History of Meteorology and Physical Oceanography Special Interest Group

Newsletter 2, 2010

WORKING FOR YOU: THE HISTORY GROUP COMMITTEE

by Martin Kidds
Hon Secretary of the History Group

Here is a short note to give members an insight into the running of the History Group on their behalf and to give early notice of some forthcoming events.

Throughout the year, your committee works hard to put together an interesting and varied programme for the Group's members, and this forms the core of our discussions when we meet, which we do three times a year. Planning for meetings, including consideration of suitable venues and potential speakers, typically begins about two years before the event itself. Closer to the time, attention is paid to the details of the programme and other arrangements. To give readers an idea, here are some of the matters we were considering at our committee meeting in March:

- Putting the finishing touches to a meeting in London in April marking the 150th anniversary of the British Rainfall Organization, also the Royal Meteorological Society's two-day Summer Meeting in Exeter in July 2010.
- The third in a series of 'Classic Papers' meetings, this themed on the subject of Turbulence, to be held at the University of Reading in November 2010.
- A meeting on polar meteorology, to mark the centenary of Scott's 1910-13 Antarctic Expedition, hopefully at the Scott Polar Research Institute, Cambridge, in the spring of 2011.
- A visit to the Thames Barrier in June 2011, the meeting themed around coastal flooding.
- A meeting in the autumn of 2011 celebrating the centenary of the use of aircraft in meteorology.

Looking further ahead, we are always keen to identify anniversaries of significant meteorological events or significant scientific advances – something the Society itself actively encourages.

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Many recent meetings have been adopted by the Society and become national Wednesday or Saturday meetings. We always take heart from this, seeing it as recognition of the contribution of the History Group and a greater prominence given by the Society to the history and development of ideas in the science. We also feel it is important that some meetings are targeted at History Group members and that we maintain a balanced programme to suit their varied interests and backgrounds.

Other tasks that occupy us include keeping a careful eye on the Group's finances and maintaining a publication programme. The former, under the watchful supervision of Mick Wood in particular, ensures we have sufficient reserves to fund suitable events for our members and the 'natural variability' of our subscription income year to year (some of you naturally prefer to renew each year, others take advantage of the five-year renewal cycle). Many of our members – including several of the committee – also make contributions to *Weather* such as profiles of interesting meteorologists,

Past Presidents of the Society and (sadly) obituaries. Last, but not least, here is our newsletter, largely put together by our indefatigable Chairman Malcolm Walker. Many History Group publications are available free via the Royal Meteorological Society's website, and are also available through the National Meteorological Library and Archive.

We are of course always delighted to hear from any members who might have ideas for meetings or, even better, if they can offer us some practical help in organizing them. Please also feel free to contact any member of the committee if you have a question about the running of the Group. We will always be delighted to hear from you.

Outreach

This year marks the 350th anniversary of the Royal Society. With the BBC and others commemorating this milestone, and interest in our science ever growing, we thought it was a good time to reach out to our members and ask for their ideas.

We are looking for ideas from members to promote the History Group (and the Royal Meteorological Society more generally) to a wider audience and of course to support our aims to promote the study of the history of meteorology and physical oceanography.

If a topic in the development of meteorology or physical oceanography is of particular interest to you, would you like to write about it? Could you commit to write a few hundred words about it? We are hoping a number of Historical Fact Sheets or 'articles' could run alongside our Occasional Papers on the Royal Meteorological Society's web site. This could be about a great weather event you witnessed, about potentially exciting 'stories' that led to significant developments in science. They could perhaps support a forthcoming meeting.

If you have any ideas, please don't hesitate to contact the editor or another member of the committee.

Historic locations in meteorology

The March meeting of the committee was hosted by Meteogroup in a modern office block in London – but it turned out this was a very historic location for meteorology, as 172 years ago G J Symons had been born just round the corner in what is now Buckingham Palace Road. Also, 63 Victoria Street nearby was home to the Met Office from 1869 until 1910 and 70 Victoria Street was the Royal Meteorological Society's headquarters for many years. Our normal meeting place is the Fellows' Room at the Society's headquarters at Oxford Road in Reading, where the photographs of distinguished past Presidents of the Society serve as one reminder of the rich history of the science of meteorology we hope to keep alive for the present and future.

THE STARTING BLOCKS OF SCIENTIFIC METEOROLOGY
by Maurice Crewe

… an article to mark the 350th anniversary of the founding of the Royal Society

BACKGROUND

In the 17th century, there was a boom in the development of interesting devices, especially on the continent, where they had contributed to the introduction of plates to measure the wind speed, tubes to create vacuums, thermoscopes, hygrometers and rain-gauges, although the latter had been around for centuries in India. The point is that different people invented ingenious instruments in different places, but initially many of them were solutions looking for a problem to solve; they had curiosity value but little known practical use. Inventions are only of value when they can be put to some useful purpose. It was in England under the auspices of the Royal Society that the value of a few foreign ideas developed into a practical set of meteorological instruments with instructions about how they should be used.

THE ROYAL SOCIETY

A key factor in the story is that in the late 1640s there were informal gatherings of natural philosophers (later becoming scientists) in London and Oxford; they called themselves the "invisible college", and when the monarchy was restored in 1660 they met more regularly and openly and then in 1662 they became incorporated formally when Charles II granted a charter to the Royal Society of London for the Promotion of Natural Knowledge. They were granted a charter and gained moral support from the crown but no money, unlike some of the academies and institutes on the continent, where the ruler or the state established and paid for societies but at the cost to their members of some of their independence. The 'Founder Fellows' of the Royal Society were elected on 20 May 1663.

Amongst the forty original names on the provisional list of members were John Wilkins, who chaired a preliminary meeting in 1660, Dr Jonathan Goddard (one of the most noted medical men of the time), Sir William Petty (a pioneer in the use of statistics), John Wallis (a mathematician who wrote on the barometer and thunder and set his pupil Isaac Newton on the track of calculus) and then first secretary Henry Oldenberg, who wrote, among other things, on the effect of thunder on a ship's compass (well he thought it was a good idea at the time!). The most noted early members from our point of view were Robert Boyle ('pigeonholed' for PV = a constant), Christopher Wren (known as a builder of churches, especially St. Paul's), Robert Hooke (who most people think just stretched a bit of wire) and Edmond Halley (who happened to notice a comet that returns every 76 years). These were some of the individuals who were referred to by Isaac Newton when he said "If I have been able to see further, it was only because I stood on the shoulders of giants". This was reputedly in one of the politer letters to Robert Hooke.

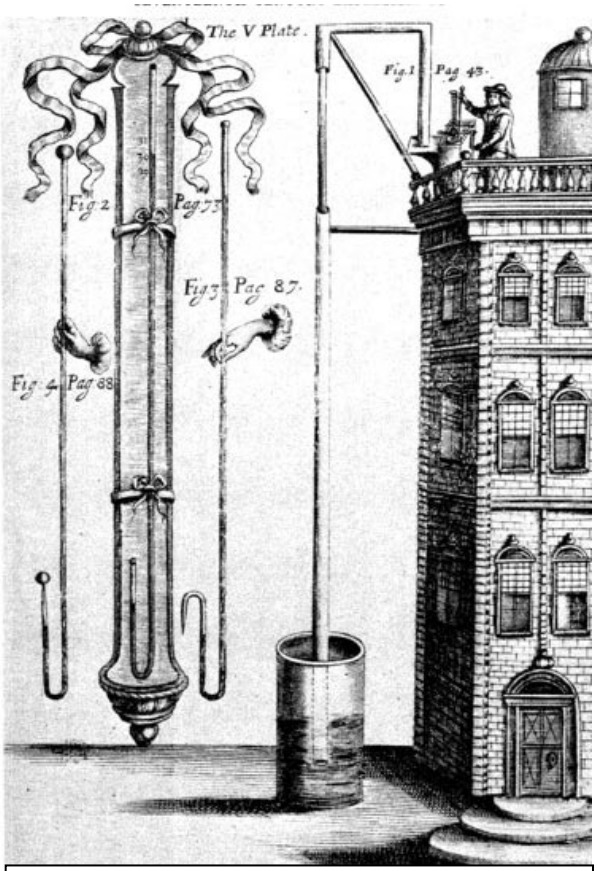
Hooke, according to Pepys, WAS the Royal Society; he served it from its inception for some forty years, producing new scientific demonstrations – sometimes every week. He even worded the society's credo "To improve the knowledge of natural things, and all useful arts, manufactures, mechanic practices, engines and inventions by experiments (not meddling with divinity, metaphysics, morals, politics, grammar, rhetoric or logic)". He also did a stint as secretary and another as president; his friend Christopher Wren wrote the preamble to the Society's charter.

Of vital importance to the development of the Royal Society was the novel idea of publishing a journal, which was introduced as the *Philosophical Transactions* in 1665. In the first seventy volumes, there are well over 400 papers concerned with meteorology, showing the growing interest in the environmental sciences in the 17th century.

PERSONNEL: BIOGRAPHICAL NOTES

Boyle

One of the most influential leaders of the scientific community in the mid-17th century was Robert Boyle, who in 1656 was in Oxford investigating, among other things, the properties of air. He knew many people on the continent were experimenting with Torricellian tubes so it is difficult to attribute all the ideas. I have seen it suggested that it was Boyle who brought the first barometer to England when he returned from studying on the continent. In 1726, William Derham claimed that it was Christopher Wren who suggested to Boyle that he should use a mercurial barometer to examine the theories of René Descartes, thus persuading Boyle to make a practical barometer, and Boyle has also been credited with coining the term 'barometer'. However, Boyle, with help from his assistant Hooke, constructed an air pump and investigated the springiness of air – work that eventually led to Boyle's Law – perhaps the only bit of science that many remember from school, but that is just as well because it is not only a first step in learning about air but it may have been the first equation ever published relating to the quantitative study of the atmosphere. Boyle's interest in air also led him to write '*New experiments and observations touching cold, or an experimental history of cold'* in 1665 for which experiments he supervised the first sealed thermometer made in England.



Boyle's siphon barometer and water barometer (from The History of the Barometer, by W.E.K.Middleton, 1964)

Boyle was not only active as a chemist but in most other aspects of science. One of his most important contributions was to make philosophy or science fashionable. He became a famous

celebrity; among his fans, Samuel Pepys noted on 10 June 1667 "Mr Boyle's book *Hydrostatickes,* which is a most excellent book as ever I read; and which I will take much pains to understand him through if I can". Pepys not only joined the Royal Society and even did a turn as president, but from his diary it seems he struggled to understand science. However, PV=K remains a unique contribution to learning about the atmosphere.

Wren

Christopher Wren (*b*. 20 October 1632, East Knoyle, Wiltshire; *d*. 25 February 1723, London)

Wren, the son of a rector, was the youngest child, the only boy. Before Christopher was three, his father was appointed Dean of Windsor, and the Wren family moved into the precincts of the court. But the life at Windsor was rudely disturbed by the outbreak of civil war in 1642, so young Christopher was sent to school at Westminster. While still a teenager he translated William Oughtred's work on sundials into Latin so that foreigners could read it; he also constructed various astronomical and meteorological devices. In 1646, he became assistant to Dr Charles Scarburgh (FRS 1663) for his lectures at Surgeons' Hall, so he started learning about anatomy.

In 1649, Wren proceeded to Wadham College, Oxford, as a "gentleman commoner", and graduated with a BA in 1651. Then, in 1653, at the ripe old age of 21, he was elected a Fellow of All Souls College and began an active period of research and experiment in Oxford, ending in 1657 with his appointment as Gresham professor of astronomy in Gresham College, London. In the following year, Oliver Cromwell died, and in the ensuing political turmoil the college was occupied by the military and Wren returned to Oxford, where he probably remained during the events that led to the restoration of Charles II in 1660 when he went back to Gresham College, where scholarly activity resumed and an intellectual circle proposed a society "for the promotion of Physico-Mathematicall Experimental Learning". This group became the Royal Society with Wren being one of the most active participants.

In 1661, Wren was elected Savilian professor of astronomy at Oxford, and in 1669 he was appointed Surveyor of Works to Charles II. It appears that at the age of 30, having tested himself successfully as an anatomist, scientist, mathematician, astronomer and physicist, he decided that architecture might be a more satisfying career. Wren's contribution to that period of science is easy to underestimate. He was one of the greatest scientific geniuses, who was a friend to the best inquiring minds of the time. It seems a pity he is only remembered as the designer of buildings, especially churches. He continued to be an active member of the Royal Society, serving as president in 1680-82, and after he became an architect continued to work on scientific ideas. He was even elected to parliament three times, although didn't dabble too much in politics. But it was back in Oxford that he first designed a sophisticated rain-gauge and in 1663 that he described the first automatic weather station – a really original idea at that time.

Hooke

Robert Hooke was born on 18 July 1635*,* the son of a curate at Freshwater on the Isle of Wight. At the age of 13, he became an orphan of sorts; receiving a £199 inheritance from his father he was sent off to London to develop his artistic skills with the painter Sir Peter Lely, but reputedly Hooke couldn't stand the smell of the paint. Fortunately, Hooke's potential genius was recognised by Richard Busby, the headmaster of Westminster School, who helped him move through the School to Oxford University, where he went as a chorister but worked as a servant to support himself until he met Robert Boyle and become his paid assistant. Hooke stayed with Boyle until 1662, when Boyle helped Hooke get his job as curator of experiments for the Royal Society. Hooke even had rooms at Gresham College from 1665-1703, where the Royal Society most often met. He was the pivotal figure at the Royal Society who worked for Boyle and was a lifelong friend and colleague of Wren. As the curator of experiments for the Royal Society, he was being paid to do science so he could be regarded as the first professional British scientist. I see in Richard Nichols' book on Hooke and the Royal Society that Wren appears in Hooke's diary 800 times between 1672 and 1680. From this and other books it is clear that Wren and Hooke worked very closely together on many matters for many years. He died in penury, his poor health removing both the ability and will to have a social life. His salary of several thousand pounds as City Surveyor was found in an iron chest after his death on 3 March 1703.

Hooke would probably be more highly recognized had he not had the misfortune to die before Isaac Newton, who reputedly bore a grudge and led a campaign to tarnish Hooke's

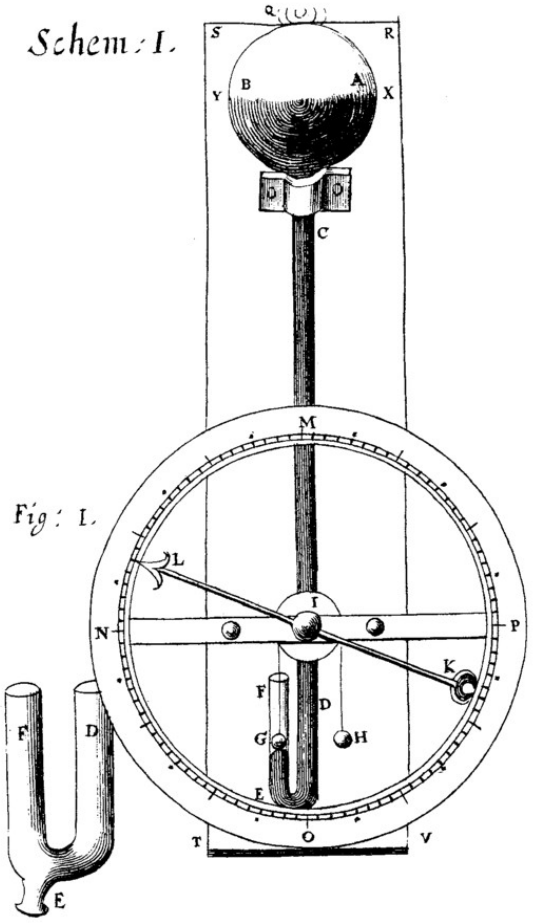
reputation. It is such a shame that Hooke's large library, diaries, scientific notes and collections of fossils, instruments etc were all dispersed or destroyed, along with the official Royal Society portrait.

It is difficult to find anything Hooke was not interested in. He tried to invent flying machines but gave up when he proved to himself that human muscle power wasn't up to it. Also: properties of matter – elasticity, anatomy – blood transfusion; surveying – new instruments and waywisers; architecture – design and sash windows; microscopy – the first definitive book including detailed drawings of snowflakes and hailstones; cytology – he coined the term cell; instrument making – precision cutting of helical gears; oceanography – e.g. 30 September 1663 "the ways I prefer before several other contrivances for sounding ye depth of the sea and fetching up water from any depth"; navigation (a marine chronometer – details of which were lost for some 300 years); music – he spent time explaining sound and vibrations to Pepys; astronomy; optics; geology; horology; meteorology; and, no doubt, almost any other 'ology' you care to think about.

From Hooke's posthumously published papers we see that he did a lot of work related to the earth sciences; he tried weighing air, drying it with heat, calibrating thermometers and to try and obtain consistent values. He also developed the wheel barometer (see diagram on right), which offered a user-friendly scale and a needle to magnify readings to which someone later added legends that still appear like rain, fair change etc. All this only 26 years after Torricelli's experiments in Italy. He refined a pressure-plate anemometer that was the most widely used wind measure for nigh on 200 years, made what is generally regarded as the first practical hygrometer, not to mention the weather-wiser with Wren. In passing, it may also be noted that Hooke developed a marine barometer and various instruments for sounding the great depths of the sea, from taking temperatures to samples of the sea bed – so he was also a pioneering oceanographer. But it was in 1663 that he first explained a method for observing the weather, becoming, so far as we know, the first person to do so.

Halley

Edmund Halley was another Oxford man, and was introduced to John Flamsteed, who was appointed the first Astronomer Royal in 1675. Halley visited the Royal Greenwich Observatory, where Flamsteed worked, and was encouraged to study astronomy. By the way, Wren is credited with building Greenwich, but it was just one of the sites where Hooke was the surveyor who supervised much of the work – but of course gained no credit.



Hooke's wheel barometer (from his Micrographia, 1665) The vessel DEF shown lower left was used for filling the barometer (for an explanation, see The History of the Barometer, by W.E.K.Middleton, 1964)

Halley was the youngest of this group of Royal Society members in London, who were attempting to find a mechanical explanation for planetary motion, as was Newton at Cambridge. The problem was to determine which forces would keep a planet in forward motion around the Sun without either flying off into space or falling into the Sun, and although Hooke and Halley had calculated that the force of gravity keeping the planets in orbit decreased as the inverse of the square of the distances between them, they were unable to deduce from this hypothesis a theoretical orbit that would match the observed planetary motions, despite the incentive of a prize offered by Wren.

Halley visited Newton, who told him he had already solved the problem; the orbit would be an ellipse, but that he had mislaid his calculations to prove it. Encouraged by Halley, Newton then expanded his studies on celestial mechanics into one of the greatest masterpieces produced by the mind of man, his *Principia*. The Royal Society decided that "Mr Halley undertake the business of looking after it, and printing it at his own charge", which he proceeded to do. He consulted with Newton, tactfully subdued a priority dispute between Newton and Hooke, edited the text of the *Principia,* wrote laudatory verse in Latin for the preface to honour its author, corrected the proofs, and saw it through the press in 1687. Without Halley, we may never have heard of Newton.

Meanwhile, Halley also took an active interest in meteorology. Galileo and Hooke both tried to describe and explain trade winds, but Halley actually produced both an explanation and, for the first time, a chart, in 1686. Halley also repeated an earlier experiment by Descartes, taking a barometer up Snowdon; he produced the first pressure-height formula. In neither case was he quite accurate, but he could see an application and a method of applying meteorological science. He also gave an "Account of circulation of watery vapours of the sea & the cause of springs" and gave a "Discourse tending to explicate the modus of the rising vapours out of water". These and other entries in the Royal Society Register suggest he was describing the hydrological cycle.

These four gentlemen all contributed pioneering scientific ideas that set the pattern for the earth sciences that we all recognise today.

INSTRUMENTS

It is a pity that history often attributes the invention of scientific instruments to only one person. For example: who invented the barometer? Practically everyone says it was Torricelli, but several of his contemporaries also investigated vacuums, and when Evangelista showed his experiment to the world it was little more that a diverting novelty. It did interest a few ingenious gentlemen, however – various Italians and Frenchmen, including Descartes and Pascal. Then, in the late 1640s, English 'philosophers' started experimenting, and for the rest of the 17th century it was Fellows of the Royal Society who developed most of the new ideas. Reputedly: it was Boyle who first saw the potential for studying the air and coined the term barometer; it was Wren who suggested using just mercury; and it was Hooke who actually made the first practical instrument for use by weather observers. Beware the simple answers about who invented things.

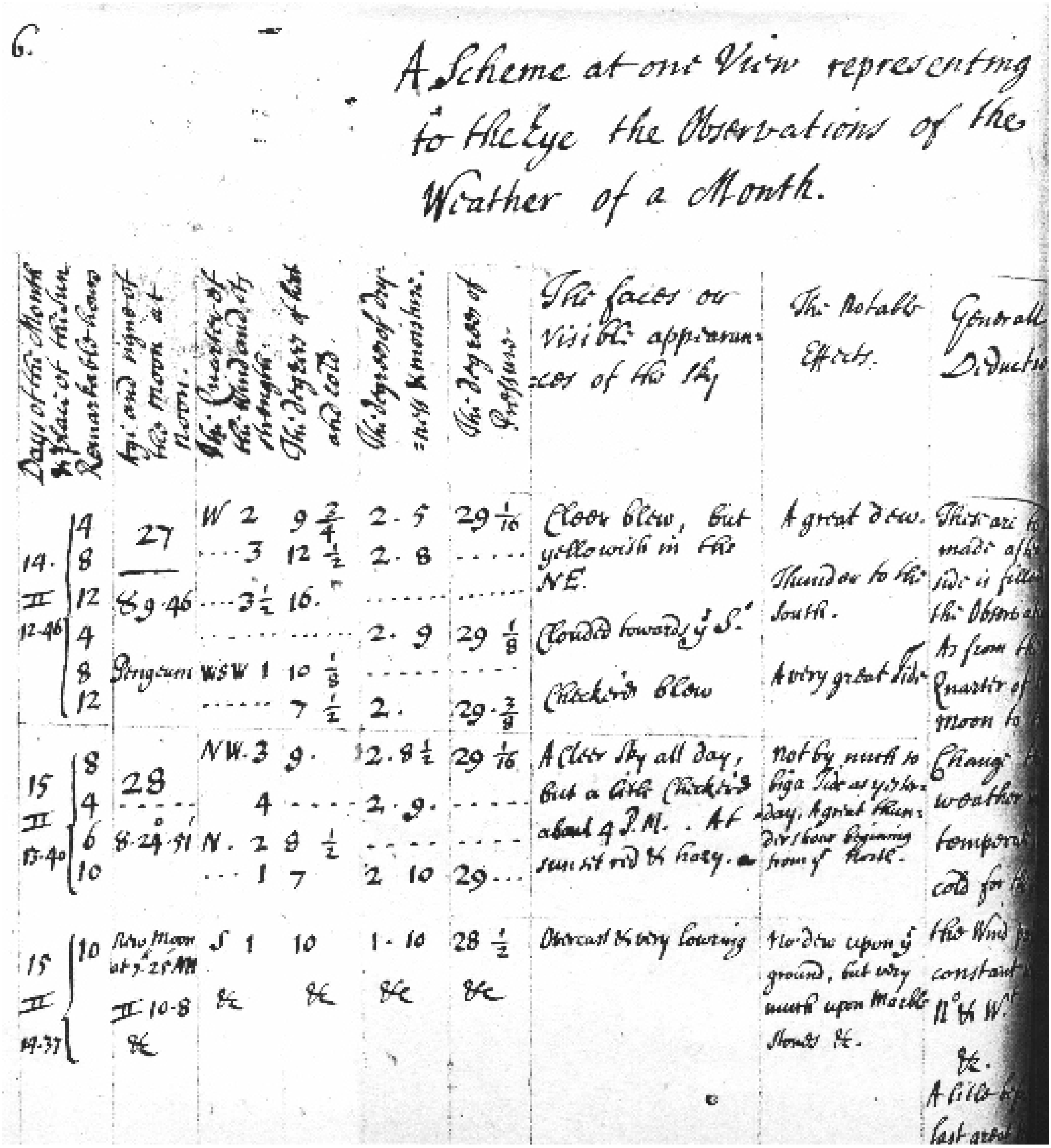
The early thermometers or thermoscopes were of course open to the atmosphere, so were unduly affected by variations of pressure. It is thought that Sir Robert Southwell brought the sealed thermometer to England, but it was soon copied by Boyle and Hooke, and it was Hooke who may have been the first to describe a method of volumetric calibration – not ideal because he used only one fixed point, but it was farsighted to see the need for standardization.

It seems clear that many clever men in the Royal Society chipped in with ideas to refine various instruments. But generally it was down to Hooke to actually make them. You have all seen these illustrations before. But there is so much more, and to quote from Richard Waller's book "Nov 14 1683 Mr Hooke shew'd an instrument to measure the velocity of the air or wind and to find the strength thereof which was by four vanes put upon an axis and made very light and easy for motion; and the vanes so contrived as that they could be set to what slope should be desired". This anemometer was demonstrated by walking up and down the long gallery at Gresham College with all the doors and windows shut and was intended for use on ships. This was of course a refinement of the 12 Mar 1667 description of an instrument for collecting the wind or making the slower motions of the air more sensible. He must have been close to the idea of a cup anemometer. There are other examples.

WEATHER-WISER

On 9 December 1663, Wren gave a "Description of a weather clock" to the Royal Society.

Hooke promptly suggested one or two additions and offered to add them, the result being that over the next 20-25 years both Hooke and Wren read papers on the subject, but it was Hooke who actually built the "weather-wiser" (first working model probably around 1669) with a tipping bucket rain-gauge, designed earlier by his friend Christopher Wren. They developed an instrument that took some 300 years before it was adopted as an official, standard instrument. When two geniuses are friends who meet several times week over 30 years or more it is impossible to know who introduced which idea – and that comment covers almost all aspects of science.



Hooke's Weather Observation Scheme, 1663.

It was, however, the first automatic weather station and made recordings at The Royal Society with trip hammers that made marks on paper to record wind direction, wind speed, rainfall, temperature, humidity and pressure. Not surprisingly, it spent more time being repaired or developed than actually working, but their vision was some 150 years ahead of other practical automatic logging systems. Removing the human element from observing the weather was some 300 years before it was put into operation.

OBSERVATIONS

Most writers on the history of meteorology acknowledge that Hooke's paper "How to make a history of the weather" (see diagram above) contained the first coherent and comprehensive

instructions on weather observing, and that was originally read on 7 October 1663.

To quote from Thomas Birch's History of the Royal Society, the paper "was read, and ordered to be reviewed, by the president and Sir Robert Moray, and then to be registered and sent to the several persons who had been engaged in this work of observing the changes of the weather, as Dr Power, Mr Beal etc."

The first published version was probably in Sprat's history of the Society that was published in 1667 – a book that Pepys thought sufficiently noteworthy to record in his diary (10 August 1667). It is usually a version from the more common 1702 edition that the instructions are usually reproduced. If you followed these instructions in the 21st century you would find that even over three centuries later you would still produce very competent human weather observations.

NETWORKS

Towards the end of his instructions for observers, Hooke advocated that weather observations should be made to a common standard and collected from several places around the world "but especially in different parts of this Kingdom". A network of observations to establish an overall national or better an international picture of the weather. Well to us it seems a sensible idea, so why did it take roughly 190 years before Matthew Fontaine Maury set the international ball rolling?

CONCLUSIONS

Many countries claim pioneers in the development of "modern science" but it is difficult to find anything that predates the pioneering meteorological work of members of the Royal Society in the second half of the 17th century. They combined the imagination, technical skill and opportunity to transform the world of science. I suggest that Boyle, Wren, Hooke and Halley, separately and more importantly together, demonstrated a breadth of vision and foresight that changed meteorology from a philosophical pastime into an instrumental science. But since the study of meteorology depends primarily on weather observations made with comparable instruments to a common standard from a network of stations then the individual who first suggested that approach should be recognised as the "father of scientific meteorology" and that man was "Mr Royal Society" Robert Hooke.

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ALSO
Numerous papers by Halley, Hooke, Boyle and Wren in the Library and Archive of the Royal Society.

WEATHER IN THE DIARY OF SAMUEL PEPYS

In his article about the early days of the Royal Society (pp.2-8), Maurice Crewe mentioned Samuel Pepys, who was another with more than a passing interest in the weather. Two articles in particular contain extracts from the diary:

Sheward, R., 1904. 'Weather notes in Samuel Pepys' diary, 1659-1669'. *Quarterly Journal of the Royal Meteorological Society*, Volume 30, pp.264-266.

Cave, C.J.P., 1920. 'Quotations from the diary of Samuel Pepys on the weather'. *Quarterly Journal of the Royal Meteorological Society*, Volume 46, pp.65-87.

From the diary, we learn that rose bushes were in full leaf on 21 January 1661 and that January 1662 was again warm, with Pepys recording on 15 January 1662 that "Parliament ordered this to be a Fast Day, to pray for more seasonable weather, it having been as though it was the middle of May or June, which all men say do threaten a plague". In contrast, 6 January 1665 was "one of the coldest days, all men do say, ever known in England", and on 24 January 1666 "the wind so very furious" that "it was dangerous to walk the streets, from the bricks and tiles falling from the houses". On 1 June 1664, Pepys went to see a play and "before it was done there fell such a storm of hayle that we in the pitt were fain to rise, and all the house was in confusion".

Sheward suggested that Pepys was "entitled to rank as one of the first of British meteorologists, although he knew nothing of the instruments employed therein today". But Cave disagreed, saying out that Pepys' references to the weather were "such as any one might make in writing a diary or in correspondence". Unfortunately Sheward made some transcription errors, which Cave corrected. Cave also pointed out that some confusion over dates may have occurred as a result of Pepys using the Old Style, in which New Year's Day was 25 March. Thus, it is necessary to exercise care when interpreting entries in the diary in the first three months of the year. January 1659 Old Style, for example, was January 1660 New Style.

For further information about Pepys' diaries, see the four-part set of articles published by D.J.Schove in the *Journal of Meteorology*: 1986, Vol.11, pp.73-88; 1987, Vol.12, pp.37-44; 1989, Vol.14, pp.42-47; 1990, Vol.15, pp.16-21.

HOWARD OLIVER MEETS OLIVER HOWARD

Meeting report by Howard Oliver

On 20 March 2010, a special event commemorating the "cloud modification" paper of Luke Howard and the role of clouds in art was held in the galleries of Tate Britain.

Howard and Sylvia Oliver described the life and meteorological studies of Luke Howard, including his cloud descriptions and the resulting tribute poetry by Goethe. A range of related handouts were provided for everyone, including a reprint of part of the original 1803 paper published in *Tilloch's Philosophical Magazine*.

John Thornes then discussed John Constable's clouds; Giles Harrison, atmospheric electicity; Maarten Aubaum, cyclones and tempests; and Gavin Pretor-Pinney, cloud observations. The organizer, artist Serena Korda, ended the day by "turning herself into a cloud" outside the Tate using a large number of white balloons!

Both of the two sessions, limited to about 40 persons per time, were sell-outs, and the audience response was very good. Hopefully, those attending will have taken away a better appreciation of the relevance of meteorology in art and science.

A most satisfying aspect of the day was, however, the visit by Oliver Howard (direct descendant of Luke). Howard and Sylvia were able to spend some time talking to him and describing the displays they had brought. These included an early edition of Forster's "Researches about Atmospheric Phænomena" which incorporates a reprint of Luke's modifications paper together with associated illustrations. Constable owned and used a copy of this book so it made a good link with John Thorne's talk.

COMMENT

With reference to an article by Anders Persson in Newsletter 1, 2010 ('More on the D-Day forecast', pp.20-21), John Kington has written to point out, in respect of wartime meteorological reconnaissance flights, that daily weather observations were made by the Luftwaffe Wettererkundungs Staffeln (Wekusta) over the North Atlantic, as described in his book (with Franz Selinger) entitled *Wekusta: Luftwaffe Meteorological Reconnaissance Units and Operations* (Flight Recorder Publications, Ottringham, 2006).

THE WHAT-HOUSE EFFECT?
by Alan Hughes

The greenhouse effect is now well established in popular consciousness. The term "greenhouse effect" is a 20th-century one.

In 1907, the English mathematician and physicist J.H.Poynting (1852–1914) wrote in the *Philosophical Magazine*:

> "Prof. Lowell....pays hardly any attention to the 'blanketing effect' or, as I prefer to call it, the 'greenhouse effect' of the atmosphere." (*Phil. Mag*.,1907, Vol.14, p.749).

Lowell was the American astronomer who in 1894 had founded the Lowell Observatory.

This seems to be the earliest use of the term *greenhouse effect* in the way we now usually understand it: the heating of the lower atmosphere as a result of the presence in it of gases that absorb infrared. However, two years earlier the term had been used to refer to the heating effect produced by a glass greenhouse:

> "This heating up of the leaf...must chiefly be due to 'the greenhouse effect', the imprisonment of the reflected dark-heat rays by the glass plates." (*Proc. R. Soc.*,1905, B, Vol.76, p.409).

And in 1849 it was used to refer to the *visual* effect of lightness produced by large, closely-set windows:

> "The windows, which are of two lights, are so closely set as to have almost a green-house effect." (*Ecclesiologist,* October 1849, p.104)

The modern greenhouse effect was described as far back as 1827 by J.B.J.Fourier (1768–1830), the French mathematician and physicist, but he did not use any French equivalent of "greenhouse effect":

> "C'est ainsi que la température est augmentée par l'interposition de l'atmosphère, parce que la chaleur trouve moins d'obstacle pour pénétrer l'air...qu'elle n'en trouve pour repasser dans l'air lorsqu'elle est convertie en chaleur obscure." (*Mém. de l'Acad. Royale des Sciences de l'Inst. de France*, 1827, Vol.7, pp.585-7).

While the greenhouse effect is usually so termed now, it has also been called the *hothouse effect*, and for nearly as long.

> "Under the perfectly cloudy condition [in the Permian]...there would be a 'blanket' or 'hothouse' effect similar to that which now exists, and which now raises the surface temperature of the earth nearly 30°C." (C.G.Abbot, *The Sun*, 1911, p.323).
>
> "The postulated 'hothouse effect' of increased atmospheric carbon dioxide." (*New Scientist*, 1970, 3 September, p.451).

RECOMMENDED BOOKS
by Howard Oliver

Anyone looking for a suitable meteorology-related present for a 7-13 year old relation could do far worse than get them a copy of the Luke Howard biography *The Man who named the Clouds* by J Hannah and J Holub, published by Whitman.

This is a beautifully illustrated and excitingly written account of Howard's life together with activities for budding meteorologists to try themselves. The copy I brought for the Tate Gallery display (see page 9) caused a lot of interest.

It is about £10 and readily available via *Amazon.*

On a more adult note: the English translation of the book *War North of 80 – The last German Arctic Weather Station of World War II* by William Dege, published by Calgary Press, is also now easily available.

It is a highly detailed story of William Dege, the station leader, together with a wealth of information about the installation and operation of the station and general background to wartime arctic weather observations by both sides. It is based on Dege's journal and other documents rescued by his son during a visit to the original base camp in 1985. There are many black and white photographs and illustrations. It also includes appendices, written by the English translator William Barr, on the post-war careers of some of the German meteorologists who worked on the Arctic stations. A very interesting read.

THE BRITISH ANTARCTIC EXPEDITION 1910 to 1913 – THE METEOROLOGICAL VIEW
by Alan Heasman

"We left Cardiff on Wednesday June 15th 1910. The town gave us an excellent send off, there being large crowds on the quay to give us a cheer and hearty well wishes".

With these words, George Simpson, the leading meteorologist of the British Antarctic Expedition (BAE), opened his personal diary of his participation in the adventure, more famously known as 'Scott's Last Expedition'. George Simpson, later nick-named 'Sunny Jim' because of his passing resemblance to a 'cartoon' (or more precisely 'carton') character used to promote 'Force Flakes', a breakfast cereal available in 1910 and still available in 2010 (I eat it most mornings), was one of several members of the BAE on board the 'Steam Yacht *Terra Nova*' as it began its gruelling voyage under a mix of sail and steam south through the Atlantic via Madeira, South Trinidad to South Africa and thence across to Australia and finally arriving in New Zealand in late October 1910. The '*Terra Nova*', an ex-whaling ship re-registered as a yacht to avoid strict mercantile regulations on loading and crew accommodation, was a notoriously poor sea-going vessel which rolled and wallowed its way across the oceans. Captain Scott wisely travelled by another faster ship to New Zealand. As usual, the *Terra Nova*'s regular crew maintained a marine meteorological log through that voyage and the several voyages between New Zealand and the Antarctic between 29th November 1910 and 12th February 1913. These little-known marine weather observations of the BAE can be found in six log books in the care of the National Meteorological Archive, Exeter (under Refs BAE 3 to 8).

On board the '*Terra Nova*', Simpson was accompanied by Charles 'Silas' Wright, another physicist. Five days after leaving Cardiff, they had already begun various scientific measurements including atmospheric electricity (Simpson's special interest), the radio-activity of the air and other geomagnetic observations. Most of these would be continued in the Antarctic. All this helped set the theme of the BAE which was a very science-led expedition but with the parallel and 'glorious' aim of being the first to reach the South Pole.

It is hoped that through the History Group Newsletter and the planned meeting in Spring 2011, hopefully at the Scott Polar Research Institute, Cambridge, we will be able to follow the progress of the BAE during its centenary 2010 to 2013 with the emphasis on the meteorological observations and achievements.

IN THE ARCHIVE
by Malcolm Walker

Most of the Royal Meteorological Society's archive is now in the National Meteorological Archive (NMA) at Exeter.

The following items were deposited in the NMA on 15 March 2010:

- One box file containing the minutes of the Society's Council minutes from 18 March 1925 to 20 December 1944.
- One box file containing the Minutes of the Society's Finance Committee from 15 January 1936 to 12 October 1955.
- One box file containing the minutes of the Society's Finance and General Purposes Committee from 11 November 1955 to 28 May 1964.
- Various documents, published articles and original correspondence from the late 1870s and early 1880s relating to an investigation called 'The Lightning Rod Conference'. The word "Conference" in this context meant a consultation carried out by a committee. This committee was chaired by G.J.Symons.

All of the minutes of the Society's Council meetings from the very first, on 3 April 1850, to about 1960 are now at Exeter. So, too, it is believed, are the minutes of all committees and sub-committees from the earliest days of the Society to about 1960.

Minutes of Council and other meetings held since about 1960 are held at the Society's headquarters in Reading. Also at Reading are the membership lists of the Society from 1850 onwards, along with the nomination papers of many Fellows and other classes of member.

Besides the minutes, the NMA cares for many other papers and books owned by the Society. Among them, there are many of the rare meteorological books collected by Symons and bequeathed to the Society by him. Nine of them were published between 1476 and 1499, 128 between 1500 and 1599, 214 between 1600 and 1699 and 403 between 1700 and 1799.

To find Society material in the NMA, you should make use of the online catalogue:

http://library.metoffice.gov.uk/search~S18

This online facility takes a bit of getting used to. Be patient. It's worth it.

150TH ANNIVERSARY OF THE FOUNDING THE BRITISH RAINFALL ORGANIZATION
Meeting Report by Julian Mayes

A beautifully sunny spring day failed to deter a good turnout (58) to this national Society meeting on Saturday 17 April, co-organized by the History and Meteorological Observing Systems Special Interest Groups. Many of the talks were written up for a special issue of *Weather* published in May.

After words of welcome from the Society's President, Professor Julia Slingo, the meeting started with a short introduction from the chairman of the morning session, Stephen Burt, who set the scene for the meeting by reviewing some of the great events of the 1860s. The first main talk covered the history of the BRO by *David Pedgley*, who also covered this topic in History Group Occasional Paper No.5. George Symons started collecting rainfall records in the late 1850s as concerns were raised about a succession of dry years. This led to the publication of a four page leaflet '*English Rainfall'* covering the rainfall of 1860 (the forerunner of the annual *British Rainfall* volumes), a reproduction of which was given to those attending the meeting.

David Pedgley traced the rise in workload as the number of contributors increased – reaching over 2000 in just 20 years. The problems of workload and finances continued, leading ultimately to the absorption of the organization into the Met Office in 1919.

Malcolm Walker provided a biographical portrait of George Symons. Symons was forced to leave his employment in the Meteorological Department of the Board of Trade in 1863 as a result of FitzRoy's refusal to allow him time to carry out the work and his objections to him talking to the press. After explaining how *Symons's Meteorological Magazine* had evolved into the Met Office's publication *Meteorological Magazine*, Malcolm expressed his regret at the ending of the journal, a view supported by many in the audience.

Ian Strangeways then broadened the subject-matter with a review of the history of the rain-gauge. One of the main tasks for the BRO was to establish the standards for rainfall measurement which were, in time, adopted in much of the world. Ian also considered the value of rain-gauge observations, particularly in terms of design and exposure.

Stephen Burt provided an evaluation of *British Rainfall*, noting that many rainfall records would have been lost to history had they not been published here. He also observed that no original copes of the 1860 volume *English Rainfall* were known to still exist (the handout given out on the day being from a facsimile copy published in 1884). In a similar vein, it was asked why more recent rainfall data could not be published on the Met Office website as a substitute for the annual volumes of *Rainfall*, the successor to *British Rainfall*, which was published by the Met Office until the volume for 1993. As the meeting venue at Regents Park is close to the home of the BRO at Camden Square, Stephen's comments on the history of the house were of particular interest. Although the meteorological station lived on after the demise of the BRO, it was relocated in 1957 and closed due to vandalism in 1969.

Harvey Rodda described how the annual list of heavy daily rainfalls published each year in *British Rainfall* had been digitised and how this forms a valuable resource for the insurance industry (this has previously been published in *Weather,* March 2009). It was noted that the analyses and maps published in *British Rainfall* sometimes showed rainfall distributions comparable with the storms of summer 2007. 1968 was an outstanding year for heavy rainfall events, coincidentally the last year covered by the annual listing which was then discontinued, that being the last year in which *British Rainfall* was published in the original form, being replaced by the *Rainfall* volumes from 1969.

Tim Allott from the Met Office brought us up-to-date with a review of the present-day rainfall observing network. This currently comprises 3,214 gauges, 30% of which are automated. 66% are run by the Environment Agency. Even so, there are still as many as 1,800 voluntary observers. 59 rainfall stations have been running for at least a century but the network has contracted in recent decades. As previously noted, several members of the audience asked whether more extensive publication of rainfall data could be considered for the Met Office website, this form of publication easing some of the costs and delays in production that had previously caused the cessation of *British Rainfall*.

Malcolm Kitchen (also Met Office) provided much food for thought in his consideration of the future of precipitation measurement. He contrasted the recent slightly decreased resolution of rain-gauge data with the ever-

growing resolution of Numerical Weather Prediction, and the extent to which the latter should act as a driver for the former. He wondered whether the observation capability is sufficient to allow detailed analyses of small-scale events such as local storms and whether we can integrate radar with traditional observations from rain-gauges. He noted that mobile phone signals suffer from attenuation in heavy rain and considered the potential for this to be used as an alternative means of capturing rainfall distribution at high resolution.

One of the features of the meeting that made it such a success was the range of historical exhibits on display; these included two Albert medals awarded to Symons, the originals of the Society's Symons' medals and a fine testimonial book awarded to Symons by the Society in 1879. There was also a display of 21 historical documents relating to the BRO, mostly owned by the Society and cared for by the National Meteorological Archive at Exeter. Thanks are due to those who arranged for these items to be available for view.

The meeting ended with the story of how the poor condition of Symons' grave was publicised in the BBC Four documentary 'Rain', broadcast in April 2009. Following an initiative by Philip Eden and Stephen Burt, the grave has now been restored, with all present at the meeting being invited to a commemoration ceremony to be held at Kensal Green Cemetery on St Swithin's Day, 15 July 2010.

Symons was appointed a Chevalier de l'Ordre National de la Légion d'honneur in May 1891. The picture shows the badge, displayed at the British Rainfall Organization meeting on 17 April 2010. The award was presented to Symons in London by the French Ambassador on 18 June 1891.

PICTURES OF A RAIN-GAUGE supplied by Mick Wood

These pictures of a rain-gauge were taken at Mulberry Hill, Frankston, Victoria, Australia, on 21 February 2010.This was the home of Sir Daryl Lindsay and his wife Lady Joan Lindsay, the latter the author of "Picnic at Hanging Rock". It is now a National Trust property. Note the cover to keep out creepy crawlies!!

WEATHER AND THE PERFORMANCE ENVELOPE
by Richard Gregory

While it is all too obvious that the weather affects what we can do outdoors, not many of us would expect to be incapacitated by desalination in this country. However, on a very close, warm afternoon in my mother's vegetable garden in Hampshire, which is surrounded by tall trees, I was slightly disconcerted when I became a little giddy. Like a true Brit, I paused for a while and then went on digging, and was most disagreeably surprised when, only a few moments later, I found myself unable to stand upright without holding the fork handle, the tines of which I had plunged firmly into the soil. Fortunately I recalled an article in a monthly magazine – *Air Clues* – circulated in the Royal Air Force, concerning a bunch of volunteers on a jungle survival exercise in Malaya, when the only individual to suffer from desalination had not taken his salt tablets. So making my way to my mother's kitchen, where I sat down, I asked her to whisk up a teaspoonful of salt in a tumbler of water, and quickly drank it. Recovery took minutes only.

Some years later, when flying from Riyadh in Saudi Arabia while training student pilots for the Royal Saudi Air Force, it was quite usual to take off one's flying overall and see it streaked with salt within a few seconds of being hung up! These daily dramatic reminders encouraged us to maintain our daily salt intake since, in the middle of one of the world's large deserts, humidity levels were always extremely low. Fortunately, we had a resident aero-medical specialist always available with sensible advice, which was essential when the flying programme was reorganized so that the usual sortie duration was extended from one hour to one and a half hours. Since the business of strapping in and completing cockpit checks with a student new to the aircraft could take up to 25 minutes, in the hot season this meant the loss of up to 3.5 pints of sweat – and its precious salt content – before starting the engine, closing the canopy and getting the cooling system running, and this risked the loss of too much salt toward the end of a sortie. Fortunately, we suffered neither incident nor serious accident over the critical period, although some sorties were quietly cut short when the instructor suspected the onset of desalination. I was one of this number, and possibly the only individual with previous experience of the phenomenon.

Having once volunteered for a survival course in the Cairngorms, together with a number of other front line jet jockeys, we all experienced rain in the Highlands. This was real rain – pitchforks, tines downward – which greeted us when we stepped out of our large wooden hut at Rothiemurchus, (even the name sounded like a forecast of poor weather – in the local dialect) a few miles northwest of Glenmore, now a ski resort. Our view of the inclement conditions was somewhat coloured by three considerations, the first being that it was what my daughter calls o'dark thirty – actually the first gray light, and it was raining. We also knew that we had to subsist for some days on the rations we had been able to carry up in our rucksacks from the Land Rover, which could get no closer to the hut than 400 yards-downhill.

Our rucksacks carried our survival ration for the day – two handfuls of mixed nuts and raisins, together with the invaluable Kendal Mint cake for those who had thought to bring it, full water bottles, and a one man survival dinghy! We knew that we were in for a long walk and a long day in consequence, and the first two hours were inauspicious, as we made our very damp way up a rock strewn gulley toward a col, where we turned left and scrambled up the gulley side to the top of what we had expected to be a peak, but which turned out to be an extent of soggy, tufted grassland. Here, one of the party discovered that, when he lifted his boot to retie the lace, water ran out at the back. Later, we emerged on to a broad Forestry Commission track which made easy going, and which led us to our "lunch" halt – a grassy spot on one side of a loch, when we were blessed by the rain ending and the appearance of a watery sun. This agreeable prospect was somewhat affected by the news that, our repast over, we had to inflate our dinghies, cross the loch, deflate and stow our dinghies, scramble up the far side to another col, cross it, find the headwater of a small stream and follow that for about 3 miles to a map reference, where a helicopter would run a shuttle service back to base – but only for the first twelve to reach it. The five or six unfortunate sluggards would be faced by a final 5 mile tramp back to the hut. Major Cork, our army liaison officer and overall guardian angel advised us to watch out for the onset of dehydration, which we might expect to be marked by irritability and difficulty in making decisions – good ones especially, which would lead to worsening performance. Of course, we would all be driven by the wish to get on the

chopper, but I had resolved to be very careful in avoiding dehydration, which might well see me walking an extra five miles at the end of what was already a long and tiring day.

Luckily, with a fair amount of boating experience I had decided that the best way to get myself across the loch in the dinghy would be to lie prone in the narrow end and paddle with as much of my hands and arms as I could get into the water. In the event, like everyone else, I generated a fair amount of body heat but lost rather more, mostly through my hands and forearms, but I went very much faster than those who sat comfortably at the wide end of their dinghies, paddling only with their hands. Deflating and stowing our dinghies proved to be on a par with trying to thumb an oyster through a Yale lock, but I was in the first three to start up the hillside and over the col where, consulting the map, I struck out for the stream – initially following the wrong bank, with the chopper pick-up point on the far side. Realising this, I took a long draught from my water bottle and waded the stream immediately, before it grew wider and deeper with the possibility of water getting into my boots. I was very lucky to be in the first lift, and on arrival at the comfort-free hut we set about making a fire and preparing the food for supper, which would necessarily be fairly substantial tho' lacking in delicacies!

Another day involved a very long walk, over a number of ridges only about 20 feet high, but covered in bracken. Each step required the decision whether to walk naturally, and bring water cascading off the bracken and boot-ward down the legs or lift the foot over the bracken and put it down not knowing where ground level might be – rather like going up or down stairs in total darkness, aiming for a non-existent stair or walking into an unexpected one. By this time, the rain, which started toward the end of the walk, had penetrated all our clothing. Luckily, the inner three layers consisted of an early model string vest, complete with knots, then a Viyella shirt, with a woollen sweater over, so that what ever moisture got through the skin, it was at least warm. After half an hour of this type of going, I was extremely relieved to have the company of two others over 30 years of age, the rest of the group being less than 25 years old – and what a difference that made. There was an enduring temptation to lie down and just give up, but we three kept going for another 45 minutes of this misery. That day certainly extended our performance envelopes, interestingly enough on the side of mental, as well as physical, endurance.

A Winter Survival course in the Austrian Alps had, as its central and critical feature, three days outdoors in dense pine forests carpeted by 3 feet of snow. For subsistence we had a 12 ounce pack of food, one day's ration for troops fighting in mountainous country. This contained such delights as dried pemmican, which had the density of a good quality riding saddle, and as far as I could judge pretty much the same taste, to which could be added four hard tack biscuits, a foil wrapped wedge of cheese, two Oxo cubes, two ounces of plain chocolate a small tin of streaky bacon, and a simply dreadful confection called, with great imagination, powdered tea. When added to boiling water, which required several large blocks of dense snow to be melted down, the resultant brew would have taken the porcelain off a cast-iron bath, but we each had some, and all earned a medal by preparing and consuming the dreadful muck! To keep boredom at bay during daylight hours, we had to construct a different type of shelter each day, beginning with a simple para-tepee and progressing to a sophisticated arrangement of four walls, made of hard snow blocks, and roofed with a layer of pine boughs topped with a thick layer of pine twigs. We slept within this highly improbable device on a night when the outside air temperature dropped to -19°C, and were warmer there than in the unheated hotel, since the shelter had been constructed with a maximum floor-to-ceiling height of about 30 inches, at what one might call the lobby or entry end, tapering to about 18 inches at the head end. Having first covered the packed snow floor with pine twigs, the drill was to carry one's sleeping bag in, unrolling it with the entry end furthest away, crawl to and sit on this open end, remove and carefully brush the boots and then put them into the sleeping bag first, since a boot which has frozen stiff overnight is uncomfortable in the extreme to wear. As testimony to the efficiency of the construction, I recall that the inside tops of the snow walls showed clear signs of having begun to melt overnight. Impressive, convincing and in the event, all quite comfy. On a very basic note it is worth mentioning that over this three-day period no one had used the toilet paper in the food pack.

Finally, we were reliably informed by our aero-medical specialist at Farnborough that a one-hour instructional sortie in a small high-speed jet aircraft used up as much mental energy as an

average eight hour working day. To introduce my university graduate students to night flying, I once faced a programme of 3 flights, each sortie being more demanding than its daylight equivalent. On three occasions on one night we took off from Oakington, near Cambridge, climbed out to the south over the Channel, where we performed some forbidden night aerobatics, turned back to base, made a high-speed run, descended to make a recce of the approach, then went around to a final landing. At the conclusion of my final sortie at about 0430, I was so weary, mentally and physically, that I could only climb slowly out of the cockpit and down to the tarmac where I briefly rested my cheek on the still ice-cold wing, before walking wearily into the flight hut to sign off the aircraft as serviceable. I could not claim my night flying supper, but drove home - to crash out. Truly a night to extend the performance envelope!

CLARIFICATION
by Malcolm Walker

In Newsletter 1, 2010, there was an article by Richard Gregory entitled 'More reminiscences'. When preparing this article for publication, I changed 150 to 15 in the very last paragraph, which appeared thus in the newsletter:

… descending late one autumn afternoon toward Swinderby, between Newark and Lincoln, and with the Vale of Trent covered in mist, 15 miles away the towers of Lincoln Cathedral were clearly silhouetted against the mist filled vale beyond.

My most sincere apologies to Richard for misinterpreting what he wrote. He was indeed 150 miles away and has provided the following clarification (and added to it):

Free of the constraints of a training exercise with a pupil pilot, it was my habit to go quite high and as far as possible, within the limits of the available fuel, and this often meant that I flew well above 30,000 feet, to enjoy the panoramic view, as in the situation described. In a cruise descent from 30,000 feet at 1,000 feet a minute, with an indicated airspeed of 300 knots, my aircraft would have covered 150 nautical miles. This gave me the view of Lincoln Cathedral from the north, silhouetted against the mist covering the Trent valley, which would have obscured the view had I been over the Trent myself.

Many routine parts of most flights were flown with particular power settings, indicated airspeeds and rates of turn, with the aircraft in a particular configuration, as for instance, with wheels and flaps down on a radar talk-down approach. The instrument flying procedures made it possible for me to retrospectively calculate the times spent accumulating ice from supercooled water droplets, as on the two occasions which I described – the much more dangerous three inches in cloud at 14,000 feet, and a quarter inch at 1,200 feet.

I was in London at the time of the great smog of the 1952/53 winter; also 15 years or so later, flying toward London at 20,000 feet from the north after a couple of days of high pressure when London was, once again, hidden beneath a mushroom shaped pall of smog.

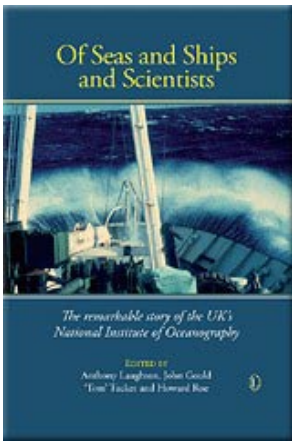
Thank you, Richard, and my apologies again for the editorial *mea culpa*.

NEWLY-PUBLISHED MUST-HAVE BOOK

It's a bit early in the year to be writing to Santa! Maybe you still have unspent tokens from last Christmas. Whatever … a book that should appeal to all members of the History Group has just been published. It's called *Of seas and ships and scientists: the remarkable story of the UK's National Institute of Oceanography* (NIO). It has been published by The Lutterworth Press, price £25. ISBN: 978-07188-9230-2.
For details of the book, see:

http://www.lutterworth.com/lp/titles/ofseas.htm

The book focuses on the period 1945 to 1973 and tells how the NIO became a world-leader in oceanographic research. Written by former members of the Institute – among them Sir Anthony Laughton, John Gould, 'Tom' Tucker and Howard Roe – the book describes the excitement, difficulties and fun of doing science on the oceans on a small budget with small research ships.



JEHUDA NEUMANN MEMORIAL PRIZE FOR 2010 (to be presented in 2011)

Nominations for the 2010 Jehuda Neumann Memorial Prize are invited. Please send them to the History Group's Chairman, Malcolm Walker (metsochistorygroup@gmail.com), by 31 August 2010. His postal address is: Mr J.M.Walker, 2 Eastwick Barton, Nomansland, Tiverton, Devon, EX16 8PP.

The Prize commemorates the work of Professor Jehuda Neumann (1915-1993) on the relationship between weather and historical events, and the rules are as follows.

1. The Prize shall be awarded biennially to the person whom the Committee of the Royal Meteorological Society's Specialist Group for the History of Meteorology and Physical Oceanography (or delegated sub-committee) considers to have made the most outstanding contribution to the study of the history of meteorology or physical oceanography during the preceding five years. In exceptional circumstances, at the discretion of the full Committee, this qualifying period may be extended – to recognise, for example, an individual's outstanding contribution over a long period. The award shall not be confined to members of the Royal Meteorological Society or of the Group.
2. The Prize shall usually be awarded for a published paper in the English language, or for an outstanding contribution or contributions to the Group's activities, during the preceding five years. Exceptionally, the period may be extended to recognise long-term meritorious contributions.
3. Nominations for the award, with supporting reasons, should be sent to the Honorary Secretary of the Group by 31 August in even years. A decision will be made by the Committee, or by a designated sub-committee of at least three persons nominated by the Committee.
4. The Prize shall be awarded only if the Committee is satisfied that a sufficiently high standard has been attained.
5. The Prize shall be presented at the Annual General meeting of the Society next following the last day for nominations and shall consist of a prize to the value of £50, together with a certificate and five years free membership of the Group.
6. No person shall be eligible for a second award.

THOUGHT FOR THE DAY
Words of wisdom from Sir Napier Shaw on the history of meteorology

In the Presidential Address he delivered before the Royal Meteorological Society on 15 January 1919. published in the April 1919 issue of the Society's *Quarterly Journal* (Vol.45, pp.95-111), Sir Napier Shaw commented as follows (on page 109):

"How little we have done to form a connected story of the study of weather as disclosed by the writings which have come down to us. Men in all ages have been face to face with the problem of the weather. How little do any of us know even of Clement Ley, of Abercromby, of FitzRoy, of Luke Howard, or of Dalton, of Piddington, or Reid, or Capper, or Loomis, or Ferrel, of Hadley, or Halley, or Hooke, or of the earlier writers on the weather and the early observers before the invention of the barometer and the thermometer? What had the astrologers, who were prepared to forecast everything, to say about the weather? Behind all the fantastic explanations which have been discarded there must have been points of view depending upon experience, which may disclose themselves in the writings which survive. What meteorological knowledge had the discoverers of America? What sort of wind blew the Norsemen to Labrador? If I have any knowledge of the feelings of the Society, it would welcome occasional contributions on the history of the science, recent or remote, not less warmly than an account of personal observations. Mr Bentley has already told us about weather in war, and Mr Inwards has given us the meteorology of proverb and folklore. Will not some one tell us of meteorology in literature? *Reculer pour mieux sauter* is as apposite to the progress of science as to any other persistent effort, if by it we may understand that an occasional survey of the past helps us to make more sure of the future. … While the knowledge of *how things are done in practice* is important for the learner, it is the knowledge of *what things have been done* that provides inspiration for the future."

DID YOU KNOW?

An isanakatabar is a line on a chart showing equal atmosphere-pressure range during a specified time interval. Isanakatabar literally means 'equal ups and downs of pressure'.

WEATHER, CLIMATE AND HEALTH
Meeting of the History Group
Call for papers and ideas

A meeting of our Group on the subject of weather, climate and health is planned for March or April 2012, probably in London. Meteorologists were much concerned with this subject area in the nineteenth century, in respect of cholera, influenza, sanitation arrangements, valetudinarian considerations and so on. They are still concerned today – with breeding conditions for disease-bearing mosquitoes and other insects, for example.

Would you like to speak at this meeting? Do you have ideas for topics that might be discussed at the meeting? Can you suggest speakers? If so, please contact **Dr Howard Oliver**, whose email address is hroliver@waitrose.com.

FORTHCOMING MEETINGS

We are delighted to report that the two-day Summer Meeting in Devon from 18 to 20 July 2010 proved very popular. It was fully booked, with 56 participants.

The next meeting which has had a major input from the History Group takes place from 14:00 to 17:30 on **Wednesday 17 November at the University of Reading**. This will be the third of the Royal Meteorological Society's 'Classic papers' meetings and will be concerned with **Turbulence**. The programme will be as follows:

Malcolm Walker (History Group Chairman)
It all started with an iceberg!
This talk introduces G.I.Taylor's work whilst on the North Atlantic aboard *Scotia* in 1913 after the *Titanic* disaster of 1912, but did it all start then?

David Thomson (Met Office)
The work of G.I.Taylor and developments stemming from it.

Andy Brown (Met Office
Large-eddy simulation: from Deardorff to the present day

Gabriel Rooney (Met Office)
Plumes: the analysis of convection from an isolated source of buoyancy

Bert Holtslag (Wageningen University)
Modelling atmospheric boundary layers for weather and climate

Stephen Belcher (University of Reading)
Turbulent flow over obstacles

Forthcoming meetings: continued

On either Saturday 2 April 2011 or, second choice, 26 March, we hope there will be a meeting of our Group in Cambridge to mark the centenary of Scott's 1910-1913 Expedition to the Antarctic. More information about this meeting will appear in the next newsletter.

On Tuesday 21 June 2011, there will be a visit to the Thames Barrier. Again, details will appear in the next newsletter.

In the autumn of 2011, there will be a meeting about the early days of aircraft being used for meteorological purposes. The meeting will be held at Farnborough and will probably take place on Saturday 24 September.

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.

ANDERSON, G.D. (2010). 'The first weather satellite picture', *Weather*, Vol.65, p.87.

BRUGGE, R. (2010). 'Forty years of the Climatological Observers Link', *Weather*, Vol.65, pp.139-143.

BULLYNCK, M. (2010). 'Johann Heinrich Lambert's scientific toolkit, exemplified by his measurement of humidity, 1769-1772', *Science in Context*, Vol.23, pp.65-89.

BURT, S. (2010). '*British Rainfall* 1860-1993', *Weather*, Vol.65, pp.121-128.

DUCHEYNE, S. (2010). 'Whewell's tidal researches: scientific practice and philosophical methodology', *Studies in history and philosophy of science*, Vol.41, pp.26-40.

DUPIGNY-GIROUX, L-A. and MOCK, C.J. (Editors) (2009). *Historical climate variability and impacts in North America*, Springer, 278 pages, ISBN: 978-90-481-2827-3. Price: £90.00. In the words of the book's blurb:

Climatologists with an eye on the past have any number of sources for their work, from personal diaries to weather station reports. Piecing together the trajectory of a weather event can thus be a painstaking process taking years and involving real detective work. Missing pieces of a climate puzzle can come from very far afield, often in unlikely places. In this book, a series of case studies examine specific regions across North America, using instrumental and documentary data from the 17th to the 19th

centuries. Extreme weather events such as the Sitka hurricane of 1880 are recounted in detail, while the chapters also cover more widespread phenomena such as the collapse of the Low Country rice culture. The book also looks at the role of weather station histories in complementing the instrumental record, and sets out the methods that involve early instrumental and documentary climate data. Finally, the book's focus on North America reflects the fact that the historical climate community there has only grown relatively recently. Up to now, most such studies have focused on Europe and Asia.

GIESE, B.S. *et al* (2010). 'The 1918'19 El Niño', *Bulletin of the American Meteorological Society*, Vol.91, pp.177-183.

LEWIS, J.M. *et al* (2010). 'Suomi: pragmatic visionary', *Bulletin of the American Meteorological Society*, Vol.91, pp.559-577.

This is a very detailed biographical article about Verner Suomi, who has been called "the father of satellite meteorology".

MACDONALD, N. *et al* (2010). 'Historical weather accounts from Wales: an assessment of their potential for reconstructing climate', *Weather*, Vol.65, pp.72-81.

MERGEN, B. (2008). *Weather matters – an American cultural history since 1900*, University Press of Kansas, 398 pages, ISBN 978-0-7006-1611-4. Price: £31.50. In the words of the blurb:

Bernard Mergen's captivating and kaleidoscopic new book illuminates our inevitable obsession with weather – as both physical reality and evocative metaphor – in all of its myriad forms, focusing on the ways in which it is perceived, feared, embraced, managed, and even marketed. From the roaring winds atop Mount Washington to the reflective calm of the poet's lair, he takes a long-overdue look at public response to weather in art, literature, and the media. In the process, he reveals the cross-pollination of ideas and perceptions about weather across many fields, including science, government, education, and consumer culture.

MOHR, T. (2010). 'The Global Satellite Observing System: a success story', *World Meteorological Organization Bulletin*, Vol.59, pp.7-11.

The first launches of artificial satellites beginning with Sputnik on 4 October 1957 by the Soviet Union and with Explorer I by the United States of America on 2 January 1958 heralded a new era of Earth observation. A few years later, on 1 April 1960, the first meteorological satellite, TIROS-1, was launched, providing the first-ever pictures of the distribution of clouds, images previously undreamed of. Although the spacecraft operated only for 78 days, meteorologists worldwide were ecstatic over the pictures of Earth and its cloud cover. Thus began the satellite revolution, which was to forever change how people observed the planet. These advances in computer and space technology at the end of the 1950s and the beginning of the 1960s stimulated the creation of the WMO World Weather Watch, and ultimately the WMO Global Satellite Observing System. The Global Satellite Observing System has had unparalleled success in bringing together the countries of the world to scientifically collaborate and transform how meteorologists study the planet and the atmosphere.

NASH, J. *et al* (2010). 'Working to standardize instruments and methods of observation', *World Meteorological Organization Bulletin*, Vol.59, pp.18-20.

Requirements for high-quality observational data and their worldwide compatibility were a governing principle when the International Meteorological Organization was established in 1873. Thus, it was necessary to define technical standards, conduct instrument intercomparisons, testing and calibration, and implement quality-control procedures. These responsibilities were assigned to the Commission for Instruments and Methods of Observations (CIMO), one of the first commissions established by IMO. When IMO was replaced by the intergovernmental WMO in 1950, CIMO continued its mandate under the new establishment and was designated as the corresponding Technical Commission for the Instruments and Methods of Observation Programme (IMOP). Since then, standardization responsibilities of CIMO have significantly expanded, to cope with the fast development of measuring technology, to guarantee the traceability of measurements to the International System of Units (SI).

PEDGLEY, D.E. (2010). 'The British Rainfall Organization, 1859-1919', *Weather*, Vol.65, pp.115-117.

PRICHARD, R. (2010). Obituary of George Cowling, *Weather*, Vol.65, p.111.

STRANGEWAYS, I. (2010). 'A history of rain gauges', *Weather*, Vol.65, pp.133-138.

SUNDT, J.C.P. and BOOTH, B.J. (2010) 'A Norwegian at ETA 1942-1945', *Weather*, Vol.65, pp. 160-165.

SVANSSON, A. (2010). 'Walfrid Ekman (1874-1954), theoretical oceanographer', *Earth Sciences History*, Vol.29, pp.100-120.

WALKER, M. (2010). 'The man behind the British Rainfall Organization', *Weather*, Vol.65, pp.117-120.

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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.

THE NEXT NEWSLETTER

All being well, the next newsletter will be published in October 2010. Please send comments, articles etc to Malcolm Walker (address above) by 30 September.

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