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**JAMES GEORGE TATEM  
WILLIAM HENRY WHITE  
AND  
EARLY METEOROLOGICAL  
SOCIETIES IN GREAT BRITAIN**

***MALCOLM WALKER***

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# JAMES GEORGE TATEM WILLIAM HENRY WHITE AND EARLY METEOROLOGICAL SOCIETIES IN GREAT BRITAIN

*Malcolm Walker*

Royal Meteorological Society  
January 2016



*Letter from James George Tatem to William Henry White, dated 13 December 1836. It was addressed to White at the Meteorological Society's temporary address.*



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**James George Tatem, William Henry White  
and early meteorological Societies in Great Britain**

**by Malcolm Walker**

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## SUMMARY

This paper is about some little-known meteorological societies in Great Britain:

- the Meteorological Society of London which was founded in 1823, revived in 1836 and wound up in 1851;
- another, different, Meteorological Society of London, which was founded in 1848 and wound up in 1850;
- an astro-meteorological society, the Uranian Society, which was founded in July 1839 but never heard of again after March 1840;
- two other astro-meteorological societies which existed briefly in the early 1860s, namely the Astro-Meteorological Society and the Copernican Meteorological Society;
- the Bournemouth and Norwich Meteorological Societies, which existed around 1870.

The paper is not about the British Meteorological Society, which was founded in 1850 and still exists today as the Royal Meteorological Society, nor is it about the Scottish Meteorological Society, which was founded in 1855. The British Meteorological Society does, however, feature, as this Society acquired many of the assets of the Meteorological Societies of London in 1850 and 1851.

Without two very different characters – James George Tatem, a Pillar of Society, and William Henry White, who became increasingly controversial, at least scientifically – the London Meteorological Society which was founded in 1823 and revived in 1836 may never have survived. White was also a leading member of the Uranian Society, the Meteorological Society of London which was founded in 1848, and both of the astro-meteorological societies, but Tatem never joined any of these societies. He did, though, join the British Meteorological Society, which White did not.














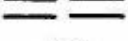










Tatem and White had a common interest in natural history and both published articles about birds, animals and other aspects of the countryside. Both were also keen meteorologists, but, by espousing astro-meteorology, White put himself beyond the pale among orthodox meteorologists of the day, who favoured rational explanations which stood up to currently accepted scientific scrutiny.

Neither Tatem nor White was associated with the meteorological societies at Bournemouth or Norwich. Nevertheless, these two short-lived bodies have been included for the sake of completeness, as the only known examples of early local meteorological societies in Britain.





## RECORDING THE WEATHER SYSTEMATICALLY IN THE 1780s AND 1790s

*Symbols used by the Societas Meteorologica Palatina when reporting state of the sky, significant weather and special phenomena. From pages 418 and 420 of Kington (1974).*

*For further information about the Societas Meteorologica Palatina, see Kington's paper and pages 3 and 5 of this occasional paper.*

Symbol	Specification	Symbol	Specification
	Rain		Clear sky
	Snow		Pallid sky with weakened sunlight and stars
	Hail		Clouds in small amounts
	Frost		Variable cloudiness, less than half cover
	Fog or mist		Partly cloudy with patches of clear sky
	Ice formation		Mostly cloudy, either continuous or broken
	Cloud motion		Fully cloudy or overcast
	Good visibility		Cloudy sunrise
	Solar halo		Cloudy sunset
	Lunar halo		
	Rainbow		
	Crepuscular rays		
	Thunderstorm		
<b>AB</b>	Aurora Borealis		
	Shooting star		
	Meteor (fireball)		

N.B. No entry in column indicated sky obscured

N.B. The supplementary symbol  was used as an indication of intensity, e.g.  heavy rain;  thick fog;  severe thunderstorm

## **Chapter 1**

### **EARLY EFFORTS TO OBSERVE THE WEATHER SYSTEMATICALLY**

The world's first society devoted solely to meteorology was the Societas Meteorologica Palatina, founded in 1780 by Elector Palatine Karl Theodor of Bavaria (1724-1799). It was not, however, the first learned society with a considerable interest in the atmosphere, especially the importance of a systematic approach to weather observing.

#### ***The Accademia del Cimento***

The first network of meteorological stations was set up in 1654. Overseen by a Jesuit named Antinori, who was secretary to the patron of the project, Grand Duke Ferdinand II of Tuscany, the network comprised stations at Florence, Vallombrosa, Cutigliano, Bologna, Parma, Milan, Warsaw, Innsbruck, Osnabrück and Paris. Observations were made with great care at specific times of day and written down in special tables called 'formulae'.

The network was closely associated with the Accademia del Cimento of Florence, the world's first formal scientific institution, and ceased to function in 1667, when the Academy was disbanded. Founded in 1657 by the Grand Duke and his brother, Prince Leopold, the Academy was devoted to experiment and much involved in the development of barometers and spirit-in-glass thermometers, many of which were used at stations of the network (Middleton, 1971, 1973). A pupil of Galileo, Vincenzo Viviani (1622-1703), was a member.

#### ***The Royal Society of London***

Whereas the Accademia del Cimento was a private institution dependent upon patronage, the Royal Society of London was established as a corporate body, though also with royal patronage. Founded in 1660 for the pursuit of experimental natural philosophy, it is today the world's longest extant academy.

Of the early members of the Royal Society, two in particular made fundamental contributions to meteorology: the chemist Robert Boyle (1627-1691) and his assistant Robert Hooke (1635-1703). Together they developed barometers, thermometers and thermometric scales, and together they investigated the use of the barometer in weather forecasting. Together, moreover, they used experiment as a means of discovery, an important outcome being Boyle's Law, which was published in 1660 and states that, for a given mass of gas at constant temperature, the product of its pressure and volume is constant. In addition, Hooke measured wind strength with a primitive anemometer which relied upon the movement of a swinging plate over a scale. Some say that the anemometer was invented by him, though a wind-measuring instrument which employed a swinging plate had been described two centuries earlier by the Italian architect Leon Battista Alberti (1404-1472) in his treatise *On the pleasures of mathematics*, published around 1450 (Frisinger, 1977).

The habit of making weather observations regularly and systematically was encouraged by the Royal Society, and as early as 1663 Robert Hooke presented to the Society his paper entitled 'A method for making a history of the weather', in which he set out precisely what should be included in a weather observation and how, using standard instruments, observations should be made. Hooke proposed a format for recording weather observations, which he called a 'Scheme at one view representing to the eye the observations of the weather for a month' (Sprat, 1667). He stated that he wished "there were divers in several parts of the World, but especially in distant parts of this Kingdom, that would undertake this work, and that such would agree upon a common way somewhat after this manner, that as ne'er as could be, the same method and words might be made use of". Thus, he showed himself aware of not only the need for uniform procedures in the making of weather observations but also the potential value of comparing meteorological observations made simultaneously at different places. His words were apparently heeded, for the practice of making meteorological

observations regularly and systematically spread in the ensuing decades, with networks of meteorological stations established in various European countries, notably France and Germany.

### ***Foundations continue to be laid***

After the remarkable advances of the seventeenth century, there were comparatively few notable contributions to meteorology in the eighteenth. Nevertheless, the foundations for the scientific progress of the nineteenth and twentieth centuries continued to be laid. There were advances in mathematics and physics; meteorological instruments were invented and improved; the number of individuals making regular meteorological observations continually increased; knowledge of weather systems expanded; and meteorology became progressively more organized, but still no specifically meteorological society was formed, either in Great Britain or anywhere else.

Throughout the eighteenth century, the need for systematization and standardization in meteorological observing practices continued to be stressed, and attempts to create international networks of weather observers continued to be made. In 1717, for example, a German doctor, Johann Kanold (1679-1729), persuaded a number of observers in Germany and several places abroad, including London, to send him their observations, which he compiled and published in a quarterly journal, *Breslauer Sammlung*. This arrangement was, however, short-lived, lasting only ten years (from 1717 to 1727).

### ***The efforts of James Jurin***

A Secretary of The Royal Society, James Jurin (1684-1750), attempted to build upon the lead given by Robert Hooke. In 'An invitation for making meteorological observations', published in 1723 in the *Philosophical Transactions of the Royal Society* (Jurin, 1723; Landels, 1980), he stated that "changes in the weather, especially when great or sudden, have much influence on the health of mankind". He therefore considered it necessary to observe the weather and to "discover the causes of these changes". Accordingly, he recommended "the curious to mark in their diary, once a day at least, the height of the barometer and thermometer, the course and strength of the wind, the face of the heavens, the rain or snow, as also the observations with the microscope and the magnetical needle". He further recommended that, "for the sake of comparison, all observations be made at the same hour of the day". "At the end of every month and year", he added, "let the mean height of the barometer and thermometer in each be subjoined; as also the sum of all the depths of rain, fallen in the whole month or year, the mean height being found by dividing the sum of all the heights by the number of days or observations". He appealed to "such persons as may be pleased to make the observations" to send copies of them to The Royal Society that "they may be compared with the diary kept in London" and "comparisons and influences" published in the *Philosophical Transactions*.

From 1724 onwards, observers in Britain, North America, India and many parts of Europe duly sent their journals to The Royal Society, and the observations they contained were discussed in the *Philosophical Transactions*. Though the supply of such journals dwindled to almost nothing by 1735, the idea of making meteorological observations at standard times with standard instruments had taken root. So, too, had an essential element of climatology, the idea of comparing and contrasting observations made at different places. However, successful implementation of the recommended practices depended largely on the enthusiasm and competence of individuals such as Hooke, Kanold and Jurin or the support of bodies such as the Accademia del Cimento and The Royal Society.

An idea similar to Jurin's was put forward in 1744 by Roger Pickering (1718-1755) in a paper published in the *Philosophical Transactions* (Pickering, 1744). Like previous schemes for making, compiling and analysing meteorological observations, however, this was short-lived (see Wolf, 1938, pp.287-288).

### ***The Palatine Meteorological Society***

When he founded the Societas Meteorologica Palatina (in 1780), Karl Theodor of Bavaria made his castle in Mannheim the society's headquarters and appointed three members of the Mannheim Academy of Sciences to organize and direct the society (Cappel, 1980; Cassidy, 1985). In the event, only one of them proved effective, Johann Jacob Hemmer (1733-1790), a priest and physicist. After his death, in 1790, a medical colleague, Johann Melchior Gütthe (1753-1812), became Director, but the political turmoil in France and elsewhere in Europe made the society's survival difficult and it collapsed in 1795 when the French army occupied Mannheim. In its short life, however, it had showed what could be achieved with well-organized and well-equipped observational networks. It was a model for national and international meteorological bodies which were formed more than half a century later. As such, it was far ahead of its time. Moreover, the data published in the Society's *Ephemerides* proved to be of considerable value in subsequent studies of weather and climate.

The Palatine Meteorological Society collected meteorological data from a network of selected observers. At its most extensive, in the late 1780s, the network reached from the Urals across Europe to Greenland and eastern North America but never included anyone from Britain. The observers were equipped with carefully-calibrated instruments and detailed instructions, together with special forms on which to record observations. The instruments were supplied free of charge and included thermometers, a barometer, a quill-hygrometer, a rain-gauge, an electrometer, a wind-vane and, for some stations, a magnetic needle. Forms were gathered annually and the observations, made at 7 am, 2 pm and 9 pm Local Time, were abstracted and eventually published in the *Ephemerides* (Kington, 1974; Wolf, *op.cit.*, pp.286-287).

### ***Learned societies in Europe, Asia and North America***

By the early nineteenth century, meteorological observations were being made in many parts of the world, but whether or not they were made in any systematic way still depended largely on the competence of individuals. With the exception of the Palatine Meteorological Society, societies that were devoted solely to meteorology had still not been formed. In general, the literary and philosophical societies which were formed in the capital cities and major provincial towns of Europe, Asia and North America in the eighteenth century and early part of the nineteenth displayed no more interest in meteorology than the learned societies that had gone before them. An exception was the American Philosophical Society, proposed and established by Benjamin Franklin in 1743.

Another exception was the Manchester Literary and Philosophical Society, which was formed in 1781 and numbered among its most active members the chemist and meteorologist John Dalton (1766-1844). He joined in 1794, the year after he published his *Meteorological Observations and Essays*, and he remained a member for the rest of his life, reading before the Society in those fifty years 116 papers, many of them on meteorological topics (Oliver and Oliver, 2003). Though best known for his work on atomic theory, he is considered by some to have been first and foremost a meteorologist.

Like Dalton, Luke Howard (1772-1864) was a chemist and meteorologist and, like him, a Quaker. Like Dalton, too, he made many substantial contributions to meteorology, among them *The climate of London*, first published in 1818. He is best remembered, though, for his essay *On the modifications of clouds, and on the principles of their production, suspension, and destruction*, published in 1803 by the Askesian Society (a debating club for scientific thinkers which was formed in 1796 and wound up in 1807). In his essay (Howard, 1803), he defined and described cloud types and noted that clouds are not random but have characteristic forms, for which he proposed "a methodical nomenclature" based on Latin terms that remain familiar today, namely *cirrus* (curl), *cumulus* (heap), *stratus* (layer)

and *nimbus* (rainy cloud). His was the first practical cloud classification and forms the basis of the classification which is used around the world today.<sup>1</sup>

Though in 1807 there was still no meteorological society in Great Britain, learned societies which specialized in other scientific subjects had begun to emerge. The Linnean Society, for example, was formed in 1788 for those whose interest was taxonomy and natural history, and some members of the Askesian Society joined the Geological Society, which was formed in the autumn of 1807. There was an awakening of interest in the formation of specialized scientific societies in the late eighteenth and early nineteenth centuries. A meteorological society would surely come sooner or later.

## Chapter 2

### BRITAIN'S FIRST METEOROLOGICAL SOCIETY

When the idea of a meteorological society did eventually come, it was not, as might be expected, in the learned journal of a purely scientific society but in an editorial in the issue of the *Monthly Magazine* (a magazine of 'literature, science and belles-lettres') published on 1 February 1823 (55, Issue 1 of 1823, No.378, p.70), in a section called 'Literary and Philosophical Intelligence' (Figure 1).

#### Figure 1

*From the Monthly Magazine published on 1 February 1823 (55, 378, p.70).*

*In the paragraph on the right, reference is made to an article by Mr H T Colebrooke FRS (his name was usually spelt with a final e). For the source of the article, see Colebrooke (1823).*

*It will be seen in the paragraph that the editor commented that it seemed surprising that no special society for ascertaining the general principles of the science of meteorology had yet been formed.*

**The atmospheric phenomena in any given place ashore, especially inland, are affected by many more causes of sudden and anomalous change than are experienced at sea, especially on the great oceans; and, hence, Mr. H. T. COLEBROOK has judiciously inferred the great importance of accurate and greatly multiplied observations at sea towards ascertaining those general principles of the science of meteorology, which yet, unfortunately, are wanting, and towards the attainment of which, it seems to us surprising that no special society has been yet formed. Mr. Colebrook has himself set the example of making, during a voyage into the southern hemisphere and back, a series of observations, (which are recorded in a late quarterly Journal of Science,) from whence he has drawn a great number of results highly interesting to the meteorologist, but much exceeding our room to particularize them.**

<sup>1</sup> The first known cloud classification was that suggested by the French naturalist Jean Baptiste Lamarck (1744-1829), who proposed (in 1802, in Volume 3 of his yearbook *Annuaire Météorologique*), three levels of cloud and five types of cloud ('hazy clouds', 'massed clouds', 'dappled clouds', 'broomlike clouds' and 'grouped clouds'). Though Howard's classification was adopted as the foundation of the modern classification of clouds, Lamarck's tripartite division of the atmosphere is still used today, but in modified form. His yearbooks were published annually from 1800 to 1810 and then discontinued after an unnecessarily public and brutal tirade from Napoleon in which Lamarck was told by the Emperor he should confine his attention to natural history.

Mr James G Tatem shared this surprise. In a letter dated 20 February 1823, published in the *Monthly Magazine* for 1 April 1823 (55, Issue 3 of 1823, No.380, p.207), also in the section of the magazine called 'Literary and Philosophical Intelligence', he wrote as follows (Figure 2).

**Figure 2**

*The letter from James Tatem published in the Monthly Magazine on 1 April 1823 (55, 380, p.207).*

*To the Editor of the Monthly Magazine.*

SIR,

**A**MONG the numerous societies established in London for the encouragement of the arts, the improvement of the sciences, and the diffusion of knowledge, it had often excited my surprise, that a Meteorological Society had not been formed; it was therefore with very great pleasure I found that you had experienced similar feelings.\* Allow me, therefore, to call the attention of the meteorologists of the metropolis, and its vicinity, to the propriety of forming such a society, which I have no doubt might be easily effected, and would be ably supported. Of the increased interest which meteorological subjects have lately obtained, the latter numbers of your Miscellany are sufficient evidence; and the improvement of the science would be the necessary result of the association of persons either

\* Vide Monthly Mag. vol. lv. p. 70.

skilled in or attached to it. Placed under the management of an active committee, and patronized, as it would most probably be, by some of the first characters in the country for rank and talent, the society must flourish; and there can scarcely be a town or large village in the kingdom which would not afford a correspondent, who would be willing to transmit his observations to the society; and thus many phenomena, which had been observed by some retired meteorologist, would become publicly known, and receive the attention which might be due to them. Through the numerous tables which would be obtained by these means, the temperature, dryness, or humidity, of different places, would be more accurately known, and the observations would be rendered of more value, if made (under the recommendation of the society,) with instruments of the same construction, and under circumstances as nearly similar as possible. From registers thus formed, the meteorologist would receive information and pleasure, the man of science amusement, and the valetudinarian benefit, by being able to select a residence where the climate suited his constitution,—a thing of no small consequence, and no little difficulty in the variable temperature of our native isle.

JAMES G. TATEM.

*Harpenden, near St. Alban's;*

*Feb. 20, Mon.*

### ***A meteorological society is formed***

It has long been assumed that Tatem's letter served to bring about the meeting which was held at the London Coffee House, Ludgate Hill, on Wednesday 15 October 1823, though it appears that he was not among those present, a distinguished company which included Luke Howard. It is possible that Howard himself had seen Tatem's letter and taken action. However, Browne (2004) has stated that the meeting may have been convened by Thomas Ignatius Maria Forster (1789-1860) in conjunction with the founder of the *Monthly Magazine*, Sir Thomas Phillips (1767-1840). Forster was a naturalist and phrenologist who had published a number of meteorological works, most notably *Researches about atmospheric phænomena* (Forster 1813). He was also a keen astronomer and a member of the Royal Astronomical Society, which had been founded in 1820.

At the meeting on 15 October, convened “to take into consideration the propriety of forming a Meteorological Society” (Symons, 1881), the chair was taken by Dr George Birkbeck (at 8pm) and the following resolutions were agreed:<sup>2</sup>

- 1 That the formation of a Society to promote the advancement of Meteorology have the cordial approbation of this meeting.
- 2 That a Society be formed to be called *The Meteorological Society of London*.
- 3 That the business of this Society shall be conducted by a President, Vice-Presidents, Treasurer, Secretary and Council; and that the number of Vice-Presidents and members of the Council be determined at a subsequent meeting.
- 4 That Mr Thomas Wilford be requested to officiate as Secretary to this Society (*pro tempore*), and that he be authorised to send a printed summons to attend the next meeting to each person who shall become a subscriber.<sup>3</sup>
- 5 That an annual subscription of two guineas be paid in advance by every member of this Society.
- 6 That those gentlemen present who are inclined to become members of this Society do now send their names to the Secretary to be enrolled.
- 7 That a Committee of three members be appointed in conjunction with the Secretary to draw up an account of the Society's proceedings this evening.
- 8 That scientific men throughout the United Kingdom be solicited to co-operate with this Society and to transmit communications to it; and that this Society will always be ready to receive meteorological observations from the cultivators of science throughout the various quarters of the globe.
- 9 That no other qualification be required to constitute eligibility to this Society than a desire to promote the science of Meteorology.
- 10 That after the next meeting the election be by ballot upon the proposition of three, and that a majority of members decide.
- 11 That this meeting do adjourn to the 12th of November next, to meet at the same place and hour.

### ***Subsequent meetings of the newly-formed meteorological society***

The meeting on 12 November duly took place, “in pursuance of the resolutions agreed to on October 15, and was very numerous and respectably attended” (Symons, *op.cit.*). Several new members were admitted and Officers appointed, namely Dr George Birkbeck (President), Dr Henry Clutterbuck (Treasurer) and Mr Thomas Wilford (Secretary).<sup>4</sup> The eight Council Members included Luke Howard, Thomas Forster and John Frederic Daniell.<sup>5</sup>

The third meeting of the Meteorological Society of London, held on 14 January 1824, was the first to focus on the science of meteorology. A paper by the blind botanist and mathematician John Gough on the vernal winds of the north of England was read (Gough 1839), and, to quote Symons (*op.cit.*), “the Committee appointed by the Council to consider and report upon the best means of establishing correct and complete series of Meteorological Observations presented their preliminary report”. In this report, the Committee recommended that “immediate measures be taken to procure correct registers of comparable observations from different parts of Great Britain and its colonies, as

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<sup>2</sup> Dr Birkbeck (1776-1841) was a physician and pioneer of adult education who founded the London Mechanics' Institute (later Birkbeck College) in December 1823 (Kelly, 1957; Walker, 1993).

<sup>3</sup> Thomas Wilford was a surgeon of 7 Union Street, Southwark, London.

<sup>4</sup> Clutterbuck (1767-1856) was a physician and medical writer.

<sup>5</sup> Daniell was the inventor of the cell and hygrometer which bear his name and had recently published his *Meteorological essays and observations* (Daniell 1823).



well as from other parts of the world, with instruments graduated to the common scales". "To effectuate this purpose with advantage", they considered it "absolutely necessary that the Meteorological Society of London should set the example of the requisite precision by establishing a Meteorological Observatory in the metropolis, or its vicinity".

Further meetings were held on 11 February, 10 March, 14 April and 12 May 1824, and scientific papers were read at all of them. Resident and corresponding members were admitted, and honorary members, too, among them Sir John Leslie (professor of natural philosophy in the University of Edinburgh), Dominique-François Arago (professor of analytical geometry in the École Polytechnique, Paris), Joseph-Louis Gay-Lussac (professor of physics at the Sorbonne), Jean-Baptiste Biot (professor of physics in the College of France, Paris), Marc-Auguste Pictet (professor of natural philosophy in the University of Geneva), Friedrich Wilhelm Bessel (director of the Königsberg Observatory), Heinrich Christian Schumacher (director of the Altona Observatory), and Jean Christian Oersted (professor of natural philosophy in the University of Copenhagen).

### ***A letter from James George Tatem***

A letter from James George Tatem to Thomas Wilford dated 10 January 1824 and written from High Wycombe mentioned that he had resided at Harpenden "during the months of January, February and March 1823", which explains why his letter published in the *Monthly Magazine* had been written there. He had lived at Harpenden for several years and taken up residence at High Wycombe at the beginning of April 1823 (see Appendix 1).

In the letter to Wilford, Tatem provided a reason why he would not be able to attend the meeting of the Society on 11 February 1824. The distance of London from High Wycombe (about 30 miles) would prevent him from doing so, from which it appears that he may not have attended previous meetings of the Society on account of travel difficulties. One may wonder why he had not been able to stay overnight in London. He further said in his letter that he would "feel obliged" by Wilford "forwarding to him the Rules of the Society, if published, with the names of the committee and List of Members".

With his letter, Tatem enclosed meteorological observations he had made at Harpenden in January, February and March 1823 (see Figure 3, page 10), and he said that he would be "happy to receive instructions from the Society as to the hours at which they would wish their members to make their observations, and the instruments to be observed". "I need not state to you", he went on, "how much depends upon the observations being made at the same time, and with instruments of similar construction, in order to establish any data on which to make calculations or draw conclusions respecting climate". He thus showed that he understood the need for observations to be made regularly and systematically, as advocated by Hooke, Jurin and others many decades earlier.

### ***Other correspondence in 1823 and 1824***

Formation of the Meteorological Society of London did not pass unnoticed, either in Britain or farther afield. Letters, applications for membership and tabulations of weather observations were sent to Thomas Wilford, George Birkbeck and occasionally other Council Members, as well as scientific papers that were submitted to be read at Society meetings or considered for publication.<sup>6</sup>

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<sup>6</sup> Numerous letters, weather diaries and various other manuscripts received by the Meteorological Society of London from 1823 onwards are held in the National Meteorological Archive, Exeter, catalogued under 'Incoming Correspondence, Meteorological Society of London, ARCHIVE V22.B2-A3'.

Day	Hour	Thermo- meter	Extreme	Baro- meter	Hygro- meter	Pluvia- meter	Winds	Weather	Remarks on Clouds &c.
Wednesday	9.50	40.25		29.12			SW 1	Small rain	
	3.—	44.50				.0375	SW 1	Thunder	Hazy
	10.50	40.25		20.05				Thunder	
Thursday	9.—	36.75		29.01			SW 1	Chiefly	Water clouds
	3.40	39.—				.1025	SW 1	Bright	over the sea
	10.5	36.25		29.10					Small clouds
Friday	9.30	31.25		29.15			SW 1	Snow 2 1/2	
	3.40	33.—				.025	SW 1	with rain	
	10.30	33.—		29.24				clear	at night
Saturday	9.30	40.—		20.00			SW 3	Clear	
	3.30	49.50	49.50			1.4375	SW 3	Thunder	at night
	10.40	45.—		20.70				Thunder	at night
Sunday	10.—	36.50		29.39			SW 1	Bright	
	3	41.—				.17	SW 1	Small rain	
	10—	32.25		29.25				Thunder	
Monday	10—	40.—		29.12			SW 3	Special	
	3.5	39.25				2.05	SW 3	Thunder	at night
	11.5	35.—		29.54				Thunder	at night

**Figure 3**

Weather observations made by James George Tatem at Harpenden from Wednesday 1 to Monday 6 January 1823. From left to right, the columns contain the following: Days; Times observations made; Temperatures (°F); Extremes; Barometric pressure (inches); Hygrometer readings (none listed); Pluviometer readings; Wind direction and force; Weather; Remarks on clouds etc.

Some correspondents responded to resolutions which had been agreed at the inaugural meeting of the Society. John Coldstream of Leith, for example, wrote to Wilford on 8 December 1823, enclosing a paper “on some thermometrical observations lately carried on here, for the purpose of determining the best hours for daily observations”. He was doing so, he said, “in compliance with the request contained in your Resolutions of the 15 October [Resolution 8] as it will be some time before the next volume of the *Wernerian Memoirs*, in which this paper is to appear, can be published”. He appears to have assumed that the Society would be able to publish his paper in the near future, not knowing, as he could not have done, that the first set of scientific papers to be published by the Meteorological Society of London would not appear before 1839. His paper, on thermometrical observations made hourly at Leith in 1822 and 1823, was, in fact, published by the Wernerian Natural History Society in 1824 (Coldstream, 1824).

The paper by John Gough which was read at the Society meeting on 14 January 1824 was submitted to Dr Birkbeck by Samuel Marshall of Kendal on 5 January and also did not appear in print until 1839 (Gough, *op.cit.*), by which time it was published posthumously, for Gough died in 1825.<sup>7</sup>

Among weather observations sent to Thomas Wilford were meteorological journals kept by Dr William Burney at the observatory of his Academy in Gosport for several months of 1823 and early 1824. Besides thermometer readings, one journal, that for April 1824, included readings of

<sup>7</sup> Gough is credited with introducing John Dalton to meteorology. He was also a Quaker and friend of Luke Howard. See Wilson (2011).

Dr Luc's Whalebone Hygrometer, an instrument described and discussed by Middleton (1969, pp.103-107) and favoured by Luke Howard over other hygrometers for its durability.

Letters which were meant to be helpful were also received, one of them, dated 8 March 1824 and addressed to Luke Howard, coming from a surgeon, Thomas Hanson, who offered suggestions for improving the newly-founded Society. He also enclosed his weather observations for 1823.

Requests for instruments were received, too, an example being that from William Daniel Conybeare, geologist and Dean of Llandaff. On 12 March 1824, when Chairman of the Bristol Literary and Philosophical Institution, he wrote to the Society concerning the keeping of meteorological observations for comparison with those of the Meteorological Society and asked for instruments for this purpose. He had evidently assumed that the Society already possessed or had access to a stock of instruments, when, in fact, they did not.

Reports of notable weather events were presented to the Society, too, one of them, received from Thomas Forster in early 1824, being a 'Memoir on the great depression of temperature which occurred near East Grinstead in Sussex in January 1820'. In this, he reported an "extraordinary degree of cold which occurred on or about the 14th day of January 1820", when the temperature fell to minus 10°F.

No definitive list of those who were members of the Meteorological Society of London in the session from 15 October 1823 to 12 May 1824 has come to light, and that provided by Symons (*op.cit.*, p.69) was certainly not complete. As shown by documents of the Society which survive in the National Meteorological Archive (see Footnote 6), a number of people who were not listed by Symons became corresponding members of the Society, among them the Revd William Kirby of Barham in Suffolk and Captain Theobald Jones RN of Strabane in Ireland (both in April 1824), as well as Mr William West of Leeds (in February 1824), and Mr James Stockton of New Malton (in May 1824). Each had been recommended by at least three members of the Society's Committee, one of the three for each nominee being from personal knowledge.

The list of members that Symons provided was, he said, "nearly perfect". "Although very short", he added, the list contained many names that would not soon be forgotten, which was indeed so. Entries for most of these people can be found in the 2004 edition of the *Oxford Dictionary of National Biography* (Oxford DNB). The following is the list provided by Symons, the asterisks denoting the members with an entry in the Oxford DNB.

Robert Addams, of Jermyn Street, St James's, occupation not known.

- \* William Allen, FRS, a chemist and philanthropist.
  - \* George Birkbeck
  - \* John Bostock, FRS (1829), a physician and medicinal chemist.
  - \* Edward William Brayley, a writer and lecturer on science, a man in his early twenties in 1823, with an interest in meteors.
  - \* Sir Benjamin Brodie, FRS, a physiologist and surgeon.
  - \* Henry Clutterbuck
  - \* Thomas Frederic Colby, RE, surveyor, army officer and, by 1823, Superintendent of the Ordnance Survey.
  - \* John Frederick Daniell, FRS
  - \* Sir Henry Thomas De La Beche, FRS, a geologist with a strong interest in meteorology.
  - \* Edward Forster(the younger), FRS, a botanist.
  - \* Thomas Ignatius Maria Forster
  - \* Edward Harrison, a physician.
  - \* Luke Howard, FRS
- G M Patterson, a physician.
- \* William Hasledine Pepys, FRS, a surgical instrument maker and natural philosopher.

\* Jonathan Pereira, a pharmacologist and physician, who was in 1823 a student of Henry Clutterbuck.

C J Roberts, a physician

\* William Shearman, a physician and medical writer.

\* Richard Taylor, a printer and naturalist.

Thomas Wilford

It will be noted that many of the members were, like Birkbeck, distinguished medical practitioners, suggesting that he had recruited them (and also honorary members) to raise the level of respectability of the new Society. It will be noted, too, that James George Tatem does not appear to have been a member, but he had indeed joined, as shown by letters he wrote in 1836 (see later). It would surely have been inconceivable that the man who deserved to be regarded as the founder of Britain's first meteorological society had not joined it.

Another who did not appear on the list provided by Symons (1881) was Charles Shearman, but he was certainly a member by 12 May 1824, when he was one of those, along with William Shearman, who recommended Robert Addams for membership.

### ***Twelve dormant years***

In view of the initial enthusiasm and activity, it is surprising that the Society's meeting on 12 May was the last of a scientific nature for twelve years. During these years, there was Society activity only in the summer and autumn of 1832, when several meetings were held, all concerned with financial matters. At one of them (on 1 August), Birkbeck was appointed Treasurer, following Clutterbuck's resignation.

In the early stages of the dormant period, it appears that some members did not know that the Society had become inactive. Even Tatem seems to have been unaware, for on 10 January 1825 he wrote to Wilford, "drawing attention to lunar haloes for weather prognostication" and saying that it would give him "pleasure if this communication should be considered worthy of the attention of the Society". Charles Shearman was another who seems to have been unaware, for on 11 January 1825, writing from Euston Place, he submitted a report which ran to nearly four pages, its subject being 'A short account of a remarkable meteor observed in the evening of 9 September 1824'.

Towards the end of 1824, on 7 December, William Shearman wrote as follows to Wilford:

I find myself so much engaged in various pursuits as not to leave me sufficient leisure to bestow upon the concerns of the Meteorological Society so as to become an efficient member thereof. I will therefore thank you to intimate to the Society my wish to withdraw my name from their list. At the same time I am fully impressed with a conviction of the importance and utility of their researches and wish them every success in the prosecution of their object.

Shearman had been Treasurer of the Medical Society of London for several years and in 1824 become President of that Society.

Why the Society languished is a matter for speculation, though it has been suggested by Symons (1881, 1900) that the move of Luke Howard in 1824 from Tottenham to his Yorkshire residence at Ackworth near Pontefract could have been a key factor. Evidence for this can be found in a letter from Howard dated 12 January 1825, in which he said that he was sorry that the state of his engagements in other respects would prevent him from "meeting the Meteorological Society – as was the case last time, when I was just arrived from Yorkshire". Like Tatem and others, Howard seemed to believe that the Society was still active, so there may be another reason for the dormancy. It may have been that Birkbeck had become preoccupied with his work in the London Mechanics' Institute, founded in 1823, and with his endeavours to establish such institutions in many other places in the United Kingdom (for details, see Kelly 1957).

## Chapter 3

### REVIVAL OF THE METEOROLOGICAL SOCIETY OF LONDON

Revival of the Society came in the autumn of 1836, following the publication of several letters and articles in *Loudon's Magazine of Natural History*, some written by James Tatem, others by a Mr W.H.White. The letters and articles dwelt, as Symons (1881) put it, "on the desirability of meteorological observers combining for the purposes of mutually promoting the advancement of the science". White did not appear to know of the existence of the original Society and even Tatem was not sure that the Society still existed, saying in one of his letters, "I was or am a Member of the Meteorological Society founded in 1823", whereupon he received a letter from Birkbeck, who, writing as President, informed him that "The Meteorological Society of London has not been dissolved but has only sunk into a state of rest, not from the want of pecuniary means to effect the objects of the Society, as some have imagined, but, apparently, from a want of zeal in some of the members to carry into effect various important objects".

In the summer and autumn of 1836, Tatem and White corresponded on a personal basis about the re-formation of the Meteorological Society of London or the formation of a new society (see Figure 4, page 14); and Tatem also wrote to Birkbeck (see Figure 5, page 15).

#### **Who were Tatem and White?**

As we have seen, Tatem merits his place in history as the founder of Britain's first meteorological society, but what do we know of him? What were his meteorological credentials? And what do we know of the man who helped him revive the Society in 1836, William Henry White?

By 1836, Tatem had been a keen weather observer for almost twenty years. The first of his weather diaries which has come to light began on 1 January 1817, this containing observations made at Harpenden.<sup>8</sup> His monthly records for 1818 are shown in Figure 6 (page 16), also based on observations made at Harpenden. It will be noted that he employed questionable statistical methods, taking the highest and lowest values of temperature and barometric pressure each month and averaging them. Notice also the number of decimal points he quoted!

From April 1823 until well into the 1840s, all of Tatem's observations were made at High Wycombe. For a few years from 1825, his daily values of temperature (°F), barometric pressure (inches), rainfall amount (inches), wind direction and weather were published in the *Monthly Magazine* (see Figure 7, page 17). Then, from 1829 for several years, monthly means and extremes of these meteorological variables, along with numbers of fair, rainy and snowy days and frequencies of wind direction, were published in *Loudon's Magazine of Natural History, and Journal of Zoology, Botany, Mineralogy, Geology, and Meteorology*, as well as brief reviews of the weather each month (see Figure 8, page 18, from Tatem, 1829).

Letters and articles written by Tatem were also published in journals in the 1820s and early 1830s, one of his earliest letters being one that discussed a remarkably large fall in barometric pressure. This appeared in the *Monthly Magazine* in 1822, in that year's issue for 1 March (see Figure 9, page 19). It is worth including this letter in its entirety for it shows Tatem's breadth of knowledge of meteorological observations made elsewhere in Great Britain.

***continued on page 20***

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<sup>8</sup> This diary belongs to the Royal Meteorological Society and is now cared for by the National Meteorological Archive at Exeter. Tatem's diaries for 1818 and for 1 January 1822 to 31 March 1823 are also in the National Meteorological Archive (in ARCHIVE Z11.E-Z10.B). Diaries for 1819, 1820 and 1821 are missing.



High Wycombe  
July the 16. 1836

Sir

I have to apologize for delaying to answer your letter of the 7th Inst but have been exceedingly occupied since its arrival. I feel much flattered by your application to me to assist in the formation of a Meteorological Society, which I have, for a long time, considered much wanted, indeed so far back as 1823 I addressed a letter to the Editor of the Monthly Magazine which appeared in the number for April of that year, calling upon meteorologists to establish a Society, and the Institution to which you allude was formed in the October following, of which I was or am a member, for the Society has never been regularly dissolved. Dr Birkbeck, was the President, Dr Clutterbuck, the Treasurer, and Mr Wilford, of Union Street, Southwark, the Secretary. Whether the whole of the funds were expended, I do not know. The Treasurer some years since refused to receive any more subscriptions. I have been this particular, because it might be advantageous to have some communication with those gentlemen, and revive that Society, or, as you propose, set immediately about getting up another, any aid I can afford will be most willingly given. — Mr Adams to whom you have written, I have known from his childhood, and in a letter received

**Figure 4**

Part of a letter from Tatem to White, dated 16 July 1836:

I have to apologize for delaying to answer your letter of the 7th Inst but have been exceedingly occupied since its arrival. I feel much flattered by your application to me to assist in the formation of a Meteorological Society which I have, for a long time, considered much wanted. Indeed so far back as 1823 I addressed a letter to the Editor of the Monthly Magazine which appeared in the number for April of that year, calling upon meteorologists to establish a Society, and the Institution to which you allude was formed in the October following, of which I was or am a member, for the Society has never been regularly dissolved. Dr Birkbeck was the President, Dr Clutterbuck the Treasurer and Mr Wilford, of Union Street, Southwark, the Secretary. Whether the whole of the funds were expended, I do not know. The Treasurer some years since refused to receive any more subscriptions. I have been this particular because it might be advantageous to have some communication with those Gentlemen and revive that Society, or, as you propose, set immediately about getting up another. Any aid I can afford will be most willingly given.



Highly Respected Sir  
Septem. the 7. 1836

Sir

Being one of the original members of the London Meteorological Society, I shall be forgiven for thus intruding myself on your notice; from your letter to my old friend and neighbour Mr [Samuel] Kent, I learn that you are willing to lend your aid to revive the Society and resume your post as President. Believe me I rejoice at this very much; but I must be allowed to question the policy of the Rules of the Society, as adopted at its institution. In the first place I object to the word "London" being introduced into the title which I think should be solely "The Meteorological Society" and the division of the members, as it at present stands I likewise think wrong, and I am the more anxious to call your attention to this subject now, because I see in the Magazine of Natural History that Mr W H White has prepared a paper, under your authority, calling upon meteorologists anxious to become members, to signify the same to you; and in that paper the division of the members into three classes is inserted, my objection applies rather to the persons who are ranged under the classes than the classes themselves, which I would retain.

W Birkbeck

**Figure 5**

Part of a letter from Tatem to Birkbeck, dated 7 September 1836:

Being one of the original members of the London Meteorological Society, I shall be forgiven for thus intruding myself on your notice; from your letter to my old friend and neighbour Mr [Samuel] Kent, I learn that you are willing to lend your aid to revive the Society and resume your post as President. Believe me I rejoice at this very much; but I must be allowed to question the policy of the Rules of the Society, as adopted at its institution. In the first place I object to the word "London" being introduced into the title which I think should be namely "The Meteorological Society" and the division of the members, as it at present stands I likewise think wrong, and I am the more anxious to call your attention to this subject now, because I see in the Magazine of Natural History that Mr W H White has prepared a paper, under your authority, calling upon meteorologists anxious to become members to signify the same to you; and in that paper the division of the members into three classes is inserted my objection applies rather to the persons who are ranged under the classes than the classes themselves, which I would retain.



**Figure 6**

Meteorological observations made by James George Tatem at Harpenden in 1818, showing the highest and lowest readings of barometric pressure (inches) and temperature (°F) and their means, along with rainfall amounts (inches) and wind direction frequencies. These observations are held by the National Meteorological Archive at Exeter.

		1818														
Month	Day	Barometer			Thermometer			Pluvia inches	W. S. N. O. S.							
		Highest	Lowest	Mean	Highest	Lowest	Mean		East	West	North	South	NE	SE	SW	NW
January	13 <sup>h</sup>				52.50	25.25	38.89	2.7575	1	13		1	1	1	13	1
	17 <sup>h</sup>															
	19 <sup>h</sup>	30.06	28.60	29.44												
February	17 <sup>h</sup>				49	33	34.64	1.825		7		3	1	1	12	4
	10 <sup>h</sup>															
	11 <sup>h</sup>	29.86	28.65	29.25												
March	30 <sup>h</sup>				52.25	50	30.94	3.0875		2	2	6	2		15	4
	9 <sup>h</sup>															
	31 <sup>h</sup>	30.02	28.10	29.25												
April	29 <sup>h</sup>				62.50	29	44.72	4.55	2	2	1	1	6	7	10	1
	1 <sup>h</sup>															
	3 <sup>h</sup>	30.65	28.79	29.53												
May	31 <sup>h</sup>				70.25	10	50.07	3.825	1	4	4	1	7		12	2
	12 <sup>h</sup>															
	25 <sup>h</sup>	29.99	28.95	29.48												
June	12 <sup>h</sup>				82.50	50	61.25	0.5025		16	2	1			11	
	6 <sup>h</sup>															
	5 <sup>h</sup>	29.98	29.27	29.67												
July	24 <sup>h</sup>				85.75	52	60.10	1.9375		15					0	0
	9 <sup>h</sup>															
	15 <sup>h</sup>	29.96	29.43	29.76												
August	5 <sup>h</sup>				80.25	42.25	58.71	1.175	1	3	3		7		0	9
	22 <sup>h</sup>															
	23 <sup>h</sup>	29.88	29.72	29.70												
September	4 <sup>h</sup>				74.25	42	49.11	3.55		13		2			19	3
	17 <sup>h</sup>															
	31 <sup>h</sup>	29.92	29.06	29.44												
October	16 <sup>h</sup>				64.75	36	50.76	1.54375		4		2			23	2
	9 <sup>h</sup>															
	20 <sup>h</sup>	29.99	28.94	29.53												
November	2 <sup>h</sup>				50.50	33	46.59	2.925		6		7	1	3	11	2
	10 <sup>h</sup>															
	27 <sup>h</sup>	30.05	28.99	29.48												
December	23 <sup>h</sup>				48	20.50	35.70	1.1375	1	1	3	2	9	4	9	2
	25 <sup>h</sup>															
	31 <sup>h</sup>	30.22	29.10	29.71												
July	24 <sup>h</sup>				85.75	20.50		20.65625	6	86	15	26	36	16	112	50
December	11 <sup>h</sup>															
March	28 <sup>h</sup>	30.22	28.15													



Figure 7

Daily observations of temperature (°F), barometric pressure (inches), rainfall (inches), wind direction and weather made at High Wycombe by James Tatem from 26 July to 27 August 1825, published in the 1825 volume of the Monthly Magazine (60, 415, p.265). This was the first of the sets of such tabulated meteorological observations published by Tatem in the Monthly Magazine in succeeding months.

*Extract from a Meteorological Journal, kept at High Wycombe, Bucks. Lat. 51° 37' 3" North, Long. 40° 3' West. By JAMES TATEM.*

Days.	Thermometer.		Barometer.		Rain.		Wind.	Weather.	Remarks.
	Highest.	Lowest.	Highest.	Lowest.	Ins.	Dcls.			
July 26	68	47.50	30.05	30.05	—	—	N	Fair	
27	75	44	30.03	29.99	—	—	N	Do.	
28	75.75	49.50	29.96	29.95	—	—	N	Do.	
29	78	39	29.93	29.92	—	—	N	Do.	
30	74.25	40.25	29.89	29.79	—	—	E	Do.	
31	79	41.50	29.73	29.73	—	—	E	Do.	
Aug. 1	83.50	57	29.77	29.72	—	—	SW	Cloudy.	
2	67.75	50.25	29.74	29.69	0.0375	—	S	Changeable.	
3	69	57.50	29.72	29.55	0.24375	—	S	Cloudy.	{ Thunder about 3 p.m.—gale of wind at night.
4	61	51.25	29.31	28.93	0.43125	—	SE	General cloud.	
5	66	50.50	29.37	29.29	0.2	—	SW	Fair till night.	{ Thunder about 1 p.m.
6	62.25	48.25	29.42	29.36	0.31875	—	W	Frequent showers.	
7	65.50	48	29.56	29.46	0.0375	—	W	Fair till night.	
8	64.50	53	29.45	29.44	0.0125	—	SW	Fair.	
9	59.75	46.50	29.45	29.44	0.1875	—	SW	Fine morning—then wet.	
10	63.25	45.50	29.53	29.45	0.04375	—	W	Fair till night.	{ Thunder about 4 p.m.
11	62.50	46.50	29.70	29.69	0.0125	—	N	Fair.	
12	64.50	55.50	29.79	29.68	0.0375	—	W	Fair.	
13	63	55	29.37	29.48	0.3625	—	SW	Frequent showers.	
14	61.75	54.25	29.23	29.16	—	—	W	Fair.	
15	60.25	53.50	29.42	29.19	0.0375	—	W	Dull and heavy.	
16	62.25	50.25	29.59	29.53	—	—	W	Fair.	
17	64	52.25	29.64	29.59	—	—	SW	Threatening rain.	
18	62.25	51.25	29.94	29.69	0.00125	—	NW	Dull and heavy.	
19	62.25	40.25	29.97	29.94	0.01875	—	NW	Do. with misty rain.	
20	62.25	53.50	30.08	30.06	—	—	NW	Variable.	
21	67.50	51.50	30.07	30.06	—	—	NW	Threatening a storm.	
22	68	57	30.04	29.98	—	—	NE	Fair.	
23	69.50	47	29.94	29.85	—	—	NE	Do.	{ Thick heavy atmosphere.
24	65.50	45.50	29.88	29.86	—	—	NE	Do.	
25	60	49	29.88	29.87	—	—	NE	Do.	
26	67.50	54	29.69	29.68	0.025	—	NE	Fair until night.	
27	55	54	29.84	29.74	0.675	—	NE	Nearly continual rain.	

Thermometer.		Barometer.	
Greatest variation in the day . . . . }		July 29th. { At 3 P.M. 78°. {	August 4. { At 8 A.M. 29.31. {
		Midnight 39. }	of an inch { 10 P.M. 28.93. }
		Greatest variation in the day. }	

The quantity of rain that has fallen since the 1st of August is 2.6525 inches. The temperature has been low since the first of the month, and the barometer very unsteady; still the weather has been propitious to the agriculturist, and the harvest is nearly completed.

N.B. As it is proposed to continue these Reports regularly every month, it may be proper to state that the thermometer is observed three times every day—at eight o'clock in the morning, three in the afternoon, and ten at night; and that the extreme of cold is ascertained by a self-registering thermometer; the height of the barometer is registered twice—at 8 A.M., and 10 P.M. The rain-gauge is examined every morning at eight o'clock; consequently the quantity measured shews how much has fallen since the preceding morning, at the same hour. The direction of the wind given is that which has been most prevalent during the day, when it has been variable.

High Wycombe, 28th August, 1825.

JAMES G. TATEM.

Figure 8

Tables and two of the monthly reviews, from 'Journal of the weather kept at Wycombe, Bucks., Lat. 51°37'44" North; Long. 37°45" West, during the year 1828, with monthly observations, by James Tatem, Esq., Member of the London Meteorological Society' (taken from Tatem, 1829).

Table of Thermometer and Barometer.

Month.	Thermometer.				Barometer.			
	Mean.	Greatest variation.	Greatest Heat.	Greatest Cold.	Mean.	Greatest variation.	Greatest height.	Lowest extreme.
January	38·78	15·28	52·50	25·50	29·67	0·78	30·16	28·89
February	58·93	17·31	56·25	25·25	29·54	0·86	30·22	28·68
March -	41·28	21·28	62·25	23	29·65	0·86	30·11	28·79
April -	44·80	24·44	69·25	25·50	29·49	0·59	30·09	28·92
May -	51·42	21·32	72·75	32·25	29·59	0·45	30·08	29·14
June -	56·73	19·26	76	41·25	29·74	0·67	30·07	29·07
July -	58·28	19·28	76	39	29·46	0·35	29·75	29·11
August	56·19	17·80	74	41	29·61	0·50	30·05	29·11
September	54·95	19·70	74	35·25	29·69	0·59	30·29	29·15
October	46·95	18·70	65	28·25	29·87	0·82	30·22	29·05
November	42·44	23·44	55·75	19	29·62	0·66	30·06	28·96
December	42·25	18·73	54	25·50	29·70	0·78	30·16	28·92
	47·75				29·64			

Table of Rain, Snow, Fair Days, and Wind.

Month.	Number of fair days.	Number of rainy days.	Number of snowy days.	Rain.		Winds.							
				Ins.	Dels.	N.E.	East	S.E.	South	S.W.	West	N.W.	North
January	14	15	2	4·67	1	8	3	2	7	6	1	5	
February	14	11	4	1·47	3	2	6	3	3	5	3	4	
March -	20	10	1	0·77	2	2	1	8	10	8	2	2	
April -	10	20		3·50	1	2	2	1	3	1	3	7	
May -	17	14		1·92	4	8	3	2	5	5	4	4	
June -	18	12		2·68	6	2		3	9	5	5	1	
July -	15	16		4·55	1	1		6	8	6	4	2	
August	15	16		5·3	4	3	5	2	14	4	2		
September	15	16		3·25	5	6	1	5	6	1	6	6	
October	23	8		1·8	3	1	4	1	5	7	6	4	
November	18	12		1·28	1	10	3	2	4	6	3	1	
December	14	17		2·6		6	5	5	7	7		1	
	193	166	7	33·83	28	51	32	33	79	63	35	35	

*January.* An extraordinary quantity of rain fell during the month, upwards of three times as much as in January 1827, and very considerably more than for the eleven last years. The mean temperature was higher than since 1817, but the mean height of the barometer was above that of last year, in the corresponding month, notwithstanding the excess of rain. Snow fell on the 11th and 15th; the whole together about 3 in. in depth. Thunder heard and lightning seen about two o'clock in the morning of the 18th. The evaporation 0·05625 of an inch.

*February.* The mean temperature was above that of the last year, and the maximum higher than observed by the journalist, in the month of February, for twelve years. The mean height of the barometer lower than since 1823, in the same month, but the range greater than for some years; snow fell on four different days, and the whole amounted to 8 in. in depth; the quantity of rain and melted snow 1·475 in., of which about  $\frac{2}{3}$  of an inch was from the latter. A lunar halo, with misty area, seen about ten o'clock on the 28th. The evaporation 0·03125 of an inch.

**Figure 9**

Letter from James Tatem published in the Monthly Magazine on 1 March 1822 (53, 365, pp.123-124).

SIR,  
**A**S every information respecting meteorological phenomena cannot fail to be acceptable to you, and, by insertion in your *Magazine*, will be more extensively circulated than by any other means with which I am acquainted, I beg to communicate to you my observations on the extraordinary fall of the barometer, which occurred at this place, on the 24th, and 28th of last month.

On the 23d of December, at 10 P.M. the barometer stood at 28.92, but sunk rapidly during the night and following day until 9 P.M. when it had reached the minimum 27.77, the wind blowing from the S.E. a heavy gale, and the thermometer indicating a temperature of 45.50. Very soon after this time the mercury began to rise, for at ten o'clock that night it had risen to 27.85, a gradual ascent followed, and on the night of the 27th, the barometer was at 28.74, but in the course of that night and the next day it fell with great rapidity, and in the evening of the 28th had descended to 27.91; after this it continued rising during the remainder of the month.

I am induced to consider this depression

sion of the barometer as *extraordinary*, because on examining the tables, published by the Royal Society, of the Observations made at their house from the 1st of January, 1774, to the end of the year 1820, I find the minimum there given is only 28.18, and also from another set of tables in the Philosophical Transactions of Observations made by Thomas Barr, Esq. at Lyndon, in Rutlandshire, from the year 1774 to the year 1799, (both inclusive) it appears that the barometer was only twice observed by that gentleman below 28 inches, viz. 27.88 in March, 1783, and 27.92 in January, 1791. From the Meteorological Report given in your excellent Miscellany, the extremes of the barometer are 30.88 and 27.97, and in the results of Mr. Pitt's observations made at Carlisle, as published by you, the mercury does not appear to have ever been below 28 inches, although his tables are continued for upwards of twenty years; and I am further confirmed in my opinion by an examination of the observations made at Edmonton, by that scientific and indefatigable meteorologist, the master of Lattimer's School. That such a fall would have astonished the philosophical men of the last century we may be assured, for the celebrated Dr. Wallis never saw the barometer lower than 27.99. Mr. Townley, indeed, observed the mercury to fall to 27.80 about 2 P.M. on the 24th January, 1698; and Mr. Henry Beighton states "that on the 5th of January, 1734-5, during the greatest storm that had been in those days, the mercury fell to a tenth below 28 inches, which had not been seen," he says, "in that age, or perhaps since Torricelli's time."

JAMES G. TATEM.

Harpenden, near St. Albans, Herts.  
 Jan. 22, 1822.



**continued from page 13**

Articles on meteorological topics which were published by Tatem in *Loudon's Magazine of Natural History, etc* included 'Data and observations towards establishing rules for the guidance of agriculturalists and botanists, as to the quantity of rain which falls in different months of the year in different places' (Tatem, 1831). He signed this "James G Tatem, Member of the Meteorological Society", showing that he believed the Society still existed when, in fact, it had then been dormant for seven years. In another article published in *Loudon's Magazine*, he turned his attention to the effects of the weather on human health, and again he claimed membership of the Society (Tatem, 1832).

Not all of Tatem's articles were on meteorological topics. A brief contribution from him about the rarity of Kingfishers, for example, appeared in the 1831 issue of *Loudon's Magazine of Natural History, and Journal of Zoology, Botany, Mineralogy, Geology, and Meteorology* (4, p.469); and he published in this magazine a few years later an article about horses and guinea fowl dying after eating branches and leaves of yew trees (Tatem, 1835).

In the late 1820s and early 1830s, W H White also published articles in *Loudon's Magazine of Natural History, and Journal of Zoology, Botany, Mineralogy, Geology, and Meteorology*, and, like Tatem, wrote about natural history in general and meteorology in particular. Many of his contributions were about birds, including, in the 1830 volume of the magazine, a note about the arrival of a Cuckoo on 21 April 1829 in Bedford, where he then lived, and the last sighting of this species in that town that year on 4 August (3, p.154). In the 1831 volume of the magazine, he published a comment about the migration of Cuckoos and Swifts (4, pp. 184-185) and observations on the Nuthatch (4, pp.465-466) and Tree Creeper (4, pp.473-474).

White's meteorological contributions to *Loudon's Magazine* included, in the 1831 volume, his 'Journal of the weather kept at Bedford, Lat. 52°8'48" North, Long. 2°49" West' (White, 1831a), as well as an article 'On the temperature of the atmosphere on different parts of the Earth's surface', in which he considered the importance of climate, pointing out that "had a uniform climate been established over the face of the whole Earth we should have been deprived of that beautiful variety of plants and animals which now strikes us with astonishment at every step" (White, 1831b).

Both Tatem and White published articles in *Loudon's Magazine* about spectacular auroral displays which had impressed them (Tatem, 1836; White, 1836a). Tatem described displays he had seen at High Wycombe in January 1831, September 1835 and November 1835 and provided a sketch of the display he had seen on 7 January 1831 (Figure 10). White (1831c) wrote about auroral displays he had observed at Bedford in 1830 and 1831; and he also described a display he had seen from London in November 1835 (White, 1836a).

By 1836, Tatem was a High Wycombe worthy who was not only interested in meteorology but also had many civic and other local interests and also served as a secretary of the British and Foreign Bible Society. For a biography of Tatem, see Appendix 1.

White, in contrast, had been a teacher of mathematics in Bedford but now lived in London. Indeed, some of his articles published in *Loudon's Magazine of Natural History, and Journal of Zoology, Botany, Mineralogy, Geology, and Meteorology* had appended to them, after his name, the abbreviation H.M.C.S., indicating that he was at the time Headmaster of Bedford's Commercial School. For a biography of White, see Appendix 2.



**Figure 10**  
Sketch of the auroral display seen by Tatem at High Wycombe on 7 January 1831.  
From Tatem (1836).

### ***The utility of a meteorological society***

Through letters to individuals and articles in journals, some as early as the spring of 1836, White in particular and Tatem to a lesser extent both pressed for the formation of a meteorological society or the revival of the London Meteorological Society. A number of positive replies were received, though none as potentially far-reaching as that from William Radcliff Birt, whose work in the early 1830s on the tabulation of winds had impressed the distinguished astronomer Sir John Herschel (see, for example, Birt, 1835).

In a very long letter to White dated 14 June 1836, Birt developed an idea he had put forward in an article published earlier that month in *Loudon's Magazine* (Birt, 1836), itself an advance on a proposal made by White in the same journal (White, 1836b). As White put it:

Meteorology, both in its ordinary and in its extraordinary manifestations, furnishes abundant materials for the contemplation of the scientific enquirer. As there are several correspondents of this [*Loudon's*] *Magazine* who take considerable interest in the science of meteorology, I beg most respectfully to propose to them, and to others interested in the science, the propriety of adopting some efficient plan to carry into effect a unity of purpose in making observations; and this, I think, can only be effected by establishing several meteorological stations, both in north and south Britain; and by each observer using the same kind of instruments, making observations at the same appointed time, and using the same formulæ in each journal. .... Such a plan of observation would not only render each meteorological station of greater value, in consequence of its useful association with others, but it would become an object of the highest importance to meteorological science.

In his article in *Loudon's Magazine*, Birt (1836) said that he had read “with great pleasure” White’s (1836b) suggestions for the establishment of a meteorological society “having for its object the institution of stations in Great Britain where observations may be made which are statedly to be compared”. Such a society would, he went on, “if properly conducted, considerably contribute to the advancement of meteorology”.

Developing the suggestions made by White (1836b), Birt (*op.cit.*) wrote as follows:

I have long considered that the establishments of meteorological observatories in various parts of the world would be found of immense utility. An apartment fitted up with barometers, thermometers and hygrometers and other meteorological instruments, having a good chronometer, for the purpose of noting exactly the time of every important phenomenon, and furnished with a circular opening in the roof, for ascertaining the direction of the aerial currents, would form tolerably good means as the kinds of instruments required.

He went on to suggest that the opening in the roof should be graduated (with North being 0°, East 90°, South 180°, etc), so that true directions of cloud movements could be ascertained; and he further proposed that the clock be used to gauge the speeds of cloud movements.

Birt proposed in his letter of 14 June 1836 to White “an active system of co-operative meteorological observations” with stations at:

- Falmouth, Plymouth, London and Harwich forming a line with a WSW-ENE direction;
- Walsall, London and Winchelsea in a line nearly NW-SE;
- Portsmouth, London, Epping, Stowmarket and Yarmouth in a line running SW-NE;
- Brighton, London, Boston and Flamborough Head on a N-S line.

He pointed out that all of these lines passed through London and suggested that his idea might be “realized by a society” which was “for making of observations and for people corresponding and communicating their observations”. It would differ, he said, from existing societies, in that it would be, first and foremost, “a corresponding society”, rather than a group of “drones” into which members were admitted “who possessed no other qualification than the ability to pay fees”!

In Birt's view, all members of a meteorological society must be meteorologists. If societies, of whatever kind, meteorological or otherwise, were filled with drones, "the working members were few and the drones wanted the honey when the meeting nights came round". The outcome of this was that "the workers were not always able to supply it [the honey] suitable to the taste of the drones and they consequently became dissatisfied, withdrew, and the societies sank into oblivion".

Both White and Birt were therefore suggesting a meteorological society which engaged in activities that echoed those recommended by a Committee of Council at the meeting of the Meteorological Society of London held on 14 January 1824 (see page 8), i.e. one that procured "correct registers of comparable observations from different parts of Great Britain and its colonies, as well as from other parts of the world, with instruments graduated to the common scales" (to quote from pages 8 and 9). They were, in effect, suggesting a society with aims, objectives and methodology similar to those of the Palatine Meteorological Society.

### ***The first meeting of the revived Society***

The first meeting of the Meteorological Society of London for more than twelve years was held on 15 November 1836 at the Mechanics' Institute, Southampton Buildings, with Dr Birkbeck in the chair. Charles Shearman was appointed Treasurer, in place of Dr Clutterbuck, who had resigned in 1832 (see page 12); and William Henry White was appointed Secretary, in succession to Thomas Wilford, who had taken up residence in Madeira in the early 1830s and died there in 1836.

The first item on the agenda was a resolution which proved to be, as expected, a mere formality, that "the Society resume its meetings". After that, the objects of the Society were agreed to be "the cultivation and advancement of meteorology", and rules governing the admission of members were approved. Finally, Dr Birkbeck read a paper by Professor H W Dové of Berlin "On the various winds and their causes".

As listed in the *Laws and Regulations of the Society* (published in 1839 in the *Transactions of the Meteorological Society*, pp.157-163), three classes of membership were recognized:

- "Members, or those persons residing in the British Islands already elected";
- "Associates, or those persons co-operating with the Society, but residing out of the British Islands";
- "Honorary Members".

It was agreed at the meeting on 15 November that each person who wished to become a Member or Associate had to be proposed and recommended by three Members or Associates, of whom one was required to certify his personal knowledge of the Candidate. Each person proposed for admission as an Honorary Member had to be recommended by three Members or Associates from personal knowledge or from acquaintance with his scientific works and be, furthermore, certified by all three sponsors that he was eminent in science. It was also agreed that the annual subscription would be one guinea for Members and Associates and that any Member or Associate who subscribed ten guineas would be considered a Life Member.

As regards regular meetings of the Society, there would be two types:

- Annual General Meetings, held on the second Tuesday in March each year.
- Ordinary Meetings, held at eight o'clock in the evening on the second Tuesday in every month, from November to June, both inclusive, apart from March.

Annual General Meetings would receive and consider reports of the Council on the affairs of the Society, elect officers for the ensuing year, and discuss and consider the enactment of new regulations or the alteration or repeal of existing regulations. The business of Ordinary Meetings would be to propose and ballot for candidates, announce donations, consider matters referred by Council, and hear read communications which related to meteorology.

Council could, in addition, when necessary, call a Special General Meeting. For these, a week's notice had to be given to every member, specifying the time of the meeting, the venue, and the business for which the meeting had been called.

### ***Recruitment of individuals***

The endeavours of White and Tatem to recruit individual members met with mixed success. William Baxter of the Oxford Botanic Garden, for example, writing on 5 December 1836 in reply to a letter from White, said that he feared he could be “of no service whatever” to the Meteorological Society; and Dr Burney of the Royal Academy at Gosport declined, too, saying, in a letter to White dated 13 December 1836, that “from his numerous duties, he could not consent to become a Member but only promise promiscuous communications on the Science, in the event of anything occurring worth the notice of the Society”.

Some who declined to join the revived Society did so on account of the distance they lived from London. Mr H W Bailey of Thetford, for example, said that he considered the revival of the Society “most gratifying”, but London was so great a distance from Thetford that regular attendance at meetings would not be possible. Others, on the other hand, who lived farther from London than Mr Bailey, responded positively to their invitations to join the revived Society, among them Mr Edwin Lees of Worcester, Mr W Addison of Great Malvern, Mr G Hutchinson of Glasgow and Mr F C Lukis of Guernsey.

### ***John Ruskin***

Another who accepted an invitation to join the revived Society was John Ruskin, the celebrated writer, critic and artist. In a letter to White, dated 5 December 1836, he said that he should consider himself “highly honoured in being admitted a Member of the Meteorological Society”. He was, he said, “about to reside at Oxford for the usual number of Terms”, but he would “most gladly embrace the opportunity of occasionally enjoying the privilege of meeting individuals so distinguished as those belonging to the Society”.

Though only 17 years of age in December 1836, Ruskin was soon elected a Member of Council, on 9 May 1837. However, he declined this honour, deeming it “due to the Society to state that being now occupied to the full extent of his powers and time at Oxford, he would be totally inefficient as a member of Council” (letter to the Society from his father, John J Ruskin, 1837).<sup>9</sup> He was now an undergraduate at Christ Church, following matriculation in October 1836. Nevertheless, he was able to attend the Society meeting held in London on 14 February 1837 and at it read a paper (never published) “On the formation and colour of such clouds as are caused by the agency of the mountains”, a paper which contained the results of observations he had made in Switzerland.<sup>10</sup>

In a letter to his father, Ruskin (1837) mentioned this paper. Having noticed a tendency towards astro-meteorology on the part of some Society members, he suggested, somewhat superciliously, that “the Society would be much better employed, instead of listening to anticipations which never will be realized, and prophecies which the weather takes good care not to fulfil, in ascertaining the causes and effects of phenomena which have actually taken place, or in perusing such scientific and interesting communications as one which I sent in to Mr White, and which he says in a note he will have great pleasure in laying before the Society at their next meeting”.

Also in 1837, Ruskin submitted “a few remarks on the present state of the Science of Meteorology and on the incitements to its pursuit, with a slight sketch of the general object of the Meteorological

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<sup>9</sup> Like other correspondence cited in this occasional paper, the letters of Ruskin senior and junior are held in the National Meteorological Archive (for details, see Footnote 6).

<sup>10</sup> Ruskin had shown a considerable interest in the geology of Switzerland in three articles he had published in *Loudon's Magazine* in 1834 (7, see pp.438ff, 644ff and 648ff).

Society" (letter from him to the Society, 1837). The "remarks" were subsequently published in the *Transactions* (Ruskin, 1839) and included the following wisdom:

The meteorologist is impotent if alone; his observations are useless; for they are made upon a point, while the speculations to be derived from them must be on space ..... The Meteorological Society, therefore, has been formed not for a city, not for a kingdom, but for the world. It wishes to be the central point, the moving power, of a vast machine, and it feels that unless it can be thus it will be powerless; if it cannot do all it can do nothing. It desires to have at its command, at stated periods, perfect systems of methodical and simultaneous observations; it wishes its influence and its power to be omnipresent over the globe so that it may be able to know, at any given instant, the state of the atmosphere at any point on its surface.

Ruskin clearly had in mind a meteorological society akin to that proposed by Birt and White.

### ***The revived Society from 1836 to 1839***

After the inaugural meeting of November 1836, meetings were held regularly and scientific papers read at most of them (nearly fifty in the 1836-37 session and about sixty in the 1837-38 session). Some of the papers described instruments which had been invented or produced specifically for the Society's use. Others described optical or other atmospheric phenomena; and many of the papers included reviews of meteorological observations made in various parts of Britain and farther afield.

Notable in respect of instruments was the meeting held on 12 December 1837, when, to quote Symons (1881):

This meeting was chiefly devoted to examining the new standard instruments made expressly for the Society's own observations, and for verifying the instruments of the observers throughout the country.<sup>11</sup> The barometer was described as follows. The Society's Standard barometer is a magnificent instrument, the proportion of the calibre of the tube to that of the cistern being as 1:50; a proportion which at once obviates the correction of capillary attraction. The thermometer and hydrometer have been constructed with equal care.<sup>12</sup>

Another new instrument which featured at a Society meeting was the first enamelled tube thermometer, exhibited at the meeting on 13 February 1838. Made by Robert Carr Woods, it was, in the words of Symons (*op.cit.*), "calculated to show the temperature at any hour of the night without the aid of artificial light".<sup>13</sup> The new feature of the instrument was a narrow streak of white enamel introduced into the cane of the thermometer immediately behind the tube.<sup>14</sup>

As regards papers which included reviews of observations made abroad, the meeting on 9 January 1838 focused on the weather of the Canary Islands and heard a communication 'On the meteorology of the Island of Tenerife', submitted by an Associate Member of the Society, Lieutenant (later Sir) George Grey, who had made temperature measurements aboard his ship at Santa Cruz de Tenerife in July 1837 whilst on a voyage to Australia.<sup>15</sup>

Grey pointed out in his communication that the Island of Tenerife was of volcanic origin and, "as its famed peak was at the present moment, and had been since the island was known to Europeans, in

<sup>11</sup> It will be noted that the Society was now building up a stock of its own instruments.

<sup>12</sup> According to Symons (1881), this barometer was made by a Mr Cameron. However, as Symons himself pointed out in a footnote on page 77 of his paper, it actually bears the name of Robert Carr Woods as maker. At the time, Woods (1816-1875) was an optician and maker of barometers and other meteorological instruments, with his workshop at 47 Hatton Garden, London. He was a member of the Meteorological Society of London from 1838 to 1840 and then removed first to India and later, in 1845, to Singapore, where he practised initially as a journalist and later as a lawyer.

<sup>13</sup> For information about Robert Carr Woods, see Footnote 12.

<sup>14</sup> For further information about this thermometer, see Woods (1839).

<sup>15</sup> For reports on Grey's visit to the Canary Islands, see Grey (1839) and Chapter 1 of Grey (1841). He reached Australia in early December 1837. He was admitted an Associate at the Society meeting on 13 June 1837.



a state of solfatara”, he “entertained a hope that if a series of observations had been made they might possibly throw some light upon the influence that volcanic action exercises upon atmospheric phenomena”.

Grey (1839, 1841) reported that the late Dr Savignon, of Laguna, a town on the Island of Tenerife about 1,800 feet above sea level and three miles inland, had made a series of temperature observations during a period of eight years (from 1811 to 1818, inclusive) without missing a single day. Savignon had found that the mean temperature for the whole year was 62.7°F and the mean for July 68.7°F. The quantity of rain which had fallen at Tenerife in 1812 was 19.33 inches, of which 5.24 inches had fallen in January in one period of twenty-four hours; and the total rainfall in 1813 had been 26.22 inches.

Grey further reported that Dr Savignon had recorded details of a “tempest of wind and rain” which had visited the Canary Islands during the night of 7/8 November 1826. On the Island of Tenerife alone (though much damage had occurred on all the islands), 311 houses had been destroyed, 114 houses ruined, 243 persons killed, and 1003 animals destroyed.

Many of the papers read at Society meetings reviewed unusually severe weather. Grey’s paper was no exception. At the meeting on 13 February 1838, for example, a communication by Tatem was read, ‘On the extraordinary severity of the frost of January 1838 at High Wycombe’. In this paper, Tatem reported that the mean temperature of the month in that town was only 25.6°F, which was 3.3°F below the coldest of the previous fourteen years. The lowest temperature he had recorded was 1°F during the night of the 19th/20th.

Further reference to the severity of the weather in January 1838 was made at the Annual General Meeting (AGM) on 13 March 1838 and at the Ordinary Meeting on 10 April 1838. At the AGM, Mr Samuel Marshall reported that the mean temperature of the month at Kendal, his home town, had been 30.6°F, the lowest for at least fifteen years. He also mentioned that the minimum temperature had occurred three times – viz. 16°F, on the 18th, 19th and 20th. Another member reported that the temperature had fallen to minus 5°F in Sheffield on the 20th.

The reference to the severe weather of January 1838 that was made at the meeting on 10 April 1838 came in a paper ‘On the cold of January last, as experienced at Brussels’, from Professor Adolphe Quetelet, Secretary to the Royal Academy of Brussels. This communication (read by W H White) showed that the severe weather occurred not only in many parts of Great Britain but also over neighbouring parts of the European Continent. At Brussels, Quetelet reported, the lowest temperature, 5°F, had been recorded on the 20th, as at Kendal, Sheffield and High Wycombe. He went on to say that the month in question had been the coldest January in Brussels since 1823; and he also mentioned that the temperature had fallen to minus 9.25°F at Maestricht on the 20th.

Another paper which featured unusually severe weather was that ‘On the peculiar weather at Gosport in December 1838’, presented by Mr J H Maverly at the meeting on 8 January 1839. The most noticeable feature had been a violent hailstorm which produced agglomerated masses of clear ice, some nearly an inch in diameter and others between two and three inches long. According to Maverly, some 8,000 panes of glass had been broken in Gosport and the vicinity.

It is clear from the papers read at meetings of the revived Meteorological Society of London, and from the donations of meteorological data reported at Annual General Meetings, that the recommendations of Birt, White and Ruskin had been heeded, at least in part. Observations from far and wide were being received and discussed, but the Society had not thus far instituted a systematic approach to the collection of meteorological registers.

The principal stations of the Meteorological Society in 1839, with the names of observers, were listed in the *Transactions of the Meteorological Society* (pp.153-155). Observations had been received from various parts of the British Isles and from all over the world, including Altona, Amsterdam, Berlin, Brussels, the Cape of Good Hope, Danish dominions, Geneva, Gibraltar, Jamaica,

Lisbon, Louvain, Mauritius, Canada, Paris, St Petersburg, Newfoundland, several places in the United States, and four locations in Australia. The Meteorological Society of London was indeed becoming international.

All but two of the donations to the Society had taken the form of books (see the list on pp.150-152 of the *Transactions of the Meteorological Society*). Most of the books had come from donors in Britain, but some had also come from Professor Quetelet and Dr Vandermaelen in Brussels, Professor Crayhay at Louvain, Professor M A T Kupffer in St Petersburg, and various individuals and institutions in the United States, including Professor Olmsted of Yale College, Professor Silliman of New Haven, Mr W C Redfield of New York City, and staff of the Albany Institute. The two other donations had been a thermometer from Dr Lee and a barometer from Dr Birkbeck.<sup>16</sup>

A letter from Birkbeck to White dated 15 April 1841 shows that a misunderstanding had arisen over the donations from Lee and Birkbeck. In Birkbeck's words:

It is difficult to comprehend the misapprehension of people. In relation to the five pounds of which you speak, there could be no mistake; the word loan was never mentioned: it was a gift towards the purchase of the barometer, as a gift of the same sum was given by Dr Lee, to pay for the thermometer. It consequently reduces by so much the balance in my favour in the account current which I rendered to you.

Meetings in the period 1836-39 were chaired by various senior members of the Society, normally Dr Birkbeck, but in his absence by Mr Charles Shearman (Treasurer), Dr Æneas M'Intyre (Vice-President), Mr John Reynolds (Foreign Secretary) and Dr John Lee (who succeeded Mr Shearman as Treasurer in March 1839). For lists of Society officers for the years 1838 and 1839, see Figure 11 (p.27). Dr Birkbeck remained President until 12 March 1839, when he stood down on grounds of ill health (but remained a member of Council). He was succeeded by Lord Robert Grosvenor (Walker, 1994b).

For meetings in the period 1836 to 1839, the review article by Symons (1881) is the main source of information. However, reports of proceedings at meetings did in fact appear in several magazines and newspapers of the time. For example, we learn from a report of the meeting held on 9 May 1837 which was published in *The Gardeners' Gazette* on 20 May (Issue No.20, p.314) that Captain John Ross RN (the Arctic explorer) and the Revd John Charles Williams (curate of High Wycombe) had been admitted Members of the Society and that Charles Piazzi Smyth (assistant secretary to the Royal Astronomical Society at the Cape of Good Hope), Professor Denison Olmsted (Yale College, United States), Professor Heinrich Wilhelm Dove (Berlin) and Captain John Grover (Geneva) had been admitted Associate Members. Two Honorary Members had also been admitted on 9 May 1837: Monsieur D'Avezac (Paris) and Thomas Maclear (Astronomer at the Cape of Good Hope).<sup>17</sup>

Symons (op.cit) mentioned that a paper on 'On the winter of 1837 in Wigtownshire' had been read by Captain Ross at the meeting on 9 May and reported that the winter weather, though severe everywhere else, had been exceptionally mild in the far south-west of Scotland. Ross stated that he had had great difficulty in filling his ice-house. The report in *The Gardeners' Gazette* provided more detail. In the words of Ross, writing about the winter: "the ground was never completely covered with snow, and there were only two days that sufficient ice could be found to fill my ice-house". He further commented that, "having just returned from thence, I can testify that vegetation is further advanced than near London". A paper by Tatem was also read at the meeting on 9 May 1837, its subject being, as reported in *The Gardeners' Gazette*, "luminous and auroral arches". The magazine called this "an interesting paper".

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<sup>16</sup> Lee (1783-1866) was a barrister, antiquarian, astronomer, mathematician and philanthropist (see McConnell, 1996).

<sup>17</sup> The report in *The Gardeners' Gazette* gives the name George Maclear, but this is not possible, as George was born in 1836! He was one of Thomas Maclear's sons and became, like his distinguished father, an astronomer.

A report on the Meteorological Society meeting held on 13 June 1837 appeared in *The Gardeners' Gazette* on 17 June (Issue No.24, p.386). This included the statement that "the Society was in an exceedingly prosperous state, having added upwards of thirty new Members and read nearly fifty original papers on meteorology since its revival in November last". Four people had been admitted Associate Members at the June meeting, these being: Sir Robert Wilmot-Horton (Governor of Ceylon), Professor José Sánchez Cerquero (Astronomer, Cadiz), and two who had embarked on an expedition of exploration to northwest Australia in 1837, namely Lieutenants George Grey and Franklin Lushington.<sup>18</sup>

### Figure 11

*Officers of the Meteorological Society of London for 1838 and 1839.*

*Left: Officers for 1838.*

*Right: Officers for 1839.*

<p style="text-align: center;"><b>President.</b></p> <p style="text-align: center;">GEORGE BIRKBECK, M.D., F.G.S., &amp;c.</p> <p style="text-align: center;"><b>Vice-Presidents.</b></p> <p>ÆNEAS MC. INTYRE, L.L.D., F.L.S., &amp;c. RICHARD TAYLOR, Esq., F.R.S., F.R.A.S., &amp;c.</p> <p style="text-align: center;"><b>Treasurer.</b></p> <p style="text-align: center;">CHARLES SHEARMAN, Esq., F.R.A.S., &amp;c.</p> <p style="text-align: center;"><b>Secretaries.</b></p> <p style="text-align: center;">W. H. WHITE, Esq. M.B.S. CHARLES DIXON, Esq. C.E</p> <p style="text-align: center;"><b>Foreign Secretary.</b></p> <p style="text-align: center;">JOHN REYNOLDS, Esq., M.B.S., &amp;c.</p> <p style="text-align: center;"><b>Council.</b></p> <p>CHARLES H. ADAMS, Esq. WILLIAM BATEMAN BYNG, Esq., F.R.A.S., &amp;c. W. R. BIRT, Esq. THE RIGHT HON. LORD ROBERT GROSVENOR, M.P. SIR JOHN F. W. HERSCHELL, K.H., F.R.S., &amp;c. THE RIGHT HON. SIR ROBERT WILMOT HORTON, G.C.H. F.R.S., &amp;c. SAMUEL L. KENT, Esq. F.G.S., &amp;c. JOHN LEE, L.L.D., F.R.S., F.R.A.S. P.N.S., &amp;c. CAPTAIN SIR JOHN ROSS, R.N., C.B., F.R.S., &amp;c. W. HENRY SHERWOOD, Esq. JAMES GEORGE TATEM, Esq. ROBERT CARR WOODS, Esq.</p> <p style="text-align: center;">MR. R. C. WOODS OF No. 47, HATTON GARDEN, LONDON, HAS KINDLY CONSENTED TO COMPARE THE INSTRUMENTS OF ALL OBSERVERS, WITH THE SOCIETY'S STANDARD INSTRUMENTS.</p>	<p style="text-align: center;">PRESIDENT.</p> <p style="text-align: center;">The Right Hon. Lord ROBERT GROSVENOR, M.P.</p> <p style="text-align: center;">VICE PRESIDENTS.</p> <p>Captain Sir JOHN ROSS, R.N., C.B., K.C.S., F.R.A.S., &amp;c. Dr. M<sup>c</sup> INTYRE, F.L.S., M.B.S., &amp;c.</p> <p style="text-align: center;">TREASURER.</p> <p style="text-align: center;">Dr. LEE, F.R.S., Treas. Numismat. Soc.</p> <p style="text-align: center;">SECRETARIES.</p> <p style="text-align: center;">Dr. MITCHELL, F.G.S., &amp;c. W. M. WHITE, Esq. M.B.S.,</p> <p style="text-align: center;">FOREIGN SECRETARY.</p> <p style="text-align: center;">JOHN REYNOLDS, Esq. M.B.S., &amp;c.</p> <p style="text-align: center;">REGISTRAR.</p> <p style="text-align: center;">ROBERT CARR WOODS, Esq.</p> <p style="text-align: center;">OTHER MEMBERS OF THE COUNCIL.</p> <p>CHARLES HENRY ADAMS, Esq. H. W. BAILEY, Esq. M.R.C.S. GEO. BIRKBECK, M.D., F.G.S., &amp;c. WILLIAM BATEMAN BYNG, Esq. F.R.A.S., &amp;c. E. W. BRAYLEY, Esq. F.G.S., F.L.S., &amp;c. JOHN GREEN, Esq. M.B.S. SIR JOHN F. W. HERSCHELL, Bart. K.H., F.R.S., &amp;c. The Right Hon. Sir ROBERT WILMOT HORTON, Bart. F.R.S., &amp;c. SAMUEL LUCK KENT, Esq. F.G.S., &amp;c. JAMES GEORGE TATEM, Esq. RICHARD TAYLOR, Esq. F.R.S., &amp;c.</p>
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## ***The first journal of the Meteorological Society of London***

There have been several references already in this occasional paper to the *Transactions of the Meteorological Society*, published in 1839 by Smith, Elder and Co., price two guineas. This was the first journal of the Society and contained a paper which had been received as long ago as 1823-24, that by Gough (1839) on the vernal winds of Westmorland. There were 28 contributions of one sort or another in the journal (articles, notes, and meteorological summaries), as well as two appendices and a lengthy set of 'Introductory Remarks'.

<sup>18</sup> See Footnote 15.

The remarks were written by Dr Æneas M'Intyre (1839), a Vice-President of the Society, on behalf of Dr Birkbeck, who was indisposed. In the words of M'Intyre:

The introductory remarks would have emanated from the pen of our highly esteemed and talented President, had not a severe affliction of several month's duration deprived both the Society and the public of his valuable scientific labours. This deprivation the Members of the Society feel very acutely; and, with the writer, they take this opportunity of expressing their sympathy, and of tendering this small tributary testimony to his unwearied exertions as a philosopher, and to his noble and generous spirit as a philanthropist. To this indisposition of the President must also be attributed the unavoidable delay which has taken place in the publication of the present volume, as well as the substitution of this hasty essay for the more deliberate production of the President's judgement.

M'Intyre ranged widely in his remarks and at times showed considerable insight into the factors which needed to be taken into account when explaining the phenomena of meteorology. For example, he pointed out that the researches of the meteorologist should not be restricted to the atmosphere alone. As he put it: "The ocean at various depths and in various latitudes and situations, the land at various distances below its surface and at various elevations above the sea, in different regions, and during the several seasons, demand his eager and accurate examination". This would not be queried by meteorologists today, but it was remarkably perceptive for the 1830s.

Another display of M'Intyre's insight (and maybe foresight) came when he stated that the theory of meteorology must ultimately be investigated by mathematics "and definitely expressed, if indeed that theory is placed within the range of human comprehension". The need for a mathematical approach to meteorology would have been a novel idea to many in the 1830s but is taken for granted by most meteorologists today. M'Intyre went on to say that "mathematics is the instrument by which we investigate, the language in which we express, the ultimate laws of the physical creation, as far as a knowledge of those laws is attainable by Man".

M'Intyre defined meteorology as "the term now used for the purpose of designating the science which observes, registers, classifies, and compares the various and varying phenomena of our atmosphere", but he went on to make a statement that could have been interpreted as a nod towards astro-meteorologists, when he said that meteorology "remarked, at the same time, the connexion of these phenomena with the heavenly bodies". In fact, however, he was careful anywhere in his introductory remarks to avoid speculation about any possible influences of planets, saying, for example, when drawing analogies with other sciences that "the superstitious terrors of astrology, and the vain labours of alchemy, had been succeeded, respectively, by the lucid theories of physical astronomy, and by the brilliant discoveries of modern chemistry".

In M'Intyre's view, the pages of the *Transactions* showed that meteorology seemed "to be now entering, with some vigour, on the period of observation and reason". Atmospheric science would "progress in proportion to the increase, zeal, and activity of intelligent observers". Meteorology "broods no baseless theory; it approaches no hypothesis; but it fosters the science which it professes to cultivate, inviting profound enquiries into the phenomena of nature".

A further point made by M'Intyre was that "meteorology, more perhaps than any other science, requires the aid of instruments", and he went on to say that "the rapid intercourse between distant places which now prevails, as well by land as over the waters, conjoined with the increased and increasing intelligence of the conductors of that intercourse, may also be confidently expected to promote the views of this comprehensive science".<sup>19</sup> In this respect, he mentioned that Trinity House presented "another source of highly important intelligence" and he went on to suggest that

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<sup>19</sup> The electric telegraph as a practical system had come into use in the 1830s, i.e. before M'Intyre wrote his introductory remarks. When writing of "rapid intercourse", he may have had in mind the capabilities of the telegraph for meteorological progress.

“many of the consulates, throughout the commercial world, represented as they mostly are now, by persons of education and talent, may probably be appealed to shortly for unquestionable information”.<sup>20</sup>

As M’Intyre mentioned in his introductory remarks, the *Transactions* included notes, articles and sets of observations which supported the opinions he had expressed in his remarks. To him, reliable observations and soundly based deductions were all important in meteorology; and he clearly felt that the pages of the *Transactions* had cast in a good light contemporary endeavours to establish meteorology as a subject based on well-founded scientific reasoning and methodology.

Heretofore in this occasional paper, articles in the *Transactions* by Gough (1839), Grey (1839), Ruskin (1839) and Woods (1839) have already been mentioned. To these, we may add contributions by Tatem (1839), White (1839d, 1839e), and a paper about auroral displays by Gardiner (1839) which was communicated by White. In his paper, Tatem included detailed diagrams which showed variations of barometric pressure, rainfall and temperature at High Wycombe from the beginning of April 1823 to the end of 1836 (Figures 12, 13 and 14, pp.30-31).

Among other notable articles are those by: R J Morrison (1839) on the principles, general bearings and utility of meteorology; J H Maverly (1839) on solar and lunar haloes (Figure 15, p.31); and W C Redfield (1839) on a meteorological journal kept in the City of New York for the year 1837. To these, we may add numerous meteorological summaries, one of them for 1833 at York, Western Australia, submitted by Henry Ommanney, an Associate Member.

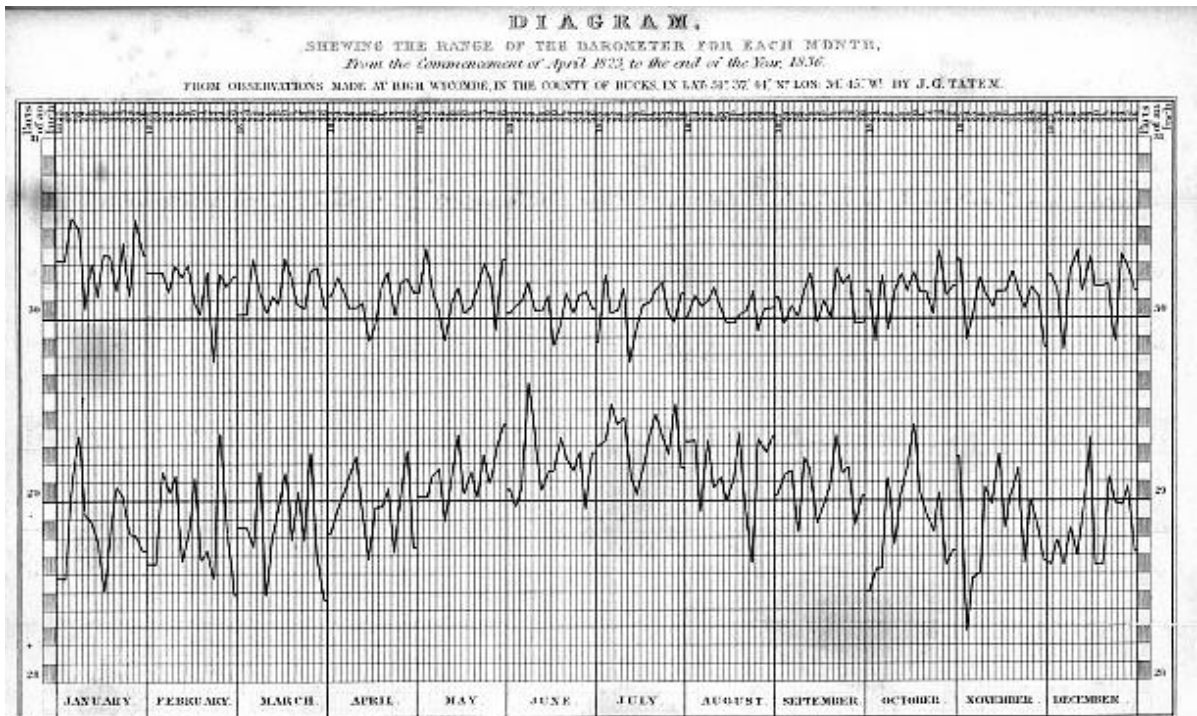
As well as donations to the Society and the list of principal stations of the Meteorological Society, which were mentioned on pages 25 and 26 of this occasional paper, Appendix 1 contains the article by Woods (1839), along with tables of meteorological observations made at Alost (Belgium), Copenhagen, and Dundee. The Appendix also contains the Society’s Laws and Regulations, the list of officers for the year 1838 (Figure 11), and sets of observations made at London for 37 successive hours from 6 am on 21 March 1838 to 6 pm on the 22nd, and for 25 successive hours commencing at 6 am on 21 September 1838 and ending at 6 am on the 22nd.

Appendix 2 was devoted to a “retrospect for 1837 at eight stations in Great Britain with notices explanatory of *Tabulæ Meteorologicæ*”, the eight being London, Bedford, Derby, Thetford, Swansea, High Wycombe, Cheltenham and Gosport, the sources being, respectively: The Royal Society of London; Captain W H Smyth; The Derby Philosophical Institution; H W Bailey; The Royal Institution of South Wales; Samuel Luck Kent; Samuel Moss; and The Gosport Royal Academy (*per* J H Maverly). For each of the eight stations, monthly weather reviews were provided and meteorological data tabulated. For some stations, the data extend back decades. At London, for example, values of maxima, minima, and ranges of temperature and barometric pressure are tabulated for each of the months July to December, beginning in the 1780s; while for Thetford, tabulations of these variables are shown for every month of the year, plus monthly information about wind direction and strength, beginning in 1817 for each month.

All in all, the *Transactions of the Meteorological Society* presented a comprehensive review of the state of meteorology in Great Britain in 1839 and showed the Society to be, in general, a body in good shape with respectable scientific credentials and international aspirations. Nowhere, though, is it explained why this was but Volume 1 of the *Transactions*. There never was a second volume.

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<sup>20</sup> We may wonder at this point what M’Intyre would have made of modern communications and the important rôles they have played in bringing about today’s advanced levels of meteorological knowledge and understanding. He could not possibly have foreseen their invention and development, but he would have surely welcomed them, not least because they supported many of the points made in his remarks.

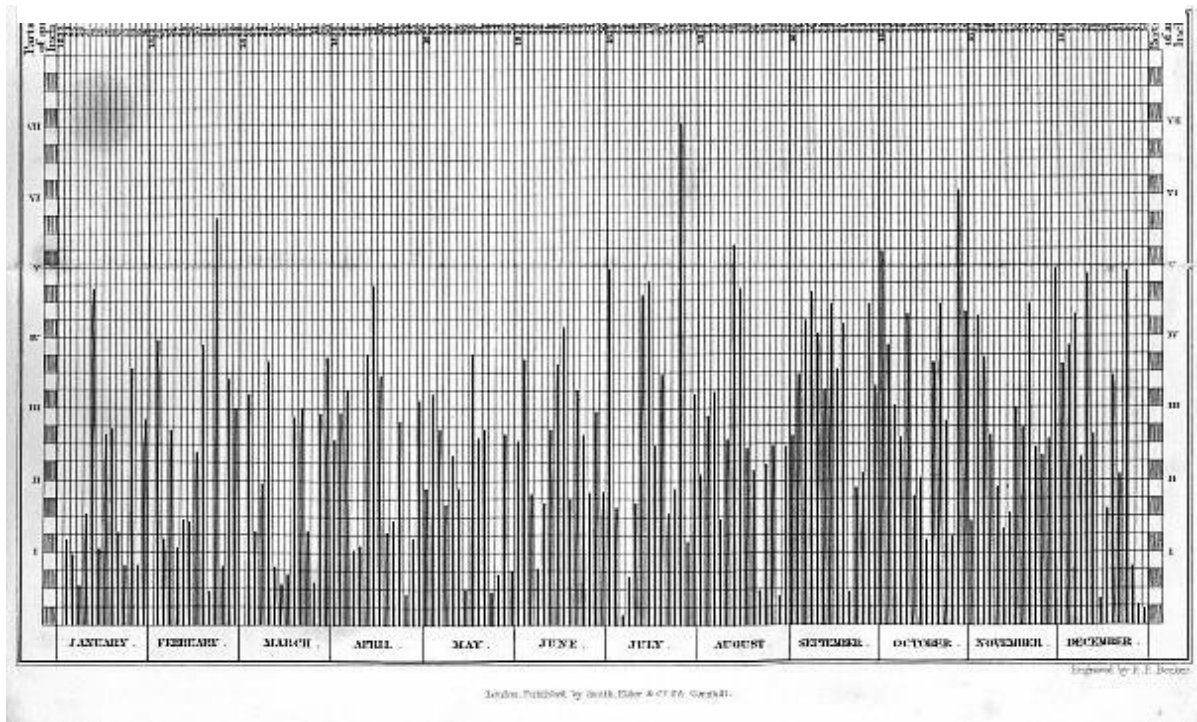


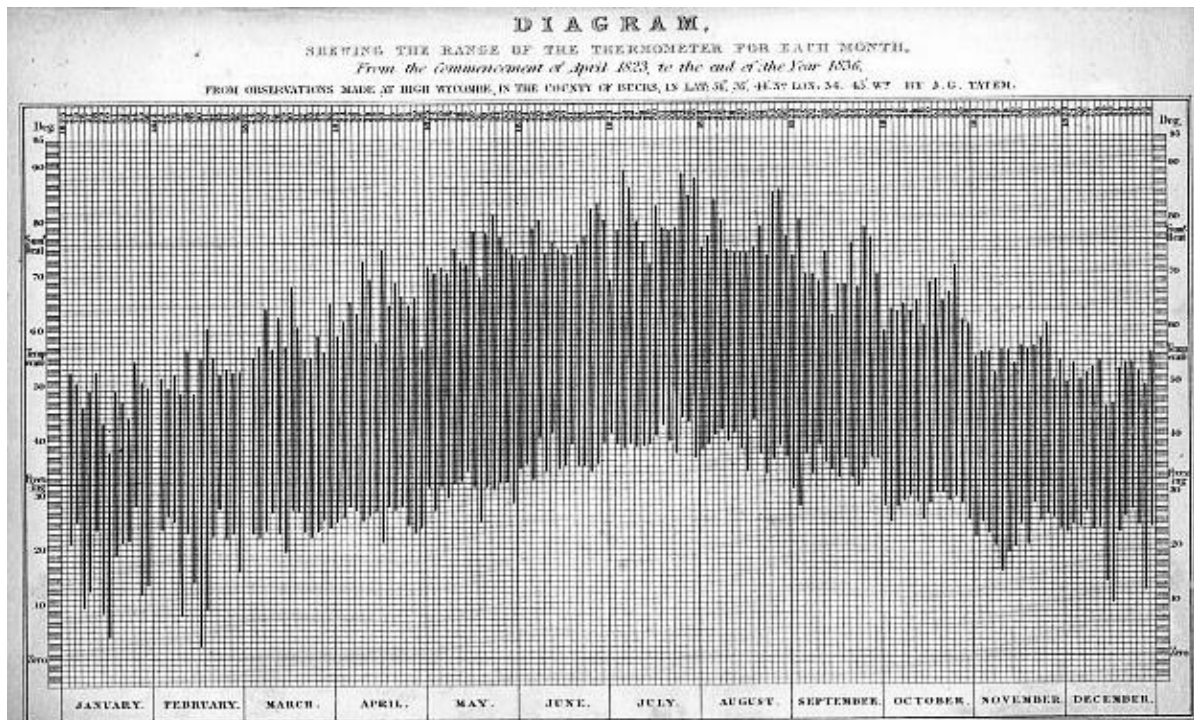
**Figure 12 (above)**

Diagram showing the range of the barometer at High Wycombe for each month from the commencement of April 1823 to the end of the year 1836. From Tatem (1839).

**Figure 13 (below)**

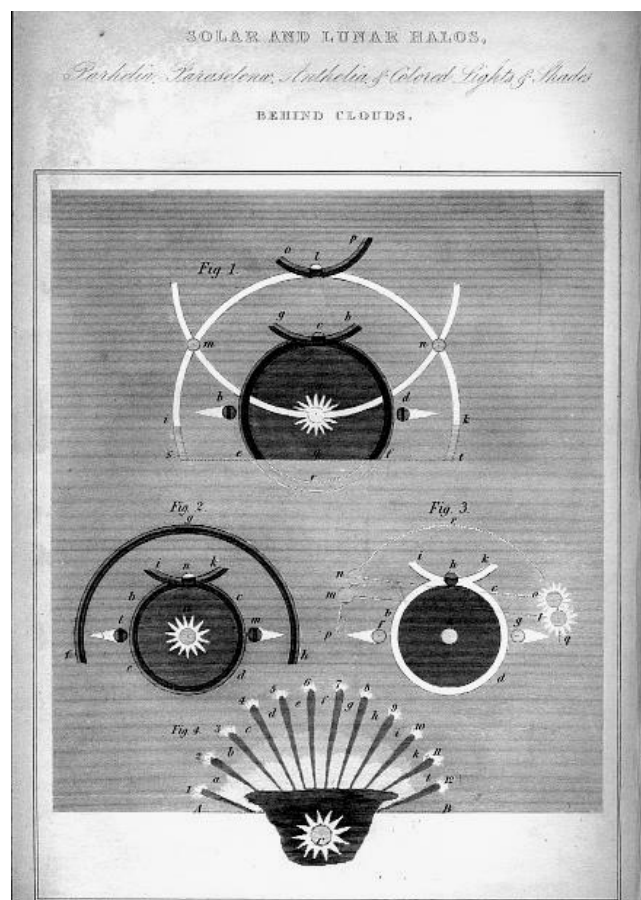
Diagram showing the quantity of rain at High Wycombe for the same period. From Tatem (1839).





**Figure 14 (above)**

Diagram showing the range of the thermometer at High Wycombe for each month from the commencement of April 1823 to the end of the year 1836. From Tatem (1839).



**Figure 15 (right)**

Solar and lunar haloes, with parhelia, paraselenæ, anthelia and coloured lights and shades, behind clouds. From Maverly (1839).

## ***The Uranian Society***

As early as 1837 (see page 23), John Ruskin had noticed that some members of the Meteorological Society appeared to be attracted to astro-meteorology, a pseudo-science concerned with alleged influences of celestial phenomena such as comets and planetary conjunctions on weather and climate. This may have been unduly perceptive on his part, but it was certainly true that two of Britain's foremost astrologers had begun making overtures to the Society, namely Lieutenant Richard James Morrison RN and Patrick Murphy.<sup>21</sup>

In a letter to the Society written from his home in Cheltenham on 17 December 1836, for example, Morrison had written as follows:

Having observed a report in the *Sun* paper of last evening, of an occurrence at a recent meeting of the Meteorological Society [13 December], I allude to a paper being read by P Murphy Esq 'on the anticipated state of the weather during the approaching month of January'. I am induced to take the liberty of addressing you. Without going so far as to ask the Society to examine the whole of the contents of the little work I beg to present herewith, I hope you will excuse my soliciting their attention to my anticipation of the weather all through the year 1837, formed upon principles which I have carefully investigated during many years.

Soon afterwards, Murphy enhanced his reputation greatly by a prediction he made in a book called *The Weather Almanack (on Scientific Principles, showing the State of the Weather for every day of the year 1838)*. He predicted that 20 January would be 'Fair, probably lowest degree of winter temperature'. As we have already seen (page 25), exceptionally low temperatures were indeed recorded that day across England and the near-Continent. In consequence, his book became a best-seller and ran to 45 editions, but he was never able to repeat the success of his forecast for 20 January 1838. Though this did not diminish his fame or reputation immediately, he was eventually ridiculed by the press and public when, more and more, his forecasts proved incorrect.

Neither Morrison nor Murphy was a member of the Meteorological Society in 1837 or 1838, and Murphy never became one. Indeed, a letter from a Mr Whityer to White dated 10 July 1837 warned that any association with Murphy could give the Society a bad name. Morrison appears to have joined the Society in 1839 or early 1840, for he became a Council member in 1840, taking the place of Dr Birkbeck, who was then in poor health.

White was one of a number of the Society's members who began to develop an interest in astro-meteorology from about 1837 onwards, but he did not then do so to the exclusion of conventional meteorology. He could be critical of astrologically-based weather predictions, as we see from an article published in *Loudon's Magazine* (White, 1837), in which he deemed Murphy's predictions for January 1837 "a complete failure and thereby calculated to reflect discredit on meteorologists". Whether or not Murphy's successful prediction for 20 January 1838 changed his mind in any way, we do not know, but, as Symons (1881) has noted, concern grew among Society members over the increasing inclusion of astro-meteorological papers in the Society's programme of meetings.

In his review of the meeting held on 19 June 1838, Symons wrote as follows:

Lieutenant Morrison described a storm in London on May 31, which he had "predicted from the square of the Sun to Jupiter". I may here remark that although the Society did not itself publish any astro-meteorological papers, the Secretary, Mr White, did so, and, as the above shows, Lieutenant Morrison was allowed to bring forward his own views. There is evidence to show that these facts seriously damaged the Society, more than one member resigning on that account.

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<sup>21</sup> Appendix 1 of the *Transactions* contained a set of observations made by R J Morrison at the summer solstice in 1838 at Lat. 53°14'N, Long. 9°00'W, a set which revealed astrological tendencies on his part, as shown by a footnote, which read: "N.B. A new moon 72 degrees from Jupiter. Herschel and Jupiter in opposition, and Mercury in Quartile to both."



The extent of White's attraction to astro-meteorology became apparent in the summer of 1839, when he helped found the Uranian Society. This Society was apparently intended as an offshoot of the Meteorological Society, given that its address was the same as that of the latter (25 Bartlett's Buildings, Holborn) and, furthermore, that an advertisement for the Uranian Society's programme of meetings for the session 1839-40 stated that the new Society's Chairman, W H White, was "Secretary to the Meteorological Society". The Secretary to the Uranian Society was a Mr J M Cavalier, and ordinary members of the Society included both Morrison and another prominent astro-meteorologist, Mr W J Simmonite.

According to an advertisement dated 15 July 1839, the Uranian Society had been "established for the advancement of astronomical science, by means of discussion, aided by a regular and continued series of observations, and extended correspondence". Meetings would be held on the first Tuesday in each month, at 8.00pm, and the following topics had been proposed at a meeting of members on 9 July:

- 6 August  
Is the Sun the cause of heat, cold dryness, etc., and if so, in what manner is his influence exerted upon the Earth's Atmosphere?
- 3 September  
In what way does the Moon possess those influences that have been ascribed to her, viz. of exciting damp vapours – of generating moisture – of putrifying animal and vegetable substances – and of operating, in a sensible manner, upon both the animal and vegetable economy?
- 1 October  
Have the inferior Planets, Mercury and Venus, during any particular aspect with the Sun, Moon or other Planetary Bodies, any sensible effect upon the Atmosphere of the Earth?
- 5 November  
Does the planet Mars, in any portion of his revolution, or during any aspect with any of the other Heavenly Bodies, produce any visible or electrical changes in the Earth's Atmosphere?
- 3 December  
What changes are produced in the Earth's Atmosphere during Jupiter's aspects?
- 7 January 1840  
It is said that Saturn when in aspect with the Sun produces cold and dryness: what proof have we that such are the effects on our Atmosphere?
- 4 February  
Are any visible changes found to take place in Earth's Atmosphere during the aspects of Uranus?
- 3 March  
Have Comets, during their approach to the Earth's orbit, the power of exerting any influence on the Atmosphere of the Earth, or of producing perturbations among the Heavenly Bodies?
- 23 March  
Anniversary Meeting.

A cordial welcome was extended to "astronomers and lovers of science" to attend these discussions, and the advertisement went on to say that those who were "prevented from doing so by distance or any other causes" would "greatly promote the objects of Science by sending their opinions or observations in writing" to the Honorary Secretary.

No names of speakers were shown on the programme, but it is clear that White had led the discussion on 3 March, for he included "Read before the Uranian Society" on the title page of a pamphlet called *Comets, and their supposed influence on the atmosphere of the Earth* (White, 1840). On this page, White's credentials were given as: "Vice-President of the Uranian Society, member of the Botanical Society of London, Secretary to the Meteorological Society, Corresponding Member of the Natural History Society of Liverpool, etc., etc."<sup>22</sup>

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<sup>22</sup> There is a copy of White's pamphlet in the University of Liverpool's Library.

The Anniversary Meeting appears to have been the last meeting of the Uranian Society ever held. No record of any subsequent meeting has yet come to light. Whether or not White had second thoughts about being Secretary of the Meteorological Society and, simultaneously, much involved in an astro-meteorological society, we know not. He did, however, publish a work *On the theories of the weather prophets, and the comparative success of their predictions* (White, 1841), which showed a thoughtful and perceptive approach to the methodology of weather prediction.

As with the Meteorological Society in 1836 and 1837, so it was with the Uranian Society in 1839: White and others endeavoured to recruit members. And as it was with the Meteorological Society in 1836 and 1837, their endeavours met with mixed success. Notable among those who declined was James Glaisher, then of the Cambridge University Observatory and soon (1840) to become Britain's first ever professional meteorologist (when he became Superintendent of the Magnetic and Meteorological Department of the Royal Observatory at Greenwich).<sup>23</sup> In a letter to White dated 30 August 1839, he declined to join either the Uranian Society or the Meteorological Society. He was a scientist with a growing reputation who practised an orthodox approach to both astronomy and meteorology and would not have wished to associate himself with a body that was taking more than a passing interest in a pseudo-science such as astro-meteorology, though he did, in fact, decline membership of the Meteorological Society politely on the grounds that he lived outside London!

### ***The Meteorological Society from 1839 to 1843***

From November 1836 to May 1843, meetings of the Meteorological Society were held regularly. Until 1841, they were held on the second Tuesday in each month from November to June. Thereafter, following a resolution passed at a Special General Meeting on 22 September 1841, they were held on the second Tuesday in each month throughout the year. The Annual General (Anniversary) Meeting continued to be held in March.

As in the first few years of the revived Society, meetings ranged widely in content, with a number of presentations about severe weather. On 11 December 1838, for example, Mr W Gardiner of Dundee reported that a near-hurricane with "fearful gusts" between 6.00 and 8.00 pm on 11 October had left houses unroofed and the streets of his town strewn with chimney-cans, slates and tiles. A woman had been killed by the storm near Huntly in Aberdeenshire, while at Stonehaven, also in Aberdeenshire, the chimney stack of the gas works had blown down. Comparable damage had occurred elsewhere in eastern Scotland that night, notably at Kirriemuir in Forfar, where the spire and four or five feet of the steeple of the Episcopalian chapel had been blown down.

Papers about newly-invented instruments were also presented, as on 13 April 1841, when W H White read a communication from Mr Henry Lawson of Hereford about a thermometer stand he [Lawson] had recently designed (see Figure 16 – next page – and Lawson, 1842, 1843). As Lawson put it in the communication read by White:

It appears to be impossible for the Meteorological Society to draw accurate deductions from the different registers they are constantly receiving, for, on comparing the observations made in one district with those made in another, how can conclusions of any value be drawn, unless the plan of arranging the instruments be strictly similar?"

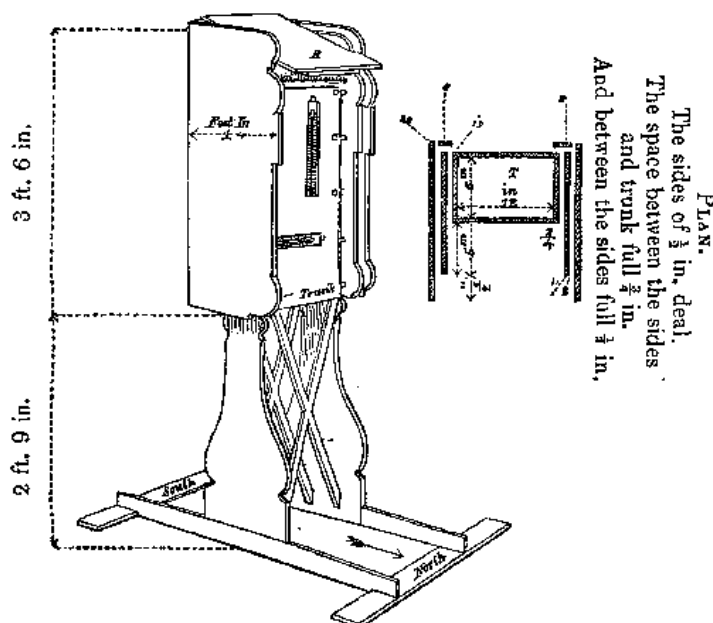
Lawson went on to list the "requisites or excellencies" of his stand, saying that it could be "employed and used by every meteorologist wherever residing", that it was "of a determined height and size", that it could be placed in any open spot which best suited its owner, and that it allowed "the addition of other instruments, such as Daniell's hygrometer, the rain-gauge, &c".

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<sup>23</sup> For a pen portrait of Glaisher, see Pedgley, 1995.

Figure 16

Lawson's thermometer stand. The whole was formed of half-inch white deal. Lawson stipulated that the stand should be painted white, except on the northern side (where the thermometers were hung), which should be blackened.



A communication from Joseph Atkinson of Harraby near Carlisle which was read on 8 November 1842 presented the results of some experiments on the situation, shape and size of rain-gauges (Atkinson 1843a, 1843b). This work was basically instituted to satisfy Atkinson that the height of a rain-gauge rim above the ground affected the amount of rain collected, but he also investigated spherical gauges, as well as "the effect of an inclined funnel which would always present itself towards the wind" and "whether any and what difference the size of the funnel made in the quantity of rain received" (see Figure 17, taken from Atkinson 1843a, p.248).

### SUMMARY.

1840-1.	12-inch funnel horizontal on surface.	12-inch funnel horizontal, 3 ft. above surface.	12-inch funnel horizontal, 6 ft. above surface.	12-inch funnel at an angle with vane, and moveable top, 6 ft. above surface.	Sphere 36 inches in circumference, 6 feet above surface.	Funnel 18 inches in diameter, horizontal, 6 feet above surface.	No. of days strong wind.	No. of days calm wind.
November .	3·089	3·112	2·709	3·158	2·877	2·709	7	23
December..	·439	·429	·369	·393	·405	·291	2	29
January....	3·182	2·594	2·364	2·668	2·580	2·129	8	23
February...	1·569	1·477	1·249	1·681	1·337	1·167	8	20
March.....	2·728	2·571	2·407	3·550	3·042	2·153	10	21
April.....	2·587	2·576	2·429	2·915	2·481	2·324	6	24
May.....	2·406	2·261	2·172	2·435	2·181	2·074	5	26
June.....	3·380	3·405	3·243	3·193	2·882	3·013	1	29
July.....	3·270	3·180	3·166	2·666	2·717	2·902	2	29
August....	6·597	6·456	6·210	5·651	5·394	5·780	8	23
September .	3·941	3·901	3·863	3·405	3·507	3·377	11	19
October....	6·035	5·444	5·360	5·713	5·598	5·117	3	23
Totals ..	39·222	37·406	35·541	37·428	34·981	33·036		

Figure 17

Results of experiments on rain-gauges carried out by Joseph Atkinson at Harraby from November 1840 to October 1841, inclusive. Atkinson concluded from his experiments that 12 inches was "the proper diameter for the funnel of a rain-gauge".

As the years went by, more and more astro-meteorological papers were read. On 12 October 1841, for example, W H White read a paper which described the results of electrical apparatus which Mr W H Weekes of Sandwich in Kent had extended over his home town. These results had shown many remarkable coincidences of electric action in the atmosphere in relation to the peculiar positions of the planets during each day in the month of September last. In White's opinion (see *The Quarterly Journal of Meteorology and Physical Science*, No.1, January 1842, p.41), "the grand electrical displays exhibited by the apparatus" were not only "the result of planetary influence but also associated with the synchronous oscillation of magnetic needles" at Toronto, Dublin, Brussels, Prague, Milan, St Helena and Van Dieman's Land on 29 May and 29 August 1840.

By early 1843, there were 64 Members, 59 Associates and ten Honorary Members, the ten being Sir John Herschel (London), Luke Howard (Pontefract), Andrew Crosse (Taunton), John Dalton (Manchester), Dominique-François Arago (Paris), Jean-Baptiste Biot (Paris), Marie-Armand-Pascal D'Avezac-Macaya (Paris), Lambert-Adolphe-Jacques Quetelet (Brussels), Jean Christian Oersted (Copenhagen) and Heinrich Christian Schumacher (Altona). Of the Associates, a number were distinguished scientists, among them Heinrich Wilhelm Dove (Berlin), Robert Hare (Philadelphia), William C Redfield (New York), Elias Loomis (Ohio), Charles Piazzi Smyth (Cape of Good Hope) and a former Council Member, and Vice-President, Sir John Ross (since 1839 Her Majesty's Consul in Stockholm). Sir John Herschel was also a former Council Member (1838-41), though it appears that he, like Ross, never attended a Council meeting.

### ***The Quarterly Journal of Meteorology and Physical Science***

It was resolved at the Special General Meeting of the Meteorological Society on 22 September 1841 that the Society should begin to publish a new journal on 1 January 1842; and many of the papers which were read at meetings from 1839 onwards were published in the new periodical, which was called *The Quarterly Journal of Meteorology and Physical Science*. The first issue was edited by J W G Gutch and W H White and printed in London by E Lumley of Chancery Lane (price three shillings each).<sup>24</sup> All of the other seven issues were edited by Gutch alone. Reports of meetings appeared in the new journal (in the Society's *Proceedings* for Sessions 1838-40, 1840-41 and 1841-42); and a review of all meetings during the period 1836 to 1843 can be found in *The history of English meteorological societies, 1823 to 1880*, by Symons (1881).

There were numerous contributions from White in the eight issues of the *Quarterly Journal* which were ever published (January 1842 to October 1843, inclusive), but the only items from Tatem were brief comments on the weather at High Wycombe (see, for example, page 103 of the April 1842 issue of the *Journal* and page 428 of the October 1843 issue). Tatem remained, however, an active member of the Society in the early 1840s, as shown by a number of letters from him to White, Gutch and occasionally others.

In a letter to Gutch dated 12 April 1841, he said that he had heard from both him and White that a quarterly journal was contemplated. He was very much in favour of such a venture and thought his fellow members of the Council needed to be stimulated to action, as there appeared to have been little progress so far. He was, he said, "in entire ignorance" of what went on at meetings, as he lived some distance from London and had been obliged to rely for some years on the *Gardeners' Gazette* for information about proceedings at the meetings he had been unable to attend.

A letter Tatem wrote to White on 5 February 1842 was at first sight a little surprising, for it concerned what he called "the great conjunction of the planets Jupiter and Saturn, which had occurred on 26 January, an event which had not happened since 19 June 1821 and must have excited the attention of every one who felt an interest in the science of meteorology". The letter

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<sup>24</sup> Gutch succeeded Dr John Lee as the Society's Treasurer in 1841. Gutch (1809-1862) was a surgeon, pioneer photographer, amateur naturalist and geologist

suggests that Tatem had strayed into astro-meteorology, which he had hitherto showed no signs of doing.

However, he had not strayed. He was particularly interested in any changes in temperature and barometric pressure which had occurred before or after the conjunction and considered that “a collection of observations made at different places would tend much to prove the correctness of the principles on which the predictions were published, and the opinions entertained by many persons, have been founded”. Observations made at his home (at High Wycombe), showed that “the barometer fell during the gale which followed the conjunction, six tenths of an inch, but rose rapidly afterwards, that the temperature increased during that time, but declined as the barometer rose”. He had no explanation.

The spread of topics covered by the new journal was much the same as in the *Transactions of the Meteorological Society*, except that papers with an astro-meteorological bias tended to increase in number as the years went by. See, for example, the paper on solar, stellar and cometary light which Morrison (1843) presented at a meeting of the Society on 9 May 1843. To Symons (1881), this paper may have helped bring about an unfortunate consequence. In his words: “It was followed by a thoroughly astro-meteorological one, by Mr W H White, and whether this killed the Society or not, I cannot say, but, curiously enough, this is the last meeting of which I have any record”.

A summary of White’s paper was published on page 386 of the July 1843 issue of *The Quarterly Journal* (No.7), in the report on the meeting held on 9 May 1843. It read as follows:

The Secretary [White] read a short paper, entitled ‘Remarks on the peculiarity of the weather, during the first week in May 1843’, being intended as a practical supplement to the paper just read [Morrison, 1843]. This paper showed the highly electrical condition of the air during the first three days of the month, when Mars was stationary, he reflecting only the red or positive ray. But when Saturn approached his stationary position on the 6th, he reflecting only the blue or negative ray, the electrical condition of the air became completely changed, and the blue ray from this planet disengaged the positive electricity in the air, by producing cold currents of air, which coming in contact with the currents already heated by Mars, dissolved the clouds, which fell in rain and snow, and producing a fall of temperature, a series of phenomena rarely witnessed at this season of the year. These phenomena were completed by a splendid display of the *aurora borealis* after sunset on the 6th.

With papers like this, one can understand why members of the Society who preferred orthodox scientific approaches to meteorology were growing disenchanted and becoming inclined to desert the Society.

Like the *Transactions*, the *Quarterly Journal* included summaries and discussions of the weather observed at places in the British Isles and abroad, as well as remarks on occurrences of fogs, frosts, lightning and other weather variables, notes on severe or otherwise unusual weather, articles on zodiacal light, haloes and other optical phenomena, reports of auroral displays, expository papers on meteorology as a science, and descriptions of climates in various places around the world. In addition, however, and unlike the *Transactions*, it contained papers which not only promoted astro-meteorological views but also articles and letters which were critical of astro-meteorologists.

For example, a letter which was signed by “The author of the *Meteorological Ephemeris*” and published in the October 1842 issue of the *Quarterly Journal* (No.4, pp.219-220) argued that any branch of meteorology which related to the influence of the planets could never attain satisfactory results “or become anything else than the objects of the derision and scorn of a rational public”. The author went on to say that solar action was “the most powerful agent upon our atmosphere” and lunar action “the next in potency of its operations”. Thus, the letter recognized the importance of solar radiation but also drew attention to the idea of lunar influences on the weather, a topic that would bring astro-meteorologists into disagreements with Admiral FitzRoy in the early 1860s, as we see later in this occasional paper.

An article by W J Simmonite in the April 1843 issue (No.6, pp.281-284) was unequivocally astro-meteorological, as would have been expected from one so committed to astrology. So, too, were papers on comets by P M McFarlane in the July 1843 issue (No.7, pp.356-360), and by W H White, R J Morrison and Professor Schumacher in the October 1843 issue (respectively No.8, pp.394-402, 409-415 and 415-419).

It is not easy to decide which of the many papers published in the *Quarterly Journal* should be considered 'notable'. Choosing them is subjective. However, some papers do indeed stand out, none more so than an extraordinarily comprehensive catalogue of meteorological phenomena in the British Isles and farther afield from 220 to 1836 AD, compiled by Gutch (1842a).<sup>25</sup>

In the paper, Gutch listed the phenomena as follows and provided many examples of each:

- Some of the most remarkable frosts (from 220 to 1830)
- Rain (from 553 to 1829)
- Snow (from 1719 to 1836)
- Storms – memorable (from 234 to 1836)
- Whirlwinds (from 1803 to 1829)
- Lightning (from 1120 to 1822)
- Meteoric phenomena (from 333 to 1837)
- Miscellaneous, including appearances of comets, a total eclipse of the sun, a display of the *Aurora Borealis*, and a "surprising meteor" (from 1625 to 1761)

It is a pity that Gutch did not say more about his sources of information.

Another paper by Gutch which merits a mention was that 'On the importance of meteorological enquiries derivable from observations drawn from plants, animals, and inanimate bodies' (Gutch, 1842b). Read before the Society on 8 February 1842, Symons (1881) called this "a very good paper", which is "partly analogous to Claridge's *Shepherd of Banbury's Rules for judging the Weather* [published in 1764], and almost trenches on the territory of our phenological staff".

On pages 12 and 13 of his paper, Gutch (1842b) quoted from a work by Captain Basil Hall (1841) in which Hall had recommended the barometer as an instrument that was invaluable to seafarers in port and on the high seas for purposes of weather forecasting. In so doing, Hall was, in fact, echoing the views of Robert FitzRoy, who had used the barometer skilfully on his voyages of 1828 to 1830 and 1831 to 1836 when captain of HMS *Beagle* and had only recently published his *Narrative of the surveying voyages of His Majesty's Ships Adventure and Beagle between the years 1826 and 1836*, in which he explained how he interpreted changes in barometric pressure (FitzRoy, 1839).

One passage in particular from page 264 of Hall's book was quoted by Symons (op.cit.) "as an early claim for sea-coast barometers, if not for storm signals":

For more than twenty-four hours before the great gales of November 1840, my barometer at Portsmouth foretold so unequivocally the approach of a furious storm that I have good reason for believing, if this fact had been publicly announced, many boats and, perhaps, many ships and their crews would have been saved from the destruction into which they ran themselves from sheer ignorance of the impending bad weather, of which there were no other indications.

After he published the paper he read on 8 February 1842, Gutch extended his work on weather lore and contributed to the next issue of the *Quarterly Journal* (Gutch, 1842c) what he called "a suitable addenda to my former paper, making it thereby more complete, and proportionably more valuable".<sup>26</sup>

<sup>25</sup> CE (Common Era), rather than AD (Anno Domini), is being used increasingly in publications today. The dates in Gutch's paper were all shown as AD.

<sup>26</sup> Both papers by Gutch (1842b, 1842c) contained a wealth of weather sayings, proverbs and rules, and both were, indeed, listed in the bibliography of the classic work on weather lore, that by Richard Inwards, which was first published in 1893 and ran to three editions (see Inwards, 1950).

Another paper which is worthy of mention is that which provides a catalogue of winters of extraordinary severity in Scotland and other parts of Europe from 763 to 1824 AD (Forbes, 1843). As noted by Symons (1881), however, it contains two misprints. Forbes stated that his main source had been a bulky German work by Pilgrino, published at Vienna in 1783. Pilgrino should be Pilgram, and 1783 should be 1788. Symons said that he possessed a copy of the original, but not the translation, and, indeed doubted whether any translation had been published.<sup>27</sup>

Among the occurrences mentioned by Forbes were:

- Both the Black Sea and the Dardanelles Strait frozen over in 763, and snow drifts fifty feet deep.
- The Danube, Elbe and Seine and other great rivers of Europe “frozen so hard as to bear heavy waggons for a month in 822”.
- The Katagat frozen between Norway and Jutland in 1269.
- Failure of the crops in Scotland in 1339, “and such a famine ensued that the poorer sort of people were reduced to feed on grass, and many of them perished miserably in the fields.
- One of the coldest winters ever recorded, that of 1408, when “not only the Danube was frozen over but also the sea between Gotland and Öland and between Norway and Denmark, so that wolves, driven from their forests, came over the ice into Jutland”.
- Charles X of Sweden crossed the ice from Holland to Denmark in 1658 “with his whole army, horse and foot, followed by the train of baggage and artillery”.
- Even the oaks in England were split by the frost in 1684, and “coaches drove along the Thames, which was covered with ice eleven inches thick”.

Yet another paper which is worthy of mention was that which provides an illustrated account of a pressure-plate anemometer and recording rain-gauge that had been invented by Mr Follett Osler in the 1830s (Anon, 1843). This account contains a description of the first recording anemometer that was durable enough and cheap enough for continuous use at meteorological stations; and the paper also includes assessments of the performance of the anemometer in severe storms which crossed the British Isles in 1837, 1838 and 1839, in particular “the calamitous storm” which crossed Lancashire and Yorkshire on 6 and 7 January 1839. For a diagram which shows the essential features of Osler’s anemometer and for a facsimile of markings made by the anemometer and pluviometer, see Figure 18 (next page, taken from Anon, 1843).

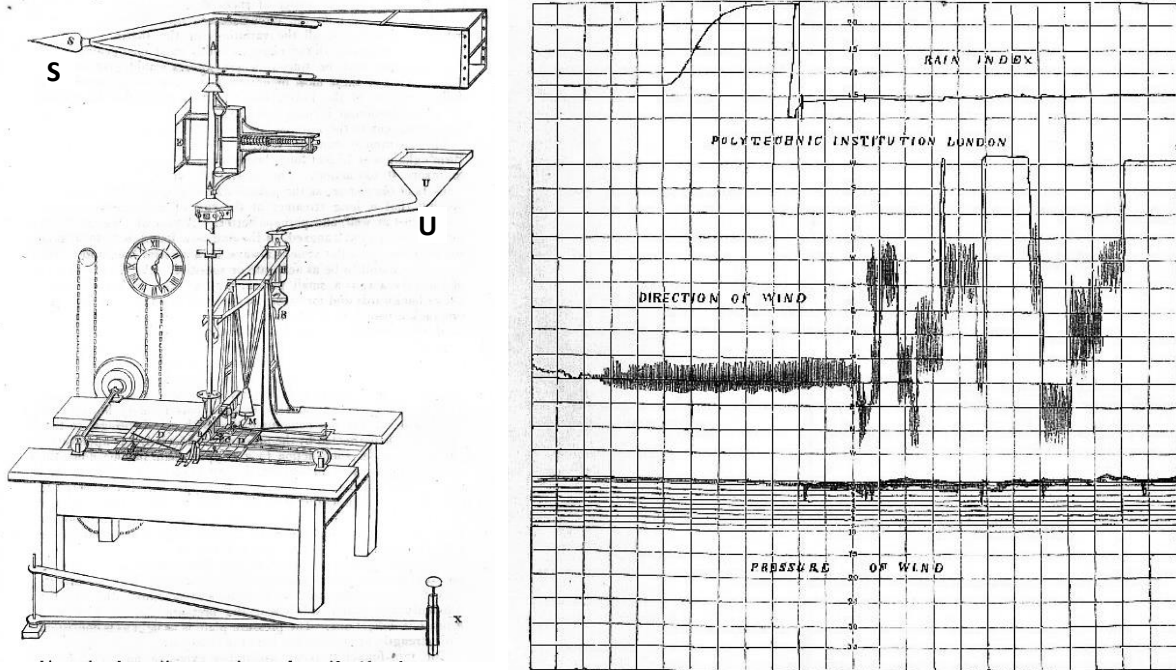
Reports of other societies appeared from time to time in the *Quarterly Journal*, for example one for the year 1841 from the Literary and Philosophical Society of St Andrews, which was published in the January 1842 issue of the *Quarterly Journal* (No.1, pp.42-47). This included accounts of auroral displays in eastern Canada and south-eastern Scotland, as well as observations of the motions of cirrostratus and cirrocumulus clouds over Berwickshire from January to July 1841, inclusive, as compared with the corresponding seven months of 1840. In addition, Sir David Brewster laid before the Literary and Philosophical Society in 1841 the results of a series of hourly observations made at Trivandrum Observatory (India) by his astronomer, Mr John Caldecott, during the year 1839.<sup>28</sup>

*continued on next page*

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<sup>27</sup> According to Symons (1881), Pilgram’s was a wonderful book, containing, for instance, a list of aurorae from 394 to 1784 AD, and much other interesting matter. Its full title is Pilgram, A., 1788. *Untersuchungen über das Wahrscheinliche der Wetterkunde durch vieljährige Beobachtungen* (Wien: Edlen von Kurzbeck, Vol.2, 607 pp.).

<sup>28</sup> Brewster (1781-1868) was a physicist, mathematician, astronomer and inventor who made fundamental contributions to optics. From 1838 to 1859, he was Principal of the United Colleges of St Salvator and St Leonard of the University of St. Andrews. He became Principal of the University of Edinburgh in 1859.



**Figure 18**

*Osler's anemometer and pluviometer*

*Left: The instrument. The wind-vane is labelled S and the rain-funnel U.*

*Right: Facsimile of markings made by the anemometer and pluviometer at the London Polytechnic Institution on 13 January 1843.*

The *Quarterly Journal* carried obituaries, too, the most prominent of the people in question being the former President of the Meteorological Society and, at the time of his death, Vice-President, Dr George Birkbeck, who died, aged 65, on 1 December 1841 and whose obituary appeared on page 56 of the January 1842 issue of the journal. The obituary called him “a man unassuming in his deportment and mild in his disposition, an indulgent parent, an affectionate husband, a warm friend and safe counsellor”, thereafter saying that he was liberal as a politician “and never permitted party motives to influence the exercise of his beneficence”. As a well-known patron of the Arts and Sciences, and to many Institutions, he was “a most liberal subscriber”.

Tributes to Birkbeck were paid at the Society meeting on 14 December 1841 and the following resolution was adopted unanimously:

That the members of this Society feel called upon to record their sense of the extreme loss the Meteorological Society, in common with the whole scientific world, have suffered in the much lamented decease of its Vice-President, Dr Birkbeck, to whom, indeed, more than to any other individual, this Society is indebted for its original institution.

There were many advertisements inside the front and back covers and on the back covers of the *Quarterly Journal*, these featuring books and magazines on a wide range of subjects. There were also, in some issues of the *Journal*, critical notices of new publications.

### ***The name of the Society***

The Society of 1836-43 called itself by various names. Sometimes, its name was *The Meteorological Society of London*, as in the published review of the session 1840-41, entitled *Proceedings of the Meteorological Society of London*. In the *Laws and Regulations*, though, and on the title page and on page vii of the *Transactions* (in the “Introductory Remarks” of Æneas M'Intyre, Vice-President), its name was, simply, “The Meteorological Society”. This was the name used, too, in the loyal addresses



sent to Queen Victoria and Prince Albert in April 1840 to congratulate them on their marriage. All eight issues of the *Quarterly Journal* were “published under the immediate sanction and direction of the Meteorological Society of Great Britain” (to quote the title pages), and the *Annual Report of the Council* read at the Anniversary Meeting on 8 March 1842 also referred to the “Meteorological Society of Great Britain”. It appears likely that the latter name was adopted towards the end of 1841, though nothing to this effect was recorded in the Society's publications or in the Council Minutes. The preferred designation remained *Meteorological Society of Great Britain* until at least October 1843, when the *Quarterly Journal* was last published.

### ***The Society's home***

The Society led a somewhat nomadic life. From 1836 to 1839, meetings were normally held at the Mechanics' Institute, Southampton Buildings (near Chancery Lane). In May 1839, despite financial difficulties, the Society rented rooms at 25 Bartlett's Buildings, Holborn, a property owned by a Council Member, Mr J W Green. The following year, “in consequence of Mr Green's leaving Bartlett's Buildings” (Council Minutes, 14 April 1840), the Society was forced to move, this time taking rooms of the Botanical Society at 20 Bedford Street, Covent Garden. In 1841, the Meteorological Society's Finance Committee “resolved that the necessary notice be forthwith given to the Botanical Society declining the further occupation of the Rooms at present held by this Society” (Finance Committee Minutes, 16 March 1841). Acting upon this resolution, the Society duly gave notice that they would “give up the possession of the Rooms at midsummer next” (Finance Committee Minutes, 26 March 1841). There must have been a change of plan, though, given that the Society continued to occupy the rooms until June 1842, when rooms were taken at 17 Old Bond Street.

### ***Financial problems***

At the Annual Meeting on 8 March 1842, Lord Grosvenor reported that the financial state of the Society wore “a much more satisfactory and healthy aspect than it did on the last Anniversary Meeting” (Grosvenor, 1842). Only one year later, however, the Society was “struggling with difficulty to maintain its ground” (Gutch, 1843). In a statement signed by the President and Treasurer and sent to Members in February 1843 (copy in the National Meteorological Archive at Exeter), the problems were explained thus:

In the year 1839, the Council was induced to publish an elaborate volume of *Transactions*, at a great expense. This proceeding speedily produced a result from which the Society now suffers, viz., a debt of £150, which has ever since operated as a clog upon its movements, and paralysed all its exertions. £90 have, however, been paid, leaving a deficit of £60 upon the debt incurred, to which must be added other liabilities to the extent of £90, making a total of £150, and which the Council are most anxious should as early as possible be discharged. When this can be accomplished, the Society will be unfettered and enabled to pursue its course uninterruptedly; the present number of subscribing Members being amply sufficient to discharge all current expenses, and contribute towards the publication of the many valuable documents in their possession.

The printers of the *Transactions* pressed the Council increasingly for payment, starting with a letter dated 1 September 1842 from Mr H W Martin. It was brief and read as follows: “Gentlemen, I beg the favour of your naming a day for the settlement of my account, which is now overdue”. He wrote to the Council again on 10 October 1842, this time with a threat:

Gentlemen, No notice having been taken of my former application for the payment of my account, I now beg to inform you that unless it be paid before the end of this month, I shall be obliged to place the account in the hands of my attorney for collection.

Yet again, Mr Martin had to write to the Council, on this occasion a much longer letter, dated 27 October 1842, in response to a letter from Gutch:

Gentlemen, I beg to acknowledge the receipt of a letter from you through your Treasurer, Mr Gutch, and should consent to wait your convenience, but for the unnecessary comparison drawn between Messrs. Smith Elder & Co's conduct and my own. For what reason I am expected to follow the system of business pursued by parties in a different trade, I cannot understand, especially as your Treasurer adds that their amount is "largest" and that mine is "not very considerable". Besides, I presume you have not ceased to deal with the before mentioned firm, whereas in my case, the business, with which you formerly honoured me, has been, I must say unhandsomely, removed from me, without in justice assigning any instance in which I had given dissatisfaction, or in fact without offering any reason whatever; and yet I am expected to inconvenience myself by giving extended credit to the Society. I am sure I need only mention this latter circumstance to show that I stand in a different relation to you from that of your other creditors. Awaiting a very early reply.

This was still not the end of the matter, as we see from a letter from Mr Martin to the Council dated 13 March 1843:

Gentlemen, I beg to call your attention to the subject of my account. Your Treasurer gave me to understand that if I waited till March I should then be paid. I must now therefore press you for payment, which if longer delayed will be attended with serious consequences.

At this point, Council of the Society paid what they owed, but this left the Society with debts amounting to £121-13s-6d. To help relieve the Society from its difficulties, particularly to ensure continued publication of the *Quarterly Journal*, every Member was asked to donate one guinea. "Should this not succeed", Members were informed, "an appeal should be made to the Scientific world for such assistance as it may think the objects of the Society merit", and "should the anticipations and wishes of the Council be unfortunately disappointed, it will become their painful duty to declare to their constituents, that from want of funds the Society must suspend its meetings at the close of the session, 1843, until the friends of Meteorological Science can be reassembled under more fortunate auspices".

Alas, the response from Members was disappointing (see Figure 19, page opposite). Furthermore, the President and Council of The Royal Society were unable to accede to the Meteorological Society's request for assistance in the form of permission "to reduce and publish in the *Quarterly Journal* all or any such Tables and Meteorological communications as are not designed for publication in the Royal Society transactions".<sup>29</sup> The last meeting was held on 9 May 1843, with Mr George Leach, Vice-President, in the Chair. The Society was not, however, dissolved, and the story does not end here.

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<sup>29</sup> The Royal Meteorological Society possesses a copy of the letter sent by Mr Gutch to the President and Council of The Royal Society. It is dated 14 March 1843. The response can be found on page 413 of the *Royal Society Minutes of Council 1832-46*, Volume 1, in the minutes of the Council meeting held on 4 May 1843.

Name	Residence	1837-8	1838-9	1839-40	1840-1	1841-2	1842-3	1843-4	1844-5	1845-6
White W.H.	Isleworth near Haul	1-1	1-1	1-1	1-1	1-1	1-1			
Williamson J.	High Wycombe Bucks	1-1	1-1	1-1	1-1	1-1	Resigned			
Webster H.W.	Isleworth	"	"	"	1-1	Resigned				
Walton J.	Isleworth	"	"	1-1	Resigned					
James R.L.	23 Hatton Garden	"	1-1	1-1	Resigned					
Fryde W.	Rd. Woodwick	"	"	"	"	1-1				
Weston W.	Leamington	"	"	"	"	1-1	1-1	1-1	Resigned	
Wright J.	Isleworth	"	"	"	"	"				
Wells W.		"	"	"	"	"	1-1	2-2		
Wardell W.	Chester	"	"	"	"	"	"	2-2	1-1	1-1

Figure 19

Meteorological Society subscriptions and donations 1837-8 to 1845-6, showing resignations, some resulting from the Society's drift towards astro-meteorology (see page 37).

## Chapter 4

### ANOTHER METEOROLOGICAL SOCIETY OF LONDON

Another Meteorological Society of London was formed in 1848, its founders all prominent members of the previous Society, namely Lieutenant R J Morrison RN, Mr P L Simmonds, Mr W H White and Mr L P Casella.<sup>30</sup> Their "preliminary meeting" (as it was called in the Council Minutes of the new Society) was held on 2 June 1848 at Casella's home (23 Hatton Garden), with Morrison in the Chair. These Minutes contain nothing to suggest that Morrison and the others were reawakening a dormant society.<sup>31</sup> No reference was made to any previous society, and the Minute Book expressly states that the Meteorological Society of London was *formed*, not re-formed, on 2 June 1848 (Figure 20).

According to its Constitution, which was drawn up at the meeting on 2 June, the new Society would be governed by a President, three Vice-Presidents, and a Council of up to seven, with all officers elected annually by members of the Society by means of sealed balloting lists. In addition to Ordinary Meetings, held on the first Thursday in each month, there would

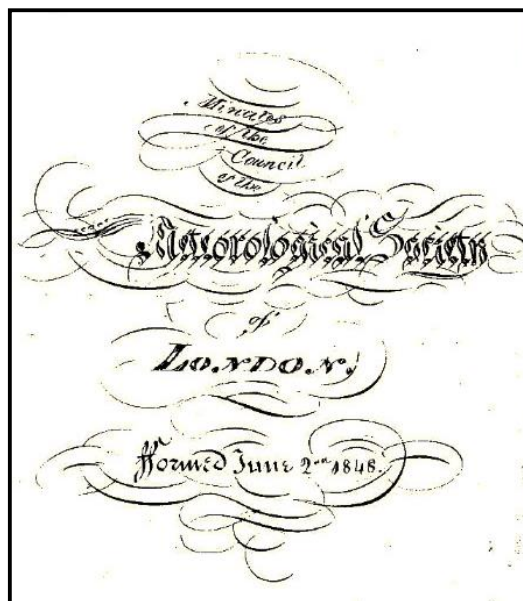


Figure 20

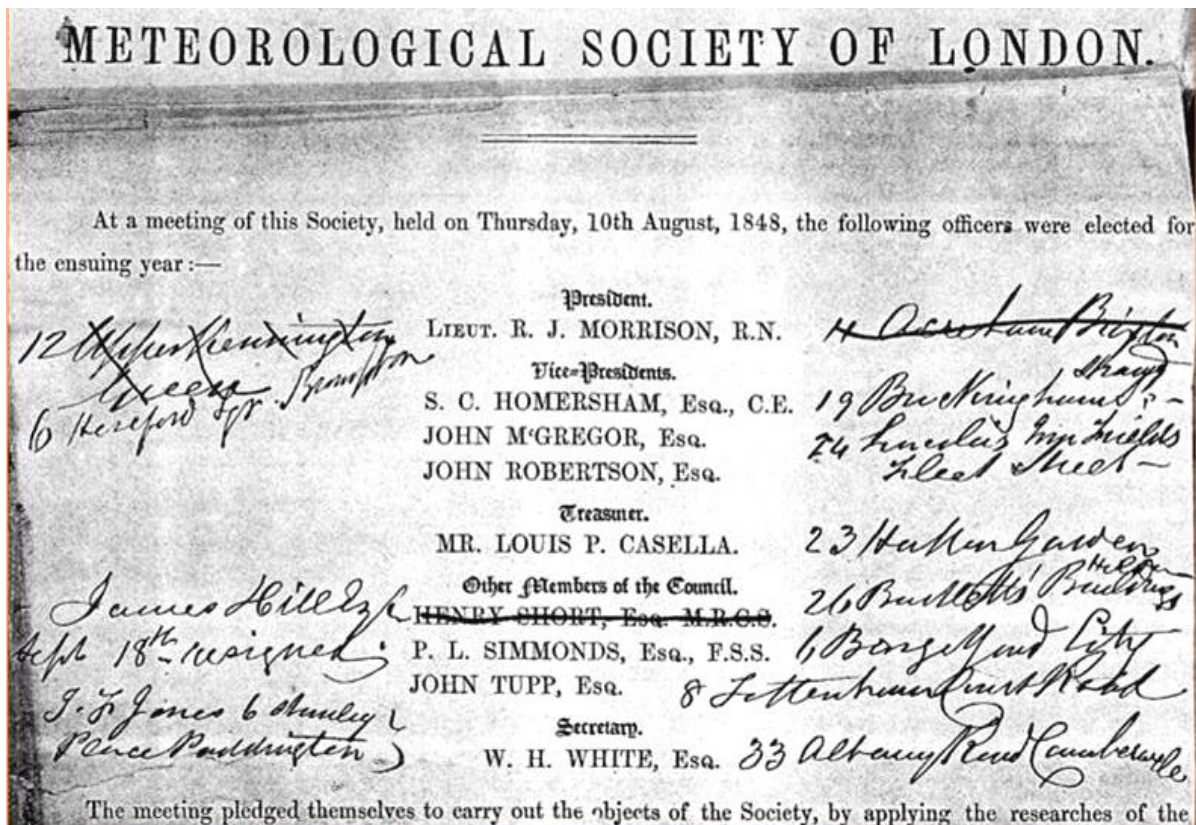
Cover of the Minute Book of the Council of the Meteorological Society of London which was formed on 2 June 1848.

<sup>30</sup> Casella (1812-97) was the only person who ever belonged to the Meteorological Society of London which was revived in 1836, the Meteorological Society of London which was formed in 1848 and the British Meteorological Society. He was a maker of scientific instruments, particularly high-quality meteorological instruments.

<sup>31</sup> The Minute Book belongs to the Royal Meteorological Society and is cared for by the National Meteorological Archive at Exeter.

be an Annual Meeting, held as soon as possible after 1 August each year, and Special Meetings could also be held as and when necessary. The annual subscription would be one Sovereign.

At the second meeting of the Society, held on 10 August 1848, it was confirmed that Morrison would serve as President, Casella Treasurer and White Secretary; and three Vice-Presidents were elected, namely Mr S C Homersham, Mr John McGregor, and Mr John Robertson. Simmonds was appointed a member of Council, along with Mr Henry Short and Mr John Tupp. Short resigned on 18 September and was replaced by Mr James Hill (Figure 21).



**Figure 21**

*Officers of the Meteorological Society of London elected on 10 August 1848, with their addresses.*

As it was put in the Constitution, the objects of the new Society were “to spread a knowledge of Meteorology, and to obtain information as to the causes which operate in producing changes and modifications in the condition of the atmosphere”. These are, of course, laudable objects. However, White “entertained astro-meteorological views” (to quote Symons, 1900) and Morrison was the foremost astrologer of his day (his pseudonym Zadkiel Tao-Sze).<sup>32</sup> Thus, we may expect to find that the new Society was inclined towards astro-meteorology, bearing in mind the suggestion of Symons (1881, 1900) that the astro-meteorological tendencies of White, Morrison and others were largely responsible for the failure of the previous Society in 1843. There is, though, nothing in the Council Minutes of that Society or in the reports of Society meetings published in the *Quarterly Journal* to support the suggestion of Symons. The most significant factor in bringing about the failure in 1843 was undoubtedly lack of funds.

<sup>32</sup> In Jewish rabbinical lore, Zadkiel was the archangel associated with the planet Jupiter. In Roman mythology, Jupiter was predominantly a sky god and, as such, the originator of all atmospheric changes. Zadkiel was also the pseudonym of William Lilly, a 17th century astrologer, whose *Introduction to Astrology* Morrison republished as *The Grammar of Astrology*. He was very much a disciple of Lilly.

In fact, the Society that was formed in 1848 was, if anything, preoccupied with meteorological observations and tabulations of them. The minutes of its Council meetings do not reveal any astro-meteorological tendencies. Indeed, it was recorded in the minutes of the Ordinary Meeting held on 10 August 1848 that:

The meeting pledged itself to carry out the objects of the Society, by applying all available observations they may obtain, from any part of Great Britain, to forward the Agricultural, Commercial, and Sanitary interests of the country. To effect this desirable end, the Members declared an intention of publishing such observations as may be transmitted to the Society, with suitable comments thereon; but, as the whole range of atmospheric phenomena embraces a wide field, it was –

Resolved – That as the fall of rain in a given time in Great Britain, under all its circumstances, is but imperfectly known, whilst a correct knowledge of it is highly important to Agriculturalists in the operations of the farm, to Commercial men in establishing freights, to Civil Engineers in designing works for the supply of towns with water and in draining lands and other operations, and for sanitary arrangements, it shall be the more the immediate present object of this Society to obtain authentic accounts of the fall of rain all over these kingdoms. And that a rigid investigation of this important phenomenon shall be pursued, and the results deduced made known from time to time; and that, therefore, the Society cordially invites all persons who may take notes of the fall of rain in any locality in Great Britain to co-operate with it in the investigation of this important piece of meteorological research.

This was a commendable ambition of the new Society, but, unfortunately, nothing ever came of it.

Morrison was re-elected President at the Anniversary Meeting held on 18 September 1849 and chaired the Council meetings held on 9 October and 13 November. Thereafter, there is neither mention of him in the Council Minutes nor explanation for his absence. From December 1849 to September 1850, when the Society was dissolved, a vice-president, Mr Samuel Homersham, chaired all but one of the meetings. For the president of a society to disappear so abruptly without explanation or tributes must be considered unusual. It is conceivable that the Officers and Council made Morrison unwelcome, but there is no evidence to support this suggestion, which must, therefore, be taken as pure speculation. Whatever the truth of the matter, the days of the Society which was formed in 1848 were numbered.

### ***The British Meteorological Society***

A momentous meeting took place on 3 April 1850 at Hartwell House, near Aylesbury, Buckinghamshire. Ten gentlemen with an interest in the “the advancement of the aërostatical branch of physics” (Symons 1881) met to form a Society, “the objects of which”, to quote the minutes of the meeting, “should be the advancement and extension of Meteorological Science by determining the Laws of Climate and of Meteorological Phenomena in general”. The society was called the British Meteorological Society and still exists today, as the Royal Meteorological Society.

The Meteorological Society of London which had been founded in 1848 first acknowledged the existence of the new society at its Council meeting on 10 July 1850, when, in the words of the minutes, there was a discussion “on the propriety of dissolving the Society, and recommending the Members to join the British Meteorological Society”. A Vice-President, Mr John MacGregor, agreed to meet Mr James Glaisher, Secretary of the British Meteorological Society, to discuss the recommendation and “to hear his riposte”. At the Council meeting on 14 August, chaired by Mr MacGregor, it was resolved that a letter be sent to each Member. It read as follows:

At the last Special Meeting of the Council it was Resolved to have the Opinion of each Member on the following proposition. It appears that a new Society has lately been formed under the name of ‘The British Meteorological Society’, and that their objects are the same as our own, and from the influence and number of its Members, there appears every prospect of their carrying







After that, White wrote two letters to Glaisher, both dated 10 September 1850. As the minutes of the British Meteorological Society's Council record (meeting held on 17 September), one was merely a covering letter with a copy of the circular that had been sent to each member, together with a list of the members and their addresses. The other formally notified Glaisher that the [1848] Meteorological Society of London had been dissolved.

This is still not the end of the story, for at the meeting of the British Meteorological Society's Council held on 10 December 1850 a letter from Mr J W G Gutch was read, "relative to the Books and Papers now in his hands, belonging to the London Meteorological Society" [which had been formed in 1823 and revived in 1836]. He offered "to deliver them up to the British Meteorological Society upon receiving authority from Lord Robert Grosvenor as President of the former Society to do so".<sup>33</sup> At the meeting of the British Meteorological Society's Council held on 22 April 1851, it was reported that Gutch had obtained the authority of Lord Grosvenor and advised that the books and papers in his possession were contained in two large cases. Soon after that meeting, the books and papers were sent to Dr Lee (Treasurer of the British Meteorological Society), and Gutch was paid the sum of £2-10s-0 for postage and carriage.

**The Meteorological Societies of London were no more.**

## **Chapter 5**

### **ASTRO-METEOROLOGY IN THE 1860s**

For a number of years in the 1850s and early 1860s, W H White contributed a weekly column on meteorology to a reputable periodical called the *Mark Lane Express*, which was devoted principally to agriculture and related interests. In the 1850s, though, he was influenced increasingly by Britain's foremost astrologer, Richard James Morrison, alias 'Zadkiel Tao-Sze', who had since 1831 compiled and published *Zadkiel's Almanac*, which contained, in the words of its blurb, "weather predictions all through the year, with rules for foretelling atmospheric changes, and the theory on which they are founded" (Walker, 1994a; Perkins, 1996; Anderson, 2005). The content of White's contributions to the *Mark Lane Express* became more and more astro-meteorological, however, and he openly used its pages to promote astrologically-based views on the causes of atmospheric behaviour. And in the issue of the *Mark Lane Express* for 12 March 1860, he first put forward the idea of an astro-meteorological or astro-physical society (Britton 1938).

#### ***The Astro-Meteorological Society***

In the autumn of 1860, White helped found the Astro-Meteorological Society, along with Morrison. The inaugural meeting was held on 29 November and meetings took place regularly until January 1862, when the Society was dissolved. Throughout its brief existence, White served as the Society's Secretary. The annual subscription was one guinea, with an entrance fee of five shillings.

The topics discussed at meetings of the Astro-Meteorological Society make strange reading to us today, and undoubtedly did to those of the time who were endeavouring to advance meteorology by conventional scientific approaches. Most of the papers submitted by astro-meteorologists were rejected by scientifically reputable journals.

For information about meetings of the Astro-Meteorological Society, the article by Britton (1938) is the main source. In turn, his principal sources were issues of the *Mark Lane Express*.

<sup>33</sup> Mr Gutch was never a member of the Society formed in 1848. This is not surprising, given a remark he passed in a letter to Glaisher, read at the meeting of the British Meteorological Society's Council held on 14 January 1851. In the letter, Gutch "wishes the Society every success and recommends the keeping out of the Society all charlatans, and Zadkiels"!

After the inaugural meeting, the Astro-Meteorological Society next met on 13 December 1860, when two tracts were presented to the Society, one called *Planetary Tables*, the other *Weather Prognostications*. Both were presented by their author, an astronomer at Eastbourne (whose name was not given). The next business was, as it was put in the issue of the *Mark Lane Express* for 24 December 1860, for White to read thirty letters which asked for “the prospectus of the Society and the objects of its researches”, after which the President, Morrison, “exhibited a beautiful diagram showing the mean temperature of the first three months of the year 1858 from the tables of the Royal Astronomical Society, kept at the Royal Observatory, Greenwich”.

At the meeting on 3 January 1861 (reported in the *Mark Lane Express* on the 7th), three papers were read:

- one by M E Lenz of St Petersburg ‘On the production of cold by the voltaic current’;
- another by White ‘On astral predictions and their importance to agriculturalists, mariners, etc., during the summer of 1860 with numerous extracts from letters showing their fulfilment’;
- the third on ‘The rainfall of England’, which was to be be “published *in extenso* in No.1 of the ‘Record of facts’, which would be published [by the Society] on 1 February 1861, to which contributions were invited”.

This Record of Facts was duly published on 1 February, as the first issue of a journal called the *Record of the Astro-Meteorological Society* (Figure 23, page 50). In all, only five issues of the journal were ever published.<sup>34</sup>

Meetings of the Society were held frequently during 1861, with one in particular, on 28 February, worthy of mention. In the issue of the *Mark Lane Express* for 4 March, it was reported that White had felt the need to clarify the meaning of ‘astro’:

Some correspondents feel great alarm for the safety of the Society as the word ‘astro’ they think is part of the word ‘astrology’. I assure them this science [astro-meteorology] is as far from its connexion with astrology as ‘biology’, ‘conchology’, ‘phrenology’ or any other ‘ology’ in the universe. It means simply meteorology founded on the power of the planetary bodies called ‘stars’, or in fact ‘astronomy’: hence the ‘astro’ is only an abbreviation of ‘astronomy’.

Etymologically, White had a point, but he was surely being pedantic, and possibly a little defensive, for it had long been accepted that astro-meteorology was related to, or at least based on, astrology. According to the Oxford English Dictionary, ‘astro-’ means ‘relating to the stars or celestial bodies’ and is derived from the Greek ‘astron’, meaning ‘star’.

At the Anniversary Meeting, which was held on Friday 29 November 1861, the annual report was read, showing that the Society had enrolled fifty members during the first year. The *Mark Lane Express* for 2 December reported that “many interesting papers had been read during the year and a great number of meteorological facts collected”. Furthermore, “the financial account was highly satisfactory, every disbursement having been met, leaving a small balance in the hands of the Treasurer”.

Given this positive report, it comes as something of a surprise that there was never again any mention of the Astro-Meteorological Society in the *Mark Lane Express*, and, indeed, the Society collapsed in January 1862. White continued, however, to edit the meteorological column of the *Mark Lane Express* for some time afterwards, but, as Britton (1938) put it: “he was obliged to descend from the stars and report the meetings of the *real* Meteorological Society, even though he mentioned their labours with derision”!

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<sup>34</sup> Copies are held in the National Meteorological Archive at Exeter.

## ***The Copernican Meteorological Society***

In March 1862, Morrison and White attempted to launch another astro-meteorological society by founding the 'Copernican Meteorological Society'. There was little enthusiasm, though, and the Society died out almost immediately (Britton, 1935, 1938). The Copernican Meteorological Society published, in April 1862, one issue of *The Journal of Astronomic Meteorology, and record of the science and phenomena of the weather* (No.1, 16pp.), its contents all contributed by White, who served as Editor of the Journal and Secretary of the Society (Figure 24, page 51). This was the one and only issue of a publication by the Copernican Meteorological Society that ever appeared.

## ***Disagreements with Admiral FitzRoy***

In the early 1860s, Admiral Robert FitzRoy, Meteorological Statist to the Board of Trade, was drawn into disagreements with astro-meteorologists.<sup>35</sup> He had begun to issue storm warnings for shipping and weather forecasts for the general public, using analysis of weather charts and rejecting lunar and planetary influences. Astro-meteorologists were scornful of him and others who did not accept that the moon and the planets could influence weather significantly.<sup>36</sup>

FitzRoy constructed synoptic charts that were based on observations which flowed into his Department from coastal and inland stations by means of the electric telegraph. These charts enabled him to study weather patterns and thereby show that changes in the weather at any given station could be foretold (or, as he preferred to call it, 'forecast') by intelligent interpretation of atmospheric conditions occurring at places upstream.

On 6 February 1861, he issued the first of his storm warnings for shipping, or, as he called them, 'cautionary signals'. Then, on 1 August 1861, he began to publish weather forecasts for the general public on a routine daily basis, again using synoptic charts, his technique being to interpret changes in barometric pressure intelligently in conjunction with observations of wind, temperature, visibility and other indicators. He also employed his own model of extratropical weather systems. Unfortunately for FitzRoy, prominent scientists, particularly Francis Galton, disapproved of his methodology, considering it unscientific. He was therefore criticized not only by the meteorological 'establishment' but also by astro-meteorologists.

FitzRoy had a tendency to overreact and engage in public controversy, which did not help his cause or that of his Department. In *The Times* of 2 March 1861, for example, he wrote dismissively of "persons who profess to know intuitively more than real philosophers", particularly those who "have 'prognosticated' or, as some say, 'prophesied' changes, or storms, at definite times, upon some vague ideas of 'lunar' influence, or (so-called) 'astro-meteorology'". "Perhaps", he added, "the alchemists and astrologers of old were wiser, in their generation, than these prophets". "Astro-meteorology is a sham and calculated to mislead the public". This resulted in a challenge from the Astro-Meteorological Society. An advertisement was sent to *The Times* "challenging the gallant admiral to mortal meteorological combat". *The Times* refused the advertisement, but the *Daily Telegraph* published it on 8 March 1861. FitzRoy was invited to disprove the ability of astro-meteorologists to predict the weather, but he wisely did not accept the challenge!

***continued on page 52***

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<sup>35</sup> FitzRoy was effectively the first head of what is known today as the Met Office, though the name 'Meteorological Office' was not adopted until 1867.

<sup>36</sup> For details of FitzRoy's storm warnings for shipping and weather forecasts for the public and his disagreements with astro-meteorologists, see Chapter 2 of Walker (2012).

# RECORD

OF THE

## ASTRO-METEOROLOGICAL SOCIETY.

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No. 1.]

FEBRUARY 1, 1861.

[Price 6d.

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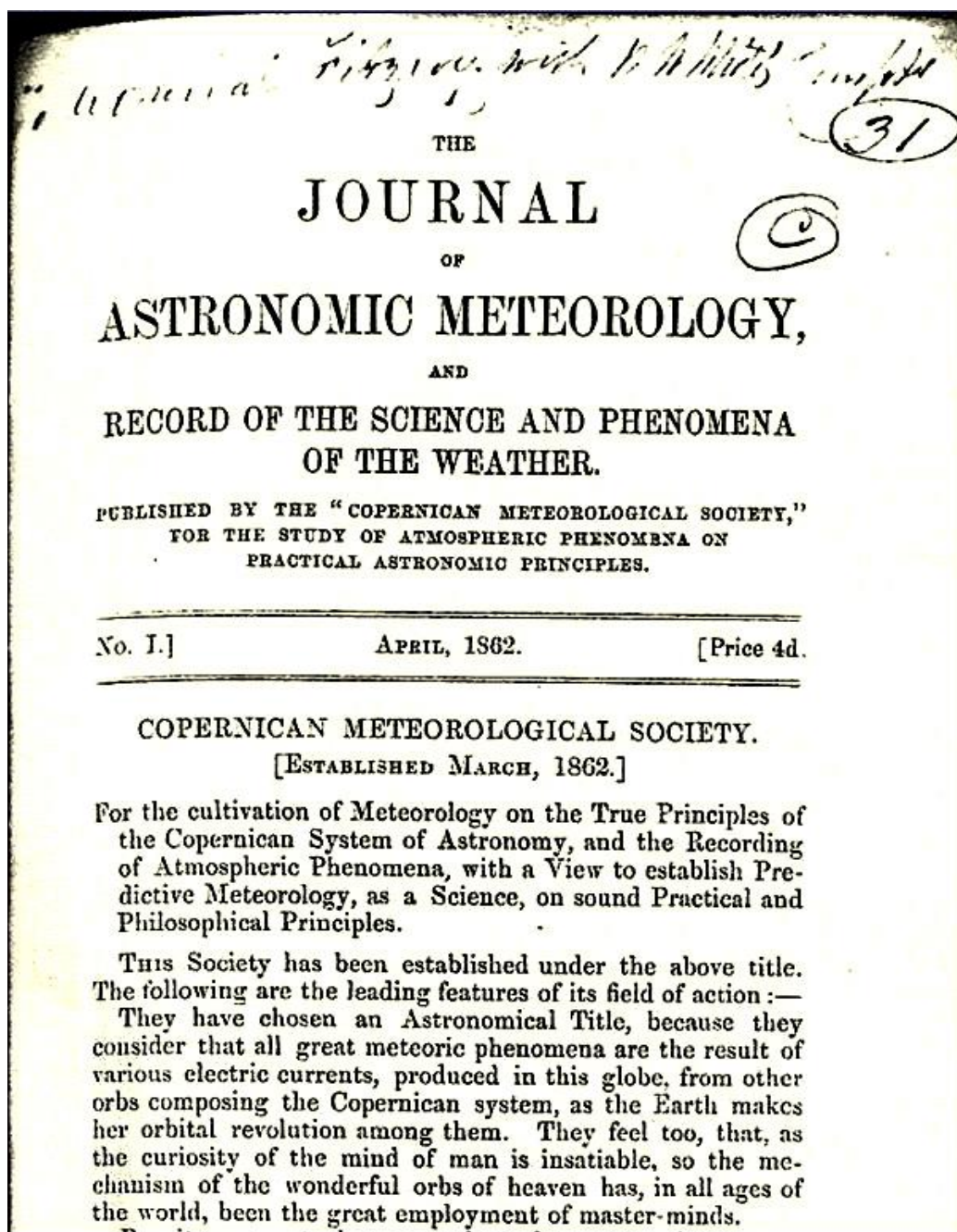
### ADDRESS TO THE PUBLIC.

THE founders of the Astro-Meteorological Society have only one object in view; which is, the furtherance of such knowledge of the causes of changes in the condition of the atmosphere as will lead to a foreknowledge of the periods of storms, or excess of heat or cold, drought or rain. They feel confident that these effects are the results of causes at present perfectly *unknown* to the scientific men of Europe and America. While they willingly acknowledge the talents and industry of the scientific world, they submit that, whether arising from prejudice or accident, the fact, unhappily for the interests of society, exists, that those talents and that industry have been hitherto misdirected, in the search for a solution of the great problem of the causes of changes in the weather.

It is only after more than a quarter of a century's close observation of those changes, by several gentlemen, having no interest in anything but the truth being known upon this subject, that those observers have come to a decided conviction that there exists in nature a *principle*, which—though little known to society, and not known at all to the *savans*, whose eyes have been strangely blinded to its perception—really and truly leads to a foreknowledge of the state of the atmosphere.

**Figure 23**

Page 1 of the first of five issues of the Record of the Astro-Meteorological Society, that for February 1861. This issue contained sixteen pages.



**Figure 24**

Part of page 1 of the only issue of a publication by the Copernican Meteorological Society which ever appeared, viz. The Journal of Astronomic Meteorology, and record of the science and phenomena of the weather.

It can just be made out at the top of the page that this copy of the journal had been presented to Admiral FitzRoy with the compliments of W H White.



*continued from page 49*

Further criticism came from a number of people with entrepreneurial ambitions. Led by James Glaisher, a promoter of *The Daily Weather Map Company*, these were people who sought financial gain from the supply of weather information and considered the supply of free material by the Meteorological Department an obstacle to their ambitions. So far as Glaisher was concerned, there may have been, additionally, a lingering niggle over the decision in 1854 to place the Department within the Board of Trade, rather than the Royal Observatory at Greenwich, where a meteorological department had existed since 1840. Criticism came, too, from ship-owners, who were concerned less with the safety of their crews than with the loss of revenue caused by captains keeping their vessels in port when storm warnings were in force.

To set against the criticism, there was support for FitzRoy from some quarters. A survey carried out by the Meteorological Department showed that most seafarers approved of storm warnings, and some expressed astonishment that anyone should question their value. The forecasts were popular also with the general public, as articles and letters in contemporary newspapers and magazines indicate. The Royal Society expressed support, too, though somewhat qualified, and the French showed their approval of FitzRoy's techniques by introducing, in 1863, a storm-warning system that was essentially the same as that operated by the British.

FitzRoy's principal reaction to the criticisms was to work harder than ever, not only during office hours but also when off duty. In fact, he wrote *The Weather Book: a Manual of Practical Meteorology* (FitzRoy, 1863) as "a holiday task, hastily performed", according to a letter he sent to the Secretary of the Royal Society on 5 March 1863. He apologised for submitting "so ill-digested and obscurely-written a work". "In a week or two", he said, "I hope to lay before you a second edition of this book, which has been carefully revised and, I hope, rendered somewhat less obscure".

He returned many times in the book to the effect of the moon and sun on the atmosphere, devoting a whole chapter to the subject. The following is an extract from the book (page 4):

It is remarkable that 'Astro-meteorologists' and 'Lunarists' have not observed that their supposed causes of weather must, if existent, affect entire zones of our atmosphere, in diurnal rotation, instead of one locality *alone*; and that such results are not proved by the facts observed.

That the moon, as well as, and probably much more than, the sun, causes a tidal effect in the air, due to gravitation, cannot be doubted; but as the *solar* heating and electrical causes are very much greater, and act powerfully on elastic, expansible, and mobile air, all the effects caused by gravitation towards sun or moon have been found, by repeated observation, to be so greatly overborne or masked by recurring daily causes, immediately referable to solar heating, or electrical action, as to be almost undistinguishable even at places supposed to be most eligible for observation.

When persons who attribute changes of weather to the moon are asked, "What periods of a lunation of four weeks are critical?" the reply is usually, "the quarters – new and full moon especially – within two or three days of either". But any day in a lunation *must* be within two or three days of a quarter, one way or the other; therefore no satisfactory information can thus be gained, and we remain baffled.

Coincidences are much noticed, generally speaking; and but few persons treat them as merely casual.

FitzRoy sought the opinion of Sir John Herschel at Christmas 1862 on the ideas he proposed to include in the chapter which was particularly concerned with lunar and solar effects. Impatiently, though, he did not wait for the reply to arrive before publishing the book, and when it did come, in March 1863, he found that Sir John had rejected all of his ideas. Herschel was much interested in meteorology and in January 1864 had published a substantial article entitled 'The weather, and weather prophets' (published in *Good Words*), in which he wrote dismissively of "lunar prognostics" and explained how weather resulted from physical processes involving solar radiation, evaporation



and condensation of water, and density differences between warm and cold air.<sup>37</sup> This was not, however, intended as an attack on FitzRoy. On the contrary, his references to the work of FitzRoy were approving.

Astro-meteorologist Stephen Martin Saxby took issue with both FitzRoy and Herschel, devoting a whole chapter of his book (*Saxby's Weather System or lunar influence on weather*, published in 1864) to a discussion of FitzRoy's luni-solar theory, entitling it 'The world's disbelief in the moon's influence on weather as shown by the *'Weather Book' – 'luni-solar' theory*'. In the following chapter, he further criticised FitzRoy's ideas and disputed the views which Herschel had expressed in his article on the weather and weather prophets.

FitzRoy was able to respond philosophically to the views of Herschel, but the views of Saxby and other astro-meteorologists provoked him, to the extent that he included in the sixth report of his Department, published in 1864, a 'Postscript' which contained his comments on "a small volume, just published", almost certainly Saxby's book. FitzRoy was now the one who poured scorn. "There is nothing new, or even modern, in the assertion of lunar influence on weather", he wrote; "some have denied, while others have advocated it, time out of mind". "What is *now* wanted", he said, "is the *modus operandi*; how dynamic effects, which we observe, are caused?".

By the end of 1864, FitzRoy's health was deteriorating by the day and, to add to his woes, he was losing his hearing. He was absent from the office more and more. By early 1865, his attendance had dwindled to almost nothing. The attacks on his forecasts, his personal financial difficulties, and worries over his standing in scientific circles had taken their toll. It was nothing new for him to become a little dispirited, and he had indeed suffered from depression whilst on the *Beagle*, but deep despondency now descended on him all too often. He went to his dressing room just before 8 am on 30 April 1865 and cut his throat. By mid-morning, he was dead.

Thus the story of FitzRoy's disagreements with astro-meteorologists came to an end; and the involvement of W H White in astro-meteorology came to end soon afterwards, too, with his death on 24 July 1868, but not before he had published (White, 1865) a substantial work of ninety pages on weather theories in which he reviewed possible lunar, planetary and other celestial influences on the atmosphere (notably comets). This was his last significant contribution to astro-meteorology.

<sup>37</sup> In *A Manual of Scientific Enquiry; prepared for the use of Her Majesty's Navy: and adapted for travellers in general* (London: John Murray, 1849, 488pp.), there is a substantial section on meteorology, written by Herschel. In this, he pressed for the introduction of uniform ways of making observations at sea and for the recording of such observations in standardized registers.

## APPENDIX 1

### James George Tatem

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Tatem was born on 21 May 1774, at Ratcliffe, a hamlet in the parish of Stepney, Middlesex.<sup>38</sup> His surname was not then, however, Tatem. It was Upham. His father, James Upham, was a Gentleman who had married Sarah, née Baxter, in St Dunstan's Church, Stepney, on 2 July 1771. Sarah's mother, Margaret Baxter, was a daughter of John Huxley of Wyer Hall, Edmonton, Middlesex.<sup>39</sup> The first child of James and Sarah was a daughter, Sarah Margaret, who was baptised on 6 August 1772. James George was their second child, and another son, George Baxter, was baptised on 8 May 1777.

No information about the education or other early life of James George has yet come to light. The first reference to him dates from 1803, when, in the issue of the *Gentleman's Magazine* published on 15 June (73, Part 1, p.572), in a report about the business conducted at a meeting of the Society of Arts, Manufacture, and Commerce held on 1 June 1803, his name was listed as one of the "Noblemen and Gentlemen elected Members since October last".

Not many weeks later, on 4 August 1803, James George Upham was admitted to the South East Division of the Honourable Artillery Company, his status then 'Gentleman' and his address 103 White Horse Street, Ratcliffe.<sup>40</sup> He became a Sergeant on 9 February 1804, and his subsequent military record shows that he held this rank in the Third Company on 22 November 1804, 12 December 1804, 23 December 1805, 18 December 1806 and 29 October 1807. He was listed as a Lieutenant in the Third Company on 23 December 1807, a Sergeant again on 21 December 1808 and a Lieutenant once more on 21 December 1809, 20 December 1810, 19 December 1811 and 23 September 1812. His last known subscription was paid in 1820.

Meanwhile, the surname of James George had changed from Upham to Tatem, this being a condition of him receiving an inheritance. As it was put in *The London Gazette* on 3 October 1807 (Issue number 16073, p.1317):

The King has also been pleased to grant unto James George Upham, of the Hamlet of Ratcliffe, in the Parish of Stebenheath, otherwise Stepney, in the County of Middlesex, Esquire, His Royal Licence and Authority, that he and his Issue may take and use the Surname, and bear the Arms, of Tatem only, with proper Distinctions, in compliance with an Injunction contained in the last Will and Testament, and out of grateful and affectionate Regard to the Memory of his maternal Kinsman George Tatem, of the Parish of St George, Bloomsbury, in the said County of Middlesex, Esquire; heretofore His Majesty's Consul at Messina, in the Island of Sicily; one of the Directors of the Honourable the East India Company; and also one of the Deputy Lieutenants for the City of London, deceased; such Arms being first duly exemplified according to the Law of Arms, and recorded in the Herald's Office.<sup>41</sup> And also to order, that this His Majesty's Concession and Declaration be registered in His College of Arms.

George Tatem was a cousin of Margaret Baxter and left her the sum of £10 for mourning. He also bequeathed his personal estates, stocks, funds and securities to James George Upham, son of James Upham, on the "express condition" that he "take the name and bear the arms of Tatem and not otherwise". If he refused, the inheritance would go to George Baxter Upham, the younger son of James Upham. He did not refuse.

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<sup>38</sup> Tatem was baptised at Stepney on 22 June 1774.

<sup>39</sup> The significance of mentioning Margaret Baxter and Wyer Hall will be seen below.

<sup>40</sup> This and other information about the military record of James George Upham was provided in an email to Malcolm Walker from Justine Taylor, Archivist of the Honourable Artillery Company, on 25 August 2009.

<sup>41</sup> George Tatem died at Edmonton on 25 June 1807 in his 86th year.

James George Tatem received four-fifths of the estate of Wyer Hall in 1814 and appears to have lived in the hall or on the estate until 1816, when he moved to Harpenden.<sup>42</sup> By then, three of his offspring had been born: Eliza on 2 August 1808, Ellen Emma on 2 December 1813 and James George junior on 21 September 1815. Another daughter, Mary, was born on 2 May 1818, and the three youngest offspring were baptised at Harpenden on 1 July 1818.

Intriguingly and confusingly, James George Tatem married Ester Ager on 17 May 1821 in the Parish Church of St Mary, Lambeth, and his two younger daughters were re-baptised the following day, in the Old Church, St Pancras, London. On the marriage certificate, the parish of the bride is shown as “Saint George Bloomsbury in the County of Middlesex” and it is stated that she was a “Spinster”. Tatem’s marital status was given as “Bachelor”, and he was stated to be “of this Parish” [Lambeth], which is curious, in that he had moved to Harpenden by 1821. We may also wonder why the baptisms took place at St Pancras, not Lambeth, only one day after the marriage. Whether or not Ester Ager was the mother of any of the children is not known. Neither is it known if Tatem had been married before and provided false information for the marriage. The matter raises a number of questions and remains a mystery.

It is further not known why Tatem moved to Harpenden in 1816 and then to High Wycombe in 1823, but it may be that he had inherited or otherwise accumulated sufficient means to become a gentleman of leisure. There is a hint of this on page 257 of *The history of the Borough of High Wycombe from its origins to 1880*, by L J Ashford (Routledge and Kegan Paul, 1960, 343 pp.), where it is stated that Tatem was “a London tradesman who had retired to Wycombe”. His occupation when in Middlesex is another mystery.

Tatem soon became involved in civic and other local activities in High Wycombe, a particular interest being highways. One of his earliest appointments, in 1824, was to a committee whose purpose was to apply to Parliament for a Bill to build a new road from Wheatley Bridge through Thame to West Wycombe; and in 1831 he served as a trustee of the Beaconsfield and Stokenchurch Turnpike. He was a member of High Wycombe’s ‘Paving and Lighting Commission’ in the late 1820s and also, around the same time, chairman of the ‘Friends of Rational and Efficient Reform’, a group which had campaigned for reform in borough elections [ahead of the 1832 Reform Act]. His address in 1830, as listed in that year’s *Pigot’s Directory*, was “High Street, Wycombe”.

In 1835, as chairman of the Board of Guardians of the Wycombe Union, Tatem submitted evidence to the Poor Law Commissioners; and in 1836 he was listed as a Land Tax Commissioner for the Borough of Chepping Wycombe. At the start of 1836, he was elected a councillor for High Wycombe and Mayor of the town, and he was also appointed an Alderman for three years.<sup>43</sup>

The gratitude of the Guardians of the Wycombe Union was shown in 1839, when they announced that it was their intention “to present a piece of plate to J G Tatem Esq, one of the guardians of the borough of Wycombe in token of the high value at which they estimate the zealous, efficient and impartial services as their presiding chairman which situation he has held since the formation of the Union in 1835” (see *Jackson’s Oxford Journal* on 6 April 1839, Issue 4484). Tatem was especially interested in the education of pauper children and in 1841 successfully led efforts by the Wycombe Union to obtain a grant of £500 from the government’s Committee of Council on Education for the construction of two large class-rooms in the workhouse at Bledlow, near High Wycombe.

The 1840 Wycombe Borough rate records show Tatem as the occupant of a house and garden in St Mary’s Street, and the 1841 Census gives his address as “St Mary’s Cottage”, with the household consisting of James George Tatem (aged 65, Head of Household), Ester Tatem (aged 55, his wife),

<sup>42</sup> The other one-fifth passed to one of his aunts.

<sup>43</sup> He was still an alderman in 1840, when he proposed to the Council that a congratulatory message be sent to Queen Victoria on the occasion of her marriage. As reported in *Jackson’s Oxford Journal* on 16 November 1844 (Issue 4777), he was re-elected an alderman in 1844.

James Tatem (aged 25, his son, Surgeon), Mary Tatem (aged 20, his daughter), and two servants (Sarah Lindon aged 25 and Sarah Standage aged 20). It is stated in the Census that none of the four members of the Tatem family had been born in the county.

By the time of the 1851 Census, Tatem had moved to Reading, Berkshire, but exactly when he moved is not known. He was certainly still living in High Wycombe in 1845 and appears to have moved to Reading in early 1846. The minutes of the meeting of the British and Foreign School Society on 25 August 1845 mentioned "the removal of Mr Tatem, the late Secretary of the School" and recorded "its grateful sense of his long, continuous and efficient services". The 1846 rate records for High Wycombe show his name crossed out and the single word "Sale" written in, which indicates that his house in St Mary's Street had been sold and he no longer lived there. Moreover, records of the British and Foreign Bible Society in 1846 note that he had removed from Wycombe.

Tatem began a private weather diary at Reading on 1 January 1847, but his diaries for 1845 and 1846 are ambiguous as to his place of residence, for they contain data from Wycombe as the main observations, with data from Reading Athenæum and Greenwich inserted in blue and red, respectively, presumably for comparison purposes (see Figure 25).

The image shows a handwritten weather diary table for 1846. The table has several columns, likely representing different weather variables such as temperature, wind speed, and direction. The entries are organized by month: September, October, November, and December. Each entry includes a date and numerical values. Some values are written in red ink, while others are in blue ink. At the bottom of the table, there is a handwritten note in blue ink: "Figures in Red, denote Observations at Greenwich, in Blue, Reading Athenæum".

**Figure 25**

Part of Tatem's High Wycombe weather diary for 1846, showing, at the foot of the table, the explanation "Figures in red denote observations at Greenwich, in blue Reading Athenæum".

The 1851 Census gives Tatem's address as 7 Eldon Square, Reading, with the following at home at the time: James G Tatem (aged 76, Head of Household, married, Landed Proprietor, born Middlesex, Stepney), Ester Tatem (aged 65, wife of Landed Proprietor, born Middlesex, Paddington), James G Tatem (aged 35, son, unmarried, born London), Mary Tatem (aged 32, daughter, unmarried, born Herts, Harpenden), and two servants (Mary Hilsey aged 28 and Maurice Brown aged 22).

Tatem joined the British Meteorological Society on 7 May 1850, his address given in the Society's membership lists as "Eldon Square, Reading", and he remained a member to the day of his death.

Tatem's wife died on 14 December 1851, twelve days short of her 66th birthday, and he himself passed away on 22 August 1855, aged 81 years, the cause of death being, as recorded on the Death Certificate, "Paralysis 4 months. Bronchitis 4 days". The informant was Rosanna Atkins of Watlington Place, Reading, who apparently could not write, as her mark was recorded. She had been present at the death. Both James George and Ester Tatem were buried in the London Road Cemetery, Reading.

It was recorded in the minutes of the meeting of the Council of the British Meteorological Society held on 27 May 1856 that James George Tatem junior proposed to present his father's meteorological manuscripts to the Society.<sup>44</sup> These included his private weather diary for Reading, which is today, like Tatem senior's other meteorological observations, cared for by the National Meteorological Archive at Exeter.<sup>45</sup>



*Left:*  
*The coat of arms of James George Tatem.*

*Right:*  
*Tatem as an old man.*

<sup>44</sup> The British Meteorological Society became, simply, in 1866, by Royal Charter, 'The Meteorological Society'. It was renamed 'Royal Meteorological Society' in 1883, when Her Majesty Queen Victoria granted permission for the 'Royal' prefix to be used.

<sup>45</sup> Tatem's weather diaries are all owned by the Royal Meteorological Society.

## APPENDIX 2

### William Henry White

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We do not know White's date of birth. His death certificate states that he died on 24 July 1868, aged 81 years. If he was indeed then 81, he would have been born on or before 24 July 1787. When, however, the Census was taken on 30 March 1851 he gave his age as 62 years; and when the next was taken, on 7 April 1861, he gave it as 72 years. Given that the age of his wife was accurately given as 58 years in the 1851 Census, and if we assume that he was equally accurate over his own age, then he was born in the period 8 April 1788 to 30 March 1789.<sup>46</sup> If he was, in fact, in his 81st year when he died and not already 81, he would have been born in the period 25 July 1787 to 23 July 1788. The date of his birth could therefore have been between 8 April and 23 July 1788.

White (1835) said in an article published in *Loudon's Magazine of Natural History, and Journal of Zoology, Botany, Mineralogy, Geology, and Meteorology* that his "venerable father" was "a considerable farmer in Derbyshire". However, an exhaustive search of the International Genealogical Index and every available parish register in the Derbyshire Record Office at Matlock failed to find any record of a birth that was definitely his. Nor do we know anything about his education or other early life, but the keen interest in natural history which is so evident in many of his notes and articles suggests that many of his younger days were spent in the countryside on or near his father's farm.

William Henry White and Elizabeth Wallis were married by Banns in the Parish Church of Camberwell on 30 May 1819. She was stated to be a Spinster and he a Widower. Her parents, Richard and Christiana, served as witnesses. A search for White's earlier marriage (or maybe marriages) has so far proved unsuccessful. Some possibilities have been found, but the name 'William Henry White' was all too common to be sure.

There were seven offspring of White and his wife:

- Henry Richard, baptised on 21 July 1820 in St Giles's Church, Camberwell, with the entry in the baptismal register showing his father as "Gentleman".
- Lavinia Christina, baptised on 6 November 1822 in the Parish Church of St Paul, Bedford, with the entry in the baptismal register showing his father as "Schoolmaster".<sup>47</sup>
- George Frederick, baptised on 5 September 1824, also in St Paul's Church, Bedford, the father's occupation shown as "Schoolmaster".<sup>48</sup>
- Robert James Prosser, baptised on 8 October 1824, also in St Paul's Church, Bedford, the father's occupation shown as "Schoolmaster".
- John Arata, baptised on 9 May 1828, also in St Paul's Church, Bedford, the father's occupation shown as "Schoolmaster".<sup>49</sup>
- Alfred Wallis, Solicitor's Clerk, aged 20 at the time of the 1851 Census, born Bedford.
- William Charles, also Solicitor's Clerk, aged 17 at the time of the 1851 Census, born Camberwell.

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<sup>46</sup> The birth of White's wife was registered on 26 January 1808 at Dr Williams's Library, Red Cross Street, Cripplegate, London, the certificate number being 1405. She was Elizabeth Wallis, born on 15 December 1792 at Peckham in the Parish of St Giles, Camberwell, the daughter of Richard and Christiana Wallis.

<sup>47</sup> A note in the margin of the baptismal register gives Lavinia Christina's date of birth as 11 May 1822.

<sup>48</sup> A note in the margin of the baptismal register gives George Frederick's date of birth as 29 December 1823.

<sup>49</sup> William Henry White's son was not the first in the family given the name Arata. White had a nephew with that name, baptised at Camberwell on 20 August 1823. He was a son of White's wife's elder sister Judith Young (née Wallis) and was baptised George Edward Arata. The name may be a mistake. Aratus of Soli (c.315 to before 240 BC) was a poet of ancient Greece who wrote *Phænomena*, which described the movements of the constellations and considered how seasonal weather may be forecast from astronomical phenomena. It was a work that offered useful instruction to sailors and farmers and therefore may have appealed to a countryman such as William Henry White, who was, by the late 1820s, much interested in the weather.



From 1821 to 1831, White was headmaster of the institution then called Bedford Commercial School.<sup>50</sup> Previously, for several years, he had taught mathematics at Alfred House Academy, Camberwell (Matthiason, 1831).

It is not known how or when White gained his knowledge of mathematics, but there was no shortage of elementary books on the subject at the time. Indeed, his name appears in the list of subscribers to a *Key to the Course of Mathematics, composed for the use of the Royal Military Academy*, by Charles Hutton (Dowling, 1818). White himself wrote books on mathematics, the first of them being *The Young Ladies' and Gentlemen's Arithmetic, etc* (White, 1821), followed, in February 1822, by a complementary work called *A Complete Course of Arithmetic, theoretical and practical, etc* (White, 1822). In the book published in 1821, he referred to his "long experience", which suggests that he was then far from new to mathematics.<sup>51</sup>

A person whose work may have helped spark White's interest in mathematics was William Taylor of Birmingham, for White (1823) called his next book *A Key to Taylor's Arithmetician's Guide, containing answers to all the questions in that work, etc*. Taylor was a land surveyor and teacher of mathematics who had published *A Key to the Arithmetician's Guide; containing the solutions at full length of all the questions proposed in that work; being very necessary for all tutors who make use of the guide* (Taylor, 1788). This work had run to two further editions (published in 1793 and 1801).<sup>52</sup>

A second edition of White's (1823) book appeared in 1831 but was not in any way responsible for a momentous change of circumstances which befell him that year. He was dismissed as Headmaster of Bedford Commercial School.

The reasons for his dismissal have been explained thus by Underwood (1981):

W H White's term of office began with the introduction of a 'new system of instruction' initiated by the Trustees.<sup>53</sup> Books and maps were purchased for the library [in 1821], and shortly a pair of globes [in 1823]: but with little success.<sup>54</sup> A committee which examined the school in 1828 found woeful ignorance; there were too many holidays they thought, and too much time was spent in writing up arithmetical exercises. White, told to improve matters, made no attempt to do so, and in 1830 closed the school for a day while he went to London.

The following year, the examiners found a sad situation: few who were leaving at fourteen had any qualifications to suit them for professional occupations and there was abysmal ignorance in religious knowledge. William White was dismissed.

Underwood went on to describe some of the pranks that were played by pupils who were at the school in White's time. The punishments he meted out were generally not taken very seriously by the pupils and consequently did not prove much of a deterrent.

From Bedford, White moved to London, first to 2 Townsend, Old Kent Road, and then, in the late 1830s, to 7 Kennington Street, Walworth, Surrey. After that, in 1840, he moved again, this time to 16 Queen's Row, Walworth, where he was living on 6 June 1841, the day that year's Census was taken. This Census gave the ages of Robert, John, Alfred and William as, respectively, 15, 13, 10 and 8 and those of their father and mother both rounded to 45. The occupation of the father was stated to be "Private Tutor".

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<sup>50</sup> The school was renamed Bedford Modern School in 1877 (Godber, 1973).

<sup>51</sup> In a review of *The Practical Self-Teaching Grammar of the English Language* published on the inside of the back cover of Issue No.1 of *The Quarterly Journal of Meteorology and Physical Science* (January 1842), White stated that he had been a teacher for more than thirty years. That being so, his career as a teacher appears to have begun around 1810.

<sup>52</sup> Taylor died in 1804.

<sup>53</sup> Bedford Commercial School was endowed and run by the Harpur Trust, which remains so with Bedford Modern School today (Godber, 1973).

<sup>54</sup> The dates in square brackets have been taken from Godber's book.

Some years later, White moved yet again, this time to 62 Beresford Street, Walworth, the address from which, on 10 September 1846, he replied to Mr J W G Gutch, Treasurer of the Meteorological Society of London, when asked to donate one guinea to help the Society out of financial difficulties (see page 42), White wrote as follows:<sup>55</sup>

I beg to state that I should have been glad to have contributed my mite in liquidation of the outstanding debt of the Meteorological Society had the means been in my power. I am however sorry to have to inform you that since last November I have not earned as many pounds as there are months, and at the present moment I am not in any employ whatever. Nay, had it not been for the kindness of his Lordship [Carrington?] and a few other kind friends, I should have been in utter destitution. I am however in hope of getting employment in Railway Surveying again in a week or two.

White was clearly struggling to make ends meet from being a private tutor and had turned to railway surveying to try and supplement his income and thus support his family.<sup>56</sup> The advertisement he had placed in the January 1843 issue of the Meteorological Society's *Quarterly Journal of Meteorology and Physical Science* (No.V, back cover) had evidently not brought him the gainful employment he had hoped for:

W.H.White, Secretary to the Meteorological Society of Great Britain, Hon.Mem. of the Philosophical Society of St Andrew's, and of the Natural History Society of Liverpool, and Professor of Mathematics, begs leave to acquaint the Public in general, and Scientific Institutions in particular, that he continues to deliver popular Lectures on Meteorology and the Physical Sciences, at any distance from the Metropolis, on reasonable terms. His Course of Lectures is illustrated by Diagrams, Transparencies, &c.<sup>57</sup>

By 1848, White had moved again, this time to 33 Albany Road, Camberwell, but he moved yet again, in 1850, to 4 Norfolk Place, Camberwell New Road, which was his address on 30 March 1851, the day that year's Census was taken.

On the day of the Census, White and his wife and two of their offspring were at home, Alfred Wallis White and William Charles White. There is a hint that Charles was the name commonly used for the latter by his family and friends, given that the Census record shows him as "Wm. Charles". Their father's occupation was given as "Teacher of Mathematics" and their mother's place of birth as Peckham, the latter being consistent with the information given in Footnote 46.

By the time of the 1861 Census, White was again a widower and then living as a boarder at 4 Northampton Terrace, Camberwell. His occupation was shown as "Private Tutor and Land Surveyor". We do not know the date of his wife's death.

A quarter of a century earlier, in the autumn of 1836, White helped revive the Meteorological Society of London (see page 13), and he also joined the newly-formed Botanical Society of London (Allen, 1986; and see also *The Times*, 14 October 1836, Issue 16234, p.3.).<sup>58</sup> He showed himself keen to promote both societies and endeavoured to recruit members for them, as shown by

<sup>55</sup> The letter is held in the National Meteorological Archive, Exeter, catalogued under 'Incoming Correspondence, Meteorological Society of London, ARCHIVE V22.B2-A3'. For details of the financial difficulties, see page 41.

<sup>56</sup> It may be relevant to note here that White's wife's brother-in-law Robert Serrell Young, father of George Edward Arata (see Footnote 49), was, in the early 1840s, Secretary to the London and Croydon Railway Company. He later became, in 1846, Secretary to the Direct London and Portsmouth Railway Company.

<sup>57</sup> The Meteorological Society of London was called 'The Meteorological Society of Great Britain for a few years in the early 1840s (see page 40).

<sup>58</sup> It should be noted that the William Henry White (1777-1866) who featured in Allen's book was private secretary to the Duke of Sussex. Allen assumed that meteorologist White and the private secretary were one and the same person. They were not.

correspondence in the National Meteorological Archive<sup>59</sup>. The abbreviations M.B.S. and M.M.S. which he and others sometimes appended to their names stand for 'Member of the Botanical Society' and 'Member of the Meteorological Society'.

As well as writing letters to individuals he thought might join the Meteorological Society, White endeavoured in other ways to raise the profile of the Society. For example, he sent to L'Académie Royale des Sciences et Belles-Lettres de Bruxelles observations of temperature, barometric pressure, humidity, wind speed and direction, state of the sky and principal cloud types which had been made in London at Hatton Gardens. These were published in the Academy's *Bulletin* (White, 1838), as were also two articles, one about the temperature of water in wells (White, 1839a) and another on parhelia and other optical phenomena he had observed at Camberwell in July 1838 and August 1839 (White, 1839b). Yet another article by him, on 'the original and probable causes of rain', was published by the Royal Institution of South Wales (White, 1839c).

From the middle of the 1830s onwards, White showed increasing interest in astro-meteorology. He helped found the Uranian Society in 1839 and thus began to lead something of a double life, for he was openly espousing astro-meteorology (and, moreover, chairing the Uranian Society) whilst simultaneously serving as Secretary of a body which purported to advance meteorology through conventional scientific methods, namely the Meteorological Society of London. Monthly meetings of the Uranian Society were held from 6 August 1839 to 23 March 1840 (see page 32), after which nothing more was ever heard of the Society.

For a number of years in the 1850s, White contributed a weekly column on meteorology to a reputable periodical called the *Mark Lane Express*, which was devoted principally to agriculture and related interests. In that decade, however, he was influenced increasingly by Britain's foremost astro-meteorologist, Richard James Morrison, alias Zadkiel Tao-Sze (see pages 32 and 44) and by 1860, he had himself become one of Britain's leading astro-meteorologists. In the autumn of that year, indeed, he helped found the Astro-Meteorological Society, serving it as Secretary. This Society collapsed in early 1862, whereupon, in March of that year, White endeavoured to establish another similar society called the Copernican Meteorological Society, but this was no more successful than the Astro-Meteorological Society and died out almost immediately (see page 49).

As noted at the beginning of this appendix, White died on 24 July 1868. The death certificate shows that he died at 2 Lower Kennington Lane, Lambeth, the cause of death being "Diarrhoea eight days". The informant was Elizabeth Cawthorne, who had been present when he passed away. We do not know where he was buried.

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<sup>59</sup> See Footnote 6.

## APPENDIX 3

### Two local meteorological societies

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Though the Bournemouth and Norwich Meteorological Societies were not in any way associated with Tatem or White, it is worth including them in this occasional paper for the sake of completeness, as examples of early meteorological societies.

#### ***The Bournemouth Meteorological Society***

Reference to the Bournemouth Meteorological Society can be found in Volume 5 of the *Proceedings of the Meteorological Society* (21 June 1871, 5, 56, pp.349-350), where it is reported that “this Society has been established three years, and has printed for each year a very interesting Report, including essays by some of its Members on special questions”. It is also reported that “the Society has five stations, at which meteorological observations are carefully taken, and monthly Reports are supplied regularly to the *Bournemouth Visitors’ Gazette* and the *Christchurch Times*”.

Copies of the second and third annual reports of the Bournemouth Meteorological Society (for May 1870 and March 1871) are held by the National Meteorological Archive at Exeter, as well as a paper on *The climate of Bournemouth* read before the Bournemouth Meteorological Society on 8 February 1869 (Newnham, P H , 1869). Copies of a weather diary kept by Newnham at Bournemouth for the years 1867-70 are also held in the National Meteorological Archive, in the Royal Meteorological Society Collection.

#### ***The Norwich Meteorological Society***

Reference to the Norwich Meteorological Society can also be found in Volume 5 of the *Proceedings of the Meteorological Society* (21 June 1871, 5, 56, p.349), where it is reported that the Society, “although only in the second year of its existence, is progressing very satisfactorily”. The members of the Society numbered 66 in 1871, an increase of 17 on the previous year. It is reported, too, that “the anemometer works very well” and that “much interest is taken in the recording powers of the instrument by the local public”.

Information about the Norwich Meteorological Society can also be found in Issue No.50 of the *Proceedings of the Meteorological Society* (15 June 1870, 5, 50, pp.181-182), where it is reported that a meeting of the British Association for the Advancement of Science had been held in Norwich in August 1868 and the Local Committee had had a balance in hand of more than £300 after all expenses had been defrayed. Of this surplus, £100 had been voted for the purchase of meteorological instruments, and the three trustees of the surplus, Mr Gurney Buxton, the Rev Joseph Crompton and Mr C Mends Gibson, had met at Gurney’s Bank on 3 December 1868 and at their meeting resolved to form a Society to be called ‘The Norwich Meteorological Society’.

Yet another reference to the Norwich Meteorological Society can be found in the third issue of the *Quarterly Journal of the Meteorological Society* (1873, 1, 3, p.88), where it is stated that “the meteorological observations have been continued, and registered regularly during the past year”. And further information about the Norwich Meteorological Society can be found in *Meteorology for Norwich for the years 1870-74 being results from the instruments belonging to the Norwich Meteorological Society*, a copy of which is held by the National Meteorological Archive.

It was recorded in Kelly’s Directory for Cambridgeshire, Norfolk & Suffolk (1883, pp.403-411) and in *An Historical and Descriptive Account of the Norwich Public Library established In 1608 and the present Public Library opened in 1857* by G A Stephen (published in 1917) that the Norwich Meteorological Society’s anemometer was fixed on top of this Library.

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A digital reprint of FitzRoy's book was published by Cambridge University Press in 2012.

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