

# Full & By



Crew newsletter  
of the barque

## James Craig

*October - December 2002*



# The day we sailed off the berth and it took 21 topmen to furl the course

*The sail of 9/28*  
- By Peter Davey  
ordinary seaman (sail)

By Hugh Lander  
- Manager James Craig

This sail will go down as the one that all others will be measured by.

We sailed off number seven wharf, under the bridge and out of Sydney Harbour without using engines or tugs and it was four and half hours before the engines were engaged.

During the day there was no seasickness from the crew or the passengers – the crew were too busy and the passengers too enthralled.

When we came to return to harbour we were punching into 40 to 50 knots. We had to get back by 1700 for the passengers. Normally on a square-rigger, when you are on the yards, the stronger the wind the more it presses you onto the yard.

With the wind from dead ahead combined with a drum tight sail trying to press your legs off the foot ropes it made the conditions on the yards interesting.

Initially 10 topmen tried to furl the course. We could not bring in an inch of sail. With 21 we finally beat the course.

When I no longer go over the futtock shrouds and hang up my knife and marlin spike I will always have the memory of the day that I was one of the topmen who furled the fore course sail on 28/9.

Bravo Zulu to Captain Ken Edwards Master Mariner.

Saturday 28th September turned out to be an absolutely memorable day. Our ship went to sea with 6556 passengers and 56 crew. Strong westerlies had been forecast and the Weather Bureau got it absolutely right.

Your diarist was out racing on the harbour and our yacht had to forfeit when we experienced gear failure with winds over the deck gusting to 40 knots straight out of the west so we knew all about the conditions.

Our Master, Captain Ken Edwards, estimated winds at sea at 45 - 50 knots but he described the day as one of the most memorable highlights of his long career as crew and officer on a square-rigger. It all began when, in a first for our ship and in a feat probably not often accomplished since the days when tugs first began operating, James Craig was sailed off her berth without the aid of either tug or auxiliary engines.

Ken said that he had done it only twice before, once when he actually sailed *Young Endeavour* off her wharf in Darling Harbour (Cockle Bay) and through Pyrmont Bridge (open at the time) and again when he sailed *Regina Maris* off her berth in San Juan, Puerto Rico, “missing the Junction Buoy by one foot”.

The ship and her crew performed magnificently in the challenging conditions and she reached 8.6 knots at one stage. Ken paid high tribute to his crew adding that he was very proud of them. One of our crew took a photograph showing a total of 21 crew lined out along the main course yard as they strove to furl the sail at the end of the cruise. The ship handled the conditions perfectly heeling over and sailing steady giving the passengers an exciting (mal de mer free) ride.

Well done team and, to the passengers lucky enough to be out on the day can I say how envious of you I am. May there be many more such days.

## James Craig Crew News

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(except where credited  
to others) by John Spiers

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All crew members and others  
associated with the James Craig  
are very welcome to submit  
material for this newsletter

The opinions expressed in this  
newsletter may not necessarily be  
the viewpoint of the Sydney  
Maritime Museum, the Sydney  
Heritage Fleet or the crew of the  
James Craig or its officers.

*OPPOSITE: 21 topmen finally get the course stowed.  
Photo by Steve Smith.  
RIGHT: Sailing under the harbour bridge.  
BELOW: Sailing (barely) down the harbour.  
BOTTOM: Sailing past the Opera House with third mate James Parbury on the foredeck.*



# We followed the ghosts of ships past

Just after the war, a vessel came to Sydney manned almost completely by New Zealanders. She was the last square-rigged merchantman to sail in and out of this port, the big, four-masted barque Pamir. She was of particular and personal interest to me because her master, Captain Collier, and I had gone to school together, to sea together and even in sail together, and we had met in Callao, Peru, he as first mate of the barque Gladbrook and I as first mate of the barque Dartford.

The Pamir berthed at the western side of Circular Quay, and thousands of sight-seers went on board. Very few squareriggers that ever came to Sydney outmatched the big Pamir in size: in fact, I can only think of two, the huge Danish Kobenhaven and the French La France.

The Pamir was built for the famous German Flying P Line of Cape Horners and was almost the last word in square-rigged science: bridge amidships and brace and halliard winches - none of the old pulley-haul about her.

All the ancient mariners in Sydney swarmed aboard like bees around a honey pot. Of course the press swooped on board on her arrival, but somehow they missed the greatest highlight of her entry into Sydney. It wanted a man like Captain Villiers to do that justice. I got the story and caught the drama of it when I hurried on board not long after she berthed.

Sitting in my friend's cabin were two men with very solemn faces. I knew them both, one a marine superintend-

*Our sail down the harbour reminded me of the following passage from the book, **The Restless Waterfront** by Capt James Gaby. (Antipodean Publishers 1974 ISBN 0 86944 024 1). As I can find no trace of the publishers, I hope no-one is going to be upset over copyright. The photos I took about 30 years ago while backpacking, I think near Ushuaia in Tierra del Fuego or Rio Gallegos in Patagonia. Can anybody identify them? John Spiers.*

ent and the other a stevedoring superintendent. My jovial entrance was right out of place. "Where's the body?", I asked cheerfully. "You chaps look like there's a corpse about. What's doing?" They'd evidently said all they had come to say and got up to leave not even bothering to answer my zany inquiries.

"Don't worry about my report. All's well that ends well", Captain Collier told them as they left the room.

From then on it was like the reunion of two long separated brothers. "What's the matter with them? They had such dismal faces and worried looks that I smell trouble", said I.

We settled down, and he told me the story. He had made his landfall up by Broken Bay about five p.m. and had wirelessed his position to the company. Back came the reply, "The tug is leav-

ing the wharf at six p.m. to pick you up", and the Pamir radioed "Will come down to meet her". It was dirty southeasterly weather so Captain Collier tacked ship and headed down, but when he arrived off Sydney Heads, there was no tug, and the squally wind was jamming him up against the land.

"I thought about heading for Botany Bay where there's a straight passage in, but she wouldn't lay up to Botany so", and he waved his right hand palm up, "there was nothing else for it, Sydney or the rocks".

"It must have had you worried", I said, knowing what it was like to be jammed in on the land in a sailing ship.

"Just quietly, it did. I could have wrung someone's neck, but there it was, no use flapping your hands. If I didn't make a run in then, I'd soon have been out of position for it anyway.

"What sail were you carrying?", I asked.

"All except the royals, but the six t'gans'ls: were up there doing a good job. I hauled up all the courses so we could con her in, and I told myself, Well, Collier, get her in or get your bag packed!"

"Did a pilot come out to you?"

"Yes, he did, but she was squared away when he got out to me, and I couldn't stop for him. She had to be travelling when she went through the Heads so that she'd have plenty of way on her when she rounded to. Anyway, I have Sydney exemptions, and there wasn't any point in two of us worrying.

The Big 3,500-ton barque sailed in





at 9.15 p.m. straight through the Sydney Heads in a blinding southeasterly rain squall. It could not have hit them at a worse time. Told about it the next morning, the lighthouse keeper wouldn't believe that she didn't have engine power. No big ship without it, he reasoned, would have dared to come through the Heads on a squally night like that. What a sight it would have been by day - the huge barque driving in with twenty-five sails set, her three square-sail masts clothed in canvas and towering 175 feet high, all sails drum tight.

With split-second timing, her helm was put hard down after she passed Hornby light.

Then her brace winches really came into their own; hand braces would never have rounded those yards fast enough. She rounded like a thoroughbred into the eastern channel where she lost the wind in her square sails, and only the sheer speed of her drive through the Heads and her fore and aft sails took her to windward of the hungry Sow and Pigs, the only reef in Sydney Harbour.

They were the critical minutes, for wind can be blowing from one direction in the open and from another direction at the same time in a land-locked area. But she sailed up past the reef in pitch dark-

ness with her square sails madly flapping in the veering wind and the burden still full on her fore and aft sails through the quarter of a mile before she could up helm and sail comfortably up to Clark Island and anchorage.

I felt proud of my old shipmate.

"What happened to the tug?", I asked.

"That's what had those two jokers worried", said Captain Collier. "When they radioed that the tug was leaving the wharf at six p.m., they forgot to say that it was the Port Kembla wharf, forty-five miles south of Sydney. It was the old Hero too, and it would have taken her four hours to get up. I wouldn't have dreamed of coming down near the Heads if I'd known that. They're worried that I'll go to town on them in my report, but as you heard me tell them, all's well that ends well, and that's where it ends. They needn't worry. Tell you what, though, I wouldn't like to do it again on a dirty night like last night. When I lost the wind, I was wondering how it would end. No telegraph to ring full speed then. just had to sweat it out. The mates and crew did their work like champions. That's a feather in the cap for the Dominion kids."

And that is a true story that has never been written before. Watch a big yacht

beating into the harbour, and then think of the skill and teamwork for a giant the size of the Pamir. The Cutty Sark came in under the same conditions years ago, but she rounded into Manly Cove, a far easier proposition than weathering the Sow and Pigs. Apart from her, I've never heard of another big ship sailing in at night since the emigrant ship days. The unfortunate Dunbar tried it on such a night, and she crashed onto the Gap.

When the Pamir's sailing days arrived, Harbour Master Captain Murchison and I had lunch with Captain Collier. As we shook hands to part, Captain Murchison said, "Put on a good show for us, Captain".

He had his wish fulfilled. As the last mooring line came off the bollard, the crew were swarming up aloft to loose sail. The tugs towed her away from number seven Circular Quay and swung her out into the entrance. By this time, all the fore and aft sails had been hoisted, and before she reached Bradley's Head, all square sail was set, the towline was cast off, and the very last merchant wind ship to leave Sydney's harbour sailed majestically out into the Tasman. It had been a brief glimpse into Sydney's most colourful era, the days of the tall ships and skilled merchant square-rigger sailors.

# The SHF birthday bash



By Hugh Lander

On the weekend of the 12-13 October the fleet really flew its colours high. Several thousand people, many of them in period costume, came down to Wharf 7 to join in with us the 100th birthday celebrations for two of our great ships, steam launch Lady Hopetoun and steam tug Waratah.

His Excellency the Right Reverend Dr Peter Hollingworth AC OBE, Governor-General of the Commonwealth of Australia addressed invited guests and members of the public at a short ceremony before he and Mrs Hollingworth unveiled commemorative plaques. The official party then left on Lady Hopetoun for a very pleasant harbour cruise before disembarking Dr and Mrs Hollingworth at Kirribilli House.

Sponsors and supporters of the fleet met on the quarter deck of James Craig for a light lunch as members of the public were invited to inspect James Craig and to see for themselves the various museum activities. A popular feature of the weekend was the free harbour





*Left: Crew man the yards (photo Mike Richter) and wharf scene. This page - 'Elvis' and chorus line and marines make smoke and noise .*

cruises on board Lady Hopetoun and the tours over Waratah. The weekend was a marvellous opportunity to share with the public one of Sydney's better kept (until now) secrets.

Over the two days there were marching bands, buskers cake and period costume competitions and other fun things for visitors to do. The NSW Colonial Marines dressed up in their red coats and white britches fired their ancient muzzle loading muskets and regularly surprised the crowd by firing their 6lb cannon.

All in all a great occasion for all and a wonderful chance to show off our fleet and bring new members into the fold. As well as being a chance to show off our wares we also made a net profit from the weekend's activities.

Well done to all and a mighty vote of thanks to all those wonderful volunteers from all parts of our great organisation. We could not do it without you but, in fairness to the small band of museum staff who put it all together - thank you too.



# Tacking - a guide to the evolutions

By Sally Ostlund

**T**acking a ship. How does one do it? What exactly are the procedures? In trying to understand the evolutions more clearly I consulted a few of sources which are of two basic types: First hand accounts by experienced mariners and manuals of seamanship.

Frank Worsley sailed on the Wairoa as a sixteen-year-old apprentice on an approximately 90-day voyage from Lyttelton New Zealand to London England sometime in the 1880s. The iron ship Wairoa was built in 1875 in Newcastle (England) by Palmers' Co. Her length was 204 feet, width 34 feet. She had 20 feet depth of hold and a gross registered tonnage of 1,057. She measured 190 feet WL to main truck; with a sky sail yard 20 feet long, a main yard 60 feet long, and a main sail 450 square yards of canvas in area. Her square sails clewed in to quarters (near to center of the yards). The New Zealand Shipping Company (N.Z.S.Co.) owned her from 1875 to 1894. When Worsley sailed on her there were 27 crew members, including captain and three mates, cook, steward, bos'n, carpenter, sailmaker and 4 apprentices. The following description of tacking a ship is taken from Worsley's account of his first voyage: First Voyage

## Preparing to tack

The Old Man....ordered the man at the wheel to "keep her clean full," and shouted: "All hands on deck! See all clear for going about" ...

I...pattered around the decks after Stringer, assisting him to coil the braces down clear on the deck, so that presently they would run out freely and not check the yards swinging as we tacked ship...

The helmsman was keeping her clean full - there was not even a wrinkle in the weather leach of the skysail, the gleaming snow-white bellies of sixteen square sails strained out to leeward, and the Wairoa was dancing along at 8 knots.

The watch had just unhooked the main-tack tackle and let go the main bowline.

The mate on the forecandle-head and the second mate in the waist sang out: "All clear for running."

"Stations about ship," came the an-

swering order from the master on the poop, and all hands took up their stations. The mate and his watch were on the forecandle-head, bos'n at the fore-tack, 'Doctor' [cook] at the fore-sheet, Chips and Sails and the starboard watch at the gear ready to haul the mainsail up, the second mate at the main-tack, third mate and an apprentice at the main-sheet, three apprentices at the spanker boom sheet.

## Beginning the tack

Captain Bungard made a slight movement of his forefinger to windward, in response to which the man at the wheel eased the helm down.

"Ready about," the mate reported.

"Lee, oh!" came from the master in high ringing tones which resounded all over the ship - a clear, unmistakable order.

The fore-sheet and head-sheets were let go.

Collins steadily but quickly hauled over on the spokes of the wheel until the helm was hard down. "Helms a-lee, sir," he reported to the master, as we apprentices hauled in smartly on the spanker.

The rudder, the release of pressure forward and the increased pressure of the spanker aft, all conspired to swing the ship's bows towards the wind.

For'ard the jibs were slatting, the sheet-blocks banging about and the fore-sail was thudding. As she came flying up into the wind all the sails flapped and pounded like thunder.

"Raise tacks and sheets!" The master's order rose clear above the tumult. Up went the clews, and the great main-sail flapped and fell back against the mast.

"Cro'jack [the lowest yard on the mizzen mast] braces," stringy hissed, and Tosswill and I fled to the main fife-rail, leaving him to handle the spanker-sheet with a little surreptitious help from Collins.

## Ship's head to wind

We reached our stations just as the ship came head to wind. Then we heard the jib chain-sheets rattling over the wire stays as the mate's watch hauled over to port and flattened them aft.

Before this was finished she had swung on until the wind was slightly on her starboard bow.

## Ship's head passed through to new tack

The sails on the main and mizen[sic] hung becalmed behind the sails on the foremast.

"Mainsail haul!" sang the master, and the lofty, vertical canvas planes of the main and mizen[sic] swung swiftly from the port tack to the starboard tack as the apprentices hauled madly on the cro'jack, racing the frenzied starboard watch as they hauled on the main braces [main and mizen mast square-sails are being hauled parallel to one another].

The sails flat aback on the foremast were boxing the ship's head off to the starboard tack.

## Ship making no headway but still on new tack

By this time the ship, unlike a fore and aft-er, had lost her way through the water - the helm had no effect, but the pressure of the for'ard canvas was making her head pay off correctly.

"Midships" was the next order from the master and Collins swung the wheel until the rudder was amidships.

As the Wairoa's head fell away from the wind, the after-sails began to fill.

The master was waiting for this, and the orders: "Fore bowline!" and "Let go and haul!" followed like pistol shots. The mates let go to starboard, both watches hauled furiously on the port fore braces, and the foreyards came around complainingly against the pressure of the wind.

Meantime the ship had gathered a little sternway and the master signalled to Collins, who had stepped across to starboard, to "put the helm down." When a ship has sternway the effect of the helm is reversed, so the Wairoa paid off more and the wind heeled her over to port. The foresails flapped full, the foreyards came around with a fullock and were braced sharp up.

The port watch hauled aft the foresheet and hove down the fore-tack, while the starboard set the mainsail in similar fashion and the apprentices hauled aft the staysail sheets.

## Ship sails off on new tack

The ship lost sternway, forged ahead and heeled over on the starboard tack.



*'And all I ask is a tall ship . . .*

In other words she had been put about. The master had succeeded in staying her.

## Nicholls' Seamanship guide 1908.

**Q.** How would you tack ship?

**Ans.** See all clear for going about, keep the ship clean full, and station the hands. When ready, put the **helm a-lee**, ease off or let go the head and fore sheets, and haul the spanker boom amidships. When from 1 to 2 points from head to wind, **Mainsail Haul**. Haul the head sheets over when the wind gets on the other bow, and ease off the spanker boom. When filling aft, fore bowline, **let go and haul**, and trim all sail for the other tack.

Notes on tacking

If a ship loses headway before she gets head to wind, she may miss stays. Hauling the after yards too soon deadens the ship's headway and makes her more likely to miss stays. On the other hand, if the after yards are not hauled before coming head to wind, they will not come round easily. The best time, therefore, is when the leeward side of the sails at the main are getting becalmed by those on the fore. The crossjack should be started just before the main....

**Q.** Why do you ease off the head sheets

and haul the spanker boom amidships when the helm is put a-lee?

**Ans.** By doing so I help the ship to come up in the wind.

**Note.** If the mainsail is not hauled when getting ready for going about, the tack and sheet must be raised as soon as it lifts, ready for swinging the yard.

**Q.** If ordered to see all clear for going about what would you look to?

**Ans.** I would have the weather jib sheets put over the stay and the slack hauled aft; also the weather foresheets out of the becket ready for hauling aft, mainsail ready for hauling up if necessary, and the braces clear for running with their ends hitched.

**Q.** When is a ship likely to miss stays?

**Ans.** When she has very little headway, that is, in very light airs; or again, in a strong breeze when under low sail and in a head sea.

## US Coast Guard

The US Coast Guard's training ship Eagle is a 1,816 ton, 295 foot steel barque, which has three masts and 22 sails, ten of them square. As many as 165 cadets can be trained at a time. I've taken the following excerpt from the book Eagle Seamanship, which is published by the Naval Institute press for the USCG.

"Commands for Tacking"

**Preparatory steps:**

Cadet OOD: "*All hands to sail stations*"

Mast Captains: "*fore (main, mizzen) manned*" when enough cadets are at the mast to handle sail

Cadet OOD: "*Ready about*" (this command means "prepare to tack")

Mast Captains: "*fore, (main, mizzen) manned and ready.*" This command should not be given until all lines that will run have been faked out; all...buntlines, bunt-leecheads...have been taken off their pins; all lines are manned; and everyone is ready to start the evolution

**Bringing ship into the wind:**

Cadet OOD: "*Helm's alee.*"

This is an informational command notifying all personal that the maneuver has begun.

Cadet OOD to mizzenmast captain: "*Haul the spanker boom amidships*"

Cadet OOD to helmsman: "*Right (left) rudder*" The rudder command is normally given as the spanker boom begins moving amidships. If timed correctly the spanker will continue to drive the ship forward as the turn upwind is made, and it also will provide a turning moment.

**Bracing the main:**

Cadet OOD to main and mizzenmast captains: *“Rise tacks and sheets”* This command is given when the weather leeches of the main square sails begin to lift. On this command the mainmast captain takes in the mainsail and douses the main staysails, and the mizzenmast captain douses the mizzen staysails.... The mizzenmast captain usually holds the mizzen staysails as long as possible to take advantage of their driving power and turning effect....

Cadet OOD to mainmast captain: *“Mainsail haul.”* This command should be given as soon as the weather leeches of the main square sails begin to back.

#### Head to wind:

Cadet OOD to foremast captain: *“shift the headsail sheets”*, or if the vessel has lost headway and may not come through the wind, *“lead aft the main sheets,”* in which case the headsails are reset flat on the old tack so that they will back and help swing the bow off onto the new tack.

Cadet OOD to mizzenmast captain: *“Ease the spanker.”* The spanker is eased out as necessary so that it will not hold the bow up into the wind. The cadet OOD should give orders to the helm as appropriate. If the ship’s head comes through the wind, the rudder should be eased to prevent the vessel from swinging too far off the wind on the new tack and losing ground downwind. If the ship comes dead in the water and then gains sternway, the rudder should be shifted to back the ship around onto the new tack.

#### On the new tack

Cadet OOD to foremast captain: *“Let go and haul.”* This command is given when the mainsails begin to fill. The foreyards are braced quickly around to the new tack....

Cadet OOD to mainmast and mizzenmast captains: *“Set the mainsail.”* On this command first the main and mizzen staysails are set and then the mainsail. No further commands are needed from the cadet OOD.

After all sails are set, each mast captain trims sail and fans the yards appropriately for the new tack.

Sources: [First Voyage in a Square-rigged ship](#) Cdr. Frank Worsley 1938 Lloyds of London

[Nicholl’s Guide to Seamanship](#)

[Eagle Seamanship](#)  
All Hands Aloft



## What happens to women who go to sea

*USS CONSTITUTION met and defeated HMS GUERRIERE, the first in a grand succession of victories in the War of 1812. It was during this ferocious battle that the seamen, astonished at the way the British cannonballs were bouncing off the Constitution’s hull, cried out - “Her sides are made of iron!”; Thus, her nickname, “Old Ironsides.” What was not known at the time was the fact that a US Marine, serving aboard Old Ironsides as George Baker, was actually Lucy Brewer. Eventually the Marine Corps reluctantly acknowledged that Lucy Brewer was in fact the very first woman marine. It would be over one hundred years before the Marine Corps seriously began to recruit women - August 1918*

## James Craig restoration wins two World Ship Trust awards

*From Hugh Lander –*

The whole world has been watching the progress of our ship – not only the recovery and restoration but also the training of our crew and, more recently our commercial operations.

The vision and dedication which have culminated in the unique achievement which has seen James Craig sail free again have made an impact on the maritime world in general. The London based World Ship Trust has recognised the importance of the project by bestowing upon it two of its most important awards.

Australian Heritage Fleet’s Patron and James Craig major benefactor, Robert Albert’s contribution has been recognised through an Individual Award for his “significant and exemplary role in support of the James Craig restoration and other maritime heritage causes”. James Craig was honoured through the granting of the Trust’s prestigious Maritime Heritage Award.

As a result she joins other distinguished vessels such as - among others - Mary Rose (UK 1510), Vasa (Sweden 1626), USS Constitution (USA 1797), Great Britain (UK 1843), Star of India (USA 1863), Cutty Sark (UK, 1869) and Polly Woodside (Australia 1885).

These highly sought after awards must be presented by the Head of State of the recipient country.

They will be presented by His Excellency the Right Reverend Dr Peter Hollingworth, Governor-General of the Commonwealth of Australia at a dinner to be held on the evening of 7<sup>th</sup> March 2003.

This dinner will be the climax of Sydney Harbour Week which will run from 2<sup>nd</sup> to 9<sup>th</sup> March next year and which will be run under the auspices of the Sydney Harbour Foreshore Authority.



*A great time was had by all on our recent trip to Broken Bay. The sail up was one of our best - and wait till you see*

*the magnificent photos taken of us on the way from the helicopter by Ron Israel during the trip*



*This low resolution (72 dpi) PDF version of James Craig Crew News is optimised for screen display with small file size (which also minimises email problems). Printouts from this version will look "soft." If you would like to do good quality printouts from your computer (pictures look much better) a higher resolution (300dpi) PDF is available by contacting [webman1@optushome.com.au](mailto:webman1@optushome.com.au)*

Visitors -

## David van Kool

Among the various visitors to the ship there has been a French couple who have been to Belem, Kiwis who know Edwin Fox plus many others familiar with our ship in various stages of recovery, from Hobart to her present sailing splendor and at wharf 7.

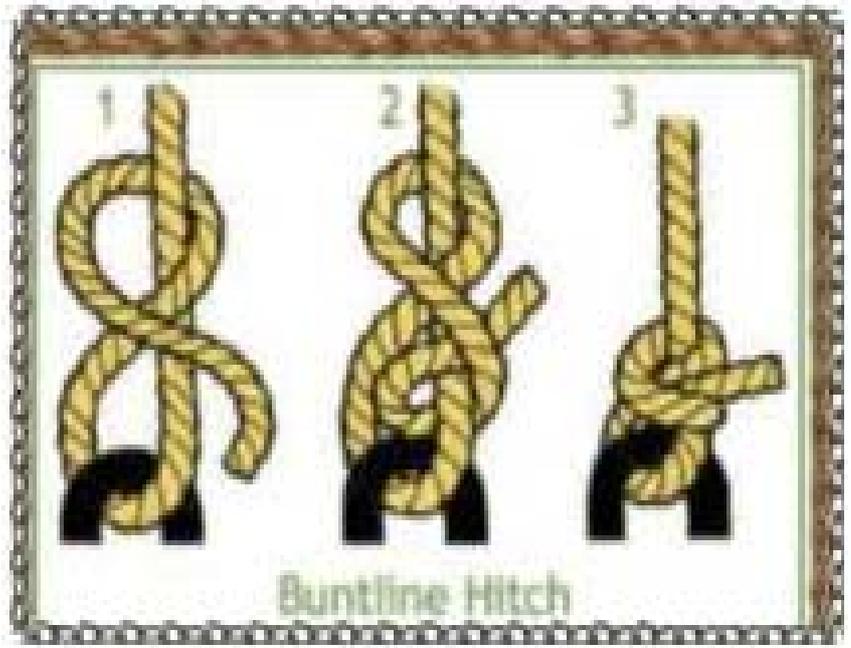
The most interesting to date has been the pair of Little Penguins coming alongside on several occasions during August. The fishing must be good because they have made a lot of noise and are more visible than normal; sufficiently so to point them out to other visitors to the ship.

This is the best site that I have found for square-riggers

<http://www.infa.abo.fi/~fredrik/sships/square-rigging.html>

check out. [Boys Manual of Seamanship and Gunnery](http://www.pbennyon.plus.com/B_S_M/Contents.html) dated April 1871 (Royal Navy) [http://www.pbennyon.plus.com/B\\_S\\_M/Contents.html](http://www.pbennyon.plus.com/B_S_M/Contents.html)

- Peter Davey



The buntline hitch gains its name because it is used to help in furling the sail's bunt (belly), a long line was tied into a cringle (loop) in the boltrope on the foot. The line is then led aloft to the masthead and then through a block down to the deck, where it was pulled to gather the sail as sheets were eased. The knot securing this line to the cringle had to be small, so there was little chafe, and also firmly knotted—it was too far aloft to be retied if it opened up.

Its a dog's life . . .



A means of measuring degrees—arms must be fully extended.

Hand at full arm's length, fingers widely spread	22 degrees
Thumb turned in	15 degrees
Closed fist	8 degrees
From second knuckle to edge of fist	3 degrees
Between two centre knuckles	2 degrees

These vary slightly like your personal dimensions and for accuracy should be accurately checked by each individual with a compass.

A small article that may be of interest to all of us who draw lookout duties. Have checked it out with a compass and it is pretty accurate. It is part of a number of bush navigation tricks to telling the time etc. These may be of interest later.  
Morrin