Stormy weather

On storms, shipwrecks and lighthouses

Text: **Mandi Smallhorne**

Richard Nesbitt was a boy of 13 travelling with his mother and younger brothers and sisters aboard Her Majesty's Steamer Birkenhead. They were on their way to meet his father, a quartermaster at Algoa Bay on the frontier of the empire in the eastern Cape of what we now call South Africa. In the dead of night on 26 February 1852, on a perfectly calm sea, the Birkenhead struck a partially submerged rock a mile offshore of what is known as Danger Point, half a day's steaming time from Cape Agulhas, the southernmost tip of Africa.

Captain Salmond, immediately woken by the screeching jolt of metal on rock, headed for the bridge and gave the order that has become immortalised in naval tradition: "Launch the lifeboats, women and children first." Richard, his family and every other woman and child aboard survived the disaster, but 445 out of a total 638 on board perished, all men.

(*Lighthouses: The Race to Illuminate the World*, Toby Chance and Peter Williams, New Holland Publishers 2008)

The rough seas off South Africa's coast prompted Bartholomew Dias to call the Cape Cabo das Tormentas (Cape of Storms) – John II of Portugal renamed it Cape of Good Hope in one of history's early PR manoeuvres.

What causes storms at sea and on land?

Depression

The beginning of a storm, over water or land, occurs when a centre of low atmospheric pressure develops, surrounded by a high pressure system. (For Sky and BBC habituees, in the

If you can't find *Lighthouses: The Race to Illuminate the World* in your local bookshop, order it from *amazon.uk*

UK weather reporters tend to call these 'depressions'.)

What sets off a low pressure system? It could be features of geography or differences in temperature, influenced by a complicated stew of other factors. Essentially, wherever the air is warmed and starts to rise – over a warm sea or a hot desert, for instance – as it reaches the upper layers of the atmosphere, it flows away, reducing the mass or weight of the air at the surface (that's why it becomes 'low' pressure).

This sucks in air from outside the low pressure system, with predictable results – rather like watching water flow away down the plughole, it causes turbulence (winds). The rising moist air also cools as it reaches the upper atmosphere, and that cause clouds to form. And within the clouds, a kind of static build-up may develop, leading to the thrilling flash-and-boom of a thunderstorm.

Low pressure areas may develop anywhere on the planet. It often happens when a feature causes warm air and cold air to meet. One example is cold air from the North Pole sweeping down and clashing with a warmer body of air. Another would be places where the atmosphere is interrupted by mountains – in North America, for example, those harsh storms that get reported on the news often form on the leeward side of the Rocky Mountains.

In the doldrums

There's one part of the globe that's a nursery for major storms. It's a belt of low pressure that girdles the world at the equator. The Intertropical Convergence Zone (ITCZ) is also known as the Monsoon Trough or the Doldrums. This is, of course, the part of the planet which gets the most warmth from the sun. The consequence is rising, warm, moist air: low pressure. Regions in the heart of this zone get as much as 200 days of rain a year, and wind is light or non-existent. Sailors in wooden ships dreaded getting becalmed in the hot, humid doldrums.

Storms and warm ocean currents from the ITCZ redistribute warmth from the equator and the tropics around the globe. South Africa is quite far south of the equator, but the Tropic of Capricorn runs through our country – it passes through the Kruger National Park, and there's a Tropic of Capricorn monument at Ga-Phasha Village, Botlowa, in Limpopo.

So our weather is obviously influenced by the ITCZ. We also have warm ocean currents (the Mozambique and Agulhas currents) pushing south from the equatorial region, and then just south of the southern tip, we have the sub-tropical convergence zone, where warm water pushing south meets the cold water coming up from the Antarctic.

Result? A turbulent, stormy sea swirling along a rocky coast line. And lots of shipwrecks over the years.

There's a light…

This brings us back to the Birkenhead, one of our most famous shipwrecks. Not so long ago, there were no airplanes to fly people and products round the world. One of the major trade routes, before the Suez Canal was dug, took sail and steam ships around the Cape, en route to India or the Spice Islands and back again.

So many ships fell victim to our coasts that the authorities became concerned. They needed lighthouses to guide ships and steer them clear of places like Danger Point. But the technology was very poor and the lights were unreliable. A race began between the French and the British to develop lighthouses which could do the job effectively. At the heart of this race was James Chance, a man who was like the Bill Gates or Steve Obs of the day.

He was a man who had the skill, the knowledge, the curiosity, and, importantly, the backing from glass manufacturers Chance Brothers, to work away at perfecting lighthouse optics. His direct descendant, Toby Chance, lives in South Africa. He was inspired by a visit to Slangkop and Greenpoint Lighthouses (both equipped with Chance Bros Lenses) to write the story. In *Lighthouses: The Race to Illuminate the World*, he and co-author Peter Williams tell a fascinating yarn.

"Every era produces technology which is needed just at the right time," he told *Skyways* in an exclusive interview. "In the mid 19th century, steam ships propelled global trade into a new dimension, and without effective lighthouses to warn ships' captains of dangerous rocks and reefs as they navigated in and out of ports, the economic costs – lost cargo, crew and ships – would have inhibited this trade.

James Chance, and the firm he led, overcame enormous technical challenges to give Britain's growing empire the optics needed for casting a beam of light far out to sea, essential to safe navigation. Lighthouses were points in a network of communication just like Internet servers are today – the only difference is that 150 years ago, physical movement of goods by sea was the predominant form of trade while today the transmission of digital information across fibre optic and satellite networks are the drivers of economic exchange. In this sense, Chance Brothers facilitated 19th century globalisation just as

Toby Chance makes the history of lighthouses come to life

IBM and Intel have done, by developing the core technology."

The development of the technology was clearly urged on by the competition between French and British developers. "Lighthouse technology began to advance rapidly from the 1780s when parabolic reflectors became widely used, then in the 1820s with the introduction of the dioptric lens. France and Britain have competed for territory and prestige for centuries and lighthouses was one of the theatres on which this battle was acted out," says Chance.

"Interestingly, collaboration was as important as competition and the manufacturers – Chance Brothers in Britain and three or four French firms – went about their business in a very gentlemanly fashion. Demand outstripped supply for much of this time, because there were so few manufacturers able to make the optics, though the Board of Trade held prices down by insisting that Chance Brothers achieve parity with the state-aided French firms.

Competition was as much a matter of pride as it was improving the bottom line – most notably at the trade fairs and exhibitions where the firms came head to head. When Chance Brothers was awarded the Grand Prix at the 1867 Paris Exhibition over their French rivals, James Chance felt a deep sense of satisfaction that he had beaten the French at their own game. The fact that the lighthouse business was still unprofitable was a secondary consideration but a source of great concern to his more business-minded partners!"

Ethics in business

The book tells the tale of a company as much as a technology. One of the things I found striking was the level of concern Chance Bros showed for their staff's welfare. I asked Chance what was behind this. "The men at the helm of Chance Brothers were enlightened enough to realise that the success of their business depended on a secure stream of educated, healthy and loyal employees," he explained.

"Being in a hi-tech enterprise, without an abundant source of skilled workers, they had to build their own schools, establish provident funds and provide job security so that the workforce could continue to invent and manufacture products to keep the company competitive. Underlying this, though, was a belief – a faith – in Christian ethics and the betterment of one's fellow men. Privilege brought with it a responsibility to give back to the community, seen in the schools, churches, gardens and recreational facilities that Chance Brothers – and other firms in Britain – build for their workforce and their families.

This was a time when the state played a minimal role in the lives of people – remember, hardly any of them (and certainly not women) had the vote. Paternalistic employers, being closer to the daily needs of their workers, took on that role and successful businesses were those that demanded loyalty, hard work and the highest quality in return for decent wages and social infrastructure."

The ordinary working folk at Chance Bros made the lenses for 36 of the 50-odd lighthouses that dot our coast. Robben Island's Lighthouse was the first, Chance tell us, with a Chance Bros lens installed in 1863: "Nelson Mandela, imprisoned here from 1963 to 1990, often took walks up to the lighthouse and gazed the six or so kilometres over to Cape Town, imagining a different life.

"A painting of the Robben Island lighthouse by Mandela suggests a fondness for this beacon of the sea, but he surely did not celebrate its centenary as he began his twenty seven years of incarceration there."

Lighthouses: The Race to Illuminate the World is well-written, absorbing and surprisingly fascinating for a book on a rather technical subject. (My husband, for one, had his nose in it every chance he could get, unable to put it down.) The frequent references to lighthouses along our coast inspire a desire to know more. We'll be following up with occasional articles in *Skyways* on significant lighthouses, so keep reading.

"Man the lifeboats!"

Some of South Africa's most memorable shipwrecks include:

- **The Arniston, an East Indiaman ship wrecked off Cape Agulhas on 30 May 1815, with the loss of 372 lives, and just six survivors.**
- **The Doddington, which hit a rock in Algoa Bay in the winter of 1755. Of her 270 crew and passengers, 23 survived and were castaway on Bird Island, where they lived off fish, birds and their eggs for seven months. The gold and silver on board was looted by Port Elizabeth treasure hunters in modern times, leading to a lengthy court case.**
- **The SS Waratah, an Australian steamship, was travelling from Durban to Cape Town in July 1909, when she simply disappeared with all 211 crew and passengers. No clue to what happened has ever been found.**
- **The Treasure, an oil tanker which sank off the West Coast on 23 June 2000, triggering what was said to be the biggest penguin rescue effort ever attempted.**