

News, views and a miscellany published by the Royal Meteorological Society's
Special Interest Group for the History of Meteorology and Physical Oceanography

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News

Julian Mayes, Secretary / Newsletter editor

Welcome to the first issue of the Newsletter for 2020. This has clearly been an unusual and challenging year and I hope you are well. The meetings shown in the December 2019 newsletter have obviously been postponed until further notice due to the coronavirus.

In this issue we include another of Brian Booth's detailed appreciations of a Met Office meteorologist who has lost their life in combat – Corporal Norman Clifford. We extend our thanks to Brian for his careful research on this and the many previous such studies that we have published. This issue contains one other full article – Brian Powell's reminiscences of working at Kew Observatory in the early 1950s. As our membership includes some others who worked there, I am sure that this article will be read and enjoyed by many – for the humour and social history as much as the meteorological content! Also, we look back 150 years and 100 years – the latter including a reminder that we have just passed the centenary of the Louth flood (May 29th 1920) [see item below].

Membership – We welcome a new member, Helen Mulholland of Bath. She is researching the career of her father, Frank Tyler, who was an RAF meteorologist during the war and was one of three men shortlisted to be Stagg's assistant. Her current focus is on his time in Europe after D-Day until early 1946. Helen reports that he grew up in the Lincolnshire town of Louth and was evacuated in the town's flood disaster 100 years ago.

Chairman – The History Group is still looking for a new Chairman. Enquiries can be made to myself or to the RMets.

History of Buxton climatological station - Records commenced in Buxton in 1865, making it one of the oldest sites in the UK. This website <https://www.buxtonweather.co.uk/metofficeslopes.htm> outlines the site's history and shows how volunteer observers were recruited following the withdrawal of staffing by the local authority.

Future meetings of the History Group and other meetings of interest

WeatherLive: Past, Present and Future

<https://www.rmets.org/event/weatherlive-2020>

This is the Society's annual weather event, this year being run as a virtual meeting on 17th October. Presentations will include 'the history of climate science' and '170 years of weather forecasts'.

The following meetings were postponed due to the coronavirus. Dates will be rearranged in due course.

The history of climate science ideas and their

applications RMets National meeting arranged by the RMets SIG on Climate Change with reference to the History Group. The programme can be found at

<https://www.rmets.org/event/history-climate-science-ideas-and-their-applications>

History and development of meteorological

Instruments A joint meeting between the Worshipful Company of Scientific Instrument Makers, the Scientific Instrument Society and the Meteorological Observing Systems SIG of the RMets.

Historic Scottish weather observations and how to access them

Corporal Norman John Clifford, RAFVR 29 July 1912 - 17 June 1940

Brian Booth, Devizes

The evacuation of nearly 500,000 Allied troops from France between 28 May and 25 June 1940 was conducted during three operations masterminded by the Royal Navy.

*Everyone is familiar with **Operation Dynamo**, the evacuation of over 338,000 British, French and Belgian troops from Dunkirk between 28 May and 4 June. Several meteorologists were among those who returned home, and a graphic account of the experiences of one six-man group, plus their driver, has been published by Ken Anderson as Occasional Paper No 7 (2009)¹.*

*The second stage was **Operation Cycle**, when nearly 12,000 men were transported from Le Havre to Cherbourg between 10th and 13th June. It is not known if any meteorologists were involved on this occasion.*

*The third evacuation, **Operation Aerial**, was mounted from multiple ports along the west coast of France, from Cherbourg in the north to Saint-Jean-de-Luz near the border between France and Spain. Lasting from the 15th to 25th June, Aerial successfully extracted over 190,000 men, women and children, including 144,000 British military personnel, and some 35000 civilians, from France.*

These evacuees included an unknown number of meteorologists, but 11 embarked on His Majesty's Transport 'Lancastria' off St Nazaire on 17 June. When the vessel was sunk by German bombers later in the day, an estimated 2500-3000 of its passengers and crew died, making it the worst British maritime loss of life in history. The loss of the 'Lancastria' was probably witnessed by Patrick Meade from another vessel; he went on to enjoy a very distinguished career in the Meteorological Office, rising to become the Deputy Director-General.

By good fortune of the 11 meteorologists on the 'Lancastria' only Corporal Norman John Clifford died. What follows is his story.

There is some mystery about Norman's father as his name does not appear the birth certificate, but nine months later he gained a stepfather when his mother, Lena, married George Robinson; a widower with three children. Living in a three-bed terrace house in Lower Edmonton, Middlesex, the family increased to nine during the next five years with the births of two more sons and a daughter, Rosamond.

On reaching school age Norman began his education at Croyland Road Council School, and remained there until 1926. After being awarded a grant to study engineering he spent the following two years at the Ponders End Technical College (now Middlesex University)².

Having successfully passed the examination for Boy Mechanics in the Royal Air Force (RAF), Norman left college in 1928 to pursue a career in the service. At least that was the intention, but the training offered was dependent on an applicant serving in the RAF for ten years, something that appears not to Norman's taste as he returned home after just one week.³

In 1935 his mother reverted to her maiden name and, accompanied by Norman, left her husband to live at another address in the town.⁴ The reason is unclear especially as later events did not suggest any obvious conflict within the family. In the event during 1939 she returned to the family home.⁵

Exactly how Norman was employed after leaving the RAF is unknown, but when he enlisted in the Royal Air Force Volunteer Reserve (RAFVR) in August 1939 his civilian occupation was recorded by the vague description of 'Technical Assistant'. It is possible that 'Technical Assistant' referred to work connected with railway engineering as Norman was a close friend of Donald L Champion, F.R.Met.S., a draughtsman of the London and North Eastern Railway.⁶



Nine years older than Norman, Champion was a keen amateur meteorologist who sent monthly rainfall returns to the Meteorological Office from a well-equipped meteorological station at his home in Goff's Oak, Hertfordshire.⁷ The two men lived no more than 7 miles apart, and circumstantial evidence suggests Norman was a welcome visitor at Champion's house. The subjects discussed and investigated appear to have been quite diverse, for instance the only surviving letter between the two included references to soil hardness and a snow solidimeter.⁶

Corporal Norman Clifford, circa Spring 1940. (Norman Toomy)

There is little doubt that this friendship was the catalyst for Norman's interest in meteorology, and it seemed only natural for this slightly built man (just 1.6 m tall) to volunteer for the Meteorological Branch of the RAFVR in August 1939. As Aircraftman 2nd Class Clifford, Norman began his meteorological training at RAF Waddington in early September. Being unqualified he rarely made entries in the Waddington Daily Register, but the few that survive show a neatness and clarity of hand consistent with him being an engineering draughtsman in civilian life.

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		0	010	—			/	I					45.2					

1600 to 1800 GMT observations from Waddington Daily Register for 16 October 1939. The first two are initialled by Norman's supervisor.

In early November, having been assessed as a competent observer and promoted to Leading Aircraftman (LAC), he was posted to the Group Meteorological Office of Headquarters 5 Group. His new unit was based in a requisitioned private house, St Vincent's Hall, Grantham, not far from Waddington.³ The work was different to what he had been used to; whereas at Waddington, an operational bomber station, he had learnt about observing and instruments, at HQ 5 Group the work was more office orientated - plotting and teleprinter operations.



HQ 5 Group, RAF, St Vincent's Hall near Grantham, when Norman served briefly for a month before proceeding to France.

On 3 December, having been informed he was being posted to France, Norman married his fiancé, Gladys Barrett. Their time together as man and wife was brief as two weeks later he sailed for France and HQ Component Field Force (HQ CFF) at Maroeuil. This was during a period later known as the 'Phoney War', for at the time there appeared to be little immediate threat from the Wehrmacht (the German army) massing near the German border in the east.

This was the last movement shown on Norman's service record, but in all probability he was sent to Maroeuil simply for administration purposes prior to posting to an operational airfield. What happened after Norman arrived in France is largely conjecture, the only confirmed event being his promotion to Corporal on 1 March 1940. Many other airmen enlisting at the same time as Norman never advanced beyond LAC so early in their careers, so his promotion to non-commissioned officer suggests his superiors thought well of him.

The 'Phoney War' ended when British and French forces were caught completely unprepared as the Wehrmacht launched its Blitzkrieg on 10 May 1940. Enemy forces encountered little opposition as they sped across the neutral countries of Holland, Belgium and Luxemburg, and within two days had reached Brussels and the Ardennes Mountains.

Even at this late stage Allied commanders naively ignored German troops and armour reported to be pouring into the Ardennes, mistakenly believing that, as had been the case during WW1, this mountainous and heavily forested area was impenetrable by military transport and armour. But the following day, 13th May, the enemy broke through weak French defences near Sedan and, spearheaded by Panzers (German tanks), sped rapidly west along the valley of the River Somme, and a week later had reached Abbeville.

This flanking operation effectively isolated nearly 400,000 men of the British Expeditionary Force (BEF), including HQ CFF, from their supply depots south and west of the Somme. Left with no way out of the trap British and French troops had little choice but to fall back on the Channel ports of Calais, Boulogne and Dunkirk. These quickly fell in succession, but when Dunkirk was taken on 4 June desperate rearguard actions had allowed the Royal Navy's *Operation Dynamo* to extract over 338,000 Allied troops from beneath German noses.



Schematic representation of (a) places referred to in text; (b) the Wehrmacht flanking movement (red); (c) the extent of the German advance during the BEF retreat after 5 June 1940 (blue); (d) Norman's probable route to St Nazaire (purple).

Despite the proximity of German forces, civil and RAF transport aircraft continued to fly mail and stores into Paris until at least 6 June; in fact a letter written by Norman on the 3rd reached Champion safely.⁶ That he was able to communicate this way indicates Norman must have been based in or near the city at the time.

Following its early success the Wehrmacht quickly turned its attention to the remnants of the BEF deployed elsewhere in northern France, advancing towards Paris, and west towards Normandy and Brittany.

Within days Norman, along with over 180,000 British survivors of the BEF, was retreating westwards towards Brittany. Harassed by the Luftwaffe along roads crowded with refugees and vehicles, it was an uncomfortable and dangerous journey. Nonetheless, travelling via Orleans, Norman reached Nantes airfield, just 30 miles from St Nazaire harbour, on or about 14 June. After resting a day at Nantes, Norman's party moved on to the assembly point for evacuation from St Nazaire, a partly constructed airfield three miles east of the harbour, during the morning of the 16th.⁸

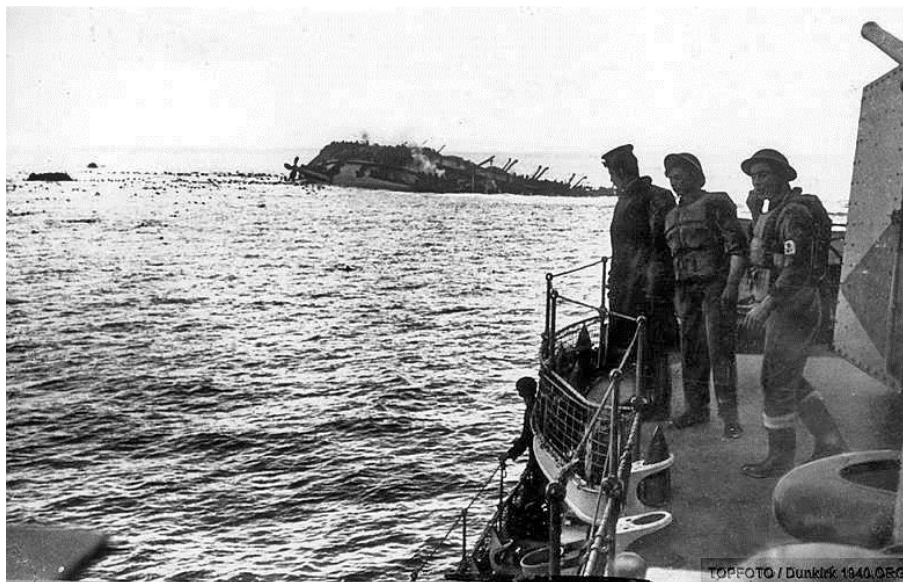
The situation in the town was chaotic; facilities were inadequate and no one appeared to be in overall command. A constant stream of lorries arriving at the site led to all entrances and exits quickly becoming gridlocked, and by midday, more than 10000 men were estimated to be crowded into the camp. Fortunately German aircraft constantly patrolling the area failed to press home any attacks; had they done so the carnage would have been horrific.

In the absence of any orders, the officer in charge of Norman's party took matters into his own hands, and at 5 pm, ordered his men to march through the congested streets to the docks. There they joined a long queue of troops stretching over half a mile from the end of the jetty and embarkation point. Progress was slow but the men eventually reached the head of the queue an hour after sunset, only to find the French harbour authorities were refusing to allow the evacuation to continue overnight.

Dispirited, the men were left to rest in the streets as best they could, their main discomforts being a lack of food and spent bullets, fired by trigger-happy French troops at enemy aircraft, falling on them. At 4.30 am on the 17th the airmen marched to the embarkation pier, only to find it was again already packed with soldiers. Once again no one appeared to be in charge but embarkation restarted at 6.30 am, and by 8 am Norman had embarked on *His Majesty's Transport (HMT) Lancastria*, some 15 km to the southwest of St Nazaire.

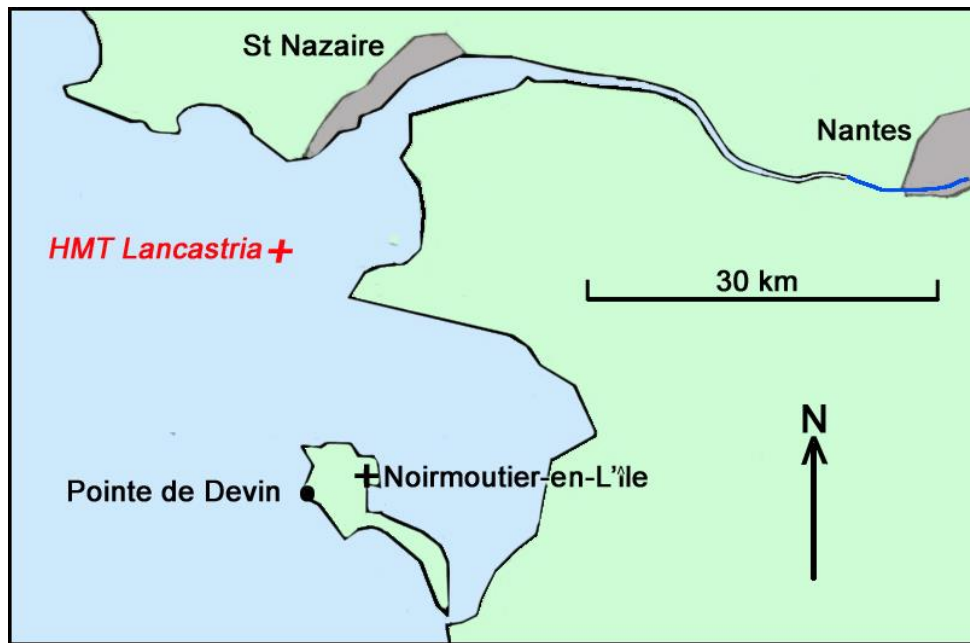
A pre-war liner, *HMT Lancastria* was designed to carry some 2500 passengers and crew, but with so many men crowded into St Nazaire the Royal Navy ordered the ship's captain to embark as many people as possible, despite there being too few lifeboats and woefully inadequate numbers of lifebelts. It was later estimated that at least 5000 troops, civilians and crew were on board, although some unsubstantiated accounts believe the number to have been much higher. The majority were soldiers, but included some 800-1000 RAF men together with an unknown number of civilians.

For reasons never explained, the grossly overloaded the *Lancastria* remained at anchor, even when air attacks damaged other ships in the vicinity at 2 pm and bombs landed nearby. Inevitably the ship became a major target, and during the third attack of the afternoon, at 4 pm, she was mortally wounded by two bombs. Within 20 minutes the *Lancastria* had turned turtle and slipped below the oil-covered sea. Fewer than 2500 survived.



The last moments of HMT Lancastria, 17 June 1940

Of 11 meteorologists known to be on the ship Norman was the only one who died that day.⁸ His body was found nearly two months later, on 10 August, near La Pointe de Devin on the Atlantic coast of L'île de Noirmoutier,⁹ some 20 km south of the spot at which the tragedy unfolded.



Wreck of HMT Lancastria

Identified only by his identity disk, Norman was laid to rest the same day in the Noirmoutier-en-L'île Communal Cemetery.



The Noirmoutier-en-L'île Communal Cemetery. Norman's grave is on the extreme right of the back row, and is engraved with the inscription "He fought the good fight." Most of the British graves are of men who died on the Lancastria.

When news of the disaster reached the Prime Minister, Winston Churchill, he ordered an immediate media blackout, fearing the demoralising effect such a great loss of life would have on the population after the euphoria of Dunkirk. However, the news could not be hidden and on 24 July the Ministry of Information issued a press release allowing newspapers report the *Lancastria's* loss.

In fact the Ministry had little choice as reports had begun appearing in local newspapers soon after the first returned survivors home.

Norman's family was probably never aware that he had been one of those on the ship; the first official telegram to his wife simply recorded he was '*missing in action*', while the following spring a second gave the news she had been fearing, that he was '*presumed killed on active service*'.¹⁰ No other details were offered.

When his mother passed away in 1946, Norman's name was added to her memorial:

*In Loving Memory of Norman John Clifford,
Devoted Son of Lena Robinson, and Loving Husband of Gladys.
Killed in France June 17th 1940; Aged 27.*

We Live with the Memories of the One We Loved Dearly.

There was, however, one final twist in Norman's story. When her only son was born in 1947 Rosamond named him after Norman to keep his memory alive.

Acknowledgements

I am immensely grateful for Norman's nephew, Norman Toomey, for his kindness in allowing the use of Norman's photograph and providing an copy of Donald Champion's letter. Although not immediately apparent on first reading, the letter eventually provided a wealth of information which helped develop Norman's story.

I must also acknowledge the invaluable assistance of my friend, Pierre Babin, for obtaining copies of the documents relating to Norman's death from the civil authorities in Noirmoutier-en-L'île.

The description of events on 16-17 June is based on a report written by Wing Commander D Macfadyen, an RAF officer in charge of some 200 RAF personnel who embarked on the *Lancastria* at St Nazaire.⁸

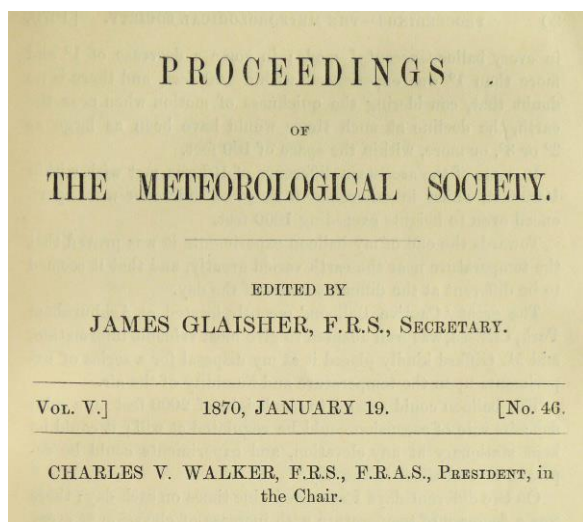
Sources

1. Anderson K.D. 2009. *Weather Services at War*. Pub. R.Met.S. (<https://www.rmets.org/sites/default/files/hist07.pdf>)
2. Norman's Croyland Road Council School education summary
3. RAF Service Record
4. Electoral rolls
5. WO 389/7 (1939 Register accessed through Findmypast website)
6. Letter dated 7 July 1940 from Champion to Clifford (Delivered to Norman's wife as next-of-kin)
7. Goff's Oak Rainfall Station Form 1090 (Met Office Archives)
8. National Archive file AIR35/190: *Headquarters British Air Forces in France; Personnel lost when SS Lancastria sank on 17 June 1944.*
9. Documents provided by the office of the Mayor of Noirmoutier-en-L'île, via Pierre Babin.
10. *Flight* magazine; 12 June 1941

Looking back 150 years

Some Notes on the *Proceedings of the Meteorological Society* for 1870

Howard Oliver, Swanage



A good picture of what was being studied 150 years ago under the general theme of 'meteorology' can be obtained by looking at the articles published in the *Proceedings*. There were six issues during the year which comprise about 60% of volume five. The editor was James Glaisher who was also Secretary to the Society.

The subject matter covered in the articles can usefully be divided into four areas:

1) General Observations: By far the largest paper was by Glaisher himself, "On the Fall of Rain for every Day in the Year, from Observations extending from 1815 to 1869", which included twelve double pages of tightly packed data as well as a range of tables of averages. There were

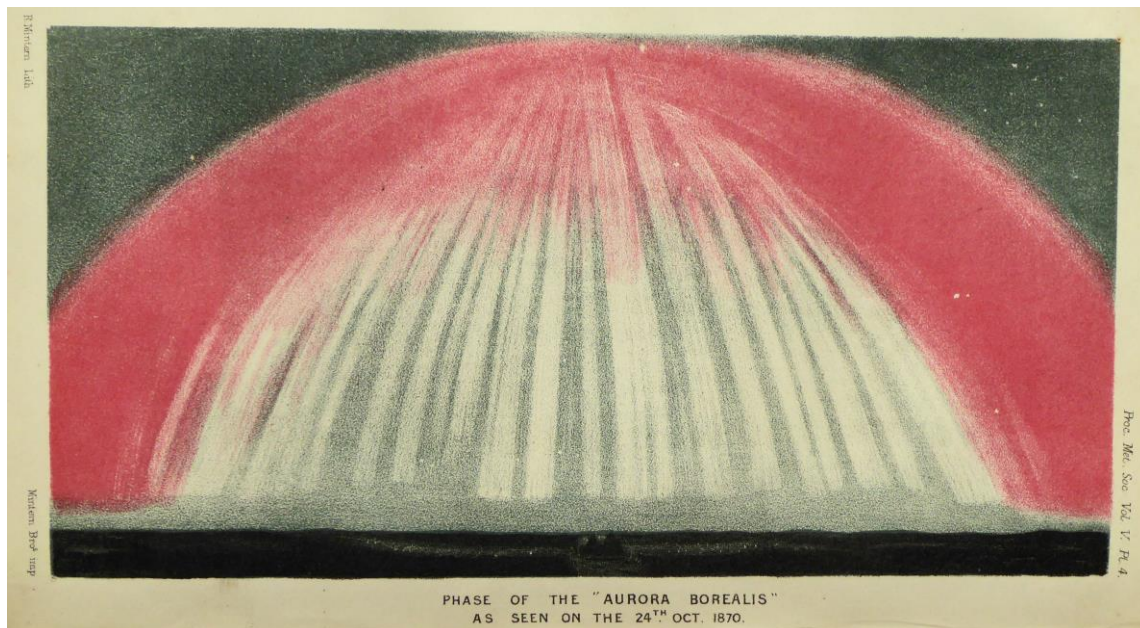
also shorter weather articles of varying extent by other authors for Jerusalem, Scutari, Natal, Calcutta, Clifton and Cobham, together with ozone data for Bristol.

2) Upper Atmosphere Events: 1870 was during a period when aurora displays were seen relatively frequently from Britain and the events observed in February, September and October are described by a wide range of contributors.

The detailed accounts of the event on 24 October were deemed important enough to justify the only coloured illustration in the whole volume (shown over page, below). It seems that understanding of the aurora had made little progress since the pioneering studies begun 80 years earlier by John Dalton.

Anything observed which happened within the atmosphere was considered under the heading of meteorology so could include meteors seen both from the UK and overseas.

This year had a detailed analysis of reports of a 'fireball' travelling across England in November 1869 and a description of meteors seen from Mauritius.



3) Understanding Weather Processes:

The June issue contains an important paper which is the germ of the development in this field. It is by Richard Strachen and discusses the developing knowledge of the relationships between atmospheric pressure, wind speed, wind direction and precipitation. Although not at this time really understanding all the processes and mechanisms involved, the paper does still provide some valid pointers to future techniques for weather forecasting.

Taking a very different approach there is a third paper in an ongoing series arguing the possibility of lunar influence on the weather. Previous authors on this subject had included George Dines and James Glaisher and the subject had still not been properly resolved.

4) Experimental Research: There are two papers describing important experimental observations which deserve proper mention. Firstly, 'On the Temperature and Humidity of the Air at the Heights of 22 feet and 50 feet above the Ground, in

comparison with the Temperature and Humidity of the Air at 4 feet' by James Glaisher: He had already completed many of his balloon ascents and measured the variations in the temperature profile well above the ground.

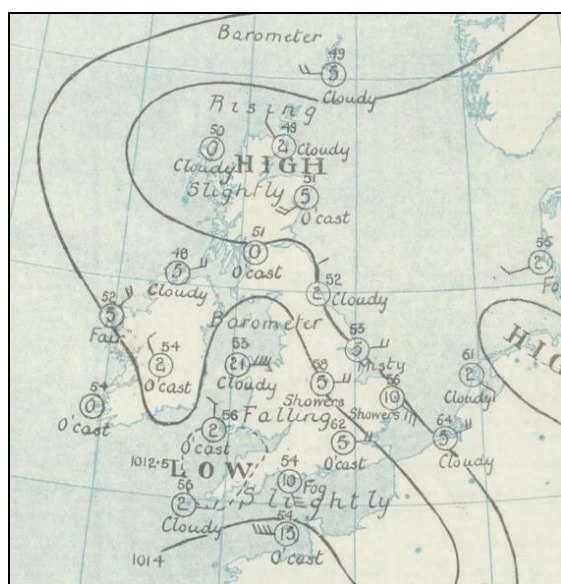
This new research area was aimed at filling in the knowledge about conditions very close to the surface. He illustrates the variation of the profile during 24 hours and discusses its change from lapse in the day to inversion at night.

Secondly, 'On Evaporation and Evaporation Gauges, with some remarks upon the formation of Dew' by George Dines: The detailed results in this paper show the effect of wind speed, temperature and humidity on evaporation rates and represent a significant step forward in understanding the processes involved. It would take almost another 80 years before Howard Penman eventually developed his famous and widely employed evaporation equation.

Looking back 100 years

The weather of 1920 and the Louth flood

British Rainfall 1920 noted that in the ‘winter months orographical rainfall was exceptionally frequent and heavy.....as a consequence, the rainfall in the west was excessive, that in the east generally defective’ (*British Rainfall 1920*, p. 139). As sometimes happens in ‘westerly’ years, the number of heavy daily rainfalls in the summer was relatively low though the summer was changeable. An exception was during a hot spell at the end of May when a heavy fall of rain on the 29th led to a disastrous flood in the Lincolnshire town of Louth. The synoptic situation on the morning of the 29th was depicted in the *MO Daily Weather Report* as shown below. A rather slack area of low pressure was drifting north with easterly surface winds over eastern England.



© Crown Copyright 1920. Information provided by the National Meteorological Library and Archive – Met Office UK. <https://digital.nmla.metoffice.gov.uk/>

In the *Heavy Falls on Rainfall Days* section of *British Rainfall*, the following account was given of the Louth storm:

Towards the town several streams flowing from the Wolds converge and form the river Lud. The water in this normally placid rivulet rose extremely rapidly, by report, as much as 6ft. in 10 minutes, and was at one time 15ft. above its usual level, and a torrent 200 yards wide was sweeping down through the town. Twenty-two people are known to have drowned, and an enormous amount of damage to property was caused, the cost in Louth alone being estimated at £100,000....It was clearly an exceptionally severe case of ‘cyclonic’ rainfall associated with the interaction of two air currents of different temperatures travelling respectively from south-east and south-west, both conveying a good deal of moisture.

Rear Admiral Sir Francis Harrison-Smith, of Stamford is quoted in *British Rainfall* from the official Met Office report:

‘‘At 14h. 45m. a very heavy warm squall struck us from the S.W. driving great masses of low cloud before it. In England I have never seen the cloud so extraordinary, rolling and tumbling over and over exactly as I have seen it do in cyclones, hurricanes, and the like abroad... This warm disturbance travelled right over Easton and Stamford in a direct line for Louth, and I have very little doubt that as it approached the coast it met a colder current from the North Sea, which caused the sudden precipitation of the masses of the obviously dense vapour which the shift of wind was collecting in its course.’’

One rain-gauge in the town recorded exactly 4.00” of rain with 3.95” at Horncastle.

The *British Rainfall* article concluded that: A similar rainfall in many districts would have undoubtedly drained away without causing exceptional damage but the valley of the Lud and its tributaries form a veritable bottle-neck and if, as is surmised, the bottle was inadvertently corked by a blockage in the stream, the awful suddenness of the disaster may be to some extent explained.

Julian Mayes

Recollections of working at Kew Observatory, Jan 1952 – Oct 1955

Brian Powell

Following my completion of the Initial Forecasting Course at Stanmore, being only twenty-one, my forecasting days were at least two years away;ⁱ indeed I spent the best part of the next four years at Kew Observatory as Resident Observer. A spacious, south facing room on the first floor was my bed-sitting room.

Mrs Relf, the wife of the Caretaker, Ron,ⁱⁱ brought in my meals and cleaned my room. The Relfs had two children, Marie and Gordon – referred to by Ron (a Cockney) as Young Gording. Another member of the Relf household was a largish, black, short-haired cat, who lived for over twenty years.



Kew Observatory from the south-east

“My name is Mike, what’s yours?” said M.J.Blackwell, my boss, as I walked into his office (which I was to share with him) on my first morning at Kew Observatory. One of my first tasks was to tabulate the average over five years of hourly totals of solar radiation for each month.ⁱⁱⁱ I

presented the results of my hard work to Mike. He had a look at the table and pointing to one of the figures, said, “Just check that one.” It was the only figure I had got wrong. We were involved in redesigning^{iv} the Robitzsch,^v solar radiation recorder.

One of our most important roles was to take care of the Met Office's Kipp & Zonen solarimeters,^{vi} which were used for measuring sunshine energy falling on a horizontal surface at Met Office stations in the UK and abroad. These instruments would come to us to be recalibrated. For this we had a 2000 Watt lamp in an enclosure, cooled by output air from a vacuum cleaner. On one occasion the clamp holding the lamp was not tight enough and the lamp housing swung round, clipping off the top of the outer glass dome, like taking off the top of a boiled egg. These domes are optically spherical, ground and polished. Not a good thing to let happen. It was my fault.

I also tabulated the average over five years of hourly totals of daylight illumination for each month as well.^{vii} Various aspects of the Daylight Illumination Recorder needed improving, so we designed a new one. I really appreciated Mike's kindness by including me as co-author of the research paper he wrote; the first one with my name on it.^{viii} One morning, the reading of the Daylight Recorder went to zero. We were experiencing daytime darkness. It seemed that air had moved in from opposite directions, causing a relatively shallow layer of somewhat dirty fog to be piled up over us to a considerable depth, completely blocking out light from the sun.

In our office was a precision 'synchrometer' clock. It was vital that it was correct because it sent an electrical time signal on the hour to the Seismometers^{ix} to mark their charts. Every

morning, just before ten, one of the Computer Room staff, usually Peter Cutting, would come down to our office to check this clock against the ten-o'clock time signal from Greenwich. The radio would be switched on and we would wait. On this particular occasion, I wanted to check how my newly purchased wristwatch was doing. I think Mike was also checking his. Peter, stopwatch in hand, waited and, as the pips came, he moved his hand in time with them, with a finger ready to press its button at the sixth pip. One – two – three – four – five – and then – six: only there *was* no sixth pip! In a way we didn't need the missing pip, Pete was absolutely synchronized with the pips. We never heard how that sixth pip went missing.



The office Mike Blackwell's and I shared. On the top shelf are chart recorders for solar and daylight radiation.

Joe MacDowall and Bill Roach were involved in the HARBAG project at Kew, they were investigating the heat and radiation balance at (and just above) the ground – hence the acronym. Joe, with the help of John Henley, the man in charge of the workshops at Kew, designed and built a total radiation fluxmeter.^x

As the Resident Observer, part of my duties was to make the six-o'clock

weather observations four mornings a week. These I shared with Ron Relf, the Caretaker.

I had little experience in making weather observations and so was glad of Ron's instruction. Towards the end of my time at Kew, he sometimes asked me for my opinion. As we were on the flight path into London Airport, we were unable to have a cloud searchlight to help us determine the type and height of low clouds at night. When in doubt, Ron's solution was to write down, "Eight-eightths of Strato-Cu at two fahsend faive 'undred."



Among those gathered for coffee in the Admin Office are Mr Burgess on the left and Mr Fulcher on the right; behind Sheila and to her left is Dr Ken Stewart, the Superintendent.

I was responsible for four six-o'clock observations in the morning each week, and three nine-o'clock ones in the evening. On Sunday mornings I also had to do the nine-o'clock and midday observations except one Sunday in the month which I had off; but on one of the other Sundays I was responsible for the three p.m., six p.m. and nine p.m. observations as well. For the rest of the time, observations were made by the day-

time staff under the watchful eye of Senior Assistant Linda (R. P.) Baxter. The only other girl was Barbara Fegent, who came from Wales and was known as 'Feege'. To avoid confusion with Bryan Ray, I was to be called, not Brian, but by my first name, David and nicknamed 'Dai bandu bach'. Geoff Goodger and George Cooper, Peter Cutting, John Holley and Jim Calder completed the crew of the 'Computer Room' where all the observations were written up and subjected to statistical analysis.

Occupying an inner room, and in charge, was Experimental Officer Mr A.G.W.

Howard. He had been a forecaster at Stonehouse, an RAF station near Gloucester during the war and, unbeknown to the Met Office authorities, took it upon himself to issue daily weather forecasts to a Partridges, a local firm making transformers. His attitude to those currently issuing the official weather forecasts was that they were not as good as in his day. "What I mean," he would say in measured tones, "We knew!"

The Admin Office was run by Mr Burgess with the help of Mr Fulcher. Sheila did the typing and looked after the telephone switchboard. After office hours, the outside line was routed to the phone in the corridor outside my room. Ron was not charged for the use he made of it. I remember this typical snatch of a call by Ron one Saturday to his Bookmaker: "... I'll 'ave ten bob each way on *Wot no sun*; and, 'oose runnin' in the two forty?...".

Although the Observatory was isolated in the middle of the Royal Mid-Surrey Golf Course and a good quarter of a mile from the main road, Ron Relf's life in the Observatory was a pretty good one. From time to time he would complain in terms such as these: "I mean fair's fair." "If people don't study me, ven I'm not going to study vem." "Nah nah Brine, I'm off down the Labour Exchange in the mornin'." and, "Not doin' no in-loo [in lieu] time." I became quite adept at imitating Ron's London/Cockney accent.

When I had been at Kew for a year or so, the folk in the Computer Room told me what Ron thought of the new Resident Observer. On my first Saturday, I cycled over to Hounslow to look up the parents of my old school-friend, Bryan Cross. It occurred to me that they might invite me to stay for a meal, so I phoned Mrs Relf to let her know that I might not be back for tea. Ron dropped into the Computer room and said, "'E's a queer bloke, this new feller; 'E rings up me missus and sez. (here Ron imitates an upper crust accent) 'Ai don't know whether Ai shall be into tea or not', 'E sez.'" It was a case of the biter bit!

I didn't like to complain and for a long time put up with having my Sunday morning breakfast left for me the previous evening. Eventually, I did suggest to Mrs Relf that instead of my being expected to eat soft cod roe on (soggy) toast, would she please leave me a slice of bread (which I could toast with the gas fire) and an egg for me to boil myself.

When the Relfs went away for their annual holiday, and I had to cook my own meals, I made use of the gas-ring in my room and others in the admin office and in the basement; a somewhat tricky exercise.

The Superintendent, Dr G.D. Robinson, knew nothing of this, but when after some three years I happened to mention to him how I coped, he was most indignant and insisted that when the Relfs were away in future, they must allow me the use of their kitchen.

In the photograph below, just to the right of the gas fire, is my brass toaster; on the hearth, a saucepan. In the drawer of the table on the left I kept the components of a crystal set. Though loose in the drawer they were connected together and to a pair of headphones



The sitting and dining end of the Resident

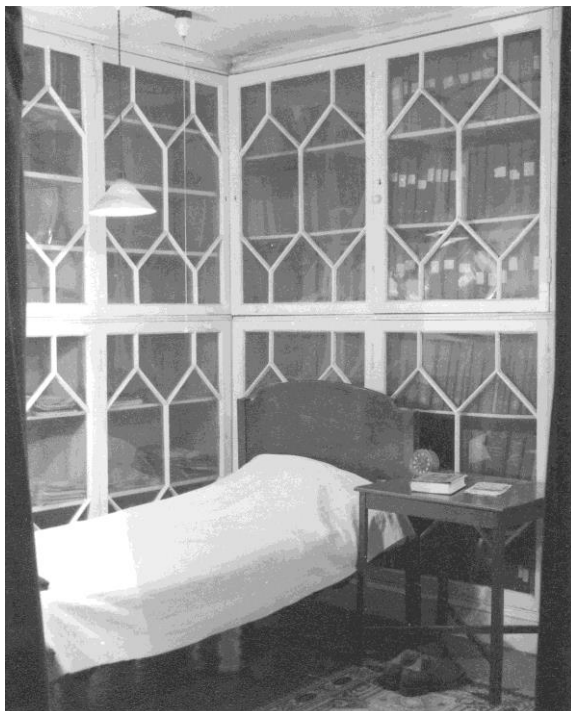
Observer's room

seen on top of the table. Their lead reached far enough to allow me to listen to the BBC Home Service at mealtimes.

The many instruments needed to be checked every three hours. Most of the recording instruments had their charts changed daily, at around the time of the nine-o'clock morning observation. Their paper charts being held in place by a thin brass bar. In addition to the more

common thermograph, barograph and hygograph, there were the seismographs which lived in a semi-underground bunker, the only lighting being a dim red light. Their charts were changed daily, or, in the case of the 'Short-period vertical' seismograph, every two days. This meant that I had to remember whether this particular Sunday was the one on which its chart had to be changed.

These charts were made of photographic paper and the trace was made by a spot of light. As the drum rotated once an hour, instead of a brass bar, a glass bar was used to hold down the chart, so that recording was not interrupted. The drum not only rotated, but was also moved along its axis providing a series of parallel traces on the photographic paper. Because of these glass bars, I was always somewhat nervous in changing seismograph charts. Spare bars were kept in the bunker, and the workshop had to be called upon from time to time to replenish the stock by cutting another bar from a sheet of plate glass.



Resident Observer's room – sleeping area.

The Seismological Summary (I.S.S.) people were also based at Kew. Using data came to them from all over the world; they were able to calculate facts about each earthquake, such as its epicentre. The ISS chief, Mr Jefferies had an office in the basement and one of his staff, Veronica, a very pleasant, fair curly-haired girl, had a desk in what was the entrance hall to the basement from the steps down on the south side of the Observatory. Another of Mr Jefferies staff was John Waverley who had an office in a large wooden hut by the drive. He had had polio and came to work in a special three-wheeled car. If I saw him from the window of my room, I would go downstairs to help him with his wheelchair and to his office.

Waking up in time to do the six-o'clock 'ob' was a problem. I found that when the alarm clock went off by my bed I could only too easily reach over, turn it off and go straight back to sleep. The next thing I knew was the telephone ringing in the corridor outside my room. "Victory House here, could we have your 'ob' please?" and I'd realise that I had over-slept, so I'd tell them, "I – I'll ring you back." I would then have to do my best to reconstruct what would have been the observation at six-o'clock from the various recording instruments. It was no use hiding the fact, I would have to confess my sin to the Computer Room staff because, when the doors of the photographically recording thermometers in the North-wall Screen were opened, there would be a small 'kick' on the photographic chart.

After a while I placed another alarm clock, timed to go off a few minutes later, on a small table, with a drawer, on the other side of my room. Even with this I could still climb sleepily back into bed and so I arranged for a switch resting on the alarm winding key to become dislodged when the key turned. This switch was connected to a battery and electric bell in the drawer

of the table. The only way to stop that bell ringing was to open the drawer and disconnect the battery. That required so much mental activity that I then remained awake.

On Sunday mornings, there was another phone call, and a Northern voice would announce, "Doongie 'ere with the Ob." It was the Coastguard with his weather report from Dungeness in Kent for me to pass on to Victory House.

If I were woken up in the night by a thunderstorm, I had to get up, note the time of each flash, its direction and time the interval between flash and bang with a stopwatch. When my observation was combined with those by others in the region, the position of the flash could be calculated and the track taken by the thunderstorm worked out. Sometimes, on coming down into the Computing Room someone would ask, "Did you hear that thunderstorm last night?" and I could truthfully and happily answer "No." I had slept right through it.

The original dome which had housed a telescope was still in place at the top of the Observatory but it was no longer possible to rotate it, by its crank-handle, more than a couple of degrees. The dome now housed the Dines anemometer with its mast rising above the dome itself. During a thunderstorm one day I ventured out on to the flat roof and I could clearly hear an electrical discharge sizzling away from this mast and its wind vane. At every flash of lightning, the sizzling which had been increasing, ceased or became markedly less. After one flash however, the sizzling, instead of reducing, became stronger than ever; I darted straight back indoors.

As we went round looking at instruments and noting what they indicated and of the type/s and heights of clouds, we wrote these on observation pads. Back indoors

we transferred these to the Observations Record. If anyone were to look through these for the period when I was the Resident and compared them with entries of my predecessors, they might have drawn the conclusion that optical phenomena such as haloes round the sun were more common during my residency. This was because I took a particular interest in these phenomena.

As Resident Observer in December 1952, and in particular over the period from Friday 5th to Tuesday 9th, I was in position to observe The Great Smog of that year.

The weather in November and early December had been very cold. Early on 5th the sky was clear and winds light and the air near the ground was moist. These were ideal conditions for the formation of radiation fog. The anticyclone that had settled over the London area had formed an inversion, like a lid, trapping smoke from innumerable chimneys of coal-burning fires to form a fog in a layer 100 to 200 metres deep near the ground.

During the period of the fog, huge amounts of impurities were released daily into the atmosphere, not only carbon dioxide, but fluorine compounds, hydrochloric acid and worst, tons of sulphur dioxide which converted into sulphuric acid.

Many people suffered from breathing problems and 4,000 people were known to have died as a result of the smog. A series of laws were brought in to avoid this happening again, including the Clean Air Acts of 1956 and 1968.^{xi}

My friends the Ways had invited me to dinner for Sunday 7th. As it was daylight, I do not recall any difficulty in finding my way to their house, 33, Napoleon Road, in the St. Margarets district of Twickenham. By the time I set out to ride back to the Observatory on my bicycle, it was dark. The journey from their road to Crown

Road and then along St. Margarets Road was not too difficult. The roundabout at the junction with the Chertsey Road was another matter. As I kept close to the outer kerb, peering through the fog, I came across a telephone kiosk. I supposed that it had been put there recently for I hadn't seen it before. After trying several exits from the roundabout, I found the right one and, apart from nearly taking a side path down to the river, the rest of my route was over the bridge and along the Chertsey Road until I found the entrance to the Old Deer Park, the beginning of the drive up to the Observatory.



By the Observatory's south entrance: on the left, Geoff Goodger and Bryan Ray. On the right: Brian Powell and Linda Baxter. The two girls: Feege on the left; Veronica on the right.

Thermometers in the screen on the North Wall of the Observatory were mounted on 2 inch wide; 1/8th inch thick brass plates. Over the decades, a patina had slowly built up on the surface of the brass. So acid was this wet smog that it was able to dissolve and wash away the patina and form the evil looking greenish-yellow drop I saw hanging from the glass bulb of the thermometer.

Given the corrosive content of the smog, it is no great surprise that Mr Way, who did have some chest problems,

succumbed to the stress on his health and, on 19th January 1953, became one of the 4000 extra deaths attributed to the smog. I too became ill briefly in December.

The fog was so dense on the Saturday morning, that the observer on duty, who needed to change the chart on the recorder on the evaporation tank, was unable to find it. This was not surprising, because the tank was set in an area of open, mown grass with no nearby objects to help us navigate. He and I, armed with a couple of bicycle lamps, set out to search for it. Visibility was no more than

15 feet so we placed our cycle lamps that distance apart to help us to find our way back to the path. We managed that, but had to admit defeat; we never did find the evaporation tank that day.

The north-side entrance to the Observatory was by a pair of stone steps. I found that when I stood at the top of one flight, I could see no further than the bottom step; ten feet.

From time to time the Met Office arranged a Monday Evening Discussion. At one of these a few months later, Dr K. H. Stewart gave an interesting talk about the Great Smog. However, he dismissed the observation I had made from the top of those stone steps. A few months later I was able to tell him that I was the observer and that I stood by the accuracy of my observation. He graciously accepted what I told him.

By the summer of 1953, I had enough spare cash to think about buying a camera. The first photograph I took was of a decorative arch put up in the Mall for the Coronation of Queen Elizabeth II.

Ron and Mrs Relf were among the few whose names had been drawn for the privilege of watching the Coronation procession from a window of the Air Ministry building in Whitehall. They were shielded from the weather.

A cold northerly airstream brought dull skies, a chill wind and sporadic outbreaks of rain during the morning – although it dried out gradually later on. In the afternoon the temperature climbed no higher than 12°C.



Cabinets line the rooms to the north and south of the ground and first floors

The stairs, on the left, led up to the flat of the Caretaker, Ron Relf and his wife, and to my room.

On one holiday I decided to cycle home to Beaulieu, and to stop overnight somewhere in the Alton area. For this I had with me a cycling cape, an ex-government waterproof sleeping bag and a telescopic light-alloy aerial.

With the aerial firmly anchored by its cord stays and the cycling cape spread over the top, I had the shelter I needed. In the night, however, I was woken by the pattering of water dripping on to the cape from the canopy of leaves over my head.

A thick mist had formed and was blowing through the wood. Despite this, I did get enough sleep and, in the morning, continued my journey to my parental home in Beaulieu.

For three summers I helped in beach missions for school age children. The first one for me was held at Seaview in the Isle of Wight where I stayed in the home of a couple, Dr & Mrs David Clark. While I was there, Ron Relf became ill and the Superintendent said I must be recalled from leave. I had mentioned to my parents that I was going to be staying with a doctor, so Dad went down to the Police Station in Hythe and spent hours going through a list of every doctor on the Isle of Wight, phoning each one in turn to ask if I was staying with him. I was staying with none of them. Dr Clark was not a G.P; he was an anaesthetist.

I was expecting to spend the weekend with my parents, but after all the trouble my Dad had been through trying to get in touch with me; he was understandably annoyed and relieved at seeing me. He now knew why 'my' doctor was not on the list. "You are to go straight back to Kew now," he said, and then told me why.

Linda Baxter, the Senior Assistant in charge of the observers, had been the one who had been taking my place as Resident and was so pleased to be relieved of her enforced residency.

In October 1955, my time at Kew came to an end and I was sent on an Advanced Forecasting Course at the Met Office training school at Stanmore. Mike Blackwell, who had recently married was posted that year to become Superintendent of Eskdalemuir Observatory in Scotland. Years later our paths would cross again.

Endnotes

- ⁱ The Meteorological Office wisely decided that weather forecasters needed to be at least twenty-three years old before they would be ready to stand before experienced (and sceptical) RAF types and brief them on the weather forecast.
- ⁱⁱ Ronald J. Relf, the Resident Caretaker, was born 21 July 1902 (*National Registration* CNFJ150). Ron started work for the Met Office April 1918 when he was not quite 16, and was appointed Resident Caretaker in 1935. He retired in July 1967 and, on 18th December 1967, was presented the Imperial Service Medal at Bracknell by the Director General of the Met. Office, Dr B.J.Mason.
- ⁱⁱⁱ Blackwell, M.J.; Five years continuous recording of total and diffuse solar radiation at Kew Observatory. London, Meteorological Office, 1954. (Unpublished, available in the Met. Office Library.)
- ^{iv} Blackwell, M. J.; On the development of an improved Robitzsch-type actinometer. London, Meteorological Office, 1953. (Unpublished, available in the Met. Office Library)
- ^v The Robitzsch solar radiation recorder used three bimetallic strips made of two metals bonded together; one having a larger coefficient of expansion with heat than the other. The strips were laid parallel to each other: the central one, painted matt black, was exposed to sunlight; the other two, which compensated for changes in ambient temperature, were shielded by white painted plates. A hemispherical glass dome covered them. Movement of the central strip was linked to an arm ending in a pen resting on a paper chart wrapped round a clockwork drum. When exposed to solar radiation, the curvature of the black, central strip more than compensated for that of the protected ones and the pen rose on the chart. Mike Blackwell's modification was to use two half-length bimetallic strips to ensure that the centre of the black strip was horizontal, regardless of changes in ambient temperature.
- ^{vi} The Kipp and Zonen thermopile pyranometers are designed to measure total irradiance on a plane (horizontal) surface in the range 300 (blue) to 3000 (red) nanometers. The thermopile is covered by an inner and an outer glass dome. Their sensitivity ranges from 5 to 20 microvolts per Watt per sq. m.
- ^{vii} Blackwell, M.J.; Five years continuous recording of daylight illumination at Kew Observatory. London, Meteorological Office, 1953. (Unpublished, available in the Met. Office Library.)
- ^{viii} Blackwell, M. J. & Powell, D. B. B.; On the development of an improved daylight illumination recorder. London, Meteorological Office, (Unpublished, available in the Met. Office Library.)
- ^{ix} It was essential to have an accurate mark every hour on the photographic chart so that the precise time of arrival of the p-wave and the s- and long waves from an earthquake could be recorded.
- ^x The sensitive part of the radiation fluxmeter was a 100 mm square sheet of Paxolin composite board on which was wound Constantan wire. After half of each side had been coated with wax, the board was immersed in a copper sulphate solution and the exposed part of the windings electroplated with copper. Copper has a much higher electrical conductivity than Constantan, so the junctions between the plated and bare windings formed thermocouples. The fluxmeter plate was coated with matt black paint and mounted horizontally and, by having a constant stream of air blown over it by an electric fan, was unaffected by varying winds. Fluxmeters of a different shape were embedded in the soil.
- ^{xi} The Great Smog of 1952 — Met Office.
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We welcome all contributions, from letters to brief articles. My contact details are as follows:
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