Welcome to the sixth issue of the SHA Newsletter, and the first to be produced on a quarterly schedule. It contains all the usual material.

The Society’s long-awaited journal The Antiquarian Astronomer is in the process of going to press as I write, and may well have reached you by the time that you read this. Reg Withey will be taking over as Journal Editor for issue two. Thanks are due to Callum Potter for his sterling work on the first issue and also, of course, his earlier work on the Newsletter. Reg Withey is keen to receive papers for publication in the Journal, and contributions for the Newsletter are also always welcome.

The Society is holding several events during 2005, the next of which is the Spring Conference and AGM, which will be held at the National Maritime Museum, Greenwich on Saturday 28 May. There is more on all these topics inside.

There is also an article on the astronomical aspects of the British Library’s recent Silk Road exhibition, which had to be held over from the previous issue because of lack of space.

Finally, a reminder that subscription renewals were due on 1 January, and if you have not renewed by 31 March then, as required by the Society’s Constitution, your membership will lapse.

The Dunhuang Star Map

The Dunhuang Star Map, so-called because it was found in a cave-complex outside the city of Dunhuang in western China, probably dates from the seventh century and is the oldest extant star map to show individual stars. The section opposite shows a region with equatorial coordinates of approximately 5 to 7 hours right ascension and -40 to +40 degrees declination. North is up and east to the left. The central part of the map shows the Chinese asterisms Shen and Shenqi, corresponding to Orion. In the upper part the asterisms Wuche and Sanzhu are equivalent to Auriga.

The map was one of the exhibits in the British Library’s recent exhibition The Silk Road. A report on the astronomical aspects of this exhibition appears inside.
Society news
Stuart Williams, Ken Goward and Clive Davenhall

Council meeting - February

A meeting of the SHA’s Council & Officers was held in the meeting room of the Institute of Astronomy, Cambridge University on 12 February 2005. Much business was discussed, including a number of possible changes to the constitution to enable the Society to be managed more efficiently. These amendments will be presented to Members at a later date and they will be voted on at the forthcoming AGM.

The Society's publications programme and library service, as well as finances and other aspects of its work, were also discussed. Several encouraging reports were made, matters arising from which are reflected elsewhere in this report. The meeting broadly concluded that though much good work has been and continues to be done, more is needed and Council and Officers are committed to continue to improve the Society's operation and to offer excellent value to Members for their subscription.

The Antiquarian Astronomer

The SHA's long-awaited and much anticipated annual journal, The Antiquarian Astronomer, has now reached the final proof reading stage, thanks to Editor Callum Potter and Assistant Editor John Woodruff, and it is hoped that it will have gone to press by the time you read this. In any event, Council will be ensuring that the Journal goes out to Members as soon as possible. We hope that you will agree that, while the delays in its production have been unfortunate, it will have been well worth the wait.

Callum Potter is stepping down as Editor after the publication of this first issue, and Dr Reg Withey will take up the position from issue two onwards. Callum leaves a fine legacy in a quality publication for the Society that will set an excellent standard for us to build on.

Joint WHS/SHA meeting in Bath, Saturday 5 March 2005

SHA Council has worked with, and at the invitation of, the William Herschel Society (WHS) to organise a joint open meeting in Bath. Information was circulated to Members, but the WHS handled publicity locally and amongst its own members. A successful meeting was held on the afternoon of 5 March and a report appears elsewhere in this Newsletter. The SHA hopes to work with the WHS on future co-operative ventures, as they are natural partners in our field.

Future meetings

The following SHA Council Meetings are planned, at 1pm in each case, and concluding no later than 5pm. While these events are not general open meetings, individual SHA Members wishing to present a matter to Council, or to observe, are welcome to attend, by prior arrangement with the Secretary, subject to capacity of the meeting room in use.

23 July 2005: Yorkshire Museum, York,
12 November: Birmingham & Midland Institute, Birmingham.

In addition to the joint WHS/SHA session above, the SHA events planned for 2005 are the Spring Conference and AGM (28 May), the Annual Picnic (6 August) and the Autumn Conference (8 October). Details for the first two events follow; preliminary details of the Autumn Conference are included in the Forthcoming events inside the back cover of this Newsletter.

Spring Conference & AGM

This year’s AGM and Spring Conference will take place on Saturday 28 May 2005 in the Lecture Theatre, National Maritime Museum (NMM), Greenwich from 11am until 5:30pm. The AGM will take place between 2pm and 3:30pm. Some small changes to the Society's Constitution will be proposed at the AGM for Members' consideration.

Confirmed Conference papers include: Positional Astronomy at the Royal Observatory by Gilbert Satterthwaite, FRAS; The Greenwich 28-inch Refractor by Dr Derek Jones, FRAS and The English Mechanic and World of Science by Eric Hutton, FRAS.

In addition, two 15-minute slots have been scheduled for members to present small papers. Topics might include either completed research or a progress report on some research project. If you wish to be considered for a slot, please send an abstract of your proposed paper to the Society Treasurer (contact details on the final page of this Newsletter).

After the Conference members will gather to dine at the nearby Plume of Feathers Public House. To facilitate table booking please let the Treasurer know well in advance if you would like to join our party.

Whilst the AGM itself is free for all Members to attend, there will be a small charge of £5 per head for anyone attending the Conference to cover costs including refreshments (not lunch) and a donation to the NMM. Please make cheques payable to ‘Society for the History of Astronomy’ and post to the Treasurer as soon as possible. Individual meals after the Conference may be paid direct to the pub.

Summer Picnic

We return to the Society’s birthplace at Wadham College, Oxford for our Summer Picnic on Saturday 6 August (note the revised date). The programme has still to be finalised, but will include a lecture from our Honorary President, Dr Allan Chapman, followed by refreshments in the Refectory. Two options are...
available to Members: we can either picnic in the delightful college grounds, or sit down to a cooked lunch in the Great Hall. Depending upon Member’s replies we will take up one or other option, but not both. As yet we have not been quoted for the cost of a meal, or for the use of College facilities.

If you would like to attend the picnic, please contact the Treasurer and let him know your preferred catering option as soon as possible. Finalised arrangements and costs will appear in the next edition of the Newsletter.

Sir Robert Ball Library news

Since the last Council meeting, Stuart Williams, Roger Jones and Madeline Cox have worked together to set up the Sir Robert Ball Library at the Birmingham & Midland Institute. This library provides an important reference facility for SHA and BMI Members that we hope will also be used by local astronomical societies in due course.

We are pleased to report that the Library is now fully set up, complete with computer and colour copying facilities, and has opened on two days in January and in February. The arrangements for using the Library, including opening hours, have been circulated to Members and are also summarised elsewhere in this Newsletter. Initial opening publicity was published in Astronomy Now and Popular Astronomy magazines, and will be followed up.

New SHA Library Manual

The new SHA Library Manual, compiled by Madeline Cox with the assistance of Stuart Williams, Roger Jones and Ken Goward, will be available shortly on the SHA Web site as a free download-able PDF file. Members without access to the Internet will be able to obtain a paper copy if required, which will be supplied at cost. You are strongly encouraged to obtain a copy of the new Manual, which includes full information on all aspects of our Library Service as well as a current Library Catalogue. Further details from SHA Librarian Madeline Cox (SHA Lending Library) or SHA Secretary Stuart Williams (Sir Robert Ball Library).

Visit to the ROE Library

The proposed Member’s visit to the ROE Library mentioned in the previous issue of the Newsletter (November 2004, no. 5, p5) attracted precisely one expression of interest, which is clearly not viable. However, there is no particular deadline for the visit. If you are interested then please let Clive Davenhall (acd@roe.ac.uk) know. He will maintain a list and attempt to organise a visit if sufficient numbers accumulate.

The Sir Robert Ball Library

Stuart Williams

The SHA’s Sir Robert Ball Library is a small library housed in the Benson Room of the Birmingham & Midland Institute, which is in Birmingham city centre and within a 10 minute walk from Birmingham New Street and Snow Hill railway stations. The BMI’s address is: Birmingham & Midland Institute, 9, Margaret Street, Birmingham, B3 3BS. BMI Web site: www.bmi.org.uk

The Library’s collections of books and journals are held for reference only, and any photocopying is subject to condition and copyright regulations.

Access to the Sir Robert Ball Library is available only during its published opening hours (see below) to card-carrying members of the SHA and the BMI, though others may be admitted by special arrangement, please contact Stuart

Part of the Sir Robert Ball Library. View shows the printer

Sir Robert Ball
Williams (details below). Members are requested to bring their membership card as identification.

Admission is free of charge. Access is supervised by SHA volunteer staff; normally Secretary Stuart Williams and/or Councillor Roger Jones. The Library is securely double locked and intruder-alarmed. There are no power sockets for laptop computers, so please ensure your battery is fully charged. Toilets are nearby. There is a café on-site and many eating establishments nearby.

See below for full details of preservation rules, contact details and opening days and hours.

**Preservation rules – pencils only**

Many items at the Sir Robert Ball Library are old, delicate, valuable and in some cases irreplaceable. Preservation is therefore the Library’s first priority. Access to items will only be permitted if it will not result in damage to those items, and will be supervised. Visitors are advised that the use of pencils only is required when in the Library, to avoid damage to Library stock. You should bring a pencil, notebook etc. with you when visiting. Eating and drinking are not permitted in the Library.

**Photocopying and copyright**

Subject to copyright restrictions and the physical condition of the items in question, photocopying services are available at the Library for the purposes of research and private study. A charge will be made, plus postage if applicable, to cover costs and help maintain the service. Photocopying can only be undertaken during Library opening hours. Photocopying does not grant permission for publication, copyright applies and you must obtain any necessary permissions.

**Contact**

Stuart Williams, telephone 07906 103735 during Monday and Saturday afternoon opening hours only. Or write with SAE to: SHA, 26, Matlock Road, Bloxwich, Walsall, West Midlands, WS3 3QD.

**Opening Times for 2005**

Note that there is no access to the Sir Robert Ball Library on dates other than those listed below.

**Mondays**

Open 10:30am – 12:00pm, 1:00pm – 3:30pm

**Saturdays**

Open 2:30pm – 5pm only, except for additional mornings 11am – 1:30pm as noted by *

Please telephone to make sure the Library is open before travelling.

**Opening days in the remainder of 2005**

**April**

Monday: 25 April
Saturday: 30 April*

**May**

Monday: 23 May
Saturday: 28 May

**June**

Monday: 6 June
Saturday: 11 June
Extended opening hours for the RAS Library

Peter D Hingley, RAS Librarian

(The RAS has kindly invited SHA Members to use its Library. The Society is grateful for this useful and generous concession. Similar arrangements exist for Members to use the ROE Library, which might be more convenient for those in more northerly latitudes. In both cases Members should bring their membership cards when visiting – Ed.)

For the benefit of Fellows and others who are in full time employment, or otherwise have difficulty reaching the Library, it has been agreed that the RAS Library will be kept open later than usual on some Wednesdays on which the BAA meets, and will open on four Saturdays, two of them coinciding with BAA London meetings, during 2005. The first opening until 6pm was so successful that it has been decided as an experiment to continue this until 7pm.

Because some material in the reserve collections and many journals are housed in another part of Burlington House, which is not accessible on Saturdays, readers requiring this kind of material should contact the Librarian (telephone 020 7734 4582, ext. 215, or e-mail pdh@ras.org.uk) in advance so that it can be got out ready for them. Those who think they will find this facility useful are encouraged to send a message as above so that I can add their addresses to an e-mail list to which reminders of open days and evenings will be sent.

Please note also that the RAS Library Online Catalogue (OPAC) is now available at URL http://ras.heritage4.com. Currently the OPAC includes most of the books in the Main Library and all journals.

The Wednesdays when the Library will be open until 7pm will be:
- 30 March
- 25 May
- 26 October

The Saturdays when the Library will be open 9:30am – 5:30pm will be:
- 23 April (roses mandatory!)
- 4 June
- 26 November
- 17 December

I ask that all concerned give the widest possible publicity to this information. The extended hours are an experiment intended to benefit amateur astronomers, historians, etc, and will only become a regular feature if they are sufficiently well used to justify my giving up a Saturday! If successful we may well open for 6 Saturdays in 2006, or even more, depending on the response.

The Silk Road Sky

Clive Davenhall

Between the 7 May and 12 September last year the British Library presented the exhibition The Silk Road: Trade, Travel, War and Faith. A colleague and I went in July, whilst we were in London for a course. The Silk Road was a collection of trade routes (see the map) which stretched from the Mediterranean to China. It flourished for several millennia (though the name was only coined in the nineteenth century) but went into decline after AD 1000, as maritime trade became increasingly important. Not just silk, but a whole variety of goods, including salt, wool and jade were traded along the route. The importance of this trade should not be underestimated. One historian has estimated that of the forty-odd wars fought in the Western Roman Empire between 58 BC and AD 107 some two thirds had their origins in changes in the trade policy of Imperial China. I find this statistic quite remarkable: clearly globalisation is nothing new! And not merely goods travelled along the Silk Road; it was also an effective conduit for transmitting new ideas and religions.

The exhibition Web site has a number of themes, one of which is ‘The Silk Road Sky’ and it is this astronomical material which is of interest in the Newsletter. The actual exhibition had a rather more geographical layout, with sections that largely corresponded to individual nations, regions or archaeological sites.

Dunhuang is a city in the western Chinese province of Gansu. The contemporary city dates from only 1725, but there was an earlier town to the west with a history of some
2000 years. It was originally established as a military garrison, but being strategically placed close to where the Silk Road split into northern and southern branches around the Taklamakan Desert, it prospered, and by AD 400 was the chief town of the Chinese frontier region.

In 1900 a small cave which had been used to store documents was accidentally discovered in a Buddhist cave complex just outside old Dunhuang. It contained hundreds of paintings on silk and over 40,000 documents. The cave had been sealed in the eleventh century and the collection is the largest extant from that period. The Hungarian-born archaeologist Sir Aurel Stein and the eminent French sinologist Paul Pelliot visited Dunhuang a few years after the discovery and secured a large number of the documents, many of which are now in the British Library.

One of the documents collected by Stein is the Dunhuang Star Map (British Library catalogue number Or.8210/S.3326). It is the earliest star chart extant to show individual stars. The chart is about 87 inches long by 10 inches wide and occurs towards the end of a longer scroll. The first part of the scroll shows various types of cloud formation and explains their use in divination. The star chart then follows and the scroll ends with a drawing of an archer shooting an arrow. The chart proper comprises thirteen separate panels. The first twelve show regions some 2 hours wide, equally spaced along the celestial equator and covering a declination range of -40 to +40 degrees. Each is accompanied by explanatory text. The final chart shows the circumpolar region and has no associated text.

The map shows some 1345 stars grouped into 257 asterisms. The chart has no grid or co-ordinates, but the stars and asterisms are mostly placed accurately and all but a few can be identified. For the equatorial charts a projection similar to Mercator’s seems to have been used. Stars are shown as small dots, with no indication of their brightness, and asterisms are indicated by lines joining the stars, following the usual Chinese conventions. The Chinese asterisms are completely different from the familiar western constellations. The date of the chart is difficult to estimate, but it was probably drawn between AD 600 and 710. There are earlier sky maps extant, notably the Hellenised Egyptian Dendera Ceiling (about 30 BC) and the Greek Farnese Atlas (sometime between the second century BC and AD 150), but these show only constellations, not individual stars.

Also, the number of stars shown in the chart is about a third as many again as listed in the catalogue included in Ptolemy’s *Almagest*, which remained the most extensive western star catalogue until the work of Tycho Brahe.

A second star map, somewhat more crudely drawn and with only the circumpolar region extant, has also been found at Dunhuang. It is now in the Dunhuang County Museum. Despite being the earliest extant chart, the Dunhuang map appears to be the product of a mature tradition and is
probably a copy. There is believed to have been a long tradition of producing star catalogues and charts in China. Unfortunately, most early records, including astronomical ones, were lost in the infamous ‘burning of the books’ ordered by Qin Shihuangdi, the first Emperor, in 213 BC. However, various star catalogues are believed to have been compiled before or during the ‘Warring States’ period (476-221 BC). Similarly, star charts drawn from these catalogues date from at least Chen Zhuo in the third century AD, if not earlier. The interest in detailed star mapping was a consequence of Chinese astrology and cosmography, which saw the sky as a reflection of the Earth. Thus the sky was monitored for changes which could be interpreted as portents of forthcoming terrestrial events. Astrologers were important officials in the Imperial Court and they needed accurate charts to identify transient and unusual events.

The Dunhuang star map was undoubtedly the most significant astronomical item in the exhibition. However, there were various other astronomical exhibits: calendars and almanacs (the printing of which was supposedly the prerogative of the Imperial Astronomers, but the production of private ones seems to have been widespread) and representations of planetary deities by various cultures and religions along the Silk Road. The five naked-eye planets were part of the Chinese astrological system and each was associated with one of the five Chinese elements (water, metal, fire, wood and earth). Each of these deities took a recognisable human form when it revealed itself on Earth. Jupiter, in particular was named the ‘Year Star’ (suixing) and closely associated with the Emperor. By contrast the Indian Buddhist pantheon knew the five planetary deities, but also recognised the Sun and Moon, and Ketu and Rahu, these last two being demons who tried to eat the Sun or Moon during eclipses. Astronomically they corresponded to the nodes of the lunar orbit. Together these various planetary deities formed the ‘nine luminaries’ (Navagraha).

The greater part of the exhibition was, of course, not astronomical, though nonetheless it contained much of interest. For example, there was a copy of the Buddhist Diamond Sutra printed in AD 868 at the behest of one Wang Jie, which is believed to be the earliest complete printed book still extant (though there are earlier incomplete fragments from Korea and Japan). Woodblock printing developed in China during the eighth century. Though this copy of the Diamond Sutra was found in Dunhuang, it was probably printed in Sichuan in South West China.

In conclusion the British Library are to be congratulated on mounting and enjoyable an impressive exhibition and the star map was a particular highlight for anyone interested in the history of astronomy. As I type this article I’m listening to the CD Moon Rise over the Silk Road by the group Ghazal, who play a mixture of Persian and Indian instruments. Their delicate, haunting improvisations on these traditions is a modern continuation of the centuries-old tradition of cultures travelling and diffusing along the Silk Road.

Further reading

The Web site for the exhibition is still available at the British Library. See URL: http://www.bl.uk/whatson/exhibitions/silkroad/main.html.


Ancient Chinese astronomy first became known in the West during the nineteenth century. Arcturus Press, run by SHA Member Peter Erwood, publishes a facsimile of one of the books which introduced it: John Williams’ Observations of Comets from BC 611 to AD 1640. Translated from the Chinese Annals. An advertisement appears elsewhere in this issue.

The reference that I have for changes in Chinese trade policy causing wars in the Roman Empire is F.J. Teggart’s, Rome and China: a Study in Correlations in Historical Events (1939, University of California Press: Berkeley and Los Angeles), vii-viii, and passim.
Joint meeting of the William Herschel Society and the SHA

Stuart Williams, SHA Secretary

Saturday 5 March 2005 saw the first joint meeting of the William Herschel Society and the Society for the History of Astronomy. It was held at the Bath Royal Literary and Scientific Institution, Queen Square, Bath.

The programme of speakers for the afternoon was drawn from the William Herschel Society, the Society for the History of Astronomy, and special guests from another visiting society, the Herschel Society of Japan. The programme proceeded as follows.

William Herschel’s Residences in Bath, Mr Michael Tabb (WHS/SHA)

Mr Tabb, a member of both our societies, recounted a brief history of the many and varied residences in Bath which William, and then William and Caroline, Herschel had occupied before the family moved away to be near Windsor once William had been appointed Royal Astronomer. In December 1766 William had moved to Bath and had lodged with the Harper family in Bell Lane (which is no longer in existence as such). At the time, and for several years after, he worked as a musician and teacher of music. From 1769 he lived at 7, New King Street. Around this time he brought his sister Caroline to England. Places where he worked as a musician include the Octagon Chapel, The Lower Rooms, the Upper or New Assembly Rooms, the Theatre Royal and the Spring Gardens. Gradually he began to concentrate on astronomy and telescope making, and this took up an increasing amount of space in the house. In 1774 he moved to Walcot Parade where there was more room for workshops and a rooftop observing position for his 20 foot telescope. In 1777 he returned to New King Street, to no. 19, which was to become his best-known home in Bath and the location of the present museum. Now his astronomy began to take over completely and it was here (returning from yet another move, this time to 27, Rivers Street, revealed by Mr Tabb’s research in Bath City Archives) that he discovered the planet Uranus in 1781. Subsequently in 1782 he moved to Datchet, Berkshire; in 1785 to Clay Hall, Old Windsor, and in 1786 to what became known as ‘Observatory House’ in Windsor Road, Slough, sadly long demolished, where he built his famous 40 foot telescope.

William Herschel and The Bath Philosophical Society, Prof. Francis Ring, FRAS (WHS)

Prof. Francis Ring, Chairman of the William Herschel Society, introduced the audience to something of the history of the Bath Philosophical Society. In the eighteenth century, Bath was a credible alternative to London, a place to be seen and to live in for the intellectual and the fashionable, a place of culture, music, literature and science. Tea and coffee house society flourished in the city and many would gather therein to discuss the news of the day and the fascination of science. Travelling teachers made their living by giving lively talks on the sciences for the high-class entertainment of gentlemen and their families. An Agricultural Society had been formed in 1777 to bring scientific method to the badly organised farming industry. Between 1778 – 1787 the nucleus of the Bath Philosophical Society came into being, formed formally in 1779 from 27 people who were invited or agreed to form the Society, including such luminaries as Joseph Priestley and William Herschel. The Bath Philosophical Society gradually formed the opinion that they were better than the Royal Society in London. Prof. Ring went on to describe some of those interesting early members of the society, especially the activities of William Herschel. His membership of the Bath Philosophical Society encouraged Herschel to give a total of 31 papers over a period of just three years, and this provided him with an incentive to make more of...
his scientific interests. It would appear that one reason for the Society’s collapse in later years was the departure of Herschel to Windsor, and the death Sir Edward Rock. Sadly, no trace of the records of the Bath Philosophical Society has been found, though copies of some items have been found in the collections of the Royal Society. Prof. Ring concluded that Herschel’s time in Bath undoubtedly prepared him well for a life of scientific discovery. Scientific interests in Bath had continued to grow, and in 1819 the Bath Institution Library and Reading Room opened. The Bath Royal Library and Scientific Institution existed from 1825 to 1955. Finally, in 1978, the William Herschel Society was formed.

The Herschel Family Archive, Mr John Herschel-Shorland (WHS)

Mr John Herschel-Shorland, a descendant of William Herschel, began by describing the family history of the Herschels, illustrated by detailed family trees, from William’s parents, through William to himself and beyond. He discussed the movements of the family from Bath to ‘Observatory House’ in Slough, which was to become the family home for many years. Observatory House was last used by Revd Sir John Herschel between 1869 – 1950. Observatory House was sold in 1960 and many family items were sold to American and other institutions. William Herschel’s 7 foot telescope was retained and moved with the family to Warfield in Berkshire. John Herschel-Shorland himself became a mechanical engineer working at Rolls-Royce in the Midlands. He now lives in a former farmhouse at Diss, Norfolk, and holds the remaining archive of the family, as well as the 7 foot telescope and a clock given by fellow astronomer Olbers to John Herschel. These items are kept in a converted barn, with an upstairs display room or small museum, and the archive of family papers, letters and photographs, as well as antique photographic equipment and plates, in cabinets around a downstairs room which doubles as a games room. Mr Herschel-Shorland concluded with a viewing of images from several family albums.

John Herschel’s View on the Neptune Discovery Synchrony, Dr Nicholas Kollerstrom, FRAS (SHA)

SHA Councillor Dr Nicholas Kollerstrom introduced the controversy over the simultaneous discovery of the planet Neptune in 1846. In England John Couch-Adams, and in France Urbain Le Verrier, calculated the position of Neptune from irregularities in the orbit of Uranus. Le Verrier was apparently better served by the German astronomer Galle (who found the planet in one hour) than Adams was by Airy, the Astronomer Royal, who gave the task to Challis, the Director of the Cambridge Observatory. Challis observed the planet first but did not recognise it. Within two months of the discovery, Challis, Airy and James Glaisher, three of Britain’s top astronomers, had publicly committed themselves to the radically unsound view that Adams and Le Verrier’s predictions agreed ‘within one degree.’ Nothing has more skewed the debate than this claim: they differed by about four degrees. The only thing within one degree was the discrepancy between Le Verrier’s prediction and the observed position. The resulting controversy, fuelled for many years by the disappearance of the relevant file from the Royal Greenwich Observatory, is well known. Dr Kollerstrom and his colleagues William Sheehan and Craig Waff have been reviewing the original documents, rediscovered in 1998, and have concluded that Adams’ British contemporaries gave him more credit than was due him, even though he had performed some remarkable calculations. However, he most certainly deserves credit as a pioneer, with Le Verrier, of applying perturbation theory to planetary motion. On this occasion Dr Kollerstrom revealed the stressful nature of the controversy by shedding light on some most eloquent opinions on the matter expressed in correspondence by John Herschel. Herschel’s views at this stressful time display a wonderful depth of philosophical understanding. In the end, despite considerable misgivings about the whole matter, and changing opinions over time, Herschel came to the conclusion that it could only be to the benefit of science that its maturity was revealed by the ability of two able mathematicians to independently predict the location of the ‘new’ planet.

There followed a short break for refreshments. The second half of the programme was, of necessity, altered due to the unavailability of one of the speakers, the SHA’s own Ken Goward, who had been unable to travel due to road conditions and illness. Stuart Williams, SHA Secretary, stepped in to offer a short contribution, and the rest of the programme proceeded as follows.

John Herschel and Early Photography, Mr Stuart Williams LRPS, FRAS (SHA)

Mr Williams, who is not only SHA Secretary but a professional photographer of more than 25 years standing and a member of the Royal Photographic Society (whose home is in Bath), gave a concise introduction to some of the early contributions to the science and practice of photography made by John Herschel, astronomer, scientist and son of William Herschel, and to some of the early processes. John Herschel introduced the process of chemically ‘fixing’ (making permanent) photographic images in emulsions to William Henry Fox Talbot, Britain’s great photographic pioneer, and also coined the words ‘Photography’ and ‘snap-shot’, and first used the words negative and positive in their photographic sense.
Introduction to the book ‘A History of Japanese Astronomy’ by Shigeru Nakayama, Mr Seiji Kimura (HSJ)

Mr Seiji Kimura, of the Herschel Society of Japan, briefly introduced the audience to *A History of Japanese Astronomy: Chinese Background and Western Impact* (1969, Harvard University Press: Cambridge, Massachusetts). Although only available second hand now, it is well thought of and well worth seeking out. A number of copies are currently available online via www.abebooks.co.uk. Mr Kimura then introduced his young colleague Mr Tamao Tsunoda of the same Society.

Kenji Miyazawa and his ‘Night of the Milky Way Train:’ its Influence Upon Amateur Astronomy in Japan, Mr Tamao Tsunoda (HSJ)

Mr Tamao Tsunoda presented a most interesting example of the relationship between astronomy and its cultural context, in the shape of one of the works of Kenji Miyazawa, a Japanese national poet and writer of juvenile literature. When thinking about the uniqueness of Japanese amateur astronomy, one example of his work, *Night of the Milky Way Train*, has been a great influence since World War II. Japanese astronomy is rather poetic and lyrical, and values childish innocence compared with other countries, though this might be a characteristic of the entire Japanese culture where Kenji is included. Many Japanese today hearing the words ‘the Milky Way’ immediately recall *The Milky Way Train*. Seemingly a simple novel for children, *Night of the Milky Way Train* is very mysterious and profound. Generally said to embody the spirit of self-sacrifice and the salvation of others, the story represents Kenji’s strong and charming humanism. But in this work, it is the fantastic lyricism, novel expression and vivid imagery that so many people have found so fascinating. In raising interest in astronomy this poet’s work has therefore been of great importance. Born in 1896 in Hanamaki, Iwate Prefecture, Kenji Miyazawa majored in agriculture at the local college and absorbed the newly arrived culture of the West. On the other hand, he gave himself up to a radical and heretical form of Buddhism, Nichirenism, which advocates social reform. Deep love for the wild nature of his home and the death of his sister in his youth are said to have influenced his creative works. He died in 1933, in the prime of life, aged 37, of an illness. Today, on Amazon alone, *Night of the Milky Way Train* is represented by 243 books, 68 DVDs and 37 CDs; a lasting tribute to the appreciation of this work and clearly an inspiration to budding Japanese astronomers.

England’s Leonardo – Robert Hooke, Dr Allan Chapman FRAS (SHA/WHS)

Dr Chapman began by recommending the works of Michael Hoskin to all interested in the Herschels and by singing a jolly song composed by William Herschel in the mid-1760s: ‘The Ghost will be heard in Cock Lane.’ The life of ‘England’s Leonardo,’ Robert Hooke (1635 – 1703) has many parallels to that of Da Vinci. Late medieval science had been primarily limited, not by religious suppression, but by the lack of advanced instrumentation and therefore data. Columbus’ discoveries had for example themselves spurred on new scientific development by the provision of new orders of data. Hooke benefited from living in an age when instrumentation was vastly superior to that of the legendary Italian. Like Da Vinci, Hooke (born at Freshwater, Isle of Wight) was also an artist, an experimental scientist, an engraver, painter and architect who worked with Sir Christopher Wren. As a child he had made sundials, and was a skilled draughtsman, achieving a scholarship to Westminster School and then to Christ Church, Oxford. A brilliant scientist, able to synthesise from the new knowledge bubbling up in his time, he was able as a result to see further ahead than many. He later became the first professional scientist when he was employed by the Royal Society as Curator of Instruments, creating and organising their experiments. With Wren, he had a hand in the design and construction of many buildings, including the Royal Greenwich Observatory and the London Monument to the Great Fire of London, the column of which was actually used as a telescope! More than half of his published work pertains to astronomy, and the rest to other sciences. Robert Hooke saw new instruments as ‘artificial organs’ which extend mankind’s senses. He improved the use of the telescope (inventing the pendulum driven equatorial drive) and the microscope (publishing
Micrographia) amongst other instruments and created many experimental devices. He even saw the sailing ship, itself a key method of acquiring new data, as an instrument in itself. At one time, having closely observed and modelled lunar craters, he actually discussed the possibility of flying to the Moon, though despite ideas of England selling woollen overcoats to the Selenites (who must surely be cold!) he abandoned this concept when, working with Robert Boyle, he discovered that space must be a vacuum. Like many scientists of the day Hooke had a strong ego and was not always the easiest person to get along with. He clashed with many, and Sir Isaac Newton in particular, which resulted in his being unfairly ignored and obscured following his death in 1703. In recent years, however, not least thanks to the work of Dr Allan Chapman, Hooke, the master of experimentation, has begun to emerge from that undeserved obscurity to take his rightful place amongst the ranks of the many flawed geniuses that make the history of British science, and astronomy in particular, so fascinating.

The Mind of William Herschel, a dramatic performance by Mr Richard Phillips (WHS) and ‘Sir William Herschel’ (Prof. Francis Ring, WHS)

Cambridge science historian, Dr Michael Hoskin, now Honorary Vice President of the SHA, wrote scripts in the 1960s for a TV Series that was broadcast for A-level students. The series was called ‘The Mind of the Scientist.’ In each programme a modern scientist interviewed one from the past to find out how they succeeded in their mind-transforming discoveries. The programme dealing with Sir William Herschel was entitled ‘The Depths of Space and Time.’ In this presentation, the part of Herschel was read by Prof. Francis Ring dressed as William Herschel in his later years (early nineteenth century) with Mr Richard Phillips of the William Herschel Society reading the part of the modern scientist – a most gentlemanly and enlightening double act! In spite of realising that two stars of very different brightnesses could be at the same distance, Herschel persisted in using the ‘faintness relates to distance’ idea when trying to determine how far the stars stretched, his quest for ‘the construction of the heavens.’ When challenged on this approach he said that one had often to make improbable assumptions if one was going to get anywhere at all! He succeeded in establishing that the stars did not go on for ever by introducing the modern astronomical technique of ‘star-counts.’ Thus he drew the first chart of our local star-system, ‘The Milky Way.’ The magnifying powers that Herschel claimed for his early telescopes were challenged but a trial showed that they were far better than anything at Greenwich Observatory. A result he made hundreds of small telescopes, often for European royalty and nobility. He described some of the accidents he had and finally, his problems with the largest telescope in the world until 1848, the 40 foot reflector at Slough. He reasoned, by comparing the brightness of some of the stars he saw through it with that of the Sun, that their light must have been travelling millions of years. This conclusion was an extraordinary extension of Newton’s Universe, especially as at that time it was universally believed that Creation took place in 4004 BC. When confronted with the debunking of his earlier theories he said ‘One must expect such things if one delves into great problems. During my life as an astronomer I have tried to maintain a proper balance between observation and theory. If you build a fanciful world of your own, without making observations, you can’t expect this to be the world of nature. On the other hand, if you simply pile up observations without drawing conclusions from them and without speculating about them, then you have wasted your time. And I have tried never to waste my time.’

The meeting concluded at around 5:45pm following closing remarks from Dr Allan Chapman, Prof. Francis Ring (on behalf of the William Herschel Society) and Stuart Williams (on behalf of the Society for the History of Astronomy).

Thanks are due to our Chairman, Gilbert Satterthwaite, the speakers, and all who were able to attend - and commiserations to those who could not be there. Special thanks go to the William Herschel Society and Prof. Francis Ring for inviting us to join forces with them on this very special event, enjoyed by all. The William Herschel Society made the SHA’s representatives and Members very welcome and the general consensus was that this ought to be the first of many future joint meetings.
All being well, Issue 1 of our Journal will have been published by the time you read this note. We must now try to ensure that Issue 2 follows before the end of the year. This time-scale will be possible only if we have papers to publish. Therefore Council and the Journal Team are asking every Member to consider very carefully how he or she can contribute to the success of Issue 2.

The subject of papers can be anything related to the history of astronomy: for example, people and equipment; the contributions made by little-known, or well-known local amateurs, the story of a place or a discovery. The angles are endless. The length is not important: small contributions could be one page, longer ones eight pages or more. In all we need about sixty pages. Please offer what you can. If you are an inexperienced writer, you can rely on help from the Journal Team to put your work into print. Please send your idea for a paper, and an estimate of its length (word or page count) to Reg Withey (contact details on the back page of the Newsletter). Every idea will be gratefully received and discussed with you.

As contributions are accepted, we hope to put the working titles and page counts on the Society’s Web site, so that Members can share in seeing Issue 2 taking shape. We are not setting deadlines at the moment; these will also be posted on the Web site when we can ensure that there are sufficient papers for Issue 2. So please make your offer of a paper very soon.

We hope that having seen Issue 1 of The Antiquarian Astronomer, Members will agree that publishing it should be an important and interesting part of how our Society contributes to the enjoyment and understanding of astronomy; please support it.

---

Progress Report on the English Mechanic Project

Eric Hutton

This note is a progress report on the project to digitise a complete run of the English Mechanic and World of Science newspaper, as described in the previous issue of the Newsletter (November 2004, no. 5, p13).

Copies of all the previously listed missing volumes have been located, and offers to borrow the volumes required to complete the project made. I have decided to only produce copies on DVD and not also on CD-ROM, as the latter would involve writing an unfeasible number of disks. The series will still require fourteen DVDs. However I do have a sample CD showing the results of any text search across the first DVD, but you will only be able to view the pages from the first two issues of each volume. This CD is available free of charge. The first batch of three DVDs will be available by the end of May, with the project completed by the end of 2006.

---

Exhibitions noticed

Clive Davenhall

I recently visited two current exhibitions which include some historical astronomical material. In both cases the astronomical items are only a small part of the exhibition. It would probably not be sensible to visit unless the rest of the exhibition was also of some interest.

You Are Here at the Design Museum is about the graphical display of information, particularly spatial information. The first section contains a collection of astronomical exhibits, both historical and modern. The historical items include a six-prism spectroscope, a lunar globe for demonstrating libration and an orrery, all from the nineteenth century. The more modern material includes the ‘flight spare’ for one of the original instruments on the Space Telescope. There is a section on terrestrial mapping, with a nineteenth century facsimile of the Mappa Mundi in Hereford Cathedral, which might be of interest. There is also a variety of other material which unfortunately I did not have time to see.


Turks at the Royal Academy is an exhibition of Turkish art and culture from AD 600 - 1660. One of the items on display is a copy of the Book of Constellations of the Fixed Stars (exhibit no. 56) by the astronomer ‘Abd Al-Rahman al-Sufi (903-86). This book became the standard Islamic work on constellation diagrams. The figures largely follow the Greek ones, but with some changes in the constituent stars and stylistic modifications. The copy on display dates from the thirteenth century and is the earliest copy extant. There are also a few other marginally astronomical items.

Peter Aughton’s book is one of several that appeared to coincide with the transit of Venus in 2004. Unlike others, however, (including the excellent tome by William Sheehan and John Westfall) this one deals only with the transit of 1639, and that within the life and work of Jeremiah Horrocks. The transit itself covers only one chapter so the title is really the wrong way round.

Many SHA members will be familiar with the story of the Lancashire clockmaker’s son who briefly led the astronomical world in the mid-seventeenth century. The author chronicles Horrocks’ life from his boyhood in Toxteth, through his undergraduate days in Cambridge, to his untimely death at Hoole in 1641 at the age of 22. During his brief life he discerned the slight attraction between Saturn and Jupiter (now known to be caused by gravity) and realised that comets travel in curved paths and not in straight lines. He proposed that the motion of things attracted to the Earth was in principle the same as the motion of the Moon around the Earth – forty years before Newton.

He worked for two years on a theory of the motion of the Moon, realising that its orbit was more akin to that of a planet than a satellite. He was one of the first to realise the true scale of the solar system.

But Horrocks is chiefly remembered for being the first person to view a transit of Venus. Aughton recounts the event in detail, from Horrocks’ realisation that the event was imminent, to his triumphant observations of the planet on the day. The author successfully conveys his youthful enthusiasm, as well as explaining his genius at being able to apply his observations in a wider context; in this case a more accurate measurement of the size of the solar system and the radius of the solar parallax. Jeremiah was that rare being – an outstanding observer as well as a sound theorist.

But another aspect of his talent is also revealed, that of poetry. His excellent blank verse is a revelation and must surely rank him amongst the top astronomer-poets, if such a league exists. Accuracy and imagination are wonderful tools in Horrocks' young hand.

The author has dug deep in his research, consulting many primary sources. He explodes the myths surrounding Horrocks’ life, including the one that he was curate at Hoole (also pointed out by Allan Chapman in his talk to the SHA). But Aughton also knows his astronomy and Horrocks is placed firmly within the scientific context of his time, as an early advocate of Kepler’s theories and as one of the giants on whose shoulders Newton stood. The social and religious upheaval caused by the English Civil War is also well portrayed. There are useful appendices, including a family tree, a glossary and an extensive bibliography. The last full-length biography of Horrocks appeared in 1859 so a new one was long overdue. This book fills the gap admirably and is an essential read for all historians of astronomy.

Madeline Cox

Mary Somerville (1780-1872) was one of the best-known women scientists of her day, notably in the field of the physical sciences. Her outstanding achievement was an original exposition and translation of Pierre Laplace’s *Mecanique Celeste*, the most advanced statement of the subject ever written. Her translation, called *Mechanism of the Heavens* (1831), is a mathematical tract dealing with the motion of solids and fluids, universal gravitation, the orbits of the planets, and lunar theory. Such was its success that it became the first book ever written by a woman to be used as an undergraduate text at Cambridge.

Her other works included *On the Connexion of the Physical Sciences* (1834), *Physical Geography* (1848), and *Microscopic and Molecular Science* (1869). She also had articles published in the *Philosophical Transactions*, most notably one about the chemical action of ultraviolet radiation on different vegetable matter (1826). *On the Connexion of the Physical Sciences* went through ten editions to 1877, and concerned the interrelationship of quantifiable physical forces – gravity, light, sound, electricity and magnetism. In it she suggested using the perturbations in the orbit of Uranus to pinpoint the location of an
unknown planet. This suggestion was taken up by John Couch Adams in his search for Uranus in 1846.

Allan Chapman’s book deals not only with Mary’s life and scientific achievements, but also with the social and intellectual milieux in which she moved. Coming from a well-connected Scottish family, she was able to meet and correspond with the leading scientists of her day, including Sir John Herschel, Thomas Young, William Wollaston and Charles Babbage. She was fortunate that her husband, Dr William Somerville, supported and helped her in her work, as it was difficult for intellectual women at the time to be taken seriously. But as Allan Chapman points out, at least the Grand Amateur tradition to which she belonged did not exclude Mary on grounds of not holding a degree, which would have been impossible for her.

One of the striking things about Mary was her fulfilment at many levels. As well as being an excellent scientist, she was a successful wife and mother, a beauty and a socialite, a campaigner for women’s rights and for the abolition of slavery. Comparisons with Caroline Herschel, her contemporary, are inevitable. They were both deeply involved in astronomy and were awarded Honorary Membership of the Royal Astronomical Society in 1835. But where Caroline was a pathologically modest individual, Mary was happy to be celebrated in her own right, not as an amanuensis to a more famous male relative. She owned a telescope but was not a seasoned observer like Caroline. Although they corresponded, the pair actually never met.

Allan Chapman has written a well-documented and eminently readable account about one of our most celebrated women scientists and the fascinating times in which she lived.

*Madeline Cox*

**Books noticed**
Madeline Cox and Clive Davenhall

This column lists some recently published books which might be of interest. Listing here does not preclude a review at a later date.


**Lending library report March 2005**
Madeline Cox, Librarian

**Donations**

We thank the following for their recent donations to the Library:


Stuart Williams for his extensive collection of items to be housed at the BMI and to be called The Stuart Williams Collection.

**Purchases**

The Library has a small budget this year for purchases and would welcome suggestions from Members.
Forthcoming meetings and events

Clive Davenhall

The following is a list of forthcoming meetings and events to be held later in the year. Booking is necessary unless noted otherwise. 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.

Mon. 4 Apr. Tour of the Crawford Collection and Lecture. A tour of the Royal Observatory Edinburgh’s collection of historic astronomical books and a related talk. Part of the Edinburgh International Science Festival. See http://www.sciencefestival.co.uk/. 7:00pm, £3.50. Note that this tour of the Crawford Collection is a public event and different from the proposed tour for SHA members (non-SHA event).

Mon. 4 to Fri. 8 Apr. NAM 2005. National Astronomy Meeting organised by the RAS and PPARC. To be held at the University of Birmingham. The historical astronomy session will be on Tue. 5 April, 4:00 - 5:30pm. See http://www.sr.bham.ac.uk/nam2005/ for a preliminary programme. If you are interested in presenting a paper or poster contact Peter Hingley (pdh@ras.org.uk), The Librarian, Royal Astronomical Society, Burlington House, Piccadilly, London W1J 0BQ (non-SHA event).

Sat. 28 May. SHA Spring Conference and AGM. National Maritime Museum, Greenwich. 11am to 5:30pm. See the Society news elsewhere in this Newsletter for details.

Wed. 29 June to Sun. 3 July. SEAC XIII. Annual meeting of the Société Européenne pour L’Astronomie dans la Culture (SEAC). To be held in Isili, Sardinia, Italy. See http://www.iac.es/seac/seac.html (non-SHA event).

Sat. 6 Aug. SHA Annual Picnic. Wadham College, Oxford. Note change of date. See the Society news elsewhere in this Newsletter for details.

Sun. 4 to Fri. 9 Sept. AAS HAD Meeting. Joint meeting of the History of Astronomy and Planetary Sciences Divisions of the American Astronomical Society. To be held at the University of Cambridge (England). For further information contact Peter Hingley, details above or see http://www.aas.org/~had/had.html (non-SHA event).

Sat. 8 Oct. SHA Autumn Conference: Astronomers and Observatories. To be held in the Birmingham and Midland Institute in Birmingham city centre. Arrangements by Stuart Williams and Ken Goward. Proposals to present talks at this event are welcome.

Talks should be from 20 minutes to 1 hour in length. Please contact Stuart Williams.

See also Exhibitions noticed (p12).

NEW ASTRONOMY BOOKS AT DISCOUNTED PRICES AND SECONDHAND ASTRONOMY BOOKS

Martin Lunn MBE
6 Evelyn Crescent
Clifton
York
YO30 6DR
TEL/FAX 01904 337989
www.aurora-books-uk.co.uk
E-mail: martinlunnmbe@aol.com

ARCTURUS PRESS
Publishing since 1979
The Manse, Fleet Hargate, PE12 8LL, England
01406 423971 Fax 01406 422191

Williams, John
Observations of Comets from BC 611 to AD 1640. Translated from the Chinese Annals. With Tables for Reducing Chinese Time to European Reckoning, and a Chinese Celestial Atlas

Wallace, Alfred Russel
The Society for the History of Astronomy extends a very warm welcome to a recently elected new member:

Mr James Raymond Smith of Petersfield, Hampshire.

The Society’s first Chair, Emily Winterburn, resigned in the spring of 2004 in order to spend more time with her family. Specifically, she was starting one. We are delighted to report that Charlotte May checked in, precisely on time, at 2am on 18 November 2004, weighing 6lb 10oz. Mother and daughter are both well.

Charlotte May Fellows Winterburn

Guidelines for submitting articles and letters to the Newsletter

Guidelines for submitting articles and letters to the Newsletter were included in an earlier issue (No. 4, May 2004) and are available from the Society’s Web Site.

Council and Officers

Hon President: Dr Allan Chapman

Hon Vice Presidents: Dr Michael Hoskin
Sir Patrick Moore CBE FRS

Chairman: Gilbert Satterthwaite FRAS
Email: chair@shastro.org.uk

Secretary: Stuart Williams LRPS FRAS
26 Matlock Road, Bloxwich, Walsall, WS3 3QD
Email: secretary@shastro.org.uk

Treasurer: Kenneth J. Goward, FRAS,
14 Keightley Way, Tuddenham St Martin,
Ipswich, Suffolk, IP6 9BJ
Email: treasurer@shastro.org.uk

Council Members
Dr Nicholas Kollerstrom
Email: nk@astro3.demon.co.uk

Martin Lunn MBE
Email: martinlunnmbe@aol.com

Roger Jones
Email: roger.jones@shastro.org.uk

Editor, The Antiquarian Astronomer
Dr W R Withey
Email: theaa@shastro.org.uk

Newsletter correspondence to:
Clive Davenhall,
30, Millar Crescent,
Morningside,
Edinburgh, EH10 5HH
Email: newsletter@shastro.org.uk

Librarian
Madeline Cox
Email: library@shastro.org.uk

Archivist
Mark Hurn
Email: archive@shastro.org.uk

Website Manager
Greg Smye-Rumsby,
Email: webmaster@shastro.org.uk

SHA Website:
http://www.shastro.org.uk

The deadline for the next edition of the Newsletter is the 1st of May 2005. Please send all items to Clive Davenhall.

The Antiquarian Astronomer
16 Lennox Close
Gosport PO12 2UJ
Email: theaa@shastro.org.uk

Guidelines for submitting articles and letters to the Newsletter

Guidelines for submitting articles and letters to the Newsletter were included in an earlier issue (No. 4, May 2004) and are available from the Society’s Web Site.