This portrait hangs in the Council Room of the Royal Astronomical Society in Burlington House. It shows the Revd William Pearson (1767-1847) demonstrating an orrery of his own design to his first wife Frances and daughter, also Frances. The Revd Pearson was the Rector of the Leicestershire village of South Kilworth and the observatory that he built there still survives, though it is now a private house. A report by Mike Frost appears inside.

Amongst many other achievements, the Revd Pearson was, with Francis Baily, one of the two original founders of the RAS. It is particularly appropriate that we should carry an article about him in this issue of the Newsletter as the SHA has recently affiliated to the RAS. An announcement is included in the Society news, overleaf. (Portrait courtesy of the Royal Astronomical Society.)
Editorial

David Rayner

Welcome to the eleventh issue of the Newsletter; another bumper copy for which once again we have to thank contributors for the quality and quantity of their submissions.

Although this issue arrives with you a little later than expected, the editorial team trust you will bear with us and enjoy it now it finally has arrived. We have plenty to tempt you with. A ‘further’ news section, new to this issue, carries three archaeoastronomical reports as well as wonderful news concerning the return of early manuscripts to the Royal Society. Mike Frost’s article on the Revd William Pearson, an innovative designer of astronomical equipment and leading member of the astronomical community as well as a founder member of the Royal Astronomical Society, illustrates the energy and prolific achievements of a man who for the most part has been forgotten. As well as reporting on a visit to the Revd’s observatory, Mike Frost shows us some of the accomplishments of this extraordinary man.

At the risk of making a rather fragile link to some of the work of the talented Revd, the Society’s Autumn Conference will be held at the Birmingham & Midland Institute on Saturday 7 October and we are urgently calling for papers on the theme Instruments and Imaging, which can be from earliest times to the present day. Further details may be found in Stuart Williams’ Society news section.

Society news

Stuart Williams

AGM and Spring Conference success

The Society’s Annual General Meeting and Spring Conference, with the theme Women in Astronomy, was held at the Institute of Astronomy, Cambridge on 20 May. The meeting was a great success, with more than 40 members attending. A full report appears on p7. Apart from the excellent speakers and businesslike AGM, a main highlight was the presence of Treasurer Ken Goward, who despite his recent severe illness and early stage of recuperation, made a productive appearance thanks to his wife Lorraine. Special thanks are due to the Institute of Astronomy for their support in hosting the event, and of course to IOA Librarian and SHA Archivist Mark Hurn for facilitating the meeting and his work behind the scenes.

Council election results

There were some changes to the Council of the Society during the election held at the AGM. The following Council Members were re-elected unopposed and unanimously: Chairman Gilbert Satterthwaite, Secretary Stuart Williams, Treasurer Ken Goward, Councillors Madeline Cox, Peter Hingley, Mark Hurn, Roger Jones and Martin Lunn. Councillor Reg Withey, who had been co-opted by the previous Council, was elected formally and unanimously. Dr Nicholas Kollerstrom had resigned from Council but intended to remain a member of the SHA. He was formally thanked for his past service to the Society. The vacancy left by this resignation was filled by the unanimous election of Kevin Kilburn, a former Councillor from our founding year who was enthusiastically welcomed back on the team. Gilbert Satterthwaite reported that in accordance with the Constitution the Council wished to continue the appointments of Dr Allan Chapman as Honorary President, and of Dr Michael Hoskin and Sir Patrick Moore as Honorary Vice-Presidents, and this was approved with acclamation by the meeting.

RAS affiliation

It has always been one of the Society’s hopes, from its foundation in 2002, to be able to affiliate to the
Royal Astronomical Society, and indeed many SHA members are Fellows of the RAS. However, until recently there has been no practical and mutually beneficial mechanism for accomplishing this aim, despite friendly fraternal relations between the two societies. Nonetheless, for a while Council has been negotiating with the RAS about affiliation. We are now pleased to report that agreement has been reached and the SHA will affiliate with the RAS. A preliminary announcement was made at the AGM (see p7) and more details will be issued once formalities have been concluded.

SHA Council meetings in 2006

SHA Council meetings for the rest of 2006 will take place as follows: 29 July 1pm Yorkshire Museum, 25 November 1pm Sir Robert Ball Library, Birmingham. Apart from the AGM, space is very limited at these meetings, which are not general Society meetings, so if any member wishes to present a matter to Council in person, they should apply in advance to the Secretary, Stuart Williams. Anyone wishing to table an agenda item at a Council meeting should contact the Chairman, Gilbert Satterthwaite.

Urgent call for papers – SHA Autumn Conference

The Autumn Conference will be held at the Birmingham & Midland Institute on Saturday 7 October. The theme is Instruments and Imaging, and may include any appropriate topic on telescopes, their optics, mounts and mechanisms, and other astronomical instruments, or on any imaging processes applied to astronomy, from earliest times to the present day. Initial offers of papers from members, including a short abstract and suggested length (twenty minutes, thirty minutes or one hour including question time) as well as audio-visual requirements, are urgently invited by post only, with SAE to the Secretary, Stuart Williams, 26, Matlock Road, Bloxwich, WS3 3QD.

Society Web site

The SHA’s Web site was updated in time for the AGM and Spring Conference by our webmaster, Greg Smye-Rumsby, who as a professional designer had in previous years completely redesigned and upgraded our site and provided the SHA with its fine logos. Sadly, this update will be the last carried out by Greg as he has been forced by illness and pressure of work to step down as webmaster. Council formally thanks him for his past service to the Society. It is seeking a new webmaster as well as considering changes to reduce the cost of the Web site and simplify its operation. A potential volunteer has already come forward and negotiations are underway.

SHA Publicity leaflet now available on-line

A new publicity leaflet bearing an encouraging message from Sir Patrick Moore together with a photograph of him and various Society activities has been designed by Stuart Williams and is aimed at recruiting new members across the UK. It is now available for download from the SHA Web site as a PDF file. The leaflet is available on-line.

Further news

Compiled by Clive Davenhall

Early manuscripts returned to the Royal Society

Important manuscripts which throw light on the early history of the Royal Society and the work of Robert Hooke (1635-1703), its first Curator of Experiments, were due to be auctioned at Bonhams on 28 March (see the Newsletter for March 2006, no. 10, p16). However, they were sold to the Royal Society for £940,000 in a last-minute deal on the day before the auction. The documents returned to the Royal Society’s premises on 17 May.

The purchase was made possible by a generous grant of £469,000 by the Wellcome Trust, with additional contributions from 150 other donors, including several SHA Councillors. The Society is extremely pleased to have made even a small contribution to securing these historic documents.

The manuscripts comprise Hooke’s personal copies of the minutes of meetings of the Royal Society for several decades from 1661. There are two sets of manuscripts. The first, covering the period 1661-1677, consists of ‘fair copies’ of the minutes with (sometimes acerbic) comments inserted by Hooke. In 1677 Hooke became the Royal Society’s second Secretary. The second set of manuscripts dates from after this appointment and consists of Hooke’s own rough notes of the Society’s meetings. The manuscripts throw important new light on the development of microscopy.
astronomy and the theory of universal gravitation.

Following their return the documents will now undergo comprehensive preservation and analysis. The preservation will include rebinding, transcription and digitisation. The Royal Society is collaborating with Prof. Lisa Jardine, a biographer of Hooke, in the study of the manuscripts.

The Royal Society hopes to eventually make digitised versions of the documents available from its Web site. In the meantime the manuscripts were displayed as part of its Summer Science Exhibition (3-6 July).

**Further reading**


**Harrison memorial at Westminster Abbey**

On 24 March a memorial to John Harrison (1693-1776), the clockmaker who developed the first successful marine chronometer, was unveiled at Westminster Abbey. Harrison’s chronometers were made in response to the Government’s ‘Longitude Prize’ of 1714 which offered a reward of £10,000 for the construction of a chronometer capable of maintaining sufficient accuracy whilst at sea to allow the determination of longitude.

The memorial was organised by the Worshipful Company of Clockmakers with support from the RAS and Sir Arnold Wolfendale, Astronomer Royal 1991-95. The ceremony was performed by HRH the Duke of Edinburgh and was attended by about 600 people, including the Master of the Worshipful Company of Clockmakers, Dava Sobel, author of the best-selling book *Longitude* about Harrison, and Sir Arnold.

The memorial is set in the floor of the nave of the Abbey, close to the grave of Thomas Tompion (1639-1713), the ‘father of English clockmaking’ and his partner and successor George Graham (1674?-1751), who assisted Harrison early in his career.

The stone (below) is of Purbeck Limestone, like the rest of the floor. A bimetallic strip (itself an invention of Harrison’s) bisects his name and is stamped with the memorial’s longitude, 00° 7’ 35”. The strip is set obliquely in order to accurately follow the meridian, the Abbey being not quite aligned due north.

The Worshipful Company of Clockmakers has produced a booklet, *Harrison in the Abbey*, to commemorate the event. It is edited by Sir Arnold Wolfendale and is generously sponsored by the Smith of Derby Group, clockmakers.

In total Harrison produced five chronometers, now designated H1 to H5. H1 to H4 are on display at the National Maritime Museum and H5 is displayed in the Worshipful Company of Clockmakers’ own Museum in the Guildhall, London.

**Further reading**


See the Worshipful Company of Clockmakers’ Web site for details of their museum and also how to obtain *Harrison in the Abbey*: http://www.clockmakers.org/


**Reprieve for Thornborough henges**

On 21 February 2006 North Yorkshire County Council rejected a planning application by Tarmac Ltd to extend its quarrying operation to Ladybridge Farm close to the Thornborough Henges. The henges take their name from the neighbouring village of Thornborough, which is about ten miles from Ripon in North Yorkshire. Though not widely known, they are some of the most important Neolithic monuments in Britain.
The group dates from around 3500-2500 BC in the mid-Neolithic and comprises three similar circular, banked henges, each about 800 ft in diameter and equally spaced about 800 yards apart. The whole structure is over one and a half miles long. It is aligned northwest to southeast, but lies in a crooked ‘dogleg’ rather than being completely straight. Moreover the henges do not exist in isolation. They are all that remains of a group originally of eight, which itself was part of an extensive Neolithic ‘sacred landscape’ spread over twenty miles across North Yorkshire.

The archaeoastronomical aspects of the henges are that they seem to have been a representation of the three central stars of Orion’s belt. This suggestion is doubly unusual amongst the many and varied imaginative proposals for ‘ancient star maps’ in that it seems to have been both accepted by archaeologists and ignored by the pseudoscientific fringe. The central henge is built on top of an earlier cursus monument that also seems to have been aligned with Orion’s belt. The henges have other alignments with the winter solsticial sunrise and with Sirius. In the context of the henges as a star map it might be also be significant that they were originally covered with gypsum, giving them a striking white appearance.

Though they were previously damaged by ploughing, all three henges, and the strip of land connecting them, are now Scheduled Ancient Monuments and not threatened. However, the whole area contains valuable gravel deposits and quarrying by Tarmac Ltd has destroyed much of the surrounding landscape. It is this landscape which gives the henges their archaeological context. The decision by North Yorkshire County Council should prevent further expansion of the quarrying, though Tarmac intend to appeal. The ‘Friends of Thornborough Henges’ is a voluntary group that campaigns to preserve the henges and their locale.

They welcome public support and details of how to contact them are included below.

**Further reading**


Friends of Thornborough Henges: http://www.friendsofthornborough.org.uk

Dr Jan Harding of Newcastle University has studied the henges extensively. He maintains a site about them at http://thornborough.ncl.ac.uk/index.htm. He has been instrumental in investigating their astronomical alignments. A report is planned for next year.

**Ancient observatory discovered in Peru…**

The oldest ancient observatory known in the New World has recently been discovered on a barren hillside near Buena Vista, a few miles north of Lima in the Peruvian Andes. It is believed to date from about 2200 BC, making it substantially older than any similar complexes hitherto known.

The discovery was made by Robert Benfer of the University of Missouri and a number of Peruvian colleagues. The site has become known as the ‘Temple of the Fox’ after a mural of a fox found there.

In the context of archaeoastronomy an ‘observatory’ is a building or other structure deliberately constructed with astronomical alignments. The twenty acre Temple of the Fox site contains a number of sculptures and features with such alignments matching times critical for regulating agricultural activities.

Several alignments involving points on the temple entrance, offering chamber, sculptures and surrounding ridges indicate the solstices, equinoxes and other significant dates. For example an alignment from the offering chamber to a modified rock indicates sunrise on the (southern hemisphere) summer solstice of 21 December. This date indicates the start of the flood season when crops are planted. On the other side of the site a scowling clay head frowns at the setting sun on 21 June, around the start of harvest time.

The finds at the site reveal a level of sophistication that was not believed to have developed in the region for the best part of another millennium. They add support for the recent idea that a sophisticated civilisation developed in the region during the ‘pre-ceramic’ era before the...
development of fired pottery after about 1500 BC.

**Further reading**

There are numerous versions of the report on the Web. See for example:

University of Missouri-Columbia: http://www.missouri.edu/captions/benefer.htm

Newswise: http://www.newswise.com/articles/view/520388/


... and in Brazil

Another site which was probably an ancient observatory has been discovered in the far north of Brazil close to the border with French Guyana. It is near to Calcoene in the State of Amapa, some 240 miles from the state capital, Macapa. The discovery was made by archaeologists from the Amapa Institute of Scientific and Technological Research. The age of the site is uncertain, but estimates range from around the first century AD to about 500 years ago.

The site consists of some 127 blocks of granite, each about ten feet high. They are set upright and evenly-spaced into circles. The astronomical significance is that the blocks are positioned so as to mark the winter solstice. In particular, during December sunlight shines through a hole in one of the blocks. The site seems likely to have served a ritual as well as a calendrical purpose.

Traditionally the pre-Columbian Amazon rain forest has been thought to have been inhabited by only a sparse and unsophisticated population. However, the discovery lends support to a recent idea that it actually supported advanced cultures with sedentary populations.

**Further reading**

Again there are numerous versions of the report on the Web. For example:

BBC: http://news.bbc.co.uk/1/hi/world/americas/4767717.stm


The flying saucer now standing...

Over thirty years ago British Rail (the then nationalised British railway system) had plans to develop nuclear-powered flying saucers for interplanetary travel. No, seriously. Though quite how an organisation that struggled for years with the tilt mechanism of its Advanced Passenger Train would have managed space flight is hard to imagine. However, a student browsing the European Patent Office Web site recently happened on a patent for a nuclear-powered spacecraft that the organisation submitted in the early 1970s.

The idea of a ‘Lifting Platform’ was developed by Charles Osmond Frederick and the design was first filed with the Patent Office by the London-based company Jensen and Son acting on behalf of the British Railways Board. The first submission was made on 11 December 1970 and the patent was completed on 21 March 1973.

The design envisaged a saucer-shaped craft with a passenger compartment on its upper deck. Rather alarmingly, it was to have been powered by controlled thermonuclear fusion ignited by laser beams, a technology still as elusive now as it was thirty years ago.
The English Mechanic on DVD

Eric Hutton

Eric Hutton has completed the project to prepare a facsimile edition of The English Mechanic newspaper on DVD ahead of schedule (see the Newsletter passim and especially September 2005, no. 8, pp7-8). A flyer is included with this issue of the Newsletter. The English Mechanic was published from 1865 to 1926 and the complete edition comprises fourteen DVDs. It contains 72,269 pages, and includes about 78,000 letters and 160,000 queries.

As an example of the usefulness of The English Mechanic newspaper, a search for the name of Dr William Doberck, (see Newsletter, no.10, p15) returned 93 matches, amongst these a letter on double star observing, in which Dr Doberck gives the time taken to measure double stars with various telescopes, and the description of an observing chair of his own design.

Copies of the DVDs are available for reference use in the SHA's Sir Robert Ball Library at the BMI, and the RAS Library, London. Copies are also available for purchase (for SHA members at £18 each or £252 for the set). For further details Eric can be contacted by e-mail at bookman@rmpc.co.uk.

AGM Report

Gilbert Satterthwaite, SHA Chairman

Gilbert Satterthwaite opened the meeting, expressing our pleasure that Ken Goward, still recovering from heart surgery, was able to be present. He reported that during the previous twenty-four hours he had been informed that the Council of the Royal Astronomical Society had agreed that the SHA be affiliated to the RAS. In conveying his apologies for not being present our Honorary President, Dr Allan Chapman, had sent his good wishes for a successful day.

The Minutes of the 2005 AGM were presented and approved. Stuart Williams then presented his Secretary’s Report. In this he paid tribute to the tremendous contribution Lorraine Goward had made to keeping the Society’s affairs running smoothly during Ken’s enforced absence, in addition to caring for him and their family; Gilbert called upon Stuart to make a small presentation to Lorraine to express Council’s gratitude, and proposed a vote of thanks to her which was carried with acclamation. Ken then presented his Treasurer’s Report on the accounts and membership, noting that the Society currently had 118 Members and 4 Institutional Members. The Librarian’s, Archivist’s, Survey, Publicity and Publications reports were then received and approved. Gilbert reported that the webmaster, Greg Smye-Rumsby, had been forced by illness and pressure of business to step down. Council were seeking a new webmaster, and also considering changes to improve the Web site and its operation in the future.

The meeting then proceeded to elect Council for the coming year. Gilbert Satterthwaite (Chairman), Stuart Williams (Secretary) and Ken Goward (Treasurer) were re-elected to their current posts. Madeline Cox, Peter Hingley, Mark Hurn, Roger Jones, Kevin Kilburn, Martin Lunn and Reg Withey were elected Councillors.

Gilbert then thanked our host for the day, Dr David Dewhirst, the Institute of Astronomy for the excellent facilities provided, and Mark Hurn for all his work in preparing for the AGM and Conference, and adjourned the meeting at 15:30.

SHA spring conference

Stuart Williams

The fourth AGM and Spring Conference took place on Saturday 20 May 2006, kindly hosted by the Institute of Astronomy (IOA), University of Cambridge. Its theme was Women in Astronomy, an important subject that we will continue to highlight in the future work of the Society. The business of the Annual General Meeting is reported elsewhere (above) so this report will concentrate on the Spring Conference itself, and the rest of the proceedings.

Registration and refreshments began at 11am in the comfortable and spacious foyer of the Institute, where delegates were also able to peruse the excellent commercial offerings of Aurora Books and Hemispherium (replica sundials and such) as well as information on the SHA’s Survey of Astronomical History, the SHA Library Service and our publications The Antiquarian Astronomer and this
Newsletter. A showcased display of books on the Conference theme was provided by IOA Librarian/SHA Archivist Mark Hurn.

At 11:30am, the programme proper began in the Institute’s Lecture Theatre, where an introduction and warm welcome were given by SHA Chairman Gilbert Satterthwaite and Dr David Dewhirst of the IOA. The occasion was also an informal celebration of Dr Dewhirst’s eightieth birthday, which had taken place six months previously.

At 11:50am, the first paper of the day, Women in Astronomy, was ably presented by Madeline Cox. Madeline’s talk concentrated on pre-twentieth century women, highlighting some of the most famous females in astronomical history, and asked how the Society can increase knowledge in this area, as well as attracting more female members. Caroline Herschel, Mary Somerville, Elizabeth Hevelius, Agnes Mary Clerke and Hypatia of Alexandria were of particular note, as well as several others, including astronomers, writers, teachers and ‘lady computers’.

It was made clear that while much important work was done by early female astronomers both as assistants and in their own right, and by women in associated specialities, their tenacity and talents were often sadly under-used and under-appreciated in their own day, with few exceptions. The work of Margaret Flamsteed in assisting her husband John as the first Astronomer Royal at Greenwich has also been rediscovered recently with the finding of her notebooks.

Attention was also drawn to the work of astronomy writer Margaret Bryan, whose A Compendious System of Astronomy (Pub: J. Wallis, Wynn & Scholey, 1799) is now the oldest book in the SHA’s Library (see p16).

The United States of America was ahead of its time in offering opportunities to women, including the first female professorship. Even in the 1960’s, despite the ‘liberated’ times, newspapers and TV had more interest in the femininity of female astronomers than in their scientific achievements (i.e. pulsar discoverer Jocelyn Bell was asked by reporters if she had a boyfriend).

However today women have many opportunities in astronomy at every level, their skills being well recognised, and this is to be applauded. The Society will continue to seek to ensure that the achievements of past female astronomers are properly recognised and to seek more female members.

At 12:20pm,-Dr George Wilkins spoke on the subject of The Lockyer Ladies. Sir Joseph Norman Lockyer, FRS (1836-1920) was an English scientist and astronomer, born at Rugby.

A keen amateur astronomer with a particular interest in the sun, Lockyer eventually became director of the Solar Physics Observatory in South Kensington, London. He married Winifred James in 1858, who went on to help him with his observing, notably in reporting ‘red flames’ on the sun. She also accompanied him on solar eclipse expeditions as well as translating astronomical works, including in 1866 The Heavens by French author Amédée Guillemin.

In the 1860s Norman Lockyer became fascinated by electromagnetic spectroscopy as an analytical tool for determining the gas composition of heavenly bodies. He identified a previously unknown element in the solar spectrum that he named ‘helium’ after the Greek sun god. This discovery was eventually confirmed in the 1890s.

To facilitate the transmission of ideas between scientific disciplines Lockyer established the general science journal Nature in 1869. He remained its editor until shortly before his death. After his retirement in 1911, Lockyer established an observatory near his home in Salcombe Regis, Devon. Originally known as the Hill Observatory, the site was renamed the Norman Lockyer Observatory after his death. For a time the observatory was a part of the University of Exeter, but is now owned by the East Devon
Winifred Lockyer (née James) died in 1879. Winifred Lucas Lockyer (1873-1934), the second daughter of Winifred and Norman Lockyer, was Assistant Hon. Secretary and Librarian of the Norman Lockyer Observatory and had various observations reported in letters to *Nature*.

Lady (Thomazine) Mary Lockyer (1852-1953) became Norman Lockyer’s second wife in 1903. She was a ‘vacation student’ at the Solar Physics Observatory in 1882, and participated in the 1905 eclipse expedition. A skilled photographer, she performed this duty on expeditions. Elected FRAS in 1923, she provided financial support for the Norman Lockyer Observatory and administrative support as its Assistant Hon. Treasurer.

Sir Joseph Norman Lockyer died at his home in Salcombe Regis in 1920. William James Stewart Lockyer (1868-1936) was the fifth son of Norman Lockyer. He continued the family astronomical tradition as Director of the Norman Lockyer Observatory 1920-1936.

At 12:50pm the conference broke for lunch, which included an eightieth Birthday buffet courtesy of Dr David Dewhurst. During the break Mark Hurn organised informal tours of the observatory.

The Conference reconvened at 2pm for the AGM (see above), after which refreshments were made available in the foyer. The afternoon’s lectures continued a little later than planned with Mr Anthony Kinder speaking on *Annie Maunder*. Mr Kinder is the Director of the Historical Section of the BAA and the Association’s Librarian. He has been researching the lives and careers of two of the principal founding members of the BAA, Edward Walter Maunder and his wife Annie, for some time and hopes to publish a biographical paper in the near future.

Edward Walter Maunder (1851-1928) is best remembered for his solar studies, though he was also an esteemed biblical scholar. After studying at King’s College London he joined the Royal Observatory in 1873 as a spectroscopic assistant. His job involved photographing and measuring sunspots. As part of this work he made a number of important discoveries, including in 1904 the famous ‘butterfly diagram’ showing how the latitudes of sunspots change during the solar cycle and the ‘Maunder Minimum’ of 1645 to 1715 when few sunspots were seen. He was also a Mars observer and was sceptical about the canals.

After 1891, he was ably and closely assisted in his work by his second wife, Annie Scott Dill Maunder née Russell (1868-1947), a mathematician educated at Girton College in Cambridge. Born in Strabane, Co. Tyrone, Ireland (then part of Great Britain), she was one of the ‘lady computers’ who were working at the Royal Observatory Greenwich from 1890 to 1895.

Although full degrees were not available to women studying at Cambridge until after the 1920s, Annie Russell had nonetheless ‘graduated’ as a ‘Senior Optime’ (one who has achieved a second class in the mathematical tripos, roughly equivalent to a 2:1 degree) and later became an assistant mathematics mistress at Leyton’s College, Jersey, before moving to the Royal Observatory, where she experienced a drop in salary and was paid £48 per annum. She was encouraged by the Astronomer Royal, Sir William Christie, and was appointed to do night observing but went into solar observing. The Maunder went on several eclipse expeditions.

In 1890, Edward Maunder was a driving force in the foundation of the BAA. Although himself a Fellow of the RAS since 1875, he wanted an association of astronomers open to everyone interested in astronomy from every class of society and especially open for women. Later on, his wife Annie, also a BAA member, was one of the first women accepted by the RAS in 1916. She served as the BAA’s Vice President 1896-99, 1900-1903, and 1942-44 and on Council 1893-4 (as Russell), 1904-07, 1908-11, 1912-15, 1916-17, and 1944-42.

Edward Maunder was the first editor of the *Journal* of the BAA, an office later taken by his wife in 1894-96 and 1917-30. His older brother Thomas Frid Maunder (1841-1935) was cofounder and for 38 years secretary of the Association.

Edward and Annie worked so closely together that their contributions are indivisible at times, an example being their book *The Heavens & Their Story* (1909). But the only book Annie published exclusively in her own name is the *Catalogue of Current Groups of Sunspots for the years 1874-1906.*
The final lecture was presented by Dr Mary Brück on the subject of Agnes Mary Clerke.

Now retired, Dr Brück was formerly a lecturer in the Department of Astronomy, University of Edinburgh. She is the author of the recent biography Agnes Mary Clerke & The Rise of Astrophysics (2002).

Agnes Mary Clerke (1842-1907) was an astronomer and writer, mainly in the field of astronomy. She was born at Skibbereen, County Cork, Ireland, and died in London. Self-taught from books from an early age, she never attended university but in later years she became a prolific writer and commentator on astrophysics, spectroscopy and photometry as well as many other subjects including literature.

Her father, a local bank manager, had studied at Trinity College Dublin and was keen on science and mathematics, being an amateur astronomer and owning a portable transit telescope. Agnes’ favourite subjects were music and mathematics. She was also interested in astronomy from an early age, and had begun to write about it before the age of fifteen.

In 1861 her family moved to Dublin, and in 1863 to Queenstown. In 1867 Agnes went to Italy with her sister Ellen, where they stayed until 1877, chiefly in Florence, studying at the public library and preparing for literary work. Ellen studied Renaissance poetry and amongst other things Agnes studied Galileo. History of astronomy was to become another of her special interests.

In 1877 she settled in London. Her first important article, Copernicus in Italy, was published in the Edinburgh Review in October of that year. Extensively published in that magazine, with 55 articles largely but not exclusively on astrophysics, she went on to achieve a world-wide reputation in 1885, on the appearance of her exhaustive treatise, A Popular History of Astronomy During the Nineteenth Century. This book was indeed popular: the second edition sold out and it was also published in America.

Clerke was not a practical astronomer, instead collating, interpreting and summarising the results of astronomical research. Nevertheless, fascinated by the ‘new astronomy’ including spectroscopy, in 1888 she spent three months at the Cape Observatory as the guest of the director, Sir David Gill, and his wife, and there became sufficiently familiar with spectroscopic work to be able to write about this newer branch of the science with increased clarity and confidence.

She corresponded widely with prominent astronomers who appreciated her talents, and also became a regular attendee of the Royal Institution lectures, eventually being invited into the circle of its Director Prof. James Dewar, who asked her to write the history of his experiments with freezing gases. Eventually, she helped record the rise of astrophysics, radioactivity and radio physics.

In 1892 Clerke was awarded the Actonian Prize of 100 guineas by the Royal Institution. As a member of the BAA she attended its meetings regularly, as well as those of the RAS. In 1903, with Lady Huggins, she was elected an honorary member of the RAS, a rank previously held only by two other women, Caroline Herschel and Mary Somerville.

Agnes Mary Clerke’s personal books and papers have never been found. The only letters surviving are in observatory correspondence. If her own papers could be found, it would be a great discovery indeed.

Finally, at around 6pm, the conference was concluded by SHA Chairman Gilbert Satterthwaite with the presentation of a fountain pen to Dr David Dewhirst as an eightieth birthday gift from the Society. Members then cleared up and made their way home after a successful meeting. It only remains to thank the IOA for their hospitality, which is much appreciated.

Audio recording of conference

Michael Oates kindly made an audio recording of the conference. A CD of this recording will shortly be available for loan from the Society’s Lending Library. Contact Madeline Cox for further details.

Further reading


Agnes Clerke (1842-1907), from Lady Margaret Huggins’ Agnes Mary Clerke and Ellen Mary Clerke: an Appreciation, printed for private circulation in 1907.
The Rector of South Kilworth

Mike Frost

On the wall of the Council Room of the Royal Astronomical Society in Burlington House, off Piccadilly, there hangs a portrait of one of the Society’s founders, the Reverend William Pearson (see p1). He is shown with his family (his first wife Frances and daughter, also Frances). Beside the happy family sits one of the astronomical instruments that Pearson designed, an orrery, or clockwork model of the solar system.

William Pearson is not well known nowadays, but in his day he was a leading member of the astronomical community. As well as being an innovative designer of astronomical equipment, and the writer of one of the most important astronomical textbooks of the nineteenth century, he carried out a decades-long programme of positional astronomy. The observatory from which he carried out these observations was in a small Leicestershire village where Pearson was the incumbent minister, and the building that housed his observatory stands to this day and is now a private house. This article is the story of the Rector of South Kilworth.

William Pearson was born in Whitbeck, Cumberland, on 23 April 1767, into a family of yeomen farmers. He went to school at the grammar school in Hawkshead, Cumberland, where one of his schoolmates was William Wordsworth, who was three years younger than Pearson. Wordsworth later wrote ‘His manners when he came to Hawkshead were uncouth as well could be, but he had good abilities, with skill to turn them to account: ... I often used to smile at the tales which reached me of the success of this quondam clown, for such he was in manner and appearance before he was polished a little by attrition with gentlemen’s sons trained at Hawkshead, rough and rude as many of our Juveniles were.’

In 1790 Pearson began his adult career as an assistant schoolmaster at Hawkshead grammar. He did not initially attend university (though he was later awarded an honorary doctorate by Glasgow University), probably because he would not have been able to support himself as a student. By 1793 he was working in Lincoln, as an under-master at Lincoln Grammar, and shortly after as a curate of St Martin’s, Lincoln. Around this time he married Frances Low, and their only child, also called Frances, was born in 1797.

In 1796 he designed the first of the astronomical instruments that were to make his reputation in the subject – an orrery, named for the fourth Earl of Orrery, who commissioned the first such instrument from George Graham in 1708. Almost certainly Pearson’s orrery was built for the purposes of giving public lectures on astronomy, a frequent and profitable employment for men of science at the time. We know that Pearson gave such lectures in Lincoln.

Over the succeeding years Pearson constructed a series of superbly accurate models of planetary, lunar and satellite motion. He paid particular attention to the mechanisms required to produce accurate motion. Ironically, given the long struggle to discredit epicyclic descriptions of planetary motion, Pearson’s orreries employed epicyclic mechanisms. Pearson published a series of articles on how to construct orreries, telluriums and satellitiums. One orrery (or a copy) still exists in the Science Museum, London. Another instrument, built
by Fayrer of Pentonville to Pearson’s design, is a satellitium, demonstrating the motion of the Galilean satellites of Jupiter; it is held in the Museum of the History of Science in Oxford. Shortly before the 2005 SHA Picnic I was shown the satellitium by Jim Bennett of the History of Science museum. It is an exquisite instrument, still in good working order.

In addition to his successes as a public lecturer and instrument maker, Pearson’s career as a schoolmaster continued to flourish. In 1800 he became a partner in a boys preparatory school, Elm House in Parson’s Green, near Fulham. Running a successful school proved to be a profitable enterprise. By 1809 he had founded a larger establishment, Temple Grove School, at Sheen Grove in East Sheen. It proved fashionable with the aristocracy – Wellington’s sons and Disraeli’s brother were educated there. Temple Grove School continues to exist, although it has now moved to Uckfield, and claims to be the oldest preparatory school in the country.

Nor should we forget Pearson’s career within the church. From 1810 to 1812 he was Rector of Perivale, near Fulham. In 1817 he was appointed to Rector of South Kilworth, Leicestershire, although he continued to live in East Sheen until 1821. Absentee rectors were common at this time!

It was around this time that William Pearson became involved in the most momentous of his many endeavours – the founding of an astronomical society. He first mooted the idea in 1812, and then again in 1816. Both times there was interest, but nothing came of the idea. The idea of an astronomical society was independently proposed by Francis Baily (after whom Baily’s Beads are named) in April 1819, and then in December 1819 Pearson tried a third time, writing to astronomers around the country. At a meeting in the Freemason’s Tavern, London, on 12 January 1820, the Astronomical Society of London was founded. The first full meeting was on 29 February 1820, and Pearson was elected Treasurer, a post he was to hold for seven years. The Society received a royal charter from William IV on 7 March 1831 and from then on became the Royal Astronomical Society.

In addition to the RAS, Pearson became a Fellow of the Royal Society, was a visitor to the Royal Greenwich Observatory for twenty years, and was involved with the foundation of the British Association for the Advancement of Science.

It is perhaps surprising, therefore, that in 1821 William Pearson should make his home in a quiet Leicestershire village. He attended almost all the monthly meetings of the RAS, travelling by stagecoach from Rugby. Selling Temple Grove School, at a handsome profit, enabled him to retire to the countryside and pursue his many interests. He also purchased substantial holdings of land around the country, including land around Grasmere and Rydal in the Lake District. There is still a boathouse on Grasmere with a stone bearing the initials ‘W.P’. William Wordsworth was not keen on the boathouse – ‘a tasteless thing in itself … utterly out of place and perfectly fitted … to mar the beauty and destroy the pastoral simplicity of the vale.’

Pearson had been interested in astronomy since at least his Lincoln days – in 1794 he had presented a copy of James Ferguson’s influential *Astronomy* to his old school in Hawkshead. His first observatory was in East Sheen in 1812 (he wrote to Wordsworth about it in 1813), but his work here seems to have been more concerned with building optical instruments rather than using them, as very few observations are recorded from here.

William Pearson’s first task on arrival at South Kilworth was to build a new wing for the Rectory, incorporating two instrument stands. These were used to house a transit telescope, and an altitude and azimuth circle. The altitude and azimuth circle had originally been built by Edward Troughton (at a cost of 500 guineas, 10 years salary for a country curate) for the Imperial Observatory in St Petersburg, Russia, but Napoleon’s invasion of Russia had meant a cancellation of the order. The transit circle was built for Pearson by Jones in 1815. Both instruments were used to observe due south, through shutters in the
walls. Due south was marked by a meridian mark on a wall, 400 yards away. Pearson determined the latitude of his observatory and duly informed the Astronomer Royal that the published latitude for South Kilworth was 4° in error, an error that was corrected in the next Ordnance Survey.

Pearson built a second observatory in the summer house in the Rectory garden. This contained a more flexible instrument, a 6.8 inch, 'the most powerful refractor then in England', crafted by Tulley from a piece of flint glass donated by Guinard to the Royal Astronomical Society. The other notable feature of the summer house observatory was its roof, which rotated on rollers. This feature is now a common in observatories, but was a novelty in its time. The roof was designed by John Smeaton, an engineer who is more famous for his lighthouse designs, including the lighthouse on the Eddystone rock. Pearson eventually offered the roof to the York Observatory, although it probably was not used.

Two observatories might have been enough for most people, but not for William Pearson, who decided that smoke from the village was degrading his observations. In 1834 he built a new observatory, on land owned by the Church to the south of the village. To mark the meridian he also built a farmhouse due south of the new observatory! For that matter, he also built a new aisle for the church, in 1840, although this was not a complete success and was rebuilt in 1868 by his nephew’s son, Col. William Pearson.

From South Kilworth, William Pearson carried out an impressive programme of observations over two decades. He specialised in positional astronomy – the precise and painstaking determination of the positions of astronomical objects.

The transit telescope was used to make 1700 observations of the Sun’s altitude at noon, from which Pearson determined the obliquity of the ecliptic (the angle at which the Earth’s axis is inclined to the plane in which the Sun moves). Pearson also published a catalogue of the positions of 520 stars that could potentially be occulted by the Moon. For this catalogue Pearson and an assistant from the village, Ambrose Clarke, observed each of the 520 stars between 5 and 20 times. The 6.8 inch refractor was used to observe occultations, the satellites of Jupiter, Mars, and Halley’s comet during its 1835 apparition. Pearson published many of his observations in the *Monthly Notices* and *Memoirs* of the Royal Astronomical Society.

Additionally he published an instructional book, *Practical Astronomy*, quite early in his South Kilworth days, and this was probably his most influential publication. The first volume, published in 1824, contained tables of astronomical observations, along with detailed instructions on how to reduce the observations to derive useful data. The second volume, published in 1829, is a description of astronomical instruments, many owned by Pearson, with detailed instructions on how to use them. These two volumes won Pearson the RAS’s gold medal for 1829. *Practical Astronomy* was still being recommended as a reference work at the end of the nineteenth century.

By now, you will probably not be surprised to hear that William Pearson contributed fully to his community. He was a Justice of the Peace, sitting in Lutterworth, and a Freemason of the Borough of Leicester. He built a new village school and endowed it with seven hundred pounds, giving an additional two hundred pounds for the ‘education of ten poor girls annually’. He also bought a set of communion plate (4 pieces of silver) and a new organ for the church. After his first wife died, he remarried, in 1831, to Eliza Sarah, a woman the same age as his daughter.

Pearson continued to live a full life until 1844 when, at the age of 77, he had an accident. As he explained in a letter to George Airy, ‘In consequence of a fall from my horse onto hard ground the other day, I have been confined to my room and notwithstanding the aid of 30 leeches, I am unable to move from my bedroom.’ Finally he began to slow down, putting his affairs into order. William Pearson died, in South Kilworth, on 6 September 1847, and was buried in the churchyard.

After Pearson’s death, his instruments were dispersed. His observatory was converted to a granary, and then to a cowshed, and then in 1960 to a private house. A sundial that used to be on the outside wall of the house was removed in 1959 to a Leicester museum (Snibston Discovery Park), where it is now in storage. The current owners of the house are in the process of restoring the building, and I was invited by them to come and take a look at The Observatory, South Kilworth.

The ground floor of the cottage is a living room. There is a staircase (not part of Pearson’s original design) up to the upper floor, which used to house the telescopes. The design of the house is octagonal, with side rooms on three sides (to which the current owners are adding an extension). The upstairs windows are full to the floor, and it is likely that these were used for the telescopes (the Troughton and Jones...
 Nazca lines from space  
Clive Davenhall

The Space Imaging team, who operate the IKONOS commercial Earth Observation satellite, have been busy again. Following on from their gallery of ancient observatories (Newsletter, no 8, September 2005, p12) they have now released an image of the Nazca lines obtained by the satellite. The Nazca lines are a series of straight lines, geometric designs and stylised pictures of animals and plants drawn in the Pampa Colorado (Red Plain) region of the Peruvian desert. They were made by the Nazca people, who lived along the streams that flow from the Andes between 200 BC and AD 600.

The method used to construct the lines is straightforward. The surface of the Pampa Colorado consists of stones oxidised to a red colour (hence the name). The Nazca simply pushed aside the surface layer to reveal the lighter material underneath. The plain has little wind and less rain, so there has been minimal erosion and the lines have endured. The remarkable feature of the lines is their size. The straight lines run for miles and the figures can only be

There are several unanswered questions about Revd Pearson, which I would dearly like to answer. I would very much like to track down Pearson’s telescopes. Martin Lunn confirms that one of his telescopes was donated to the York Philosophical Society. We had suspicions that another of his telescopes was eventually donated to the Museum of Science in Cambridge, however correspondence does not bear this out. Most intriguing of all is a comment in the South Kilworth parish magazine that a working orrery has been constructed, to Pearson’s design, by a Rugby watchmaker. As I live in Rugby I would be very interested to meet this man!

Acknowledgements

I am very grateful to David and Sue Dilks for showing me round the Observatory and South Kilworth Church, one sunny summer afternoon, and for lending me copious information about Revd William Pearson.

I am also grateful to Martin Lunn who provided information about Pearson’s donations to the Yorkshire Museum; to Peter Hingley, for correspondence on Pearson’s RAS connections; to James Hyslop who answered my enquiries to the Whipple Museum of the History of Science in Cambridge; and to Jim Bennett of the Museum of the History of Science in Oxford, who showed me the Fayrer satellitium held in store there.

Sources and further reading


D.A.L. Harrison, ‘The Life and Times of a former Rector’ (in 3 parts), South Kilworth Parish Magazine.

Histories of South Kilworth School and South Kilworth Church.

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**TO THE MEMORY OF THE REVD WM PEARSON, L.L.D. F.R.S. RECTOR OF SOUTH KILWORTH WHO DEPARTED THIS LIFE ON THE 6TH SEPTEMBER 1847 IN THE 81st YEAR OF HIS AGE. UNIVERSALLY BELOVED AND REGRETTED**
The purpose of the lines remains something of a mystery, though a religious or ritual explanation seems the most likely. The German-born archaeologist Maria Reiche (1903-1998) spent most of her life studying the lines. She thought that many of the straight lines had astronomical alignments (which might have been used in an agricultural calendar) and that the pictures might show constellations. However, there are so many lines that it is not obvious that

Khoda Bux identified

In 1871 a letter appears in The English Mechanic (issue 325, 16 June), written under the mysterious nom de plume of ‘Khoda Bux,’ who claims to be the great-grandson of the Revd John Michell (see Newsletter no. 8, September 2005, p16). He also claims that it was Michell who first got the then

uncommon German musician William Herschel interested in astronomy. The letter has long been known, but has been dismissed by most modern writers.

Khoda Bux was a regular correspondent of The English Mechanic, with letters, for example, describing the various structures that he had built in concrete, some of which are now grade II listed buildings. Through information contained in these letters I am now able to confirm that Khoda Bux was indeed who he says he was. His real name was Andrew Thomas Turton Peterson (1814-1906), the son of Anna Peterson née Turton, who was the daughter of John Michell’s daughter Mary.

I am preparing a paper for The Antiquarian Astronomer describing this discovery in greater detail. I hope to include the full text of Khoda Bux’s letter, which has not previously appeared in full in an astronomical journal, and various other background details.

Eric Hutton, Waltham Abbey, Essex.
This article is the second in a series of occasional reviews of some of our prized possessions in the SHA Lending Library and our reference collection in the Sir Robert Ball Library.


Little is known of Margaret Bryan (b. c. 1760, fl. c. 1797-1815), the author of this work and of *Lectures on Natural Philosophy* (London, 1806), except that she ran two successful schools for girls, teaching the sciences at high levels. The book is dedicated to her pupils at Blackheath, in south east London. The frontispiece tells us only that she was handsome and had at least two daughters. The subscription list for the *Compendious System* is long and full of aristocratic names, indicating that whatever else she was, Bryan was well-connected. Out of 400 subscribers, 127 were women, but how many of them actually read and understood the work, we can only guess: subscribing to a publication was very much a status symbol at the time. However, as it ran to a second edition, the book must have had some success. It had been reviewed and promoted by the mathematician Dr Charles Hutton, who praised the work very highly.

The book is divided into ten lectures covering all aspects of astronomy, including optics and the eye, the celestial sphere, the solar system, parallax, gravity, orreries, time and tides, motion and Newton’s laws, and the stars.

It is always fascinating to read old books to discover the state of knowledge at the time. Uranus is still called Herschel or Georgium Sidus, for example, and the planets (and comets) are all deemed to be inhabited as they have atmospheres and obey the same laws as Earth. Also, God would not have made anything without purpose, so Saturn has lots of moons to give extra light to inhabitants when the Sun has gone down. Quite a sensible argument really!

Some facts are unknown; for example the rotation periods of Mercury, Saturn and Venus. The nature of comets is still in dispute. Magnetism is considered to emanate from ‘a subtle fluid’ and Jupiter’s spot appears every fourteen years. Sunspots may account for novae, and the aurora (borealis, presumably) is a meteor. As one would expect for a book of the late eighteenth century, there is little on the nature of the stars, though there is a mention of Herschel’s work on binaries. The book is well written, detailed and accurate for its time.

Although there are worked examples of trigonometry, the author states that women are not capable of higher mathematics. For that reason, she explains, she will not go into detailed explanation of ephemerides tables, as they are too complicated to understand, though she recognises their importance to astronomers.

One of the book’s main attractions are the explanatory drawings and diagrams, beautifully executed by the author herself. She was obviously a talented draughtsman as well as a gifted science teacher. A liberal sprinkling of poems by Milton and Pope is also included. The work is littered with digressions on the glory of God, the use of reason to uncover His work in Nature, and the moral edification of study. This is very much in keeping with the ethos of the times, though we would find it rather sanctimonious today.

This book is the oldest belonging to the SHA and was donated by Dr John Lester, to whom we are extremely grateful. It is kept in the Sir Robert Ball Library at the BMI in Birmingham and may be consulted by members for reference only. It has a fine, original binding and is a most handsome book. If any member knows more about it, or the author, I would be very pleased to hear from them.

**Aurora**

**Books**

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Book reviews


Shire Publications are a series of books which, I am sure, many SHA members with a local history background will be familiar with. Many of their books deal with churches, collectables, countryside traditions, transport, village history and the like. They even have a special series devoted to archaeology, of which this book is a member.

The author, Aubrey Burl, has also written a number of books on the subject of stone circles and is well qualified to write this entry-level book on the subject of archaeoastronomy. First published in 1983, this new edition has an updated text and new colour illustrations. The colour photographs of ancient monuments such as stone circles and tombs make for an attractive book.

Initially archaeologists were sceptical of the astronomers’ and other laymen’s claims for astronomical alignments at ancient sites. But, over time the evidence for alignments, particularly to the rising and settings of the sun and moon, has become more generally accepted. The pioneering work of Alexander Thom and Clive Ruggles has led to the acceptance of archaeoastronomy as a respectable field of academic enquiry.

Rather than taking crude alignments direct from site plans, modern archaeoastronomers take into account the latitude of the site, local topography, clusters of similar sites, folklore, changes and damage to the site, colouring of stones, grading of stones (by size), and cup and other marks on the stones. All these factors have to be taken into account as evidence for an astronomical alignment. Particularly as alignments to other monuments or horizon features may actually have been the intention of the builders.

The prehistoric sites considered are all in Britain, Ireland and Brittany and date in the period 4000 to 1250 BC. The types of site covered are chambered and passage tombs, stone circles and other standing stones. The book takes some of the best preserved sites which demonstrate astronomical alignments. Clusters of similar sites can be studied statistically, for example, recumbent stones in north-east Scotland do show common astronomical alignments (mainly to the south-west). Shared alignments may indicate peoples with a common culture and belief system.

Evidence is strongest for solar alignments to the summer solstice sunrise or the winter solstice sunset. There is also some evidence for lunar alignments. It seems likely the builders made a connection between the sun and life. It was important to them that burial cairns had a solar alignment and possibly the bones of ancestors were exposed to the sun in order to give them new life. For example, Newgrange in Ireland (a passage tomb of 3200 BC) is aligned on the mid winter sunrise and has a narrow aperture above its doorway allowing the rays of the sun to penetrate along the passage at that special time.

In conclusion, this book provides a well-illustrated and reasonably priced introduction to the archaeoastronomy of prehistoric Britain and Ireland. The pictures alone are enough to encourage one to take up the compass and measuring tape!

Mark Hurn


I recently came across this gem of a book in my local public library, not usually noted for its coverage of astronomical history. It is a collection of twenty-eight essays from the author’s *Marginalia* columns in *American Scientist* magazine. Donald Fernie is the founder of the astronomy department at the University of Cape Town and the author of *The Whisper and the Vision: the Voyages of the Astronomers*.

The articles bring to life the adventures, struggles and follies behind some of the best-known stories in the history of astronomy: the discovery of Neptune, the search for the planet Vulcan, the lives of Edmond Halley and Jeremiah
Horrocks; and some lesser known ones as well: Thomas Edison and his chickens (about the 1878 total eclipse of the sun), and the story of Daniel Kirkwood (called ‘the American Kepler’ by Fernie). Five articles chronicle transit of Venus expeditions in the eighteenth century, and three pieces the setting up of the Harvard southern observatory at Arequipa in Peru. I particularly enjoyed the Harvard piece as it is the subject of one of my own talks, and it was gratifying to see I had covered all the sources that the author had consulted.

All the pieces are written in an engaging, chatty but intelligent style, with the emphasis on the human interest side of the story. One is reminded yet again how astronomical knowledge is sometimes gained only by courageous men (and sometimes women) undertaking dangerous and difficult expeditions to remote parts of the world. These pioneers certainly command our respect and our thanks.

None of the material is original research but the author knows his subjects well, and has written a very enjoyable romp around the history of astronomy. Highly recommended.

Madeleine Cox


Ian Glass, of the South African Astronomical Observatory, has written a collection of biographies of eight well-known figures in the history of astronomy. They are: Galileo, Isaac Newton, William Herschel, William Huggins, George Ellery-Hale, Arthur Eddington, Harlow Shapley and Edwin Hubble. The author has chosen these eight as they were all responsible for dramatic changes to the world-pictures they inherited and showed that terrestrial and celestial objects obey the same physical and chemical laws.

Glass lists some of the outstanding qualities most of them possessed: excellent practical and mathematical skills, a heightened degree of physical intuition, a penchant for hard work and innovation, and a search for immortality through their achievements; Herschel was the only one known for his modesty.

Some readers might raise their eyebrows at the use of the term ‘astro-physicists’ to describe pre-nineteenth century astronomers. (The term ‘astrophysics’ was coined by Huggins and his contemporaries to emphasise the spectroscopic revolution of the time.) Glass explains his choice of the word to emphasise the fact that all these astronomers used ideas drawn from physics; physical astronomy in other words.

The life of each subject is presented in detail, with their achievements (and failures) included in the well-flowing narrative. There are ample quotations from their own writing and from their contemporaries. Characters are fully drawn, and the information is up-to-date and obtained from a wide variety of sources. Michael Hoskin’s recent books on the Herschels are included, for example.

There are excellent, up-to-date references at the end of each chapter, a very inclusive index, and many black and white drawings and photos. My only dislike was the unattractive typeface but that is a minor quibble.

The book was obviously written for the international market: we are told that Eton is a ‘famous school attended by many upper-class boys’. Spellings also vary between British and American ones, for example, ‘center’ and ‘centre’, which can be slightly irritating.

The wealth of detail would make this a good read for those who already have some knowledge of the subjects, as well those looking for a good introduction to the history of astronomy. Highly recommended.

This book may be borrowed by members from the Sir Patrick Moore Library.

Madeleine Cox
This column lists some recently published books which might be of interest. Listing here does not preclude a review at a later date. Please note prices may vary according to suppliers.


Contrary to what might be imagined, the cartoon (right) does not show a Newsletter editor zealously searching for items to include in the next issue. Rather it illustrates the Old Book News service which might be of interest to some members. This service supplies useful information about buying and selling old, rare and out-of-print books in the UK and on book collecting services and software. The Web site is at URL http://www.oldbooknews.com where, in addition to various useful links, it is possible to sign-up for an irregular email newsletter.

Obituaries

Commander Antony Fanning RN, MBE, DSC, FRIN, FRAS

It is with deep regret that we report the death of SHA founder-member Commander Antony Fanning on 29 December 2005 at the age of 87. Commander Fanning had a distinguished record as a specialist navigator in the Royal Navy during and after World War II. Following retirement from the Navy he became a considerable scholar, making significant contributions to the study of navigation and astronomy.

Antony Fanning was born on 15 November 1918 at Blyth in Northumberland. His father was an officer in the submarine service. However, the family soon emigrated to South Africa. In 1932 Fanning passed the entrance examination for the Royal Naval College Dartmouth. He went to sea in 1936, first in the training cruiser Frobisher and then in the battleships Royal Sovereign and Revenge.

In 1938 he passed his Sub-Lieutenant’s courses and was appointed to the escort vessel Milford on the Africa Station at Simonstown.

Following the outbreak of war he was involved in convoy duty, minesweeping and antisubmarine patrols. In November 1940 the Milford took part in the Free French attack on Libreville. During this action she was attacked by the Vichy French submarine Poncelet. Fanning was the Anti-Submarine Control officer in charge of the sonar and his efficient and prompt action detected the submarine and helped bring her to the surface with depth charges. He then acted as Gunnery Control Officer and under his direction the Poncelet was severely damaged by gunfire. She
was subsequently scuttled by her crew, who were rescued.

In 1941 Fanning qualified as a specialist navigator. His first appointment in this role was with a mine-laying flotilla operating out of Dover, taking part in mine-laying interspersed with the occasional commando raid. From 1942 he spent most of the rest of the war in destroyers, mostly escorting convoys. During this period he was involved in the infamous ‘Channel Dash’. In March 1941 the battle-cruisers Scharnhorst and Gneisenau and the heavy cruiser Prinz Eugen slipped their berths in Brest and headed up the Channel, avoiding detection for over twelve hours. The only ships available for interception were the destroyer flotilla of which Fanning was the leading Navigating Officer. The only interception course lay through a British mine-barrier. By chance, Fanning knew, from a minesweeper friend, of a channel through the barrier that had just been swept and he was able to lead the flotilla through it. The destroyers closed to within a near-suicidal two miles before launching a torpedo attack, but the enemy turned away at speed and no hits were made. Fanning was awarded a DSC for his part in this action.

Subsequently Fanning took part in the Sicily and Salerno landings and was heavily involved in the planning for the Normandy invasion, for which he was awarded nineteen months seniority as a Lieutenant. For the actual D-day landings he was navigator of the L2 group comprising sixty ships and landing craft coming from the East Coast. Every landing craft in his charge reached Gold Beach safely. Having beached his own ship successfully he took his dog for a walk along the beach whilst waiting for the tide to turn.

From August 1944 he served in destroyer escorts to four Arctic convoys and finally in the Far East. After the war his flotilla was reluctantly involved in the Dutch attempts to reassert their rule in Indonesia. On returning to the UK Fanning had several stints as an instructor in Dryad, interspersed with spells at sea, notably as navigation officer in the carrier Illustrious. On his fortieth birthday he retired from the Navy, having been appointed MBE for his work in the Dryad.

In 1958 he became a lecturer at the London Planetarium. Unfortunately after two years the lecturers for public shows were replaced with tape recordings read by BBC staff. However, Fanning continued as a visiting lecturer for thirty-six years, until the original Zeiss projector was replaced with a Digistar device in 1994. He developed a series of presentations which demonstrated astro-navigation to Qualifying Navigators of the Navy, RAF, Military Surveyors and which were also used for yachtsmen’s courses. In total over 25,000 students attended these lectures.

Fanning was recalled to the Admiralty Compass Observatory (ACO) at Slough in 1960, becoming Deputy Director in 1962. The ACO was amalgamated with the Admiralty Surface Weapons Establishment (ASWE) in 1971 and Fanning became the Senior Naval Officer and Application Commander. He retired on 17 November 1978 as an Honorary Commander.

During his time at the ACO Fanning had considerable responsibilities in the Polaris programme, matching the American missiles to British hardware. During this period he also arranged the transfer of the Admiralty Collection of Historic Compasses to the National Maritime Museum at Greenwich. This transfer was completed when the ACO closed. The catalogue of the collection which Fanning prepared was a distinguished piece of scholarship. He also helped in the refurbishment of the magnetic compasses in the RSS Discovery (1970s), the ironclad HMS Warrior (1987) and the destroyer HMS Cavalier.

He was an accomplished author. His first book was Astronomy Explained (1963; see p21), which sold well in the US and was republished there as Planets, Stars and Galaxies (1966). He wrote the definitive history of the ACO, Steady as She Goes (1986) and contributed a lengthy monograph on the Navy’s Action Information Organisation (AIO) to Volume 1 of Radar in the Royal Navy (1995). Finally, he contributed an article on ‘Astronavigation since 1984’ to The History of Air Navigation (2005). This article had been his contribution to the centenary celebration of the Greenwich Meridian.

Fanning was a Fellow of the RAS and the BIS, and a member of the BAA. He was also a Fellow of the Royal Institute of Navigation (RIN) and served it as an officer. In 1999 he was awarded the RIN’s Gold Medal. He was a stalwart of the William Herschel Society and held office in it. Finally, he became a valued founder-member of the SHA. Fanning was a keen traveller, often making trips to view eclipses and transits, and had a number of other interests.

Antony Fanning married in 1945 following the cessation of hostilities. His wife, Mary, predeceased him in 1991. They had a son and three daughters who survive him. He will be remembered as much for his
kindness and generosity as his considerable achievements, and he will be greatly missed by all who knew him.

*John Beattie and Clive Davenhall*

**Stanislaw Lem**

Stanislaw Lem, the celebrated science fiction writer, died on 27 March 2006 aged 84. He used the conventions of the genre to avoid censorship by the communist authorities in his native Poland. Much of Lem’s work was concerned with philosophical themes, particularly the implications of cybernetics and the final unknowability of alien intelligences. The critic Darko Suvin has described it as a ‘rediscovery of science fiction as a form of literary cognition.’

The unknowability of alien intelligences was central to Lem’s best known work, *Solaris*, written in 1961 and translated into English in 1970. It featured a psychologist trapped in a space-station orbiting a planet inhabited by an apparently intelligent, but completely incomprehensible, planet-circling ocean. The crew are visited by figures which the ocean has materialised from their own memories. The legendary Russian director Andrei Tarkovsky made a film version in 1972 which was famously long and impenetrable. It was remade in 2002 by Steven Soderbergh in a version that was certainly shorter and perhaps marginally less impenetrable.

Early in his career Lem studied the history and philosophy of science. This interest is obvious in his descriptions of the science of ‘Solaristics,’ the study of the planet Solaris and its encircling ocean, which show a deep insight into the subject whilst remaining wry and amusing. These digressions are almost entirely absent from the films and, indeed, are probably unfilmable.

Some of Lem’s other books, such as *Eden, The Invincible and His Master’s Voice*, also explored the unknowability of alien intelligences. Others, such as *The Cyberiad, The Star Diaries and The Futurological Congress* were much lighter in tone, delighting in neologisms, puns and other wordplay. He also wrote a number of philosophical and mainstream works, including the notable philosophical essay *Summa Technologiae*. Not all his works have been translated, but they are available in over forty languages and have sold over twenty-seven million copies. The sympathetic English translations by Michael Kandel capture much of the tone of the original Polish.

Lem was born on 12 September 1921 in Lwów then in Poland, later in the Soviet Union and now in the Ukraine. His father was a wealthy doctor of Jewish extraction. Lem also studied medicine, but his education was interrupted by World War II. During the war he worked as a mechanic and was active in the resistance, surreptitiously sabotaging the German vehicles he was ostensibly repairing. After the war he resumed his studies at the Jagiellonian University, but he never graduated, in part due to a disagreement with the authorities over the erroneous theories of the Russian biologist Trofim Lysenko, which were imposed throughout the Soviet Block to disastrous effect.

Lem began writing as a student and continued for the rest of his life. He received numerous literary awards and came to be regarded as one of the most distinctive and perceptive voices in European literature.

Stanislaw Lem died on 27 March 2006 as a result of heart disease. He is survived by his wife, Barbara, and their son.

*Clive Davenhall*

**Library news**

*Madeline Cox and Stuart Williams*

There have been no purchases for the Library since the last *Newsletter*, but we have received the following donations, for which we are extremely grateful:


Ken Goward recently had the good fortune to acquire a copy of an early edition Commander A.E. Fanning’s *Astronomy Explained* (1963; see p19), which he has kindly donated to the Society’s Library. He is shown here handing it over to Madeline Cox during the recent Spring Conference.

The latest additions to the Library’s journal collections are an incomplete sequence of *Sky & Telescope* magazines from mid 1970 – 2003 (from the estate of the late John Darius via Kevin Johnson) and a handful of journals of the Webb Society, mid 1970’s, late 1980’s (donor Peter Grego, who has also donated several books, as yet unlisted, some of which have been transferred to the Sir Patrick Moore Lending Library).

**Library catalogues**

New library catalogues were issued at the AGM and Spring Conference on 20 May, and it is hoped to have these on-line for download in the near future, once a new Web site has been set up. There are now separate catalogues for: the Sir Patrick Moore Lending Library, the Sir Robert Ball Reference Library, the Journals Collection and the Stuart Williams Collection.

**Sir Robert Ball Library**

The SHA’s Survey of Astronomical History now has its own shelves in the Library, under the administration of Roger Jones, and use of a Windows PC. Supplementing this, SHA member Eric Hutton has generously continued to donate reference copies of his searchable DVD’s of the *English Mechanic* newspaper, an extremely valuable resource for Survey work. An Apple computer has been supplied to the Library on indefinite loan by Stuart Williams, making it possible to consult these DVD’s on the premises.

**Library usage**

The SHA has a rich library collection for a relatively young society, but these resources are not being used to their full, which is disappointing. The Sir Robert Ball Library, for example, continues to attract only small numbers of visitors, with thirty or so over the past year, so opening hours will be reviewed again for 2007. We can only continue to encourage you, the members, to make good use of the services which have been set up for your benefit.

**Library opening hours**

In all cases you should check availability before visiting and bring your SHA membership card for identification.

**SHA Sir Robert Ball Library**

For the remainder of 2006 the Sir Robert Ball Library will be open on selected Saturdays only, as listed below. On these days the opening hours will be 10:30 am – 12:00 noon, 1:00 pm – 3:30 pm (closed for lunch noon – 1:00 pm). Please note that the Library will not be open on Mondays during 2006.

22 July, 19 August, 30 September, 28 October, 25 November*, 9 December.

* – On 25 November the Library will close at 12:00 noon because in the afternoon it will be used for an SHA Council meeting.

The Library is located at the Birmingham & Midland Institute, 9, Margaret Street, Birmingham, B3 3BS. BMI Web site: www.bmi.org.uk. You are strongly advised to check that the Library is open before visiting to avoid disappointment. Contact Stuart Williams, telephone 07906 103735 during opening hours only. Any enquiries, please write with SAE to: SHA, 26, Matlock Road, Bloxwich, Walsall, West Midlands, WS3 3QD or by email to: secretary@shastro.org.uk

**RAS Library**

The RAS Library is open during office hours, 10:00 am – 5:00 pm, Monday to Friday. In addition it will be open on the first Saturday of every month, 9:30 – 5:30. It will also stay open until 6:00 pm on the nights of BAA London Wednesday meetings and, if the BAA arranges any London Saturday meetings, it will attempt to cover those as well. Therefore the planned Saturday openings until the end of 2006 will be:

5 August, 2 September, 7 October, 4 November, 2 December.

It is essential to contact the Librarian in advance if any rare or older book material, archives, and especially older journals, are required during these extended openings as some of these items may be in another building which is not accessible on Saturdays. The front door of the RAS premises is locked on Saturdays, so visitors must ring the bell and wait to be let in. Unfortunately, it is difficult to hear the bell from the Librarian’s office. Please ring his mobile telephone (below) in case of difficulty. Finally, please note that the continuation of the extended openings for 2006 is an experiment intended to benefit amateur astronomers and historians, such as SHA members, and will only be continued if sufficient readers use the Library on these days to make it worth while; *so use it or lose it!*

Contact Peter Hingley (020-7734 - 4582, ext. 215; mobile: 07757 133891 or pdh@ras.org.uk).

On-line catalogue:  http://ras.heritage4.com

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ROE Library

The ROE Library is usually open during office hours, Monday to Friday. Contact Karen Moran (0131-668-8395 or ksm@roe.ac.uk).

On-line catalogue: http://www.roe.ac.uk/roe/library/index.html and follow the links:

‘Search the Main Library Catalogue’ and ‘ROE Catalogue’.

RAS Library closure

Peter Hingley

As previously advised (Newsletter for March 2006, no. 10, p22) the RAS Library will be closed from the autumn of this year whilst the Burlington House premises are refurbished. The plans for this work are becoming more definite. The Library and Archive collections will probably be in storage from the end of October this year at the latest for up to eighteen months. I will attempt to retain some kind of access to items from the collection on a ‘by appointment’ basis, but this will necessarily be quite restricted. I strongly recommend that readers try to access what they are likely to need from the Library before it goes into storage, including borrowing books they would like to have available. See the March Newsletter for a brief background to the refurbishment.

Forthcoming meetings and events

Clive Davenhall

The following is a list of forthcoming meetings and events to be held during the remainder of 2006. Unless noted otherwise booking is necessary for meetings but not for exhibitions. Except where noted the events are organised by the SHA. The details of non-SHA events are checked as far as possible but cannot be guaranteed. Items for inclusion in this list in future issues of the Newsletter are welcome. They should be sent to the editorial address given on the back page.

Thr. 8 Jun. to Sun. 7 Jan. 2007. At the Edge of Space, Parts 1-3. Exhibition of photographs by Dan Holdsworth; part of the New Visions programme at the National Maritime Museum, Greenwich. Comprises 3 series of photographs: At the Edge of Space (the ESA launch site in French Guyana), The Gregorian (the Arecibo radio telescope) and Hyperborea (the aurora borealis seen from Iceland and Norway). 10:00 am to 5:00 pm, Mon. to Sun. Admission free. See http://www.nmm.ac.uk/newvisions (non-SHA event).


Mon. 14 to Sat. 25 Aug. IAU General Assembly XXVI. To be held in Prague. IAU Commission 41 (History of Astronomy) will be organising sessions as part of this meeting. See http://www.astronomy2006.com/ (non-SHA event).

Sat. 7 Oct. SHA Autumn Conference: Instruments and Imaging. To be held at the BMI. Any appropriate topic from earliest times to the present day may be included. Initial offers of papers from members, including a short abstract and suggested length (twenty, thirty or sixty minutes including question time) as well as audio-visual requirements, are welcome by post only, with SAE to the Secretary, Stuart Williams, 26, Matlock Road, Bloxwich, WS3 3QD.

Details of additional forthcoming international conferences are included in Wolfgang Dick’s Electronic Newsletter for the History of Astronomy. An archive is available at URL: http://www.astro.uni-bonn.de/~pbrosche/aa/enha/.

SHA summer event 2007

Next summer will be the fifth anniversary of the founding of the SHA at Wadham College, Oxford. In order to celebrate this occasion the usual summer picnic will be replaced by a very special event at Wadham College on Saturday 4 August 2007. Like the founding, the day will start with luncheon in the Great Hall and will be followed by a series of talks on the founding of the: Royal Society, British Association for the Advancement of Science, Royal Astronomical Society, British Astronomical Association, Junior Astronomical Society and, of course, the SHA. There will also be time to reflect on the future of the SHA. More details will be circulated in due course. In the meantime the programme is still being developed. Offers of talks are welcome and should be sent to Ken Goward (contact details overleaf).
New members

The Society for the History of Astronomy extends a very warm welcome to the following members who have recently joined the Society:

Mr Anthony W. Cross of Manchester,
Ms Eva M. Hans of St Andrews, Fife,
Mr Julien R. King of Braintree, Essex,
Mrs Caroline Marten of London, W11,
Canon Jon Reynolds of Cheddington, Bedfordshire.

Stop press

On Saturday 8 July the Society’s annual Summer Picnic was held, by kind invitation of Sir Patrick Moore, at his home and observatory, ‘Farthings’, Selsey, West Sussex. The event was a great success and enjoyed by all who attended. A report and pictures will appear in the next issue of the Newsletter. The Society is extremely grateful to Sir Patrick for his hospitality.

Guidelines for submitting articles and letters to the Newsletter

Guidelines for submitting articles and letters to the Newsletter were included in a previous issue (No. 7, June 2005) and are available from the Society’s Web site.

Articles, letters and Newsletter inquiries should be sent to Clive Davenhall. For electronic contributions the e-mail address is: newsletter@shastro.org.uk. For paper contributions see the box opposite.

The deadline for the next edition of the Newsletter is Friday 18th August 2006.