited ice capability for the emerging needs of modern exploration.

With the sale of the *Wyatt Earp*, new Australian Antarctic Division Director Phil Law was hampered in his quest to establish a permanent base on the Antarctic continent by the lack of a suitable ship. However, in 1952 he learnt of a new type of vessel built by the J. Lauritzen Line.

The 'Dan' ships, as they were called, consisted of the *Kista Dan, Magga Dan, Thala Dan* and the *Nella Dan*. They came with their strong, ice-strengthened, all-welded, smooth hulls, built to Ice Class 1 standard. This standard meant stronger structural integrity and protection for the rudder. These ships also had a fully enclosed crow's nest containing all the navigation instruments; a major asset in navigating the sea ice, giving the ice pilot a bird's eye view of the ice conditions. They also had heli-decks for helicopter capability added over the stern area. For for the first time, information on ice conditions could be obtained well ahead of the vessel, and there was greater ship to shore capability.

Kista Dan's successful pioneering voyage of 1953 saw the establishment of the first permanent base on the Antarctic continent – Mawson station. Thus began a new era in Antarctic exploration and the era of the all welded, smooth-hulled steel ships of the J. Lauritzen Line.

In 1989 the multi-purpose Antarctic research and resupply ship, the RSV *Aurora Australis*, was launched. Her closely–framed, ice-strengthened hull has an ice clearing shape, and the power to push the ship up on to the ice, whereby the weight of the ship cracks the ice. The shape of the hull is designed to direct the broken ice around or under the ship, so that the ship can proceed forward. This is a much more effective method than in Mawson's day with the old *Aurora*, which had perhaps a twentieth of the power thundering away as it charged at the ice, ramming it with its heavily reinforced bow. It required much skill on the part of Captain Davis to identify the best parts of the ice to ram for success.

Despite the increase in size, the manoeuvrability of today's ships would astound those of Mawson's era. The *Aurora* was 165 feet in length

PHILLIP LAW

The *Kista Dan* was the first of the 'Dan ships' to be used by the Australian Antarctic Division. These Ice Class 1 ships had a fully enclosed crow's nest for ice navigation, and a helideck.

with a single rudder hung on the sternpost. To turn the *Aurora* around would probably take an arc five times the ship's length. Today the *Aurora Australis* has, in addition to her rudder, a transverse bow-thruster and two retractable azimuth stern-thrusters. Not only can she turn almost in her own length, but with the use of her azimuth thrusters she can maintain a station at sea – an important capability in modern marine science and oceanographic operations.

Oceanography and marine science are a significant part of the work of the *Aurora Australis*. To undertake science at sea the vessel is equipped with eight laboratory spaces, a wet lab for sorting marine specimens, meteorological room, scientific freezers and culture cabinets. The trawl deck is equipped with trawl winches and net equipment, making biological sampling at sea possible. To acquire oceanographic data, the ship is fitted with a multi-functional instrument winch, which generally deploys the Conductivity-Temperature-Depth rosette.

The *Aurora Australis*' suite of sonar data echo sounders, transducers and net surveillance sonars are ready at the push of a button for bathymetry logging, fish detection and bottom-type assessment; a far cry from how it was done onboard the *Aurora* in 1912. According to Captain Davis it took just over an hour to sound 2600 fathoms in fair weather with the Lucas machine. This machine was mechanical and used a lead weighted wire cable on a large drum. A geared, clock-like scale measured off the depths.

Every era of exploration has the best technology of the day at hand. However, Douglas Mawson's and John King Davis's own lifetimes bridged the change from the 'old' heroic era to the modern mechanical age – the change from wood to steel, steam to diesel, and from relatively small ships to large cargo capacity icebreaking ships. We have seen the role of ships change from a means of getting to Antarctica, to full research support; but one thing that has not changed is that ships are still the most vital component of Antarctic logistics.

JONOTHAN DAVIS
Australian Antarctic Division

Ship specs

Aurora

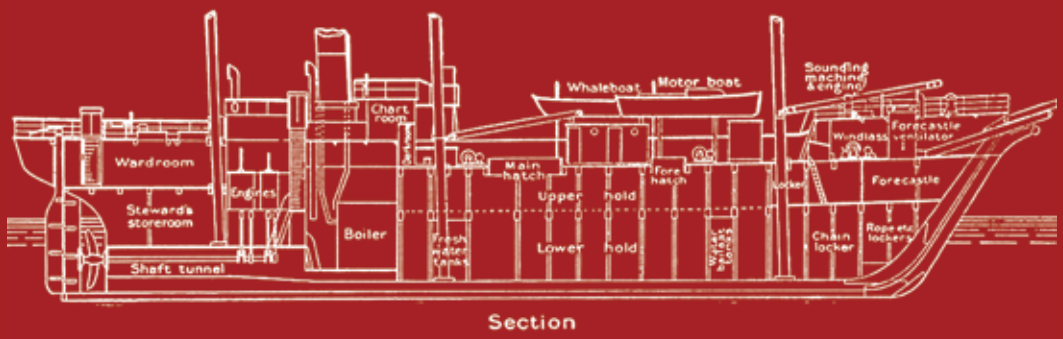
	Built in 1876
Builder:	Alexander Stephen & Sons, Dundee, Scotland. Auxiliary screw steamship, three-masted barque rig
Gross tonnage:	551.67 t (Net tonnage: 367 t)
Length:	50 m
Beam:	9.3 m
Draught:	5.72 m
Owners:	Douglas Mawson; registered Liverpool (sold to Sir Ernest Shackleton for Ross Sea party, 1914).
Engines:	Compound steam, 98 nhp made by Cunliffe & Dunlop, Port Glasgow. Single boiler, two-bladed propeller
Fate:	Sailed from Newcastle NSW for Peru with coal on 20 June 1917 but failed to arrive

Nella Dan

	Launched 13 June 1961
Builder:	Aalborg Værft A/S. Aalborg, Denmark
Gross tonnage:	2206 t
Length:	75.5 m
Beam:	14.3 m
Draft:	6.268 m (fully loaded)
Speed:	12.5 knots
Owners:	Rederiet Ocean A/S (one of the J. Lauritzen Line companies), Copenhagen
Fate:	Sank off Macquarie Island, 24 December 1987, after drifting on to rocks during a storm

Aurora Australis

	Launched 18 September 1989
Builder:	Carrington Slipways Pty Ltd, Newcastle Australia
Designer:	Wartsila Marine Industries Inc.
Gross tonnage:	6574 t (Deadweight: 3893 t)
Length:	94.91 m
Beam:	20.30 m
Draft:	7.9 m (maximum)
Speed:	16 knots (maximum)
Owner:	P&O Maritime Services
Endurance:	90 days or 25 000 nautical miles



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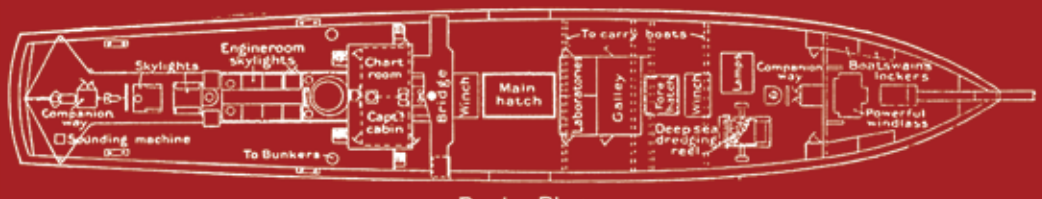


Deck Plan

Plan and longitudinal section of *S.Y. Aurora*.

1. Professional photographer Herbert Ponting was among the pioneers of classic Antarctic photography. He captured this enduring image of the *Terra Nova* on glass plates, during Scott's *Terra Nova Expedition* of 1910–12.

HERBERT PONTING

Capturing the southern light

For the first-time Australian visitor to Antarctica, the light there is something quite new. We are a temperate and tropical people, used to a high sun and rapid transitions from light to dark. Even Tasmanians can find the low, slanting light of continental Antarctica a disconcerting experience.

2. Nel Law was amongst the visual artists who painted the Antarctic landscape in the early days of the establishment of Australia's permanent Antarctic stations.
3. Professional photographer Wayne Papps mastered his highly reflective subjects to capture the drama and beauty of the Antarctic landscape during the transition from film to digital.
4. Modern-day expeditioner and digital photographer Chris Wilson has mastered the dramatic use of light in Antarctica.
5. Graham Thorley paints at Rumdoodle, 1980.

For Australian visual artists the experience of Antarctic light is magnified many times above the norm. From the perspective of technique, the process of adaptation manifests itself in many ways. As a landscape artist John Caldwell, who went south in 1987, was confronted with a much larger range of colour — purples, pinks, oranges, golds — than he'd expected (white, and more white). For Frank Hurley, experimenting in 1911–1914 in the still-young medium of photography, one of the big issues was exposure, getting used to the highly-reflective surface of snow and ice — as it was for countless photographers down the years, following in the master's footsteps.

There are other aspects to an artist's experience of the far south, suggested in the growing catalogue of Antarctic art. This is nature on a vast scale. Whoever ventures into the ice cannot fail to be struck by this scale, and by the basic, elemental quality of the landscapes and seascapes, utterly indifferent to human presence.

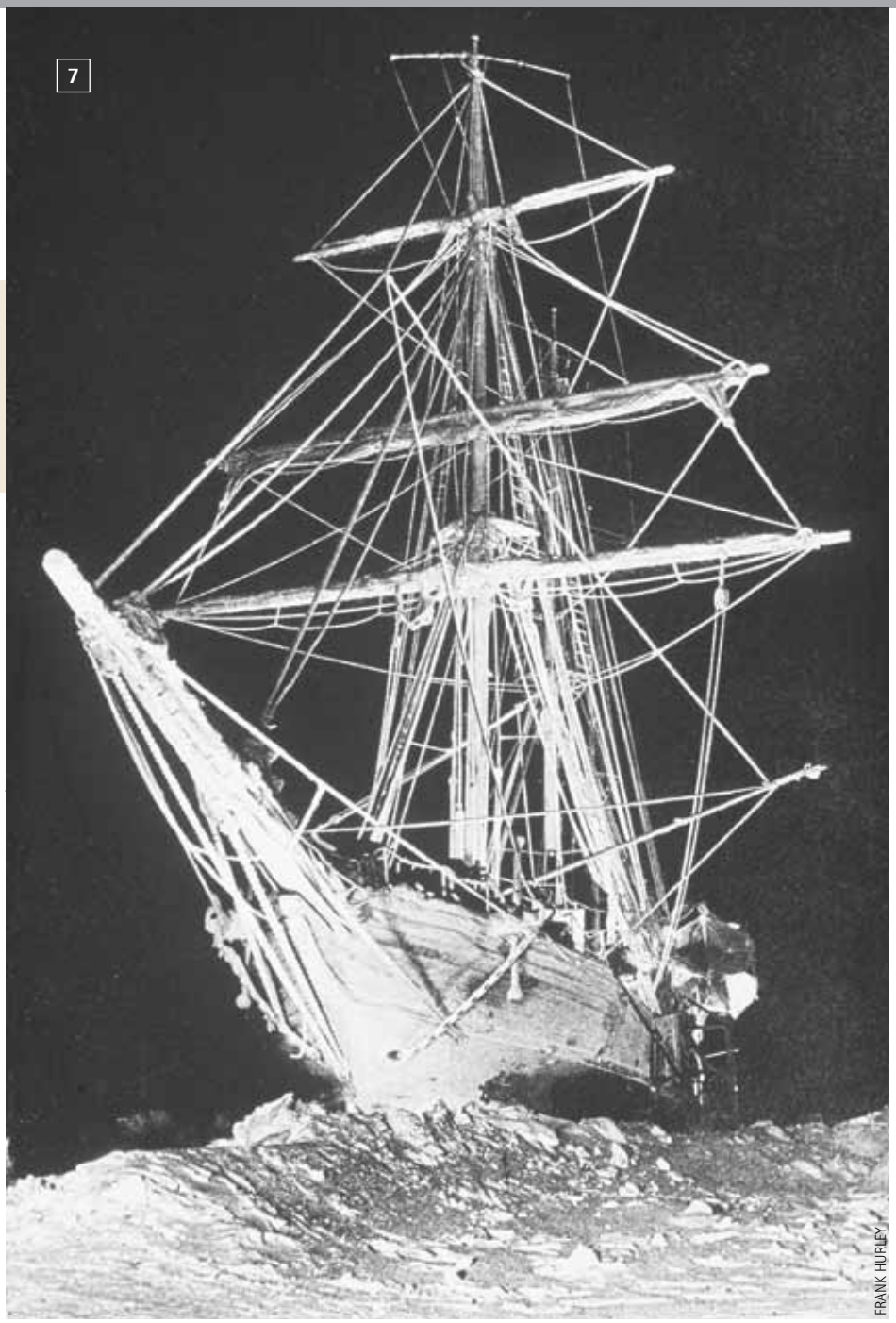
Poets and other literary travellers were perhaps the first to try to give expression to the Antarctic experience, but it was the mapmakers who first put it into visual form. At first it was entirely imaginary, driven by a human need to represent something in the unknown southern regions that their map readers could relate to — fabulous lands covered by luxuriant plant life and inhabited by savage peoples. Their drawings fed a public craving for knowledge that finally bore fruit from the 15th century onwards in the voyages of Europeans around Africa and South America, finally reaching what we now call Australia.

If there is a history of humanity's vision of the Antarctic, James Cook's circumnavigation of the continent in the early 1770s marked a turning point. For the first time, a professional artist was able to provide people with a reasonable facsimile of what the place actually looked like. William Hodges sailed with Cook aboard *Resolution* across the Antarctic Circle and deep into the pack ice, recording by watercolour, oil and pencil the extraordinary landscape, birds and mammals of the Southern Ocean's sea-ice zone. His fellow mariner, *Resolution's* master, William John Gilbert, provided competent support in the form of skilfully-drawn sketches.

The example of Cook set a precedent. All the great national voyages through the 19th century carried competent artists and illustrators who paid for themselves by providing illustrations essential to the promotion of the voyages' achievements in books and exhibitions. By the turn of the 20th century the traditional forms of visual art were being supplanted by photography. Robert Scott's final Antarctic expedition in 1910 took not only the watercolour artist Edward Wilson but also the professional photographer Herbert Ponting.

For Douglas Mawson, new technology took precedence over tradition. Though the Tasmanian Charles Harrisson was a gifted watercolourist his main role was as a bird biologist. There was no fully professional artist aboard *Aurora* in 1911 — unless we include the Sydney-based photographer Frank Hurley, who undoubtedly considered himself an artist. Even more than the outstanding photographs of Ponting, Hurley's images would transfix the world. His successful initiation into Antarctic photography at Cape Denison was followed up by one of the most famous expeditions of all, that of Shackleton's *Endurance*, made so by Hurley's unforgettable images of the stricken ship in the winter darkness, in the grip of Antarctic ice.

The visual representation of Antarctica in the 20th century is dominated by photography, at first black and white, then colour images, and finally movie film and video. Since the first Australian National Antarctic Research Expedition (ANARE) in 1947, photography has been a major preoccupation of Australian expeditioners. The output includes much fine professional work from the likes of Jutta Hosel, Laurence Le Guay, Robert Reeves, Peter Dombrovskis, Rowan Butler, Keith Taylor, David Parer, David Stephenson and Grant Dixon. Add to this the late Wayne Papps, who until his untimely death in 2003 was producing outstanding digital work based on a couple of voyages and visits to Casey and Mawson stations. And, of course, the colossal archive of amateur Antarctic photography, represented in large part in the image library of the Australian Antarctic Division.



7. One of Frank Hurley's iconic images of the *Endurance* beset by sea ice in 1915, during Shackleton's Imperial Trans-Antarctic Expedition, taken using some 20 flashes to illuminate the ship.

George Davis, Graham Thorley, Nel Law and Ray Honisett were among visual artists who painted the Antarctic landscape early in the era of permanent national Antarctic programs, following World War II, as was Sidney Nolan, who visited McMurdo Base (US) in 1964. Shelagh Robinson, ANARE Club stalwart and amateur artist who visited Casey in 1976, organised a number of exhibitions of Antarctic art in Melbourne, mainly featuring the work of former expeditioners. Watercolours by Steve Harbour (Mawson) and David Everitt (Davis), cartoons and drawings by Phil Vardy (Davis), and the drawings and paintings of Peter Gibson (Wilkes, Mawson and Casey), John Reid (Macquarie Island), Trevor Tierney (Davis), David Ashton (Macquarie Island), Gary Bradley (Davis and Mawson) and Robinson herself are among the amateur work which deserves recognition.

Relocation of the Australian Antarctic program's headquarters from Melbourne to Hobart saw a revival of the practice of sending artists south. Stephen Walker, Bea Maddock, Jan Senbergs and John Caldwell took the voyage south in the 1980s, with some outstanding results in sculpture, painting and prints. The program was expanded to take in writers, composers, performance artists and others under the broad umbrella of the 'Antarctic Humanities Program'. Writer Tim Bowden, sound recordist Ron Minogue, painters Clare Robertson and the late Aboriginal artist Lin Onus, photographers David Stephenson, Denis Crawford, David Neilson and Grant Dixon, printmakers Sally Robinson, Jörg Schmeisser, Caroline Durré, and stamp designer Janet Boschen were among those venturing into the ice from the late 1980s through to the turn of the millennium.

No longer is the station darkroom (if it still exists) in constant demand from hoards of eager photographers. Digital still images can be relayed within minutes from any Antarctic station (and most field camps) to any part of the world. While traditional media remain, today's professional artist in Antarctica is more likely to be working in Photoshop or FinalCutPro as in oils or watercolours. Alongside the prints of Lisa Roberts, the paintings of Sue Lovegrove or the idiosyncratic forms of Stephen Eastaugh and Maria Buchner, are the online diaries of Alison Lester, the digital sounds of Philip Samartzis and the mixed-media performance art of Tina Evans.

But Antarctic art is nothing if not democratic. For every finished professional work of art there are tens of thousands of amateur photographs of life who, like everyone who ventures into the ice, are awestruck by the splendour of this or that ice landscape, the quirky behaviour of an Adélie penguin, the thrill of the newly-arrived snow petrel, the exquisite beauty of an icicle or a night sky... the list is endless. Among these images there's plenty of dross, but there are also artworks that stand comparison with the much smaller body of work by the professionals. In their quest for the outstanding image, these ordinary expeditioners are today's torch-bearers in the spirit of the pioneers, Hurley and Ponting.

PETER BOYER

Echoes of the past amid the frost and silence

1. David Ellyard stands beside the bunks inside the Main Hut.
2. The Baltic pine timbers of the hut have withstood a century of wind and ice blasting.

The following is an extract from the blog of David Ellyard, President of the Australian National Antarctic Research Expeditions (ANARE) Club, during his visit to Mawson's Huts to mark the centenary of the Australasian Antarctic Expedition.

January 17, 2012

...We properly talk of Mawson's Huts, since there are two. The larger building, internally about seven metres square, was the living quarters and was always intended for this site. The smaller hut was supposed to be for another base, but that plan was abandoned early. So it too is here, built side-by-side with the living quarters, with a connecting door way and served the AAE as workshop. It stands on the seaward side of the main hut.

From the outside, there is a strong disparity between the state of the wooden walls of the two huts and of their roofs. The walls are original, constructed of vertical Baltic pine planks, now much scoured and scarred by a century of ferocious windblown snow, the Antarctic equivalent of sandblasting. In many places the heads of the nails now stand well clear of the timbers. In many places extra short planks are hammered over the walls. These once held in place pieces of cloth and other materials, added in an attempt to keep out the fine drifting snow.

The steeply-pitched roofs on the other hand look almost new, and so they are. Over recent years fresh Baltic pine planks have been placed over the original roofs, which were in much worse condition than the walls, especially on the south side, and freely leaked drift. This, plus the loss of the wooden coverings over skylights, allowed immense amounts of snow to penetrate the building, so that by the early 1970s, when the first efforts began to restore and conserve, the huts were almost totally choked with ice.

At first the juxtaposition between the old walls and the new roofs was jarring. But even a few years in the unforgiving Cape Denison environment has aged the roofs so now they blend more. The strategy adopted has the benefit that in some future time the new roofs could be removed to reveal the originals. So it is easily reversible.

When I paid my visit, the huts were deep in snow up to the roof on the south and east, but there was a scour on the western side where the entrance is. Even so, I am told it took several hours of digging, and the judicious use of a chainsaw, to clear sufficient snow from around the main doorway to allow entrance. Access to the hut is carefully controlled by its keepers, one of whom, the Western Australian Museum's Ian Godfrey, was on hand to guide us through. No more than four people are allowed in the hut at any one time, and you get to stay only about 10 minutes.

You enter the huts through the workshop, stooping low through the doorway, since the floor level is substantially raised by accumulated snow. The workshop is smaller than the main hut and almost totally empty. The machinery and equipment which used to stand here in the AAE days was all removed at the end of the expedition (other than a sewing machine which was collected later) in the expectation that they could be sold off to repay some of the expedition's debts.

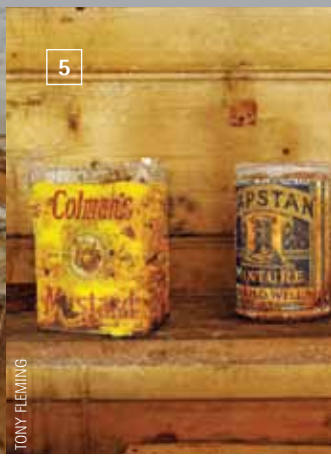
Through another doorway lies the main hut, and here there is a great deal to see, indeed too much to take in the short time we were allowed. The floor underfoot is still deep in ice so we had to move carefully. Here and there, as the ice slowly ablates, various objects are emerging. It will be some time before we know what they are.

The walls are lined with double bunks, those constituting the only private space the men enjoyed. They wrote their initials on the sides of the bunks so we know who slept where. Some bunks have two sets of initials, since the sleeping arrangements were different in the second winter. In one corner, a rusty iron stove marks the location of the kitchen. Behind it was Frank Hurley's tiny darkroom, which we may not enter because of the state of the floor. But by leaning in around the doorpost I could see (and photograph) an inscription by Hurley on the wall; 'Near enough is not good enough'.

In the opposite corner of the hut the adjoining bunks carry the words 'Hyde Park Corner' inscribed above them. This was reportedly the centre of the intellectual life of the hut through the winter, when the men, pipes fuming furiously, crowded together for lively discussion and argument. Two of the bunks in this corner were those of Ninnis and Mertz.

The first impression is of desolation and abandonment. Ice is everywhere, not only underfoot and in the piles of uncleared snow, but clustering as crystals of frost on every surface and object. Bottles, jars and tins, not thought worth gathering up when the hut was abandoned, stand on shelves, all dusted with frost or encrusted with crystals; a box of matches with an image of the Eiffel Tower, a bottle of sweet-and-sour gherkins, a tin of golden syrup. Powdery ice covers a pile of magazines, last open for reading a century ago.

In other Antarctic huts, such as those standing near the Ross Sea, there has been a deliberate effort to produce the illusion that the expeditioners have just left the hut, and may soon return. Everything is neat and ice-free;



3. Powdery ice covers piles of magazines, last open for reading a century ago.
4. Douglas Mawson's private cubicle.
5. Jars and tins sit abandoned on shelves.
6. New Baltic pine timbers clad the Main Hut and Workshop, which are both buried deep in snow.
7. David Ellyard stands outside the entrance to the Main Hut.

the shelves are crowded with all the necessaries. Anything that was missing has been replaced. There is no such sense here at Cape Denison, and no intention to create one. Its occupants are long gone and will not be returning, though we sense their presence through the fragmentary reminders of their time here.

The different approach is in some ways a matter of circumstance. The Ross Sea huts of Scott and Shackleton lie close to existing research bases and can be regularly visited for maintenance. Cape Denison is well off the beaten Antarctic track. There is no nearby Australian base; the nearest habitation, the French base of Dumont D'Urville, is an hour's helicopter flight away to the west. Access to this site for any archaeological or conservation purpose has always been difficult, the weather being only one impediment, and is now much worse thanks to [iceberg] B9B, which may well continue to fill Commonwealth Bay with fast ice to come.

But it is also a deliberate policy, and I must say I approve. Though I have not been to the Ross Sea huts (another ambition for another day) I cannot think that they will have the same memorable atmosphere as I felt here at the home of the AAE, standing amid the frost and the silence. Here it is obvious that time has passed, and that passing time has inevitably brought irreversible changes. We cannot go back, but we can, and we must, remember.

At the southern end of the hut we find the cubicle set aside for Mawson's private use. We can see where his bed was; a number of shelves survive, including one which carried a collection of chronometers, and another with some mildly saucy pictures. A chair still stands in one corner. All this is dusted with frost. The contents of a bottle on a shelf cannot be identified through the covering of ice. Frozen stalactites hang from another shelf, the consequence of the skylight overhead being not quite impervious to fine snow.

At the time it would not have been thought unusual for the leader of an expedition to have his own space, separate from the others of his party. They clearly enjoyed a close companionship and community represented by their cosy collection of bunks. Mawson of course was one of them but at the same time, inevitably, not one of them. Standing now inside his empty, icy cubicle, you can perhaps sense the loneliness of leadership.

DAVID ELLYARD
President ANARE

Read the full blog at http://anarensw.weebly.com/david-ellyard-aae-report-2012-voyage.html







MAWSON









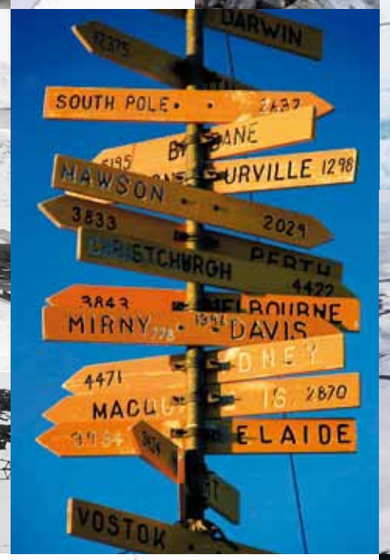




CASEY






DARWIN
SOUTH POLE
MAWSON
MIRNY
DAVIS
VOSTOK

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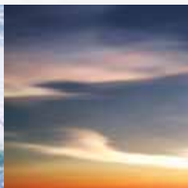

COASTAL REGIONS OF THE
AUSTRALIAN ANTARCTIC TERRITORY
Azimuthal Equidistant Projection
Latitudinal Scale 1 : 5,250,000
English Miles
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REFERENCE
AUSTRALIAN ANTARCTIC TERRITORY
ENDERBY LAND
KEMP LAND
MAC-ROBERTSON LAND
PRINCESS ELIZABETH LAND
KAISER WILHELM II. LAND
QUEEN MARY LAND
WILKES LAND
KNOX COAST
SABRINA COAST
BANZARE COAST
WILKES COAST
ADÉLIE LAND
KING GEORGE V. LAND
OATES LAND
CR. PR. OLAV LD
Shackleton Ice Shelf
Davis Sea
Drygalski I.
Mill I.
Bowman I.
FOUR LADIES BANK
FRAM BANK
BANZARE RISE
GRIBB BANK
Young I.
Buckle I.
Sturge I.
BALLENY IS
AUSTRALIA
SOUTHERN OCEAN
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PRINCE HARALD LAND
PRINCESS RAGNHILD LAND
QUEEN MAUD
AUST. ANTC. TERR.
POSITIONS ASSIGNED TO THE SOUTH MAGNETIC POLAR AREA