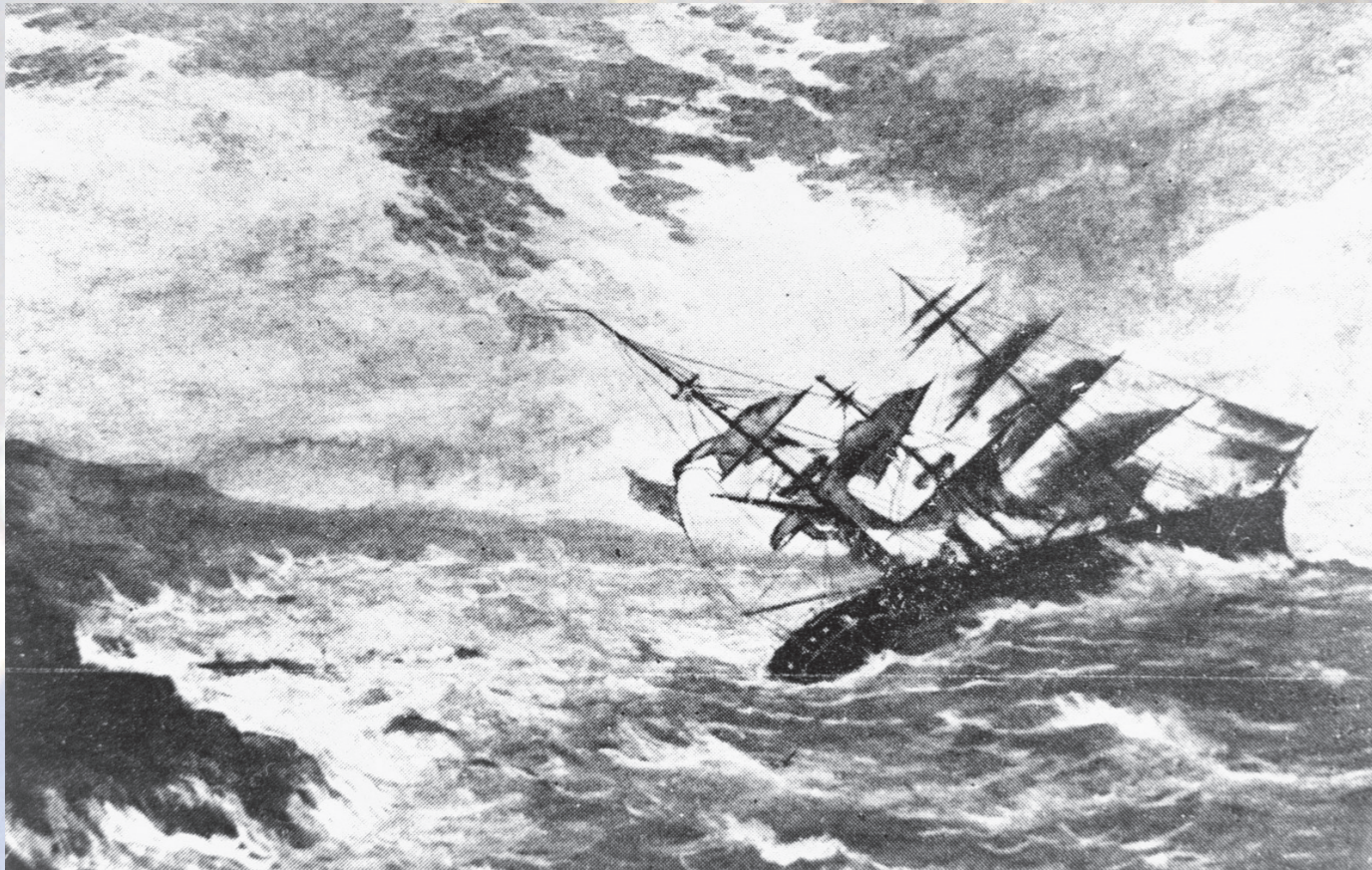


He invented the weather forecast

By Steen Blendstrup 2012

On August 1, 1861, the world's first weather forecast appeared in *The Times*. Today, few people know the originator of the forecasts, Robert FitzRoy. Perhaps because his passenger aboard the HMS Beagle, Charles Darwin, stole the limelight...

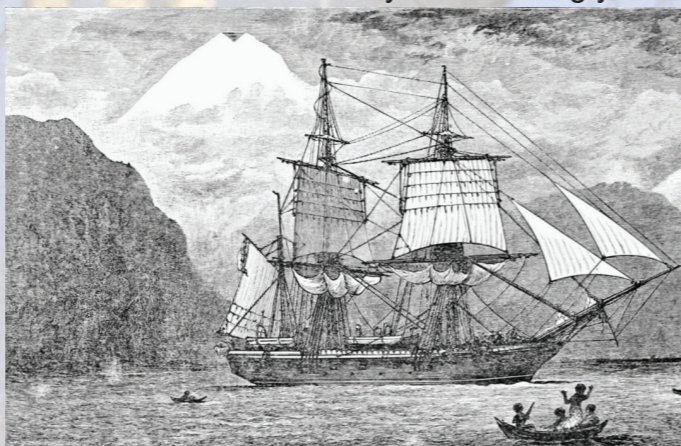


The shipwrecking of steam clipper *Royal Charter*. Source: State Library of Queensland.

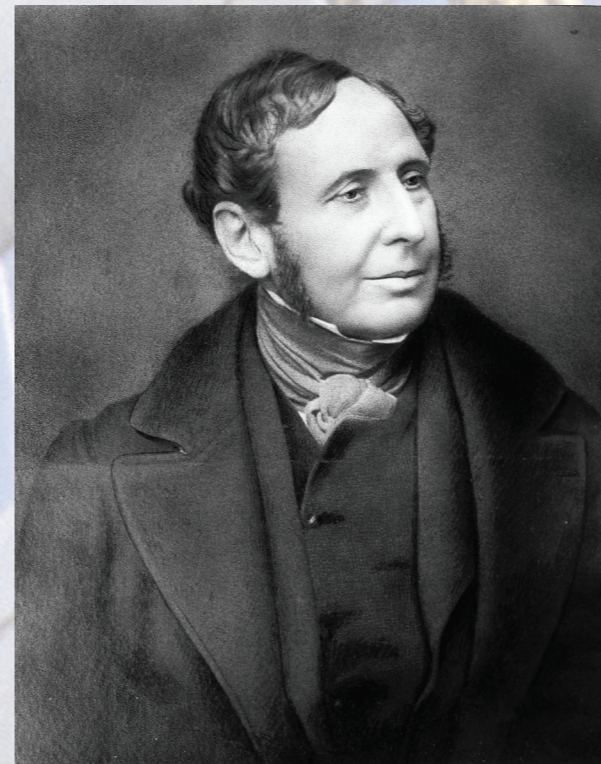
In October 1859, a very strong storm struck the British Isles. According to estimates at the time, around 200 ships sank in the storm, and especially the sinking of the clipper *Royal Charter* caused a stir. It was a modern ship with a steel hull and auxiliary engine, but still, it was wrecked on the Welsh coast and about 450 people lost their lives. The shock was exactly what Robert FitzRoy needed; he had headed the meteorological office for five years and now he got the support to introduce a warning system. Using the telegraph, air pressure and weather were now reported daily from measuring stations all over the British Isles... and already the following year *The Times* began to carry the day's weather forecast.

Captain on HMS Beagle

Science developed enormously in the 19th century. The world was mapped and everything was measured and weighed. The English navy often led the way in research, so the curious Robert FitzRoy decided early to pursue a career in the navy. At the age of 12, he was admitted to the *Royal Naval College* in Portsmouth, became a cadet and rose through the ranks. In 1828, he was a signal lieutenant for Admiral Otway and was anchored in Rio De Janeiro when fortune smiled upon him. The captain of HMS Beagle, drawing navy charts of Tierra del Fuego in South America, had committed suicide in a fit of depression.



HMS Beagle in the Straits of Magellan. Source: Wikipedia



Robert FitzRoy as Governor of New Zealand 1843-1845. Source: Robert Fitzroy (1805-1865). Schmidt, Herman John, 1872-1959 :Portrait and landscape negatives, Auckland district. Ref: 1/1-001318-G. Alexander Turnbull Library, Wellington, New Zealand. /records/22822133

The admiral decided to give the young lieutenant the command, and in the following years FitzRoy carried out his mission with great success, returning home to England in 1830.

When, in 1831, he was confirmed as captain of the HMS Beagle and was getting ready to set out on a new expedition, he felt need for some cultured company. Preferably from a colleague interested in science. That is how Charles Darwin came along on the expedition.

While posterity best remembers Darwin because of his later great work with *The Origin of Species*, Robert FitzRoy gained greater honor in his time.

His exploration of Tierra del Fuego, surveying of nautical charts and practical experiments with various barometers were things that could be used.

Storm warning

While Darwin continued his research and was caught in the heated debate about evolution versus creation (which is still going on in some places), FitzRoy continued his career in government service, including governor of New Zealand. When he retired from the Royal Navy of health reasons, he was given the position of head of the meteorological office in 1854. The storm of 1859 made the authorities realize the benefits of meteorological studies and warnings. A network of measuring stations was set up in the British Isles to daily telegraph air pressure and wind conditions. So-called storm glasses (also known as FitzRoy's storm barometers) were set up in many ports so that fishermen could be warned of dangerous weather and stay in port. FitzRoy was an excellent scientist, and his *Weather Book* (1863) was by far the most advanced work on meteorology of his time. He succeeded, among other things, in debunking several pseudoscientific theories about weather conditions – while, on the other hand, remaining biblically faithful in contrast to the theory of evolution.

World fame

It is ironic that Robert FitzRoy, who achieved the appointment of vice-admiral, himself suffered from depression and – just like his predecessor on HMS Beagle – took his own life in 1865. Although Darwin may overshadow the weather-skilled vice-admiral, he is not completely forgotten. On the border between Argentina and Chile, there is a Mount FitzRoy named after him, in Western Australia there is a FitzRoy River, the town of FitzRoy in the Falkland Islands and Port FitzRoy in New Zealand. He has also given his name to a South American pine tree and a species of dolphins. As recently as 2010, New Zealand's *National Institute of Water and Atmospheric Research* named their new supercomputer FitzRoy in honour of the old meteorologist.



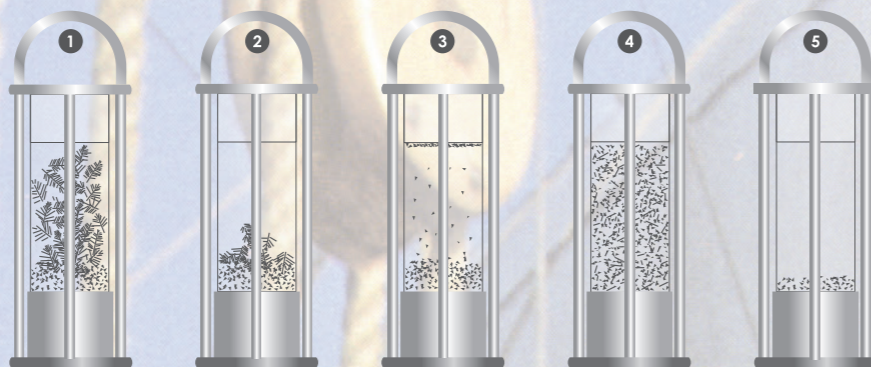


The Stormglass

In addition to the standard mercury barometer, Robert FitzRoy also experimented with a so-called storm glass. The glass contains a liquid of distilled water, ethanol, saltpeter, ammonia and camphor, which, depending on the conditions, is clear, turbid or filled with crystals. By observing the relationship between the different crystals and the weather, he was able to set up a warning system, e.g. clear liquid = clear weather, turbid liquid = cloudy/foggy, turbid liquid with stars = thunderstorm, crystal threads on the bottom = frost, crystal threads on the top = strong winds.

After the 1859 storm, many fishing villages along the British coast had storm glasses installed so that fishermen could stay in port if a storm was approaching. The owners of the fishing boats were not enthusiastic and by keeping their fishing fleets in port, they pressured the authorities to abolish the scheme after Fitzroy's death. However, they had not taken into account the ordinary fishermen who considered FitzRoy a hero because his storm glasses saved their lives, so the storm glass warnings were later reintroduced.

In the 20th century, the storm glass fell out of use in most places, but by pure chance the Danish designer Stig Larsen came across it when he docked in the Hebrides on a voyage across the North Sea. He got the 'recipe' from the local fishermen and took it home. So since 1982 the Stormglass has been manufactured - exactly according to Robert FitzRoy's recipe - by Stig Larsen and since 2004 the company Delite in Denmark. FitzRoy did not know why the liquid actually works, and a 100% sure explanation has not yet been found.



1. Fernlike crystals are building up
2. Fernlike crystals are disappearing
3. Star crystals are falling down
4. Crystals all over
5. Clear liquid

cold and stormy
warmer
frost
rain
fine and dry

The fernlike crystals will be highest in the windward side.

Stig Larsen, who introduced the Stormglass to the Danish people in 1982, believes that the sun's activities, the creation of sunspots which are a sign of solar storms, also have an influence on the Stormglass' predictions. Stig Larsen usually compares the weather's impact on the Stormglass to how weather changes affect people with arthritis. An arthritic person can usually predict changes in the weather, especially when the weather is getting worse.

HMS Beagle at the Galapagos Islands.
Painting by Ronald Dean 1975.
Reproduced here (cropped) with kind permission from Ronald Dean and Richard Johnson, the owner of the painting.

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Peter with his Stormglass designed 2010

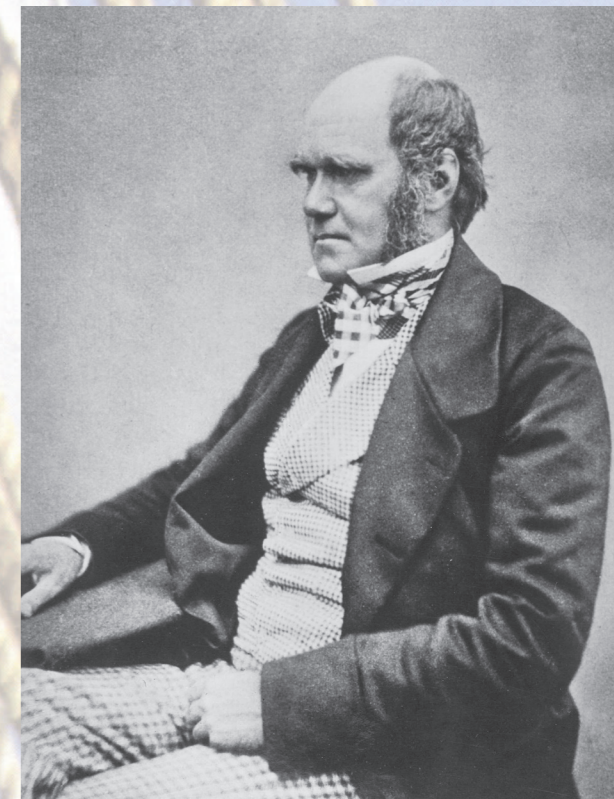


FitzRoy and Darwin

By all accounts, the captain of the HMS Beagle and Charles Darwin generally got on well with each other. On one occasion, however, when they were discussing slavery, Robert FitzRoy exploded and banished poor Darwin from his company (and that was no easy situation on a ship). FitzRoy soon apologized gracefully, however, and the friendship continued - although slavery was never discussed again.

Darwin and FitzRoy had a major disagreement over the theory of evolution. Before the expedition on the HMS Beagle, FitzRoy had indeed been influenced by modern theories about the age of the Earth and found deposits that supported these theories. However, after his return - and perhaps influenced by his religious wife - FitzRoy remained faithful to the literal interpretation of the Bible and interpreted seashell deposits high in the mountains as evidence of the Flood. He spoke out publicly against Darwin's theories in 1860.

Despite their disagreement, Darwin supported FitzRoy's admission to the scientific society, *The Royal Society*, and after FitzRoy's death, when it was discovered that he had spent his entire fortune on research, Darwin personally made a contribution of £100 (over DKK 60,000 in 2012 value) to a fund for the benefit of his widow.



Photograph (ca. 1854) of Charles Darwin 1809-1882. Source: Wikipedia



Robert FitzRoy 1805-1865. This photo is from a painting belonging to University of Greenwich (Old Royal Naval College). Source: Wikipedia.

Hot coffee

Although Robert FitzRoy had risen through the ranks, he was also born to command. He was descended from Charles II Stuart, his father was a general, and his mother was the half-sister of Viscount Castlereagh, the English Foreign Secretary. In other words, he grew up in the highest circles of English society.

Whether he had inherited mental instability from his mother's side of the family is difficult to say. The fact is that Castlereagh committed suicide with his razor. As a captain, FitzRoy's sometimes violent outbursts of anger earned him the nickname *Hot Coffee*. But there is no doubt that he was aware of the pressure that loneliness as a captain put on him, and that is why he wanted company on the expedition of HMS Beagle - and invited Charles Darwin aboard.

Just as Robert's half-brother became governor of New South Wales, Robert himself was appointed governor of New Zealand in 1843. However, he showed respect for the agreements made with the native Maori, which did not make him popular with the settlers, so FitzRoy was called home again. Here he served for a few years as captain of a frigate, before he was given responsibility for the meteorological office.

Robert Fitzroy was married twice and had five children in total. Of these, his son Robert O'Brien also joined the navy and ended up like his father as a vice-admiral.

After a long struggle with depression and generally poor health, Robert FitzRoy took his own life on 30 April 1865.

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