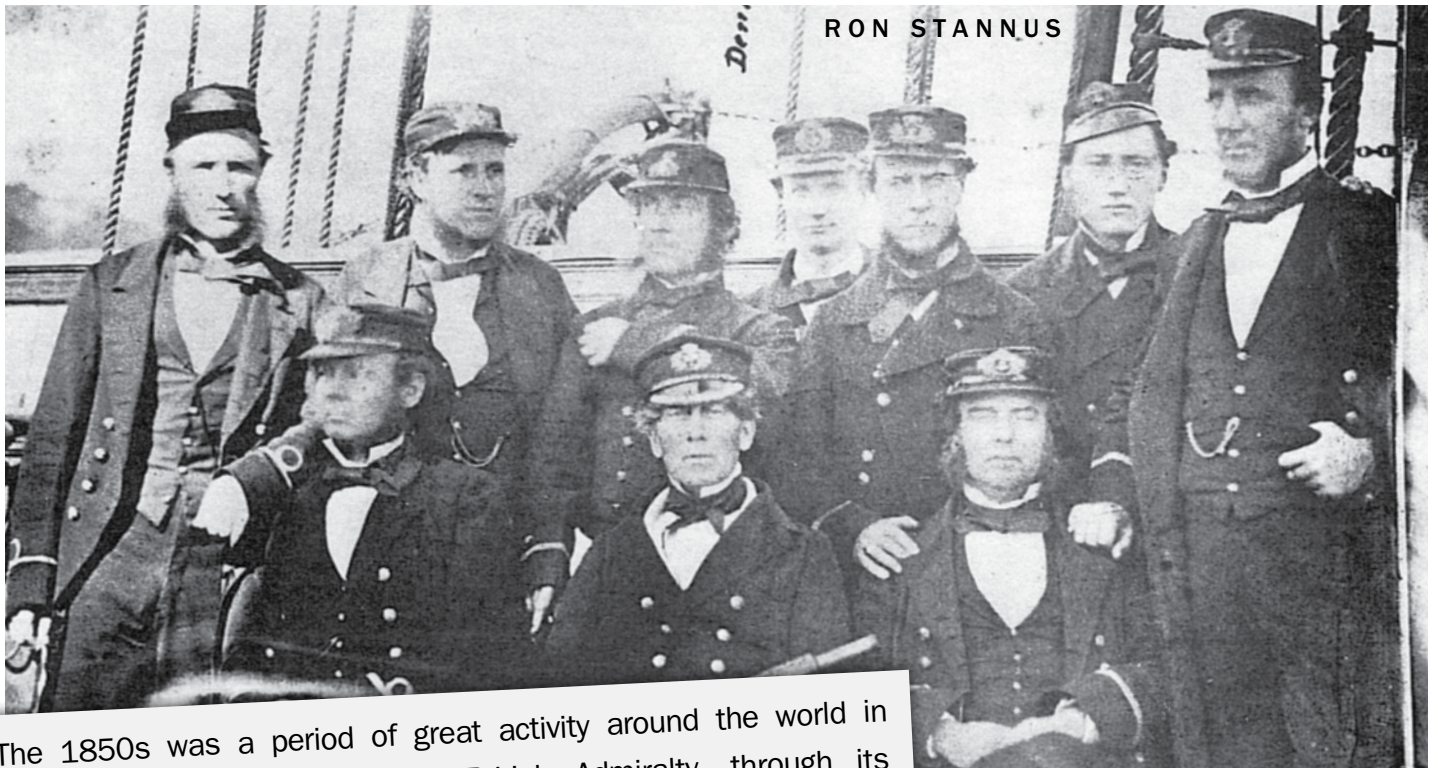


# SURVEYING THE WORLD

## THE VOYAGE OF HMS *HERALD*



The 1850s was a period of great activity around the world in hydrographic surveys, and the British Admiralty, through its Hydrographic Department, was at the forefront of this development. Britain had a particular interest in improving the charts of the oceans where its imperial interests were located, none more so than in Australia and the South West Pacific. Along with work around Canada and West Africa, the need was recognised for an accurate survey of the waters around Australia and the trade routes which led to and from Australia's coasts and ports. There was also some interest in finding a new location for a penal colony, as transportation to New South Wales had ceased.

In 1851 the then Hydrographer, Francis Beaufort, persuaded the Lords of the Admiralty to commission a project to undertake this southern hemisphere survey work, and Captain Henry Mangles Denham RN was placed in charge of the project, and

given command of HMS *Herald*. Aged 51, Captain Denham was already an experienced surveyor and proved to be a first class choice for the job.

The survey tasks set for Denham by the Admiralty would mean that HMS *Herald* would be almost constantly at

1860: Captain Denham (seated, centre of front row) and the officers of HMS *Herald*. Photography had left the laboratory, experimental stage by this time and Glen Wilson and others made useful photographic records of the voyage, of which this is one.

work and away from home for a total of nine years from 1852 to 1861.

The ship's company of 100 included a number of scientists – naturalists, botanists and ornithologists – and, most fortuitously, an artist and photographer, James Glen Wilson, whose fine paintings and drawings provide an excellent visual record of the voyages that were undertaken. Also on board were two doctors and a number of artificers – carpenters/shipwrights, sailmakers and a blacksmith – who could carry out

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## SURVEYING THE WORLD continued

running repairs and make the ship self-sufficient in most situations.

HMS *Herald* left England in February 1852 destined for Sydney and was accompanied on the outward voyage by HMS *Torch*, a schooner-rigged auxiliary paddle steamer, which proved of some value at times, although after arrival in Sydney the two vessels operated more or less independently.

The voyage out included calls at Cape Verde, Rio de Janeiro and Capetown, with a pause for a survey of St Paul Island in the Southern Ocean. All the way, soundings were being taken; the deepest was in mid-South Atlantic where they reached a depth of 7,706 fathoms – 8¼ miles – and the scientists were obtaining specimens and making notes about what they were seeing. *Herald* arrived in Sydney on 18 February 1853 and *Torch* on 7 April. They hadn't been able to stay together for much of the time.



*SURVEY OF PORT JACKSON 1857: The only existing survey had been carried out in 1822 and was badly out of date and inaccurate, so it was decided that a complete re-survey was necessary. A base of 2,780 feet was measured along the shore of Rose Bay and a triangulation scheme set up, with an observation spot on Garden Island, whose position was established as 33° 51' 58" S, 151° 15' 29" E. Extensive soundings were carried out from well outside the Heads to the upper reaches of the Harbour. Large-scale surveys of Cockatoo and Garden Islands were included so that accurate details of the docks and slips could be shown. The topographical survey of the surrounding land by Lieutenant Colonel Sir T L Mitchell was incorporated into the work, and the result is shown in the central section of the chart reproduced here, which was prepared by the Hydrographic Office in London, from the drawings and data sent by Denham.*

## The Ship

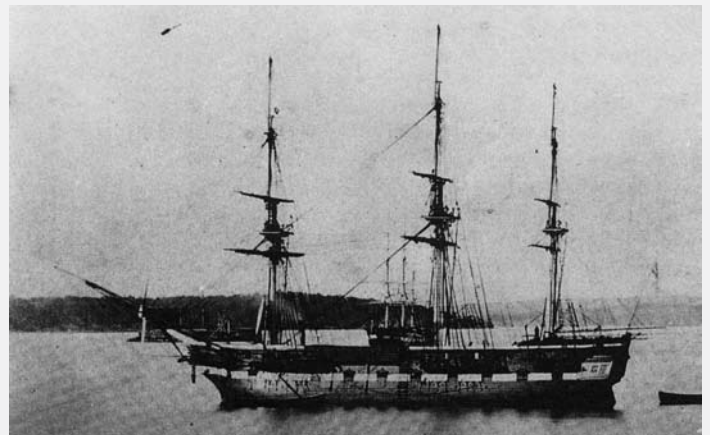
*Herald*, built in Cochin, India, of Indian teak, had already given 30 years of hard service when she was chosen for her extraordinary survey voyage. It was a tribute to her builders and the materials that went into the ship that she was still sound and gave few problems during nine years away from Britain, and came away from two groundings without structural damage. As a sailing ship she had the endurance to remain in remote locations, far from any coaling stations or other reliable supplies of fuel. *Herald*, however, could not be called a handy ship. Her early 19th century bluff-bowed hull shape, ship-rigged, meant that she had little windward sailing ability. Denham and his men spent many anxious nights in bad anchorages in reef-strewn waters, where an adverse change in the weather, or critical gear failure, could have brought the whole project to a quick and disastrous end, a long way from help.

One is left with an impression of superb seamanship and professionalism on the part of the ship's company – and a little bit of luck.

The Royal Navy had a series of ships bearing the name HMS *Herald* until the last *Herald*, also a hydrographic ship, was paid off in 2001.

The photograph shows HMS *Herald* in Sydney and is believed to

have been taken by Lieut Arthur Onslow RN, who joined the ship in Sydney in 1857 and remained with her until she paid off in Chatham in 1861. In 1863 Arthur returned to Sydney and married Elizabeth Macarthur, daughter of James Macarthur. They were the progenitors of the well known Macarthur-Onslow family.



A number of things about *Herald*, and her survey activities, were impressive. The sheer physicality of life on board goes unremarked, but it must have been an arduous life for the seamen – boatwork, setting and taking in sail, letting-go and weighing anchor, with the only mechanical aids the capstan and block and tackle. Shore excursions by the scientists far inland in rough country were commonplace ('...the party set off for the ship, reaching their boat at 5 pm, after a 24-mile walk there and back...') when the ship was in locations that were being surveyed. And soundings, over 3,000 of them in total, were not only physically demanding but slowed the vessel's progress. Another was the high risk situations in which the ship was frequently placed; bad anchorages amongst multiple reefs and cays in poorly charted or uncharted locations. To do his work Denham had to get in close and find an anchorage where he could. Even so, in nine years the ship grounded only twice in circumstances that were entirely excusable.

Provisioning the ship was a major problem for long voyages to remote locations. The stores were either salted or weevilly ship's biscuits and where possible the crew would supplement them with fish, turtles and birds' eggs, and by trading with local communities. Even so, there were outbreaks of scurvy and dysentery which disabled many of the crew, but they seemed to recover quickly once fresh food became available. Fresh water had to be supplemented wherever possible from wells and springs and these often proved difficult to locate.



1855: *Planting coconut palms on Cevaira – Conway Reef – in the Fijian Islands to make the reef more conspicuous. The wreck of the Logan is in the foreground.*

Almost immediately after arriving in Sydney in 1853, Captain Denham began an almost continuous series of survey voyages which would take him around much of Australia as well as to Pacific Ocean islands.

The important trade routes to be surveyed were to the West Coast of North America, so a safe passage was needed through the island chain around Fiji. A second trade route was to India, for which a route through the Coral Sea and Torres Strait would save over 1,000 miles compared with the 'south about' route.

On Captain Denham's first attempt to survey the route to India in 1857 he found himself up against seasonal headwinds, which led him to make a dramatic change of plans, turning south through Bass Strait across to King George Sound (Albany) and then to Shark Bay on the mid-west coast of Western Australia. A point of interest in his Bass Strait survey; his men discovered the well on Three Hummock Island which Giuseppe Garibaldi (the great uniter of Italy) had dug to obtain



1865: *Admiral Sir Henry Mangles Denham*

fresh water in 1852, and they used it for the same purpose.

The Hydrographer Beaufort, who had commissioned Captain Denham, retired in 1855 and was replaced by John Washington. Denham had a

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## SURVEYING THE WORLD continued

fairly uneasy relationship with him. Washington was critical of Denham for his change of plans in sailing to Western Australia, rather than pressing on to Torres Strait, as the Shark Bay survey revealed nothing in the way of usable land or resources. But it had always been contemplated that Denham would return to the UK from Torres Strait by the western route and his surveys of Bass Strait and King George Sound were of immediate value. The Coral Sea surveys were carried out later and Torres Strait was, indeed, surveyed on the voyage back to England.

Cook in his second voyage to the South Pacific had a copy of Harrison's H4 chronometer with him, which he referred

to as 'our trusty friend, the watch, our never-failing guide', but earlier navigators had no accurate timepieces and had to rely on dead reckoning and estimates to prepare their charts. As a result the longitudes were almost always wrong and Denham, by frequently checking the rates on his chronometers – he had 12 of them – was able to accurately position many of the badly charted hazards. He saw abundant evidence of the need for the survey work he was doing when the remains of wrecked ships were found on remote cays. In case there were still survivors in the area Denham would erect beacons and leave supplies of food wherever practicable. He also left a copper sheet engraved with the distance

and compass bearing to the nearest inhabited land.

HMS *Herald* had one lengthy layover in Sydney, from 27 February to 20 December 1857, but Denham was still busy. During this time in Sydney he carried out a detailed survey of Port Jackson. His time in Sydney was also marked by two events, one of them tragic. On 20 August 1857 the *Dunbar* with 121 souls on board, trying to enter Sydney Harbour in a gale, was wrecked on rocks near the Gap, with only one survivor. Denham was asked for his advice on how to prevent a repetition of this tragedy. He recommended that a light be placed on Inner South Head, and he was pleased to see that this was done. The other event was the construction of the Fitzroy Dock on Cockatoo Island, a major piece of engineering for the colony, and *Herald* was the first vessel across the sill. The hull was cleaned and 151 sheets of copper were replaced as part of a general refit for the next phase of the ship's survey work. The dock was used a second time by the *Herald* before it returned to England.

By the 1850s the world was beginning to enter the modern age and this had some useful consequences for Denham and his work. Sydney had long since ceased to be a frontier town and penal settlement and was now a substantial city. However, convicts still played a part in the local economy and were used in the construction of Cockatoo Island's Fitzroy Dock. The original plan for Denham's survey work was

### THE VOYAGES AND SURVEYS CARRIED OUT BY CAPTAIN HENRY DENHAM IN HMS *HERALD* 1852 -1861

This record shows what could be achieved in nine years with a well-found ship, an exceptional commander and a capable and well disciplined crew.

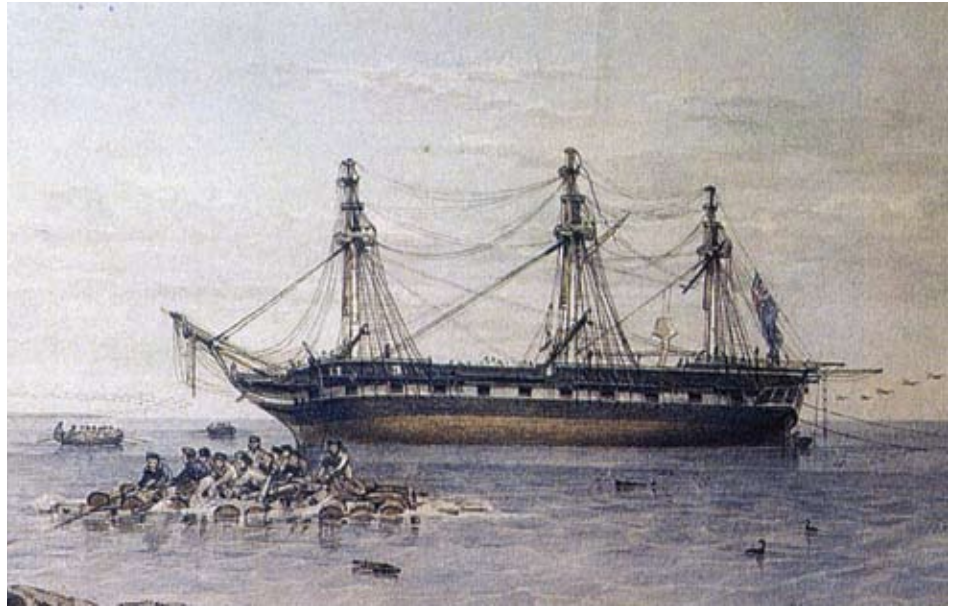
England to Australia	February 1852 to February 1853
Lord Howe Island, New Caledonia and Isle of Pines	February 1853 to January 1854
New Zealand and Raoul Island, Kermadec Group	January to September 1854
Fiji, first survey	September to November 1854
The search for Ben Boyd	November 1854 to January 1855
Norfolk Island, first survey	January to June 1855
Fiji, second survey	June 1855 to February 1856
The resettlement of Pitcairn Islanders on Norfolk Island	February to June 1856
Fiji, third survey	June 1856 to February 1857
Port Jackson survey	February to December 1857
Bass Strait, King George Sound and Shark Bay, WA surveys	December 1857 to June 1858
First Coral Sea survey	June to December 1858
Second Coral Sea survey	December 1858 to October 1859
Third Coral Sea survey	October 1859 to May 1860
Sydney to Surabaya via Torres Strait	May to November 1860
Surabaya to Chatham, UK, via Simons Bay	November 1860 to June 1861

that it be a two-phase project, returning to Britain after five years for refitting and crew change before embarking on a second five year survey. But the opening of the Fitzroy Dock made the long return journey unnecessary, and a partial crew change was carried out in Sydney. Hydrographer Washington was again critical of Denham for the decision to refit in Sydney, but it enabled Denham to carry out the valuable survey of Port Jackson. And a steamer mail service had started so that he was able to send, relatively quickly, the results of his surveys to London, where they could be quickly incorporated into new charts and become generally available. Locally, Notices to Mariners were issued promptly.

HMS *Herald* was a naval vessel and the formalities were observed. Even in remote locations royal birthdays were observed by dressing ship, gun salutes and splicing the main brace. When practicable Denham would conduct Divine Service on Sundays and Holy Days, after which the crew would be stood down. He was a devout Christian and from time to time took part in services ashore when the ship was in areas where there were mission stations.

When Denham was appointed to the *Herald* he had been married for 26 years and although during those years he had spent periods away on surveying duties, nothing could compare with his nine-year absence in the *Herald*.

Two poignant events occurred during those nine years. The first was the death of his young sickly son, Fleetwood, on board *Herald*. Presumably he had taken Fleetwood with him believing that it



1858: *Herald* aground in Freycinet Estuary, Shark Bay, WA. The ship was refloated without serious damage.

would benefit his health. He was buried on remote Raoul Island in the Kermadec Group north of New Zealand.

The other was on his arrival at Spithead in 1861 before paying off at Chatham. A young stranger came on board and after an awkward pause exclaimed: 'Why father you don't know me?!' It was his son Annesley, whom he had placed in HMS *Southampton* nine years before as a twelve-year-old-cadet.

Denham never went to sea again after his return to England, but he and his wife had only 4 years together before her death in 1865. He died in London in 1886, aged 86, and is buried with her in a London cemetery. When the portrait reproduced in this article was painted in 1865 he had been promoted to Admiral, and knighted and had become Admiral Sir Henry Mangles Denham.

And what of that stalwart ship, HMS *Herald*? At Chatham, England, at sunset on 1 June 1861, Denham's pennant was hauled down in the presence of the

Dockyard Commander and *Herald* was taken out of commission.

So ended what surely must be the longest surveying voyage on record. ⚓

## The Book

*The Voyage of HMS Herald to Australia and the South West Pacific 1852-61 under the command of Captain Henry Mangles Denham* (Miegunyah Press, an imprint of Melbourne University Press, 521pp, 1995), by Andrew David has been the reference source for much of this article. Commander David RN was an Admiralty Hydrographer who had access to the papers and other material stored at the Hydrographic Office in Taunton, Somerset. The meticulous tracings, log and journals of Denham and the scientists who formed part of the ship's company have enabled the story to be told in great detail. The book is dedicated to the memory of Captain Henry Mangles Denham (1897-1993) great grandson of the captain of *Herald*, who was of great assistance to the author in the writing of the book. In its physical aspects the book, printed in Australia, with its handsome dustcover, is a fine example of the printer's and bookbinder's craft. It was printed in a limited edition of 1,200 copies and may now be hard to come by.