

Recording the weather

by Tim Sherratt

Exactly 100 years ago, on 8 August 1908, the weather on Norfolk Island was miserable. It was overcast, with a top temperature of only 14°C. About 10mm of rain fell.

How do I know this? Because the National Archives of Australia holds a register of meteorological observations compiled on Norfolk Island from 1908 to 1930.¹ Indeed the National Archives holds many such records from all over Australia, dating from as early as the 1830s.²

Those of you who know your Constitution – and of course you all do – would remember that s. 51(viii) grants the Commonwealth power over ‘astronomical and meteorological observations’. In fact, colonial meteorologists had somewhat pre-empted Federation working towards improved cooperation through a series of intercolonial conferences from 1879.³

There seemed little doubt that meteorology would benefit from national coordination. It was a practical science that nation builders hoped would arm legions of sturdy settlers in their battle against the elements. The Commonwealth took up its Constitutional power in 1906 with the passing of the Meteorology Act. The following year, Henry Ambrose Hunt was appointed Commonwealth Meteorologist, and in 1908 the Bureau of Meteorology commenced operations, taking over the state offices, and with them their records.⁴

¹ NAA: CP697/100, VOLUME 1.

² For example: ‘Meteorological register kept at the Port Office, Launceston, for the month of August 1839’, NAA: P463, AUGUST; and ‘Register of the weather with the rise and fall of the thermometer and barometer from 1 April 1843 to 31 December 1847’, NAA: AP810/58, VOLUME 1.

³ RW Home and KT Livingston, ‘Science and technology in the story of Australian federation: The case of meteorology’, *Historical Records of Australian Science*, vol. 10, no. 2, December 1994, pp. 109–27; Kirsty Douglas, ‘Under such sunny skies: Understanding weather in colonial Australia, 1860–1901’, *Metarch*, no. 17, Bureau of Meteorology, 1997.

⁴ For more on the history of the Bureau of Meteorology see: *Federation and Meteorology*, Australian Science and Technology Heritage Centre, 2001 <<http://www.austehc.unimelb.edu.au/fam>>; David Day, *The weather watchers : 100 years of the Bureau of Meteorology*, Melbourne University Press, Melbourne, 2007.

The observations contained in records such as these provide the raw material for meteorology. They can be extracted and analysed to construct a forecast. They can be added and averaged to describe a climate. They can be graphed, mapped, modelled and manipulated. A century or more after they were created, these records could help guide our future, contributing to our understanding of climate change.

This is the data that gives meteorology its power. But it was not always so.

We understand meteorology as a science based on the accumulation of standardised data across time and space. It is a science of networks and numbers. But this is something that only really developed in the late 18th and 19th centuries. Before that meteorology was focused on the reportage of unusual local phenomena. Descriptions of the weather were personal and particular, often infused with ideas about politics or spirituality.⁵

As meteorology took a more quantitative turn, this understanding of weather was forced out of the scientific literature; however, it lingers in our experience and memory.⁶

Time for a quick experiment. Putting aside for a moment your obvious high-levels of sophistication, your detailed knowledge of climate change, your understanding of statistics, just think back to your childhood and answer honestly – do you remember the summers of your youth as being hotter? Or perhaps that there were more thunderstorms? Heavier hailstorms?

What does this show? Simply that memory is not an average of the past – it's not a simple accumulation. Whatever power meteorological data gives us to predict or understand, it does not capture the experience of weather – how it makes us feel, how it inhabits our memories, how it shapes our hopes and fears. But we can look elsewhere to try and document the personal and emotional dimensions of weather. What I want to do today is look beyond the registers and logbooks, to find some other types of weather records within the collections of the National Archives.

Hope

On 3 April 1920, an article in the *Melbourne Age* observed:

The power to make rain was almost the first claim the primitive magic man made. He performed rites that had no relation to natural laws, and sometimes, as now, coincidences attended his ceremonies. To this day the civilised ignorant resort to ritual in order to precipitate rain. Education has delivered most men from such palpable superstition. Yet, if served up with scientific nomenclature, people are still willing to swallow ideas as preposterous as those entertained by the untutored savage. Some scientific-looking apparatus and frequent allusions to electricity and

⁵ Vladimir Jankovic, *Reading the skies : a cultural history of English weather, 1650–1820*, Manchester University Press, Manchester, 2000.

⁶ Tim Sherratt, 'Human elements', in Tim Sherratt, Libby Robin and Tom Griffiths (eds), *A Change in the Weather: Climate and Culture in Australia*, National Museum of Australia Press, Canberra, 2005, pp. 1–17.

natural laws will create the impression that rain can be made responsive to human mechanism.⁷

The target of *The Age's* innuendo was John Graeme Balsillie who, with the Federal Government's support, had established what he called 'rain stimulation plants' at Hopetoun in Victoria and Conargo in the Riverina.⁸

Balsillie had begun his experiments along the east-west railway in 1916. His initial results impressed WA Watt, the Minister for Works and Railways, persuading him to invest a considerable sum of government money in further research.⁹

Balsillie did not claim to work miracles. 'I cannot "make" rain, nobody can', he commented in a report to the department, 'In fact the phrase is one coined by persons of inferior mental calibre'.¹⁰ Balsillie stimulated rain. The process, he explained, was an electrical one. By changing the electrical condition of the atmosphere he was able to overcome the forces that prevented water droplets from growing and falling to earth.¹¹

The stimulation apparatus consisted primarily of a very long piece of wire, and a kite. Box kites 'of special design' were used to carry the wire aloft to a height of between 4000 and 6000 feet. The lower end of the wire was grounded, allowing an electrical current to travel from the atmosphere to the earth.

While he could not generate rain out of empty air, Balsillie claimed that the operation of his stimulation plant did, over time, result in increased rainfall in an area of about 250 square miles around the plant. He supplied the department with tables and diagrams demonstrating the effect.

Balsillie's interpretation of the meteorological data did not, however, impress the Commonwealth Meteorologist, HA Hunt, who saw nothing in the figures beyond normal variability. Moreover, he pointed out, meteorologists the world over used similar apparatus to make normal atmospheric observations. 'The lack of any rain precipitation or stimulation resulting from the world-wide use of kite apparatus would', Hunt noted, 'appear to dispel the contention that such is likely to be obtained with rain making experiments depending on the conveyance of electric currents by means of kite wires'.¹² Predictably, Balsillie objected to Hunt's use of the term 'rain making': 'Mr Hunt apparently does not understand what the object of the experiments is', he responded.¹³

⁷ *Age*, 3 April 1920, cutting in NAA: A8510, 68/89A.

⁸ Lindsay Cleland, 'Balsillie, John Graeme (1885-1924)', in *Australian Dictionary of Biography*, vol. 7, Melbourne University Press, Melbourne, 1979, p. 162.

⁹ A chronology detailing the Department of Works and Railways' involvement in Balsillie's experiments is contained in NAA: A106, G1923/338.

¹⁰ Letter from Balsillie to the Secretary, Department of Works and Railways, 18 June 1919, NAA: A8510, 68/89A.

¹¹ Balsillie describes his system in 'Rain stimulation - Balsillie system - A theory relating to atmospheric electricity and its effects on weather conditions generally', 1 November 1921, NAA: A106, G1923/338 ATTACHMENT 5.

¹² Letter from HA Hunt to the Secretary, Department of Works and Railways, 22 February 1918, NAA: A8510, 68/89A.

¹³ Letter from Balsillie to the Secretary, Department of Works and Railways, 8 May 1918, NAA: A8510, 68/89A.

What is particularly interesting is the attitude of the secretary of the department, Walter Bingle. Confronted by Balsillie's claims and Hunt's curt dismissal, Bingle noted:

The opinion of the Commonwealth Meteorologist upon a subject of this kind is entitled to consideration; on the other hand Mr Balsillie is a scientist, who in other directions has demonstrated his inventive genius and ability. The question is one of transcendent importance to Australia, and indeed any country having dry areas, and the man who can add some inches of moisture to the dry interior of Australia is worth his weight in gold.¹⁴

The power of hope, it seemed, was a match for the nay-saying of experts.

Balsillie's experiments were discontinued for a time in 1920, when available funds ran out. But Watt, now Treasurer, intervened once more to have the rain stimulation plants re-opened. A memo prepared at the time, presumably by Bingle, seeks to justify the decision:

Anyone who has had anything to do with Australia, especially inland, knows that there is practically no more important question for the welfare of this Country than increasing the rainfall. If there is any reasonable hope of doing this the Government is justified in spending a few hundreds in demonstrating how - in fact it would be failing in its duty if it did not.¹⁵

In fact it was rather more than a few hundreds. In all, the expenditure on Balsillie's experiments amounted to more than £6000. Despite Watt's support, criticism mounted both in parliament and the press. *The Age's* attack was particularly damaging:

Rain cannot be artificially made. Even Mr Balsillie knows that, and he spikes his critics' guns by disclaiming the power. He cannot make - but he can stimulate! Like many another, Mr Balsillie must be grateful for the range and subtlety of the English language. Claim to make rain and you can instantly be tested. Claim to stimulate rain and you still have a door of dignified retreat if the stimulus proves ineffective. Meanwhile the taxpayer is left to ponder the difference between making and stimulating, and whatever is the use of stimulating that does not result in making.¹⁶

The plants were finally closed in January 1921.

Trust

Historical research is a journey marked by disappointments and discoveries. You can imagine my excitement one day in the reading room of the National Archives when,

¹⁴ Memorandum by Walter Bingle entitled 'Rain stimulation experiments - Bookaloo', 15 May 1918, NAA: A8510, 68/89A.

¹⁵ Memorandum entitled 'Rain stimulation experiments', April 1920, NAA: A8510, 68/89A.

¹⁶ *Age*, 3 April 1920, cutting in NAA: A8510, 68/89A.

in a routine departmental file, I came across a cache of 102 letters written by country-folk from all across New South Wales – and all about the weather.¹⁷

The letters were written in support of the long-range weather forecaster Inigo Jones. Jones had been issuing forecasts since 1923. By the late 1930s, when the letters were written, he had gathered a devoted following, particularly amongst the farmers and graziers of NSW and Queensland.¹⁸

Jones's system was centred on the sun. Our weather, he insisted, was controlled by variations in solar activity, most readily observed as sunspots. These variations were cyclical, determined by the relative positions of the planets. So, in essence, if you knew where the planets were you knew what the weather was going to be like. There were many more complications and qualifications on top of this, which I will not confuse you with today.

However, for Jones's research to be fully successful, he needed a lot of data over a very, very long period. He was fond of quoting the opinion of Queensland University's professor of mathematics that a full test of his theory would require 300 years worth of data. Obviously he could not complete the task alone, and so he looked to the Commonwealth government to ensure that his research would continue.

Worn down by the incessant and determined lobbying of Jones and his supporters, the government announced in 1938 that it would form a scientific committee to investigate the merits of his system. The rural newspaper, *The Land*, sought to contribute to the review, organising its own test of Jones's theories. 'We believe that the only real test of theories of any kind is whether they work out in practice', the newspaper asserted, inviting its readers to write in with their own opinions of Jones's forecasts.¹⁹ This was the source of the 102 letters now in the National Archives.

Many of the letter writers contrasted the value of seasonal forecasts with the limited offerings of the Weather Bureau. 'In my opinion the 24 hour forecast is a farce for the land man', remarked D Sweetnam of Georges Plains, 'we all have an idea of what will happen 24 hours ahead'.²⁰ Jones was 'out on his own' in providing landholders with a glimpse of what lay far beyond the horizon. 'A three or four day limit may be very valuable to a seaman or a weekend tripper', explained HT Manning of Barellan, 'but to the man on the land, who has to commence operations sometimes 12 or even 18 months ahead of harvest, it is infinitesimal compared with the long range forecast'.²¹

But not only were Jones's forecasts more useful, many correspondents insisted they were also more accurate. 'I can say he is miles ahead of other weather men', wrote

¹⁷ NAA: A1, 1938/24704.

¹⁸ For more on Inigo Jones and his system, see: Tim Sherratt, 'Inigo Jones – The weather prophet', *Metarch*, no. 16, Bureau of Meteorology, 2007; also Tim Sherratt, 'The weather prophet', public lecture at the National Archives of Australia, 8 June 2005, <<http://naa.gov.au/collection/issues/sherratt-2005.aspx>>.

¹⁹ *The Land*, 1 July 1938, p. 3.

²⁰ Letter from D Sweetnam (Georges Plains, Bathurst district) to *The Land*, 8 August 1938, NAA: A1, 1938/24704.

²¹ Letter from HT Manning (Barellan) to *The Land*, 10 July 1938, NAA: A1, 1938/24704.

David J Stanfield of Tumut, 'I reckon he has been 85% correct while our state day to day forecasters are nearly that percentage wrong'.²² David Povey of Bredbo agreed. 'He is the only man that has went months ahead and on many occasions has been right to the day of rain', he explained, while forecasts from the weather bureau were 'very often wrong going only 24 hours' – 'If it is raining we usually get a forecast of rain, and a flood warning when the creeks have gone down again'.²³

The letter writers to *The Land* understood that Inigo Jones was not merely interested in the weather, he was interested in them – he was working on their behalf, offering hope, reassurance and confidence. 'If he is not on the crown pay role [sic] well he should be', wrote JK Nielsen of Little Plain, 'for he has saved many of the men on the land'.²⁴ While Jones was deeply concerned about the risks endured by those on the land, the Weather Bureau appeared to be focused on the needs of the urban population. 'Like the City Press and many other Sydney institutions', observed A Heath of Curlewis, 'their idea of NSW & Australia does not get past the Country of Cumberland'.²⁵ While Jones was a farmer, with a 'deep love for the country', the Bureau seemed to be a remote bureaucracy which ill-understood the vicissitudes of rural life.²⁶ While Jones laboured to find practical solutions to the problems that beleaguered farmers, the Bureau sought to stymie his efforts through the testimony of so-called 'experts', and the cold, dead hand of officialdom.

But by far the most common assessment of the weather prophet by his rural admirers was, simply, that he was 'on the right track'. This phrase is used again and again. His system wasn't perfect yet, but at least he was having a go. While meteorological authorities stressed the limits and difficulties of forecasting, Jones held out the promise of certainty. Inigo Jones was 'on the right track' and his supporters were all too willing to join him on the journey.

Fear

Where was the cloud? This was the question anxiously pondered by Australians in June 1956. A British atomic bomb test held off the north-west coast of Australia in the Monte Bello Islands had resulted in a cloud of radioactive particles – but where was it? The cloud had been expected to dissipate harmlessly over the Indian Ocean, but strange sorties by radiological monitoring aircraft and the banning of civil air flights alerted the press that all was not right.²⁷

The government was confused. Howard Beale, the Minister for Supply, at first tried to explain that while lower level winds had carried most of the radioactive debris out to sea, at upper levels some minute particles had drifted inland. But even these, he

²² Letter from David J Stanfield (Blowering West, Tumut) to *The Land*, 18 August 1938, NAA: A1, 1938/24704.

²³ Letter from David Povey ('Gurrabeeal', Bredbo) to *The Land*, 18 July 1938, NAA: A1, 1938/24704.

²⁴ Letter from JK Nielsen (Little Plain) to *The Land*, no date, NAA: A1, 1938/24704.

²⁵ Letter from A Heath ('Pine Cliffs', Curlewis) to *The Land*, 11 July 1938, NAA: A1, 1938/24704.

²⁶ Arnold G Hudson, 'Inigo Jones attempts to solve the riddle of the seasons', *The Land Farm and Station Annual*, no. 1474, 23 August 1939, p. 30.

²⁷ For more on the missing cloud see: Tim Sherratt, *Atomic Wonderland: Science and Progress in Twentieth Century Australia*, PhD thesis, Australian National University, 2003, pp. 245ff.

assured reporters, were now tending to head back towards the coast. The cloud, it seemed, was neither in nor out.²⁸

The following day, Beale sought to remove any doubt, reporting that the path of the cloud had been tracked by plane and it was now 'over the sea 100 miles off the north-west coast of Australia'.²⁹ The cloud had moved once again and was now exactly where it was supposed to have been all along.

The government's reassurances would have been more convincing had it not been for the boom in uranium mining. Prospectors across the country used their trusty Geiger counters to test for the spread of radioactive debris. Three days after the blast, Jack Tunney in Kuridala, a small rail centre in north-west Queensland, gained a reading of 2000 from the rain as it fell on his roof.³⁰ Asked for an opinion, physicist Mark Oliphant declared that 'there did not appear to be any danger' as the levels of radioactivity were still quite low.³¹ HC Webster, the professor of physics at the University of Queensland, was less sure. He advised against drinking the water, and suggested anyone caught in the rain should take a bath as soon as possible.³² The residents of nearby Cloncurry, meanwhile, were reportedly 'all praying for fine weather'.³³

With the press reports full of recalcitrant clouds, radioactive rain and deadly winds, it was not surprising that some had begun to ponder the broader connection between atomic bombs and the weather.³⁴ In March 1956, William Wood wrote to Prime Minister Menzies asking whether the connection between recent poor weather and atomic bomb tests had been properly examined. 'As few of us can gauge the consequences of our actions with any certainty', he noted, 'why should Atom bomb experiments be likely to behave much differently?'³⁵

The reply from the Prime Minister's Department reassured Mr Wood that 'leading International Meteorological opinion' was satisfied that the effect of an atomic explosion was 'comparable only with that of a small isolated storm and could have no important general influence on weather conditions'.³⁶ Wood, however, was not convinced, and the announcement that a further series of atomic tests was to be held at Maralinga spurred him to write once more. 'What else will this certainly mean for us here', he demanded angrily, 'than that the few days of nice sunshine we are enjoying now will come to an end immediately these confounded tests begin'? There would be 'more weeks of cloudy days', he insisted, more 'blustery, off-quarter

²⁸ *Adelaide Advertiser*, 21 June 1956, p. 1.

²⁹ *Adelaide Advertiser*, 22 June 1956, p. 1.

³⁰ *Courier-Mail*, 23 June 1956, p. 1.

³¹ *Courier-Mail*, 23 June 1956, p. 1.

³² *Courier-Mail*, 23 June 1956, p. 1.

³³ *Courier-Mail*, 23 June 1956, p. 3.

³⁴ The tenor of the media reports can be gauged from the file of newspaper clippings, NAA: A6456, R058/005.

³⁵ Letter from William Wood to the Prime Minister, 22 March 1956, NAA: A6456, R124/007.

³⁶ Letter from AS Brown, Secretary of the Prime Minister's Department, to WF Wood, 3 May 1956, NAA: A6456, R124/007.

winds', as well as 'other signs of serious atmospheric disturbance': 'Do you want to starve us, sir, as very few crops in Australia will now grow in a normal manner?'³⁷

No further reply was sent to Mr Wood. However, he was not alone in his concerns, and the government asked the Bureau of Meteorology and CSIRO to prepare a report examining the 'possible weather effects' of atomic explosions. The report found fault, not with the bomb, but with human memory. 'In their view on the weather', the report argued, 'the majority of people have very short memories indeed, and, particularly in periods of distress due either to floods or to droughts, there is an obvious tendency to blame unusual conditions vaguely to some illunderstood cause'.³⁸

Whispering in the archives

It might seem that the examples I've presented today are little more than oddities – quirky asides to the real business of science and government. The sort of thing which can provide a little light relief in an otherwise serious exhibition. But I want to suggest that they're more than that.

I was fortunate to be able to attend the Fourth International Conference on the History of Records and Archives (ICHORA) earlier this week, where there was much discussion of how minority voices might be recovered, both inside and outside the archive. But systems of exclusion and authority need not be based only on ethnicity, culture or race. Any organised system of knowledge, such as science, defines insiders and outsiders – those entrusted to speak the truth, and those who can only listen.

What I've tried to do today is to listen to some of the other voices that speak around our experience of weather. They offer no single narrative, no alternative history, they are fragmented and partial, whispered asides to the sonorous march of progress. But yet the voices are familiar. They have echoes in our own experiences, our own memories, in the way we personally know the weather.

Global warming demands changes in our behaviour that are unlikely to be achieved solely by rational persuasion.³⁹ We receive the warnings not as scientists or statisticians, but as people who have known the weather intimately all our lives. The context in which we each must grapple with the challenges of climate change is not in the detailed records of meteorological observations, but in the realm of emotion and meaning.

Like Balsillie and Bingle we cling to the hope that there must be some sort of technological fix, some measure of control we can exert. Like Inigo Jones's supporters we are inclined to put our trust in those who offer the prospect of certainty in a world of change and confusion. Like William Wood we nurture a lingering fear that our interference with nature might yet wreak a terrible cost.

Collections, like those of the National Archives of Australia, remind us that there are many ways of knowing the weather.

³⁷ Letter from William Wood to the Prime Minister, 11 September 1957, NAA: A6456, R124/007.

³⁸ Report dated 13 July 1956, NAA: A6546, R102/001.

³⁹ Tim Sherratt, 'Civilisation versus the Giant, Winged Lizards – Changing Climates, Changing Minds', *Altitude*, no. 7, 2006 < <http://www.api-network.com/cgi-bin/altitude21c/fly?page=Issue7&n=1>>.

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