

# The Astronomical Society of Edinburgh

Journal 45 - December 2002



**Picture of Moon by Neil Grubb**  
October 2002 with a webcam through an 8" SCT from Cameron Toll  
It is a composite of ten high magnification frames

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# From the President

It is with some surprise that I find myself in year three of my two year term as President of the ASE!

At the last AGM, in the absence of any volunteers to take over the position, I was co-opted to be President for another year. Whilst I am happy to oblige, this necessity for co-option is hardly an indication of an entirely healthy state of affairs. We have a large membership made up of people of diverse professions and skills of which the ASE could benefit, but it is difficult to persuade members to come forward with help in the running of the Society. The result is that it is always left to the same handful of people to do all the work. Most of the members of the Council have full time jobs and generously give much of their (limited) free time to deal with Society business covering both our interest of astronomy and the more tiresome administration matters relating to the Calton Hill Observatory.

The ASE is an active and interesting society and it would be nice to think that all of our time could be devoted to enjoying this interest. Alas for the council, time has also to be given to arising difficulties, usually relating to the management and maintenance of the observatory site. It is never easy to deal with the City Council, our landlords, largely because the wheels of local government administration turn frustratingly slowly, but if this is a drawback, we must balance against this, the privilege of enjoying this historic site. I think its worth all the effort.

We are lucky in the society to have so many benefits. As well as this unrestricted use of the City Observatory for our meetings and hosting events, we have for practical observing, the dark site at Earlyburn where we also have access to some very nice equipment. In this area of practical observing, the observing and imaging groups have restarted having had a break over the summer months, but since resuming, the dismal weather has given no opportunities for observing. Nevertheless, the time has been well spent overcoming equipment problems and discussing projects for the coming session. One plan discussed was for the groups to make more use of the Earlyburn site, where, given unclouded skies, the remoteness from city lights gives better conditions for observing and imaging. There, members can use our 12" Lewis reflecting telescope, which under the darker skies should give amazing views of celestial objects. Any member is welcome to join either group. No equipment or prior knowledge is necessary: just dress up warmly, come along and enjoy.

I hope this illustrates our aim that whether members interests lie in the practical and observing side of astronomy or whether the preference is to be a fireside astronomer, there is something in the society for everyone. Occasionally there can be hitches when our best laid plans go awry or when our own work and personal commitments prevent the completion of council tasks on time. This is when we start to hear complaints. Of course we need to be told when we are not getting things right, but rather than criticising, why not instead ask yourself what you can do to help and whether you have skills that you may have to offer. Remember, the ASE is our collective responsibility for the benefit of all the members sharing in our mutual interest of astronomy.

In the meantime, please do give some thought to joining the council. We need new people with fresh ideas to ensure the continued success of the Astronomical Society of Edinburgh.

Now who is going to volunteer to be president?

Lorna McCalman

# Agnes Mary Clerke and the Rise of Astrophysics

by Mary T Brück

## A Book Review by Dave Gavine

Years ago when I was researching the History of Astronomy in Scotland I managed to acquire a copy of the fourth edition (1902) of Agnes Clerke's *History of Astronomy during the Nineteenth Century*, and it is a goldmine! This monumental work, constantly updated, was not the only product of this remarkable lady. Her *System of the Stars*, *Modern Cosmogonies* and *Problems in Astrophysics* reviewed the state of astronomy at the time, and identified new fields for investigation. Then there were the papers and articles in *The Observatory*, *The Edinburgh Review*, *Knowledge*, *The Encyclopaedia Britannica* and numerous other journals, and no less than 150 biographies of astronomers for the *Dictionary of National Biography*. She was praised by the astronomical community throughout the world and admired by the most famous astronomers such as Hale, Wolf, Gill and Huggins who freely offered her their results, photographs and advice. This surely must have been the work of an eminent academic in a great University.

But it was not. Agnes had no "qualifications" of any kind. Her circumstances were such that an academic career was most unlikely, born in 1842 in remote Skibbereen, Co. Cork, to a "mixed" Catholic/Protestant but well-to-do family. At that time women did not expect to be educated in sciences, they were not allowed to take degrees, and if they did have an education they were not encouraged to use it as a career. But Agnes had a prodigious thirst for knowledge and was given her education at home by her talented father, an amateur astronomer, not only in the physical sciences and mathematics but also in the classics, literature and history. Later her brother Aubrey, a brilliant mathematics and physics scholar of Trinity College, Dublin, would share his knowledge and her life-long encouraging companion was her elder sister Ellen, herself a talented scientific writer. Neither sister married - all their energies went into rigorous scholarship. Some years of fruitful research on Galileo and the Renaissance in Italy were followed by further travel and life in London where, assisted by her social standing and reputation, Agnes' literary career took off and life-long friendships developed, especially with William and Margaret Huggins. She was active at the time when sensational new discoveries were being made in astronomy, especially with the powerful new tools of spectroscopy and photography. She chronicled everything that went on in the astronomical world with impartial clarity and a grasp of the underlying scientific principles.

However, it was not easy. The universities were closed to women and the hallowed portals of the Royal Society and the Royal Astronomical Society would not accept them as Fellows. Not until 1903 (she died in 1907) would the latter at last admit her and her close friend Lady Huggins as Honorary Members, as had been the case a generation earlier with the formidable Caroline Herschel and Mary Somerville. The BAA alone (founded 1890) accorded men and women equal status. Only in America, it seemed, could a woman work in an observatory or be a professor of astronomy, albeit in a ladies-only college, Vassar, which tried unsuccessfully to entice Agnes to that post. And among the praise there remained Gregory, the reactionary critic of *Nature* who believed that women really were the weaker sex and should not dabble in this sort of thing, especially if they were not active professional observers.

Dr Brück, herself a highly competent astronomer, has brought Agnes Clerke to life in a fascinating book, indeed the two have a lot in common, even by birth. In a deceptively small work of 275 pages so much information is packed. Not only is the story of Agnes herself revealed but we are given much information about the characters she knew, like

her close friends the Gills, the Huggins', George Ellery Hale, Holden and Lockyer. Likewise we are given revealing glimpses into social life in Ireland, the status of women in science, and the work of other ladies in astronomy, including Pickering's team at Harvard led by Mrs Williamina Fleming (who was born in Dundee!).

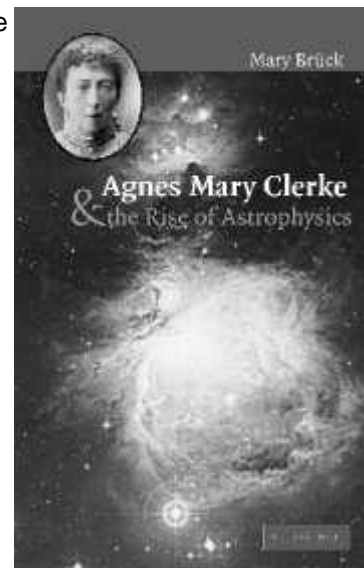
Enjoy this book - I did and I learned a lot.

Dave Gavine

Picture from CUP website

**Bibliographic information:**

Brück, M. T. (Mary T.)  
Agnes Mary Clerke and the rise of astrophysics / M.T. Brück.  
Cambridge; New York : Cambridge University Press, 2002.  
x, 275 p. ; ill., 1 map ; 23cm; ISBN 0-521-8084408  
QB36.C57 B78 2002  
520/.92 B 21  
£35.00



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## The Wigtown Astrofest, Nov 15-16 2002

Neil and Fiona Grubb and Dave Gavine went down to Wigtown for the second successful Astrofest, an activity organised by Helen and Ian Macdonald of the local Astronomical Society, and which seems to involve most of the local folk and businesses. It was held in the kirk hall and in the adjacent primary school, and unlike the Scottish Astronomy Weeekends it was open to the public. In the hall refreshments were provided and there were stalls of astronomy books set up by a few of the many booksellers in the village, for the Association for Astronomy Education and for John Braithwaites telescopes, besides our own ASE display. The main speaker was Neil Bone, one of our former members who is now Director of the BAA Meteor Section and a writer for *Astronomy Now*. He gave an outline of the predictions for the Leonids based on previous observations of the stream, explained the nature of meteor showers in general and described how to observe meteors. Neil Grubb gave a talk on imaging with webcams and was lucky enough to take good pictures of the Moon when the sky cleared late on Friday night, to add to his presentation. Dave's subject was Observing the Northern Lights, illustrated with slides of some huge displays of the last few years.

One of the highlights of the weekend was a party held in a huge barn-like hall of the local distillery, with plenty of wine, a 3-course buffet (eat as much as you like), and music provided by two immensely talented lads.

It is such a bonny place, (pity it is a bit remote), but the hospitality and enthusiasm of the Astrofest are such that we implore you to consider going to the next one in 2004.

Dave Gavine

# The One o'clock Gun : the story of Edinburgh's time service

## A Book Review by Dave Gavine

This small book was produced to accompany an exhibition on the Time Ball and Time Gun in the Edinburgh Museum, Canongate, last year. Another small exhibition was set up just before this, near the Gun itself, at the Castle.

It is an interesting story, the Time Ball was, by coincidence, invented by a Captain Wauchope of Midlothian in 1818 but although balls were set up at Greenwich, St Helena, Mauritius and the Cape, it was not until 1852 that Edinburgh got its own signal on the Nelson Monument, and its gun at the Castle in 1861, after a few teething problems. The book summarises with numerous illustrations the story up to the present day, listing all the gunners and the types of gun. There is also a useful summary of the distribution of time signals by telegraph and this involved another Edinburgh man, the clockmaker Alexander Bain, inventor of the electric clock.

However, there are a few drawbacks to the book. The facts are adequately presented but nothing is given about how the time is actually arrived at from the observation of transits of clock stars across the meridian of the Calton Hill Observatory using the Transit Circle, how the observation was done and by whom, and how the signal got to the Time-ball. There is no astronomy in the story whatsoever. The style of English is poor, the sentences short and stilted, spelling is correct apart for the annoying use of "it's" for the possessive; it isn't a narrative, it is an official report.

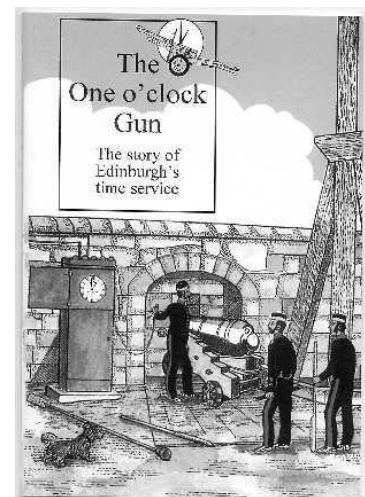
While the many line drawings are clear, the figures of the soldiers are wooden and expressionless. One, apparently based on a sketch by C. P. Smyth, shows workmen hauling the Monument-to-Castle wire up using a rope, but they seem to be pulling it up in the wrong direction. The picture of the Time Gun (long disused) in Dundee shows the gun far too small in proportion to the man. (I know it well. I used to climb on it with my pals, - then get chased by the "Parkie".)

It is to be hoped that a fuller and more scientific account of the Edinburgh Time Service will emerge in time, meanwhile this small book will give the bare bones and at only £2.50 no-one can grumble. Unfortunately I have not seen it in any shop apart from the Edinburgh Museum.

Dave Gavine.

### **Bibliographical information:**

The One o'clock Gun : the story of Edinburgh's time service /  
compiled and published by the One o'clock Gun Association /  
illustrations by John Thomson /  
technical details supplied by A Guinan and John Thomson  
[Edinburgh]: The One o'clock Gun Association, 2001  
28p, no pagination; No ISBN; £2.50.



# The Leonid Meteors - 19/20 November 2002

A full moon, high thin cloud and a bitter SE wind blowing patches of cloud and mist in off the sea made observing conditions so poor that if it had been an ordinary meteor shower we would not have bothered. But this was the last chance for a very long time to see a spectacular show by the Leonids and the predictions were spot-on.

**Horst Meyerdierks** observed from Earlyburn from 0200 to 0530. His faintest meteors were about +2, most of them were about 0 or 1, a few brighter. Many came in pairs or within a second, some in bursts, but some minutes went by with no meteors. Most of them had luminous trains. Horst counted the meteors in 15-minute periods, rates were fairly low but rose to 30 (in 15 min) for 0345-0400 then 46 for 0400-0415, 29 at 0415-0430 then a plateau of nearly constant activity to 0530. His grand total was 255. *See graph for details.*

**George Grant** observing at Colinton about 0500-0600 saw 3 bright meteors close to Leo then in a sustained watch of an hour saw a further 30. He looked out again at 0630 and saw another 2, then a very bright Leonid passed very close to Venus which had just risen over the Pentlands.

**Ken Thomas** at Earlyburn counted the Leonids in 6 10-minute periods and got a peak activity of 50 in the 0407-0417 slot, giving him a total of 197.

**Des Loughney** observing from Kingsknowe saw 26 meteors in the hour from 0300 to 0400 in a hazy 40% visible sky with 2 bright (= Jupiter) events at just after 0300 and 0320.

**Dave Gavine** observing from Joppa from 0310 to 0500 in a sky with limiting magnitude 2.5 improving to 4.0 but at the same time the cloud increased from 3/8 to 5/8. Meteors were counted in 5-minute intervals, showing peaks at 0410-0415 and 0425-30. Total score 102. A few were as bright as Jupiter, nearly all had trains.

**Neil Grubb** observing from Cameron Toll from 0350 to 0500 saw about 100 meteors in limiting magnitude 3.5, with a peak rate of 18 in the 5-minute slot 0420-0425. He saw a 4 fireball in Ursa Major at about 0440, also seen by Dave.

**Russell Eberst** was observing satellites from East of Arthur Seat between 0136 and 0630. Activity picked up between 0400 and 0405. At the peak he estimated about 400 per hour. He saw over 100.

**Alan Pickup** observing from Fairmilehead saw 74 meteors in a sky with 3/8 cloud and increasing, LM average 3.5, between 0248 and 0424, mostly mag +1 and +2 but with one at mag -4 and a mag 0 point meteor which flared out of the radiant. Counting Leonids in 10-minute intervals he estimated the peak to occur around 0410.

Although no more spectacular rates are forecast for the Leonids in the near future these meteors are around every November in smaller numbers and it is advisable to keep observing them to enable astronomers to model the shower and its orbit with greater accuracy.

Look out for the Quadrantids, sometimes unreliable but often a strong shower, peaks at about 2200 on the night of Jan 3, with the Moon well out of the way.

Please send any meteor observations you may have to Lorna McCalman or Dave Gavine who will then send them to Brian Kelly, the BAA Meteor Section Northern Co-ordinator, for analysis. And Des : welcome to the BAA, our latest Member.

Dave Gavine

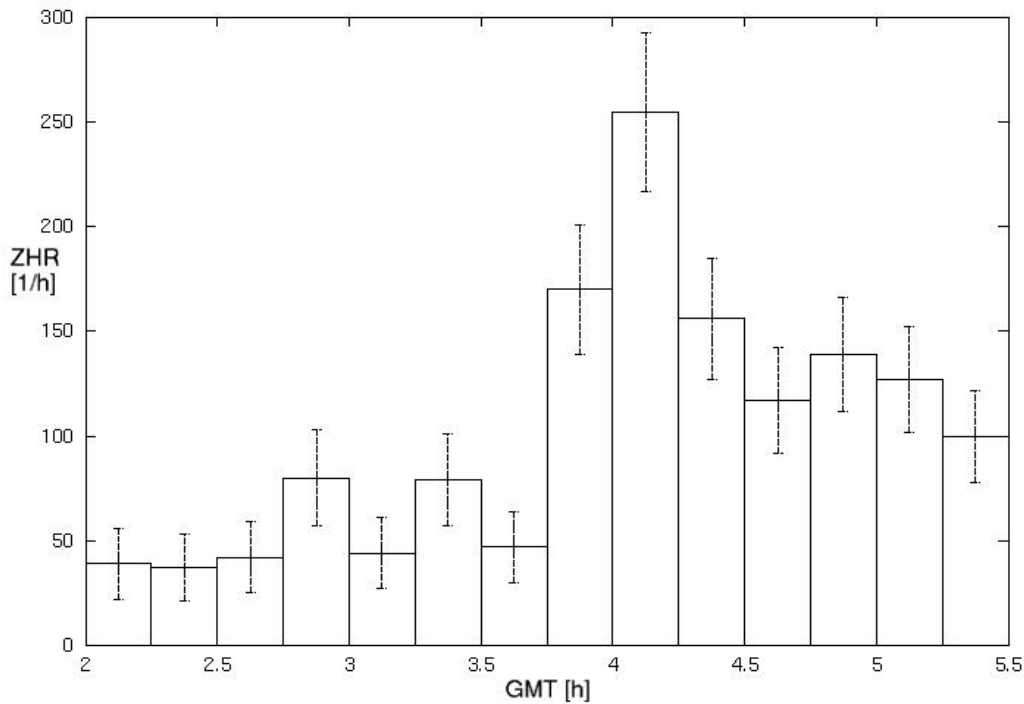


Diagram of Leonid meteors by Horst Meyerdieker

## Mini Planets

In the light of recent discoveries, let's keep Pluto as a major planet, although the mass ratio goes against it. Consider its size, especially the diameter and surface area: you have quite a sizable object still, and Pluto has a satellite. This emphasises a new class of major planet, the low-density ice-planets, a third category after the denser inner terrestrials and the outer gas giants. Pluto is also the first of another differentiation, the first irregular major planet with an eccentric and inclined orbit, which mirrors the satellite systems of the giant planets on a larger scale, so it is expected there will be more irregular planets. I would argue for 1000 km as the upper limit for minor planet status thus giving Ceres the special status of the largest minor planet. Also, let Pluto be the lower limit for major planet status. We then have a new size category for any object intermediate in size between Pluto and Ceres.

And there are at least two, three or four objects in this group known to exist within the Kuiper Belt, which I would like to suggest we refer to as mini-planets. The more of these we discover and the more we learn about Varuna, Ixion and Quaoar, then the more we realise a new intermediate category of small spherical bodies too big to be classed as minor. Perhaps Charon too is one of these rather than just a satellite of Pluto. After all, Pluto-Charon does constitute a double planet. We can expect to find quite a large population of mini-planets in the irregular Kuiper Belt region nested amongst thousands of minor bodies. As more bodies are found, we will find many more of Pluto's wee brothers such as Quaoar, then one day we will find Big Brother : perhaps a Mars-sized/Mercury mass/Pluto-density ice-rock world which will be the real major planet ten, perhaps a second irregular, but the cause of some of the peculiar orbits of smaller Kuiper Belt objects which could only have been placed by an outer planetary perturbation beyond Neptune. Finally, it might be fitting to give our own satellite devolved planetary status given its constitution and unique position the Moon, after all, is the fifth inner terrestrial planet and would easily be visible from Mars.

Graham Young (Dundee Astronomical Society)

# W Lyrae

W Lyrae is a Mira like, long term variable star. It is a good one to observe from Edinburgh as it is visible for most of the year at a reasonable height above the horizon. The figure is a record of observations between February and November 2002. These months include a full phase of the variability of W Lyrae.

Observations were made from suburban Edinburgh with a 200mm Newtonian using a time 50 eyepiece. However, at minimum, when the magnitude was under 12, a times 100 eyepiece had to be used. Magnitude estimates, at minimum, are a bit uncertain as observations are at the limits of visibility from suburbia.

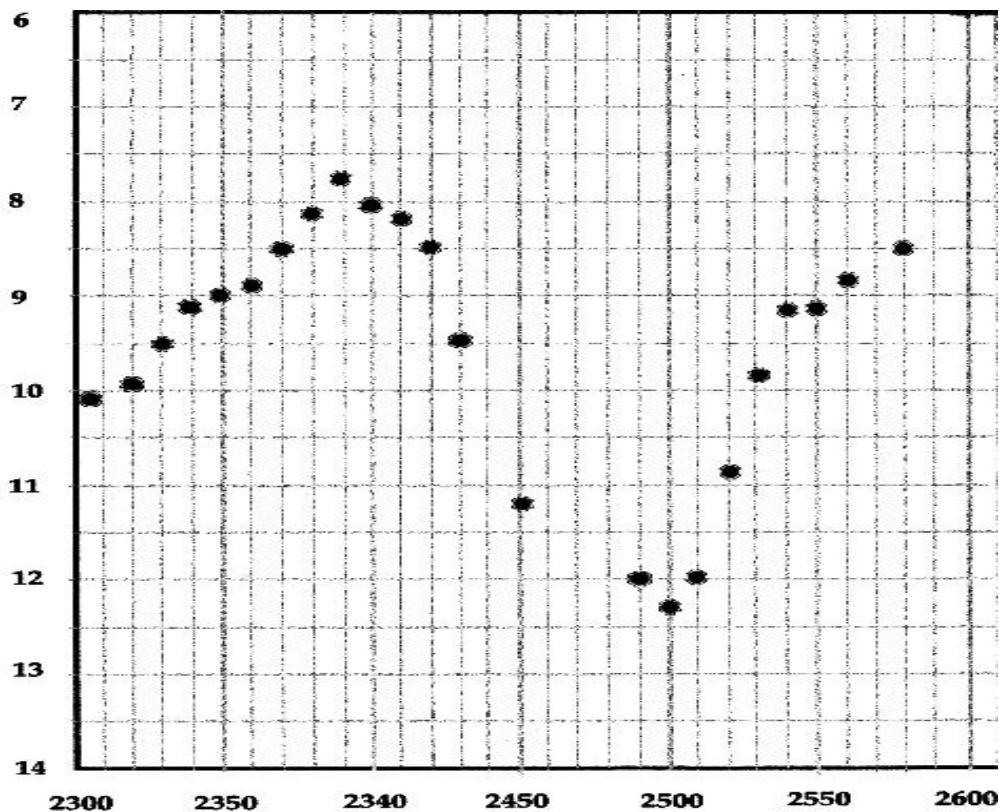
The observations confirm the standard data. The star does vary between 7.7 and 12.3 in magnitude and the period does seem to be about 196.4 days.

The observations suggest a feature of the light curve which has not been read of in connection with the particular star. The star pauses, in its brightening sequence, at 9.2 magnitude for around ten days. A partial set of observations, recorded in 2001, showed the same feature. Such pauses have been recorded for other Mira like variables.

The maximum recorded in 2001 was at magnitude 8.5. The first one in 2002 was at 7.7 and it seems, at the time of writing, that the second maximum in 2002 will be at 8.5. This variability of maxima is another feature of Mira stars.

Des Loughney  
4th November 2002

## W Lyrae



Julian Date  
2452300 - 2452600  
(2002 January 25 - 2002 November 21)

# Scottish Astronomy Weekend 2002

On Friday 6th September the 14th Weekend of the Scottish Astronomers Group was opened by the SAG President, Mark Pollock who welcomed delegates to West Park Conference Centre, Dundee. A total of 62 delegates had travelled from all over the UK, from Inverness, Elgin, Aberdeen, Stirling, Falkirk, Edinburgh, Arran, Yorkshire, Fleetwood and the Isle of Man.

After his words of welcome, Mark outlined the weekend programme on the theme of Stars and then thanked the organisers Dr David Gavine, Brian Kelly and Dr Bill Samson for all their hard work organising the weekend.

Mark then introduced the first speaker; Dr David Gavine (ASE), who gave a talk, entitled Pioneers of Stellar Astronomy in which he traced the progress of stellar astronomy from the 18th century to the present day.

In the 18th century the stars were considered to be of little interest or importance because no-one knew what they were, other than being points of light. Telescopes only helped to show them as brighter points of light. The emphasis of astronomical interest therefore lay in mathematical calculations and the orbital mechanics of the planets. We learned how by the 19th century, William Herschel, considered by many to be the father of Stellar Astronomy, attempted to define the size and shape of the stellar system by counting and mapping stars in all directions.

In an attempt to measure the distance to the stars, astronomers tried to find the angle of parallax of a star. James Bradley's discovery of the aberration of starlight made astronomers aware of how very small and difficult to measure these angles would be. It was not until the late 19th century that Bessel and Henderson finally managed to measure the parallax to two different stars.

By the 20th century spectroscopy, photometers and CCD had revolutionised our knowledge of what stars are and how they work.

The meeting then adjourned to the hallway where we were given a civic reception by Deputy Lord Provost Charles Farquhar who welcomed the SAG meeting to Dundee and stressed how much importance Dundee Council placed on astronomy. This was to be encouraged especially in trying to make children more aware of the subject. Mark Pollock thanked Councillor Farquhar for his words of welcome and indicated that we were delighted to hear of the Dundee councillors support for astronomy and SAG hoped that this would ensure a secure future for the historic Mills Observatory.

The remainder of the evening was spent browsing around the bring and buy stall and looking at the images produced by the astrophotographers. There were displays of aurora observations and images of the aurora from as far afield as the USA. There was information about variable stars and examples of light curves, and Variable Star Section materials from the BAA.

To end the day, we sat in the garden outside the halls of residence talking, enjoying drinks and scanning the sky with binoculars. Several people went out in their cars to search for any signs of an aurora, as warnings had been issued by the NASA website earlier in the day. Sadly there was no aurora so they too joined us in the garden and a pleasant time was had by all. The barman has to have a mention as he kindly came out to the garden to refill our glasses. Now that's a civilised way to do casual observing!

On Saturday morning, the first lecture of the day was chaired by Brian Kelly, former City Astronomer, Dundee. He introduced Dr Bill Samson who spoke on the Evolution of the Stars.

Dr Samson began by describing the properties of stars. We heard that temperature is a function of mass. Stars of the same temperature may have different luminosities depending on their mass. Dr Samson then went on to describe how young stars begin to form from gravitational perturbations of the interstellar dust, eventually causing the formation of a dark globule. This falls inward and when the temperature reaches  $10^7$  Kelvin, hydrogen fusion begins. The life cycle of stars was then outlined:

Stars of less than 2 solar masses burn their fuel more slowly, at lower temperatures and become red giants eventually expelling mass to form a planetary nebula or become a white dwarf. Stars of more than 2 solar masses go through their fuel much more quickly and burn heavier and heavier elements until they reach iron which cannot fuse. Dr Samson described electron degeneracy pressure, where no two electrons can exist in the same place at the same time. In iron, the electrons are packed so tightly together, they vibrate to avoid being in the same place at the same time. The constant addition of matter from continuous silicon burning, results in there being too much mass to support, the Chandrasekhar limit is reached and the outcome is a supernova, pulsar or black hole.

A question and answer session was chaired by Brian Kelly who then thanked Dr Bill Samson for his excellent talk.

After coffee break the third session got under way, chaired by Dr Harry Ford of the Greenwich planetarium. He introduced to the meeting, Dr Tom Lloyd Evans whose talk was entitled Planetary Nebulae and Variable Stars. The intrinsic variables show changes in luminosity which are due to physical changes within the stars and there are several different kinds which show characteristic spectra and light curves. These are stars not on the Main Sequence and are often old ones exhibiting instability. Many lose mass by ejecting matter from their surfaces one or more times and luminous rings are formed as the gases are ionised by UV from the hot central star itself. Tom showed a series of wonderful photographs of planetary nebulae taken by the Hubble Space Telescope, many of them showing nearly symmetrical extensions on opposite sides of the star, the result of high-speed bipolar outflow, so that they appear like cosmic butterflies.

After a very nice lunch, delegates could either visit the satellite receiving station at St. Andrews University, or visit the town of Arbroath.

I decided on the trip to Arbroath which included a visit to the Abbey. We were given a short guided tour of the site.

Arbroath Abbey consists of the substantial ruins of a monastery, founded by William the Lion in 1178 and intended as his own burial place. It was the scene of the signing of the Declaration of Arbroath of 1320, which asserted Scotland's independence from England.

We then visited Arbroath's famous Old Red Sandstone cliffs. The scenery was remarkable and the sea although a flat calm away from the coast, could be heard roaring into the inlets which, over geological time, had been cut away by the power of the water. The noise was truly frightening and was ample demonstration of the raw power of nature.

All too soon it was time to return to Dundee for dinner, and to compare notes with the people who chose the alternative afternoon visit.

So many people wanted to visit the Satellite Tracking Station at Dundee University's Department of Electronics, organised by Brian Kelly, that two visits were necessary. It was a bit crowded, but everyone was impressed by the high-tech equipment. The data is received and processed from the meteorological satellites and Dundee's weather images are to be found everywhere. These include infra-red and visible cloud and surface maps of the British Isles often seen in the journal *Weather*.



Dr Mary Bruck with Ken Kennedy, Dawn Robertson and Dorothy Mackie

Session four was opened by Lorna McCalman, President of the Astronomical Society of Edinburgh, who introduced the speaker for the evening, Dr Mary Brück.

Dr Brück spoke on *The Spectra of the Stars*

The history of spectroscopy was traced from the time, almost 200 years ago, when William Wollaston noticed some dark lines crossing the rainbow-like spectrum of the sun. Then Joseph Fraunhofer noted that there were seven lines which he assumed to be the divided colours of the rainbow. The story continued as Dr Brück told how William Huggins decided to compare laboratory spectra and stellar spectra. First visually and then photographically, he explored the spectrum of stars, nebulae and even comets.

As methods to examine the spectrum became more sophisticated through objective prism method and photography, a vast amount of information was gathered which needed to be sorted and analysed. This task fell to a group of women organised at Harvard by Professor Pickering, headed by Williamina Fleming, very appropriately born in Dundee, who was put in charge of sorting the stellar spectra into types. She devised a system of classifying stars according to their spectra, She herself sorted an incredible 10,000 stellar spectra surpassed only by her successor Annie Cannon who sorted a mind-boggling 400,000 spectra.

The next breakthrough came with the Hertzsprung-Russell diagram which graphically illustrated the stellar types. By the 1920s the theory of quantum physics was developed.

Since that time, spectroscopy, which analyses the interactions of atoms, ions and molecules with light of different wavelengths, has been a major part of astronomy. Dr Brück related how in her own professional career as an astronomer, she could remember the tedium of pre-computer calculations required in this field of work and how a seemingly

small amount of raw data would result in many long hours of grinding calculations. Computers certainly revolutionised astronomy and made life very much easier.

After questions, Lorna McCalman thanked Dr Brück for her most enjoyable lecture. A fascinating talk given by a natural storyteller who held everyone spellbound.

We were invited by Dr Bill Samson, to visit the Mills Observatory where we received great hospitality. Tea, coffee and refreshments were laid on for us by the Friends of the Mills. In addition to that, they very thoughtfully arranged a (small) aurora display for us to observe! And several objects were seen through the 10-inch Cooke refractor.

Sunday morning brought the first rain of the weekend and my goodness, did it rain! There was some thunder and torrential downpours.

There was no way that the weather would dampen our spirits and session 5 was opened by Mike Fenwick, Chairman of the Dundee Astronomical Society. Mike introduced Melvyn Taylor who is Secretary of the Binocular Group of the BAA Variable Star Section to talk on Observing variable stars. Melvyn began by outlining the requirements for safe and comfortable variable star observing, The illustrated set-up, complete with reclining chair, looked very comfortable and well organised with all the things needed by the observer placed on a nearby table for convenience. This in stark contrast to my own setup which usually leaves me scrambling around trying to find where last I laid down the note book, which, when located has to be cleared of the slugs which invariably found it before me!

Melvyn Taylor then went on to outline the various types of binoculars that could be used and illustrated ways of mounting them onto a tripod. He then showed examples of variable star maps and explained how to use them and gave a few examples of stars which we might like to follow.

Melvyn showed the observing sheets, explaining how to fill them in as well as explaining why all the information was needed and the factors which could influence observers results. He then told us how the results were correlated and used to make light curves.

Mike Fenwick thanked Melvyn Taylor for his informative talk and we then had a coffee break which was followed by the final session chaired by Ron Livesey, Director of the BAA Aurora Section. This session was handed over to the delegates allowing time for short presentations.

This session was started by Dr Harry Ford who gave a short talk about Greenwich Time and how the time service had evolved there, with the transit telescopes and the clocks, and how the Greenwich Meridian became the standard for the world.

Next came Douglas Cooper, Secretary of the Stirling society, with a simple device a beanbag which in the absence of a tripod makes a stable mount for a camera, e.g. on a car roof. He also showed some recent aurora photographs.

Alex. Pratt from Leeds showed a light curve of the eclipsing variable RZ Cas from his own observations.

Dr Russell Cockman of the Falkirk association showed a magnificent collection of slides which he had taken using a simple camera drive and 35mm film from the clear skies of Tenerife. Astounding star-fields showing nebulosity, even on short exposures. We never get anything like this in Britain.

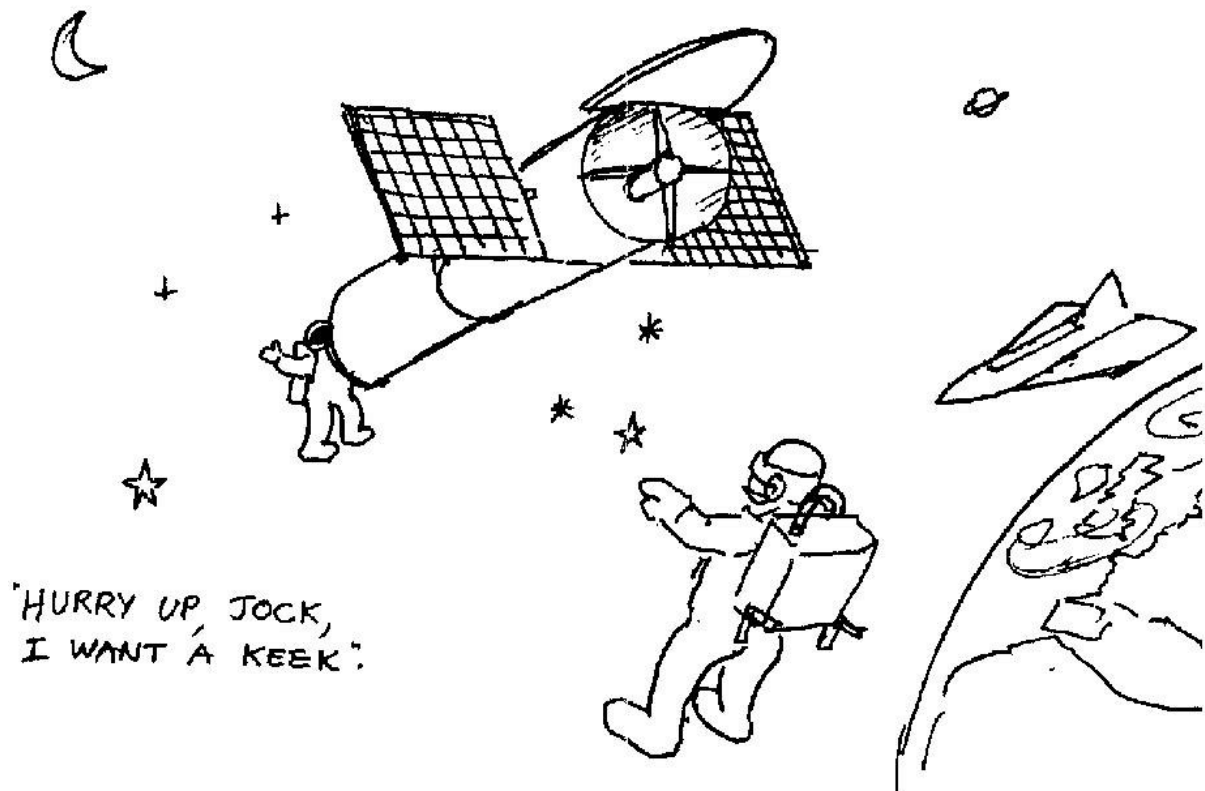
Walter Scott, also of AFA, showed pictures of the aurora of 7/8 Sept, the one we had seen from the Mills the previous night, which he had manage to process quickly as computer images.

Finally Tom Lloyd-Evans made some brief remarks on the amateurs' contributions to variable star research.

After lunch it was time to go home. Not only had we enjoyed the lectures and our visits on the Saturday afternoon, but we had enjoyed each others' company. I was not alone in feeling sorry that time had flown so quickly. As one person said as we waited for our train

"I really enjoyed the Dundee meeting. Everyone was open and friendly and chatted to me as if they'd known me for 10 years. In southern England they have to know you for 10 years before they'll acknowledge you!" And that comment captured the essence of the weekend.

Lorna McCalman



# The Society's Library

The Society subscribes to a wide selection of Astronomical magazines. But there doesn't seem to be much evidence that these are being used by members.

This may be because the Library is split in two - books in the City Dome and magazines in the "Library" in the Playfair building. Or maybe the desk in the library has been too cluttered with bits and pieces. Or perhaps the magazines are just not needed (members have their own copies or we just have the wrong selection).

The Council will be reviewing our journal selection in the New Year as around £20 each month is spent on these magazines. So your Librarian's New Year Resolution will be to have, for the end of each meeting, a desk free of clutter with just the latest magazines and recent book purchases. Please give us your comments about our purchases.

Here is a selection of recent acquisitions:

- *"Agnes Mary Clerke and the Rise of Astrophysics"*  
by Dr Mary Brück (kindly donated by the author)  
[See review in this edition]
- *"Gods In The Sky: astronomy from the ancients to the renaissance"*  
by Dr Allan Chapman  
[Channel 4 Books, London, 2001; ISBN 0 7522 6164 9]
- *"Beyond Pluto: exploring the outer limits of the solar system"*  
by Dr John Davies  
[Cambridge University Press, Cambridge, 2001; ISBN 0 521 80019 6]
- *"Observing the Moon: the modern astronomer's guide"*  
by Gerald North  
[Cambridge University Press, Cambridge, 2000; ISBN 0 521 62274 3]
- *"Astronomy with a Budget Telescope"*  
by Sir Patrick Moore & John Watson  
[Springer, London, 2002; ISBN 1 85233 586 6]
- *"Celestial Treasury: from the music of the spheres to the conquest of space"*  
by Marc Lachièze-Rey & Jean-Pierre Luminet  
[Cambridge University Press, Cambridge, 2001; ISBN 0 521 80040 4]
- *"Light Pollution: responses and remedies"*  
by Bob Mizon  
[Springer, London, 2001; ISBN 1 85233 497 5]

Choosing books to buy is largely at the Librarian's discretion so may not adequately reflect the full range of members' interests. If you have suggestions of particular books or topics then please let me know.

The computerised version of the Library Catalogue is nearing completion. This should allow members to locate books more easily and will allow us to move duplicate copies (and some frankly uninteresting books) into storage; which should give a much tidier appearance.

Graham Rule