

J. Norman Lockyer: The Early Years

Mike Frost

Past Chairman, Coventry and Warwickshire Astronomical Society

Joseph Norman Lockyer was born in 1836 in Rugby, where his father was a surgeon-apothecary and a leading member of the Literary and Scientific Institution. In the 1840s the family moved to Leicester, where his father became a manufacturer of matches. After his mother's death, he lived with an uncle and attended school in Kenilworth. His main interests then were classical and modern languages, which he taught in a Somerset school before going to Switzerland in 1856-57. On his return, the patronage of Lord Leigh of Stoneleigh helped him to become a clerk in the War Office. He developed an interest in astronomy that led to his election as a Fellow of the Royal Society, and to the editorship of the science journal, Nature.

The great Victorian solar astronomer, Joseph Norman Lockyer (1836-1920), was born in Rugby, the town where I live. Lockyer's life contained an extraordinary range of achievements¹. He pioneered the use of spectroscopy to study the solar spectrum, identifying the spectral lines of an unknown new element, which he named 'helium'. William Ramsay confirmed the terrestrial presence of this element in 1895. Along with the French physicist Jules Janssen, Lockyer produced the first spectrum of solar prominences other than during a solar eclipse. He carried out a series of solar eclipse expeditions around the world, and founded a solar observatory in London on the site now occupied by the Science Museum. Lockyer was a prolific writer and lecturer. He founded the science journal *Nature*, which has risen to become the world's pre-eminent scientific journal. He argued for a greater inclusion of science in education and government, and founded the British Science Guild to press the case. He also made important contributions to meteorology. In his later years he became interested in the astronomical alignments of the ancient monuments in Britain and abroad, principally Egypt: his book *The Dawn of Astronomy* is taken as the seminal work on archaeo-astronomy. The observatory he founded in Sidmouth, Devon, after his move from London, exists to this day and is named for him.

Two biographies of Lockyer have been written. The 'family biography'² was published in 1928, eight years after his death. Lockyer's second wife, Thomazine Mary, and his daughter, Winifred Lucas, are listed as the principal authors. The assistance of Professor H. Dingle of the Royal College of Science is acknowledged, but it is likely³ that he actually wrote the general biographical chapters, which contain few personal details, as well as two of the technical chapters. Professor A.J. Meadows of Leicester University wrote a second biography⁴ in 1972.

Both biographies contain scant detail about Lockyer's early life. The family biography does have a brief family history and a number of anecdotes, but is by no means a complete history of his

childhood and adolescence. Meadows's biography is more concerned with Lockyer's often stormy interactions with the government and the scientific establishment, and has no more than a perfunctory account of Lockyer's early days.

Following a talk I gave in 1999 to Rugby Historical Association on Lockyer, I resolved to attempt to fill in some of the gaps in the Lockyer biographies, with the assistance of Chris Hicks, a member of Rugby Local History Research Group. In Spring 2003 I presented a summary of the work so far to the Society for the History of Astronomy; this article records what I presented then and what I have discovered subsequently.

The Lockyer Family in Rugby

Joseph Norman Lockyer was born in 3 Sheep Street, Rugby, on 17 May 1836 (Figure 1). A small plaque marked Lockyer's birthplace for many years, but in 2004, Rugby Borough Council replaced it by a new 'blue plaque' (Figure 2) as part of their programme to honour famous Rugbeians (including Frank Whittle; Dennis Gabor, the inventor of holography; Rupert Brooke; and William Webb Ellis, who founded the game of Rugby football).

Lockyer's father, Joseph Hooley Lockyer, was the local surgeon-apothecary⁵ at Sheep Street, the family premises. The shop remained a pharmacy (Fleet's chemist) until 1965⁶ but is now the premises of the Household Bank. Lockyer's mother, Anne Norman, was born in Cosford, a hamlet 4 km north of Rugby. She was the daughter of the squire of Cosford. In Lockyer's day Cosford was a tiny farming community - it remains so, although it is now sandwiched between a large industrial estate and the M6 motorway.

J.H. Lockyer was a founder member, then Secretary and Treasurer, of Rugby's Literary and Scientific Institution. A fellow member was Thomas Arnold, the famous headmaster of Rugby School (and recipient of another blue plaque). I have spent some time trying to find out more about the Institution, but without much success. The Warwickshire County Archive does contain material on

J. Norman Lockyer



Figure 1

Sheep Street, Rugby

Lockyer was born at No. 3, which is the first 4-storeyed, red-brick house after the white, 3-storeyed buildings on the left side (west) of the street.

Photograph by the author 2005.



Figure 2

Lockyer's birthplace, with the blue plaque marking the event

Photograph by the author 2005.

the organisation, unfortunately from later in the nineteenth century. The family biography⁷ lists lectures by J.H. Lockyer entitled: *An Outline of Chemistry, First Principles of Chemistry, Oxygen Gas, History of Chemistry, Electro-Magnetism, Magneto-Electricity and Electricity*.

One interesting snippet from J.H. Lockyer's days was that he owned one of the first printing presses in Rugby, on which he printed material for the Scientific and Literary Institution. On 11 March 1839, he registered this press⁸. The registration still exists (Figure 3):

'To the Clerk of the Peace for the County of Warwick. I, Joseph Hooley Lockyer do hereby declare that I have a Printing Press and Types for Printing which I propose to use for Printing within the Town of Rugby and which I require to be entered for that purpose in pursuance of an Act passed in the thirty ninth year of his majesty King George the Third entitled 'an act for the more effectual suppression for societies established for

sedition and treasonable purposes and for better preventing treasonable and seditious practices'. Witness my hand this eleventh day of March in the year of our Lord one thousand eight hundred and thirty nine.'

The witness is Matthew H. Bloxam, a well-known antiquary in Rugby. Amusingly, a directory of printing press registrations⁹ mentions Bloxam, but says 'nothing is known about Lockyer'. Other members of the Bloxam family have astronomical connections,¹⁰ which I am hoping to research.

Another, undated, document¹¹ from about this time, gives an interesting insight into commercial life in a small Warwickshire market town. J.H. Lockyer added his name to a petition to H.J. Gibbs Esq. (Figure 4).

'We the Undersigned Inhabitants and Shop Keepers of Rugby do find the Bazaar now standing near the George Inn in the Said Town very injurious in Trade & should be much obliged by you using [sic] your endeavours [sic] to remove them from this town. We are your Most Humble Servants.'

A move to Leicester

At some time in the 1840s, Lockyer's father decided to move closer to his family in the Leicester area. Neither biography sheds much light on the family's life in Leicester, but an examination of *White's Leicestershire Directory* for 1846¹² yields some interesting information. Joseph Hooley Lockyer is listed as owning a 'congreve match and cake blacking manufacturer', with premises in Leicester Market Place. There is also a family home listed in King Street. Congreve matches, developed during the 1830s, were named for William Congreve, who developed rockets in the early 1800s. Congreve rockets were fired relentlessly by British forces in their siege of Fort McHenry, Baltimore during the Anglo-American war of 1812; 'the rockets' red glare' is immortalized in the national anthem of the United States of America.

It is possible that J.H. Lockyer's business in Leicester may shed light on Norman Lockyer's later accomplishments. Can it have been a co-incidence that Norman Lockyer, one of the first people to realise the potential of the spectroscope, had a father who ran a match making business? It is tempting to suppose that the young Lockyer visited his father's manufactory, and saw at first hand the results of burning sulphur, phosphorous, etc, with their distinctive-coloured flames. When, years later, he encountered the spectroscope, he must have instinctively relished the opportunity to look for the same distinctive colours in the spectrum of the Sun.

Norman Lockyer himself remembered one incident from Leicester¹³, which records his introduction to astronomy. Lockyer's father owned a small telescope of 2 or 2½-inch aperture.

To the Clerk of the Peace for the County
of Warwick

I Joseph Hooley Lockyer do hereby declare
that I have a Printing Press and Types for
printing which I propose to use for printing
within the ~~Parish~~^{Town} of Rugby and which I require
to be entered for that purpose in pursuance of
an Act passed in the thirty ninth year of his
Majesty King George the Third entitled "An
Act for the more effectual suppression of societies
established for seditious and treasonable purposes
and for better preventing treasonable and seditious
practices"

Witness my hand this eleventh day of March
in the year of our Lord one thousand eight
hundred and thirty nine

Signed in the presence of

Math. W. Blomam
Sgt. Rugby

Joseph Hooley Lockyer

Figure 3

J.H. Lockyer's printer registration

From the Ernest W. Timmins archive (see Note 8).

'One day, about mid-day, he [J.H. Lockyer] was observing Jupiter with the telescope fixed to a tripod, and he showed the planet to Norman. Then, saying 'I must fetch your mother, don't move the telescope on any account' he left the room. It had happened that on the previous day that the telescope had been turned to the church spire to examine something which in the end turned out to be a sparrow, and the boy, now being in sole possession of the instrument, felt that it was a grand opportunity to inspect the spire once more, thinking it would be a very simple business to find Jupiter again afterwards. He moved the telescope. But alas, when Jupiter was sought again he was not to be found. The boy's parents came to the telescope to find nothing visible, nor could the planet be hit upon again that day.'

The skill needed to locate Jupiter, even once, during broad daylight, suggests that his father had more than a passing interest in observational astronomy.

Lockyer's education

Anne Norman Lockyer died in 1845.¹⁴ J.H. Lockyer may well have found it difficult to bring up two children on his own whilst running a business. In addition, both biographies tell us that Norman Lockyer's health was not good. In 1849, Norman and his younger sister, Lucy were sent to live with

their maternal uncle, William Norman, a farmer living at Grange House in Ashow, a village on the River Avon north of Leamington and 3 km south-east of Kenilworth.

The Lockyer children went to school in Kenilworth, where Norman Lockyer began to show academic talent. The family biography¹⁵ relates that Lockyer's application to the War Office was supported by R.C. Adams, 'of Kenilworth School'. Meadows's biography reproduces Adams' testimonial¹⁶, dated 31 March 1856, and refers to him as the Master of Kenilworth School. There is, and was, no such establishment as Kenilworth School. However, *White's Warwickshire Directory, 1850*¹⁷ resolves this issue. A number of small educational establishments are listed in the town, among them one run by Richard Charles Adams in Castle End (to the south-east of the town centre). By 1875¹⁸, Mrs R.C. and Miss Adams are listed as running a boys' preparatory school in Castle End. Lucy Ann Lockyer, Norman's sister, was at another educational establishment in Castle End. The 1851 census¹⁹ lists her as a pupil of Elizabeth Cattell.

R.C. Adams's signed testimonial reads:¹⁶

'Mr Lockyer is 20 years of age, and has lately been Tutor at a school in Somersetshire: he had previously resided in my school, as student and

J. Norman Lockyer

To H. S. Gibbs Esq^r

We the Undersigned Inhabitants and Shop
Keepers of Rugby do find the Buzzer now
standing near the George Inn in the said
Town very injurious in Trade should be
much obliged by you using your endeavours
to remove them from this Town we are your
Most Humble Servants

Thomas Bennett
Jas Bunnicliffe
John Golding
William Pentreath
Matthew Ball
Edw Bennett
James Claxton
E Ashby
J Price
C Webb
J Jacobson
Wm Edmunds

Edw^d Harrowell
for J. H. Lockyer - 4 Priory
Garrett Foxon
Rogers & Wright
Cooke & Crossley
W E Monmouth
G. Burt
Saml Garrett

Figure 4

A petition by Rugby shopkeepers, including J.H. Lockyer

From the Ernest W. Timmins archive (see Note 8).

teacher, six years. His stature is about 5ft 6, and his health uniformly good. He is a sound English scholar, and a Classic: a good Accountant and Mathematician, and has a knowledge of French. In a word, his abilities are of the highest order, and his punctuality and perseverance indefatigable.'

The Somersetshire school referred to was in Weston-super-Mare. A second, later-dated version of the testimonial by Adams is in the University of Exeter archives²⁰, along with a testimonial from a

Thomas Atkinson of Dorchester Place, London²¹. Mr Atkinson's relationship to Lockyer is unknown to me (*White's Directory* for Kenilworth does not list him, for example) but the content suggests Lockyer's studies in either Kenilworth or Weston-super-Mare:

'7 Dorchester Place, Blandford Square, London, Oct. 28, 1856.

I have great pleasure in certifying that Mr J. Nor-

man Lockyer was a pupil of mine, & that he evinced a superior knowledge of the higher Latin Authors, especially Virgil & Horace, which he read with fluency & correctness: & that his acquirements in that language are based on an extensive & accurate knowledge of its grammatical structure and analogies. I certify also that Mr Lockyer's acquaintance with the English Language is extensive, accurate, & varied, of which his compositions furnish ample evidence.

Thomas Atkinson M. A. Camb^e.

Lockyer was able to put his knowledge of French to good use later in 1856 and 1857, when he travelled in Switzerland and France attending lectures at the Sorbonne²². A final testimonial²³ from the 'Chef d'Institution, Chateau du Lang, près Genève', dated 22 April 1857, states that Lockyer spent six months at this institution, 'avec la plus grande exactitude et conscience...'. Lockyer's travels and studies may have been made possible by a bequest from his father, who died in 1855.²⁴

Stoneleigh and Lord Leigh's patronage

The testimonial by Adams was addressed to William Henry Leigh, the second Lord Leigh of Stoneleigh, whose estates included Ashow and, 4 km upriver, Stoneleigh, and the family seat of Stoneleigh Abbey, situated between the two villages. This lovely old house, now part private apartments, has been renovated following a fire in 1960 and is open to the public at weekends²⁵. Famous visitors to the house include Jane Austen (a distant relative of the Leigh family), Queen Victoria and Prince Albert. Lord Leigh acquired a reputation during his lifetime for taking paternalistic care of the tenants on his estate²⁶. In this instance his assistance and influence was required to obtain a Government appointment for Lockyer.

The Stoneleigh estate archive is held by the Shakespeare Birthplace Trust in Stratford-on-Avon. There is a large archive of correspondence to and from Lord Leigh dating from the 1850s, but I did not find any correspondence relating to Lockyer. It is possible that most of the relevant extant material (including that quoted above in the biographies) is held in the Norman Lockyer archives at the University of Exeter²⁷.

In 1856 or 1857, Lockyer applied to the War Office for a post, writing of himself²⁸:

'Your memorialist is 20 years of age, and has received a most liberal education, he is a sound English scholar and a classic, a good accountant and mathematician, and has a knowledge of French: he can readily produce testimonials of his good moral conduct. The following gentlemen have most kindly appended their names in testimony of his attainments and qualifications for the above appointment; R.C. Adams, Kenilworth School; Wm Boddington, F.R.C.S., Kenilworth;

Charles Twistleton, M.A., Rector of Ashow;
Arthur A. Fanshawe, S.C.L., Curate of Ashow'

The family biography²⁹ suggests that internal evidence dates this letter to 1856, before Lockyer visited Switzerland, although the logic for this is not clear. There is no mention of proficiency in the physical sciences; the presence of Ashow clergy is noted as evidence of Lockyer's devout attendance at the Anglican Church.

If Lockyer first applied to the War Office in 1856, it is not clear why he then chose to travel abroad that year; perhaps his first application was rejected, or perhaps he chose to defer entry and improve his language skills. However, he took up a temporary War Office appointment in May 1857, having passed the necessary examination³⁰. A permanent position followed, in February 1858, after he had passed further, competitive examinations.

It was during his early career as a civil servant that, through his social connections, he began to take an interest in spectroscopy and solar astronomy³¹. He maintained connections with the Rugby area; in particular with George M. Seabroke of Rugby, who assisted him in his scientific work in his early years, and then, after qualifying as a solicitor, provided legal support during the establishment of the Hill Observatory, near Sidmouth, Devon. After taking up the War Office post, Lockyer never lived in central England again.

However, I have found one final connection to Lord Leigh and Stoneleigh. The Stoneleigh Estate Archive does hold one letter from Lockyer to Lord Leigh³², dating from 27 April 1869 (five days after Lockyer's election to Fellowship of the Royal Society), and bearing the address of the War Office in Pall Mall.

To the Right Honourable Lord Leigh:

My Lord, I have forwarded by this post to Stoneleigh my book on astronomy for the Reading Room as I promised you to do. I cannot miss the opportunity w[hich] this letter gives me of assuring you how deeply I felt your lordship's kindness on saying what you did at the conclusion of my lecture. I ought to have said – but one often forgets what one ought to say – that it was to your kind interest I owed my first step in life.

Believe me, My Lord, Your very obedient servant,
J. Norman Lockyer³.

From the family biography³³ I deduce that Lockyer's lecture, referred to in the letter, was delivered at Stoneleigh, at Lord Leigh's invitation³⁴. The book is likely to be *Elementary Lessons in Astronomy*, published by Macmillan and Sons in 1868. There may be an element of formal politeness to Lockyer's letter, but I sense gratitude and appreciation from the rapidly rising astronomer to his distinguished sponsor.

J. Norman Lockyer

Further Work

Lockyer's life in his late teens and early twenties is still not fleshed out in great detail. It would be interesting to know more about his teaching experience in Weston-super-Mare, his visits to Switzerland and France, and particularly his education at the Sorbonne. More detail on Lockyer's applications to, and early career in, the War Office would be useful. I also hope to find out more about the Lockyer family's contemporaries in the Rugby area - in particular, the founders of the Literary and Scientific Institution; the Bloxam family; and Lockyer's collaborator and friend, George Seabroke.

Acknowledgments

I am very grateful to Chris Hicks of the Rugby Local History Research Group for providing material on Lockyer from the collection of the late Ernest Timmins.

The assistance of George Wilkins of the Norman Lockyer Observatory Society is also greatly appreciated. He is a fellow SHA member and he suggested to me some of the themes addressed in this article. He also provided transcriptions of material in the archives of the Norman Lockyer Observatory that are held in the Library of the University of Exeter (E.U.L.).

I also acknowledge the assistance given by the archivists at the Shakespeare Birthplace Trust and the Warwickshire County Archives.

Notes and References

- 1 See for example, Wilkins, G.A. Sir Norman Lockyer's contribution to science. *Quarterly Journal of the Royal Astronomical Society*. 1994. **35**. 51-57.
- 2 Lockyer, T.M. and Lockyer, W.L. (with the assistance of Professor H. Dingle). *Life and Work of Sir Norman Lockyer*. London: Macmillan & Co., 1928. In the remainder of these Notes, this source is referred to as *Life and Works*.
- 3 A letter from Sir Richard Arman Gregory (Imperial College) to H.E. Armstrong states that he (R.A.G.) designed *Life and Work* and he 'got Prof Dingle to do the literary job ... Lady Lockyer and Miss Lockyer did not write a word in the book.' (E.U.L. MS 110 correspondence, R. A. Gregory, dated 5 November 1945).
- 4 Meadows, A.J. *Science and Controversy – A biography of Sir Norman Lockyer*. London: Macmillan & Co., 1972. In the remainder of these Notes, this source is referred to as *Science and Controversy*.
- 5 Meadows, A.J. *Science and Controversy*. 4.
- 6 Anonymous. *Aspects of the Past* - 3. Rugby Local History Research Group. 1991. 9.
- 7 Lockyer, T.M. and Lockyer, W.L. *Life and Works*. 3.
- 8 The printer registration is from the Ernest W. Timmins archive. Northamptonshire County Archive, index B26.7.1.1.
- 9 The catalogue of printer registration is an undated document from the Ernest W. Timmins archive.
- 10 Hingley, P.D. Urania's Mirror - a 170-year old mystery solved? *Journal of the British Astronomical Association*. 1994. 104(5). 238-240.

- 11 Undated document from Ernest W. Timmins archive.
- 12 *White's Directory for Leicestershire, 1846*. 148.
- 13 Lockyer, T.M. and Lockyer, W.L. *Life and Works*. 5.
- 14 Meadows, A.J. *Science and Controversy*. 5.
- 15 Lockyer, T.M. and Lockyer, W.L. *Life and Works*. 6.
- 16 Meadows, A.J. *Science and Controversy*. 3.
- 17 *White's Directory for Warwickshire, 1850*. 609.
- 18 *White's Directory for Warwickshire, 1875*. 701.
- 19 1851 Census details, provided by Warwickshire Record Office (J. Hogg).
- 20 E.U.L. MS 110 correspondence, R.C. Adams, dated 27 October 1856. This testimonial reads:
'Mr. R.C. Adams, of Kenilworth School, has great pleasure in bearing his Testimony to the skill and abilities of Mr. J. N. Lockyer as a teacher: – He resided in this School Six years: Mr. Lockyer is a sound English Scholar & a Classic: – a good Accountant & Mathematician, & has a knowledge of French; his abilities are of the highest order, and his perseverance and punctuality indefatigable. Kenilworth, Oct 27th 1856.'
- 21 E.U.L. MS 110 correspondence, T. Atkinson, dated 28 October 1856.
- 22 Lockyer, T.M. and Lockyer, W.L. *Life and Works*. 5,6.
- 23 E.U.L. MS 110 correspondence, C. Harrius, dated 22 April 1857.
- 24 Meadows, A.J. *Science and Controversy*. 5.
- 25 Stoneleigh Abbey web site is www.stoneleighabbey.org
- 26 *Stoneleigh Abbey – The House, Its Owners, Its Lands*. Ed. Bearman, Robert. Stoneleigh: Stoneleigh Abbey Ltd. 2003. Chapter 7 deals with William Henry Leigh.
- 27 The Norman Lockyer Observatory archive, University of Exeter, contains two letters to Lockyer, dated 1869, from Lord Leigh and from J.W. Leigh (probably a younger brother); these are noted below. There is also correspondence dating from 1871 about a lecture to the Coventry Institute (E.U.L. MS 110 correspondence, Lord Leigh, dated 27 August 1871); correspondence from September 1871 relating to George Seabroke (E.U.L. MS 110 correspondence, Lord Leigh, dated 22 and 27 September 1871); and a request, dated 9 September 1878, asking Lockyer to give a talk to a new society in Leamington, which could not afford to pay sufficient sums (E.U.L. MS 110 correspondence, J. W. Leigh, dated 9 September 1878).
- 28 Lockyer, T.M. and Lockyer, W.L. *Life and Works*. 6.
- 29 Lockyer, T.M. and Lockyer, W.L. *Life and Works*. 6.
- 30 Lockyer, T.M. and Lockyer, W.L. *Life and Works*. 7.
- 31 Meadows, A.J. *Science and Controversy*. 6.
- 32 The letter from Lockyer to Leigh is from the Stoneleigh Estate Archive in the Shakespeare Birthplace Trust. Index DR18/31/786d, F.39. Correspondence to and from Leigh in the 1850s is in DR18/17/57.
- 33 Lockyer, T.M. and Lockyer, W.L. *Life and Works*. 43.
- 34 Letter from Lord Leigh to Lockyer (undated, but mentioning that Lockyer is to give a talk on 12 April). E.U.L. MS 110 correspondence, Lord Leigh, 1869. The Norman Lockyer Observatory archive also has a letter dated 3 May 1869, from J.W. Leigh (see Reference 27 above), thanking Lockyer for an 'admirable lecture', and congratulating him on his election to Fellowship of the Royal Society (E.U.L. MS 110 correspondence, J. W. Leigh, dated 3 May 1869).

