All Hands

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Hard yakka

Building Sydney’s monster dry dock
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On the Cover
One of William Dobell’s paintings of cement workers on the Captain Cook Graving Dock, mid-1940s. See story on page 5. (Image: Australian War Memorial.)
This issue of All Hands marks the 75th anniversary of the Captain Cook Graving Dock’s opening. Geoff Barnes – helped by the Naval Historical Society of Australia – has given us a fascinating insight into the vast structure’s construction through WWII, when it was partly shrouded in some secrecy. Its story is set among life in a wartime Sydney that many readers may not recall.

As Kevin Sumption notes in his Director’s Log on the next page, the Wildlife Photographer of the Year exhibition returns this month – with an enhanced display to make it even more spectacular. Volunteer Brooke Twyford has managed to chat with Wayne Jones, an Australian finalist in this year’s competition, for an exclusive All Hands Q&A.

Also in this issue, Richard de Grijs takes us back to longitude and the time before chronometers. His article is based on a talk he gave us last year, to help us better understand navigational problems confronting those sailors who came before Cook in a little-known world.

Neil Hird’s series of stories on Endeavour’s medical men continues in this issue with a profile of the ship’s official surgeon, William Munkhouse (or Monkhouse). Find out why Neil refers to him as “the disorganised William Munkhouse”.

There’s also an interesting detective story on gigs, or whalers as they were sometimes called. Older sailors may recall such ship’s boats which, when retired by the Navy, often found their way to Sea Scout groups. This writer had his first sail in one from the Balmoral Scout group in 1941, though few survive to this day.

David van Kool

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With autumn now upon us, I would like to thank you all for your support in helping the museum deliver a very busy summer and school holiday period. *Time Out* magazine ranked the museum No.1 at the close of 2019 for visitation, ahead of the Powerhouse Museum and Sydney Living Museum’s Hyde Park Barracks. This is an impressive result. Your contribution in making the visitor experience a memorable one is appreciated and we couldn’t reach this top-ranking spot without your support.

This summer season was a very difficult one for hundreds of thousands of Australians. I want to send my heartfelt sympathies to all our volunteers and their loved ones who were impacted by the devastating bushfires. I realise that some of the hot and smoke-filled days at Darling Harbour over December and January were also very challenging – so again, thank you for your support during that difficult time.

You may have seen the Schmidt Ocean Institute (SOI) research vessel RV *Falkor* berthed at Wharf 7 in January. SOI is an American not-for-profit organisation started by Eric and Wendy Schmidt to advance marine research. The *Falkor* is the only philanthropically funded year-round seagoing research vessel in the world. The vessel’s visit to the museum commenced a 12-month circumnavigation of Australia, during which time it will conduct seven science expeditions. More than 900 people toured *Falkor* and its short visit to the museum proved to be very popular with visitors.

The popular *Wildlife Photographer of the Year* exhibition returns in March and this year there are two Australians who are highly commended finalists in the competition: Wayne Jones for *Night Rider* and Justin Gilligan for his work *Colliding Views*. Wildlife photographer, explorer and conservationist Michael Aw and coral scientist Dr Emma Camp will speak at *Signals from the Ocean*, a signature Ocean Talk to coincide with the exhibition opening on 5 March.

Our curatorial teams are also getting ready for the upcoming Encounters 2020 exhibitions that will launch in the museum galleries over the next few months – commencing with *Here: Kupe to Cook and Cook and the Pacific* and *Under Southern Skies*. *Under Southern Skies* looks at navigators and voyagers in Australia and the Pacific. This will see the reinvigoration of the Navigators gallery, including new acquisitions and collection objects.

The April school holidays are set to be a very busy period and these will be immediately followed by our 2020 Classic & Wooden Boat Festival. With more than 140 boats joining an array of stallholders at the museum from 1 to 3 May, the festival will feature an exciting line-up of music, performers and market stores. I look forward to seeing you there.

*Kevin Sumption*

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Construction

CAPTAIN COOK GRAVING DOCK

By Geoff Barnes

The building of Sydney’s monster dry dock was an epic feat of engineering and hard human slog.

The Captain Cook Graving Dock is very big, even by today’s standards of mega-dock projects. Nowadays there are bigger ones around the world — such as the Hyundai dock in South Korea, and the huge Pipavav dock in Gujarat — but in 1945 it was the largest and most complex engineering project that Australia had ever undertaken, and was particularly challenging under wartime austerity and conditions. In Australia, only the Snowy Mountains Scheme would ever upstage the magnitude of this prodigious endeavour.

This year, on 24 March, the dock celebrates the 75th anniversary of its official opening. Admittedly, it had unexpectedly begun operations three weeks earlier, in February 1945, when HMS Illustrious arrived for emergency repair after sustaining crippling damage from kamikaze attacks at Okinawa. When the dock was officially opened by the Governor General, HRH the Duke of Gloucester, the GG’s wife,
Princess Alice, revealed its name, commemorating the extraordinary navigation achievements of James Cook.

Every ship, big or small, eventually needs to get out of the water for cleaning and repair. In the days of sail, cleaning a ship's hull was done by careening. The vessel would be grounded at high tide and tilted over on one side. Then at low tide, weed and barnacles would be scraped from the hull and it would be waterproofed again with hot pitch.

The coming of steam in the mid-19th century changed all this. Hull shapes had changed to accommodate big engines, boilers, coal bunkers, steam pipes, paddlewheels or propellers. Careening by tilting the ship on its side was no longer an option. The vessels now needed to be propped upright. The solution was a dry dock, technically known as a graving dock.

The idea sounds simple. Find some convenient land next to the water, dig out a space large enough to hold the ship, and make a gate to seal that space off from the sea. Bring in the ship, close the gate, pump out the water, prop the vessel to stop it falling over - then start work. But it’s not that easy.

Dry docks popped up around the world, quite small ones at first, but growing bigger as ships themselves grew bigger - cargo ships, passenger ships and, more ominously, warships. Nineteenth-century shipbuilding progressed so fast that many a dry dock would be too small before it was completed.

With the global spread of the British Empire, the Royal Navy needed service facilities in distant places. In the South Pacific, so far from Europe, the RN maintained its Australia Station, with its Naval Depot at Garden Island. At the beginning of the 20th century there were already two large dry docks at Sydney's Cockatoo Island, but it was clear that they would not be big enough.

In October 1913, the brand-new RAN fleet steamed into the harbour for the first time, proudly led by the flagship, the battlescruiser HMAS Australia. She was a mighty sight, at nearly 19,000 tonnes a giant for her time, by far the biggest and most powerful warship in the Southern Hemisphere. But there was a problem. She would barely be able to squeeze into the existing Sutherland Dock at Cockatoo, and there was nowhere else in the nation that could accommodate her for repairs and maintenance.

**Why Garden Island?**
There needed to be a new dry dock, but how big, and where?

After World War I, the Royal Navy's Admiral of the Fleet, Lord Jellicoe, who had commanded Britain's Grand Fleet against the Germans at the Battle of Jutland, was asked to visit Australia and come up with the answers. He recommended docks at least 335 metres long, 36 metres wide, and with 12 metres of water over the sill. He said: "In establishing Naval Bases too much emphasis cannot be laid upon the need for leaving ample room for future expansion."

There was talk of acquiring a large floating dock from Britain. But this was rejected because it could not be expanded.

Meanwhile an upgraded Royal Navy Base and huge dry dock were being built in Singapore, but that was more than 7000 kilometres away; that's two weeks' steaming time away from Sydney. And Japan was coming into focus. She had been our ally in WWI but that could change. A militant Japanese Empire was expanding, with a
rapidly growing navy that could threaten Singapore and the Pacific.

The British engineers building the Singapore dock were asked to look at the Australian problem and recommend a location that could take the largest British ships of the time—the liners Queen Mary and Queen Elizabeth, and the King George V-class battleships.

Thirty-seven sites around Australia were looked at and reduced to a final list of two. One was at Woolwich, west of the Harbour Bridge. But if the bridge was ever destroyed by an enemy attack, ships to the west would be trapped behind it.

In 1939, the other site was chosen: Garden Island, to the east and seaward side of the bridge. Garden Island was originally just that; an island and a garden, planted to supply vegetables to the scurvy-cursed fleets in the early-19th-century colony. But it became the base for the Royal Navy’s Australia Station, the British naval command responsible for the waters around the Australian continent. When Australia created its own navy in 1913, it became home to the RAN.

Now the dock would unite the island with the mainland. The plan was to build a wall at one end of the channel that ran in between, then construct a massive caisson to block off the other end. A caisson is a large watertight chamber, open at the bottom, from which the water is kept out by air pressure, rather like the ballast tank of a submarine. Float it into position, flood it, and it settles into the “gateway” to seal the dock. Then pump out the water in the dock, and place supports around the vessel to keep it upright. Simple enough in conception, but an extraordinary construction task.

First, the water, power and telephone lines that linked the island to the mainland had to be relocated. Homes and buildings on the construction site were compulsorily purchased. And some 14 hectares of land had to be reclaimed from the bottom of the harbour.

This meant two coffer dam walls had to be built. One would be permanent, linking the south-eastern end of Garden Island to Potts Point. The other wall, a temporary one, would run from the middle of the western side of Garden Island to Woolloomooloo. Each would have to hold back the water during construction and provide access to the site.

The dam walls would rise from the harbour floor some 30 metres. Silt was dredged away and steel piles were driven into the bedrock. These supported steel sheeting, which was then held in place by sandstone walls on each side. That required a lot of stone. A new quarry was carved out of Balls Head, on the northern shore of the harbour, just west of the bridge. Eventually, 306,000 cubic metres of sandstone were quarried there and carried on barges to the construction site.

The dock would now hold the equivalent of 120 Olympic swimming pools. The pumps required to empty this were enormous.

What did you do in the war, Daddy?
The outbreak of World War II in Europe got things going, at last. On 1 May 1940, Prime Minister Robert Menzies announced that the dock would be built, federal and state bureaucracies were galvanised into action, and work began just a few months later, on 7 August. The planning, logistics and need for skills at all levels put immense strain on a nation already battling to cope with its commitments to the British Empire’s war at the other side of the world.

By the middle of 1941 the war was hitting home Down Under. It seemed that Japan
might enter the war. Feelings of vulnerability increased. Many factories had turned to war production and many civilians were already engaged in voluntary war work.

In December 1941 the Imperial Japanese forces began a whirlwind advance through Asia and the Pacific. Singapore fell and with it the Royal Navy’s dockyards. Many Australians thought that it was only a matter of time before Australia was invaded. With the London Blitz and Pearl Harbour in mind, air-raid warning instructions were issued and blackout restrictions were introduced. Everywhere in Sydney went dark except Garden Island, where every night the vast dock site was ablaze with floodlights as shifts were working continuously.

Work on the coffer dams themselves was led by the men of the Metropolitan Water, Sewerage and Drainage Board of NSW. Their experience in building huge dams like the Burrunjuck was vital, but planners, managers, skilled tradesmen and basic pick-and-shovel labourers were at a premium, and spread too thinly across the many national priorities. Many were already enlisted in the armed services or were working on committed defence projects. Women were taking over many jobs previously considered men’s territory, but many more were needed by the Allied Works Council, who coordinated the deluge of projects.

It was time to call on the “deep thinkers”, Digger slang for those slow to join up.

The CCC
The Civil Constructional Corps – the CCC – was established in April 1942 to supply labour for the urgent creation of infrastructure like docks, airfields, gun emplacements, underground fuel bunkers, barracks and roads that were being undertaken by the Allied Works Council. These were large-scale engineering projects right across Australia. Decades of neglect, budget cuts and Depression scrapping now had to be rectified. Fast! All men between the ages of 18 and 60 could be conscripted into the CCC unless they were already serving in the armed forces or employed in a reserved occupation. They received pay based on civilian award rates but their work was highly regulated: they could not strike and might be sent anywhere in Australia.

At its peak strength in August 1943, almost 54,000 men were serving in the CCC. Many, indeed most, were unskilled in construction work and had to be crash-course trained. They were involved in hundreds of projects worth millions of pounds. Almost one-third of them were conscripted – or “manpowereds”, the term current at the time. By the end of the war 77,500 men had served in the CCC. They had...
served in every state and territory and, like it or not, found that they had made an invaluable contribution to the war effort.

There were casualties: 218 men died while serving with the CCC, and all who served remembered the years with mixed emotions. They were never given the recognition of those who served in the armed forces and it was almost 50 years after the end of World War II that a Civilian Service Medal (1939-1945) was finally promulgated.

**Painting the workers**

In 1943, the formidable Frank Packer, media baron, hard man, founder of Consolidated Press and father of Kerry, was appointed to head up Personnel in the Allied Works Council. It was a controversial appointment, to say the least, and provoked howls of rage from rival newspapers and the unions. While Packer was preoccupied with the AWC and its epic struggles to rebuild Australia’s infrastructure, plus the controversial relationship of his publishing empire with the Government’s censors, his wife Gretel was working almost full time with the New South Wales Red Cross, and using her husband’s magazines and newspapers to boost morale as well as sales. Her interest in and contacts with the Australian art world were instrumental in influencing Packer to get young William Dobell and Herbert McClintock appointed as official artists to the AWC, and record its work.

Dobell was from the working-class steel city of Newcastle. He trained as an architect but his talents as an artist prevailed. In pre-war Europe he abandoned his early naturalistic style for an Expressionist approach. His work had already created considerable interest, but before his appointment to the AWC, he had been working as a conscripted artist designing camouflage patterns at Bankstown aerodrome.

Herbert McClintock had trained as a commercial artist in Perth, and had a reputation for “integrity, individuality and adventurousness”. He experimented with the European influences of Surrealism, but his membership of the Communist Party persuaded him that politics could be painted, and he adopted a style that was made popular by allied Russia. Just the style needed to portray heroic labour.

Dobell’s and McClintock’s works were...
The Captain Cook Graving Dock has had extensive upgrades over its lifetime, and is able to service today’s RAN and commercial needs alike. It continues to function as a vital part of the Australian infrastructure. Happy anniversary!

later presented by the AWC to boost the collection of the Australian War Memorial, which provided the images used in this article. But the men of the AWC and CCC were never given the status of “real” soldiers.

Solidarity forever!
When the Captain Cook Graving Dock was officially opened 75 years ago, the workers boycotted the event. The unions representing dockyard workers and the men of the Civil Constructional Corps (who legally could not strike), totaling some 6500 men, objected to the way their efforts had been dismissed.

It was a small issue at first. VIP guests got gilt-edged formal invitations but the workers on the project got theirs on plain paper, containing only their name, work number and wife’s name. Even more offensive was when they learned they were to be, as they put it, “roped off like sheep”, on the opposite side of the dock to the official guests and even their own union officials.

For two days immediately prior to the opening there were angry meetings. The union workers voted to boycott the opening and to return their invitations, and they instructed their union officials not to go either.

So the opening went ahead without the Prime Minister, with the excuse that he’d been detained in Canberra. The Minister for the Navy was reportedly in hospital after a car accident. And the Transport Minister and local Labor member for East Sydney, the firebrand Eddie Ward, stayed away in sympathy. Afternoon tea was served, but due to the boycott a lot of food was left over – more than a ton of sandwiches alone. The food went to the City Refuge and Soup Kitchen, where many a worker on this project had spent his Depression nights.

Sources:
A sincere thank-you to the Naval Historical Society of Australia, especially Ian Phillips, Norm Rivett and Colin Randall. Note the DVDs produced by the NHSA about the history of the dock and of Garden Island itself. Check the website www.navyhistory.org.au Other sources from Wikipedia.
Meet a volunteer

WHAT I DO AT THE MUSEUM

An interview with keen volunteer guide and Seabin stalwart Kade Gordon.

Kade guides at the museum up to three days a week, but he can also be found down on the waterfront helping out on the museum’s marine litter collection project.

“I first came to the museum as a visitor, and then signed up as a member,” he recalls. “I saw the opportunity for volunteering on the museum’s website, and signed up to that in 2018.”

Volunteering occupies a lot of Kade’s time. “Riding for the Disabled and Fighting Chance are two other organisations that I give some of my time to,” he says.

“Fighting Chance is a job-search organisation. My time with them involves marketing of overseas aid-funded products.”

Among his many duties at the museum, Kade helps out with the Seabin project.

The Seabin works like a large pool skimmer, using shore power to drive an electric pump that sucks debris out of the water and into a catch-bag, pushing the cleaned water back out. It also has oil absorbent pads that clean surface water of petroleum-based oils and detergents. Newer bins can also collect microfibres.

TOMRA, a global recycling company, has sponsored the museum’s Seabin, which will not only collect rubbish but also help...
raise awareness and educate people on the issue of marine pollution.

“My job is to take the bin out of the water, hand sort what’s collected in it, and classify and count the pieces of debris,” Kade explains. “Most of the rubbish is cigarette butts, plus plastic food packaging and plastic straws. It highlights what people throw away without thinking where it ends up.

“I have equipment to protect me while I’m sorting, since there can be dangerous things such as syringes among the floating debris. I dispose of it all in the appropriate waste bins. I sometimes help Emily Jateff, the museum’s project manager, with recording the data,” he continues.

“I’m at the museum every Monday, Wednesday and Friday. The ships, particularly Advance, are my favourites, but I like the lighthouse as well. I’ve done all the background reading on them to help with my guiding. But it’s helping the visitors to get the most out of the exhibits that I love,” he concludes with a smile.

Interview by Neale Philip
ENDEAVOUR’S MEDICAL MEN: THE DISORGANISED WILLIAM MUNKHOUSE

By Neil Hird

Was Endeavour’s official surgeon, William Munkhouse, actually the best doctor on board? Cook, for one, had his doubts...

The Munkhouse family (the surname sometime appears as Monkhouse) was from Brampton, Cumberland, in the north-west of England. William was one of 12 children; his date of birth is unknown, but he was baptised on 29 October 1732. William’s father, George, had a brother Jonathan, who was an apothecary in Carlisle. It was to his uncle that future surgeon William Brougham Munkhouse was apprenticed in 1749.

William moved to London where he married in 1756. On 2 February 1758 he qualified as a naval surgeon and in 1763 he was appointed surgeon to HMS Niger, which was in Newfoundland from 1766 until 1767. In 1765 William’s wife was arrested for stealing a cloak, tried at the Old Bailey, found guilty and sentenced to be transported to North America. Historian John Robson notes: “William, perhaps already separated from his wife, was absent oversea at the time in Newfoundland.”

Joseph Banks visited Newfoundland in 1767 and sailed on HMS Niger. While on board both Banks and the Captain, Sir Thomas Adams, were very sick and were tended by Surgeon Munkhouse. Banks was reported “very ill with ague and fever and at one time not expected to recover”. Munkhouse was credited with saving his life.

Prior to his appointment to Endeavour, James Cook spent the summers of 1763 to 1767 surveying the coast of Newfoundland, mainly on HMS Grenville. The Niger and Grenville were in the Newfoundland capital of St John’s on 27 October 1767, and there has been speculation as to whether Cook and Banks met at that time. It would seem that this
was unlikely. Their time there overlapped for only 24 hours, and both would have been very busy. Banks was preparing to sail the next day and Cook had to replace a mast and carry out other work on *Grenville* before embarking on the return to England.

Back in England in May 1768, Munkhouse seems to have taken an interest in politics. He wrote letters to the Duke of Portland expressing concern about election irregularities that he believed had taken place in Cumberland electorates where Portland’s opponent had been successful. Before this was resolved, Munkhouse was appointed surgeon, by warrant, to *Endeavour*, which he joined on 17 June 1768. His younger brother, Jonathan, was also appointed to *Endeavour* as a midshipman. He was 17 years younger.

Like botanist Daniel Solander, William Munkhouse embarked without a servant. After the death of artist Alexander Buchan in Tahiti, his servant, Nicholas Young, aged 12, appears in the ship’s muster as the personal servant of *Endeavour*’s surgeon.

On joining the vessel Munkhouse was involved in preparing for the voyage. 12 July 1768 sees him at the Sick & Hurt Board, meeting a Dr Maxwell who gave “him instructions for administering the rob [i.e., boiled juice] of Lemons and Oranges which by order of the Admiralty was to be sent on board, to make trial of their efficacy in curing Scurvy, also instructions for preparing the portable soup with pease and oatmeal on Banyan days [i.e., meatless days] for the ships company.”

On 30 July the Admiralty Secretary informed Cook that “based on a recent publication advising that malt made into a wort will help prevent, reduce, scurvy and that he is to carry out experiments during the voyage”.

The rules for administration of the wort included: “1. To be ground every day under the direction of the Surgeon ... 4. The surgeon to keep an exact account of the effects of the wort – his journal to be transmitted to us at the end of the voyage.”

One of the difficulties in researching Munkhouse is that his journal is incomplete. Like all the officers on the *Endeavour*, Munkhouse kept a journal, but only a small part has survived, mainly of the time *Endeavour* was in New Zealand.

We know that Munkhouse went ashore at the Bay of Good Success, Tierra del Fuego, on 16-17 January 1769 with Banks, Solander, Buchan and their four servants (Roberts, Briscoe, Dalton and Richmond), astronomer Green and two seamen. They found the going tough as they had to negotiate waist-high bushes and they sank to their ankles in the boggy ground. To add to their problems, the epileptic Buchan had a fit and a fire was lit to give him warmth. After journeying higher, Banks and his party encountered even worse weather, with snow and icy conditions, and his two servants succumbed to the bitter cold and died. There is no reference to Munkhouse’s role in assisting the sufferers in the turmoil.

In Tahiti he was one of the teams involved in observing the Transit of Venus. On 1 June 1769 Cook sent John Gore, William Munkhouse and Herman Spöring to neighbouring “York Island” (Moorea) to observe and report on Transit of Venus.

Munkhouse was with Cook, Banks and other members of the shore party in an early encounter with the Māoris at Poverty Bay, New Zealand, on 9 October 1769 (the site of the present city of Gisborne). As Cook’s party landed, the Māoris “formed into a close body upon the bank of the river” and “set up a war dance, by no means unpleasing to the Spectators at a distance”. One historian asserts:
“This was the first haka ever witnessed by a British crew”. One of the Māoris snatched astronomer Greer’s hanger [i.e., hunting sword] and refused to part with it, and the other warriors began to get “insolent” (Cook’s word). Cook ordered that the man be fired on. Banks fired and wounded the man; his musket was loaded with shot. Munkhouse then fired and his ball killed the man.

Munkhouse examined the body and recorded: “He was a short, but very stout bodied man – measured about 5ft.” He had three arched tattoos over his left eye and “spirals of tatou” on his right cheek and nose. “The ball had passed from the sixth rib on the left side to thro’ the right shoulder blade. “Some nails and beads were put upon the body, and we took our leave of the shore.”

Munkhouse was a keen observer and provides details of encounters with Māoris, both friendly and unfriendly, a description of a village and specific houses. He gives an account of Cook’s efforts to meet the natives on friendly terms, including using Tupia’s knowledge of the language. A Māori swam across, and as he arrived Cook laid down his musket “to put himself on a footing” to meet the man, and Munkhouse watched as Cook “saluted by touching noses” with him.

On leaving the bay Munkhouse gives a detailed account of the canoes that followed their ship, noting that one “came along side without any ceremony, and now the others, who were afraid to approach us before, followed her example so that we had presently seven of them along side containing fifty people, about 20 of whom came into the Ship who continued above two hours with us, behaved very orderly, talked with Tupia, who gratified them with a sight of his tattooed hips, were laden with presents and returned to their Boats highly satisfied with their treatment. The people remaining in the Canoes had, in the mean time, traded very freely with our People, bartering their Clothing, weapons, and ornaments for the Otaheite Cloth.”

There are also descriptions of the canoes and their construction. The carved prows with “a most preposterous group of features – two large Seucer-eyes formed of broad rings of Ear-Shell with a hole in the center for the pupil, and a most enormous tongue projecting beyond four or five inches without the mouth are the distinguished parts of this Visage”.

Munkhouse’s descriptions of Māori clothing are detailed: “...some of them had a very handsome border at the bottom about two inches & half broad, and worked in diamonds some half black, half white, others half black brown or cinnamon colour; the disposition of these colours was made with very just taste.” (Historian J.C. Beaglehole notes that this describes very well the taniko work, which was the highest point of Māori weaving.)

His observations extend to the Māori’s various tattoos and to the combs they used to decorate their hair. Nothing appears to escape the surgeon’s eye.

Beyond New Zealand
At Stingray Bay (later Botany Bay) the crew became friendly with the local people, the Kaneygal, and took an interest in their language. This seems to have interested Munkhouse, who collected 31 words, while Lieutenant Hicks collected nine.

As the voyage progressed, Cook’s opinion of Munkhouse changed. In his journal on 13 April 1769 he expresses the view that it was in a large measure due to Munkhouse’s care and vigilance that there were few cases
of scurvy during the voyage to Tahiti. By 7 November 1770, however, he suggests that he has come to think of Munkhouse as less medically skilled than his assistant, William Perry. William Munkhouse was the first to succumb to the unhealthy conditions in Batavia, dying of dysentery on 5 November 1770 while Endeavour was undergoing repairs; his brother, Jonathan, died three months later.

Munkhouse’s reputation fared badly following his death. On 7 November Cook records the appointment of William Perry, surgeon’s mate, to succeed Munkhouse as being “equally well if not better skilled in his profession”. Writing some 30 years after the voyage, Perry claims that those who stayed on board the vessel or in the tent harbourside fared better under his care than those who opted to move into the country away from the ship.

Doctor turned historian A.W. Beasley lends support for Perry’s view, noting that Munkhouse was briefed about the rob of oranges and lemons and other materials to help combat disease and to make an assessment of them and that he “neglected his medical duties to enjoy the excitement of ecotourism”. It seems that none of the trials ordered by the Admiralty, of portable soup, “sour krout” and the rob of oranges and lemons, were undertaken by Munkhouse, and after his death William Perry inherited a muddle such that his report amounted to little more than deference to the authorities.

Munkhouse left a will whose main beneficiary was his father. On his return to England, Cook wrote to George Munkhouse, 31 July 1771, concerning the affairs of the brothers, William and Jonathan, offering to assist in having the will proven. Following their deaths the brothers’ effects had been sold on board and had realised £229.17s. 6¾d, not including medicines and some surgical instruments – these were awaiting valuation by “proper judges” in London. This seems a large amount of money.

There are a number of references to Munkhouse’s liking for alcohol, which Perry comments on in his articles some 30 years after the voyage, and his reputation for being disorganised. On the positive side, he was well educated, Banks thought him “very sensible” and he was a keen observer. The surviving portions of his journal provide much insight into Endeavour’s remarkable voyage.

Sources:
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Robson, John, Captain Cook’s War & Peace: The Royal Navy Years 1755-1768, UNSW, Sydney, 2009.
Marine fuels

IT’S A GAS! THE RISE AND RISE OF LNG

By Bob Hetherington

A century of coal, a century of oil ... what next? Here, a look at the rise of LNG as a marine fuel.

A business headline caught my eye recently: BHP closes in on deal for the world’s first LNG-powered shipping fleet and I started to join some dots. I had seen an increasing number of similar stories in the marine media and began to wonder if we are seeing the dawn of one of the biggest maritime developments of the past two centuries.

The Age of Sail gave way to the first mechanically powered vessels. The only practical machinery in the early 1800s was the steam engine and the obvious choice of fuel was coal. On inland waterways including ours in Australia, wood was a convenient alternative, but for ocean-going ships, coal was king. It was readily available in the countries that pioneered steam technology, and as the economic attraction of the steamship grew, governments and shipping companies moved quickly to establish coaling stations along the world’s shipping lanes. There is a vestige of this global network almost in sight of the museum, at Berrys Bay where a coal loader stockpiled coal shipped from Newcastle and loaded it onto steamships from all over the world.

Coal remained king for almost a century until emerging technology began to challenge it. With the development of the oil industry in the late 1800s, oil became an increasingly attractive alternative. Although not always cheaper per ton, it had valuable advantages in shipping, storage, handling and use. The cost of handling coal and shovelling it into boilers was significant, especially for shipping companies who employed thousands of firemen, stokers and trimmers to tend their ships' boilers.

Increasingly, owners converted their ships from coal to oil and ordered new ships with oil firing. Navies were also early adopters for strategic reasons. In time of emergency, oil was a more flexible fuel and could be transferred at sea from fleet “oilers”, something which was impractical for coal. The Royal Navy commissioned its first purpose-built oil-fired warship, HMS Queen Elizabeth, in 1914. The result of all of this was that by the end of WWII oil was the predominant fuel for steamships.
A parallel development in the shift to oil was the introduction in the early 1920s of the marine diesel engine. It was designed to run on oil, so could use the same global infrastructure as its steam-powered cousins. An example close to home (and close to my heart – see note on page 19) is RMMS Aorangi. She was commissioned by the Union Line for their Sydney-Vancouver run and at the time of her launch in 1924 was said to be the largest diesel-powered ship in the world. It’s a long story for another day, but marine diesels were so successful that they totally displaced steam for marine propulsion. The prefix SS (steam ship) gave way to MV (motor vessel), MS (motor ship) and RMMS (Royal Mail Motor Ship). If you visit Port Botany today, all the ships you see will be diesel powered, and if you go cruising you will have a giant diesel thumping away beneath your feet.

So we look back on the Age of Coal and find ourselves after a century still in the Age of Oil. This brings us back to our opening ... Are we at the dawn of a Third Age for marine power?

Diesel engines are versatile and can run on a variety of fuels. Natural gas (NG) has been used for many years where it is available more cheaply than oil. Its drawback as a fuel is the difficulty of storing it. No problem if you have it “on tap” from your local gas supply, but problematic if you are at sea. It can be compressed into high-pressure cylinders and transported (Sydney Buses use this system), but for the quantities needed for an ocean voyage this is impractical. Enter NG’s latest incarnation: liquefied natural gas (LNG). Because it’s a liquid it can be stored in tanks with much smaller volume and weight, but there’s a catch: it must be held at minus 162 degrees or it will literally boil away. This sounds daunting, but current technology allows it to be done safely and economically, the most obvious example being the rapid growth of the world LNG trade in which Australia is now the major player (we recently topped Qatar to become the world’s biggest exporter). Giant purpose-built tankers carrying up to 100,000 tonnes routinely ply the world’s oceans. This raises the question: “If LNG can be carried in quantity on a ship, why not use it to power the ship?”

There are at least two major factors involved: economic and environmental. The relative economics of oil and LNG are complicated – both are traded on world markets and prices fluctuate, all too complicated for your simple scribe to understand, let alone explain. The environmental factor centres on emissions, especially carbon emissions, which explains why events are moving rapidly. Engine greenhouse gas emissions from LNG fuel can be up to 27 per cent lower than for oil, and sulphur and particulates are virtually zero. The
world’s shipping fleet, which at present is effectively oil-powered, is a significant source of greenhouse emissions, and the reduction offered by LNG is exercising many minds inside and outside the industry. Also this year new regulations on marine SO₂ emissions come into force, so operators have to decide whether to pay extra for low sulphur oil or install expensive exhaust cleaning systems.

All this has led to the commissioning of a growing number of LNG-powered ships together with shore-based refuelling stations and the first “bunkering tankers” (see photo). Carnival has a mega cruise ship running on LNG with another two on order, MSC Cruises also has two on order. BHP has made a splash with the plans mentioned in the opening to this story (also noted in Ditty Box on page 37 of this issue).

The length and extent of the “Age of LNG” are hard to predict. LNG is seen by some as an interim stage on the road to elimination of fossil fuels, and who knows how long that road will be? NG is increasingly used to replace coal in shore-based industries such as electricity generation, but as a stopgap until renewables are further developed. The challenges for marine transport and aviation are greater, as both need transportable fuels and attention is turning to hydrogen. Hydrogen is already used on a small scale as a motor fuel, and liquid hydrogen powered the space program in its early years. The technology to handle it in bulk is similar to that for LNG but more expensive to implement. The big challenge is to produce it on a large scale from renewable sources and although this is technically feasible the economics are not clear. The marine industry will be relying on some form of green technology to balance economic and environmental demands. Watch this space...

Author’s note:
My father was Fifth Engineer on Aorangi (pictured on previous page) in the 1930s and I sailed on her in 1950
NAVAL AND OTHER GIGS

By Dennis J. Weatherall
Edited by Neale Philip

Whether it was a perk for the skipper or a sail trainer for the Scouts, a gig was a very pleasing craft.

By definition, gigs are lightweight ship’s boats of varying length rowed by four, six or eight long oars. The sketch at right shows the typical profile of one such vessel, along with its sail rig, a standard accompaniment to oar power.

The earliest record of a gig dates from 1666 when gigs from St Mary’s on the Scilly Isles rescued the crew of the British East India Company’s Royal Oak, which had been wrecked on the Bishop Rock. There’s little documentation to be found on early gigs but the design evolved over time until it matured in the early 19th century.

Records show that a William Peters of Polvarth near St Mawes, Cornwall, started building high-quality gigs in 1790. His advanced design became the blueprint for the pilot gigs that met the sailing ships and offered “pilot service” to inbound merchant captains.

In 1812 Peters received an order for three gigs to be shipped to Burma (today’s Myanmar). However, due to lack of deck space on the ship transporting them to Rangoon, one wasn’t embarked. This gig was sold...
to the “Newquay Pilots” and it was named Newquay. This same vessel is still raced today by the Newquay Rowing Club on the Cornish coast.

Gigs remain popular today, particularly on the English south coast in Devon and Cornwall. Here, there is a large following of pilot gig racing with boats built in the traditional manner by local shipwrights. (See “Pilot Gigs of Newquay” by Sam Calandra, All Hands Issue 70, page 19.) The tradition stems from the race to get a pilot from shore to an incoming vessel for navigation in confined waters. The fastest gig rowers got the payment.

Construction takes from four to six months, with the launch of a new gig a major local occasion. Gigs are often launched at the World Championships in Scilly, where the local vicar blesses new vessels. Through this sport, traditional shipwright skills are maintained and knowledge of the gig is not lost to history.

The last of its kind
Traditionally, naval gigs were reserved as the captain or commander’s personal boat. One naval gig turned up abandoned several years ago in Coles Bay, Tasmania. Its fascinating story is the result of in-depth work by a researcher at the Maritime Museum of Tasmania. It turned out to be one of two gigs brought from Sydney to Tasmania in 1922 by HMAS Australia (I).

The gigs were later used by the local naval shore base in Hobart. The local Sea Scouts bought them in 1931, and named them Bass and Flinders.

Both gigs were sold in 1966, and in a 1967 bushfire, Bass was ashore and was lost, while Flinders was afloat and survived. Ownership of Flinders passed to the Maritime Museum of Tasmania in 1984. Space limitation at the museum resulted in the boat being stowed upside down at a work site, and later at a primary school propped up by rocks. She was then sold to a fisherman in 1996 and ended up on a site north of Coles Bay. A neighbour of the property where the gig lay reported that there was an old inshore whale boat down in the bush.

The Maritime Museum researcher went to see the boat, and as a former Chief Officer of HMS Worcester (a training ship on the River Thames) easily recognised the type of craft, later found to be of an 1860 UK design. However, the number 271 on the forward thwart did not tally with UK records. Because it was suggested that the gig was built of kauri, it was believed she was built in Sydney to naval plans. The register of boats when HMAS Australia (I) sailed from the UK did not include gigs. So, there were only two possible yards where the gig could have been built.

Top: a gig under construction in Launceston, Cornwall, UK. (Image: Brian Hobbs.)
Middle: a gig operated by Sea Scouts at HMAS Huon, Hobart, in 1959.
Bottom: abandoned HMAS Australia(I) gig at Coles Bay, Tasmania, February 2014. (Image: NHSA.)
either the Commonwealth Naval Dockyard at Cockatoo Island or Garden Island, Sydney.

The Commonwealth Naval Dockyard at Cockatoo Island built many small craft—cutters, whalers, skiffs, dinghies etc.—for Naval Stores and specific ships between 1914 and 1921. However, the registered number and the size of the *Australia* (I) gig were not included in the records.

With both the UK and Cockatoo Island excluded, it is quite likely that the gig was constructed at Garden Island. At the time, gigs were managed as stores pool items, as is the case with ship’s boats today. Boats were not dedicated to any particular ship.

The heritage significance of the *Australia* (I) gig is that it is the last of its type in Australia. With the advent of steam-powered warships and their boats, and the phasing out of sailing ships as “men of war” in the late 19th and early 20th centuries, pulling boats remained important for seamanship training and as a means of maintaining physical fitness.

Most gigs built for the Royal Navy were 30 feet in length and with a beam of 6 feet, fitted with two masts and a steel (70lb) centreplate drop keel. The crew was six plus a coxswain. The *Admiralty Manual of Seamanship* states that the 30ft gig “was the fastest service boat under sail and oars!” (See “Hoist the Whaler” by Tony Reid, *All Hands* Issue 54, page 22.)

At the time of writing this article, the *Australia* (I) gig was in Hobart and back in RAN hands, awaiting transportation to the Navy repository on Spectacle Island in Sydney.

Adapted with permission from Occasional Paper 60 in Issue 33 of *All Hands*, the newsletter of the Naval Historical Society of Australia.

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LIFE ON A DIFFERENT OCEAN WAVE

By John Lea

Interviewed as part of the volunteers’ Oral History project, John Lea recalls the ocean liners of his younger days.

I was born in 1940 in India, during the war. My father was working there in a dual role. He was professor and principal of what was then called the CMS College in the South Indian state of Travancore, nowadays called Kerala. He was also an ordained priest in the Anglican church, so acted as chaplain as well.

The war prevented travel between India and the UK, and my parents, who were due Home Leave, were stuck. They were very pleased to eventually find berths on one of the first civilian convoys out of India. I think the date would have been late 1944, but it was before victory in Europe in May 1945. Anyway, the reason I’m starting my story here is that there was great concern in India at that time about espionage, because of the nearby presence of many Axis submarines, primarily the Germans and their infamous “monsoon boats”, based in Japanese-occupied Penang in northern Malaya. Japanese submarines, too, were attacking British convoys.

My father cabled a hotel in Bombay (Mumbai) trying to secure accommodation and made the mistake of mentioning in his cable that the family was leaving India. When we arrived in Bombay, security police arrested my father. He was told that he had committed an offence by revealing classified information. He could fight the case and miss the convoy or pay a fine and leave. He chose the latter path. The reason behind this sensitivity was that a Japanese submarine, the I-26, had attacked a British convoy leaving Mombasa for Ceylon (Sri Lanka) in early 1944. On board one of the ships, the Khedive Ismail, were some 100 British nurses who were going to staff hospitals in Ceylon. Most of them were drowned in the sinking of the Khedive Ismail. The Japanese submarine itself was then sunk by one of the escorting British destroyers. Tragically, that had meant depth-charging
many survivors struggling in the water. When the board of inquiry was held not long afterwards, the captain of the British destroyer involved committed suicide.

At any rate, to resume the convoy story... My understanding from my parents was that my mother and I were put onto the RMS Britannic 3 which was a Cunard White Star liner built in the early 30s along with its sister ship the Georgic, both from the New York-Liverpool run. But, like many of the big liners, they were converted to troop ship status and my mother and I were on one of the very early civilian convoys to the UK via the Suez Canal. My father was put on a separate ship. This was done in order to maximise passenger accommodation. You could peck several single men into a single cabin and similarly you could put more than one woman and her children into a single cabin, but you couldn't efficiently stack families together.

We also picked up some hundreds of Italian prisoners of war in Port Said before dropping them off in Italy on our way to England. Remember that Italy had capitulated and was now on the Allied side.

I can't recall much more than that as I was only three and a half at the time. I do know we eventually arrived in Liverpool and stayed in the UK until the war was over.

In late 1945 we returned to India on the P&O liner Otranto, to a different posting in the southern state of Tamil Nadu. The Otranto was now a single-class ship, having been converted back from a troop ship into a passenger vessel, and was now scheduled to run on the newly reopened Britain to Australia run.

Bombay was our point of disembarkation. In those days it was a very long train journey of about three or four days to get us right down to the far south. One thing I can recall quite well was a big block of ice sitting in a trough in our passenger compartment. This was meant to slowly melt over the next few days to try to keep us reasonably cool.

In those days there was a restaurant chain – I think it was called Spencer's – that had branches at many Indian railway stations. I remember my father telling me that in about 1934/35 when he first went to India, he was with a colleague having breakfast at a station on the way down south from Bombay. They became aware that a rather finely dressed Indian railway official was standing by their table and they exchanged pleasantries. He then announced that when the sahibs were ready, they could reboard and the train could depart. That never happened to me, but it was part and parcel of a very different
colonial life. As a young boy, I was treated as a young master, able to wander around locally in the city without any fear of danger.

My early education was in an American boarding school established in a hill station in South India. Nowadays that school has become a posh and exclusive International School where many well-to-do Indians send their children. In my day it was almost entirely white, and filled with American children, boys and girls from grade school right through to the end of high school. These were families from places like the Anglo Iranian oil fields in Persia, plus others right across the whole Indian subcontinent.

In 1949 we returned to England for good on the P&O liner Maloja. One of the reasons this happened so soon was that my mother had died at the age of 39 of an infection caught in a local hospital. Such tragic events were not terribly unusual in colonial families in those days.

For our return to the UK, we had to embark from Colombo in Sri Lanka. South India is very close to Colombo, but it was not an easy place to reach with a lot of luggage. As it turned out, there’s a small port in South India called Tuticorin. And it was possible to catch a small coastal steamer at Tuticorin to Colombo to catch the main P&O ship back to the UK. Unfortunately, what we weren’t told was that there was no wharf. To get out to the steamer at Tuticorin meant going to sea in what seemed to me a rather large river rowing boat. Once we were through the surf, we went alongside our steamer and had to be thrown bodily from one boat to the other as the rocking between the two coincided to an almost level position. Then our luggage was thrown, box after box, across the heaving gap.

That duly accomplished, we finally reached the Maloja. The difference between this trip and the previous ones was that I was old enough to appreciate the beautiful chilled apples from Tasmania and the ice cream. Lime juice was served in those dimpled pewter beer mugs. I remember the hot saltwater baths, too. There was even a special soap to make it lather.

There were also deck games and a fancy dress competition. It was great fun. We stopped at places like Aden and Port Said. I remember getting off at the docks in Marseilles, then came a rough trip across the Bay of Biscay before landing in Tilbury.

There’s such a difference between travel on a cruise ship like the one down at Circular Quay at the moment and travel back then. The notion of cruising didn’t really exist for people in those days. However, there was a whole world of ocean liner travel that was very familiar to several
generations of British colonial employees who populated the far-flung outposts of India, Malaysia, Singapore. Many stories were told of their trips. There were of course the British class-consciousness which was exhibited by the separation of passengers into first, second, and third class, and the British also they were very nice to be on the Maori, one of the rare one-class ships.

The next trip took wasn’t quite a few years later when I was offered an academic position at a university in South Africa. I went there in 1959 on a one-class Union Castle liner called the Sa Yaal — a very pleasant trip indeed.

I guess my last major trip by sea was coming to Australia in 1976, on the Cugelmo Marconi, one of the last small old-style passenger ocean liners coming to this country. The Italian Lloyd Triestino line had two liners on a regular schedule from Europe, down via Cape Town to Melbourne and then Sydney.

Sydney University had offered me a position, and I had to be able to make the lengthy sea trip, so I had to fly there as well and the whole trip cost a fortune.

The next morning I was a bit hung over, but I managed to get up and go to the ship. It was a very pleasant trip and I enjoyed the company of the other passengers on board.

I think I have told the story of my first class experience on the Maori, because it was such an interesting trip and I learned a lot from it.

So I came back to Australia, but I didn’t stop there. I decided to try the next trip and I booked a ticket on the Maori for the return journey. It was a bit expensive, but I was determined to see what it was like.

The Maori was one of the last large liners bringing large numbers of migrants to Australia by sea, but there were also many young Australians who were returning from their overseas travel. They had great fun on the Maori and it wasn’t easy to get from one side to another without the help of a compliant stewardess.

The ship was quite small and it was a bit crowded, but I managed to get a seat near the window and I could see the beautiful scenery passing by. It was a lovely trip and I enjoyed every minute of it.

On the return journey, I was able to see the Maori from a different perspective. I saw the ships from the perspective of the passengers, and I realized how lucky I was to have been able to travel on such a beautiful ship.

I think I have told the story of my first class experience on the Maori, because it was such an interesting trip and I learned a lot from it. I think it’s important to remember the history of these ships and the people who sailed on them. It’s a part of our history and it’s important to keep it alive.
Adventures

JOHN PASCOE FAWKNER’S
SHIP OF DREAMS

By Roz Gatwood

The man now famous as one of the founders of Melbourne once earned renown in a rather more renegade way.

It looked like a hare-brained scheme that was doomed to fail, and indeed that was how John Pascoe Fawkner’s youthful ship-building experiment would turn out.

“Little Johnny Fawkner”, as he was known, apparently because of his diminutive stature, was the son of a convict transported from London in 1803, first to a short-lived settlement in Port Phillip and, when that was aborted, thence to Van Diemen’s Land.

Along with his sister and mother, young Johnny accompanied his father to Australia, and by 1814, when he was 21 years old, he was running a bakery in Macquarie Street, Hobart Town, and farming a grant of 50 acres seven miles outside the town.

It was at the bakery that Johnny heard the tale of the harsh treatment that had been meted out to one of his bakers, a convict from Piedmont. Whether the tale was true or not, it produced in the young man a fierce sense of outrage, and when he heard similar stories of unjust suffering from other convicts, a plan began to form in his mind. He would help the convicts to build a boat, so that they could escape the “slavery of convictism”.

The plot plays out

Over the early months of 1814, Johnny made preparations for the project in the utmost secrecy. A trusted blacksmith provided all the necessary ironwork, while Johnny got together rope, canvas and provisions. He already possessed a whaleboat and on 15 April, under the eyes of the sentry on the wharf, he loaded all the goods into it. That evening, he and two of the seven prisoners who were party to the scheme took the whaleboat out of the boat creek; they collected the others and headed for Recherche Bay, about 50 nautical miles south of Hobart Town, where they built a hut and workshop in a secluded spot.

For the next three months, the group felled trees, sawed them into planks and fashioned them into a 36-foot vessel they named, naturally, Liberty. Though only one of the men had ship-building experience, the lugger must have been well-constructed,
because it was later put into government service between Hobart and the Coal River settlement.

When the group ran short of rope, they set up a ropewalk to manufacture the necessary lengths out of bark; they made water casks out of wood; they laboriously sewed sails. By the end of July, the vessel was ready to heed off to South America and freedom – or so they all thought.

While Johnny sneaked back to his farm, the seven convicts set sail. After perhaps 100 miles, they were bitterly disappointed to find that their water barrels were leaking. The ship headed back to Hobart, but near the entrance to the Derwent she was sighted by the government schooner and because of her “singular appearance” was taken in charge.

Johnny’s involvement in the convicts’ attempted escape was then discovered, and on 23 August 1814 he was sentenced to 500 lashes and three years’ government labour. Though there is uncertainty about whether the exceptionally brutal punishment of 500 lashes was ever carried out – whether in whole, in part or at all – Fawkner was certainly set to back-breaking work for the government at Coal River (Newcastle) for two years (reduced from three). He returned to Hobart Town, a free man once again, in March 1817.

What happened next

The years that followed saw John Pascoe Fawkner back at the Hobart bakery, also selling liquor (without benefit of licence) and carrying firewood and sawn timber. He was in and out of personal and financial strife, and eventually moved north to Launceston with his partner, convict Eliza Cobb, to make a fresh start. In Launceston they established, over time, a bakery, a timber business, a bookshop, a newspaper (The Launceston Advertiser), a nursery and an orchard. The indefatigable Fawkner also obtained a licence to run the Cornwall Hotel.

In the spirit of his earlier quixotic ship-building endeavour, Fawkner used his newspaper as “the active and avowed friend of the emancipist class in Van Diemen’s Land, dealing heavy and repeated blows upon officedom and the reputed respectable class in the island”. He attacked capital punishment in a colony that valued “a man’s life at less than a sheep”, and made forceful remarks on cruelty to assigned servants.

A huge change for Fawkner came in 1835, when he bought a 55-ton schooner to begin a settlement on the southern shore of the Australian mainland. He renamed the ship Enterprize, a much more accurate moniker than that of the ill-fated Liberty, for in October 1835 (after quite a bit more of the strife that he was so good at getting mixed up...
Above: the modern replica of Fawkner's ship Enterprize, photographed in front of the city the original helped to establish. (Image: enterprize.org.au)

Above right: Fawkner's funeral procession in 1869 involved 218 carriages and attracted one third of the population of Melbourne. (Image: State Library of Victoria.)

in) he landed on the shores of Port Phillip Bay and at once began to lay the foundations of a fortune that grew to £20,000 in his first four years in the colony. He started the Port Philip Patriot and Melbourne Advertiser newspaper and ultimately had a long and combative career in politics, spending 18 years in the Legislative Council (where he always wore a velvet smoking cap like the one in his 1867 photograph on page 27) and making his last appearance there only a month before his death in 1869.

Cantankerous and dogmatic, he nonetheless had come to be regarded as an institution, the grand old man of contemporary Victoria. Quite an achievement for a convict's son who had once spent two years in chains himself.

Sources:
Poulson, Bruce, Recherche Bay: A Short History, Southport Community Centre, c.2004.
A WILD LIFE UNDER WATER

Q&A by Brooke Twyford

One of two Australians highly commended in this year’s exhibition, Wayne Jones is an underwater specialist.

Is there a defining moment that made you interested in photography and underwater photography in particular?
I was born in Albany, WA, and my family moved to Perth when I was quite young. I started diving and loved the ocean and its amazing life and acquired a Nikonos 4 UW camera, a film camera, which just seemed a natural progression for me.

Unfortunately, other aspects of life got in the road and I let go of my diving passion in my early 20s. Later in life I returned to study at Murdoch University doing degrees in philosophy and screen production and became passionate about making documentary movies. Following the death of a friend, I re-evaluated my life and decided I need to go out and live, thus ending my degrees after the third year.

What made you move to the Philippines and start a photo school?
I went to the Philippines to visit a friend, later to become my wife, and was not diving at this time but still interested in photography.

While at a resort in Siquijor, I decided to do a dive but soon found myself lacking the skills after such a long hiatus from diving. I redid my

Entitled Night Rider, Wayne Jones’s highly commended photo in the Wildlife Photographer of the Year exhibition opening on 5 March shows a juvenile paper nautilus octopus atop a tiny jellyfish.
The yellow pygmy goby, Lubricogobius exigus, was the subject of Wayne Jones’s highly commended entry in last year’s Wildlife Photographer of the Year exhibition. This one was photographed in the mouth of a discarded bottle, where two had set up house and would lay their eggs.

open water scuba and that was it: I was hooked again, and underwater video and photography was all I wanted to do.

Over the next few years I was diving and honing my underwater photography every day, and the Philippines is a magical marine environment for this. Underwater macro photography became my passion, and once I moved to Anilao, famous for its underwater macro life, I started perfecting my UW macro skills.

After two years here, and after an offer from another passionate and accomplished underwater photographer, we built the Anilao Photo Academy and have been operating and teaching for three years now.

This isn’t the first time you’ve entered the Wildlife Photographer of the Year competition, is it?
No, this isn’t the first time I’ve entered. I was also successful last year with a similar recognition, and these really are the pinnacle of my underwater photography.

Your highly commended photo entitled Night Rider is of an octopus hitching a night ride on a jellyfish. Are those creatures among your favourite aquatic subjects, and what are the others?
The paper nautilus (juvenile male) atop a tiny jellyfish is one of many amazing subjects that can be found during a blackwater dive. Blackwater involves a series of underwater lights suspended along a rope down into the water column which attracts the small juvenile or larval stages of marine life that develop in the deep waters before maturity. The paper nautilus is a favourite and a pleasure to photograph.

If you could dive and photograph anywhere in the world, where would it be?
I believe Anilao is one of the best locations for underwater macro photography. Therefore when I go to other locations I am wanting BIG things such as blue whales in Sri Lanka, shark in South Africa and the amazing wide angle subjects in Raja Ampat. I have a deep desire to
dive with and photograph the orca in Norway but there are so many other amazing places I would love to go.

**What does it take to be a great underwater photographer?**
Ha ha ha, I will let you know if I get there, but the success and recognition I have achieved comes from trying and failing and trying again, a lot of patience like spending a whole dive just for one photo and finding a style, a way, a method that is you and not what everyone else is doing. The camera is just a tool, you are the auteur.

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**CAPE BOWLING GREEN LIGHTHOUSE: THE QUIZ**

Compiled by Bob Hetherington

Starting this issue, All Hands is running a series of quizzes so vols can test their knowledge of the museum’s attractions. Each quiz will cover a major exhibit; the answers are all in the Training Notes and are given here on page 40. See how you go with **Cape Bowling Green Lighthouse**...

1. Where is Cape Bowling Green?
2. How was the lighthouse constructed?
3. What was the major problem with the original site?
4. The lighthouse commenced operation in: (a) 1858; (b) 1874; (c) 1898; (d) 1906?
5. Who was the first head keeper?
6. What is the current identifying “signature” for Cape Bowling Green’s navigation beacon?
7. What was the purpose of the clockwork mechanism?
8. How many people lived at the light station?
9. What major changes happened to the light in 1920?
10. When was the tower dismantled?

For **bonus points**: How many steps to the lantern room?
MODERN MAPS AND THE DEVELOPMENT OF OCEANIC NAVIGATION IN EAST ASIA

By Richard de Grijs

Volunteer Richard de Grijs is an astrophysicist with a special interest in the tricky business of establishing longitude. Here, he tells how early Asian navigators dealt with the problem.

It is often claimed that medieval Islamic geography influenced the development of Chinese mapmaking under the Mongol Empire. However, the use of maps covered by rectangular grids most likely originated in China with the work of Zhang Heng (78-139 CE). His maps have been lost in the depths of time, but his biographer, the scholar Cai Yong (132–192 CE), stated that Zhang Heng “cast a network about heaven and earth and reckoned on the basis of it.” Zhang Heng’s pioneering work greatly influenced that of his successor, the Imperial official Pei Xiu (224–271 CE), who was the first to include a grid reference and scale on his maps. (See Fig. 1 on next page.)

Ancient Chinese cartographers were well versed in determining their positions accurately on land using triangulation and observations of the night sky. Chinese astronomers were skilled in using lunar eclipses to determine their local longitude, although this was rather cumbersome. It required simultaneous time measurements across long distances and a base observatory in China. For a given eclipse, observers at both the base observatory and the location of interest identified bright stars which passed through the local meridian (the circle of constant longitude connecting the Earth’s North and South Poles and passing through the observer’s location) at the moment when the Moon started to reappear after the eclipse. Upon their return to the base observatory, both records were compared and a second measurement was obtained to determine the exact time difference of the meridian passages of both stars, corresponding directly to the difference in longitude.

These measurements require only access to a sextant. Chinese astronomers have been able to accurately calculate lunar positions since the Yuan Dynasty, which allowed them to compile tables listing the positions of the Moon and a set of reference stars throughout the year. Armed with such tables and with access to a sextant, they could have determined their longitude at sea fairly accurately.

Chinese navigators may have mastered
South and West Africa on the Korean Kangnido map (1402) see Fig. 2 below. This world map, the oldest surviving global chart from East Asia, predates any known Chinese or Japanese world maps. Most importantly, Africa is represented by a triangular shape (on the far left). This is different from contemporary Arab or European maps (until the mid-15th century), where the southern half of the African continent would usually be rendered as an extension to the East.

However, Korean cartographers were apparently not concerned with systematic surveys or coordinate systems until the late 16th century, when King Jeongjo of Joseon (1752-1800) decided to undertake calendar reform to determine the time differences between the Korean peninsula’s eight provinces. The earliest references to a physical scale on any Korean map occur late in Korean history; they are attributed to the cartographer Jeong Sang-Gi (1678-1752). Chinese influences are non-existent in any surviving records related to Korean cartographic developments. (Similarly, Japanese maps did not include grid lines until well into the 18th century.)

Other ocean voyages in the early 15th century may not have relied on skills to determine longitude at sea. For instance, the fourth expedition (1413-1415) led by Admiral Zheng He set off from Sumatra, sailing 10 days in full wind to reach the Maldives; from there,
they sailed across the Indian Ocean in full wind for 15 days, reaching Mogadishu in East Africa, some 3700 miles from their port of origin:

“We have traversed more than 100,000 li [50,000km] of immense water spaces and have beheld in the ocean huge waves like mountains rising in the sky, and we have set eyes on barbarian regions far away hidden in a blue transparency of light vapours, while our sails, loftily unfurled like clouds day and night, continued their course [as rapidly] as a star, traversing those savage waves as if we were treading a public thoroughfare...”

This voyage appears to have followed well-established Arab and Chinese trade routes rather than breaking new navigational ground. On 10 October 1432, Zheng He’s fleet set sail once again, from Pulau Rondo on Sumatra to Sri Lanka. The fleet continued to Kuli (Caliicut) in India, where they arrived on 10 December 1432. Their next leg commenced three days later and involved a 35-day voyage, until 16 January 1433, to Bandar-e Abbas in the Strait of Hormuz. They soon proceeded with their next leg, crossing the Arabian Sea from Dingde Baxi (present-day Dandi Bandar) to Jabal Khamis in present-day Oman.

The expedition used the declination of Zhinü (the “weaving girl”, corresponding to the star Vega) and of Nanmen Shuangxing (two stars in the constellation Sagittarius). Travelling westwards, they relied on observations of Pollux (in the constellation Gemini) and Procyon to determine their longitude and latitude. Zheng He’s navigators based their ocean voyages on 10 stars, which enabled them to determine their approximate longitude and latitude at sea. For latitude determination, they relied on the stars closest to the North and South Poles, and also on stars in Sagittarius; for longitude determination, their guide stars included Pollux in the North West, Procyon in the South West and Vega and bright stars in Taurus in the East.

As senior administration official, Zheng He led seven expeditions to Southeast, South, and West Asia, and to East Africa, between 1405 and 1433, which were aimed at establishing a Chinese presence and enforce Imperial control over trade in the Indian Ocean and extend the Yongle Emperor’s tributary territories. Zheng He’s sailing charts, the Mao Kun Map, consisted of four maps, one each centred on Sri Lanka, South India, the Maldives, and a fourth map showing some 400km of the East African coast, covering the coastal waters to a southern latitude of six degrees. (See Fig. 3, above.)

Zheng He’s sailing charts were designed with the specific purpose that they would be used to sail along certain routes. Therefore, their positions vary in orientation to align with
the ocean currents and winds. The aim was clearly to provide positional information in the shortest time possible; geographic features are seen from the user’s orientation. Sailing instructions are offered using a 24-point compass system with a Chinese symbol for each point, combined with a sailing time or distance. Local currents, winds, and depth soundings are taken into account.

The 24-point compass system resembles the system used for navigation in the Western Pacific and which was used already by the ancient Polynesian navigators. In a Chinese cultural context, the compass points are based on the 12 directions of the “Earthly Branches”, a system for timekeeping. For navigation purposes, 12 points were insufficient, prompting the introduction of 24- or even 48-point compasses by inserting intermediate directions.

As early as the Yuan and early Ming Dynasties, the Chinese had already invented an approach to timekeeping that was reasonably accurate. A particularly promising timing device was the “everbright lantern”, which operated similarly to the common candle clocks in use at the time:

“The compass cabin burns everbright lanterns day and night, five geng each night and five geng each day. So a ship sailing for 12 Chinese hours burns the equivalent of a total of 10 geng.”

Over the course of 24 hours, or 10 geng, a lantern would consume one catty of oil, approximately 500-600 grams, so that its burn rate could be determined accurately by reading off the amount of oil consumed on a glass oil reservoir. Chinese navigators could thus keep track of the local time in their home port while out at sea. Comparing the ship’s local times of sunrise or sunset with the home port’s time based on the lantern, they could obtain a rough estimate of their longitude difference. Incense coils with known combustion timescales had been used for the same purpose since the sixth century and became commonplace in the Song Dynasty (960-1279); both timing devices were used for periods of up to weeks or even months.

After the death of the Yongle Emperor in 1424, Zheng He’s expeditions were discontinued. China began to look inwards, adopting a policy of isolationism that lasted a few hundred years. The new Hongxi Emperor (1378-1425) ordered that Zheng’s fleet be burnt, along with all records, thus ending the “Age of the Sea”. The Hongxi Emperor expressly prohibited overseas travel; anyone who disobeyed the order was executed.

Traditional Chinese cartographic skills became more advanced in the late Ming Dynasty (1368-1644) under the influence of new ideas introduced by the European Jesuit missionaries from the early 1600s. However, major new initiatives were not seen until well into the Qing Dynasty (1644-1912), when the Kangxi Emperor (1654-1722) realised that Chinese maps were not sufficiently accurate for navigation and territorial purposes.

Meanwhile, much of Europe was suffering from religious intolerance and wars, with progress in science, technology and innovation largely stifled – a period of stagnation commonly referred to as the “Dark Ages”. The centre of scientific developments had decidedly moved eastwards.

About the author:

Richard de Grijs gained his PhD in his native Netherlands and then held postdoctoral positions at the Universities of Virginia (USA) and Cambridge (UK). After spending 8½ years at Peking University’s Kavli Institute for Astronomy and Astrophysics, he moved to Australia in 2018 and is now Associate Dean in the faculty of Science and Engineering at Macquarie University. In 2017 he published his book Time and Time Again, on finding longitude at sea in the 17th century.
BHP Transport

BHP Transport, a subsidiary of the parent BHP company, is not the oldest shipping company in Australia, but with the demise of ANL in 1999, it is the largest. ANL operated between 1957 and 1999, and its flag still flies across the region as a subsidiary of French CMA CGM.

BHP Transport, the largest bulk carrier charterer in the world, has entered a new phase of operation in 2020. It will develop the operation of LNG-powered bulk carriers.

From its earliest days, BHP used land and sea transport to carry its silver and lead from Broken Hill to Europe. From the time BHP took to steelmaking in 1915, its transportation took on a new dimension with a formal fleet organisation in 1921. Two small coal-fired general cargo vessels were purchased and renamed with the prefix Iron, which became common for future tonnage. The distinctive black funnel with two light blue bands was adopted, with a black hull and white superstructure in later ships. The hull and superstructure colour could be changed to an iron ore colour if working in that trade.

Between 1940 and 1978 most additions to the fleet were designed and built in the company-owned Whyalla shipyard in South Australia, which has since closed. This shipyard built 64 ships. The first four were corvettes for the RAN and the first, HMAS Whyalla, was finally paid off, returned and put on display as a museum ship high and dry in that town. The last major vessel, built in 1978, was Iron Curtis, a 25,850 gross register tons bulk carrier (shown ready for launching in picture at left).

The Whyalla yard built a large range of specialist vessels including the first large tankers and Ocean Digger, one of the world’s largest semisubmersible offshore oil-drilling rigs.

Later ships were built overseas; in particular Iron Pacific, a 231,850 deadweight tonnes bulk carrier built in Korea in 1986. Diesel-powered, it was the largest twin-screw dry bulk carrier in the world.

HMA Ships Sydney

The most evocative ship’s name in the RAN is HMAS Sydney. Five HMA Ships Sydney have been commissioned into the RAN. The fifth is the last Hobart-class Air Warfare Destroyer (AWD) which is due to be commissioned in May 2020 as HMAS Sydney (V) (pictured on the next page, on trials).

A model of Sydney (I) was initially displayed in the ANMM’s Navy Gallery, on its own. To celebrate the museum’s 10th birthday, an appeal was made to members to purchase three specially commissioned models of (II), (III) and (IV) to complement (I). The new models were to join the Sydney (I) model to form a history of the RAN from WWI to the present in a revamped gallery.

All four models went on display and a later revamp saw this reduced to only three with
the model of Sydney (I) removed. Details of the four models are:
• Sydney (I), (1913-1928), a light cruiser which engaged the German raider Emden and forced it to beach and surrender on North Keeling Island.
• Sydney (II), (1935-41), a light cruiser, sunk after an engagement with the German HSK Kormoran off Western Australia.
• Sydney (III), (1943-73), an aircraft carrier in Korea and fast troop carrier in Vietnam which earned the nickname “Vung Tau Ferry”.
• Sydney (IV), (1983-2015), a guided-missile frigate deployed in action against Iraq in the 1991 Gulf War.

State capital cities are common names for HMA Ships. The name Australia has been given to only two HMA Ships: HMAS Australia (I), (1913-24), a battle cruiser, and Australia (II), (1928-55), a heavy cruiser. In 1980 the Australian Government arranged to purchase HMS Invincible, the aircraft carrier, for the RAN. It fell through when the Falklands War started and the ship was retained by the RN. RAN personnel and civilian technical staff were sent to the UK for the handover. The name Australia had been envisaged and picture postcards featured Invincible with name Australia on the bow – only to become a collector’s item.

ANMM member correspondence: “HMAS Sydney Serious 10th Birthday Gift”; additional reporting

Balmain Regatta

The first Balmain Regatta was held in 1849. There were no sailing clubs in the area and races were organised at meetings in local pubs. To mark this link, last year’s regatta, which celebrated the 170th anniversary of the first event, featured a pub challenge which pitted crews from Balmain’s famous watering holes against each other in yachts provided by Balmain Sailing Club members.

Traditionally held on the last Sunday of the year, the regatta was last year held on 27 October, as part of a weekend-long celebration. It attracted sailing competitors from all over Sydney and even further afield. It also featured a waterman’s rowing race and a putt-putt challenge, plus music and celebrations on shore.

Inner West Courier; additional reporting
The Scrap Iron Flotilla and the Siege of Tobruk

HMAS Waterhen, a WWII destroyer (known as “The Old Chook”), was the first RAN loss in WWII due to direct enemy action. It was one of five destroyers built in the UK, commissioned in the RN in 1918, gifted to and recommissioned in the RAN in 1933. They became known as the “Scrap Iron Flotilla” in WWII. The destroyers were HMA Ships Stuart (I), Vampire (I), Vendetta (I), Voyager (I) and Waterhen (pictured below).

Areas of service for the flotilla included the supply line to the Libyan port of Tobruk. Tobruk was held largely by troops of the Australian 9th Division, the “Rats of Tobruk”, against the German Afrika Korps during an eight-month siege from 12 April to 10 December 1941. The supply line was known as the “Tobruk Ferry Run”. All five ships of the flotilla served on the run, in the International Squadron, an assorted fleet of ships that kept the garrison supplied from Alexandria, in the main with reinforcements and supplies. The squadron included other warships, small liners, gunboats, whalers, minesweepers, landing craft and even some sailing vessels.

The destroyers usually worked in pairs, and a typical run would be: leave Alexandria, Egypt, at 8.00am loaded with personnel, ammunition, stores etc.; arrive in Tobruk at 11.00pm; leave the next day at 5.00am and arrive at Mersa Matruh at 9.00am and disembark wounded andiced stores for Tobruk. On the third day, return to Tobruk and on the fourth day sail back to Alexandria.

In early August, it was decided to pull the Australian force out of Tobruk and replace them with British and Polish troops. All went well until 25 October when the evacuation was stopped and some Australians had to remain in Tobruk until the siege was lifted.

The Australian ships were credited with doing 139 runs into Tobruk. HMAS Vendetta (I) was the last of the flotilla to leave in October having done 39 trips – more than any other ship. HMAS Vampire (I) did only two runs because of a turbine problem and proceeded to Singapore for major repair. Waterhen had been sunk on 30 June after being hit by dive bombers off Sollum and sunk with no casualties apart from a person on deck being hit by a flying tin can of bully meat or peaches (depending on the source). It was the practice on the destroyers to carry extra people and stores on the open foredeck, hence the flying tin can from the damaged and broken cargo.

The movements in or out of Tobruk included nearly 33,000 troops evacuated and replaced by 34,000 fresh ones; 7500 wounded; 7000 prisoners; 34,000 tonnes of stores, ammunition, food and fresh water; 72 tanks and 92 guns. Twenty-seven naval ships were sunk or damaged; 12 merchant ships were sunk or damaged. There were 645 naval casualties and 125 from the merchant service.

The ships of the Scrap Iron Flotilla had a proven record of battle honours ranging from the Mediterranean to the Pacific. Three were sunk by enemy action, one scrapped in Sydney and one sunk off Sydney Heads.

A bronze plaque in memory of the ships and men of the flotilla is displayed in the grounds of the Australian War Memorial.

Naval Officers Club Newsletter; additional reporting

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**QUIZ ANSWERS (from page 32)**

1. 70km south of Townsville.
2. Using a frame of local timber with imported cladding and light equipment (the cladding was wrought iron as used at the same time for the hull of James Craig).
3. The low-lying site was prone to flooding and beach erosion.
4. (b) 1874.
5. Richard Cole, from 1874 to 1902.
6. The Morse Code for O (Oscar) – three dashes on a radar screen.
7. To rotate the lens assembly around the light, generating a pattern of rotating light beams.
8. At its peak, eight adults and 10 children.
9. The light was converted to acetylene gas, which allowed it to be “flashed”, no longer needing the lens assembly to rotate or the lamp to be tended. The lighthouse was de-manned and the cottages demolished.

**Blast From The Past**

Past stories from *All Hands* can be accessed through the *All Hands* Catalogue 2019, which lists all the stories, including all the Ditty Box items, from Issue 1 to Issue 105. Also keep an eye out for the soon-to-be-released 2020 edition of the Catalogue, which will include listings of everything published up to and including Issue 109 of the magazine. The Catalogue can be found on the Volunteers website: https://anmmvolunteers.ning.com/all-hands. All stories or items are listed by issue, Page No, Author and Title.

This issue includes an article I edited on naval and other gigs. Issue 70 in March 2010 included a story by Sam Calandra called “Pilot Gigs of Newquay” (page 19 et seq). In it, Sam recounts meeting an English visitor at the museum in 2007, who was the president of the Newquay Rowing Club in Cornwall, UK. The visitor subsequently sent Sam details of three gigs from 1812, 1820 and 1838, which had been restored and relaunched in 2008. At the time, the Newquay club had 10 gigs in regular use in the Cornish summer. These facts formed the basis of Sam’s interesting story.

Also in Issue 70 is an account of rowing Admiral, an 1865 eight-oared gig, along 65 nautical miles of Tasmania’s east coast in typical (bad) weather. A feat not for the faint-hearted, and led by then 56-year-old seafarer and local legend Bern Cuthbertson (1924-2013). These two stories, along with the hundreds of others in past issues, can be read in full online. So browse the current edition of the Catalogue and dip back into the past for hours of reading pleasure.

Neale Philip

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