Accidents can happen when moving instruments or observing in the dark, so referral to a specialist can prove useful when requiring crutches, an imperceptible truss, an abdominal belt, new arms and legs, or other appliances. Note too, ladies, that if you require artificial eyes, knee caps, or railway conveniences (whatever they might be), an experienced female will attend to your every need, though the nature of that experience is not specified. This advertisement appeared in *English Mechanic* in 1869, so Arnold & Sons might not still be in business, but those of you who are accustomed to making telescopes will probably be able to make your own body parts. Considering some of the people I encounter, I sometimes wonder whether imperceptible brains have already been distributed.

Two of the earliest eclipse expeditions to incorporate photography were those of 18 July 1860 and 17 August 1868. In India, totality lasted for almost 7 minutes, and Captain James F. Tennant – who had served with the Bengal Engineers for many years and had been assigned to the Great Trigonometrical Survey – produced many valuable observations, including a fine series of high-quality photographs. On the original plates the lunar disc was half an inch in diameter, and details were recorded as small as \( \frac{1}{400} \) of an inch – a resolution of about 9 arcsec. The photographs of the recent eclipse of 21 August are followed by my account of the expeditions to observe the eclipse of 21 August 1914.

The nice prediction Dr Halley gave of the solar eclipse, total at London, is such an instance of the great perfection to which we are arrived in these matters, as has amazed those unthinking gentlemen who were only to be rowzed out of their security in ignorance by the apprehension of Doomsday.  

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John Mason, Snake River, Wilson, Wyoming, 21 August 2017

Damian Peach, Hodges, South Carolina, 21 August 2017

James F. Tennant, Guntoor, India, 17 August 1868

Warren De La Rue, Rivabellosa, Spain, 18 July 1860

John Mason, Snake River, Wilson, Wyoming, 21 August 2017

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C. D. P. Davies and the 1914 solar eclipse

R. A. Marriott

A century and more ago, the organisation of an eclipse expedition involved the transportation of heavy and bulky equipment which usually had to be dispatched in advance; but there was no precedent to planning and embarking on an expedition when the fate of so many nations was in the balance, to be surrounded by mobilised troops in distant lands alive with civil unrest and rebellion, and to return home through countries with divided loyalties when all of Europe and much of the world was at war.

Preamble

The Rev C. D. P. Davies served as President of the Association from 1924 to 1926, and in 1992 his granddaughter, Mrs Marian Deuchar, presented the author with all of his astronomical letters, documents, and photographic plates, including notebooks and records of his work on mirror-making, and correspondence and papers concerning several of his eclipse expeditions (some of which formed the basis for the author’s paper on the 1927 British eclipse, published in the Journal in 1999). Mrs Deuchar’s memories of her grandfather – presenting a glimpse of his character and private life not mentioned in official obituaries – are included here as an Appendix, and all the manuscript correspondence and documents cited and quoted are listed in the Bibliography.

The world has transformed considerably since 1914, with the changing of place names (the variants are included here), international frontiers, the calendar in different regions, and, most notably, currency. Due to accustomisation with modern prices and costs, it can be too easy to misperceive the prices of a century ago, especially if applying a simple conversion of pre-decimalisation currency (12 pence in the shilling, and 20 shillings in the pound) to decimal currency. Between 1750 and 1938, prices increased three-fold – since when, they have increased forty-fold (see Figure 1). Therefore, costs in 1914 should in general be multiplied by about 95 in order to assess the current equivalent. Only by doing so can the expenses of equipment, travel, and accommodation be fully appreciated.

Numerous volumes have been written on the origins and causes of the First World War, but it was certainly not an event that began unpredictably. The many concatenations of nationalism, militarism, empires, treaties, alliances, power bases, longstanding emnities, and wars, extending over decades, finally erupted into a global conflict to which no single cause can be attributed. Over many years the public had become accustomed to international crises, so when war came in 1914 it was not a surprise, and was certainly not a deterrent against scientific expeditions. In that year, on 21 August, the central path of the Moon’s shadow passed over northern Canada, Greenland, the Arctic Ocean, Norway, Sweden, the southern tip of Finland, Russia, the Black Sea, Turkey, Mesopotamia, Persia, and western India (see Figure 2).

Preparations

In Britain, the Joint Permanent Eclipse Committee of the Royal Society and Royal Astronomical Society sanctioned three expeditions: from the Royal Observatory, Greenwich, to Minsk (where totality would be at its maximum of 2 min 14 sec); from Imperial College, South Kensington, to Kiev; and from the Solar Physics Observatory, Cambridge, to Feodosiya. Otherwise, such ventures were subject to private enterprise. By the early twentieth century, however, many an eclipse ‘expedition’ had become an opportunity for tourism in parallel with other forms of leisure such as English seaside holidays, which became increasingly popular during the 1890s and the Edwardian era.
Within the Association, discussions concerning possible expeditions to observe the 1914 eclipse began during the previous year. At the Ordinary Meeting on 26 November, Col Burton-Brown recalled the expedition to Norway in 1896. On that occasion, after advising his friends that they ought to scatter themselves as much as possible along the centre line of totality, he had been disappointed to find that a very comfortable ship (Norse King) had been arranged to take all of them to the north of Norway, beyond the North Cape, to the Varanger Fjord, where, 'owing to the idea of comfort and indulgence and having a good holiday', they had a very good time on board ship, clustered together on an island in the fjord to observe the eclipse, and saw nothing. ‘That was hardly going for a total eclipse of the Sun ... You must not look out for too much luxury and too much indulgence; you may have some hardships to put up with.’ At the same meeting, George F. Chambers presented a very extensive report on travel requirements and possible venues, and Andrew Crommelin later provided details of the path of the Moon’s shadow. By this time, however, Davies was already forming plans for his own private expedition.

Charles Douglas Percy Davies was born at Tewkesbury in 1856, and was educated at Cheltenham College and Oxford. He was ordained in 1880, and subsequently held curacies at Whitchurch (Shropshire), Chaceley and Red Marley (Gloucestershire), and Ringmer (Sussex). From 1892 to 1902 he was rector of East and North Marden, near Chichester, from 1902 to 1917 he held the living of Fretherne (Gloucestershire), and in 1918 he moved to Deane, near Basingstoke. (One of his predecessors in this last incumbency was Jane Austen’s father, the Rev George Austen, who in 1765 was appointed rector of Steventon, close by Deane. In 1773 he was appointed rector of Deane, and two years later Jane was born at Steventon, where she lived for the first twenty-five years of her life. Her sister and three of her brothers were born at Steventon, and her other three brothers were born at Deane.)

Davies had two great interests: campanology and astronomy. His proficiency as a bell-ringer dated from his schooldays, and as an undergraduate at Oxford he was a leading light in the University Society of Change Ringers. He later came to be regarded as an authority on the art, and was

Figure 2. Locations cited in the text, and the path of totality. Frontiers are not shown, as many of them have changed several times since 1914. (Map produced by the author.)
for nineteen years Secretary of the Central Council of Church Bellringers. His interest in astronomy developed at some time during the 1880s, and in 1890 he became an Original Member of the Association – his chief interests being mirror-making and solar eclipses. He travelled to Algiers in 1900 (28 May, Figure 3), Pineda de la Sierra, Spain, in 1905 (30 August, Figures 4 and 5), and Paris in 1912 (17 April, Figure 6), and by the middle of 1913 he had begun to consider travelling to Russia the following year.

On 24 August, Davies wrote to his friend John Evershed, who in 1907 had been appointed Assistant Director, and later Director, of Kodaikánal Observatory, in the Palni Hills of Tamil Nadu, southern India. Evershed replied almost four months later, on 13 December, as he and his wife Mary had travelled 1,500 miles north to Srinagar, in the wilds of Kashmir. They had spent three months carrying out research among mountains and glaciers – living first under canvas and later in a house boat – and were about to leave for New Zealand, to return to Kodaikánal the following March. In addition to catching up with family affairs and memories of England, Evershed discussed photography and expressed his regret at

Figure 3. C. D. P. Davies on the roof of l’Hôtel de la Régence, Algiers, 1900. (Author’s archive.)

Figure 4. The party at Pineda de la Sierra, Spain, 1905. Davies (with the straw boat) is in the foreground, and behind him is his wife Jessie (née Mudge), great-great-granddaughter of the eighteenth-century horologist Thomas Mudge. At left is John Evershed and his wife Mary (née Orr). At right (back) is one of John Evershed’s brothers – either Horace or Stanley (founder of Evershed and Vignoles, electrical equipment manufacturers). The other three people are not identified. This is one of only two known photographs of Mary Evershed – astronomer, solar physicist, historian, and first Director of the Association’s Historical Section (established in 1930) – and is published here for the first time. (Author’s archive.)
Figure 5. Militia guards at the eclipse camp at Pineda de la Sierra, 1905. (Author’s archive.)

Figure 6. The party at the Lafayette stables, Paris, 1912. Davies is at left, Ashton C. Allen is at right of centre, and Gladys Allen is in the foreground. (Author’s archive.)
not being able to observe the eclipse: ‘The silly eclipse stops short at Kurachi and doesn’t come into India, so that we shall be able to do nothing but envy you and the others who go to see it.’ The events that would unfold a few months later, however, would probably have diminished any such envy.

Planning

Towards the end of April and into May, plans for a concerted BAA expedition seem to have dissolved, though Chambers was still providing information on travel and other requirements. Davies, however, was proceeding with his own plans, and consulted his friend Ashton C. Allen and his daughter Gladys Allen, who lived at Hare Hatch, near Twyford, Berkshire. They had travelled together to Algiers and Paris to observe the eclipses of 1900 and 1912, and their plans for the 1914 eclipse would result in much correspondence and several exchange visits. They decided on either Riga, Kiev, or Feodosiya as their destination, and Thomas Cook and Son supplied Gladys with details of travel accommodation, fares, and times, with optional routes and destinations (Table 1). The service to Kiev was relatively straightforward, leaving London (Victoria) at 8.30 pm, travelling via Folkestone, Flushing (Vlissingen), Berlin, and Warsaw, and arriving at Kiev on the fourth day at 7.20 am. The return journey would prove inconvenient, however, as tickets could be obtained only for specific stages of the journey, and there was uncertainty concerning over what period they would be valid. The alternative was to travel by sea.

As regards the steamer services to Russia we would suggest to your consideration the Wilson Line from Hull to St Petersburg as per the attached folder, also the St Petersburg Express Line from London, the vessels of either service being good. The Wilson Line steamers from Hull to Riga have passenger accommodation ... but with regard to steamer routes we think that via St Petersburg would be the most convenient and interesting.

<table>
<thead>
<tr>
<th>Route</th>
<th>First Class</th>
<th>Second Class</th>
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<tr>
<td>London to St Petersburg (return)</td>
<td>£12 12s 0d</td>
<td>£8 5s 0d</td>
</tr>
<tr>
<td>Hull to St Petersburg (return)</td>
<td>£13 13s 0d</td>
<td>No second class</td>
</tr>
<tr>
<td>Hull to Riga (return)</td>
<td>£11 5s 0d</td>
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Cook’s could also procure passports and Russian visas, and recommended Baedeker’s guidebook to Russia and the Hotel Continental and the Grand Hotel in Kiev. Writing from the Hotel Métropole, Folkestone, on 1 May, Gladys appraised these options, and appealed to Davies to discuss the matter further:

As regards the steamers to Riga, the phrase with reference to the boats from Hull to Riga direct, ‘have passenger accommodation’, is rather expressive. I gather from the little book sent by Cook’s that the steamers are nothing like as good as the St Petersburg ones (run by the Wilson Line) or the St Petersburg Express Line from London. These latter are 2,500 tons and sound quite comfortable ... Papa is so much hoping that you will be able to get up to the RAS meeting and talk over things with Prof Fowler and Father Cortie.

The expedition from Imperial College, consisting of Alfred Fowler, E. H. Hills, and W. E. Curtis, originally included Fr Aloysius Cortie and Fr O’Connor, of Stonyhurst College, Lancashire, but the Russian government would not allow Jesuits into the Empire. Instead, Cortie and O’Connor would travel to Härnösand, on the east coast of Sweden. (In the eighteenth century, monarchies attempting to centralise and secularise political power viewed the Jesuits as being too international, too strongly allied to the papacy, and too autonomous. In 1820, Czar Alexander I, under pressure from
the Russian Orthodox Church, exiled them, so it is perhaps surprising that Cortie and O’Connor had planned to travel to that country.

The organisation of an eclipse expedition, however, involved far more than arranging travel and accommodation and carrying small instruments in personal luggage. Equipment included telescopes of all sizes, mounts, coelostats, spectrographs, large-format plate cameras, and even a dark-room – in effect, a fully equipped mobile observatory with all facilities, which had to be crated and sent on beforehand, often weeks ahead of the departure of personnel. The Foreign Office in London, foreign Consuls in London, and British Ambassadors and Consuls abroad, had to be consulted and requisite permissions obtained, observing sites had to be found and accommodation secured (sometimes on arrival), and the amicable cooperation of local authorities and residents at the chosen site was essential. Care was also required when considering and referring to dates, as Russian and Ottoman dates were thirteen days behind the Gregorian calendar. Until 1918 the Russian Empire employed the Julian calendar, while the Ottoman Empire used the Rumi calendar, which began in 622 and was based on the Julian calendar. Feodosiya is in eastern Crimea, and compared to Muslims from most other parts of Russia, the language and traditions of the Crimean Tatars were relatively close to those of the Ottoman Turks, so they experienced less difficulty fitting into Ottoman society. While the official Russian calendar in Crimea was Julian, it is possible that the Rumi calendar was also used.

As a first option for a sea route, Davies wrote to V. H. C. Bosanquet at the British Consulate at Riga; but the response did not prove favourable. On 18 May, Bosanquet replied that he would endeavour to obtain the information required in connection with the proposed visit, and would write again after he had made the necessary inquiries. However, as these inquiries might possibly involve attendance outside the Consular office, he required Davies to date and sign an enclosed form:

This is to certify that in consideration of His Britannic Majesty’s Consul at Riga having undertaken, at my request and on my behalf, to transact business which a Consular officer is permitted, but is not bound, to undertake under the Consular Regulations, I have agreed to pay him, on behalf of His Majesty’s Government, therefor [sic, for that object or purpose] the fee in such case provided by ‘The Consular Fees (General) Order in Council, 1906’, section 107 of Table (viz., for each hour or fraction thereof, of attendance, 10s, with a maximum per day of £4) in addition to any other fee properly chargeable under that Order in Council, and to travelling and other expenses.

To this missive, Davies noted: ‘I have written a card politely thanking him, and saying that I did not know that there were any fees, and asking him therefore to consider the matter at an end.’ Riga was crossed off the list.

At the same time, Davies received a reply from K. C. Ringeling, Acting Vice Consul at Sevastopol, though he too was not as informative as might have been hoped.

Having no friends or intimates at Theodosia I regret to be unable to do anything for you. I am however sending your letter to the British Vice Consul at Theodosia in case he should not have received your letter to him, and have no doubt he will be good enough to give the matter his attention. I think there should be no difficulty about acquiring the accommodation you require at Theodosia.

Undaunted, Davies wrote to the Foreign Office in London. This time, the reply, dated 20 May and signed by A. Law, proved far more helpful.

I am directed by Secretary Sir E. Grey [Secretary of State for Foreign Affairs] to inform you that His Majesty’s Ambassador at St Petersburg has been instructed to obtain from the Russian Government such facilities as they may be prepared to grant with a view to expediting the customs formalities in regard to the introduction and withdrawal of scientific instruments on the occasion of your visit to Russia, accompanied by Mr A. C. Allen, F.R.A.S., for the purpose of observing the solar eclipse on August 21st next. Sir Edward Grey would be glad to know the probable date of your arrival in Russia, and the route by which you propose to travel.

But they had not yet decided on which route they would take, nor where and when they would arrive in Russia.
Davies also contacted H. F. Newall at the Solar Physics Observatory, Cambridge, though he had to wait for a reply, as Newall, who was organising an expedition to Feodosiya, had been advised that the Cambridge instruments had to be at Hull ten days earlier than he had been led to expect, to leave by steamer on 6 June. He informed Davies that Oskar Backlund, the Director of Pulkowa Observatory, near St Petersburg, had made arrangements for official parties to pass the customs free of charge. This was possibly due, at least in part, to the Foreign Office's instruction to the British Ambassador at St Petersburg, though this was not mentioned by Newall, who simply offered assistance: ‘It occurs to me that if your things are not numerous or heavy that you might perhaps send them with ours, if you think of going to Crimea ... they must be at Hull before June 6.’ With only a few days notice, however, there was insufficient time to finish preparing the instruments and to crate and dispatch them. So, another option was eliminated.

Three days later, on 29 May, Allen wrote that due to delayed responses there was little possibility of finding accommodation in Feodosiya. In addition, a Miss Sykes and a Miss Miller—friends of a friend of Gladys—had also endeavoured to obtain information from acquaintances in Kiev, but no replies had been received, so the chances of finding accommodation in that locality were also reduced.

In consideration of Newall’s note about customs, and with the Hull—St Petersburg route in mind, Davies consulted Backlund, who was organising Pulkowa expeditions to Riga, Kiev, and Feodosiya. On 30 May, Backlund informed Davies that he had secured free passage for his instruments through the customs, and that he had only to declare that he would be observing the eclipse and would be taking his instruments away afterwards: ‘A card shall be sent to you which you may show at the customs. When you have decided where you intend to take your station I will be able to say what kind of service can be shown to you.’ Unfortunately, this was of little help.

Davies noted on the back of the letter: ‘Would his plan of cards cover the sending of the instruments in advance? Should we want a card for each? If so, will he send plenty?’ These questions would remain unanswered. The choices had been reduced to an overland journey to either Kiev or Feodosiya, with little chance of finding accommodation beforehand. But the Consular channels were still open, and there were other avenues to be investigated.

A few days later Davies consulted Aymar de la Baume Pluvinel, President of the Société Astronomique de France, who in collaboration with Nikolay Donitch—a Romanian astronomer working at Pulkowa—was organising an expedition to Feodosiya. Pluvinel, however, could provide very little information about Feodosiya except in notifying Davies of possible accommodation at the Hotel d’Europe and Hotel Central: ‘Perhaps Mr Newall, who also goes to Feodosiya, would be more informed than me’ (translation). But Davies had already consulted Newall, so Pluvinel’s reply was of no benefit.

By 14 June, Allen had received nothing from Feodosiya: ‘I really think we had better decide on Kieff ... I am afraid that if we go on waiting we shall get stranded and fail to get accommodation at any suitable place. I should not be altogether surprised if we are not even late.’ The instruments, which had to be sent to the chosen destination in advance, included two coelostats with collimating telescopes and prismatic cameras, and other cameras, equipped with clock drives, for photography of the corona, prominences, and flash spectrum. It would therefore be a considerable risk to arrive at the destination only a week before the eclipse, with the prospect of occupying several days in finding a site, collecting and moving the equipment to the site, setting it up in fine weather and with a clear sky, and ensuring that everything was in alignment and in full working order. An advantage of a site at Kiev, of course, would be that ‘we should have Professor Fowler to consult re. any technical difficulties.’

Four days later, Allen responded to Davies’s invitation to Fretherne for further discussion and to prepare and practise with the cameras and other equipment—an invitation which provides a perspective on the social mores of the time: ‘By the way, shall I bring dress clothes? Excuse my asking this but I do not know the ways of your household, and Gladys is away so I cannot ask her.’ During this visit the decision was made, and immediately afterwards Davies informed the Foreign Office that he and the Allens would be journeying to Kiev. The reply from the Foreign Secretary’s office, dated 24 June, was again framed in lofty bureaucratic style.

I am directed by Secretary Sir E. Grey to inform you that the Russian Government have requested His Majesty’s Ambassador at St Petersburg to ascertain through which Russian customs station or stations you propose to send your scientific instruments. I am therefore to enquire whether you intend to send the heavier parts of the instruments by the same route as you propose to travel.
Consequently, Davies informed the Foreign Office that Cook’s had advised him that if the heavy portions of the instrument were forwarded beforehand they would proceed via Ostend, Herbesthal, and thence to Kiev, where the customs examination would take place.

At the same time, Davies received a very belated reply to his letter of 11 May to W. von Stürler, British Vice Consul in Feodosiya, who had apparently been out of the country for several weeks. (It would have been quite a risk to have such a name in Russia at that time, even when British Vice Consul, but it is probable that von Stürler was a member of the Stürler patrician family of Bern, Switzerland.) By that time, Feodosiya had been eliminated as a possible site; nevertheless, the information would have been of no help, as von Stürler was rather vague about requirements and could advise only on the renting of rooms on estates outside the city: ‘I think the best would be for you to call here a few days earlier. For your guidance, rooms rent here is dear.’ This letter is dated 26 June, so it is possible that Davies could have received it on 28 June – the day that Gavrilo Princip, associated with the revolutionary group Mlada Bosna, assassinated Archduke Franz Ferdinand and Sophie, Duchess of Hohenberg, in Sarajevo. The clock was ticking.

Over the ensuing few days, Davies received advice from Fowler concerning focusing, collimation, and exposure times – ‘You might adopt Evershed’s plan of using a collimator composed of a slit and concave telescope mirror ... I think the simplest plan of making a reflecting collimator is to use a Newtonian telescope, putting the slit in place of the eyepiece’, and so forth – and from Andrew Crommelin concerning positioning of the coelostat.

It seemed that arrangements were falling into place, and on 2 July Gladys confirmed that she would be writing to the Hotel Continental, Kiev, to engage rooms for 12 August: ‘I am so glad that things are beginning to shape themselves definitely, and begin to feel that we really are going.’ She and her father had just returned from ‘a long day at Henley’: the Henley Royal Regatta – a cornerstone of middle- and upper-class society, the epitome of the enigmatic ‘Golden Summer of 1914’, and a far cry from the political machinations at the other side of Europe. On the same day, it was announced in Berlin that Kaiser Wilhelm would not be attending Archduke Franz Ferdinand’s funeral in Vienna on 4 July – the reasons being variously reported as being due to his having ‘a cold’, ‘lumbago’, or other ‘slight indisposition’, and by The New York Times as his being ‘diplomatically ill’.

A few days later a brief delay was incurred when Davies received a communication from the Foreign Office in which the Under-Secretary of State for Foreign Affairs presented his compliments and asked for a copy of the letter respecting details of the arrangements, ‘as the original appears to have been mislaid.’ Allen, meanwhile, was becoming concerned about the customs, and thought that there would probably be duty to pay and that there would be ‘endless bother at the various frontiers, which may lead to the missing of our trains.’ He therefore wanted to send as much equipment as possible in advance, as advised by Baedeker. Gladys concurred, knowing from experience ‘the time it takes to send ordinary personal luggage from London to the south of France, a civilised journey.’ She had also written to the Dutch, German, and Russian Consuls in London, with the hope of obtaining special orders for the customs. These difficulties were exacerbated due to having to wait for the coelostat, which had not arrived from Hilgers. ‘I only wish we had another extra month in which to complete the preparations.’ Meanwhile, the July Crisis was escalating with the Austro-Hungarian investigation into the events at Sarajevo, while The Times published an account of the Austro-Hungarian press campaign against Serbia – a campaign which, in polite terms, was vitriolic.

The following day, Gladys and her father were ‘fiddling about with the coelostat’, which had been delivered at last, and Crommelin provided them with extensive advice and instructions on the setting up and use of the coelostat and camera. Gladys also reminded Davies that he needed to apply for a passport and a visa (Figures 7 and 8) and that he would have to sign a declaration of religion, and asked him whether he knew when he would be dispatching his instruments. Soon afterwards, Allen suggested another meeting to discuss arrangements. He also discussed telescopes, prismatic cameras, and, in particular, focusing, but was confident that ‘Professor Fowler will be at Kieff and can tell you all about it if he is not too much occupied with his own work to give you any attention.’

On 11 July, W. Langley, at the Foreign Office, informed Davies that copies of letters concerning the proposed expedition had been sent to His Majesty’s Ambassador at St Petersburg, but he was also asked for information concerning through which customs the instruments would pass, as this information was required by the Russian government: ‘Messrs Thos Cook and Son stated that they could not undertake to give a definite answer without reference to the correspondence which you have had with them on the subject.’
Figure 7. Davies’s passport, dated 24 July and signed ‘E. Grey’. Front page, 11¼ x 15½ inches (28.5 x 39.5 cm); unfolded, 22½ x 15½ inches (57.0 x 39.5 cm). (Author’s archive.)

Figure 8. The Russian visa on the back of the passport.
With the costs of new instruments, travel, accommodation, customs fees, possible Consular fees, and other unpredictable expenses, Davies intended to recoup some of the costs by offering to send a report on the eclipse to the *Daily Mail*. On 14 July the Foreign Editor, H. Macpherson, accepted his offer:

I shall be greatly obliged if you will telegraph from Kieff, as soon as possible after the eclipse on August 20 [sic], a message of from 150 to 200 words reporting the results obtained by your party. For this message a fee of three guineas (£3 3s) will be paid plus the telegraphic charges. Kindly address your telegram ‘Daily Mail London’ and write the message in printed characters to ensure correct transmission by the Russian telegraph operators.

Two days later, Macpherson requested that a receipt be obtained from the Russian telegraph authorities when the report was sent, and would be ‘further obliged if you will let me have the name and telegraphic address of the hotel at which you will stay in Kieff’ – but accommodation had not yet been confirmed.

In the meantime, Crommelin provided further extensive advice and instructions on the setting up and use of the coelostat, while Fowler answered Davies’s enquiry concerning coronal photography, of which Fowler confessed he had little experience.

The important point is that the plates should be fine-grained, and this is best obtained with slow plates. Ordinary or Process plates would seem to be most suitable, and I should take some of each. For the spectra, a brand of rapid plates would do if you would be satisfied with the blue end. We have found Imperial plates very good. For the visible spectrum, Wratten’s Panchromatic B are excellent.

Davies also ordered special plates from The Imperial Dry Plate Co, in Cricklewood, north London, but plates of the required size had never been prepared before: ‘We could of course prepare such a size in our Process emulsion or any other brand, but we should require about 7 or 10 days notice, and the price would be say 2s per packet of dozen.’ A similar reply, indicating specialist requirements and accordant delay, was received from Kodak in London: ‘We shall be pleased to supply you with Panchromatic B plates backed, size 6¾ x 2¼”, for 2s 9d per doz.’ By this time, Serbia had called up 70,000 reservists and was preparing for war. However, good news was received from John Douglas, British Vice Consul at Kiev, who notified Davies that he had found an observing site on the roof of a large building, with instrument storage space in one of the rooms and the Hotel Francois nearby. This was fortunate, as Davies had packed the larger instruments and had sent them on their journey to Kiev. The insurance certificate issued by Cook’s branch in Gloucester, date-stamped 20 July, lists these instruments: ‘Box contg equatorial movement of cosletat [sic] box contg parts of coronograph’, valued at £55, to be sent Grand Vitesse (high speed) from Stonehouse, Gloucestershire, to Kiev – but considering the list of exceptions, insurance seemed hardly worthwhile:

(1) War Risks, Civil Commotion, or consequences arising therefrom. (2) Breakage or damage to China, Glass, Furniture, Pictures (with or without glass), Porcelain, Marble, Mosaics, Musical Instruments, Statuary, Clocks, Ivory and Wood Carvings, Curios of every description, Sewing Machines, Typewriters and such like fragile articles, unless packed in separate packages by professional expert packers, approved of by Lloyd’s Underwriters, and a special premium paid thereon. (3) Loss of or damage to Jewellery, Trinkets, Watches, Clocks, Gold or Silver Articles, Cash, Bank Notes, Securities of any description, Valuable Pictures, when placed in baggage. (4) Loss of or damage to Field or Opera Glasses, Valuable Laces and Furs, and articles of an exceptional nature or value, unless specially specified and separately valued.

Allen, however, decided to take his crated instruments with him. He had visited the Russian Consulate in London, and was assured that he would be supplied with a letter and customs authorisation stating that he was visiting Russia for the purpose of observing the eclipse and would be bringing his instruments with him when he left the country – though there was no guarantee that the customs authorities would allow them through. He had also visited the German Consulate to obtain similar papers, and had ‘had a personal interview with von Ranke, the German Consul. He told me his grandfather, whose name I could not catch, was at some time at Greenwich Observatory and assisted in defining the boundary between America and Canada.’ What Allen could not know was that the Consul’s nephew would become one of the foremost literary figures of the
Robert von Ranke's sister, Amalie von Ranke, was the mother of Robert Graves. At school, Graves was enrolled as Robert von Ranke Graves (in Germany his books are published under that name), and before and during the First World War the name caused him difficulties. His mother's great-uncle was Leopold von Ranke, one of the founders of modern, research-based history, whose understanding of foreign policy and emphasis on diplomatic history remained the dominant paradigm in historical writing throughout the first half of the twentieth century, leading to a huge amount of writing on the origins of the First World War. In his autobiography, *Goodbye To All That*, Graves wrote of the beginning of the war:

> Despite the number of uniforms in the streets, the general indifference to, and ignorance about, the war was 'business as usual'. My family were living in London now at the house formerly occupied by my uncle Robert von Ranke, the German Consul-General. He had been forced to leave in a hurry on August 4th, 1914, and my mother undertook to look after the house for him while the war lasted. So when Edward Marsh [Winston Churchill's Private Secretary] rang me up from the Prime Minister's [Herbert Asquith's] office at Downing Street to arrange a meal, someone intervened and cut him off – the telephone of the German Consul-General's sister was, of course, closely watched by the anti-espionage section of Scotland Yard.

*Goodbye To All That* was first published in 1929, so it is possible that in later years Allen might have read it and come to realise the connection.

Back in 1914, Allen – with seeming indifference to impending war – reminded Davies that 'we have only got this house till 6th Aug. Everything has to be packed up and sent off before then, and there are so many things to be considered and decided on before leaving.' On 20 July he notified Davies that Cook's head office required six days’ notice for tickets to Kiev, that he and Gladys also intended to visit Moscow and St Petersburg, and that he hoped that Davies would accompany them: 'Having spent so much money and gone so far it would be a great pity not to see these two cities.'

So, while Austria–Hungary was amassing troops on the Serbian frontier, Davies was ordering specially cut photographic plates from The Imperial Dry Plate Company. On 21 July – the day that the French Ambassador in Berlin informed Paris of the first steps towards German mobilisation – the company confirmed that the plates would be sent within a few days: 'We can only assure you that we shall do our best in the preparation of the plates, but it must be quite understood that we accept no responsibility whatever. 1 doz. Process plates, 3½ x 4½". Backed.'

By the next day, Gladys had almost finalised the travel arrangements. With departure from London (Victoria) on 6 August, the times and route to Kiev via Berlin and Warsaw were those quoted by Cook's at the beginning of May, but the prices had dropped by 35%. They would be travelling first class, which would cost less than the original quote for second class: 'I do hope we shall be able to arrange to do all the journey together ... Yesterday we were vaccinated as a precautionary measure, not having been done since the Algiers expedition of 1900. (In 1898, those travelling to India to observe the eclipse of that year had been advised to take brandy and quinine, though there was no mention of vaccination. Quinine had long been used as an antimalarial medicine, and gin was added to it to mask the bitterness – the origin of gin and tonic.)

On 22 July, Allen advised Davies to enquire of Cook's whether there would be 'any chance of getting your money back in the event of a European war making the journey impossible or very difficult', though if they did go they would 'have some experiences to relate' when they returned home. The next day, Gladys informed Davies that they would be applying for tickets and must risk the chances of war breaking out. In addition, in June there had been 118 strikes in Russia, and at the beginning of July the workers of St Petersburg had organised a massive general strike – the culmination of two years of labour unrest – that involved the active participation of more than half the factory labour force, brought the city's trams and trolleys to a halt, closed most of the manufacturing and commercial establishments, and led to armed conflicts between strikers, troops, and police. Gladys, however, seemed undeterred: 'Do you see that 130,000 men are out on strike round St Petersburg and that the railway has been torn up in one place and tramcars smashed? They are preparing a nice welcome for us one way and another.' The rarity of total solar eclipses was drawing the fine line between foolhardiness and bravura. Compared with many other countries, Britain was a relatively peaceful place. No British soldier had fired a shot in Europe since Waterloo in 1815, other wars had been very distant, and reports of conflicts appeared only in newspapers (though they were soon to be seen in kinematograph shows), so this seeming intrepidity might have been due to a degree of innocence and a lack of awareness of the immediate reality of war – especially one of such magnitude.
Soon afterwards, Allen confirmed that he and Gladys would begin their journey on 6 August, and asked Davies whether he would meet them in London or in Folkestone, where they would take the steamer to Flushing. At 6.00 pm on the day that this letter was written, 23 July, Austria–Hungary issued its Ultimatum to Serbia, implying that the Serbian government was involved in the events at Sarajevo; and yet Franz Ferdinand did not command popularity, and his demise did not cast Austria–Hungary into deepest mourning. The Ultimatum consisted of a list of ten demands purposely made unacceptable, with the intention of provoking war, and after it was delivered, Theobald von Bethmann-Hollweg, the German Chancellor, issued a circular to German Ambassadors stating that the action and demands of Austria–Hungary were fully justified.

The following day, Davies received a letter from Law at the Foreign Office – as if with an air of ‘business as usual’ – informing him that ‘His Majesty’s Ambassador at St Petersburg has applied for customs facilities for you and Mr Allen at Alexandrovo, the customs station on the direct line between Berlin and Warsaw’, and that Cook’s had stated that the instruments were being forwarded direct to Kiev. At the same time, at a meeting of the Cabinet, Sir Edward Grey said of the Ultimatum to Serbia that he had ‘never before seen one State address to another independent State a document of so formidable a character.’ When news of the Ultimatum reached St Petersburg, Russian Foreign Minister Sergei Sazonov berated the Austro-Hungarian Ambassador, Count Szapáry: ‘You are setting fire to Europe!’

At home, Allen was discussing the booking of sleeping-car berths, considering that ‘if you order your berth separately we shall each have to share a compartment with a stranger – a very objectionable arrangement.’ And yet he was still concerned as to whether a visit to Russia was feasible. He had, however, received from Backlund a document entitling him to a 50% reduction of all fares and the free transport of all instruments and apparatus, and the sanction of the Imperial Academy of Sciences for him to proceed to Russia. Meanwhile, Davies received a brief communication from Francis Thomas at the British Consulate in Kiev, informing him that ‘the roof in question is concrete’ – an important piece of information concerning the stability of the observing site. But still there was indecision. Further correspondence about meetings and arrangements included thoughts concerning the possibility of stopping Davies’s instruments en route, while Gladys, hoping that they would ‘succeed in getting somewhere, somehow’, again commented with a minimalisation of the seriousness of international events: ‘Are not things in a distracting condition? I do think that the Powers might have waited until after the eclipse to pick their quarrel.’ But the Powers were not waiting. Serbia had mobilised, Germany had threatened war if Russia did not halt preparations, Austria began to mobilise troops on the Russian frontier, and Russia declared that troops would be mobilised on the Austrian frontier if Austrian troops crossed the Serbian frontier.

The international situation was escalating and becoming ever more threatening, and time was in short supply. On 27 July, Allen again invited Davies to his home for another discussion, as he felt that he could not make a decision alone.

If eclipses were not so scarce it would undoubtedly be wise to wait for the next one. We risk an unknown amount of discomforts and perhaps worse by going into a backward country like Russia at the outbreak of war. We might for instance be taken for spies with very unpleasant results, perhaps lynched on the spot before they had time to discover their mistake.

At the same time, he also sent two telegrams to Davies: ‘Trust you will come tomorrow and stay night Carriage will meet you if informed time Cannot undertake responsibility decision without personal interview’ (Figure 9), and, apparently because Davies could not accept and instead invited Allen to Fretherne, ‘Quite impossible very sorry Allen’. On the same day, Czar Nicholas II wired to Belgrade that Russia could not be indifferent to the fate of Serbia, and Sir Edward Grey, in the House of Commons, stated that ‘the moment the dispute ceases to be one between Austria–Hungary and Serbia and becomes one in which another Great Power is involved, it can but end in the greatest catastrophe that has ever befallen the Continent of Europe at one blow ... The consequences of it, direct and indirect, would be incalculable.’

Gladys was disappointed that there could be no meeting or discussion about their expedition: ‘Papa feels quite hopeless about making a decision by himself ... [He] is harassed and worried beyond words, and does not know what to do for the best.’ There were suggestions that the journey could be postponed for a few days, that a stay in Berlin could be cut to one night, and that time spent at Kiev could be reduced. ‘Anything would be better than having to give up the whole business. Isn’t it all hopelessly unlucky?’ Her father too expressed his doubts and concerns.
Should matters continue in the present state of suspense, by starting we run the risk of getting involved in serious difficulties. Russia is not laid out for tourists, and I fear that if the traffic is seriously disorganised, and we get involved in crowds of reservists and civilians all anxious to travel and with not many trains provided for them we should come off very badly, not speaking a word of the language, scarcely able to read the alphabet, and hampered with a quantity of hand luggage ... The journeys are so long, and if we had to travel by a train stopping at every station, and with not a morsel of food to be obtained at the buffets, I expect after 24 hours we should be inclined to wish that we had stayed at home ... When so much of the manhood of a nation is called to the colours there is bound to be a good deal of disorganisation. I expect if we ever get to Kieff we should not have much discomfort, always provided we were not taken for spies, but the getting away again might be a difficult job.

His fears were not ungrounded. On the day that he wrote this letter, 28 July, Austria–Hungary declared war on Serbia. That day is now considered to be the first day of the First World War.

On 29 July, Russia mobilised, Austria bombarded Belgrade, and German patrols crossed the French frontier. Nevertheless, planning for the eclipse expedition did not halt, and the next day, Allen was busy investigating railway services through Germany, Poland, and Russia, and suggesting various sojourns along the route. Each of the stages occupied between 11 and 24 hours, but there was ‘a very good through train to Moscow, leaving Paris on Mondays and reaching Moscow on Wednesdays’, though seats had to be booked three or four weeks in advance. Meanwhile, Gladys had travelled to London, apparently on a shopping trip. Writing from Harrods Royal Exchange, she informed Davies that she had visited William Wesley, Secretary of the Royal Astronomical Society, at Burlington House, Piccadilly: ‘I was taken into his private sanctum, where we had quite a long discussion of events in general, and he was most delightful. Prof Fowler started on Sunday last and they think should reach Kieff today.’ Fowler’s instruments had been sent on in advance, but he was told afterwards that he would have been better advised to keep them with him. He would soon realise the wisdom of this belated advice. Over the ensuing four days, Germany and France mobilised, Germany declared war on Russia, East Prussia was entered by Russian raiders, German troops invaded Poland, Luxemburg, Belgium, and France, and England assured France that the British fleet would stop the German fleet if the latter attacked French shipping. The war had spread from the Balkans, across Europe, to the English Channel.

In a final and desperate attempt to find a way, Davies wrote to Frank Dyson (the Astronomer Royal, and a Vice President of the Association) and to the Foreign Office. Dyson, however, had left for Australia for the meeting of the British Association for the Advancement of Science which was to take place in Sydney and Brisbane in August and September. (In the event, this meeting would also be disrupted when the war extended to the antipodes. A planned excursion to New Zealand had to be cancelled, and many delegates left early to embark on a return sea voyage around the globe). The reply from Greenwich informed Davies only that the eclipse party – Harold Spencer Jones, Charles Davidson, and Patrick Hepburn – had left on 17 July, ‘and should by now be at Minsk in Russia, but we have not heard yet of their arrival.’ Otherwise, it was ‘regretted that we are not in a position to offer you advice as to the best means of getting to Russia under the existing circumstances.’
The reply from the Foreign Office, dated 4 August, is signed ‘Dufferin and Ava’: Terence John Temple Hamilton-Temple-Blackwood, 2nd Marquess of Dufferin and Ava, Second Secretary of the Diplomatic Service, and a Justice of the Peace and Deputy Lieutenant for County Down (whose father, the 1st Marquess – a prominent figure in Victorian society – was involved in the affairs of Syria, Lebanon, Burma, and Russia, and was later Governor General of Canada and ultimately Viceroy of India).

With reference to your letter of the 1st inst respecting your desire to reach Russia, I write you this private line in order to avoid the delay which would necessarily occur in sending you an official answer. I am afraid we can give you no advice as to how you can get to Russia. There is no chance at all of your doing so (so far as we know) either by the ordinary overland route or via the Baltic. It is possible you might get round by sea to Constantinople and thence to Odessa. In the case of our Officers who have been ordered to return to their posts we have told them to consult the various steamship offices and do the best they can for themselves.

A few hours after this letter was written, Britain declared war on Germany, and the last hope for an expedition was dashed. Within a few days the war had spread not only across Europe but also to the Mediterranean, North Africa, West Africa, and South Africa, and on 12 August, Britain declared war on Austria–Hungary. Even if Davies and the Allens had taken up the one remaining option of the Mediterranean route, their only haven as civilians would have been neutral Italy, which refused to continue its Triple Alliance with Germany and Austria–Hungary and would not enter the war on the side of the Allies until the following May. Even so, the expedition probably would not have reached Constantinople, as the Ottomans, following a secret treaty with Germany, controlled the Dardanelles, though they did not enter the war officially until the end of October.

Davies’s instruments, however, had already been dispatched on their European route, and further communication with Cook’s branch in Gloucester served only to confirm fears about their fate. On 8 August, Cook’s advised Davies:

We have now had a reply from our chief office who informs us that in all probability the boxes have passed the German frontier. They are writing to Mr Chas Birner, asking if he has received this consignment and if so whether he has reforwarded them, and if not to hold same pending our further instructions. If we succeed in locating them we will have them reforwarded to London as soon as communication is re-established. Under the circumstances we cannot move further, and we shall therefore be obliged to receive your cheque for £4 15s 9d and commence afresh in the future.

Cook’s thus absolved themselves of further responsibility, and Davies could do nothing except settle the final bill.

There is no further correspondence concerning this intended expedition, nor any record of the fate of the instruments. In the circumstances, however, disappointment was preferable to being stranded at the far side of war-torn Europe, with the risk of being arrested, imprisoned, or even executed.

Other expeditions

Despite the difficulties, several expeditions from various countries were stationed along the path of totality from Norway to Crimea (though not all of them are mentioned here). The weather everywhere, however, was different from what was forecast and expected, and later, the detailed monthly report of the Meteorological Office included confirmation that the weather system over the British Isles throughout August had moved across Europe.

The general character of the weather, after being rainy and cool for the first 8 or 9 days, was warm and mostly dry, with a good percentage of bright sunshine ... The superseding anticyclonic system came up from the southward on the 9th and 10th ... A temporary reversion to a cyclonic type over the southern and western districts was caused on the 14th and 15th ... This disturbance brought thunderstorms ... On the disturbance passing away over France the anticyclone in the north extended to all parts of this country and remained the controlling influence until the 20th, when depressions again arrived from the Atlantic bringing southerly and south-westerly winds and rain. On the 21st, thunderstorms occurred in practically all parts of the Kingdom.
Protracted stormy weather had moved in from the North Atlantic, across Europe, and into Russia, and during the three weeks or so leading up to the eclipse the skies were mostly cloudy. By the time of the eclipse the weather was much more favourable over Norway, Sweden, and Riga, but the poor weather persisted further to the south-east, especially during the daytime, though the nights were clear. Success or failure in observing the eclipse, even at stations in close proximity, depended on intermittent cloud, though the majority of the expeditions were successful (Table 2).

Apart from Canada and Greenland, the Moon’s shadow first touched land at Sandnessjøen on the west coast of Norway – the site chosen by Adolf Miethe, professor of photography, photochemistry, and spectroscopy at the Technische Universität Berlin. Miethe had worked for Schulze & Barthels in Rathenow and for Voigtländer in Braunschweig, developing telescopes, binoculars, cameras, and telephoto lenses, and was a pioneer of colour photography. (Although he is credited with the invention of the three-colour process, it was first conceived by James Clerk Maxwell in 1855 and achieved by Thomas Sutton in 1861.) Miethe was very attached to Norway. He first visited the country in 1885, learned Norwegian, translated several Norwegian books into German, and was an accomplished skier and Arctic explorer. The eclipse expedition was planned over a period of three years, and incorporated numerous instruments designed and manufactured by Goerz – 13 tons of equipment, transported from Berlin to Sandnessjøen and set up in several observing sheds. The facilities also included a wireless connection to Paris for receiving international time-signals transmitted from the Eiffel Tower and to receive meteorological reports and other communications.

Miethe and eight colleagues, travelling on the ship Sigurd Jarl, arrived at Sandnessjøen on 11 July – though three of them were military conscripts and soon had to return to Germany. Throughout the ensuing weeks the weather was repeatedly changing, but when eclipse day dawned

![Table 2. Expeditions and observations.](image-url)

<table>
<thead>
<tr>
<th>Total eclipse</th>
<th>Sandnessjøen</th>
<th>Germany</th>
<th>Berlin</th>
<th>Miethe</th>
<th>Successful</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Norway</td>
<td>Private</td>
<td>Birkeland</td>
<td>Successful</td>
<td></td>
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<tr>
<td>Fellingfors</td>
<td>Norway</td>
<td>Christiania</td>
<td>Geelmuyden</td>
<td>Successful</td>
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<td>Strömsund</td>
<td>England</td>
<td>Private</td>
<td>Slater</td>
<td>Successful</td>
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<tr>
<td>France</td>
<td>Paris</td>
<td>Bosler, Block</td>
<td>Successful</td>
<td></td>
<td></td>
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<tr>
<td>Sollefteå</td>
<td>Sweden</td>
<td>Swedish Academy</td>
<td>Hasselberg</td>
<td>Successful</td>
<td></td>
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<tr>
<td>Härnösand</td>
<td>England</td>
<td>Storyhurst</td>
<td>Corrie, O’Connor</td>
<td>Successful</td>
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<tr>
<td>Riga</td>
<td>Russia</td>
<td>Pulkowa</td>
<td>Backlund, Kostinsky, Balanovsky</td>
<td>Successful</td>
<td></td>
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<tr>
<td>Minsk</td>
<td>England</td>
<td>Greenwich</td>
<td>Spencer Jones, Davidson, Hepburn</td>
<td>Successful</td>
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<tr>
<td>Brovary</td>
<td>America</td>
<td>Lack</td>
<td>Campbell, Curtis</td>
<td>Unsuccessful</td>
<td></td>
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<tr>
<td>Kiev</td>
<td>England</td>
<td>Imperial College</td>
<td>Fowler, Hills, Curtis</td>
<td>Abandoned</td>
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<tr>
<td>Smala</td>
<td>America</td>
<td>Amherst</td>
<td>Todd</td>
<td>Successful</td>
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<tr>
<td>Stavidly</td>
<td>Russia</td>
<td>Pulkowa</td>
<td>Tikhov, Yashnov</td>
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<tr>
<td>Heniches’k</td>
<td>Russia</td>
<td>Kharkiv</td>
<td>Struve, Struve, Jewdokimoff, Gerasimovich, Fesenko</td>
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<tr>
<td>Feodosiya</td>
<td>Germany</td>
<td>Potsdam</td>
<td>Kempf</td>
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<td></td>
<td>Argentina</td>
<td>Córdoba</td>
<td>Perrine, Mulvey</td>
<td>Unsuccessful</td>
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<td>Russia</td>
<td>Simeis</td>
<td>Beljavskij, Neujmin</td>
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<td></td>
<td>Pulkowa</td>
<td>Donich</td>
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<td></td>
<td>Imperial Academy</td>
<td>Palenom, Okulichem</td>
<td>Successful</td>
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<td>Moscow</td>
<td>Sternberg</td>
<td>Successful</td>
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<td></td>
<td>France</td>
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<td>Pluvinel, Senouque, Rougier, Chandon</td>
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<tr>
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<td>Nice</td>
<td>Chrétien, Lagrula</td>
<td>Successful</td>
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<tr>
<td></td>
<td>Spain</td>
<td>Madrid</td>
<td>Ascarza, Carrasco</td>
<td>Successful</td>
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<td>Italy</td>
<td>Catania</td>
<td>Riccò, Taffara</td>
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<td>Rome</td>
<td>Mengarini, Palazzo</td>
<td>Successful</td>
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<tr>
<td></td>
<td>England</td>
<td>Cambridge</td>
<td>Newall, Butler, Stratton, Rossi</td>
<td>Unsuccessful</td>
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</table>

| Partial eclipse (successful) | London | Fowler | Algiers | Baillaud, Gonnessiat |
|                             | Paris | Bigourdan, Chatelut, Le Morvan, Jekhovsky | Palermo | Angelitti |
|                             | Lyon | Luizet, Guillame | Catania | Favaro |
|                             | Marseille | Bourget | Naples | Bemporad |
|                             | Toulouse | Saint-Blancat, Montangerand | Athens | Éginitis |
|                             | Tortosa | Landerer | Ksara | Berloty |
|                             | Valencia | Tarazona, Martí | | |

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the Sun was shining in a clear sky, and scientists, visitors, and the local populace made ready for the event. Miethe’s programme of observations was accomplished with complete success, and the report is the most extensive and impressive of all the reports of the 1914 eclipse – not a journal paper, but a 96-page book with more than seventy photographs, illustrations, and diagrams: *Die totale Sonnenfinsternis vom 21. August 1914 beobachtet in Sandnessjøen auf Alsten (Norwegen)* (see Figures 10 and 11). It is known that colour photographs of the eclipse and the camp were obtained, but these, and various items of equipment, were lost during the return to Germany.

Figure 10. Four photometric cameras and a slit spectrograph mounted as a unit for study of the corona – one of the many instruments used by Adolf Miethe’s party at Sandnessjøen. (*Die totale Sonnenfinsternis vom 21. August 1914.*)

Figure 11. Photograph of the corona obtained with the 3.45-metre objective. (*Die totale Sonnenfinsternis vom 21. August 1914.*)
Others who observed the eclipse at Sandnessjøen included Fredrik Størmer and Jens Schröter of Christiania (Oslo) University and Observatory, and Kristian Birkeland – each of whom achieved eminence in various other scientific spheres, including geophysics and meteorology.

Further to the south-east, Hans Geelmuycden, from Christiania Observatory, was stationed at Fellingfors, Norway, and was successful. Robert C. Slater had sent his instruments from England to Riga in advance but was unable to cross the Baltic, so he and his wife travelled to Sweden instead. When he arrived at Strömsund he constructed, with the assistance of a local carpenter, a camera equipped with a small lens which he had taken with him, and carried out successful observations of the eclipse. (Slater was Secretary of the Association from 1910 to 1913; he later reverted to the surname of his great-grandfather: Sclater.) Others who obtained results included Jean Bosler and H. G. Block from Paris, stationed at Strömsund, Bernhard Hasselberg from the Royal Swedish Academy of Sciences, at Sollefteå, Cortie and O’Connor and their assistants at Härnösand (Figure 12), and the Pulkowa expedition – Oskar Backlund, Sergey Kostinsky, Innokentii Balanovsky, and four assistants – at Riga.

The Lick Observatory expedition – a party of eight led by William W. Campbell and Heber D. Curtis – travelled from California to Kiev. Curtis accompanied the 4½ tons of equipment on the steamer Czar, of the Russian–American Line, direct to Liepāja, arriving on 8 July, while the other members of the party travelled via Italy and Austria. They had been offered sites and accommodation by Mr Grefs, Court Chamberlain to Czar Nicholas II, at his estate at Stavidly, and by the Lord Mayor of Kiev on his estate near Kiev; but both offers were declined, as the locations were considered to be too far from the centre line of totality. Eventually, they accepted the offer by Judge Lavrovskoy to occupy his estate at Brovarý, about 12 miles north-east of Kiev (Figure 13).
Despite all efforts, however, the Lick Observatory party did not obtain any results, though they did record the contributions of the Governors of Kiev and Chernigov, who published ‘brief and sensible proclamations’ about the eclipse for the benefit of the ‘simple, kindly Russian peasants’. Consequently:

The ispravnik, a high official of our district, thought he would do the same, and his proclamation is one of our cherished mementoes of the trip; he advised that the children should be kept indoors and the cattle not be sent out to the fields on the day of the eclipse!

In addition, the stark realities of the political and military situation were evident:

Some ten days after starting life in camp came the order for the Russian mobilisation, and we shall always remember the long sad procession of rude carts which passed the Datcha early one morning, transporting the men of our little town to their mobilisation depot. The priests, carrying the glittering icons and banners, gave them their blessing, and the scenes of parting with the wives and children were heart-rending; it was already a tragedy to these peasant women, left behind to gather in their little crops for the winter, and we could but recall that this same tragedy was doubtless at that time being multiplied ten thousand fold by similar scenes in nearly every square mile of Europe.

For some considerable time, much thought was given to the probable difficulties of the return journey. The party had railway tickets, purchased before leaving America, taking them via Berlin and Paris to London, but these were no longer of value. The route via Odessa and Constantinople was impossible, as the Russians daily anticipated that Turkey would declare war, and only one passenger train per day ran from Kiev to Moscow, though neither money nor influence could guarantee a seat on this slow and crowded train. A direct railway journey from Kiev to Petrograd (the German-sounding name St Petersburg had been patriotically changed after the war began) was very uncertain, and the route via Moscow, Petrograd, and Finland was the only practicable one except via Siberia. After reaching Pulkowa, however, they returned via Rauma, Stockholm, Christiania, and Bergen, arriving at Newcastle on 7 September.

David Todd, of Amherst College, Massachusetts, his wife Mabel Loomis Todd, and their daughter Millicent sailed from New York to Liepāja, west of Riga, where they stored their instruments for later consignment. They then visited Oskar Backlund at Pulkowa in order to ascertain what location had been assigned to them, and consequently travelled to Stavidly, about 100 miles south-east of Kiev. Unfortunately, due to the extensive use of the railway system for the mobilisation of troops, Todd’s instruments were not forwarded from Liepāja, and he had to construct a camera with oddments borrowed from Kiev University and a Dallmeyer lens purchased in a local photographic shop. Soon afterwards, Count Aleksey Bobrinsky (a descendant of Catherine the Great, and an historian and archaeologist) invited Todd to join him on his estate at Smala, in company with Prince Nikolai Trubetzkoy (a linguist and historian who was later appointed Professor of Slavic Philology at the University of Vienna). The camera was set up exactly on the centre line (Figure 14), but due to drifting cloud, success was limited. Todd and his family returned to America via Moscow, Petrograd, Sweden, and England. At Stockholm, Todd was presented with a film of the eclipse obtained at Sollefteå, and after he arrived in London it was shown in the Pathé theatre in Charing Cross Road.
Other expeditions were more successful. Gavriil Tikhov and Pyotr Yashnov from Pulkova, stationed at Stavidly, obtained results, while at Henichesk, Ludwig Struve, Otto Struve, Nikolaj Jewdokimoff, Boris Gerasimovich, and Vasily Fesenkov, from Kharkiv Observatory, also carried out observations, as did F. Blumbach’s party from the Russian Astronomical Society, a few miles to the south. However, an expedition from Potsdam Observatory to Feodosiya, led by Paul Kempf, had to be abandoned, though several other parties were stationed near the town.

The expedition to Feodosiya led by Charles D. Perrine and James O. Mulvey, of Córdoba National Observatory, Argentina, left Córdoba on 16 June. From Buenos Aires they crossed the Atlantic, and while passing through the northern Mediterranean they heard of the events in Sarajevo. From Genoa they continued by railway, while their instruments were consigned to a sea voyage to Odessa. After passing through Vienna on 15 July they crossed the Russian frontier at Volochisk the next day and proceeded to Odessa, where they met with Ruiz Guíñazu, the Argentinian Consul General, and visited the university observatory. After leaving Odessa on 23 July they travelled by sea via Yevpatoriya, Sevastopol, and Yalta, and arrived at Feodosiya two days later. Photographs of the partial phases of the eclipse were obtained, but cloud prevented observation throughout the period of totality. The party returned home via Petrograd, Rauma, Stockholm, Christiania, Bergen, and England. Later, Perrine published a popular account of this expedition in the major Argentinian newspaper Los Principios.

At a site closer to Feodosiya, Grigory Neujmin and Sergei Beljavskij, of Simeis Observatory, obtained observations for only about 30 seconds, while successful programmes of observation were carried out by Nikolay Donitch from Pulkowa, E. A. Palenom and L. V. Okulichev from the Imperial Academy of Sciences, and an expedition from Moscow led by Pavel Sternberg (a close friend of Lenin and Trotsky). Also at Feodosiya, observations were obtained by Aymar de la Baume Pluvinel, Albert Senouque, Gilbert Rougier, and Edmee Chandon from Paris, Henri Chrétien and Joanny-Philippe Lagrula from Nice, Victoriano Ascarza and Pedro Carrasco from Madrid, and Annibale Riccò and Luigi Taffara from Catania Observatory. In addition, electrical engineer Guglielmo Mengarini and geophysicist Luigi Palazzo, from Rome, carried out a programme of work incorporating photographic, pyrheliometric, meteorological, and magnetic observations, measurements of penetrating radiation, and recordings of the temperature of the soil surface. The magnetograph was operated constantly throughout 16–28 August.

The Cambridge expedition consisted of Hugh F. Newall and his wife, Frederick J. M. Stratton, and C. P. Butler (Director of the BAA Spectroscopic Section). Their instruments, dispatched to Hull, left England on 6 June, and later the party travelled across the Continent to Trieste, where they were joined by R. Rossi, and via the Adriatic, the Aegean, and the Black Sea, to Feodosiya, arriving on 25 July. There they found their instruments safely housed in the customs shed. Newall later acknowledged the help and hospitality of several officials and local residents, and his report conveys a sense of idyllic charm. Among those he thanked were Mr Hadji ‘for the loan of a summer bungalow’, Mr and Mrs Lemke ‘for kind help in household preparations’, and Dr Krim ‘for permission to use his land for our camp among the vineyards’ (Figure 15).

On 28 July, three days after the Cambridge party arrived in Feodosiya, Austria–Hungary declared war on Serbia, and soon afterwards, notices ordering the mobilisation of Russian troops were posted up in the streets. On 1 August, news was received of Germany’s declaration of war on Russia. In these distracting and anxious circumstances, the equipment was set up, and preparations for observation of the eclipse were begun. The news of Britain’s declaration of war on

Figure 15. Newall’s camp at Feodosiya. (Cambridge Institute of Astronomy Library.)
Germany was brought to Newall by the British Vice Consul, W. von Stürler, at midnight on 5 August, and on 11 August, Stratton, having already served for thirteen years in the Cambridge University Rifle Volunteers, the Cambridge University Officers Training Corps, and the Territorial Army, returned home via Odessa, Petrograd, and Norway. The day after Stratton left Feodosiya, Britain declared war on Austria–Hungary. Final preparations for the eclipse were carried out under considerable stress – but to no avail, as clouds drifted over immediately before totality, and cleared again immediately afterwards.

A few days after the eclipse, the Cambridge instruments were stored at Odessa in the charge of Jacob Owen and Co, agents of the Wilson Line. On 27 August, Rossi returned to Italy via Yalta, while the Newalls and Butler began their journey home via Simeis, Sevastopol, Moscow, and Petrograd – a distance of around 1,550 miles from the Black Sea to the Baltic. At Pulkowa, Backlund informed them of the success of the Greenwich party at Minsk, and also showed them photographs of the eclipse obtained by Sergey Kostinsky with the Pulkowa expedition at Riga. Their journey then took them through Finland – though this was not necessarily safe, as although that country was part of the Russian Empire, many Finns supported Germany. On arrival at Rauma they heard of the sinking of a Finnish ship by a German warship, and had to decide whether to take the long-distance overland route far to the north, round the Gulf of Bothnia, or risk a twelve-hour sea voyage to Gävle, Sweden. They chose the latter, and sailed during a rough night which they hoped might encourage German warships to remain in harbour. The journey also avoided the Baltic route. Even before Britain had declared war on Germany, British ships had been detained in Hamburg, and by the end of August, German ships had been laying mines for almost a month and had already entered into action against Russian naval forces and attacked merchant ships. The Cambridge party then proceeded via Stockholm and Christiania, reaching Bergen on 14 September, and after a stormy passage across the North Sea, arrived at Newcastle on 17 September – a journey of three weeks, compared with Gladys Allen’s first outward itinerary supplied by Cook’s: a 3½-day journey from London to Kiev.

Of the other two official British expeditions to Russia, the Royal Observatory party – Harold Spencer Jones and Charles Davidson, accompanied by Patrick Hepburn – sailed from London on 17 July, taking their instruments with them. The passage took them through the Kiel Canal – which had just been widened and deepened to admit the largest German Dreadnoughts – and they arrived at St Petersburg on 22 July. Although they received considerable assistance from Oskar Backlund, delays were incurred when the customs authorities insisted on removing the lids of the cases to ensure that only astronomical instruments were contained in them, and further difficulties were experienced, due to the strikes in the city, in arranging for the carriage of the instruments from the docks to the railway station. Eventually, however, on 27 July the party began their journey to Moscow – where they encountered numerous pro-war demonstrations – and from there they proceeded to Minsk. They then had to wait several days for their instruments, as the railways had been commandeered by the military authorities, and freight was refused. Almost 160 military trains passed through Minsk every day, while passenger services had been reduced to one slow train per day. Nevertheless, on 1 August the instruments arrived and were loaded onto four wagons pulled by small horses – ‘sorry beasts they were, but the best obtainable’ – which struggled to move along the deep sandy track designated as the main road to Vilnius. The observing site, chosen by Mr Amaftounsky, the Chief of Control, was close by the country house of Dr Kodis, 3 miles north of Minsk, where accommodation was provided.

For three weeks the nights were clear, and Delavan’s comet 1913f – declared in popular publications as ‘the comet of war’ – was an easy naked-eye object; but during the hours of daylight on almost every day the sky was overcast. Fortunately, on the day of the eclipse there were a few breaks in the clouds, providing an unobscured view throughout the whole period of totality, and with the help of Mme and Mlle Kodis and three engineers – Leon Szymanowski, Alexander Borodin, and Leon Nowicki – the entire programme of observations was carried through. Several photographs were obtained with the coronagraph and the spectrograph, while to the eye the corona appeared bright and of a steely blue whiteness. Regulus could be seen shining through the corona, and Mercury and Venus were also visible. In Minsk, a short distance away, almost nothing was seen of totality.

The Royal Observatory party’s journey home was, in contrast with other expeditions, relatively uneventful. On 25 August they left for Petrograd by way of Vilnius – a journey of three days, due to the very slow train and numerous stops. Freight was not being accepted on the railways, but a special concession was granted by the Chief of Railways at Minsk for the instruments to be conveyed as passengers’ luggage to Vilnius, and from there to Petrograd by military train. At
Pulkowa the party visited Oskar Backlund – who promised to store the instruments in the observatory until the end of the war – and in company with Perrine and Mulvey, and Campbell, Curtis, and other members of the Lick Observatory party, they returned via Rauma, Stockholm, Christiania, and Bergen, arriving at Newcastle on 7 September.

Fowler, Hills, and Curtis, however, from Imperial College, would not reach their destination at Kiev. On 18 July their instruments were dispatched from London to V. H. C. Bosanquet, the British Consul at Riga, with the intention that they should be forwarded to Kiev. The party left London on 25 July, travelling via the Kiel Canal and Copenhagen, and reached Riga on 1 August – the day on which Germany declared war on Russia. Their first task was to visit the British Consul in order to determine the whereabouts of their instruments, only to discover that due to the monopolisation of the railways by the military authorities they were still in a warehouse in Riga and had not been forwarded to Kiev. In addition, funds had been made available only at Kiev, and it was proposed to enlist the help of the university there; but at Riga there was no university, they could find no-one who took the slightest interest in the eclipse, and it was impossible to communicate with anyone either by letter or by telegram. The party remained in Riga for several days but risked indefinite detention, and on 5 August the expedition was abandoned. The only remaining option was to return via Sweden – 24 hours by sea from Riga – though it was eventually decided not to join the expeditions at Härnösand, as Hills had to return home for military service as soon as possible. Therefore, they boarded a Swedish steamer – but it was not allowed to leave, as Sweden had not yet declared absolute neutrality. The situation was becoming desperate. Having been informed that a cargo boat would be leaving for Copenhagen at the end of the week, they reserved places as deck passengers, where they were joined by more than a hundred other passengers – mostly Danes, with a few French, English, Italians, and Americans, though no Germans or Swedes were allowed to leave. Hills’ brief account of the voyage from Riga to Copenhagen is worthy of a Boys’ Own ripping yarn.

At 9 am on Thursday morning (August 6) we were suddenly told that this ship was going out at 10! This news naturally caused much excitement and bustle. We got on board, bought a supply of food for the voyage, and some pieces of bass matting to sleep on, and eventually cast off from the quay at five, steamed four or five miles to the entrance of the river and then anchored off the port. The next task was to get the permission of the military commandant to pass out through the mine-field. We were told it was too late to get this that night, but that it would be given early the next day. However, nearly the whole day passed without a movement. At last, about 5 o’clock, when everybody had got very despondent and the Captain was talking darkly of going back to Riga, the Danish Consul came up in a motor-boat, waved a paper, which we understood to be an order from St Petersburg for us to go, and raced on to the fort. Very soon a couple of tugs appeared, and a pilot and other officials were put on board. The boat was seized, swung from its moorings, and towed out. It need hardly be stated that the ship now woke up to life; we had a party of musicians on board, so that we went out to strains of the Russian National Hymn, the Marseillaise, and God Save the King! At 8 pm we reached the outer guard-ship, our pilot and officials left us, the tugs cast off, and with much waving of hats and handkerchiefs, with congratulatory whistles from the tugs and answering bellows from our siren, at 8.5 the course was set and we found ourselves on the high seas. After this, the only anxiety was lest we should be stopped by a German cruiser.

They saw no sign of German ships, however, and on the following Sunday evening they arrived at Copenhagen, where the party separated. After some delays owing to reports of mines in the North Sea, Hills returned home via Esbjerg and Leith and arrived in London on 14 August, while Fowler and Curtis returned via Bergen and reached Newcastle on 16 August. It must have been particularly galling to Fowler and his colleagues to learn later that Backlund and his colleagues from Pulkowa had intended to meet them at Riga and had observed the eclipse there.

At Imperial College, Fowler carried out spectroscopic observations of the cusps of the 0.65-magnitude partial eclipse (despite the thunderstorms reported by the Meteorological Office), while other observations of the partial eclipse were reported by Guillaume Bigourdan, Jules Chatelut, Charles Le Morvan, and Benjamin Jekhovsky at Paris, Michel Luizet and M. Guillaume at Lyon, Henri Bourget at Marseille, Dominique Saint-Blancat and Louis Montangerand at Toulouse, José Landerer at Tortosa, Ignacio Tarazona and Vicente Martí at Valencia, Benjamin Baillaud and François Gonnessiat at Algiers, Filippo Angelitti at Palermo, Antonio Favaro at Catania, Azeglio Temporad at Naples, Demetrius Éginitis at Athens, and Bonaventure Berloty at Ksara.
Consequences

During those few weeks of August the world changed enormously. By the time of the eclipse there had been ten declarations of war and numerous battles on land and at sea, with several more declarations to follow, and over the ensuing few weeks hostilities spread to British, French, and German territories in Africa and the Far East, involving Japan and China.

All the eclipse expeditions to Russia faced considerable difficulties, though most of them produced reports and had many a long tale to tell. The risks were greatest for the German expeditions, and the population of Feodosiya included many German residents. All of them were notified that Russia would not be responsible for their safety if they remained there. Several of the German astronomers were arrested after they arrived but before the eclipse; and after the eclipse, those who hesitated were arrested and sent to Odessa, while their instruments were confiscated – after which, nothing more was heard of them. Those German astronomers who managed to escape the country appealed to Backlund to assist with the recovery of their instruments, but he was powerless to help. Some of the equipment of the various other expeditions was removed successfully, but some was abandoned or stored in Odessa, Moscow, Petrograd, Riga, and other locations, to be retrieved up to ten years later or to be lost forever. This state of affairs was epitomised by Campbell and Curtis, whose equipment was stored at Pulkowa: ‘Whether they are still in storage there, or are being sent to us via Vladivostock and the Pacific, we do not know.’ It can only be imagined what difficulties would have been faced in attempting to recover equipment from a country which, a few months after the October Revolution of 1917, had transformed from the Russian Empire to become the Soviet Russian Republic, the Russian Socialist Federative Soviet Republic, and, after the end of the Civil War in 1922, the Union of Soviet Socialist Republics, with altered frontiers and a radically different political, bureaucratic, and social agenda.

Later eclipses

It was not possible for Davies or the Allens to travel to observe the next eight solar eclipses, as the various paths of totality passed over the Pacific Ocean, the Atlantic Ocean, North America, Central America, South America, Antarctica, the Indian Ocean, Australia, and the Far East. After the end of the war, Allen moved to Folkestone, and in 1940 he moved to Shillingford, Oxfordshire. Nothing further is known of Gladys, except that after her father’s death in 1945 she presented two of his cameras to the Royal Astronomical Society. (In 1956 these cameras were presented to the Association.) In 1924, Davies succeeded Walter Goodacre as President of the Association, and in 1926 he was succeeded by W. H. Steavenson. His final chance to observe a total solar eclipse came in 1927, when on 29 June the path crossed North Wales and northern England. Davies was stationed at Giggleswick, in the West Riding of Yorkshire, where the best results were obtained. There were no more opportunities for him, however, as he was aged 70 and his health was declining. In the year of the British eclipse he retired from active clerical work and went to live at Kemerton, on the lower slopes of Bredon Hill, close to the scenes of his early life. He died in 1931, and was buried in the cloister garth of Tewkesbury Abbey, in the town where he had been born.

Appendix

Mrs Marian Deuchar’s memories of her grandfather (written in 1992)

My grandfather was quite a small man compared to his sons, and was only a little taller than my grandmother. He was bald from quite early on in life, and had the slightly worried benevolent look that I imagine Mr Pickwick probably enjoyed, and like him did everything at the trot. I can hear him so clearly saying ‘Come on, dear boy, come on’ (even though I was a girl) if one slowed down to a normal walk. He had a number of firm beliefs in health matters which no amount of persuasion would alter: for instance, he always wore two pairs of socks – one white cotton first and the black wool ones over the top (he said wool against the skin was bad) – and he also always wore his clerical collars two sizes too big, as he was convinced a fitting collar restricted the flow of blood to the brain. For the same reason, when he bought a new boater to wear in the summer he always pushed the top out at the back so that it flapped up and down as he walked, and in fact sometimes stood bolt upright when he was flying along on his bicycle round his parish. He said the flow of air was beneficial to the brain. Then again, shaving was a little unusual. He maintained that there
were chemicals injurious to the skin in shaving soap, so he always shaved with hard yellow scrubbing soap in cold water, and had a cold bath every morning. As a result, he always smelt to me like a freshly scrubbed nursery.

The invention of wireless was one of the great joys of his life. The rectory was full of clocks, both normal and astronomical – and so of course was his small observatory at the bottom of the garden – so he had a wireless (very primitive) installed in the hall, and he would stand crouched slightly forward, with the whole house cowed to absolute silence, waiting for those blessed pips from Greenwich. The moment they sounded he would check his pocket watch and start running round the house and down the garden, checking all the clocks against Greenwich mean time. I can see his figure now – little legs pounding, hat crown jumping up and down, saying ‘Out of my way, dear boy, out of my way’.

I gather now from my sons, who have read all the old letters, that he was a fairly self-opinionated and controversial old priest, but to me he was the most beloved of grandfathers, and I remember him as clearly as if he was still standing up in the pulpit at Deane, while a small girl solemnly steps out of her pew after the sermon and says ‘Thank you for your story’.

Select biographies

Ascarza, Victoriano Fernández (1870–1934). Worked at Madrid Observatory. Member of the Asociación Meteorológica and the Instituto Geográfico. Represented Spain at several major astronomical congresses throughout Europe.

Angelitti, Filippo (1856–1931). Worked at the Astronomical Observatory of Capodimonte (Naples), and was later Professor of Astronomy at the University of Palermo and Director of Palermo Observatory.

Backlund, Oskar Andreevich (1846–1916). Born in Länghem, Sweden, graduated from Uppsala University in 1872, and spent his entire career in Russia. First worked at Dorpat Observatory and then at Pulkowa Observatory, of which he was Director 1895–1916. Member of the St Petersburg Academy of Sciences and the Royal Swedish Academy of Sciences, Fellow of the Royal Society, and Foreign Honorary Member of the American Academy of Arts and Sciences.


Balanovsky, Innokentii. Worked at Pulkowa Observatory. In 1922 he discovered a supernova in M87 recorded on a photographic plate in 1918 (a plate later studied by Edwin Hubble). In 1937, during the Great Purge, several members of staff of Pulkowa Observatory, including Balanovsky, were arrested as ‘enemies of the people’ and were summarily sentenced to ten years’ imprisonment, without presentation of charges or legal representation, but with confessions of ‘guilt’ extracted by torture. Apart from Nikolai A. Kozyrev (1908–1983), all of them, including Balanovsky, died in prison.

Beljavskij, Sergei Ivanovich (1883–1953). Worked at Simeis Observatory. Director of Pulkowa Observatory 1937–44. Specialised in astrometry, photometry, and variable stars. Discovered several asteroids and comet 1911 IV (1911g, C/1911 S3).

Bemporad, Azeglio (1875–1945). Worked at Torino Observatory and later at Catania Observatory. Appointed Director of the Astronomical Observatory of Capodimonte (Naples) 1912, and Director of Catania Observatory 1933. In 1938, following Mussolini’s introduction of antisemitic laws, he was discharged from his post and was succeeded by Luigi Taffara (q.v.).

Berloty, Bonaventure (1856–1934). Studied at Stonyhurst and Ebro (Jesuit colleges), and obtained his doctorate in Paris. First Director of Ksara Observatory (Beirut) 1906–25. Soon after the beginning of the First World War, the Jesuits were expelled from Lebanon and the observatory was plundered by Turkish troops. In 1918 Berloty returned to continue as Director, and the observatory was rebuilt.
Bigourdan, Camille Guillaume (1851–1932). Worked at Toulouse Observatory and later at Paris Observatory. Spent many years verifying the positions of 6,380 nebulae, and discovered about 500 new objects. Member of the Bureau des Longitudes and the French Academy of Sciences, and Director of the Bureau International de l’Heure 1919–28.

Birkeland, Kristian (1867–1917). Proposed a theory elucidating the nature of the aurora, consisting of atmospheric electric currents (Birkeland currents) that flow along geomagnetic field lines connecting the Earth’s magnetosphere to the ionosphere. Organised several expeditions to Norway’s high-latitude regions, established a network of observatories under the auroral regions to collect magnetic-field data, invented the electromagnetic cannon, devised the Birkeland–Eyde process for fixing nitrogen from the air, and predicted that plasma is ubiquitous in space. Birkeland suffered from severe paranoia, and died from an overdose of Veronal (barbiturate).


Bobrinsky, Count Aleksey Alexandrovich. An historian and archaeologist, descended from Count Aleksey Grigorievich Bobrinsky (1762–1813), Catherine the Great’s natural son by Count Grigory Orlov. Chairman of the Imperial Archaeological Commission, Vice President of the Imperial Academy of Arts, and Chairman of the Free Economic Society. He led the excavations of Scythian mounds near Kerch and Kiev, and was in charge of the extraction of the Pereshchepeina treasure—a major deposit of Bulgarian, Sassanian, Sogdian, Turkic, and Avarian objects from the fourth to ninth centuries AD.

Bosler, Jean (1878–1973). Worked at Paris Observatory, Director of Marseilles Observatory 1923–48. Carried out research on the physical properties and orbits of comets, demonstrated that the Sun’s magnetic field and the solar wind are responsible for many aspects of cometary tails, aurorae, solar storms, and telluric currents, and made important contributions to the theory of the evolution of stars.

Bourget, Henri. Worked at Toulouse Observatory and later at Marseille, where he collaborated with the physicists Charles Fabry and Henri Buisson in their work on interferometry.

Carrasco, Pedro. Worked at Madrid Observatory. Studied at the Astrophysical Laboratory at South Kensington, and with Alfred Fowler at Imperial College, Hugh Newall at Cambridge, and Frank Dyson at Greenwich. Carrasco was reputedly the only Spanish astronomer who could handle Einstein’s Relativity theory, and pronounced the results of Arthur Eddington’s 1919 solar eclipse experiment on General Relativity as ‘a brilliant triumph of the English expeditions’. He was a member of the welcoming party when Einstein visited Madrid in 1923.


Chrétien, Henri (1879–1956). Spent his early astronomical career at Nice Observatory. Invented the anamorphic widescreen process, leading to CinemaScope, and co-invented the Ritchey–Chrétien optical system. Co-founder of the Institut d’optique théorique et appliquée, and professor at the École supérieure d’optique.

Donitch, Nikolay Nikolaevich (1874–1956). Born in Bessarabia. Graduated from Odessa University, and until 1918 worked at Pulkowa Observatory. With the assistance of J. A. Timchenko, he manufactured the first spectroheliograph in Russia and subsequently came to be considered a master in the study of solar and lunar eclipses. After moving to Bucharest in 1940, Germany in 1944, and France in 1945, he worked at Paris Observatory. In later years he fell upon hard times, and died in an old people’s home in Nice.

Éginitis, Demetrios (1862–1934). Director of the National Observatory of Athens 1890–1933. Restored and modernised the observatory, which had been inactive since the death of Julius Schmidt in 1884. Ordered the construction of new observatory buildings and the purchase of modern instruments, and enriched the library. Instrumental in the adoption of the Eastern European time zone for local time in Greece, and succeeded in changing the official calendar from the Julian to the Gregorian.

Favaro, Antonio (1847–1922). Mathematician, physicist, and historian of science. Published more than 500 papers and articles and several books, and was chief editor and architect of the 20-volume Works of Galileo Galilei, Edizione Nazionale (1890–1909).

Fesenko, Vasily Grigorievich (1889–1972). Studied at Kharkiv University and the Sorbonne. Worked at Paris Observatory and Nice Observatory. Co-founder of the Russian Astrophysical Institute, later renamed Sternberg Astronomical Institute, of which he was Director 1936–39. Co-founder and Director of the Astrophysical Institute in Alma-Ata, Member of the Kazakhstan Academy of Sciences, and Academician of the USSR Academy of Sciences. Specialised in solar system astronomy.

Geelmuyden, Hans (1844–1920). Professor of Astronomy at Christiania University, Director of Christianitya Observatory 1890–1919, succeeded by Jens Fredrik Schroeter (q.v.).

Gerasimovich, Boris Petrovich (1889–1937). Studied under Aristarkh Belopolsky and Sergei Konstantinovich Kostinsky (q.v.) at Kharkiv University, and graduated in 1914. Privatozent at Kharkiv University 1917–22, Professor of Astronomy 1922–31. Appointed Director of Pulkowa Observatory 1933. In 1937, during the Great Purge, he was arrested and executed.
Gonnessiat, François (1856–1934). Worked at Lyon Observatory. Director of Quito Observatory 1908–31, where he was a colleague of Benjamin Jekhovsky (q.v.). Observe comets extensively, and discovered two asteroids.

Hasselberg, Klas Bernhard (1848–1922). Studied and worked at Pulkowa, Vilnius, Berlin, Schwerin, Hamburg, and Bothkamp. Member of the Royal Swedish Academy of Sciences, the Accademia dei Lincei in Rome, the Society of Sciences in Uppsala, the Physiographic Society of Lund, and the Nobel Committee for Physics. Worked in many areas of physics and astrophysics.

Jekhovsky, Benjamin (1881–1975) Worked at Paris Observatory and later at Algiers Observatory, where he was a colleague of François Gonnessiat (q.v.). Specialised in celestial mechanics and discovered several asteroids.

Jewdokimoff, Nikolaj (1868–1940). Worked at Kharkiv Observatory. Professor at Kharkiv University.

Kempf, Paul Friedrich Ferdinand (1856–1920). Assistant and later Principal Observer at the Institute for Astrophysics in Potsdam, Secretary and Treasurer of the Astronomische Gesellschaft. Participated in several solar eclipse expeditions, assisted Gustav Spörer in his work on sunspots, and co-edited and produced the *Potsdamer Photometrische Durchmusterung*.

Kostinsky, Sergey (1867–1936). Worked at Pulkowa Observatory. Obtained about 3,000 photographs of star clusters, nebulae, and planetary satellites, and eventually became a recognised authority on photographic astrometry. This valuable contribution to the study of stellar kinematics also led to the discovery of the Kostinsky effect (the apparent movement of adjacent light and dense areas in photographic emulsion).

Lagnula, Joanny-Philippe (b.1870). Worked at Lyon Observatory. Appointed Director of Quito Observatory 1908, and later worked at Nice Observatory until around 1924. Worked at Algiers Observatory, and succeeded François Gonnessiat (q.v.) as Director 1931–38.

Landerer, José Joaquin (1841–1922). Astronomer, meteorologist, and geologist. Published numerous papers and monographs.


Montangerand, Louis (1866–1943). Protégé of Benjamin Baillaud (q.v.). Studied at Toulouse University, and spent his entire working career at Toulouse Observatory. Specialised in astrophotography.


Riccò, Annibale (1844–1919). Worked at Modena Observatory and later at Palermo Observatory. Served as Chancellor of Catania University, Director of Catania Observatory, Director of Mount Etna Observatory, President of the Società degli Spettroscopisti Italiani, President of the Gioenia di Scienze Naturali di Catania, President of the Volcanology Section of the International Union of Geodesy and Geophysics, and Vice President of the International Astronomical Union. Specialised in solar work and participated in four solar eclipse expeditions.


Saint-Blancat, Dominique. Spent his entire working career of more than forty years at Toulouse Observatory. Specialised in meridian observations.

Senouque, Albert. Astronomer and physicist. Worked at Paris Observatory and Mont Blanc Observatory (where he was once stranded throughout a week-long storm), accompanied Jean-Baptiste Charcot's second French Antarctic Expedition 1908–1910, and was involved in early aviation.

Schroeter, Jens Fredrik (1857–1927). Worked at the polar station and observatory at Bosskøp, the Norwegian Meteorological Institute, and Christiania Observatory. Succeeded Hans Geelmuyden (q.v.) as Director of Christiania Observatory 1919.

Sternberg, Pavel Karlovich (1865–1920). Astronomer and revolutionary. Director of Moscow Observatory 1916–20. Sternberg was a close friend of Lenin and Trotsky, and after the October Revolution of 1917 he held several influential positions in the Bolshevik government, including Red Army Commissar. His astronomical contributions include work on planetary perturbations and the development of astrophotography. Sternberg Astronomical Institute is named after him.


Struve, Otto (1897–1963). Son of Gustav Wilhelm Ludwig Struve (q.v.). His experience and observations of the 1914 eclipse contributed to his Master's degree at Kharkiv University. Served as Director of Yerkes Observatory, McDonald Observatory, Leuschner Observatory, and the National Radio Astronomy Observatory, and wrote more than 900 journal articles and books.


Tarazona, Ignacio (1859–1924). Astronomer and meteorologist. Professor of Cosmography and Geophysics at Barcelona University and later at Valencia University. Founded observatories at both of these universities.


Trubetzkoy, Prince Nikolai Sergeyevich (1890–1938). Linguist and historian, considered to be the founder of morphophonology. His teachings formed the nucleus of the Prague School of structural linguistics. He died from a heart attack attributed to Nazi persecution following his publishing of an article highly critical of Hitler’s theories.

Yashnov, Pyotr Ivanovich (1874–1940). Worked at Moscow Observatory 1904–09, Pulkowa Observatory 1909–23, Saratov Observatory, and Tashkent Observatory. In 1937, during the Great Purge, he and members of staff of Pulkowa Observatory were arrested as ‘enemies of the people’ and were summarily sentenced to ten years’ imprisonment. Apart from Nikolai A. Kozyrev (1908–1983), all of them, including Yashnov and Innokentii Balanovsky (q.v.), died in prison.

Bibliography

Holograph letters and other documents (author’s archive)

1913

December 8 John Evershed, Kodaikánal Observatory, India

1914

May 1 Thomas Cook and Son, Gloucester
     1 Gladys Allen, Hotel Métropole, Folkestone
     18 V. H. C. Bosanquet, British Consulate, Riga
     20 K. C. Ringeling, British Vice Consulate, Sevastopol
     20 A. Law, Foreign Office, London
     26 H. F. Newall, Cambridge
     29 A. C. Allen, Hare Hatch, Twyford
     30 Oskar Backlund, Poulkovo Observatory, St Petersburg

June 9 Aymar de la Baume Pluvinel, Paris
     14 A. C. Allen, Hare Hatch, Twyford
     18 A. C. Allen, Hare Hatch, Twyford
     24 A. Law, Foreign Office, London
     26 W. von Stürler, British Vice Consulate, Theodosia
     29 Alfred Fowler, Imperial College, South Kensington

July 2 Gladys Allen, Hare Hatch, Twyford
     3 Alfred Fowler, Imperial College, South Kensington
     6 A. C. D. Crommelin, Blackheath
     7 [Unsigned], Foreign Office, London
     9 Gladys Allen, Hare Hatch, Twyford
     10 Gladys Allen, Hare Hatch, Twyford
     11 A. C. Allen, Hare Hatch, Twyford
     14 H. Macpherson, Daily Mail, London
     14 Alfred Fowler, Imperial College, South Kensington
     15 A. C. D. Crommelin, Blackheath
     16 H. Macpherson, Daily Mail, London

27
17 The Imperial Dry Plate Co Ltd, Cricklewood
18 Kodak Ltd, London
18 John Douglas, Vice Consul, British Consulate, Kieff
19 A. C. Allen, Hare Hatch, Twyford
20 Thomas Cook and Son, Gloucester (insurance certificate)
20 A. C. Allen, Hare Hatch, Twyford
21 The Imperial Dry Plate Co Ltd, Cricklewood
22 Gladys Allen, Hare Hatch, Twyford
22 A. C. Allen, Hare Hatch, Twyford
23 Gladys Allen, Hare Hatch, Twyford
23 A. C. Allen, Hare Hatch, Twyford
24 A. Law, Foreign Office, London
24 Passport with Russian visa
25 A. C. Allen, Hare Hatch, Twyford
26 Gladys Allen, Hare Hatch, Twyford
26 A. C. Allen, Hare Hatch, Twyford
27 Francis Thomas, British Consulate, Kieff
27 A. C. Allen, Hare Hatch, Twyford
27 A. C. Allen, Kiln Green, Twyford (telegram)
27 A. C. Allen, Kiln Green, Twyford (telegram)
28 Gladys Allen, Hare Hatch, Twyford
28 A. C. Allen, Hare Hatch, Twyford
29 Gladys Allen, Harrods Royal Exchange, London
30 A. C. Allen, Hare Hatch, Twyford
August 4 [Illegible signature], Royal Observatory, Greenwich
  4 Dufferin and Ava, Foreign Office, London
  8 Thomas Cook and Son, Gloucester

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Further reading


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