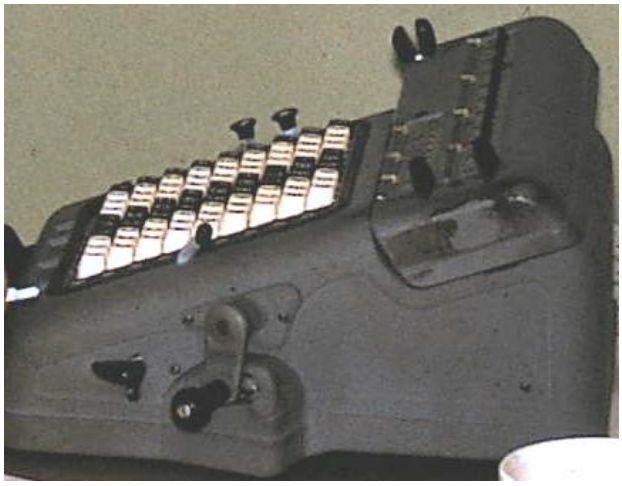
History of Meteorology and Physical Oceanography Special Interest Group

www.rmets.org/activities/groups/SIG/detail.php?ID=9

Newsletter 1, 2011

MYSTERY OBJECT

What is this device? Do any readers remember using one? See page 12.



CONTENTS

WHY DO THEY STILL TEACH THAT?
by Malcolm Walker

In the latter years of the 1960s and early part of the 1970s, my research interest was monsoons. When I embarked upon this research, I knew little more about the subject than what I had learned in geography lessons at school. Among my received knowledge was the belief that the south-east trade winds of the Indian Ocean cross the equator during the period June to September to become the south-westerly winds of the summer monsoon of southern Asia.

In the course of my research, I plotted many, many tephigrams for Gan, an RAF base in the southern Maldives at 00°40S, 73°E. Day after day from June to September, winds were light and variable and conditions convective. It was clear that air did not generally pass through Gan *en route* to southern Asia. Rather, it tended to rise to the middle and upper troposphere in cumuliform clouds. Moreover, analyses of wet-bulb potential temperature did not support the idea of frequent cross-equatorial flow near Gan.

Farther west over the Indian Ocean, however, westward of about 55°E, winds did indeed cross the equator on a regular basis, and quite strongly, but there was no observational support for the concept of a persistent cross-equatorial flow eastward of 55°E. It was perhaps true that mean winds were light southerly near the equator over central parts of the Indian Ocean, but it did not follow that air was flowing northwards across the equator on a day-to-day basis throughout the SW monsoon season. Observations did not support that notion.

So where had the idea come from that SE trades cross from the southern hemisphere to the northern to become SW monsoon winds? The answer to this question can be found in a substantial paper on monsoons by John Eliot, the Meteorological Reporter to the Government of India, published in the *Quarterly Journal of the Royal Meteorological Society* in 1896 (Vol.22, pp.1-37). Eliot said that William Ferrel had advanced the idea in *A Popular Treatise on the Winds*, published in 1890, and he named a number of distinguished meteorologists who had

agreed with Ferrel, among them W M Davis, R H Scott and the Hon Ralph Abercromby.

However, Eliot noted, his predecessor as Meteorological Reporter, H F Blanford, had held the view that (in the words of Eliot), ñthere is, throughout the whole period, a belt of calms and light winds over the equator, which serves as a species of reservoir or tank into which the SE Trades are absorbed, whilst from it on the north issue the SW to W winds of the rainy monsoonò This view was supported by the German meteorologist Wilhelm Meinardus in 1894.

Eliot concluded from his study of the winds and weather that occurred over southern Asia during 1893 that Blanford was correct so far as the pre-monsoon period was concerned but not for the period June to September. Eliot was in fact wrong, as we have now known for many years, and Blanford and Meinardus were right, so why have elementary textbooks and the Web continued to promote a concept that has long been known to be incorrect? Deference to the great and mighty of the past may be partly responsible (and are we prepared to question what the great and mighty of meteorology conclude nowadays?), but there is another factor, which I shall come to later in this article.

What else is taught in elementary meteorology courses that does not stand up to scrutiny? It is sometimes said that the best way to learn something is to teach it. I was once in the middle of a lecture to undergraduates about local winds and realized that the textbook föhn (foehn) explanation I was giving could not be wholly correct.

The essence of this explanation is as follows. When precipitation occurs over windward slopes, the temperature inside the rain clouds falls with height at the saturated adiabatic lapse rate. Moisture is lost from the air when precipitation falls on the windward side of the mountain barrier, so the cloud base is higher on the lee side than the windward side. Level for level, the air is warmer on the lee side because the air which is descending warms at the dry adiabatic lapse rate.

I realized that this explanation did not account for the sudden onset of most föhn occurrences or the magnitudes of the temperature increases that occur on many föhn occasions. Moreover, it did not explain why a föhn can occur when skies are cloudless over windward slopes! Why then do books (and now the Web) perpetuate an obviously incorrect, or at best incomplete, explanation?

The occurrence of a föhn depends upon the presence of a temperature inversion over the mountain barrier, which can be the case in an anticyclone or when there is a warm front, occluded front or warm sector over the barrier. The inversion becomes distorted over the lee slopes, its altitude there decreasing abruptly when the vertical profile of the wind speed upstream becomes suitable. A phenomenon called a ôhydraulic jumpô takes place. The level of the inversion drops so much that air from above the inversion reaches the atmospheric layer next to the ground. This air is warm and dry. Wherever stable air crosses a mountain barrier, föhn development may occur.

An hydraulic jump is a phenomenon which may occur when air is forced through a duct between the ground and a marked temperature inversion. Given an upstream wind of suitable speed and direction, air moves rapidly (shoots) through the duct. Such a flow begins and ends abruptly, starting when the speed and direction of the wind upstream is suitable for its maintenance, ceasing when it is not. These speeds and directions are controlled by the synoptic-scale weather systems that are present at the time over the region in question.

It is often stated that the strong winds which occur over some coasts of the Antarctic are katabatic flows. In part, they are, but mostly they are shooting flows. In general, katabatic flows do not exceed about 20 knots anywhere in the world, but in the Antarctic at the foot of an ice slope near Commonwealth Bay (67°S 144°E) winds of 60 knots or more blow for about nine months of the year. Furthermore, apart from occasional short-lived lulls, they blow remarkably steadily. Again, a marked temperature inversion is an essential feature, with air shooting through a duct formed between this inversion and the ground.

The bora, too, is often stated to be a katabatic flow. This strong, cold and gusty wind which in winter descends to the Adriatic Sea from the Dinaric Alps also tends to begin suddenly and without warning. It is another example of a shooting flow. It is only in part a katabatic flow.

Another misconception concerning the climate of southern Asia is that the north-easterly surface winds of winter result from cold air flowing out from an anticyclone over Mongolia and Siberia. It is certainly true that screen temperatures over Siberia are very low in winter, but the notion that this cold air reaches India and adjacent seas overlooks the fact that the Tibetan Plateau, Himalayas and other mountains form a huge barrier. The cold air is very stable and does not readily cross such formidable obstacles.

Moreover, the very existence of the winter anticyclone that is so often shown over north-eastern Asia on charts of mean sea-level pressure is questionable. The land surface in much of Mongolia is a kilometre or more above sea level, so sea-level isobars there have little meaning. And winds in the lower and middle troposphere over eastern Asia are not consistent with outflow from Siberia.

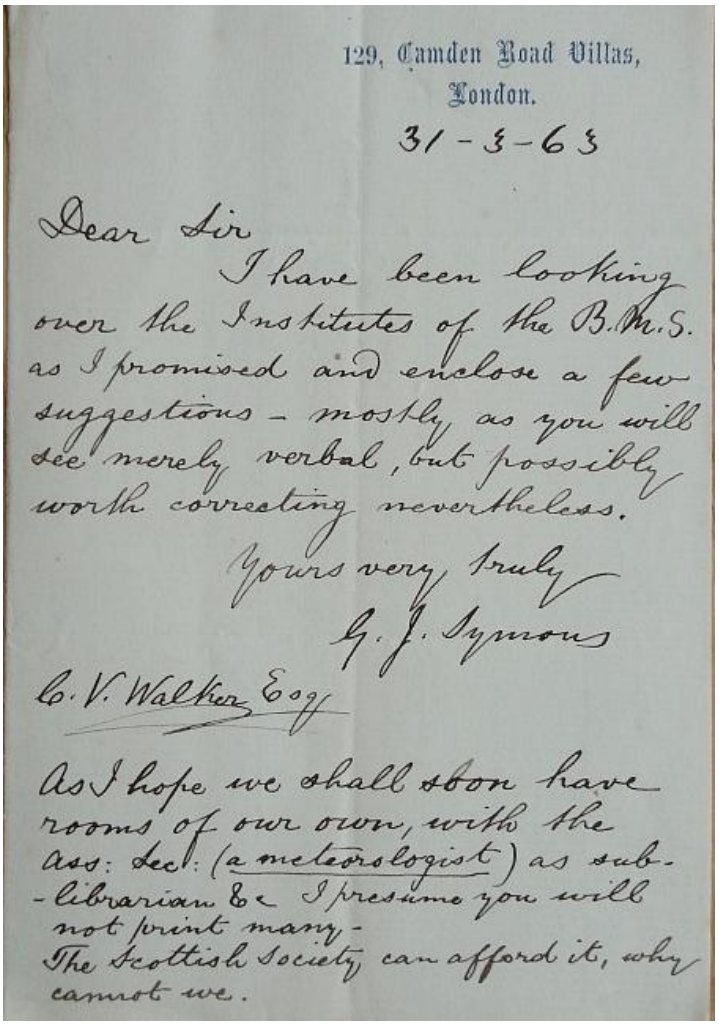
The NE winds over southern Asia in winter are typical of the latitudes in question at that time of year. They are, quite simply, NE trade winds. In winter, the atmospheric circulation over southern Asia reverts to something akin to a Hadley Circulation.

Yet another misconception that is encouraged by diagrams in elementary textbooks is that the Inter-tropical Convergence Zone (ITCZ) is continuous around the globe. It is most certainly not if clouds and rain are the ITCZ's defining features. Even a cursory inspection of satellite images shows this to be so. And the discontinuous nature of the ITCZ has been known since the 1950s.

Why do so many obvious misconceptions and shortcomings persist in elementary textbooks and on the Web?

Most books for schoolteachers are written by schoolteachers. It is the job of schoolteachers to communicate accepted knowledge. Most teachers do not have the time or facilities to advance knowledge. Not only that, textbooks reflect the expectations of GCSE and A-level examiners. In other words, the system is self-perpetuating. Until books for schoolteachers and the syllabuses they teach are influenced by research workers who are able to put across new knowledge in school-friendly terms, misconceptions and shortcomings will continue to be perpetuated. So far as the Web is concerned, the less said the better. One should be very cautious of anything on the Web.

We of the History Group have a common interest in history. We are all aware that meteorology and physical oceanography continue to develop, and we are interested in how our subjects have evolved and in the historical perspective. We do not encourage fossilized knowledge. What can we do about the problem of out-dated knowledge being perpetuated?



129, Camden Road Villas,
London.
31-3-63

Dear Sir
I have been looking over the Institutes of the B.M.S. as I promised and enclose a few suggestions – mostly as you will see merely verbal, but possibly worth correcting nevertheless.
Yours very truly
G. J. Symons

C. V. Walker Esqr

As I hope we shall soon have rooms of our own, with the Ass: Sec: (a meteorologist) as sub-librarian &c I presume you will not print many -
The Scottish Society can afford it, why cannot we.

Letter dated 31 March 1863 from G J Symons to C V Walker. It reads as follows:
"I have been looking over the Institutes of the B.M.S. [British Meteorological Society] as I promised and enclose a few suggestions – mostly as you will see merely verbal, but possibly worth correcting nevertheless."

In the postscript, Symons added:
"As I hope we shall soon have rooms of our own, with the Ass:Sec: (a meteorologist) as sub-librarian &c, I presume you will not print many [copies of the Institutes]. The Scottish Society can afford it. Why cannot we?"

Charles Vincent Walker was an Honorary Secretary of the B.M.S. (together with James Glaisher). Symons was a young man of 24 in March 1863, employed in Admiral FitzRoy's Meteorological Department of the Board of Trade, and he had already begun to make his mark on British meteorology, though not in maritime meteorology. See 'The man behind the British Rainfall Organization' (Weather, 2010, Vol.65, pp.117-120).

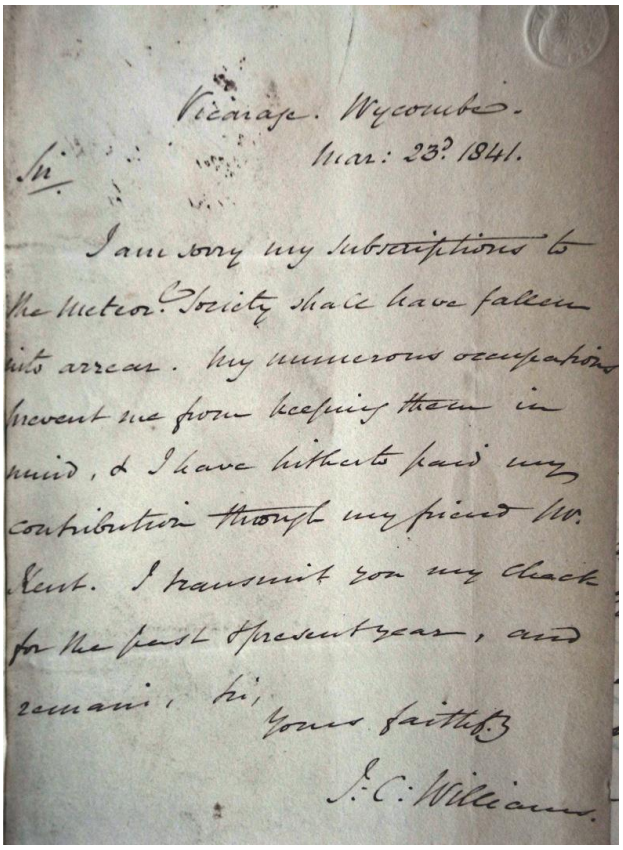
The letter pictured on the left can be found in the National Meteorological Archive, Exeter.

DO IT YOURSELF WEATHER FORECASTING

The following collection of rural weather beliefs was set in verse by Erasmus Darwin (1731-1802). The compilation was popular in the nineteenth century and long attributed, incorrectly, to Dr Edward Jenner (1749-1823).

The hollow winds begin to blow;
The clouds look black, the glass is low;
The soot falls down, the spaniels sleep;
And spiders from their cobwebs peep.
Last night the sun went pale to bed;
The moon in haloes hid her head.
The boding shepherd heaves a sigh,
For, see, a rainbow spans the sky.
The walls are damp, the ditches smell,
Closed is the pink-eyed pimpernel.
Hark! how the chairs and tables crack,
Old Betty's joints are on the rack:
Her corns with shooting pains torment her,
And to her bed untimely sent her.
Loud quack the ducks, the sea fowl cry,
The distant hills are looking nigh.
How restless are the snorting swine!
The busy flies disturb the kine.
Low o'er the grass the swallow wings,
The cricket, too, how sharp he sings!
Puss on the hearth, with velvet paws,
Sits wiping o'er her whiskered jaws.
The smoke from chimneys right ascends;
Then spreading, back to earth it bends,
The wind unsteady veers around,
Or settling in the south is found.
Through the clear stream the fishes rise,
And nimbly catch the incautious flies.
The glow worms num'rous, clear, and bright,
Illum'd the dewy hill last night.
At dusk the squalid toad was seen,
Like quadruped, stalk o'er the green.
The whirling wind the dust obeys,
And in the rapid eddy plays.
The frog has changed his yellow vest.
And in a russet coat is dressed.
The sky is green, the air is still,
The mellow blackbird's noise is shrill.
The dog, so altered is his taste,
Quits mutton-bones, on grass to feast.
Behold the rooks, how odd their flight,
They imitate the gliding kite,
And seem precipitate to fall,
As if they felt the piercing ball.
The tender colts on back do lie,
Nor heed the traveller passing by.
In fiery red the sun doth rise,
Then wades through clouds to mount the skies.
'Twill surely rain, we see't with sorrow,
No working in the fields to-morrow.

SUBSCRIPTIONS!



Vicarage. Wycombe.
Mar: 23d 1841.

Sir.

I am sorry my subscriptions to the Meteor. Society shall have fallen into arrear. My numerous occupations prevent me from keeping them in mind, & I have hitherto paid my contribution through my friend Mr. Kent. I transmit you my check for the past & present year, and remain, Sir, Yours faithfully

J. C. Williams.

This letter is preserved in the National Meteorological Archive, among material which belongs to the Royal Meteorological Society. Dated 23 March 1841 and written by the Rev J C Williams of the Vicarage, [High] Wycombe, it reads as follows:

Sir. I am sorry my subscriptions to the Meteorological Society shall have fallen into arrear. My numerous occupations prevent me from keeping them in mind, and I have hitherto paid my contribution through my friend Mr Kent. I transmit you my check for the past and present years, and remain, Sir, Yours faithfully.

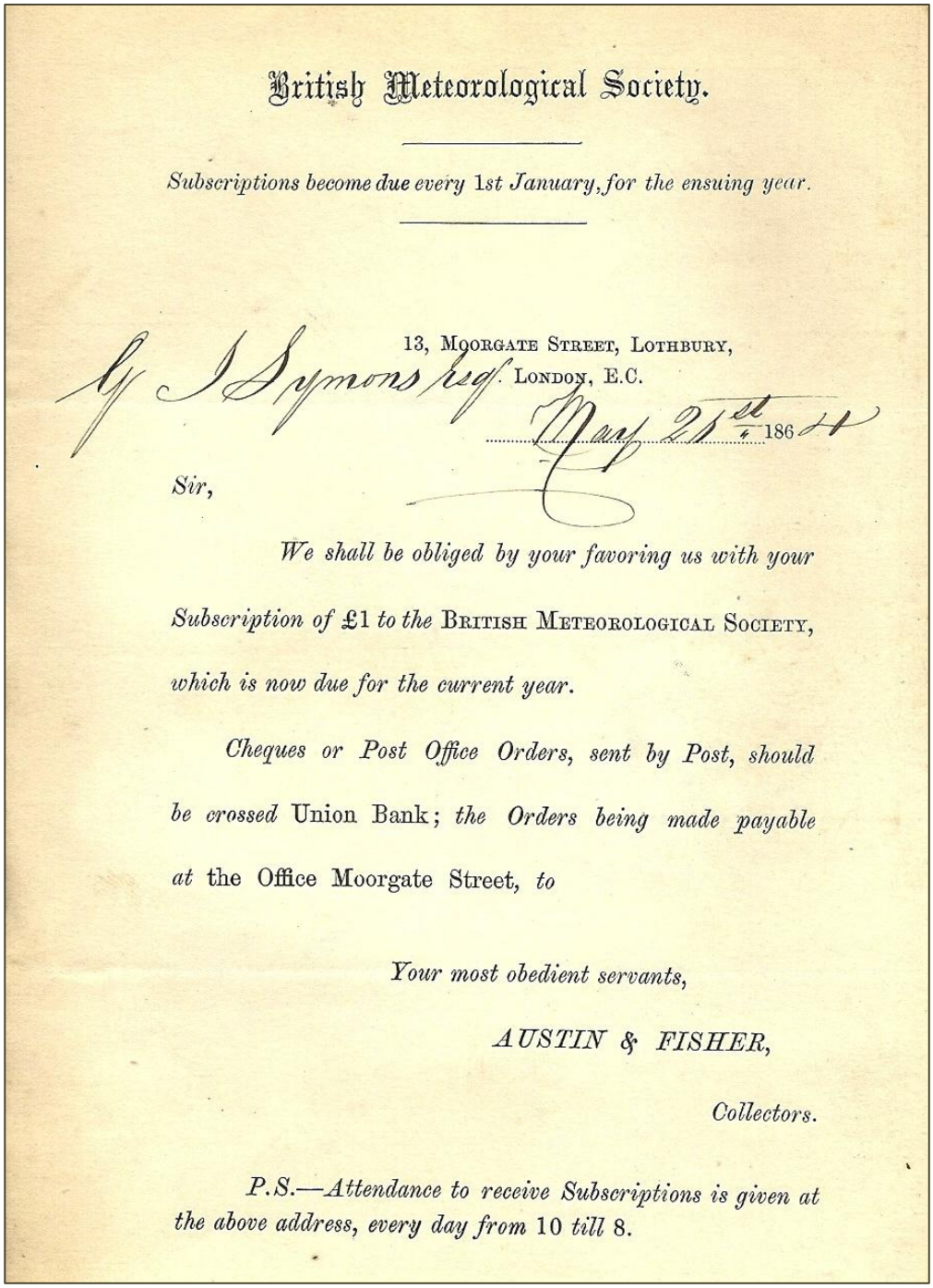
Along with Samuel Luck Kent and James George Tatem, also of High Wycombe, the Rev Williams was a member of Britain's first meteorological society, generally known as the Meteorological Society of London but sometimes called the Meteorological Society of Great Britain. For the story of this society (which ceased to be active in 1844 because of financial difficulties) and another, different, Meteorological Society of London, which existed from 1848 to 1850, see *The Meteorological Societies of London*, by Malcolm Walker (*Weather*, 1993, Vol.48, pp.364-372).

In the late 1830s and early 1840s, the annual subscription to the Meteorological Society of London was one guinea.

We see from the document on the right that the British Meteorological Society used Collectors to chase up unpaid subscriptions. Here is a notice to G J Symons dated 21 May 1864, informing him that subscriptions became due every 1st January, for the ensuing year. The Collectors were Austin & Fisher of 13 Moorgate Street, Lothbury, London EC, and they were in attendance to receive subscriptions, the notice says, at that address, every day from 10 till 8.

The notice was direct but polite, saying:

ñWe shall be obliged by your favoring (*sic*) us with your Subscription of £1 to the British Meteorological Society, which is now due for the current year. Cheques or Post Office Orders, sent by Post, should be crossed Union Bank; the Orders being made payable at the Office Moorgate Street, to Your most obedient servants, Austin & Fisher, Collectors.ò



British Meteorological Society.

Subscriptions become due every 1st January, for the ensuing year.

13, Moorgate Street, Lothbury,
London, E.C.

G J Symons Esq.

May 21st 1864

Sir,

We shall be obliged by your favoring us with your Subscription of £1 to the British Meteorological Society, *which is now due for the current year.*

Cheques or Post Office Orders, sent by Post, should be crossed Union Bank; *the Orders being made payable at* the Office Moorgate Street, *to*

Your most obedient servants,

AUSTIN & FISHER,

Collectors.

P.S.—Attendance to receive Subscriptions is given at the above address, every day from 10 *till* 8.

SNIPPET FROM AN UNEXPECTED PLACE
by Jane Insley

James Wattôs nephew Robert Hamilton was a couple of years younger than James Wattôs younger son Gregory, and on being sent to Fenton in the potteries to learn how to become a potter, spent quite a bit of his spare time with the Watts at their house Heathfield near Soho, Birmingham.

The Science Museum Archive has acquired a delightful little diary written by Robert between 1796 and about 1800, and this snippet comes from it.

ñOn Saturday the 29th July 1797 at six oôclock at night I went in the mail coach to Liverpool or rather I went on it for the inside being full I was found to ride on the outside but soon after leaving Newcastle I bargained with the guard for his chair where I sat all the way but never remember being out [é .] a storm of lightning and thunder [é] before. The former was the most vivid I ever saw and was about one continued blaze for three hours as during that time I am confident there was a flash every two minutes. The tremendous sound of the thunder was however in some degree lost with the rumbling of the carriage. What was very fortunate for me there was not a drop of rain.ò

HISTORY GROUP ANNUAL REPORT FOR 2010
by Martin Kidds

This is a summary of activity during another successful year for the Group, with a number of interesting and well-attended meetings.

The Committee

The committee met three times during the year, with the focus of activity being on planning the groupôs programme of meetings and visits.

Committee members were:

Malcolm Walker (Chairman)
Graham Bartlett
Margaret Deacon,
Alan Heasman
Joan Kenworthy
Martin Kidds (Secretary)
Julian Mayes
Howard Oliver
David Pedgley
Vernon Radcliffe
Dennis Wheeler
Mick Wood (Treasurer).

Liaison with the National Meteorological Library and Archive (NML&A) was strengthened, with the Manager of the NML&A, Sarah Pankiewicz, co-opted onto the committee during the year.

Activities

One of the key purposes of the group remains the organizing of a programme of meetings and visits, some exclusively for History Group members and some on behalf of the Society.

The Group held three meetings during 2010.

- **A meeting on the history of the British Rainfall Organization and the work of G J Symons** was held on Saturday 17 April 2010 in the Huxley Lecture Theatre, Zoological Society of London, Regentôs Park, London. This was a Royal Meteorological Society National Saturday Meeting organized jointly by the History Group and the Meteorological Observing Systems Group. A fitting tribute to Symonsô remarkable legacy, this meeting saw a range of speakers review developments past, present and future in the field of rainfall data and its contribution to our understanding of weather and climate. 58 attended on a beautiful sunny day in spring with barely a cloud in the sky; we wonder if Symons would have appreciated the irony. The sun also shone at Kensal Green Cemetery in London on St Swithinôs Day, 15 July 2010, when a ceremony was held to re-dedicate the restored graves of the Symons family. This ceremony was organized by Stephen Burt and the Council of the Royal Meteorological Society in association with the Friends of Kensal Green Cemetery.
- **The Royal Meteorological Society's Summer Meeting in 2010 was a two-day event on the theme of "advances in weather forecasting and climate science"**. It was based at the University of Exeter and held from Sunday evening 18 July 2010 to Tuesday evening 20 July 2010. It was organized by Malcolm Walker and the History Group and included visits to venues locally, including the Met Office, National Meteorological Library and Archive, Norman Lockyer Observatory near Sidmouth and Barometer World at Merton. A widely varied programme with excellent talks and visits, with a good balance of subjects covered, made this an outstandingly successful two-day meeting. The attendance exceeded all expectations: 56.
- **The third 'Classic Papers' meeting, on "Turbulence: a 'resolved' problem?"**, was held at the University of Reading on Wednesday 17 November 2010. This was a Royal Meteorological Society National Wednesday meeting organized by the History Group. It was another highly successful meeting, with excellent positive feedback from the 124 who attended. The University of Reading has the largest number of meteorology students at any UK University and the initiative for these historically-themed ôClassic Papersô meetings originally came from the student bodies there and in other universities. It is therefore pleasing to see the continuing interest in these meetings.

Three newsletters were published in 2010, all distributed to members and made available more widely via the Royal Meteorological Societyôs website. The newsletter continues to include a number of substantial articles and has become a key part of the groupôs activities and the subject of much favourable comment. The assistance and support of the Society in printing and publishing this newsletter is greatly appreciated.

The groupôs Occasional Papers continue to be available via the Societyôs website and copies are also held in the National Meteorological Library at Exeter. No new papers were published by the group during the year. However, a number of group members are working on papers for future publication.

Membership

Membership of the Group remains consistently around **85**. We noted with sadness the death of Group member Laurie Draper in June 2010.

I am sure I can speak on behalf of the committee in thanking all our members for their continuing support. Do please get in touch with us if you have any suggestions for the Group; perhaps you have an idea for a meeting, want to write a piece of interest to other members for the newsletter or even offer some time organizing a group activity. We will always be pleased to hear from you.

Finance

Income for the year was £ 520.72 and expenditure £ 399.42. Further details are available on request. The Groupôs balance at the end of the year was £2035.92.

… AND A WORD FROM THE CHAIRMAN

Many thanks Martin, for your sterling work as Secretary. Many thanks also to Mick Wood for again keeping the Groupôs accounts healthy; and grateful thanks to all who have served on the Groupôs committee during the year.

With 85 members at the end of 2010, our Group was easily the largest of the Royal Meteorological Societyôs Special Interest Groups. But, as I said last year and the year before and the year before that, I should like to see a massive growth in membership. When I talk to meteorologists and oceanographers, I find no lack of interest in the history of their subjects, but why do not many more of them join our Group? Perhaps they do not know exactly what our Group is for and what it does. I ask you, please, to publicize the Groupôs work whenever and wherever you can.

Repeating further what I said last year, I ask you all, please, to spread the word that our Group is very active and well worth supporting and arranges meetings which are full of interest. We need especially to convince students that the origins and growth of the atmospheric and oceanic sciences are not only fascinating but also important. All too many research students are now discouraged from reading anything more than ten years old and, moreover, do not appear to want to read anything that is not on the Web.

DID YOU KNOW …

é that Francis Galton died 100 years ago? Why was he important in meteorology? See page 17.

ERNEST GOLD AND GEOSTROPHY
by Mick Wood

In Newsletter 3, 2010, there was a short article about Ernest Gold inventing words. A word that he did not invent was ógeostrophicô In the April 1963 issue of the *Bulletin of the American Meteorological Society* (Vol.44, p.249), he gives Sir Napier Shaw full credit for the name.

In an official Meteorological Office publication, *Barometric gradient and wind force* (M.O.No.190), which appeared in 1908, Gold explained the gradient wind in great detail, but a suitable word could not be found for the gradient effect. Napier Shaw was considering a suitable word in 1915 just before Gold went to war in France. Gold states that he ñnaturally had recourse to Greek, the fountain from which the nomenclature of science draws its inspirationò Two words that could be used were ógeostrepsicôor ógeostrophicô Gold thought that ñgeostrophic was the more euphonious of the two and it might have turned out ócatastrophicôto have adopted geostrepsicò

Napier Shaw chose the pleasanter sounding word for the first time in *The Meteorological Glossary*, first printed in March 1916. Shaw is not shown as the author of this publication but Gold was certain Shaw was responsible. The Fourth Issue of 1918 gives óSir Napier Shaw, FRS, Director of the Meteorological Officeôas the author.

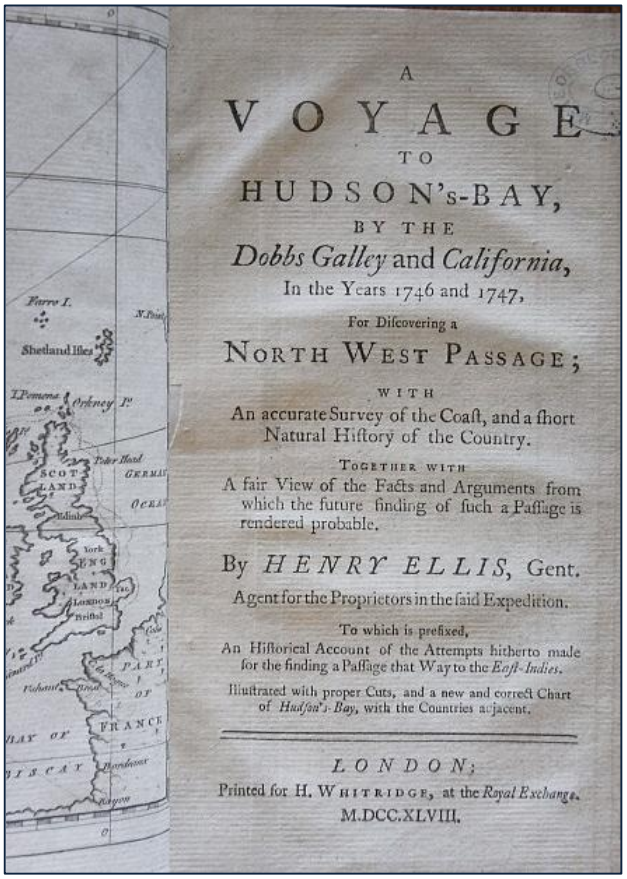
Shaw used the term ógeostrophic componentôin a discourse delivered before the Royal Institution on 10 March 1916 and also referred to ócyclostrophic componentôin the same sentence. His lecture was published in *Nature* on 4 May 1916 (Vol.97, No.2427, pp.210-213) with the title ôIllusions of the upper air: a review of progress in meteorological theory in England since 1866ô The original lecture was published in 1918 as ôIllusions of the upper airô in the *Proceedings of meetings of the Royal Institution of Great Britain*, Vol.21, pp.603-624.

óGeostrophyôdoes not appear in the *Oxford English Dictionary* (OED), but ógeostrophicô does. It is from the Greek $\sigma\tau\rho o\phi\acute{\eta}$, a turning, from $\sigma\tau\rho\acute{\epsilon}\phi\epsilon\iota\nu$, to turn, and Shawôs paper in *Nature* is given as its origin. Shawôs words are quoted in the OED: ñThe motion of air is persistent because the pressure gradient is balanced by the centrifugal action of the earth's rotation, which we may call the geostrophic component, and of the curvature of the path over the earth's surface, which we call the cyclostrophic component.ò

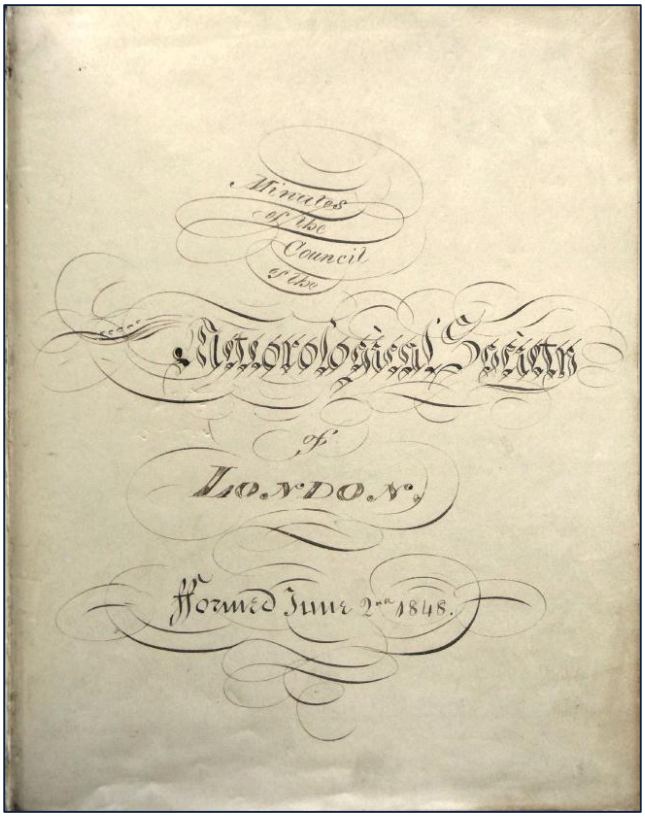
TREASURES IN THE ARCHIVE

The National Meteorological Archive at Exeter contains many meteorological treasures. Some belong to the Met Office, others to the Royal Meteorological Society. Here are three of them:

Right: ñA voyage to Hudsonôs Bay, by the *Dobbs Galley* and *California*, in the years 1746 and 1747, for discovering a North West Passage, with an accurate survey of the coast and a short natural history of the countryò, by Henry Ellis and published by H Whitridge in 1748.


A
VOYAGE
TO
HUDSON's-BAY,
BY THE
Dobbs Galley and *California*,
In the Years 1746 and 1747,
For Discovering a
NORTH WEST PASSAGE;
WITH
An accurate Survey of the Coast, and a short Natural History of the Country.
TOGETHER WITH
A fair View of the Facts and Arguments from which the future finding of such a Passage is rendered probable.
By *HENRY ELLIS*, Gent.
Agent for the Proprietors in the said Expedition.
To which is prefixed,
An Historical Account of the Attempts hitherto made for the finding a Passage that Way to the *East-Indies*.
Illustrated with proper Cuts, and a new and correct Chart of *Hudson's-Bay*, with the Countries adjacent.
LONDON:
Printed for H. WHITRIDGE, at the *Royal Exchange*.
M.DCC.XLVIII.

Below: The cover of the book containing the minutes of the Council meetings of the second Meteorological Society of London. This society was formed on 2 June 1848 and wound up voluntarily towards the end of 1850 when its members were encouraged to join the newly-formed British Meteorological Society (which very few of them did).


Minutes of the Council of the
Meteorological Society
of
LONDON.
Formed June 2nd 1848.

The set of minutes was found by the late Robert Ratcliffe in a cupboard in the FellowsôRoom of the Royal Meteorological Society in the mid 1990s. G J Symons ignored this society in ñThe history of English meteorological societies, 1823 to 1880ò, published in the *Quarterly Journal of the Meteorological Society*, 1881, Vol.7, pp.65-98. We do not know why he ignored it. He must have known about it. Reference was made to it in the minutes of the British Meteorological Societyôs Council meetings in late 1850, and Symons used those minutes when writing the aforementioned paper.

Below: Invoice from John Pinches (medallist, die sinker and stamper) of 27 Oxendon Street, London SW, dated 3 January 1902, for furnishing designs and executing a pair of dies for the first Symons Gold Medal, the Royal Meteorological Societyôs premier award. As stated on the invoice, the obverse of the medal shows a portrait of Symons and the reverse the Tower of the Winds, Athens. The cost was £50, and the bill was paid immediately, as the ñReceivedôstamp shows, dated 4 January 1902.


Royal Meteorological Society
London 3 Jan. 1902
ROYAL METEOROLOGICAL SOCIETY 6 JAN 1902
To John Pinches
Medallist, Die Sinker, Stamper &c.
27, Oxendon Street, S.W.
POST OFFICE ORDERS PAYABLE AT CHARLES ST., HAYMARKET.
GOLD & SILVER MEDALS. CASH ON DELIVERY.
Furnishing designs & executing pair of dies for "Symons" memorial medal. Obverse Portrait George James Symons F.R.S. &c Reverse, Tower of the Winds, Athens. £50.
RECEIVED
JAN 1902
John Pinches

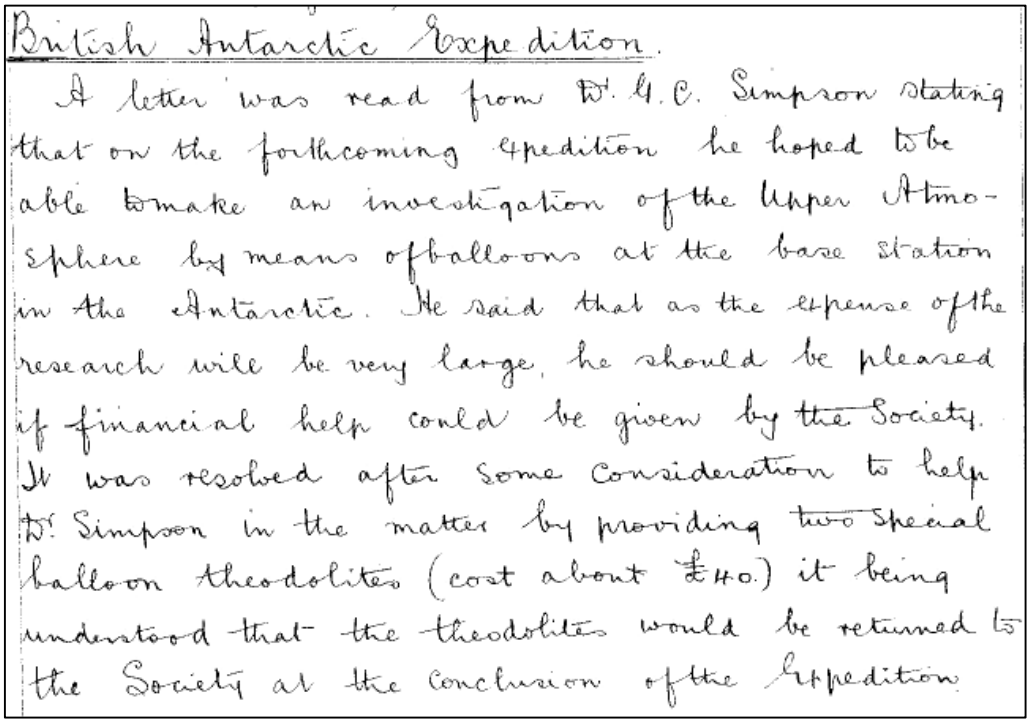
THE BRITISH ANTARCTIC EXPEDITION 1910-1913: THE METEOROLOGICAL VIEW – PART III
by Alan Heasman

As outlined in Parts I and II (Newsletters 2 and 3, 2010), Captain Scottôs ship, *Terra Nova*, sailed from the UK in June 1910, stopping briefly in South Africa and Australia before reaching New Zealand in late October 2010. The 58 members of the British Antarctic Expedition (BAE) and the shipôs crew departed Dunedin, New Zealand, on 29 November 1910, bound for the Ross Sea area of Antarctica.

After five weeks of storms and unusually dense icepack, they neared Ross Island, dominated by the active volcano, Mount Erebus. Unable to land at their preferred location at Cape Crozier, they had to make do with landfall on 4 January 1911 on a rocky promontory in McMurdo Sound. Scott named this promontory Cape Evans.

The party spent several days unloading the ship and assembling their ôflat-packô Hut. By 13 January, George Simpson, the BAE meteorologist, had established his first observation site close to the Hut and commenced weather readings. These continued, almost without break, until the last members of the BAE left Antarctica two years later, on 19 January 1913. Instrumented observations included air temperature, barometric pressure, wind speed and direction, and sunshine. There was no call for a rain gauge in that location! Simpson also made magnetic measurements, using instruments that were housed in a specially dug ice cave which minimized temperature variations. To assist Simpson in understanding the micro-climate of the Cape Evans area, he also maintained simple temperature observations in three out-lying screens. Site A (for Archibald, sometimes Adolphus) was three-quarters of a mile from the Hut on the sea ice; Site B (for Bertram) was about a mile inland of the Hut on sloping ground about 250 feet above sea/ice level. Site C (for Clarence) was also on sea ice near Inaccessible Island, a mile and a half south of the Hut. Daily journeys to these sites to read the temperatures were very hazardous, especially as the dark depths of the polar winter closed in on the BAE by April 1911. The lowest temperature at these sites was minus 50°F, in early July 1911. Site A was lost in June 1911 when a storm broke up the two-feet-thick sea ice. It was briefly re-established from May to July 1912.

In addition to these ôstaticô observations at the BAE main base, ômobileô observations were also maintained by several teams which set out from the Hut between January and April 1911 to lay supply depots southward on the Ross Ice Shelf in readiness for the main South Pole venture late in 1911. As well as ôvisualô observations of clouds etc., and ôestimatedô observations of wind, each carried a spirit-based ôslingô thermometer. Temperatures were generally too low for mercury thermometers; mercury freezes at minus 38°F. Observations were recorded (usually in pencil because of the sub-zero temperatures) in small Weather Registers each about 6 inches by 9 inches carried in a pocket in their outer garments. Also before their first polar winter, Scott sent an exploratory party across McMurdo Sound to the Western Mountains in late January 1911, returning by mid-March. This group also maintained a weather Register. Finally, a six-man team (later named the Northern Party) was taken (indirectly) by *Terra Nova* some 500 miles north of Cape



British Antarctic Expedition.

A letter was read from W. G. C. Simpson stating that on the forthcoming Expedition he hoped to be able to make an investigation of the Upper Atmosphere by means of balloons at the base station in the Antarctic. He said that as the expense of the research will be very large, he should be pleased if financial help could be given by the Society. It was resolved after some Consideration to help W. Simpson in the matter by providing two Special balloon theodolites (cost about £40.) it being understood that the theodolites would be returned to the Society at the Conclusion of the Expedition

Extract from the minutes of the meeting of the Royal Meteorological Society's Council on 16 March 1910. These minutes are held in the National Meteorological Archive, Exeter.

Evans and left at Cape Adare, an exposed and harsh promontory of Victoria Land. There they established a small hut and maintained weather observations for a year before being collected by *Terra Nova* on her return journey in January 1912. More details of the Northern Partyôs ordeal will be given in a later article. Over thirty of these original Registers, many completed under the most gruelling of conditions during nearly two years of BAE polar journeys, are retained in the National Meteorological Archive at Exeter. An exception to this is the original weather Register maintained by Scott and his four companions on their final journey. This Register in held on display, with other artefacts recovered from their tent, in the Museum of the Scott Polar Research Institute in Cambridge. By early May 1911, with the exception of the Northern Party, all the BAE members were secure in their Hut at Cape Evans to endure their first long, dark polar winter.

THE MAN WHO FORECAST NO FUTURE FOR A METEOROLOGICAL SOCIETY
by Anita McConnell

Leonard Jenyns was the son of the Revd George Leonard Jenyns and his wife Mary, daughter of William Heberdon MD, at whose London house in Pall Mall he was born on 25 May 1800. His fatherôs town house was in Paddington, from where he went to primary school in Putney, spending his holidays at the family's country home, Bottisham Hall, near Cambridge. Sent to Eton in 1813, where he found no pleasure in classics, mathematics or organized sports, his preferred reading was in travel and natural history, his outdoor exercise taken in search of bird and insect life in the adjacent hedgerows. A neat and tidy boy, he enjoyed collecting and arranging specimens. He went up to St John's College, Cambridge, in 1818, graduating in 1822. There he met John Stevens Henslow, later a Cambridge professor of botany. The two young men shared an interest in collecting, Henslow introduced Jenyns to naturalists in London and elsewhere, and proposed him for various societies. In 1823 Henslow married Jenynsôsister Harriet.

Wisely, in view of his passion for rural pursuits, Jenyns decided to enter the church. He was ordained at twenty-three to the curacy of Swaffam Bulbeck, a parish adjoining Bottisham, becoming vicar five years later. It was an ideal location. Sweeping the rough grass at Bottisham for insects, dredging the fen dykes for fresh-water molluscs, walking across Newmarket Heath, he amassed collections of insects of all orders, British birds' eggs and crania of small mammals, land and freshwater shells, and a herbarium.

In August 1831, George Peacock of Trinity College, Cambridge, wrote to Henslow suggesting Jenyns as a suitable naturalist to accompany Captain Robert Fitzroy on a forthcoming lengthy surveying voyage in HMS *Beagle.* Jenyns was by this time comfortably ensconced at Swaffam, and Darwin (nearly ten years younger than Jenyns), writing to Henslow that November, thought that Jenyns had made the right decision ï only a young man could tolerate the cramped conditions on board. Some years later, he persuaded Jenyns to take on the task of writing up the fish from the *Beagle* voyage. This required much research in Cambridge University Library, as he was obliged to educate himself by reading Cuvier's *Histoire des poissons* and other compendious works before he felt competent to tackle this alien topic.

Jenyns was elected to the Linnean Society in 1822, the same year that he joined the Cambridge Philosophical Society. He was a founder member of the Zoological (1826), Entomological (1834) and Ray (1844) Societies. He joined the British Association for the Advancement of Science in 1832 and drew up its report on Zoology in 1834.

Jenyns' marriage in 1844 to Jane, daughter of the Revd Andrew Daubeny, brother of Charles Daubeny, professor of botany at Oxford, further augmented his circle of useful acquaintances. From natural history he was inevitably led towards considerations of climate and meteorology. His best-regarded work, *Manual of British vertebrate animals* (1836) was followed by *Observations in natural history, with a calendar of periodic phenomena in natural history* (1846). When his wife became ill they moved to Ventnor, on the Isle of Wight, then to the Bath area. On leaving Swaffam, he gave his collection of Cambridgeshire insects, and his shell collection, which included nearly all the British land and freshwater species, to the Museum of the Cambridge Philosophical Society; his birds' eggs and small mammal crania went to Ipswich Museum.

While he was in Ventnor Jenyns became friendly with Dr John Martin. In 1853 both men received circulars from a new Meteorological Society, inviting them to join. Jenyns and Martin both declined; Jenyns ñdidn't know any of the names involved and I thought it very doubtful if the Society came to anything, or would ever do work of value or importanceò *(Chapters in my life,* 94). He later admitted that his forecast had been wrong.

After his wife's death in 1860 Jenyns settled in Bath, and in 1862 married the Scottish-born Sarah, daughter of the Revd Robert Hawthorn, whose parish of Swaffam Prior had adjoined his own. When he moved into the city he gave the forty folio volumes of his herbarium, together with the 1200 volumes of his scientific books, to the Bath Literary Institution where it was housed as the Jenyns Library. In 1855 he had founded the Bath Natural History Antiquarian Field Club, and henceforth contributed to its *Proceedings.*

In Bath Jenyns published his *Observations in meteorology* (1858). He tells us that he kept a meteorological register at Bottisham and afterwards at Swaffam, though at first it was irregular and made with poor instruments. In 1831 he bought from Newman of Regent Street a good barometer, which lived in an unheated room, a Rutherford registering thermometer, placed under cover near the north wall of his house, and a Daniell hygrometer. His intention to keep a record for twenty years was defeated by the move occasioned by his wifeôs illness. The *Observations* consisted of philosophical musings based on his readings of several well-known text-books, with small tables showing average annual pressures and temperatures for each of the nineteen years and some comparisons with records elsewhere in the south-east. The book was not well received, but in Bath he prevailed on the Literary Institution to set up a little meteorological observatory in their garden and from March 1865 the librarian made daily observations which Jenyns later summarized.

In 1871, on inheriting the property of the Norfolk historian Francis Blomefield, to whom he was distantly related by marriage, he assumed the name Blomefield, but as most of his important work had been done before he left Cambridgeshire, and many of his fifty-eight books and articles contained original observations of permanent value, he was always known to naturalists as Jenyns. He never travelled abroad, being satisfied with exploration on foot within England, Wales and Scotland, usually in search of natural history specimens. He remained active mentally and physically to the time of his death on 1 September 1893.

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REMINISCENCES OF LERWICK
by Malcolm Walker

One evening in early April 1963, a young student of the Birmingham College of Advanced Technology (soon to be the University of Aston in Birmingham) boarded a ferry at Aberdeen. The following morning, about 6.30 am, he stepped ashore at Lerwick, Shetland. He was a ósandwich studentô reading Applied Physics, and he was to work at Lerwick Observatory for the next five months. His degree consisted of four periods of five months spent studying in Birmingham and four periods of five months ón industryô The spell at Lerwick was the third of the four, the first, in 1961, in the Meteorological Office at Harrow and the second, in 1962, at Kew Observatory. The fourth, in 1964, was at the Royal Radar Establishment, Malvern.

I was that student, and I had no idea what work the Met Office had in mind for me. I did not know much about Lerwick Observatory, or indeed Shetland, but I was soon to find out.

My home for the next five months was to be the Observatoryôs hostel, where I had breakfast, lunch and dinner. However, a bedtime snack was not provided, so I went off during that first morning to the town of Lerwick, in the Observatoryôs lorry, to buy biscuits, cocoa and other provisions. In the grocerós, Mr Robertson looked at me and said: ñYouôre new hereò That didnôt take much working out. Lerwick was a small place where everyone knew each other. ñYou must be the new chap at The Wirelessò, he went on, ñfrom Birmingham, arenôt you?ò Hmmm, I thought to myself, someoneôs been talking. She had. The wife of one member of staff was very talkative.

I was soon to find out that news travelled fast in Shetland ï very fast. A week or so after I arrived there, I went out for a walk one evening with a young lady, one of the Observatoryôs Scientific Assistants. It was a dark evening with no moon and I was not aware anyone had seen us leave or return; and no car passed us whilst we were out. However, one of the Observatoryôs staff

who lived in Lerwick, two miles away, knew about that walk before he arrived at work the following morning. I do not know to this day how he knew, but I don't think he ever knew that we had gone out to walk up a hill to get a better view of an auroral display which was fairly low in the sky. Well, that's my story!

The establishment of a geophysical observatory at Lerwick was agreed by the authorities in the autumn of 1920. The need for such a station in Shetland had been suggested before the Great War, but there had been no progress until May 1919, when the Met Office had received a request from the Norwegian Government for cooperation in a special study of meteorological, magnetic and auroral conditions of high latitudes in connection with an expedition by the explorer Roald Amundsen to the ice field on the Arctic Ocean. The Committee had suggested that cooperation with the Norwegians might take the form of a British geophysical expedition to Jan Mayen, including meteorologists. However, the Royal Society had rejected the idea. The most practical method of meeting the wishes of the Norwegians, the Royal Society had said, would be to establish a station in Shetland that was equipped for making meteorological observations and for investigating the aurora, terrestrial magnetism, earth currents and atmospheric electricity. They had further decided that such a station would "also be of value if permanently established".

Another reason for establishing an observatory in Shetland was that the Met Office, the body mainly responsible for making magnetic measurements in the British Isles, needed to find a station to replace Kew Observatory, where the electrification of the nearby railway had seriously affected the instruments used for measuring atmospheric electricity and terrestrial magnetism. The only observatory where hourly values of the magnetic elements were obtained and tabulated was the one at Eskdalemuir. Measurements of magnetic forces were made at Valentia only once a week. The need for additional geophysical observatories was now urgent, especially one well to the north of Eskdalemuir, for it had been recognized that variations of the components of geomagnetic forces increased greatly from south to north across the British Isles. The assumption that observations from one station were representative of forces over the whole of Britain was no longer tenable.

Dr Crichton Mitchell, the Office's Edinburgh Superintendent, visited Shetland to search for a suitable site for the proposed observatory and reported that a wireless station near Lerwick appeared suitable. His recommendation was approved and the station was subsequently transferred from the Post Office to the Air Ministry on condition that the wireless apparatus was maintained and kept available for the Post Office to use in the event of an emergency. The new observatory was opened on 7 June 1921, staffed by a Senior Professional Assistant (Jock Crichton), two Technical Assistants (both recruited locally) and a wireless telegraphy operator. The observatory was fully equipped with meteorological instruments from the outset and routine synoptic weather observations were made, with the existing wireless apparatus used for transmitting them.

Lerwick Observatory soon became an important centre for geophysical research. Besides meteorological observations, the routine included observations of the aurora, terrestrial magnetism, earth currents and atmospheric electricity. And Dr G M B Dobson of the University of Oxford twice set up instruments at Lerwick Observatory to measure atmospheric ozone. In 1926 and 1927, he employed a Féry spectrograph he himself had built, and from 1940 to 1943 he used a photo-electric spectrophotometer of his own design – which brings me to the work I was assigned at Lerwick Observatory.

Under the direction of the Observatory's Superintendent, Richard Hamilton, I spent my five months at Lerwick studying ozone; and out of this work I gained my first publication: "A method of measuring atmospheric ozone absorption coefficients", published in 1966 in the *Journal of Atmospheric and Terrestrial Physics* (Vol.28, pp.667-672). It was a joint paper with Richard, and he wrote every word of it. I did the practical work of making observations on very clear days and determining the extra-terrestrial constant of the Dobson spectrophotometer we were using. The picture below shows me hard at work with slide rule and calculator.*

* Is it a Burroughs calculator?

Richard also wrote every word of another joint paper, "The determination of the extra-terrestrial constant of a Dobson spectrometer", published in 1967 by the Meteorological Office as *Scientific Paper No.27* (Met.O.No.793).

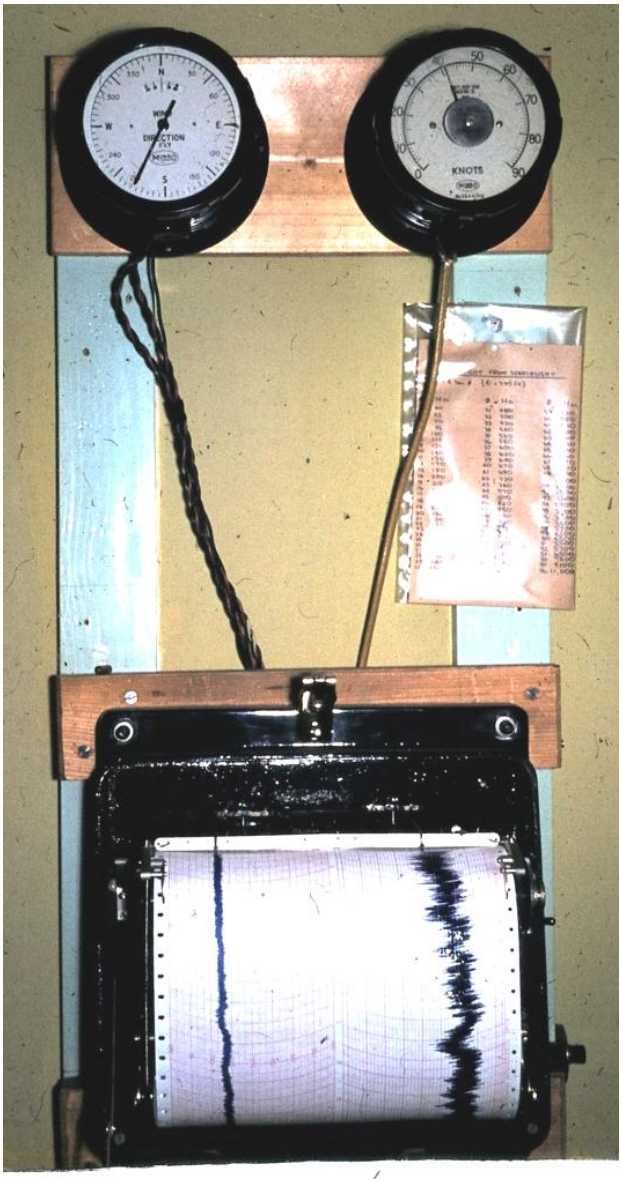
The summer of 1963 was the finest in Shetland for 14 years, and the weather so good one weekend in June that Richard was able to take me and a couple of others in his boat to the eastern side of the Isle of Noss on the Sunday morning to view the cliffs on which thousands of sea birds nested. It was quite a spectacle, and an unforgettable experience.

On another occasion, Richard took me in his boat to the Out Skerries to find out for the Met Office's Edinburgh office why there had been no readings from three rain-gauges for some while. We failed to find one gauge. Of the other two, one had been converted into a flower pot and the other forgotten about.

Another of my duties at Lerwick Observatory was to help Richard make magnetic and electrical measurements. He was exceedingly careful, ensuring nothing magnetic came near the instruments that were used for measuring terrestrial magnetism. When measurements were made, pyjamas were worn.

Synoptic observations were made at Lerwick Observatory every hour, and radiosonde ascents were made daily at midnight and midday GMT. Pilot-balloon ascents were made at 06:00 and 18:00 GMT.

Though the weather was generally good during my time in Shetland, there were a few windy spells. The picture on the right shows the Observatory's anemometer reading 40 knots (from the SSW) one day in September. Launching a radiosonde balloon in such conditions could be a challenge, to say the least. The picture below shows the launch of the midday ascent one day when the mean wind speed was about 35 knots.



Notice that the corners of the radar reflector were padded to reduce the risk of the balloon being burst if it whipped back in a gust and made contact with the reflector. The apparatus for measuring temperature, pressure and humidity was launched at the very last moment by the assistant on the right, every effort being made to avoid the radiosonde being smashed on impact with the ground. On this occasion, the launch was successful.

Working arrangements at the Observatory were flexible for the scientific personnel. If the weather was poor on a Saturday or Sunday we could work and take time off in lieu later when the weather was fine. I was able to take advantage of this to some extent, but I also had to make my ozone measurements when the sky was free of cloud or almost cloud-free, and that included weekends.

My five months in Shetland passed all too quickly. When I look back, I realize what a great

boss Richard was, and I also look back on some very enjoyable trips out on my days off. My day on Foula, the island on the horizon west of the Shetland mainland, was perhaps the highlight. Years later, in Cardiff University, a Shetlander was a colleague of mine, and it turned out his father had been the skipper of the boat which took me from Scalloway to Foula that day. What a small world!

Transmitting the latest Lerwick observation, 1963

TELEGRAPHING MID-ATLANTIC WEATHER TO EUROPE: THE FIRST AZORES METEOROLOGICAL OBSERVATORIES
by Anita McConnell

Prince Albert of Monaco (1848-1922), well known for his oceanographic campaigns in his yacht *Princesse-Alice*, regularly cruised in the North Atlantic. Aware that most of Europeôs weather came across the Atlantic, he saw how useful a mid-ocean meteorological observatory would be, if only its observations could be communicated immediately to Europe. This dream became a possibility in the 1890s, and as submarine telegraph cables were being laid linking many of the Atlantic islands to Europe, he campaigned for the establishment of mid-ocean meteorological observatories, both at sea level and at altitude. In 1887, during his first campaign in the seas around the Azores, Albert became acquainted with the Azorean military officer and geophysicist Francisco Afonso Chaves e Melo (1857-1926). After three cruises devoted largely to the waters around the Azores, Prince Albert still yearned for a modern well-funded meteorological service to replace the simple stations set up by the Portuguese government under the direction of Chaves, their records being transmitted by ship to Europe. He suggested to Chaves that another observatory should be sited on the summit of the island of Pico, at 2351 metres the highest point of the archipelago.

In the 1880s, there was one other European high-level observatory, that on Ben Nevis, at 1344 metres Scotlandôs highest peak, and Prince Albert turned to his long-time friend John Young Buchanan (1844-1925) for information on this observatory, its organization, and running costs. Happily, this enquiry coincided with the annual meeting of the British Association for the Advancement of Science (BAAS), which in 1892 was held in Edinburgh; on 4 August the Prince and his wife arrived at the port of Leith on board the *Princesse-Alice*, where they stayed for six days. On 5 August, Albert addressed the Geographical Section of the meeting,[1] his text having previously been translated and amplified by Buchanan, who explained to Prince Albert:

I duly received your Highness' letter of 4 July & the MS of the note for the meeting.

I enclose herewith the translation which I have made. In its making it seemed to me that it would be better to have it somewhat amplified and I have inserted some sentences which are marked with pencil on the margin. It seemed to me to be the simplest way of suggesting what I mean. I have also in general sought to extend the sentences, because a British audience does not apprehend statements readily when they are too concise.

The first interpolations which I have made concern the existing telegraphic communication with the various islands. The next interpolation concerns the islands suitable for high level stations. I think a paragraph should also be inserted giving some information about the different islands of the Azores & about the people whom, from your own personal knowledge, you could recommend as observers in each island. This would at once give the thing a practical shape which people would appreciate.

I have also interpolated a recapitulation of your plan with a reference to the Ben Nevis observatory which I think is very important.[2]

Regular observations at Ben Nevis Observatory had begun in 1883 and showed what could be achieved. Buchanan was the obvious person to consult on its workings, and through the good offices of Alexander Buchan (1829-1907), Secretary of the Scottish Meteorological Society, the observatoryôs superintendent, Robert Traill Omond (1858-1914), prepared an

[1] Abstract. Report BAAS 1892 (1893), 812. A fuller summary was published in pp.622-4 as part of ôOceanography at the BAASô in *Proc. Royal Geographical Society*, new.ser. 14/9 (1892).

[2] J.Y.Buchanan to Prince Albert, Edinburgh 9 July 1892 (Archives, Musée océanographique de Monaco ï hereafter AMOM)

analysis of the set-up and running costs. This was despatched to Monaco, while Buchanan and his brother Francis sailed to the adjacent town of Fort William, from where they climbed up to the observatory, taking temperature measurements at various heights.[3]

In 1893, Albertôs yearning for a mid-ocean observatory was made possible when the Europe and Azores Telegraph Company was established, and the Eastern Telegraph Company employed to lay cables from Carcavelos in Portugal to Ponta Delgada on the island of São Miguel, then on to Horta on Faial. The first observatory was built at Monte das Moças near Horta, from where basic meteorological observations were telegraphed to London, Lisbon, Paris, Hamburg and Washington.

United Kingdom co-operation was desirable, not least because most of the telegraph cable companies were British-owned, as were many commercial and maritime insurance companies. All would benefit from first-rate weather reports from mid-Atlantic, as indeed would much of western Europe. Appreciating that Portugal could not afford the standard of observatory that he considered so essential, Albert deployed every scientific and diplomatic means at his disposal. Some tact was needed, as the Portuguese government was unhappy about Britain getting too big a foothold in the Azores. Albert therefore proposed a constitution for the Azores observatories underpinned by international guarantee and funded by western maritime nations ï along the lines of the existing Bureau international des poids et mesures ï but this too was politically unacceptable to Portugal. Chaves was a long-time supporter of Albertôs proposals; he sent an 18-page letter to Albert in 1894[4] and in 1900 sent Albert a copy of his report on the Azores meteorological service. This was published in Monaco and distributed to delegates at the international meteorological congress held in Paris in 1900.[5]

Over the next ten years, as cables were laid to the Canaries and Cape Verde islands, the Atlantic observatories featured in many of Albertôs lectures. On 31 January 1898, he addressed the Académie des sciences in Paris. Later that year, on 28 April and again in Buchananôs translation, he appealed to the Royal Society.[6] Albert pictured a mid-Atlantic observatory being more than a weather station, suggesting that it could include seismic and geomagnetic instruments, and would allow navigators to regulate their chronometers. He closed his message ñand I ask the Royal Society, whose influence is so great in the domain of science, to support, by its concurrence, the accession of England to the ideas which I uphold for the common interestò Following this talk, Prince Albert wrote to Dom Carlos, Portugalôs oceanographic monarch, remarking that these matters were made more difficult in England where they did not care to join projects which they had not themselves put forward, but that his proposal, laid before the Royal Society, was recognised as having great scientific and practical importance. He was optimistic of success.[7]

The Meteorological Service of the Azores was established in 1901, under the exclusive control of the Portuguese state, and charged with making meteorological and geophysical observations and telegraphing results to European stations. It prospered under Chaves, its first director, and gained international prestige. Chaves set up four observatories, at Ponta Delgada (on São Miguel); Angra do Heroísmo (on Terceira); Horta (now Observatorio Principe Alberto do Mónaco, on Faial); and, in 1897 a station at Santa Cruz (on Flores, the most westerly island ï not then connected by telegraph), plus climatic study stations on Pico and a magnetic and seismic observatory on Fajã de Cima (on São Miguel).

In 1946 the Meteorological Service of the Azores was subsumed into the National Meteorological Service, later the Institute of Meteorology.

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[3] R.T.Omond to J.Y.Buchanan, 19 May 1893; idem 23 May 1893; J.Y.Buchanan to Prince Albert, 28 May 1893. (AMOM)

[4] F.A. Chaves to Prince Albert, Ponta Delgada, 20 March 1894 (18 pp.) AMOM.

[5] F.A Chaves, Rapport sur lôetablissement projeté du Service météorologique internationale des Açores. (Monaco: Imp. De Monaco, 1900).

[6] ôOn the meteorological observatories of the Azores.ô *Proc. Royal Society*, Vol.63, n° 395, pp.206-208 (1898)

[7] Letter, Prince Albert to King Carlos, Kiel, 2 July 1898. ôLôesprit particulier qui règne en Angleterre rend les choses plus difficiles dans ce pays, qui nôaime guère les participations aux idées quôil nôa pas eues le premier ; mais le projet, que jôai exposé dernièrement à la «Royal Society»7 y a été reconnu comme ayant une grande importance scientifique et pratique. Je ne doute pas que je réussisse à grouper des chambres de commerce et des compagnies dôassurances qui se joindront à nous. Voilà où en est la question, et je vais continuer mon ouvre [sic] dans le même sens.ôLisbon : Archives de lôAquario Vasco da Gama, Doc. No.100.

LONG AGO AND FAR AWAY
by Richard Gregory

It was my great good fortune to be part of the first pilot training course in the Royal Air Force following the end of the 1939-45 war, the course assembling at RAF Spitalgate, near Grantham, on 10 June 1947. There had been a considerable backlog of courses in progress when the war ended, one of which was composed of Dutch pilots completing their advanced training on the North American Harvard when we arrived, to occupy newly-decorated barrack blocks, which were a great improvement ï for me at least ï over the Nissen-hutted camps I had known for the previous two years.

Our ground training covered pilot navigation, armament, aero engines ï including an introduction to the then entirely new jet, and meteorology, of course. Eventually, we were introduced to the de Havilland Tiger Moth, and here again I was tremendously fortunate, for we were the last RAF pilots to begin our training on this remarkable aircraft. At the end of our elementary training it was declared redundant, and replaced by the Percival Prentice, a most unlovely, graceless agglomeration of metal with all the flying qualities of a well-tailored brick. However, for all its outstanding qualities which made it such an excellent and demanding aircraft on which to learn to fly and navigate, the Tiger had no radio, although there was a rudimentary battery-powered intercom to enable the trainee pilot in the front cockpit to hear the words of wisdom emanating from the instructor behind. Lack of a radio meant that there was almost no means of recalling solo pilots who might be airborne when the weather clamped down. The only method of recall was to discharge a signal rocket from the tower which, as may be imagined, had only limited effective range, and was pretty much a hit or miss effort. Since Spitalgate lay on the ridge rising from the Vale of Trent, accurate forecasting in critical conditions of humidity and a light westerly wind required a degree of local knowledge in the forecaster, which, in the nature of things, could not be guaranteed. To cater for the worst case, we were taught, very early on, how to make a precautionary landing in any suitable field.

At the time, we had two principal forecasters, the most senior being a heavily accented chap of Polish extraction, and a charming WRAF lass with an excellent manner of relaying her forecasts which were, of course, listened to most attentively. That she was a graceful blonde might have helped just a little. However, waiting for the duty forecaster to give us the worst news on a day when anyone could see that the weather was not good ï low cloud and a touch of drizzle ï we were rewarded by the entry of the Polish chap, who mounted two steps to the podium, where he turned to face us and then, with the most lugubrious expression, gave the shortest forecast possible ï ñFoggyòï and with that he turned and left.

Fast forward to the present day.

Luckily my wife and I are both fowls, not owls, awakening early more or less with first light, and much preferring ñrealòmusic on BBC Radio 3, with the bedside radio permanently tuned to this station. The music is interrupted on the hour by a three-minute presentation of the news and weather, with an abbreviated version on the half-hour. I slowly came to realise that the shortened weather forecast relied upon the whims and fancies of the duty news presenter, among whom Alison Roper is much my favourite, since she has a well-modulated voice and an unhurried, precise enunciation, pausing at the end of sentences, not gabbling in the slightest. It was a delight to hear one morning at 07:30, the news summary being over, the weather forecast, which simply said ñIf itôs not already raining where you are, then it soon will beò. However, even this concise utterance was beaten some short while after, when the forecast amounted to the statement ñWet and miserable ï everywhereò. I should not have been in the slightest surprised to hear Noah announcing in the same fashion that obtains at commercial airports, that the Ark was now boarding at Tower Bridge.

NEW PUBLICATION

History Group Occasional Paper No.10 was published in February 2011. Itôs by Group member Hugh Thomas and called *Weather and phenological observations at Hurstpierpoint 1859-1862*.

The paper is based on meteorological, phenological and some astronomical observations made by the Rev J Gorham at Hurstpierpoint College in West Sussex from February 1859 to March 1862. The observations are generally taken as they were written in the School Magazine, known as *The Hurst Johnian.* In the paper, after each month, season and year, comparisons are made with readings taken concurrently at Greenwich Observatory.

The paperôs ISBN is 978-0-948090-33-2 and the paper is available online, at: www.rmets.org/pdf/hist10.pdf.

JEHUDA NEUMANN MEMORIAL PRIZE

We are delighted to announce that this year's Jehuda Neumann Memorial Prize has been awarded to Professor Eric Mills of Dalhousie University, Nova Scotia, Canada. We congratulate him.

More details will appear in the July issue of the newsletter.

The first winner of the Jehuda Neumann Memorial Prize, Robert Marc Friedman (left), received the award at a Challenger Society meeting in Southampton in 1995. The award was presented by History Group Chairman Malcolm Walker (right).

SIR FRANCIS GALTON …

é died one hundred years ago, on 17 January 1911, aged 88. He was a polymath who contributed to statistics, eugenics, anthropology, psychology, genetics and, among a number of other disciplines, meteorology.

From about 1860 onwards, he developed pictorial methods of presenting weather information. Initially, his weather charts were primitive, because the amount of data available to him was limited and the techniques used for mapping weather were undeveloped. Nevertheless, he was able, as early as 1863, to identify and name the anticyclone.

One of his early contributions to meteorology was *Meteorographica, or methods of mapping the weather; illustrated by upwards of 600 printed and lithographed diagrams referring to the weather of a large part of Europe during the month of December, 1861*, published in 1863 by Macmillan. In this book, he turned his attention to the tabulation and mapping of weather, which he called ómeteorographyô

His other meteorological publications include:

ôMeteorological chartsô(*Philosophical Magazine*, 1861, Vol.22, pp.34-35).

ôMeteorological instructions for the use of inexperienced observers resident abroadô (*Proceedings of the British Meteorological Society*, 1862, Vol.1, pp.397-400).

óA development of the theory of cyclonesô (*Proceedings of the Royal Society*, 1863, Vol.12, pp.385-386).

ôOn an error in the usual method of obtaining meteorological statistics of the oceanô(*The Athenaeum*, 1866, No.2027, p.274, and *Report of the British Association for the Advancement of Science*, 1866, Vol.36, pp.16-17).

ôOn the conversion of wind-charts into passage chartsô(*Philosophical Magazine*, 1866, Vol.32, pp.345-349).

ôBarometric predictions of weatherô(*Nature*, 1870, Vol.2, pp.501-503).

ôOn the employment of meteorological statistics in determining the best course for a ship whose sailing qualities are knownô(*Proceedings of the Royal Society*, 1873, Vol.21, pp.263-274).

ôDescription of the process of verifying thermometers at the Kew Observatoryô (*Philosophical Magazine*, 1877, Vol.4, pp.226-231, and *Proceedings of the Royal Society*, 1877, Vol.26, pp.84-89).

He also drew the first weather chart published in *The Times*, a chart for 31 March 1875, which appeared in the newspaper the following day.

For more than three decades, Galton served on the Royal Society body which controlled the Meteorological Office. Indeed, he chaired the inquiry into the work of the Meteorological Department of the Board of Trade after the suicide of Admiral FitzRoy and recommended that the Society should direct the work of the Department through a Meteorological Committee. He was a member of this Committee, which was reconstituted as the Societyôs Meteorological Council in 1877, until March 1901. The Department was renamed Meteorological Office in February 1867.

Galton also played a leading rôle in the running of Kew Observatory from 1858 to 1900, first as a member of the British Associationôs Kew Committee and from 1870 as a member of its successor, the Royal Societyôs Kew Committee. At the Observatory, he invented and developed several novel and ingenious instruments for recording weather information.

For a wealth of information about Galton, visit: http://galton.org/

MEETING REPORT

On 17 November 2010, at the University of Reading, the third "Classic Papers" meeting was held. This was a Royal Meteorological Society National Wednesday Meeting, organized by the History Group, and the subject was "Turbulence – a "resolved" problem?". The meeting was well supported (attendance 124), and proved a great success, with many approving comments afterwards. All speakers took care to provide historical perspective.

Malcolm Walker gave an introductory talk, "It all started with an iceberg!", in which he explained that Geoffrey Ingram Taylor had made good use of his time aboard the *Scotia* on the ocean off Labrador and Newfoundland in 1913, the basic purpose of the voyage being to observe and report sea ice and icebergs following the *Titanic* disaster of the previous year. Taylor measured profiles of temperature, humidity, wind speed and wind direction to a height of 2,500 metres on several occasions, doing so with instruments attached to kites. He described his work in a substantial report for the Board of Trade and published his theoretical analyses in a paper which is today considered a "classic" ("Eddy motion in the atmosphere" (*Philosophical Transactions of the Royal Society*, A, Vol.215, pp.1-26). Malcolm pointed out that studies of turbulence – by Navier, Stokes and Reynolds – started long before Taylor's career began. However, Taylor – and L F Richardson – were the pioneers in field studies of turbulent motions in the atmospheric boundary layer which led to understanding of motions in the real atmosphere. They built upon theoretical foundations laid in the nineteenth century.

The next speaker, David Thomson of the Met Office, focused on key insights of Taylor and Richardson and developments stemming from them. Then, Andy Brown, also of the Met Office, spoke on "Large-eddy simulation: from Deardorff to the present day". After tea, there was yet another presentation by a Met Office speaker, this one by Gabriel Rooney on plumes. He introduced concepts and insights of a classic paper by Morton, Taylor and Turner in 1956 on plume behaviour and showed how their work had been widely exploited, ranging from analyses of industrial pollution to studies of volcanic eruptions. The next paper, by Bert Holtslag of Wageningen University, focused upon the Atmospheric Boundary Layer Study of the Global Energy and Water Cycle Experiment (GEWEX). Finally, Stephen Belcher of the University of Reading spoke about turbulent ocean surface boundary layers.

FORTHCOMING MEETINGS

➢ The next meeting of the Group takes place at the **Thames Barrier** on **Tuesday 21 June**. If you have not booked for this, do hurry, as only 30 places are available, on a first-come first-served basis. Details have been sent to all members of the History Group. If you have not received these details, please contact Malcolm Walker without delay. For his postal and email addresses, see page 20.

➢ On **Saturday 24 September 2011, at the Farnborough Air Sciences Trust (FAST)**, there will be a meeting on **'The use of aircraft in meteorology: Part I'**. This meeting will begin with coffee at 10:30am and finish around 5.00pm. There will be a tour of the FAST museum, and there will be four talks:

"Those magnificent weather men in their flying machines", by Malcolm Walker.
"Wolken Im Luftmeer: the German World War I cloud atlas", by Howard Oliver.
"Douglas's Law: the aeroplane and the birth of modern meteorology", by Brian Booth.
"Aerological aircraft ascents: from the first to the most", by Maurice Crewe.

The registration fee will be £10 and the booking form for the meeting will be sent out in late May.

➢ The **fourth 'Classic Papers' meeting** will take place at the **University of Reading** on **Wednesday 16 November 2011**. The meeting will explore developments in cloud physics, both theoretical and experimental. Details of this meeting will be included in the next issue of this newsletter.

➢ On **Saturday 17 March 2012**, there will be a meeting **in London** themed around **'Climate, weather and health'**. Topics to be covered include:
The history of relationships between weather and health, with particular reference to influenza.
The rise and fall of the "health resort".
Studies of weather and cholera in the nineteenth century.
Aspects of weather and health issues in the tropics.
Current Met Office weather and health research.

Further information about this meeting and a booking form will be sent out in due course.

► Provisionally, a meeting on **'The use of aircraft in meteorology: Part II'** will be held at **Farnborough** on Saturday 29 September 2012. This meeting will cover the period from the 1930s through World War II to the 1960s.

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.

ALLEGRA, A. and LOGAN, K., 2010. ôThe National Oceanographic Data Center celebrates 50 years of serviceô *Earth System Monitor*, Vol.18, pp.1, 3, 4 and 9.

BARR, W., 2011. ôThe retreat from Zemlya Frantsa-Iosifa [Franz Josef Land]: the diary of Lieutenant Carl Weyprecht of the Austro-Hungarian north pole expedition, 20 May-3 September 1874ô *Polar Record*, Vol.47, pp.97-125. doi:10.1017/S0032247409990568.

BOOTH, B.J., 2010. ôThe first Royal Air Force Meteorological Flight (1918/1919): Part 2. *Weather*, Vol.65, pp.302-305.

BURT, S., 2010. ôSymons gravesite re-dedication ï a unique and memorable [Royal Meteorological] Society eventô *Weather*, Vol.65, pp.340-341.

BULKELEY, R., 2010. ôTo unbar the gates of the South: Maury's 1860ï 1861 proposals for Antarctic cooperationô *Polar Record*. Available on Cambridge Journals Online doi:10.1017/S0032247410000549

CARPINE-LANCRE, J. and McCONNELL, A., 2011. ôPrince Albert and J.Y.Buchanan: Mediterranean investigationsô *History of Oceanography*, No.22, pp.24-31.

CHARLTON-PEREZ, A. and DACRE, H., 2011. ôLewis Fry Richardsonôs forecast factory ï for realô *Weather*, Vol.66, pp.52-54.

COEN, D.R., 2010. ôWeatherwiser?ô *Historical studies in the natural sciences*, Vol.40, No.1, pp.125-135 (University of California Press).
This article reviews the following publications:
MULCAHY, M. *Hurricanes and Society in the British Greater Caribbean, 1624-1783*. Baltimore: Johns Hopkins University Press, 2006, 257pp. ISBN 978-0-801-89079-6.
GOLINKSKI, J. *British weather and the Climate of Enlightenment*. Chicago: University of Chicago Press, 2007, 284pp. ISBN: 978-0-226-30205-8.
LOCHER, F. *Le savant et la tempête: Étudier l'atmosphère et prévoir le temps au XIXe siècle*. Presses Universitaires Rennes, 2008, 221pp. ISBN: 978-2-753-50696-1.
HARPER, K.C. *Weather by the numbers: the genesis of modern meteorology.* Cambridge, MA: MIT Press, 2008, 308pp. ISBN: 978-0-262-08378-2.

FUENTES, O.V., 2010. ôThe earliest documented tornado in the Americasô *Bulletin of the American Meteorological Society*, Vol.91, pp.1515-1523.

GERGIS, J., BROHAN, P. and ALLAN, R., 2010. ôThe weather of the First Fleet voyage to Botany Bay, 1787-1788ô *Weather*, Vol.65, pp.315-319.

HOLDEN, C. and HOLDEN, L., 2010. *Life and death on the* Royal Charter*. The true story of a treasure ship wrecked on Anglesey*. Chester: Calgo Publications, 288pp. ISBN: 978-0-9545066-2-9.

MITCHELL, D., 2010. ôObituary of Chris Bellô *Weather*, Vol.65, p.339.

MOCK, C.J. *et al*, 2010. ôThe great Louisiana hurricane of August 1812ô *Bulletin of the American Meteorological Society*, Vol.91, pp.1653-1663.

MOHNEN, V. and HIDY, G.M., 2010. ôMeasurements of atmospheric nanoparticles (1875-1980). *Bulletin of the American Meteorological Society*, Vol.91, pp.1525-1539.

PIKE, W.S. and WEBB, J.D.C., 2011. ôAn historical and climatological note on snowfalls associated with cold pools in southern Britainô *Weather*, Vol.66, pp.16-19.

PRIOR, J. and KENDON, M., 2011. ôThe UK winter of 2009/2010 compared with severe winters of the last 100 yearsô *Weather*, Vol.66, pp.4-10.

SHINE, K.P., 2011. ôObituary of John J.Barnettô *Weather*, Vol.66, p.27.

SMED, J., 2011. ôEarly international North Sea current studiesô *History of Oceanography*, No.22, pp.14-23.

SMED, J., 2011. ôEarly plans for telegraphic communication with the Faroes and Iceland in the interests of meteorology and fisheryô *History of Oceanography*, No.22, pp.10-13.

THEBERGE, A.E., 2010. ôA short history of the development of oceanographic instrumentation through the nineteenth centuryô *Earth System Monitor* Vol.18, pp.6-7.

THEBERGE, A.E., 2010. ôThe NOAA Central Library ï 200 years and countingô *Earth System Monitor* Vol.18, pp.5 and 10.

THOMAS, H., 2011. ôWeather and phenological observations at Hurstpierpoint 1859-1862ô *Occasional papers on meteorological history*, No.10, 38pp. ISBN: 978-0-948090-33-2. Also: www.rmets.org/pdf/hist10.pdf.

2011 MEMBERS

Rob Allan (Exeter)
Alberto Ansaloni (Milano Italy)
Oliver Ashford (Didcot)
Graham Bartlett (Slough)
Rodney Blackall (Buckingham)
Brian Booth (Devizes)
Ron Bristow (Maidstone)
Stephen Burt (Stratfield Mortimer)
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R W Phillips (Lincoln)
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John Wilson (Nottingham)
Christopher Wilson (Cullompton)
Sir Arnold Wolfendale FRS (Durham)
Mick Wood (Bracknell)

THIS IS YOUR NEWSLETTER

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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 July 2011. Please send comments, articles etc to Malcolm Walker (address above) by 15 June.

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.