

History of Meteorology and Physical Oceanography Special Interest Group



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Newsletter 2, 2012

SINCE RECORDS BEGAN (AGAIN) by Malcolm Walker

April 2012 was a very wet month over England and Wales. So, too, was June 2012. We were told in newspapers and on radio and TV that these months were, respectively, the wettest on record, and we were told all too often they were the wettest since records began in 1910. Oh dear! Anyone who knows the slightest thing about meteorology knows that rainfall records did not begin in 1910, any more than temperature records began that year.

Saying that rainfall records began in 1910 is quite an insult to George James Symons (1838-1900), who devoted more than forty years of his life not only to collecting rainfall statistics from observers all over the British Isles but also to promoting best practice in rain-gauge design and rainfall measurement procedures. He founded, in 1860, the body that came to be known in 1900 as the British Rainfall Organization (which was taken over by the Met Office in 1919).

We considered in Newsletter 2, 2011 the reasons why the year 1910 was significant, in an article entitled 'Since Records Began'. This is what appeared in that newsletter:

"1910 was the year national temperature and rainfall records began. Ah! So what is so significant about national records? The most obvious reason is that temperature and rainfall records have been digitized back to 1910 and this allows the Met Office to calculate areal statistics of regional rainfall and temperature back to this date, including series for the whole of the UK.

"But what is the significance of 1910? Well ... responsibility for collecting and publishing British climatological data prior to the second decade of the twentieth century lay NOT with the Met Office but with the Royal and Scottish Meteorological Societies. When, in 1874, the Permanent Meteorological Committee, the forerunner of the

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International Meteorological Organization's International Meteorological Committee, requested climatological observations from fifteen 'second-order' stations in Great Britain, there was embarrassment for the Met Office because very few of their stations met the specifications for this type of station. The Royal and Scottish Meteorological Societies were able to supply the data, and did so for several decades.

"Sir Napier Shaw proposed in 1905 that the Met Office should take over from the two societies responsibility for publishing their climatological data in a single publication. Agreement was reached with the Royal Meteorological Society in 1911 and with the Scottish Meteorological Society in 1913. Publication of the Royal Meteorological Society's

Meteorological Record ceased at the end of 1911 and the data hitherto published by the Society subsequently appeared in the Met Office's *Monthly Weather Report*. Scottish data were included in the *Monthly Weather Report* from January 1914.

"At the very least, clarity is required over statements that include "since records began", but it would be nice also to have the important roles of the Royal and Scottish Meteorological Societies recognized. The implication is that the data they supplied were not reliable. They were."

Monthly precipitation data for England and Wales can be found on the Met Office Hadley Centre website. Your starting point is:

<http://www.metoffice.gov.uk/hadobs/hadukp/>

It is clearly stated on this web page that the HadUKP dataset of regional precipitation incorporates the England and Wales Precipitation Series which began in 1766.¹ What do we learn from the Hadley Centre's website about the places of April and June 2012 in the precipitation record back to 1766? Well ... we find that April 2012 was indeed the wettest April on record, and June 2012 was indeed the wettest June on record. Now ... I think it extraordinary that we should have two months that were the wettest on record in the same year; and at the time of writing it is beginning to look as though July 2012 could be the wettest on record. But will it beat 1828, when the July total for England and Wales was 182.6mm? Time will tell!

Meanwhile, I repeat my plea for clarity over statements that include "since records began". Let us restore some proper sense of historical perspective in climate records. When a record is broken, it is worth saying that it breaks a 245-year record as well as a 102-year record!

MEETING REPORT

by Alan Heasman

'UNDER THE WEATHER' – Saturday 17 March 2012 at The Civil Service Club, London.

About 25 members and visitors just about filled one of the meeting rooms at the Club to learn more of past and present attempts to link aspects of the weather and climate to human disease and well-being. Our Group Chairman, Malcolm Walker, welcomed all to the meeting and after a few 'house-

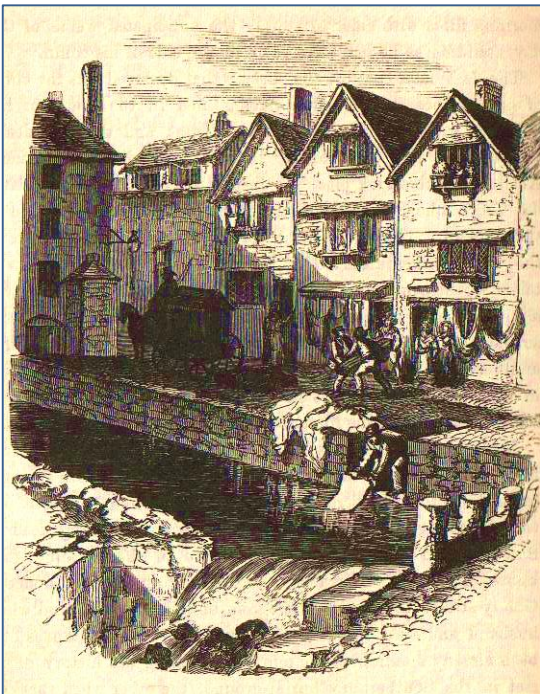
keeping' notices from him and Howard Oliver, the late morning session began under the chairmanship of Julian Mayes.

The first to speak was Howard Oliver who, with many illustrations, talked us through a whole spectrum of attempts to find links between weather and health, starting with Hippocrates, who postulated that the balance of the four humours in the body is upset by the weather. The eighteenth and nineteenth centuries saw several attempts to associate weather with diseases and death rates arising from poor sanitation as the cities became more crowded and the countryside suffered from food shortages. The late 1800s saw more detailed studies as instrumental weather records became more widespread and disciplined. Howard then reminded us that even in the twentieth century there were still causes and effects, such as the cholera in Zanzibar, radioactive depositions over Europe after the Chernobyl explosion and the spread of Foot & Mouth disease in animals spread by windborne insects. Even the traumatic effects on unborn children at the time of the severe ice storms in Canada in 1998 allegedly led to cognitive and behavioural effects after birth. Howard drew upon his personal studies ('Influenza and Weather – The Last Five Centuries') to highlight various attempts to link weather and influenza, both in normal situations and in the occasional pandemics such as those of 1830-1831, 1917-1920 and 1957. Even now, studies are being made to see whether the influenza virus is 'triggered' by specific weather parameters in particularly low temperatures and low vapour pressure making membranes in the nose and throat drier and more susceptible to infection and shorter day length in the northern winter allowing the virus to survive longer. However, as Howard acknowledged, the spread of any disease is still influenced by so many other non-weather factors such as the proximity of people that strong links are hard to find.

Malcolm Walker then focused on the dreaded disease of cholera with his talk 'Cholera Morbus comes to Britain'. This was illustrated by a whole series of graphic images. He concentrated on the outbreak which began in India in 1817, spread slowly west and, despite the quarantine on incoming ships, reached the UK at Sunderland in October 1831. Even so, it was thought that the disease was exacerbated by noxious vapours and bad smells. As the disease spread in Sunderland it was studied in detail by Dr. William Reid Clanny. He tried to link the outbreak to the weather as recorded by Henry

¹ Rainfall recording in England and Wales began in 1727.

Ogden in Sunderland. The cholera gradually spread to the SW of England where Thomas Shapter studied the 1832 outbreak in Exeter in great detail, again trying to link it to the weather, using observations by Thomas Barham, also at Exeter. Finally, Malcolm outlined the work done by James Glaisher following the cholera epidemic of 1853/1854 in London, where he endeavoured to link the occurrence of the disease to calm or light winds when air stagnated, especially in warm humid conditions. Ultimately, of course, Dr John Snow was able to demonstrate by mapping that the cholera in London was linked not to the weather but to a particular public water pump which was contaminated with sewage. Even so, there remained a lingering belief that *somehow* the weather still affected the incidence of cholera.



Removal of a cholera victim in Exeter whilst washing took place in the mill stream (from Thomas Shapter's report: 'The History of the Cholera in Exeter in 1832', published in 1849).

Julian Mayes opened the afternoon session with his presentation about the 'Rise and Fall of the Health Resort' and how this was associated with the general belief in the eighteenth and nineteenth centuries that seaside resorts and inland spas were generally beneficial – as indeed they were compared with the unhealthy cities. This resulted in the rather 'competitive' recording of weather details at the resorts which had the benefit of adding to the Victorian meteorological database. Weather reports from the 'Health Resorts' collected via the Met Office soon became a regular feature in national newspapers. During the twentieth century the

emphasis shifted somewhat from the beneficial health aspects to 'holiday weather' in general. These reports also raised the general awareness of millions of readers to the variability of weather around the UK and, at times, the extremes of weather soon became a news item in itself. However this type of reader interest faded in the late twentieth century and the Met Office stopped supplying these 'health' reports to the papers in 2008, although some aspects are now provided by PA Weather Services.

Joan Kenworthy then presented 'Tropical Climates and Health'. This drew on her personal experience in East Africa. She drew attention to the 'bad climates' quickly recognised by westerners when they ventured into far flung lands in the great age of exploration resulting in high mortality in these 'white men's graves'. Whilst local populations had had thousands of years to acclimatise, western man had been precipitated into these climates and failed to adjust quickly enough. In fact in the nineteenth century it was felt that western man would never manage to thrive in the tropics. However, some argued that in fact the tropics were healthier, especially for children, than the disease-ridden centres of population in the overcrowded slums of the temperate zones. Slowly western man learned to 'live well and carefully' in the tropics. Armed forces slowly adapted their clothing and operations to suit the climate. The colonial services recognised the need for improved accommodation and clothing and much research was made of the benefits of a wide range of pith helmets!

The next talk was prepared by John Wilson, a retired pharmacist, but presented by his son Edward, an economist with an interest in health. However, father kept an 'eye' on Edward's presentation via an innovative (if slightly temperamental) 'SKYPE' link to the meeting room! This Wilson family have strong ties to Nottingham and this city was amongst the first to benefit from piped clean water, even in the 1840s. So much so that it lessened the impact of cholera. Other towns copied but failed to deal with the other enemy – human waste. Much of this early work was done by Thomas Hawksley, who, at the age of 23, set up the pipe network. The Public Health Act of 1848 helped to set a standard for all towns and the first Medical Health Officer (MHO) was quickly appointed in Liverpool, although surprisingly it took until 1872 for an MHO to appear in Nottingham. However, some aspects were slow to change. There were still many houses without flushing water closets in Nottingham as late as 1912, and the so-called 'pail closets' were only emptied

WEEKLY by the soilman –through each house! John Wilson made a retrospective study of death rates 1905 to 1926 and weather records. He readily found a link between high summer temperatures, especially during longer hot periods, and infant mortality during the ‘pail closets’ era – but this soon diminished after WCs became more common.

Finally, Patrick Sachan, the current Health Business Manager at the UK Met Office, outlined the services now being provided to health care organizations and directly to the public. Previously services only reacted to crises even though it had long been recognised that periods of extreme low temperatures in winter and high temperatures in summer result in increased illness and mortality in the population both young and old and especially those with chronic breathing problems. It seemed particularly bad in countries such as the UK with a mainly maritime climate but occasional extremes of continental climate whereas the more continental countries such as Finland prepared well for ‘extremes’ because they can almost always expect them. Research has shown that just a one degree centigrade drop in the mean winter temperature can ‘trigger’ 8000 excess deaths in the UK. Even in the summer periods of prolonged high temperatures lead to excess deaths but it is still not clear whether it is the heat itself or the poor air quality associated with hot weather which causes the health problem. Nowadays, the Met Office issues various advisory forecasts to the health services so that they can better anticipate demands for extra beds to cope with impaired lung function cases. Also, up to 12,000 individual sufferers are ‘alerted’ by telephone so that they can take some preventative measures, and this has been found to be beneficial. Health researchers are already trying to anticipate the possible effects of ‘climate change’ especially if ‘extremes’ become more common! Patrick acknowledged that the challenge is not so much the science but the cost of the warning systems and associated preparations and the ability and/or willingness for the population to respond to advice and warnings.

The meeting concluded with the usual brief exchange of comments and questions. Hopefully the audience had ‘improved’ during the day from being ‘Under the Weather’ to ‘understanding’ some of the influences of the weather on some health concerns through the ages.

THE HISTORY GROUP COMMITTEE

The members of the committee are as follows:

Chairman: Malcolm Walker

Secretary: Julian Mayes

Treasurer: Mick Wood

Committee members:

Graham Bartlett

Brian Booth

Margaret Deacon

Alan Heasman

Joan Kenworthy

Martin Kidds

Howard Oliver

David Pedgley

Dennis Wheeler

and a representative of the National Meteorological Library and Archive.

Committee meetings take place three times a year at the Royal Meteorological Society’s headquarters, 104 Oxford Road, Reading.

THE NEXT NEWSLETTER

The next newsletter will be published in October 2012. Please send items for publication to Malcolm Walker (address on pages 9 and 20) by 25 September.

Malcolm would particularly welcome reminiscences of life in the Met Office (at home or abroad) in the 1950s, 1960s and 1970s, also recollections of meteorological activities in universities, research institutes or the services (at home or abroad) in those decades.

SNIPPET FROM THE PAST

It was reported in the *Hampshire Telegraph and Sussex Chronicle* on Monday 6 October 1823 that efforts were being made “to establish a uniform and combined system of Meteorological Observations, by means of forming a Society for the purpose”. This scheme, so the newspaper said, had been “highly approved of by several scientific Gentlemen attached to Meteorology”.

The Society in question was the first Meteorological Society of London, which was formed at the London Coffee House on 15 October 1823 (see ‘The Meteorological Societies of London’, *Weather*, 1993, Volume 48, pages 364-372).

A NOTE FROM THE TREASURER

Your Newsletter, ably produced by our Chairman, Malcolm Walker, provides much useful and interesting information about the history of meteorology and the activities of the Group.

However, as it was agreed two years ago not to hold an Annual General Meeting, I thought it might be a good time to tell you how your money is received and spent.

Yearly Income is mainly from subscriptions and nominal charges for Group meetings.

We have about 80 members, and a subscription of £5 gives an average income of £400, but as some prefer to pay in advance for up to five years this income can vary considerably from year to year.

Meetings have an average attendance of 25, providing an income of about £250.

Interest in the Savings Account is not very high at the moment and provides about £1!

Yearly Expenditure is from Group Meetings, Committee Expenses, Postage and the Neumann Prize.

Meetings in the past have been held cheaply at various locations, such as Universities or other Institutions, but these bodies are becoming more cost conscious and rates are becoming ever higher. We do try to find cheap locations, but this is not always possible, and the average cost for a meeting is now in the region of £ 350. We now have bills paid through Royal Meteorological Society HQ and thus save VAT. Joint meetings with other Groups or Centres can share the costs.

Your committee works hard to manage the Group affairs. Committee members are mainly retired and not 'sponsored' and are paid public transport costs for attending meetings. This can vary but on average is about £100 per meeting. Having a retired person's Bus Pass or Rail Card keeps our costs down.

Postage is for notification of meetings and the Newsletter for those not connected electronically and is much less costly than in the past, but has risen again this year.

The Neumann Prize is presented every other year and consists of £50 and five years' membership. For details of the Prize, see Newsletter 1, 2012.

As shown by the attached edited (but audited) accounts there was a loss of £514.76, hopefully explained by the above factors. But we still have a

reasonable amount in the Account and your committee has decided that there is no need for a rise in subscriptions or meeting charges for this year, but we will continue to monitor closely all expenses.

Mick Wood
Treasurer

PS The job of Treasurer is permanent (!!) and the Group in its 29 years has had two. Jim Burton was the original Treasurer and gave up due to failing health in 2003, when I took over, until somebody else volunteers!!

The audited accounts for 2011 show the following:

Money at beginning of 2011: £2162.44

INCOME

Subs	£140.00
Meetings	£860.00
Interest	£000.89
TOTAL	£1000.89

EXPENDITURE

Meetings	£1104.00
Committee	£241.50
Postage	£120.15
Neumann Prize	£50.00
TOTAL	£1515.65

Money at the end of 2012 £1647.68

LOSS £514.76

A RARE EVENT

There was a rare event on 5-6 June 2012, a Transit of Venus, something that will not happen again in our lifetimes. The next transit will occur in December 2117. There was generally good coverage of this event by newspapers, radio and TV, but it was a shame no mention was made of a significant building project that was occasioned by the transit which occurred on 3 June 1769.

The King's Observatory at Richmond, later known as 'Kew Observatory', was built for King George III and completed in time for the 1769 transit. This became a most important meteorological observatory which was, indeed, the Central Observatory of the Meteorological Office from 1865 onwards. Sadly, the Observatory closed on 31 December 1980, with the last meteorological observation made at 21:00 GMT that day by Tim Donovan.

CARTS, HORSES AND JET STREAMS

by Malcolm Walker

We have been told the wet weather this year has been caused by the jet stream being farther south than usual. Is the word caused correct? And what is meant by “the jet stream”?

When I was a research student in the Meteorology Department of Imperial College in the 1960s, my fellow students and I were told by the staff, notably Frank Ludlam, my supervisor, that it was unwise in meteorology to say that A caused B. It was safer, they advised, to say that A was consistent with B.

Ludlam was especially keen to make this point in connection with mid-latitude jet streams, saying that their existence was no more than consistent with the existence and development of depressions.

These jet streams of middle latitudes, he pointed out, result from conversion of potential to kinetic energy within large-scale slope convection flows from the subtropics to higher latitudes. Depression formation, he said, accompanied that conversion. With J.S.A.Green and J.F.R.McIlveen, he set this out very clearly in a classic and now sadly overlooked paper published in 1966 in the *Quarterly Journal of the Royal Meteorological Society* (Vol.92, pages 210 to 219). It was perhaps overlooked because of its title, *Isentropic relative-flow analysis and the parcel theory*, which was certainly accurate but did not give any hint of the paper’s significance in respect of jet stream formation. Ludlam also published his ideas on depressions and jet streams in the University of London Professorial Inaugural Lecture he delivered on 8 November 1966, calling his address *The cyclone problem: a history of models of the cyclonic storm*. It was published by the Imperial College of Science and Technology in 1966, and there is a copy in the National Meteorological Library at Exeter.

Ludlam argued that depression formation occurs under the right entrance of a developing jet stream at the same time as that jet stream develops. In other words, such depressions are no more than concomitants of jet stream formation. The two essentially go together. Left-exit depressions can be, however, an effect of jet stream flow.

To explain this year’s wet weather, should we not be looking for reasons why depression formation has been persistently farther south than usual, not reasons *per se* why the jet stream has been farther south?

Another point I would make is that we are being told in newspapers and on the radio and TV that the upper-tropospheric jet stream which flows across the British Isles is part of a fast-moving ribbon of air which encircles the hemisphere, the impression being given that this jet stream is continuous. It is certainly not continuous, as even a cursory look at a 250 or 300mb chart shows. This jet stream is very much discontinuous, with places on its trajectory (specifically in troughs) where the wind speed is only a few knots.

Something else I was taught at Imperial College is that conclusions about meteorological processes should not be drawn from climatological data. For example, we can see from charts of monthly-mean surface winds over the Indian Ocean during the northern hemisphere’s summer that SE trade winds from the southern hemisphere seem to cross the equator and become the SW monsoon flow. Analyses of weather data from Gan, in the Maldives, just south of the equator at 73°E, show, however, that winds tend to be light and variable there during northern summer. Moreover, observations show that cumulus congestus and cumulonimbus clouds are common there. Therefore, air does not generally travel far horizontally. It ascends to the middle and upper troposphere in convective clouds. The SE trades of the southern hemisphere do not typically cross the equator to become SW monsoon winds. This was pointed out by Meinardus in the 1890s but his conclusions were ignored, possibly because of deference: a distinguished British meteorologist, H.F.Blanford, had suggested the cross-equatorial ‘explanation’.²

Charts of monthly-mean winds at 300mb show a meandering ribbon of strong winds around the temperate latitudes of the northern hemisphere, and this band of strong winds is, climatologically, consistent with the south-north temperature gradient in the troposphere between tropical and polar regions. On a day-to-day basis, however, wind strengths in the upper troposphere in middle latitudes vary greatly, being greatest in association with depressions. We should be careful that we do not put climatological carts before meteorological horses. Moreover, as an American meteorologist once said to me, upper-tropospheric tails do not wag lower-tropospheric dogs. The atmosphere is, he

² Persistent cross-equatorial flow does occur over the westernmost part of the Indian Ocean and easternmost Africa (west of longitude 55°E) during the northern summer months.

pointed out, a convective system that is driven from below.

In short, we should not say that depressions are caused by jet streams. It could, in fact, be the opposite. It is safer to be no more assertive than to say that middle-latitude jet streams accompany depressions.

Why, you may be wondering, is an article like this appearing in a History Group newsletter. The relevance is that papers published many decades ago contain important concepts which appear to have been forgotten or overlooked or were possibly ignored in the first place. Frank Ludlam was being extremely modest when he claimed he had had only one original idea in his life and had otherwise merely developed ideas he had picked up from reading historical works, ideas which had not been developed in earlier times because of lack of data or the necessary data-processing facilities.³ He was a person who understood the great importance of studying the history of meteorology.

There is another point, though, and it comes out in the obituary of the aforementioned J.S.A. Green (see *Weather*, 2012, Vol.67, p.193). John was a brilliant mathematician who stressed the importance not only of mathematics in meteorology but also physical insight. In the present numerical age in meteorology, we may wonder if there is a danger of meteorologists focusing too much on mathematics and thereby neglecting physical insight.

THE BRITISH ANTARCTIC EXPEDITION (BAE) 1910-1913: THE METEOROLOGICAL VIEW – PART VII by Alan Heasman

Part VI of this series (Newsletter 1, 2012) recorded the events associated with the loss of Captain Scott and his companions Evans, Oates, Wilson and Bowers in late March 2012 as they struggled homeward bound across the Ross Ice Barrier having reached the South Pole but failing to be the first to get there. By early April, other members of the BAE, now safely back in their main HQ hut at Cape Evans, had to accept that the Polar Party had perished, either by accident or deprivation or by succumbing to the weather or a combination of all three, at some point since they were last seen on the polar

³ Ludlam believed he was the first to explain the formation of pileus clouds.

plateau on 3 January 1912 by the final returning support party.

Those at Cape Evans had already been committed to facing a second polar winter because the relief ship *Terra Nova* had had to depart from Cape Evans on 25 February to avoid being frozen in. The ship had taken several members of the BAE, including George Simpson, the BAE's main meteorologist, who decided that he must return to India to relieve his boss Gilbert Walker, who had fallen ill. Fortunately, amongst the fifteen men still at Cape Evans were a few scientists. It fell to the biologist Nelson to take charge of the weather observations, but he and others struggled to maintain some of the more demanding electrical and magnetic observations started by Simpson. As well as recording full details of the weather at the Hut, they were able to re-establish 'simple' observations at screens away from the Hut at 'Archibald' on the sea ice and at 'Bertram' just inland from the Hut. However, these extra observations were only maintained from 8 May to 13 July 1912. The general weather in the second polar winter was even worse than in the first. Temperatures fell to minus 45°C and winds regularly exceeded 125km/h. One blizzard lasted eight days! No wonder they dared not risk straying far from the hut to these outlying screens.

Those at Cape Evans had much to debate, including the whereabouts of the 'Northern Party'. As outlined earlier in this series, the 'Northern Party' of six men had been left at Cape Adare in January 1911 in a very basic hut on the notoriously exposed coast some 450 miles from Cape Evans. Here they maintained weather observations and made several geological explorations. They survived the first polar winter and were eventually picked up by the 'Terra Nova' as she returned from New Zealand on 4 January 1912. Even then, the party did not return direct to base camp but chose to spend a 'few weeks' of the polar summer camping and exploring another part of the Victoria Land coast at Evans Coves. The plan was that about six weeks later the ship would return to take them on to Cape Evans. However, ice conditions prevented the ship getting near. It made one final attempt as it left McMurdo Sound to return to New Zealand in late February but the sea ice prevailed again.

The men of the 'Northern Party' soon realised that they were marooned. It was too risky to walk the 250 miles or so to Cape Evans partly because the polar autumn was advancing but also because the sea was not yet frozen enough to risk crossing. With

very few supplies and only tents for shelter they faced a grim prospect of survival. They quickly supplemented their stores with a few penguins and seals and were forced to dig a cave into a bank of ice to create 'living' quarters for six men for at least another eight months. The full details of the ultimate survival of the Party has been rather eclipsed by the emotional loss of the Polar Party and cannot be in detail covered here. I highly recommend reading either of 'Hell With A Capital H' by Katherine Lambert or 'The Longest Winter' by Meredith Hooper and also 'The Wicked Mate' by H.G.R.King, which contains edited highlights of a diary kept by one of the survivors, Victor Campbell. Understandably in those conditions, they did not keep detailed weather records!

The members of the BAE at Cape Evans Hut did not know whether the *Terra Nova* had been able to rescue the Northern Party on its way to New Zealand. Thus they had to debate what to do in the polar spring of 1912. Should they try and head west to the Victoria Coast to find the Northern Party who may or may not have survived the polar winter or may have been taken to New Zealand or should they try and set out southwards back on to the Ross Ice Barrier in the hope of finding out what may have happened to the Polar Party? Should they search for certainly dead men (Scott *et al*) or possibly dead men (the Northern Party)? The decision would be made by October 1912.

Meanwhile, George Simpson eventually arrived back in India by mid-summer 1912 via New Zealand, Australia and the UK. There he resumed work with the India Meteorological Department and started his analysis of the first 12 months of data from the BAE which he had (indirectly) brought back from the Antarctic. By then, he had learned that Amundsen had been first to the Pole. Ultimately, Amundsen's success would benefit Simpson's work, because for most of January 1911 to January 1912 there were observations simultaneously available from Cape Evans (BAE HQ), Cape Adare (Northern Party), Framheim (Amundsen's base on the edge of the Barrier) and at various locations *en route* to the Pole itself. Although many hundreds of miles apart, Simpson could use these scattered observations to form the first simple daily weather charts of the South Polar region.

THE BEAUFORT SCALE FOR USE AT SEASIDE RESORTS by Howard Oliver

Swanage Coastwatch Station has recently installed a set of information panels describing many aspects of the sea and coast. One of them includes this 'seaside' Beaufort Scale, taken from a *Punch* article of around 50 years ago, which I thought you may enjoy.

0 Calm

Litter motionless.

1 Light Air

Sweet-papers rustle. Litter in branches and telegraph wires swaying.

2 Light Breeze

Sweet-papers airborne, cartons in motion, pendant paper flapping.

3 Gentle Breeze

Eddies of paper, cartons and sunglasses airborne, pendant paper dislodged. Visitors complain of strong wind.

4 Moderate Breeze

Heavier objects, bottle tops, apple cores, orange peel, banana skins, lolly sticks in motion.

5 Fresh Breeze

Lilos, plastic picnic equipment, small bottles (aspirin, sun-tan oil etc.) commence rolling.

6 Strong Breeze

Large bottles, whisky etc., rolling. Small children whining in telegraph wires. Difficulty avoiding flying fruit skins.

7 Near Gale

Large bottles careering, motor tyres and tins in trees swaying. Inconvenience felt walking through flying litter.

8 Gale

Portable cots, prams, tents, deck-chairs in motion. Kiosks and whelk stalls swaying.

9 Strong Gale

General movement of heavier litter. Small children, prams, portable cots, deck-chairs swept into the sea.

10 Storm

All visitors off course. Foreigners complain of British summer.

11 Violent Storm

Ice-cream kiosks, postcard stands, whelk stalls close down. Cinema and shop owners rub their hands.

12 Hurricane

Reporters from the national papers appear and begin to take photographs.

FORTHCOMING EVENTS

☐ **THE NEXT MEETING OF THE HISTORY GROUP** will take place on **Saturday 29 September 2012 at Farnborough** (at FAST, the Farnborough Air Sciences Trust) and will focus **on the uses of aircraft in meteorology from the 1930s to the 1960s**. The meeting will begin with coffee/tea from 10.30 am. Talks will begin at 11.15 and the meeting will finish at 4.30 pm.

There will be an opportunity to visit the FAST Museum between 10:15 and 11:15 and another during the lunch break.

The speakers at this meeting include:

Brian Booth – A brief history of RAF meteorological flights 1920-1959

A review of the origins of the Meteorological Flights from primary sources, their subsequent development and expansion together with anecdotes about some of the pilots.

Peter Rackliff – The Weather Reconnaissance Operations of World War II

A snapshot of the RAF and USAAF aircrew, their aircraft and the Met sorties to be flown, whatever the weather.

John Kington (paper to be presented by Alan Heasman) – Wekusta: Luftwaffe Meteorological Reconnaissance Operations, 1939-1945

A review of the formation and deployment of Luftwaffe Meteorological Reconnaissance Squadrons (Wettererkundungs Staffeln, abbreviated Wekusta) by the German Meteorological Service during the Second World War.

David Pedgley – Winds, waves and manta rays

David will explain his use of a light aircraft to examine the Red Sea Convergence Zone.

Stan Cornford – A versatile 1960s trio: MRF's Canberra, Hastings and Varsity

From the Arctic and Iceland to Malaysia and the South China Sea, aircraft of the Meteorological Research Flight made observations to support research which could be done only through the use of aircraft.

It is essential to book in advance for this meeting.

A booking form has been sent to History Group members.

If you wish to attend, please contact Malcolm Walker, 2 Eastwick Barton, Nomansland, Tiverton, EX16 8PP

The registration fee is £10 per person, which includes morning and afternoon refreshments and entry to the museum but **NOT** lunch. Please bring with you a packed lunch. There is a picnic area in the grounds of the museum.

Display boards and tables can be provided to display books, papers, apparatus, etc. If you wish to exhibit anything, please let Malcolm Walker know well in advance of the meeting.

The entrance to the museum is off the A325 in Farnborough, open from 10:00 to 16:00. There is a Museum sign (with FAST printed on it) opposite the entrance, and there is a visitors' car park. The Museum is wheelchair accessible and provides disabled toilets. The lecture room is unfortunately NOT wheelchair accessible.

☐ **ON WEDNESDAY 21 NOVEMBER 2012**, there will be a '**Classic Papers**' meeting at the **University of Reading**. The meeting will begin at 2.00 pm and end at 5.30 pm and focus upon developments in urban meteorology.

The speakers at this meeting include:

John Thornes (University of Birmingham)
Thermal mapping – from pedal power to satellites via Tony Chandler

A talk about Tony Chandler's pioneering work on measuring urban heat islands using mobile transects – which fed into John's research on the thermal mapping of roads etc.

Sue Grimmond (King's College, London)
Somerset House: Contrasting studies of urban climatology in the 19th and 21st Century

From Luke Howard's 19th century work on measurements of urban heat islands at Somerset House in London, this presentation will link to contemporary work on surface energy balance measurements and urban climate dynamics today very nearby in Central London.

Janet Barlow (University of Reading)
Rising above the roof-tops: urban boundary layer observations

A review of what has been learnt from urban boundary layer observations, ranging from Chandler's work in London on the BT Tower and its legacy today; helicopters over St Louis as part of the METROMEX campaign; and the increasing use of remote sensing techniques.

PLEASE TURN OVER

Xiaoming Cai (University of Birmingham)

Taking the challenge: wind around buildings

Since Castro & Robbins pioneered the wind tunnel study of air around a cube and Deardorff pioneered large-eddy simulation of atmospheric boundary layer in 1970s, we are now taking challenges of numerically simulating turbulent eddies around buildings and dispersion of pollutants inside the urban canopy as part of an emerging discipline, urban meteorology. This talk will review a few milestones in history and current work in this topic.

Peter Clark (University of Reading)

Concrete, canyons and canopies. Key developments in the representation of urban areas in weather forecast models

Twenty years ago, most urban areas occupied less than one grid box in Numerical Weather Prediction models. Now we can see the impact of Hyde-Park on the local forecast. As forecasts have improved in resolution, requirements for the representation of urban areas have changed, along with their potential applications. Urban parametrizations are now too numerous to mention. This talk will outline the development of key concepts in the evolution of urban representation in NWP, from early days of 'rough concrete', through the 'idealised canyon' to the 'urban canopy', epitomised by the work of Valéry Masson, Alberto Martilli and others.

It is not necessary to book in advance for this meeting.

☐ **ON SATURDAY 16 MARCH 2013**, there will be an all-day meeting in **London** which will focus on (a) the severe winter of 1962-63, the most severe over England and Wales since 1740, and (b) advances in monthly, seasonal and long-range forecasting which have followed from that winter.

The story behind this meeting is as follows:

In the House of Commons on 27 February 1963, Mr Gresham Cooke MP asked the Secretary of State for Air whether, "in view of the reliable forecasts put out by the United States Weather Bureau of British weather in January", he would seek guidance from American forecasters as to the possibility of predicting any severe conditions next winter. In reply, Mr Hugh Fraser said that the US Weather Bureau considered its 30-day predictions had shown "some modest success" but warned users that experience over a number of years had not shown that its 'outlooks' for the northern hemisphere as whole could be relied upon as a guide to

forthcoming weather over the British Isles, which lay in an area of particularly variable weather. Mr Cooke pointed out that the 30-day forecasts for December 1962, January 1963 and February 1963 which the Americans had issued for the British Isles had proved remarkably accurate. He believed the Office also produced 30-day forecasts but only for its own internal use. Would it not be "a good thing" for it to produce a similar 30-day forecast for the British Isles next October or November to provide a warning should another severe winter be threatened? Mr Fraser urged caution. Only 32 of 108 outlooks issued by the Americans had proved correct. Long-range forecasting was, as yet, far from perfect. He agreed that forecasts for the current winter had been extraordinarily accurate but thought this could have been a fluke.

Government pressure was, though, applied to the Met Office, and the Office's annual report for 1963 contained a statement that a decision had been taken in the autumn to initiate a series of thirty-day 'weather prospects' which would be promulgated by regular publication of a monthly bulletin with a mid-month supplement.

To support this work, the Office's Climatology Research Branch was sub-divided into a Synoptic Climatology Branch, which was given responsibility for preparing the thirty-day prospects, and a Dynamical Climatology Branch, which was to focus on theoretical approaches to the general circulation of the atmosphere. Publication of the new series of monthly bulletins, called *Monthly Weather Survey and Prospects*, began on 1 December 1963.

Thus began for the UK's Met Office the publication of weather forecasts for periods of more than a few days ahead.

The programme for this meeting is almost complete, with talks already in place for most of the following topics:

- the winter of 1962-63 and its climatological significance
- the global context of the 1962-63 winter and recent work on the predictability of that winter
- the age-old weather lore that was long used to foretell seasons
- synoptic-climatological approaches of the 1960s and '70s
- teleconnections and the significance of El Niño and La Niña

- forecasts for rainy seasons in Africa and other places in the tropics
- the pioneering days of using numerical techniques for monthly and seasonal forecasting
- operational monthly to seasonal forecasting and taking forecasts to users
- the reliability of monthly, seasonal and long-range forecasts today

There will be an exhibition of weather records, photographs, newspaper cuttings etc at the meeting. It is hoped that many of those who attend the meeting will take along material for display.

ON WEDNESDAY 26 JUNE 2013, there will be a meeting at the **National Oceanography Centre, Southampton**. Provisionally, this will begin with coffee/tea at 10.30 am, with talks beginning at 11.00 am. There will be talks on historical and modern oceanographic instruments and advances in observing techniques, and there will be a two-hour tour of the Centre. Further details of this meeting will be announced in due course.

ON FRIDAY 6 and SATURDAY 7 SEPTEMBER 2013, there will be a meeting at the **University of East Anglia (UEA), Norwich**, to mark the centenary of the birth of **Professor Hubert Lamb**, founding Director of UEA's Climatic Research Unit.

The meeting will begin in the early evening of the Friday with a talk and dinner at which we hope members of Hubert's family will be present. The plan is that the Saturday morning will be given over to talks and the afternoon set aside for a visit to the Climatic Research Unit. Overnight accommodation has been booked.

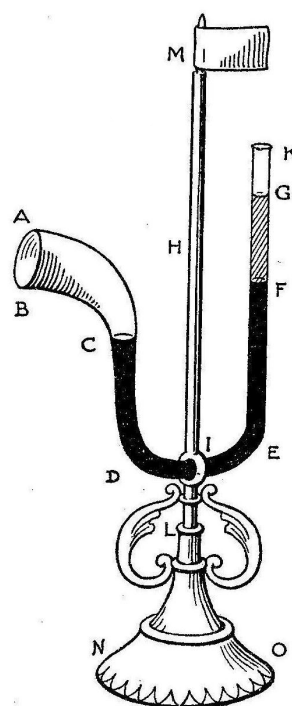
Further details will be announced in due course.

Provisionally, PART 3 of 'THE USE OF AIRCRAFT IN METEOROLOGY' series of meetings (1960s onwards) will be on **Saturday 12 October 2013 in London**. Further details will be announced in due course.

A meeting on the **history of weather ships** has been proposed for **March 2014**.

HUET'S ANEMOMETER

Several of the anemometers that were constructed or proposed during the eighteenth century consisted essentially of a U-tube which was partly filled with liquid and had one of its arms bent outwards at the top through a right angle. An early example, if not the earliest, was that of Pierre Daniel Huet, a French courtier and ecclesiastic, who described it in a book published posthumously in Paris in 1722, the year after his death (*Huetiana: ou pensées diverses de M.Huet, Evêque d'Avranches*).



His instrument consisted of a tin funnel ABC shaped like a cowl. The tube from C to F was filled with mercury; and lye-water (an alkaline solution) was poured in above F as far as G. Wind entered by the funnel AB and pressed the mercury surface downwards, thus raising the level of the lye-water. The amount the level was raised was measured by means of dots that were marked on the tube from F to G. As the funnel needed to face into wind, a vane M was

provided, supported by an iron rod MHI which entered a collar L mounted on a pedestal LNO. As the wind turned the vane, the whole instrument turned, keeping the funnel directed towards the wind.

This instrument was essentially a pressure gauge, which was of practical significance because, in the words of A.Wolf (on page 323 of *A history of science, technology and philosophy in the XVIIIth Century*), "in practice, and especially to sailors, the pressure of the wind is its most important measurable property".⁴ Huet said in Section XX of his book that his instrument was for "weighing the wind".

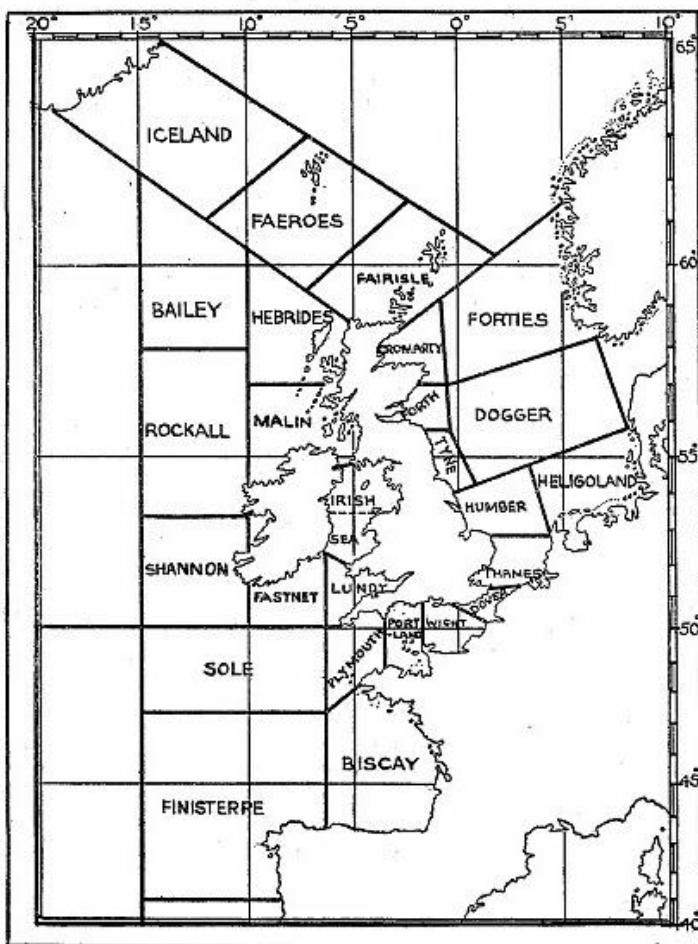
⁴ Wolf's book was published by George Allen & Unwin Ltd (second edition 1952, 814 pages).

AREAS USED IN WEATHER BULLETINS FOR SHIPPING

On page 227 of the July 1949 issue of *Weather* (Vol.4, No.7), there appeared an article by C.R.Burgess. In it, he referred to a map that had been published on page 30 of the January 1949 issue of *Weather*, a map (reproduced below) which showed the areas used in gale warnings and weather bulletins for shipping from 1 November 1948. He said in the first sentence of his article that several enquiries had been received about the names of the areas. By way of explanation, he wrote as follows.

“The predominantly coastal areas are named after what is probably the factor of major geographical significance to the mariner, thus: the Firths of Cromarty and Forth and the Bay of Biscay; the rivers Tyne, Humber, Thames, Shannon and the Irish Sea area; the ports of Dover, Portland and Plymouth; the islands of Heligoland, Wight, Lundy, Hebrides, Faeroes, Fair Isle and the rocks of Fastnet and Rockall; the headlands of Finisterre, Malin and the area adjoining South East Iceland.

AREAS USED IN GALE WARNINGS AND WEATHER BULLETINS FOR SHIPPING FROM NOV. 1, 1948



“If an area is not close to a coast line and does not include an island, the only significant feature on the chart is a comparatively shallow or deep locality, known to cartographers and seamen as a ‘bank’ and a ‘deep’ respectively and often given a name.

“Forties is the name given to a fairly large area between Scotland and Norway where the soundings are mostly between 40 and 50 fathoms.

“Dogger is a bank between southern Scotland and Denmark. To geologists, this Bank or submerged plateau is of especial interest for its northern edge marks what used to be part of the coastline of North West Europe in about 7,500 BC, when England was joined to the continent. ... It was probably given the name ‘Dogger’ at a time when it was a favourite hunting ground for a Dutch type of fishing vessel with that name.

“Sole is named after the Great and Little Sole Banks in approximate position 49°N 9½°W. History does not relate why the French gave the banks these names, but we are assured that it is not, nor is it known to have been, a particularly good place to catch flat-fish.

“Bailey is so-called because of the two shallow patches outside the 100-fathom line, one of about 64 fathoms and the other of 95, in approximate positions 60½°N, 10½° and 12½°W, respectively. The following extract from a letter from Mr G.T. Atkinson of Lowestoft, who has seen many years’ service with the Ministry of Agriculture and Fisheries, explains how and why: “As to the origin of the names I can give you the newest – Bailey. Do you remember late in the Victorian (or was it the Edwardian) era when every errand boy whistled and everybody sang the popular song ‘Won’t you come home Bill Bailey ... Bill Bailey won’t you please come home’? A Grimsby steam long-liner was exploring the series of banks which lie between the Faeroes and the Hebrides. They were quite unknown to the ordinary navigator, but there were a lot of halibuts living there and for a time he and friends to whom he revealed his discovery did very well. To give it a name nothing seemed better than the popular song of the day.”

Of the two banks in this forecast area, the shallower is known as ‘Bill Bailey’s Bank’ and the deeper as ‘Outer Bailey or Lousy Bank’. The alternative name aptly describes the weather for much of the year in these waters.”

WEATHER IN BRITISH COLONIES

It was reported in *The Times* newspaper (London) on 9 September 1839 (Issue 17142, page 3, column E) that a document had been issued from the Colonial Office. Entitled 'Memorandum respecting the records to be kept of the state of the weather in the British colonies', the document read as follows:

"The captains of ports, harbour masters, and keepers of lighthouses, or, where those officers do not exist, some other competent public functionary, should be required to keep journals of the weather, on the principle of the logbooks of ships.

"A column should be specially reserved for inserting the height of the barometer.

"Under the head of 'remarks' should be entered all meteorological observations considered worthy of particular notice.

"When the keeper of a journal may hear that a vessel has encountered a storm, he will enter in it any information on the subject which he can rely on, together with the name of the ship, of her owner, and of the port to which she may belong.

"With the view of tracing the cause of storms, the Trinity Board of London have given directions for the adoption of measures to obtain a more accurate record of the weather than has hitherto been kept at the lighthouses of Great Britain and Ireland. ↗

"The keepers of these lights having the opportunity of taking their observations by night as well as by day, great advantage may be derived from employing them in this manner. Officers in charge of colonial lighthouses should be instructed to keep similar journals. In noting the wind's force, both in the harbour-master's journals and in the lighthouse reports, it is desirable that the officers should adopt the numbers for noting the strength of the wind now in use at Greenwich Observatory, and about to be introduced at the lighthouse under the Trinity Board.

"In the cases of St. Helena and Ascension, it is desirable that more precise information should be obtained by observation respecting the 'Rollers' at those islands. As the object of Her Majesty's Government in instituting these inquiries is the advancement of science generally, the governors of the several British colonies will consider how far it may be in their power to obtain useful information bearing on the subject from countries adjoining to their governments in the possession of foreign Powers, or how far it may be useful to the study of meteorology to exchange the observations made within their governments for those of other countries in the neighbourhood.

"If at any time desired, there would be no objection to the publication in the colonial newspapers of extracts from the journals."

FROM THE ARCHIVE

The table on the right shows the Royal Meteorological Society's income and expenditure in the years 1881 to 1889, inclusive.

The income headings are: subscriptions; entrance fees; dividends; sale of publications; and Total Income.

The expenditure headings are: rent; salaries; record (i.e. the *Meteorological Record*); inspection; observers, instruments etc; journal; printing, stationery and books; special expenditure; and Total Expenditure.

The number of Fellows in each of these years was: 1881 – 555, 1882 – 571, 1883 – 568, 1884 – 551, 1885 – 535, 1886 – 524, 1887 – 522, 1888 – 525, 1889 - 549

Abstract of Income and Expenditure, 1881-1905.

Year.	Income				Total Income	Expenditure							Total Expenditure
	Subscriptions	Entrance fees	Dividends	Sale of Pub ^{ns}		Rent	Salaries	Record	Inspection Observers Instruments, etc.	Journal	Printing Stationery and Books	Special Expend.	
1881	399	77	46	31	710	48	2119	51	52	164	127	14	781
1882	491	44	47	35	752	49	268	60	58	184	71	18	777
1883	425	32	47	27	674	48	280	52	58	153	81	16	766
1884	456	40	56	24	1016	48	313	63	91	229	121	37	981
1885	695	21	60	25	934	49	328	63	61	235	98	26	944
1886	675	18	60	44	932	49	346	62	51	179	72	4	861
1887	621	20	60	26	868	48	359	56	50	214	115	5	938
1888	714	51	62	57	994	49	377	57	47	202	88	14	860
1889	712	48	62	39	1019	49	327	57	49	176	67	35	934

UNSUNG HEROES OF METEOROLOGY

by Alan Heasman

'In July there was moderate heat and wind with moderate showers occasionally falling and after the first week all the remainder of the month was rainy with moderate wind except three or four days at the end on which no rain fell'.

The above summary could easily have graced a twentieth century weather report or, acknowledging the style of phraseology, perhaps one of the early Victorian observers' diaries. In fact, it records the weather of July 1337!

For this most useful historic weather report we have to thank William Merle (sometimes written as Merlee or Morley), one time Vicar of Driby, a little village near Alford in the area of Lincolnshire known as Lindsey (sometimes earlier written as Lyndesay or Lindisse).

The history of William and his weather journal is, unsurprisingly, rather sketchy. Church records show that William Merle was 'admitted' to the rectory of Driby on 13 May 1331. It appears that he was subsequently granted a licence to study at Merton College in Oxford, one of the earliest colleges founded there, in 1264. However, there is no actual record of his name as a Fellow of that college but there are a very few indications that he visited Oxford from time to time. This has led to some confusion (see below).

He was clearly a man of some learning and is credited as being one of the first 'astro-meteorologists', a group who believed that the weather was in some way influenced by the conjunctions of the planets. This may have inspired him to record the weather in detail. His journal was written on vellum and covers just over nine pages in, mainly clear, 'copper-plate' Latin. However, although I am no graphologist, it seems to me that there are at least three different main writing styles. Also, it is remarkably 'neat' for an almost daily journal over seven years. Perhaps William made use of a scribe or possibly the existing manuscript is a 'fair copy' made later. Certainly there is nothing actually on the document which shows his name or anybody else's.

The journal begins with a summary of January 1337. For the first two years, each month's entry is quite short (see above example) running to about thirty words with a general weather description but highlighting the more extreme events by date.

By 1340, the monthly entries are more detailed, many over two hundred words long, with the weather noted on most dates of the month. He occasionally made observations of how the weather compared with past years. Of course, his records pre-date instrumental recordings, but his detailed descriptions paint a vivid picture of the climate at that time which, of course, was during the period of the so-called 'Little Ice Age'. For example, in March 1343 he recorded occasions of frost, hoar frost, snow, ice, light rain, storm, thunder, hail, the strength and direction of the wind and even recorded 'an earthquake' which occurred in the Lindsey area, damaging buildings, at midday on 28 March 1343!

The 'final' part of his journal begins in January 1344 and reads: '1st and three following days, frost with thin ice. 5th thaw with fog, 6th light rain, as light as possible. 8th very strong W wind. 10th'.

At that point the record ceases abruptly, in mid-sentence so to speak, about one third of the way down the vellum page. What could have caused the diligent William to stop in such a fashion? Perhaps he was struck with some severe illness but that seems unlikely, given that he did not die until 1347. It is unlikely that there are pages missing because of the partly completed page. Perhaps *his* diary did not in fact end abruptly at all but, bearing in mind my thoughts on the script being a 'fair copy', perhaps the *transcription* may have been interrupted and never completed. It is tempting to think that his original record may even have continued until his death. We are unlikely to ever know.

After his death, the journal (as completed) appears to have been passed to William Reed, Bishop of Chichester from 1369 to 1386, who included it in a bound set of treatises on various physical matters including several relating to meteorology. It was probably at this point that the set of treatises were given a 'contents' list and William's journal was given the Latin title '*Consideraciones temperiei Pro 7 Annis*'. This 'translates' approximately to 'Considerations of the temperature through seven years'. In this context, the word 'temperature' relates more to its origins as indicating 'mixture' or 'condition' rather than the modern day more specific use of the word. The bound set was passed to Merton College either by William Reed himself or possibly after his death, because the scholars there 'were of his kin'.

Merle's journal next surfaced along with other documents in the private possession of Sir Kenelm

Digby (including two others allegedly by Merle wherein he laid down rules for forecasting the weather by association with the planets). Digby enclosed the 'volume' in a seventeenth century calf-skin cover with clasps and his coat of arms in gold on the side and subsequently gave the volume to the Bodleian Library at Oxford in 1634.

It is probably at this point that somebody 'catalogued' the volume and wrote on the top edge of Merle's opening page a heading in seventeenth century Latin 'William Merle – Temperiei aeris oxoniis pro septennis', which has been translated as 'William Merle – Temperature of the Air at Oxford for Seven Years'.

This is where it seems that the erroneous belief began that William's journal relates solely to Oxford. This misstatement was compounded in 1685 when a Dr Robert Plot at Oxford wrote in a volume of the *Philosophical Transactions* that 'the industrious Walter [sic] Merle, Fellow of Merton College...observed the weather here at Oxford [sic] every day of the month, seven years altogether from Jan 1337 to Jan 1344; the MS copy of which observations are yet remaining in the Bodleian Library'. These statements have led to considerable confusion in later centuries because (a) it is not just a record of 'temperature' (however loosely that might be construed in a non-instrumental age) and (b) there is no direct evidence to link the whole journal to Oxford.

Many writers have speculated that William spent much of his time at Driby but visited Oxford for periods of study and also made some observations there. In the whole seven years of his journal amounting to several thousand words, William mentions 'Oxford' only five times and two of those are by way of comparison with events in Lincolnshire not having occurred at Oxford. On the other hand, he mentions 'Lindsay' specifically ten times and generally to the Lincolnshire area on other occasions. He certainly did not record his journal solely at Oxford but may have made visits and recorded the Oxford weather 'seamlessly' with his Driby observations. There are no significant 'gaps' in the record to account for travelling to and from Oxford, a round journey of about 140 miles, nor any reference to an absence or return to either location.

It still seems odd to me that this diligent observer did not make a clearer distinction over where he was at the various times. Nevertheless, the journal is a unique record of fourteenth century weather, be it at Driby or at Oxford or both!

After the journal was incorporated into the Bodleian Library it remained largely forgotten. A reference was made to it by Thomas Short, MD, in 'A Meteorological Discourse', in 1767 and this later came to the attention of the illustrious G.J.Symons in about 1870 who, recognising its value (indirectly), initiated a search of the Bodleian but nothing was found. However, in 1890, Dr Gustavus Hellmann of Berlin read the *Philosophical Transactions* of 1685, noticed the reference by Robert Plot, contacted Symons and a new search found the journal at the Bodleian early in 1891.

Such a detailed weather journal from the mid fourteenth century was unique and consequently the ever industrious Symons quickly raised sufficient money by subscription to have the journal translated from Latin, photographically reproduced and published in July 1891! Only 100 copies were printed. Fortunately, I have recently been able to buy one of these copies from another Royal Meteorological Society member.

The facsimile copy is about 25 x 36 cm with stiff board covers. Symons used the earlier Latin title 'Consideraciones Temperiei Pro 7 Annis' and gave it the sub-title of 'The Earliest Known Journal of the Weather'. It consists of a brief history of the document (as established in 1891) followed by photographic images of each of the original journal pages in Latin with the English translation on the adjacent page. The photographic reproduction is very clear and even my school-based Latin allows me to read a few of the original entries! Other copies are believed to remain at learned institutions and at the National Meteorological Library and Archive at Exeter.

As far as I know, the original volume still resides in the Bodleian Library (catalogue Digby MS Vol 176). My recent purchase has renewed my admiration for the illustrious William Merle. Although William is generally credited with producing this earliest known journal of the weather (certainly for England), his name has never been used, as far as I know, in association with any meteorological honours, prizes or even buildings! Consequently, he remains (at present) as one of my 'unsung heroes of meteorology'.

Do you have an unsung hero of meteorology? If you do, please write about him/her and send us your article for publication in the newsletter.

EARLY NERC HYDROMETEOROLOGY by Howard Oliver

The earliest incarnation of the Natural Environment Research Council’s contribution to meteorological research was in 1965 when the then Hydrological Research Unit became one of its ‘component bodies’. By that stage, it was in new laboratory and office accommodation on the Hydraulics Research Station site near Wallingford.

Early years saw investigations into precipitation, soil moisture, and evaporation techniques, and the initial developments of the twinned grass and forested catchments experiment in Plynlimon. The uses of ground-level rain gauges and automatic weather stations were also being developed (Fig.1). By 1966-67, what became the internationally important Thetford investigation into the detailed energy and water balance of a dry UK forested area also began to take shape. This was designed to supplement the Plynlimon studies on the effect of forests on water yield.

The Hydrometeorology section in the 1966 Annual Report (Fig.2) lists two meteorologists on the team: John Stewart (on secondment from the Met Office and who eventually who stayed with NERC for the rest of his career (sadly, he passed away in 2010) and a J.M.Walker (I wonder what became of him?). The first significant practical stage of the Thetford study was the successful assembly of a 30m tower in the forest (Fig.3).

In spring 1968, being interested in meteorology and the environment, my then fiancée, Sylvia, and myself (both physics finalists at Oxford) visited the nearby HRU to talk to the director Jim McCulloch and John Stewart about the possibility of a job. It was a different world then as we were both offered positions on the spot! It was agreed that I would not

take up a permanent post until I had completed a meteorology MSc at Reading over the following year. The 1968 annual report of the newly-named Institute of Hydrology lists John Stewart and Sylvia Marlow and research student Howard Oliver as members of the section. By 1969 the team also included John Gash, with plant physiology support provided by Paul Robins and John Roberts of Imperial College.

Apart from the design and assembly of the meteorological equipment and towers at Thetford, the other vital aspect of the project was obtaining

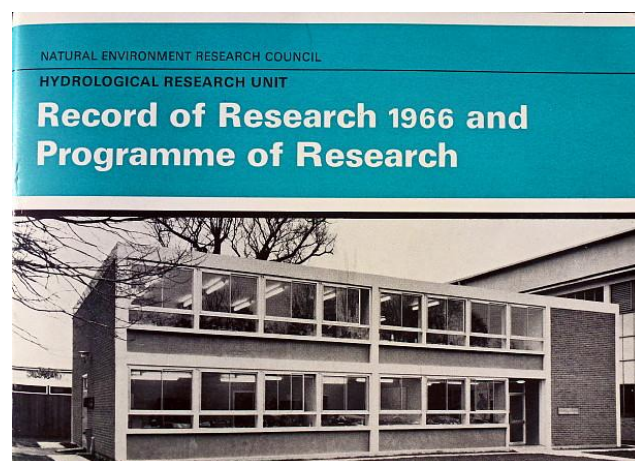


Fig.2: The 1966 Annual Report

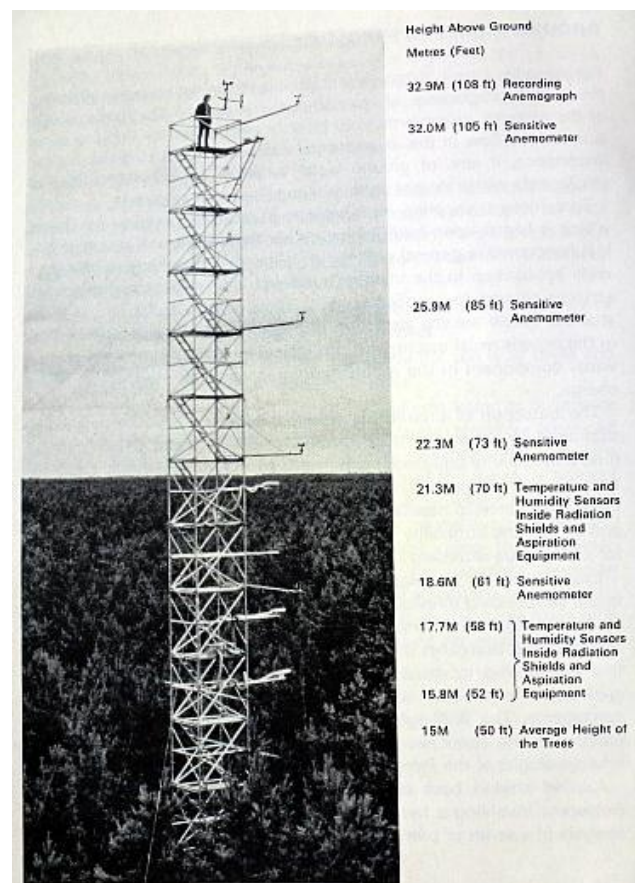


Fig.3: The 30-metre tower

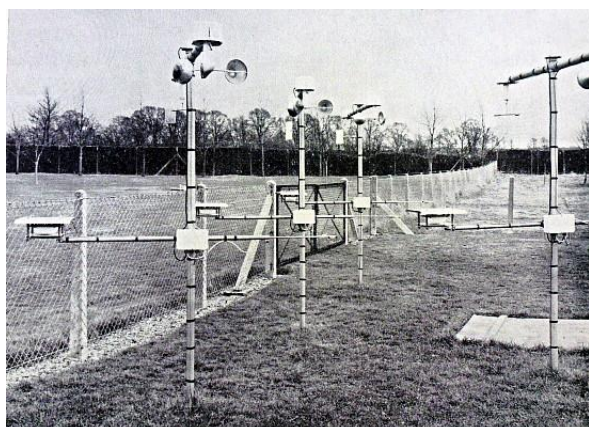


Fig. 1: Automatic weather stations

and storing the data. After an initial period of using a punched tape recorder, a full computer-controlled data acquisition system was developed and programmed, mainly by Sylvia, using a state-of-the-art 16K memory Hewlett Packard computer (Fig.4). It was operated in a caravan in the forest using generator power, which for this era was quite an achievement!

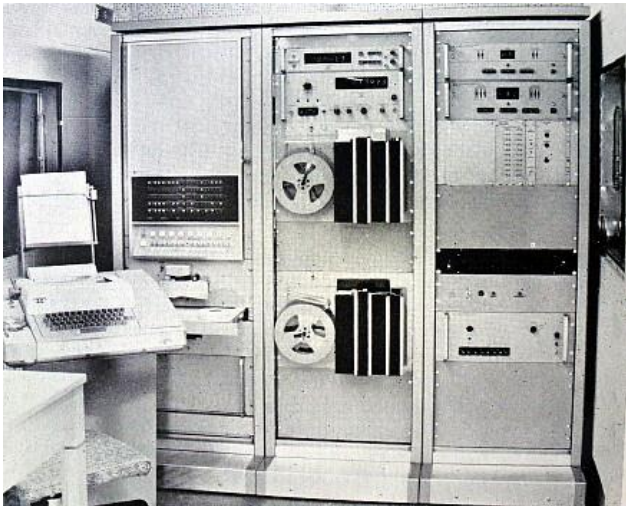


Fig.4: 16K memory Hewlett Packard computer

By 1970-71, the project used two towers: one to obtain temperature and humidity profiles and support energy balance sensors, and one for wind profiles (Fig.5). Examples of the earliest wind profile and albedo results, subsequently published in the *Quarterly Journal of the Royal Meteorological Society*, are shown (Fig.6).

The Thetford results, together with the Plynlimon catchment studies, went a long way towards understanding the complexities of the water and energy balances associated with vegetation which has subsequently become an important aspect of climate models. Later on, similar types of measurement were obtained at other locations in the UK and overseas to add to the detailed understanding and modelling of these processes.

PS from Malcolm Walker:

I was indeed the J.M.Walker mentioned in the Annual Report. I helped set up the Thetford project with Peter Rowe in 1967 whilst John Stewart was away for four months on leave in New Zealand. I remember staying in a pub near the experimental site at one guinea a night for bed and breakfast! I also remember studying (with Peter) the movements of raindrops over rain gauges. It was all very Heath Robinson. We filmed the raindrops after dark, illumination provided by the headlights of a Land Rover!



Fig.5: The two towers

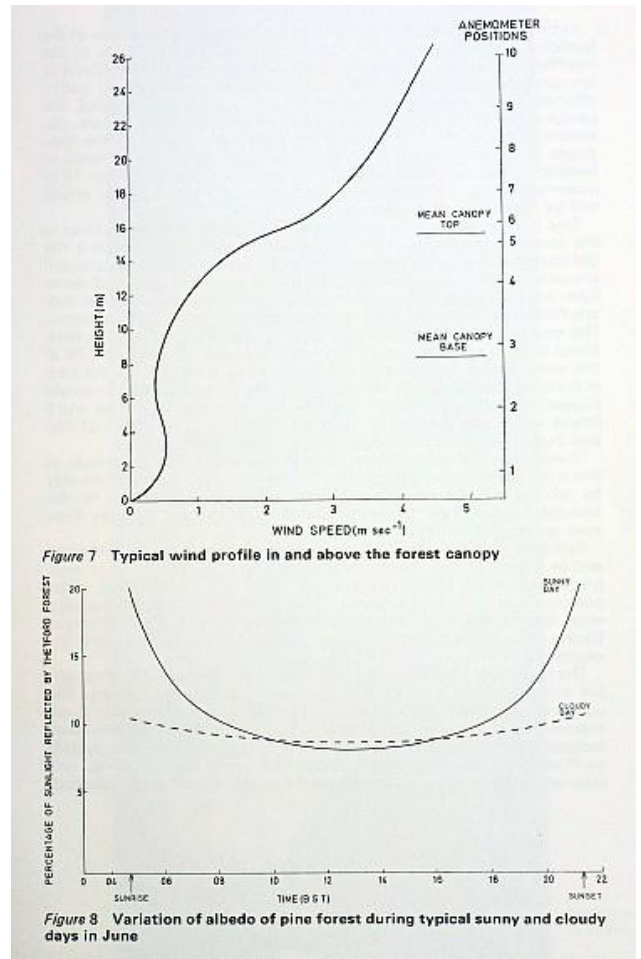


Fig.6: Wind profile and albedo results

GREENWICH WEATHER WISDOM

sent in by Howard Oliver

While trawling the term “weather seers” for use in my talk next spring on weather lore (meeting on 16 March – see page 10 of this newsletter), I came across an extract from a free archive of the *Wellington Independent* for 1850 (issue 543). It describes the scientific work going on at Greenwich including the use of automatic recording for atmospheric electricity and temperature data.

The article is aimed at the general public and makes an interesting few minutes’ read. It includes the £500 award to Charles Brooke “for his invention and establishment at the Royal Observatory of the apparatus for the self-registration of magnetic and meteorological phenomena”, explaining that every year the invention would save fully £500 of human toil. Glaisher’s climate cycles and studies on weather and health are also included.

It ends with a description of the new programme to collate professional and amateur meteorological data from around the country so “that all may be converted into scientific values and be made available for the increase of our weather-wisdom. What the Rosetta stone is to the history of the Pharaohs, these Greenwich tables have been to the weather-hieroglyphic. They have afforded something like a key to the language in which the secrets are written; and it remains for industrious observation and scientific zeal to complete the modern victory over ancient ignorance”.

I don’t think we are quite there yet!

The piece can most easily be located by a web search for “Greenwich Weather Wisdom” which brings up a free text site.

EXHIBITION IN FLORENCE

History Group member Anita McConnell has written to say that Graziano Ferrari is organizing a great exhibition in Florence next year with the title *Dal cielo alla terra. Meteorologia e sismologia a Firenze dall’Ottocento ad oggi*, with the exhibition of about eighty seismological instruments (1783-2012) and about forty meteorological (nineteenth to twenty-first century). The dates of the exhibition are 10 January to 30 March 2013.

CAN YOU HELP, PLEASE?

History Group member Storm Dunlop has asked for the following to be included in this newsletter:

Thomas Barker’s diary covering the weather at Lyndon in the county of Rutland for March 1747 to 1763 has been scanned for the Met Office Hadley Centre. Barker compiled later instrumental records, but two sets, covering 1763 to 1776, and 1789 to c.1800, are lost. Finding the data would be of the greatest value for research. If anyone has any information whatsoever about this material, either its current or past location, or, indeed, any hints as to where it may be (or have been) found, please contact: David Parker, Met Office Hadley Centre, FitzRoy Road, Exeter, EX1 3PB, United Kingdom; david.parker@metoffice.gov.uk telephone +44 (0) 1392 886649 Fax +44 (0) 1392 885681

NEW OCCASIONAL PAPER

The latest of the Royal Meteorological Society’s Occasional Papers, No.11, has been published this month, July 2012. It’s called *The Ripon meteorological data set for 1892 to 1895 as recorded by Charles Piazzi Smyth* and is the work of Dr Howard Oliver. It runs to 78 pages and contains many illustrations, including reproductions of tables which list daily weather observations each month from January 1892 to June 1895, as well as a number of cloud photographs taken by Smyth. This publication bears the ISBN 978-0-948090-35-6 and is available online on the website of the Royal Meteorological Society.

At the time of writing, the URL was <http://www.rmets.org/about-us/history-society> but this was likely to change in the near future.

For an introduction to this Occasional Paper, see ‘The meteorology and cloud photography of Charles Piazzi Smyth’, by Howard Oliver, published in Newsletter 1, 2012, pages 12-14.

RECENT PUBLICATIONS

This list of books and articles concerned with the history of meteorology and physical oceanography has been compiled by Malcolm Walker and Anita McConnell.

BYE, J.A.T., 2012. 'Southern Ocean surface drift: old observations and new theories', *Weather*, Vol.67, pp.187-191.

DAY, D., 2012. *Antarctica: a biography*, Random House Books Australia, 624 pp. ISBN: 9781741669084

FARRONA, A.M.M. and VAQUERO, J.M., 2012. 'An early scientific report of ball lightning from Brazil', *Weather*, Vol.67, pp.96-97.

GADIAN, A. *et al*, 2012. Obituary of John Green, *Weather*, Vol.67, p.193.

NICHOLLS, N., 2012. 'Long-term changes in the usage of climate and weather words', *Weather*, Vol.67, pp.171-174.

POTTER, S., 2012. 'April 15, 1912: sinking of Titanic', *Weatherwise*, Vol.65, pp.10-11.

RODDA, J.C. and DIXON, H., 2012. 'Rainfall measurement revisited', *Weather*, Vol.67, pp.131-136.

ROTHWELL, J., 2012. 'The weather during the Battle of Britain in 1940', *Weather*, Vol.67, pp.109-110.

ROWNTREE, P.R., 2012. 'Thomas Hughes's temperature record for Stroud, 1775-1795', *Weather*, Vol.67, pp.156-161.

VERMETTE, S., 2012. 'Friend and foe: weather and the war of 1812', *Weatherwise*, Vol.65, pp.22-28.

WEBB, J.D.C., 2012. 'Severe thunderstorms disrupt the Diamond Jubilee on Midsummer Day 1897', *Weather*, Vol.67, pp.174-175.

WILSON, J., 2012. 'Weather and public health in Nottingham 1905-1926', *Weather*, Vol.67, pp.121-125.

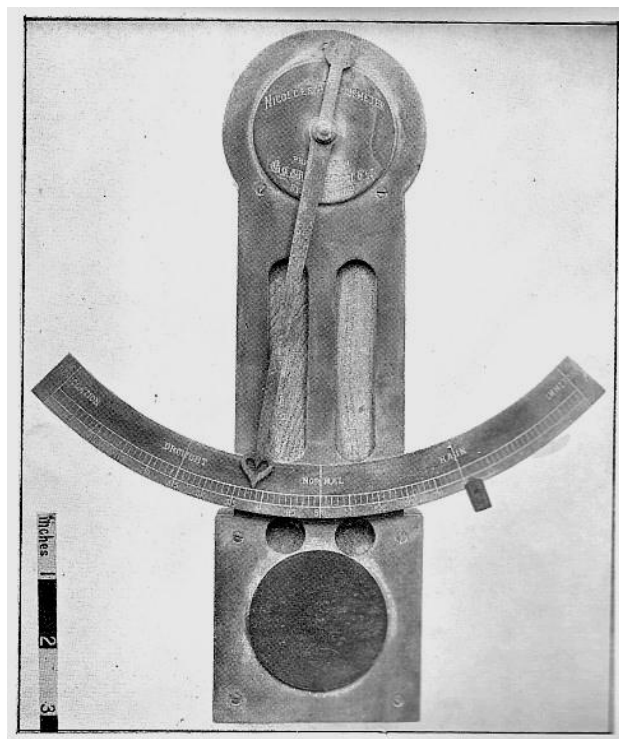
100 YEARS AGO

On Monday 13 May 1912, the Royal Meteorological Society held a meeting at Southport. Fellows assembled at the Town Hall at 11 o'clock, and then proceeded in wagonettes along the Promenade and the Marine Drive to the Anemograph Station at Marshside, where they saw Dines pressure-tube anemometers and a Baxendell Anemoscope at work.

NICOLLE'S AQUEOUS METER

The picture below appeared in the *Catalogue of the Collections in the Science Museum South Kensington with descriptive and historical notes and illustrations: Meteorology*, published by the Board of Education in 1922 (HMSO).

It shows Nicolle's 'Aqueous Meter', lent by B.C.Wainwright, Esq.



According to the catalogue entry for this instrument:

"This wood hygrometer is a modification of Conier's first wood thermometer of 1670 and Arderon's of 1746.

"In this instrument, a thin slab of wood is cut across the grain and fitted in a frame furnished with a graduated arc and an index. The axis of the index is attached to the wood so that the expansion or contraction of the slab by increase or diminution of humidity of the air causes a motion of the index along the scale. The graduations range from 0° to 100°, the limit at one end being 'Dessication' and at the other 'Immersion'."

(100 years ago continued)

On Saturday evening, May 11, William Marriott gave a Popular Lecture, entitled "A Chat about the Weather," at the Southport Temperance Institute. The Mayor of Southport presided.

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John Wilson (Nottingham)
Sir Arnold Wolfendale FRS (Durham)
Mick Wood (Bracknell)

THIS IS YOUR NEWSLETTER

Please send comments and contributions to:
Malcolm Walker, 2 Eastwick Barton, Nomansland,
Tiverton, Devon, EX16 8PP.

✉ MetSocHistoryGroup@gmail.com

The Group's annual subscription is £5 (cheques payable to *Royal Meteorological Society History Group*). A reminder will be sent when your subscription is due.
