



## “Additional Observations” of a Seventeenth Century Seafarer: William Dampier

Marine meteorological logbooks submitted to the Met Office contain a wealth of information. Of course, of primary interest to the meteorologist and the climatologist are the weather observations they contain, but the ‘Additional Observations’ of meteorological phenomena and marine fauna and flora have similar significance for those whose interests lie within the variety of subjects in these areas.

In this latter category, there is little now reported by shipborne observers that has not been seen before—waterspouts, bioluminescence, birds, fish, storms, whales, dolphins, to name but a few topics — that can be commented upon or identified by specialists, with a high degree of confidence. To aid such analyses, today’s specialist can call upon the collective knowledge of yesteryear, drawing upon the observations, research and findings of the past.

However, when the unusual does occur, whether it be (in the case of natural history) a ‘common’ species apparently no longer present in a previously favoured area, or perhaps a ‘rarity’ seen in abundance, a large amount of interest can be generated, and

specialists will want to account for the anomaly, or reach a conclusion about the identity of a species.

### William Dampier

Imagine, then, a time when the far corners of the globe were still being discovered; when new lands were claimed and mapped in the name of sovereignty (and fought over for years afterwards); when the locations of sea areas and land masses had still to be fully understood; when seafarers had only a rudimentary knowledge of meteorology; and when there was only minimal collective knowledge upon which to draw when faced with unidentified phenomena and wildlife in far-flung places.

Welcome to the mid-seventeenth century — and enter one William Dampier. Born around 1651 in Somerset, he was apprenticed as a boy to a ship’s master in Weymouth, and throughout an eventful life during which he was by turns at first a trader, a plantation manager in Jamaica, and then a log-cutter in Mexico, he found his greatest adventure sailing (as a private individual) with English buccaneers. Travelling with them provided food and shelter of sorts and also a convenient means by which to satisfy his inclinations to see the world and, between 1679

and 1691 he managed, unintentionally, and by a rather tortuous route to circumnavigate the globe.

Dampier’s intention was, basically, to describe everything he came across in his travels — had there been a tourism industry in his day, then his observations would probably have been the equivalent of the detailed travel guides available today. In the rest of this article, we unashamedly dip into Dampier’s journals to reveal some of the accounts from his own Additional Observations.

### ‘Red lobsters’

In mid-November 1683, the buccaneers sailed from the “Coast of Guinea” heading for the Straits of Magellan via the Sibel de Wards [Falkland Islands] where they would look for fresh water; Dampier found “nothing worthy remark” until 28 January 1684 when, 10 days out from the islands, he noted some flying-fish. After that, he says:

“January 28, we made the Sibel de Wards, which are 3 islands lying in the lat. of 51d. 25m. South, and 57d. 28m. West Longitude from the Lizard in England, by my account.



“The Day that we made these islands, we saw great shoals of small lobsters which coloured the Sea red in spots for a Mile in compass, and we

drew some of them out of the Sea in our Water-buckets. They were no bigger than the top of a Man’s little finger, yet all their Claws, both great and

small, were like a Lobster. I never saw any of this sort of Fish naturally red but here. For ours on the English Coast, which are naturally black, are not red till they are boiled. Nor did I anywhere else meet with any Fish of the Lobster-shape so small as these, except for maybe Shrimps or Prawns.”

*In 1696 a marine fish catalogue was published in which was illustrated many fish and other marine species known at the time. Whether or not the illustrations were based upon whole or parts of physical specimens, first-hand accounts or just hearsay is not known, but these three examples serve to illustrate that the age of sea monsters was still very much alive.*

*In (a) is an apparent representation of a Dorado, frequently reported by modern shipborne observers.*



(a)

(NOAA Central Library)

*A Hammerhead shark seems to be shown in (b) although this example has been given a defined neck for some reason’ a tell-tale ‘seam’ around the neck almost suggests that the artist was presented with only part of the shark, and was therefore forced to invent the remainder of the body!*



(b)

(NOAA Central Library)

*In (c) the reader is best left to judge what the artist is trying to show - fish, bird or mammal?*



(c)

(NOAA Central Library)

Dampier seems to have been at a loss to further identify these creatures. However, if he had had prior knowledge of the richness of life found in the cold waters of the South Atlantic Ocean, he might have been able to identify his ‘red lobsters’ as possibly either the squat lobster (*Munida subrugosa*) or a closely related species, or else the late larval stage of crabs. Around the Falkland Islands the adult squat lobsters have claws, swim and form swarms. The crabs in late larval stage also swim, have claws and swarm but their abdomens do not fold underneath as they do in the adult form.

**On the character of the Pacific Ocean**

In April 1684, his ship was sailing up the western coast of South America, and Dampier recorded his thoughts about the conditions found in the South Pacific Ocean:

“Our passage now lay along the Pacifick Sea, properly so called. For though it is usual with our Map-makers to give that Name to this whole Ocean, calling it Mare Australe, Mare del Zur or Mare Pacificum, in my Opinion, the Name of the Pacifick Sea ought not to be extended from South to



North farther than from 30 to about 4 Deg. South Latitude, and from the American Shore Westward indefinitely. For with respect to my observation, I have been in these parts 250 Leagues or more from Land, and still had the Sea very quiet from Winds. For in all this Tract of Water of which I have spoken, there are no dark rainy Clouds, though often a thick Horizon, so as to hinder and Observation of the Sun with the Quadrant. And in the Morning there is frequently hazy Weather, and thick Mists, but scarce able to wet one. Nor are there in this Sea any Winds but the Trade Wind, no Tempests, no Tornadoes or Hurricanes (though North of the Equator, they are met with in this Ocean as well as in the Atlantick), yet the Sea itself, at the new and full of the Moon, runs with high, large, long Surges, which never break out at Sea, and so are safe enough, except for where they fall in and break upon the Shore and make it a bad landing.”

### **The Galapagos Islands**

The following month the buccaneers, having captured four ships, diverted their course towards the Galapagos Islands in order to avoid trouble with the authorities in Trujillo (Peru), and Dampier’s ship plus one other “anchored on the East-side of one of the Easternmost Islands, a Mile from the shore, in sixteen Fathoms Water, clean, white, hard Sand”. He believed, however, that the English hydrographers had not charted the islands’ location accurately, for he commented:

“The Gallapagos Islands are a great number of uninhabited Islands, lying under and on both sides of the Equator. The Easternmost of them are about 110 leagues from the Main. They are laid down in the Longitude of 181, reaching to the Westward as far as 176, therefore their Longitude from England Westward is about 68 degrees. But I believe our Hydrographers do not place them far enough to the Westward. The Spaniards who first discovered them, and in whose draughts alone they are laid down, report them to be a great number stretching North-West from the Line, as far as 5 degrees N., but we saw no more than 14 or 15. Some of them are 7 or 8 Leagues long, and 3 or 4 broad.”

He noted that the islands were not excessively hot even though they lay almost on the Equator, and also observed a continual fresh sea-breeze all day. Perhaps he was unwittingly aware of the effects of the yet undiscovered Peru (or Humboldt) Current that brings cold Antarctic waters northwards along the length of South America to wash close to the Galapagos Islands before becoming part of the South Equatorial Current.

### **Local effects of strong solar heating**

Dampier also made observations of meteorological phenomena although he probably did not understand the physics behind them. While off the Pacific coast of Nicaragua in early August 1685, the buccaneers in an attempt on the port that then served Leon, had left their ships manned by skeleton

crews, and Dampier accompanied 520 men as they attempted to paddle 31 large canoes to the harbour “about eight Leagues from shore” [in this case one league is taken to be the old English measurement equivalent to approximately 2.2 km]. He says:

“We had fair Weather and little wind till two o’clock in the Afternoon, then we had a Tornado from the shore, with much Thunder, Lightning, Rain and such a gust of Wind that we were all likely to be foundered. In this extremity we put right before the Wind, every Canoe’s Crew making what shift they could to avoid the threatening danger...The fierceness of the Wind continued about half an hour and abated by degrees, and as the Wind died away, so the fury of the Sea abated. For in all hot countries, as I have observed, the Sea is soon raised by the Wind and as soon down again when the Wind is gone. Therefore there is a Proverb among Seamen: Up Wind, Up Sea, Down Wind, Down Sea.”

Even though the sea was like a millpond by the evening, the canoes could not make land before darkness, and so they stayed offshore, being about 10 km away by daylight. Intending to stay offshore until darkness once more, the buccaneers sat out the daylight hours in the tropical heat, but during the afternoon they were hit by another tornado more fierce than the one experienced during the previous afternoon.

In both cases the term ‘tornado’ is taken to mean a sudden localised thunderstorm rather than either the land-based phenomenon that bears



the name today, or tropical revolving storms. The cause might well have been intense solar heating and consequent convection which is a common trigger for the formation of thunderstorms around the time of maximum temperatures, particularly in the tropics. Had Dampier been able to carry a thermometer with him in his travels, he might have worked out for himself the connection between strong solar heating and the incidence of local storms, and perhaps the buccaneers might have thought twice before committing themselves to their long-distance paddle. However, they did literally live to fight another day.

### Orographic cloud

As with the aforementioned events that Dampier obviously could not fully explain, he met with a similar puzzle when he noted what we know as orographic clouds. Whilst the ship in which he travelled was in the North Pacific Ocean in May 1686 searching for the island of Guam in order to find much-needed food and water, hopes of a landfall were raised when some light rain was experienced, and he noted that "... the Clouds settling in the West were an apparent token that we were not far from Land." He had watched how low clouds particularly seem to move quite rapidly, but that sometimes clouds seen at the horizon do not move or change very much and could be associated with land. The

phenomenon was evidently of interest to him because he also comments "I have often taken notice of it, especially if it is high



(R.A. Ketchington)

Land, for then you shall have the Clouds hang about it without any visible Motion."

### A typhoon, bioluminescence and corposants

In June 1687, Dampier and his 'companions' arrived at the "Island Prata" [Dongshaodao, South China Sea] where they stayed for about five weeks. Although having little understanding of meteorology as a science, Dampier and the seamen of his day must have made use of a collective knowledge relating to the occurrence of particular natural phenomena and their association with subsequent meteorological events, and could act accordingly. At the beginning of July, Dampier had noted that the wind "had been whiffing about from one part of the Compass to another for two or three Days, and sometimes it would be quite calm"; as such behaviour was often a warning of a 'tempest', the ship

was put to sea as a precaution. Sure enough, two days later the storm arrived. Dampier's journal reads:

"But the day ensuing, which was the 4th Day of July, about Four o'clock in the Afternoon, the Wind came to the N. and freshened upon us. The Sky looked very black in that quarter, and the black Clouds began to rise apace and move towards us, having hung all the Morning on the Horizon. This made us take in our Top-sails, and the Wind still

increasing, about Nine o'clock we reefed our Main-sail and Fore-sail. At Ten o'clock we furled our Fore-sail, keeping under a Main-sail and Mizzen. At Eleven o'clock we furled our Main-sail and ballasted [steadied] our Mizzen, at which time it began to rain, and by Twelve o'clock at Night it blew exceeding hard, and the Rain poured down as through a Sieve. It thundered and lightened prodigiously, and the Sea seemed all of a Fire about us, for every Sea that broke sparkled like Lightning. The violent Wind raised the Sea presently to a great height, and it ran very short and began to break in on our Deck."

He then describes how the seas "struck away the Rails of our Head, and our Sheet-Anchor ... was violently washed off, and was likely to have struck a Hole in our Bow, as it lay beating against it." The ship had to be manoeuvred before the wind so that the anchor could be retrieved, but conditions were then too



dangerous to turn back into it for fear of foundering, so the ship continued “scudding right before Wind and Sea, from Two till Seven o’clock in the Morning [of 5 July]...”

The wind decreased so the ship was turned once more into the wind and sailed with only a mizzen, it then moderated further and a flat calm of two hours followed, but the storm blew up from the south-west accompanied by very heavy rain, and Dampier’s ship was again forced to run before the wind under bare poles until the evening. The whole account appears to indicate a close encounter with an intense tropical depression, or even a typhoon.

During the morning (apparently some time after four o’clock) the rain and thunder had abated, and then St Elmos’s fire had been seen. This phenomenon seems to have been associated with either good ‘omens’ or bad depending upon its location about the ship.

The journal reads:

“...and then we saw a Corpus Sant at our Main-top-mast Head, on the very Top of the Truck of the Spindle. This sight rejoiced ourMen exceedingly, for the height of the Storm is commonly over when the Corpus Sant is seen aloft. But when they are seen lying on the Deck, it is generally accounted a bad Sign.

“A Corpus Sant is a certain small glittering Light. When it appears, as this did, on the very Top of the Main-mast or at a Yard-arm, it is

like a Star. But when it appears on the Deck, it resembles a great Glow-worm... I have heard some ignorant Seamen discoursing how they have seen them creep, or, as they say, travel about in the Scuppers, telling many dismal Stories that happened at such times. But I never saw any one stir out of the place where it was first fixed, except upon Deck, where every Sea washes it about. Nor did I ever see any except when we have had hard Rain as well as Wind, and I therefore believe it is some Jelly: ...”

The illustration shows a shipwreck, storm and corposants (from *Meteorologia philosophico-politica*, Franz Weiner (1661–1708) NOAA Central Library) and corposants can be seen on yard-arms. There

seem to be two sources or varieties of the phenomenon in Dampier’s account, but perhaps only one of them (that associated with the mast and yard-arms) is really the static electrical type. The form that is mentioned as being washed around the deck or in the scuppers might have been an organism(s) such as jellyfish which have often been reported displaying luminescence by modern seafarers, or perhaps a *pyrosoma* (a hollow cylindrical colony of individual organisms swimming as a single entity, and brightly luminescent). If such were washed on board in heavy seas, they would no doubt continue to show this light as they were tossed about on their way back to the scuppers, or else whilst sliding about on a wet deck. In darkness their true animal form would not be seen and it is supposed that



(NOAA Central Library)



they could have been interpreted as corposants (“Glow-worm”) on deck. In the first part of Dampier’s observation, the seas that were “all of a Fire” and that “sparkled like Lightning” might well have been a manifestation of bioluminescence too, probably caused by dinoflagellates at the surface.

### A waterspout

Waterspouts were no doubt as frequent an occurrence in the seventeenth century as they are in the twenty-first, and modern seafarers will find much that is familiar in Dampier’s observation of this phenomenon, in the Celebes Sea on 30 November, 1687.

“A Spout is a small ragged piece of Cloud hanging down seemingly about a Yard from the blackest part of it. Commonly it hangs down sloping, or sometimes appears with a small bending or elbow in the middle. I never saw any hang perpendicularly down. It is small at the lower end, seemingly no bigger than one’s Arm, but still fuller towards the Cloud from where it proceeds. When the Surface of the Sea begins to work, you shall see the Water for about 100 Paces in Circumference foam and move gently round till the whirling Motion increases. And then it flies upwards in a Pillar about 100 Paces in Compass at the bottom, but lessening gradually upwards to the smallness of the spout itself, until it reaches the lower end of the Spout, through which the rising Seawater seems

to be conveyed into the Clouds. This visibly appears by the Cloud’s increasing in bulk and blackness. Then you shall presently see the Cloud drive along, although before, it seemed to be without any Motion. The Spout keeps the same Course as the Cloud, and still sucking up Water as it goes along, they make a Wind as they go. Thus it continues for the space of half an Hour, more or less, until



(R. J. Fletcher)

the sucking is spent. Then, breaking off, all the Water which was below the Spout, or pendulous piece of Cloud, falls down again into the Sea, making a great Noise with its fall, and a clashing Motion in the Sea.”

Waterspouts are not a significant problem for modern seafarers, and

are often reported upon in ships’ meteorological logbooks as an interesting diversion, but they were considered a threat to sailing ships, and Dampier’s like others, was kept at a great a distance as possible from them. Not without reason apparently, for he knew (or had been told) of an event where a ship had received what might be called a ‘direct hit’ from a waterspout and had lost not only its

bowsprit but the foremast and mizzen mast too. One method by which it was thought possible to weaken a waterspout that could not be avoided by a ship was to fire deck guns into it. However, Dampier is dismissive of such efforts — “But I never heard that it proved to be of any Benefit”.

### The halo

Optical phenomena can be seen approximately one day in three if the observer is keen enough not to look towards the sun or moon alone and is suitably placed to cast an eye around other parts of the sky. Nevertheless, haloes remain the most frequently reported examples of phenomena caused by the passage of light through ice crystals in cirriform clouds. Cirrus cloud invading the sky is often the first sign of an approaching depression, and so in Dampier’s day it is understandable that the halo was seen as a precursor to bad weather. Strangely, more importance was placed on the appearance of a solar halo than of one around the moon.



On 18 May 1688, Dampier and his consorts were navigating from the Nicobar Islands towards Sumatra. In his journal he wrote of the halo:

“It was indifferent clear till Noon and we thought to have had an Observation, but we were hindered by the Clouds that covered the Face of the Sun when it came on the Meridian. We also then had a very ill Presage, by a great Circle about the Sun five or six times the Diameter of it, which seldom appears without storms of Wind or much Rain ensuing. Such Circles about the Moon are more frequent but of less import. We commonly take great notice of those that are about the Sun, observing if there is any breach in the Circle, and in what Quarter the Breach is. From there we commonly find the greatest Stress of the Wind will come. I must confess that I was a little anxious at the Sight of this Circle, and wished heartily that we were near some Land.”

A violent storm indeed followed, and it was bad enough for Dampier to believe that his end was imminent. He did survive, however, but no doubt he continued to regard the appearance of a solar halo with considerable apprehension.

### Epilogue

Unknown to Dampier at the time of the search for Guam, in May 1686, the vessel had narrowly avoided a mutiny — or worse.

The ship had been at sea for about two months and supplies were so low that the daily ration for each man was 10 spoons of boiled maize, and there was enough left for only three more days. He was to learn later that had the island not been found, then the crew had decided to kill the captain when the food had run out, and eat him followed by everybody who had sanctioned the voyage to the original destination of the Philippines.

Such a grisly end would have deprived later generations of his valuable contributions. As it happened, he eventually returned to England in 1691, and died in London in 1715 at the age of 63. ♪

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### Editors Note:

*WOW! what an adventure...This great story was written for and first published in the October 2001 issue of the UK Met Office's **Marine Observer**. Who would have imagined that by sailing the seven seas in search of adventure and a few pieces of eight, your name would be listed in the annals of science for your great exploration and discoveries. -- Luke*