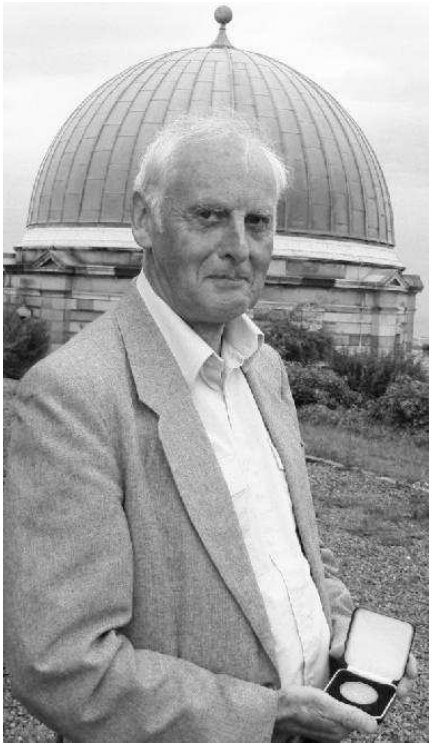
The Astronomical Society of Edinburgh

Journal 46 - August 2003



Dave Gavine
Latest recipient of the Lydia Brown medal of the British Astronomical Association
(See page 10)

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From the President

It has been an eventful and interesting few months since I became President of the Society. I feel that I am still only beginning to establish exactly what the job entails and so should start by thanking the other Council members for all their support so far.

We have had some superb main speakers recently. In the last couple of months we have seen Dr Jardine's presentation on Planetary Formation and Gerry Taylor's on Planetary Rings. Both of these presentations show the value of the computer projector the Society has recently purchased and I will long remember Gerry's graphic illustration of the difficulty of defining an average particle size by the use of a smashed house brick.

I am also pleased to report that we have been doing some observational astronomy at Calton Hill recently. The Messier / Imaging groups met on 7th April and (unusually) it was a clear night. The members present were able to use the Cooke, the Wray telescope (recently acquired from Jewel and Esk College), the 11 X 80 binoculars and one of the Dobsonian telescopes to observe a variety of objects, including Jupiter, Saturn and a waxing crescent Moon. This also gave us an opportunity to try out the Brandon eyepieces the Society purchased in March. The optical quality really does appear to be very high and I hope that the Society members will make good use of them.

May saw a number of astronomical events, notably the Solar transit of Mercury, the Lunar eclipse and the annular Solar eclipse. For the Mercury transit, several Society members viewed the event from Calton Hill using the Society's dedicated Solar telescope and my own little 90mm Maksutov. It really was a remarkable sight through the Solar telescope - Mercury a small hard dot against a solar disk showing a lot of activity and some impressive prominences. Again, I would encourage all Society members to try out the Solar telescope sometime - you really do see the Sun in a whole new light. Unfortunately the eclipses were clouded out for me.

One of the main areas of activity within the Society right now is the "Mars Project" - a range of activities designed to coincide with the upcoming opposition of Mars late this summer. Planning for this is now well underway and I am sure that it will be a huge success. A lot of work has already gone in to developing observing guides, as well as display material and presentations about Mars. You can expect to see this material on display at Calton Hill in the next few months. I would also like to take this opportunity to thank those Society members who have contributed to this project. It is only by the involvement of members that the Society can undertake this sort of activity.

Coming up in August is the Scottish Astronomers' Weekend. This is always a great opportunity to meet other astronomers and hear some excellent presentations, so if you can make it then do come along.

Finally, if you would like to get involved in the Messier or Imaging Groups or any of the Society's other activities then just come along to the meetings and join in - you never know, the sky might just be clear.

Dave King

Astronomy News

Mike Gadsden (centre) with Danish aurora observers Holger Andersen and Ole Skov Hansen at the Mesospheric Clouds Conference in Perth, 2002.

We are very sorry to tell you of the death of Dr Michael Gadsden, in Perth on April 10, at the age of 69 after a long fight against cancer. He was one of our frequent and most welcome speakers, on Aurora and Noctilucent Clouds on which he was a world authority. Michael acted as mentor and adviser to Ron Livesey and Dave Gavine of the BAA Aurora Section. He had a wonderful career which took him from Imperial College London, to St Andrews, to studying the Southern Lights in New Zealand, then to Boulder, Colorado and Kitt Peak where he witnessed the amazing Leonid meteor storm of 1966. As senior lecturer in Physics at Aberdeen University he reorganised the ancient abandoned observatory on the Cromwell Tower at Kings College with new instruments for aeronomy. Happily this has been taken over as a good observing site by the Aberdeen Astronomical Society. Michael was Vice-President (Scotland) of the Royal Meteorological Society, Secretary-General of the International Association for Aeronomy (IAGA) then President, and a Council Member of the RAS. He was a big man with a huge grin and a naughty sense of humour. We miss him greatly and offer condolences to his wife Mavis, 2 sons, daughter and 9 grandchildren.

On a happier note, we were delighted to hear that Dr Harry Ford, our Lorimer Medallist and Honorary Member, was awarded the MBE in the New Years Honours and was invested by Prince Charles at Buckingham Palace on February 13. This comes as a recognition of all the good work he has done for Astronomy education, especially for his masterly programmes with the Caird Planetarium at the Old Royal Observatory at Greenwich and, before that, his post as Curator of the Mills Observatory in Dundee.

Congratulations also to another old friend and welcome visitor from the Deep South (Chichester), Storm Dunlop. Soon after the appearance of another of his fine books, *How To Identify the Night Sky* he was made an honorary Fellow of Sussex University, and later this year, in Norwich, he is to be given the Gordon Manley Award of the Royal Meteorological Society.

The Mystery of the Moon Illusion:
Exploring Size Perception
By Helen Ross and Cornelius Plug

Book Review

Picture from OUP website

I have written several times about the Moon Illusion (it appears about 1½ times larger near the horizon than when overhead), most recently in *Journal* 41 (April 2000). Consequently, I was most interested to read this book. Helen Ross was latterly in the Department of Psychology at the University of Stirling. Cornelius Plug hails from a similar department at the University of South Africa at Pretoria. The book has a short foreword by Prof. Richard Gregory.

The Illusion applies not just to the Moon, but also to the Sun and constellations near the horizon. Consequently it can be called a celestial illusion: a magnification of all astronomical objects seen close to the horizon (or horizontally). It has been known at least since Babylonian times and was first described scientifically by Aristotle 2300 years ago.

Theories of the Illusion fall into three categories : physical, physiological or perceptual. The first two are based on the idea that the image of the Moon does actually increase (angular enlargement), the last on the idea that it is only *perceived* to increase.

The authors painstakingly explore many explanations for the illusion, concluding either that they do not explain it or only partly explain it. Rejected are the varying distance of the Moon, atmospheric refraction (most people's explanation), aerial perspective, change in pupil size, the perceived flattening of the sky overhead (the sky illusion) and the presence of intervening objects. Partly rejected are relative size, angle of regard, and the vestibulo-ocular (balance) reflex. The authors conclude that the Illusion is due to a combination of the effect of several factors and that about 40% of the Illusion is caused by relative size effects. Another 10% comes from oculomotor commands, angle of regard and posture, while the effects of a light haze and a red colour might contribute another 10%. They observe that the perceived enlargement of the Moon is found to be the same as that of terrestrial objects on the horizon. Consequently, whatever analysis is given to the Moon Illusion should be applied to normal size constancy. They urge more experiments and predict large advances in the neuroscience and psychophysics of size perception in the next few years. Therefore, it is an illusion that we still cannot completely explain. Even though one is not sure where one has arrived, the journey is fascinating and very well documented.

There is an appendix summarizing scientific developments relating to the Illusion, comprehensive chapter notes, references, and name and subject indices.

Steuart Campbell

Bibliographic information:

Ross, Helen Elizabeth, 1935-; Plug, Cornelis.
The mystery of the moon illusion : exploring size perception / Helen E. Ross, Cornelis Plug.
Oxford ; New York : Oxford University Press, 2002.
viii, 277 p. : ill. ; 24 cm.
ISBN 0-19-850862-X
£29.95.

Yet Another Edinburgh Astronomer of the Past

(There were dozens of them - see past issues of the *Journal*).

REV EDWARD BRUCE KIRK was born in Edinburgh in 1857, son of Rev John Kirk, DD, Congregational minister. His two elder brothers were also ministers. He graduated MA at Edinburgh University in 1879 and in the same year was ordained into the Congregational Church then changed to the Evangelical Union, first at Brighton Street, then Saltcoats, then for 33 years, until 1915, was minister at Barrhead. He died at Pollokshields on 22 May 1929.

He was a member of the BAA, President of its West of Scotland Branch in 1897, and became a Fellow of the Royal Astronomical Society in 1911. He was a very active amateur observer, contributing notes to *The Observatory* on double stars, meteors, Jupiter, aurora spectra and the Comet of 1881. Between 1899 and 1903 he wrote several papers for the BAA *Journal* on a variety of topics including the possibility of life on other worlds. He gave lectures on astronomy at the Royal Technical College, now Strathclyde University.

Dave Gavine

Some Recent Observations

Meteors : Dave Gavine saw 13 Quadrantids and 3 Sporadics on January 3/4. There were no bright events.

Aurora : Ron Livesey's magnetometer picked up several disturbances and storms but very few aurorae have been seen, much less than expected. Dave saw displays from Joppa on Feb 9/10, Mar 29/30 & 30/31 and Apl 23/24 and July 26/27, all quite active with rays but they faded after only a few minutes.

Lorna, Horst and others have been making full use of the hydrogen-alpha solar telescope to record prominences on as many occasions as possible, while Ron continues sunspot counts.

Variable stars : Lorna, Dave, Des and Ron are now keeping an eye on some 50 variable stars, mostly irregulars and semiregulars. The fade of R CrB is described elsewhere.

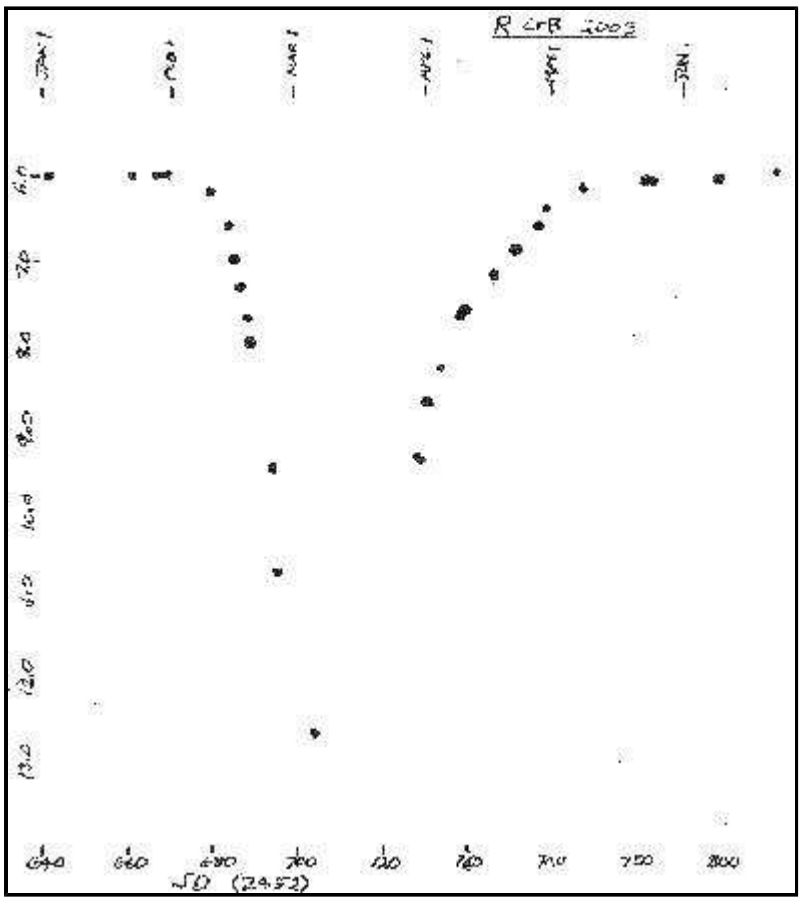
The Transit of Mercury was well seen by many of our members, we got about an hour of reasonable sky on the morning of May 7 but missed the 3rd contact before clouds rolled in. Nobody saw the eclipse of the Moon on May 16 - cloudy again.

First reports from our members who ventured into the far North to see the annular eclipse of the Sun on the early morning of May 31 indicate that it was moderately successful : more in our next issue.

Noctilucent Cloud was seen at Joppa on June 8/9, 23/24, 24/25, July 3/4, 8/9, 12/13, 14/15, 18/19, 26/27 and 27/28.

The Recent Fade of R Coronae Borealis

R Coronae Borealis (R CrB) is one of the best and most interesting variable stars for the amateur to observe, and may be found on almost any star map, including that in the BAA Handbook for 2003, available in our Library. These notes are taken from the description of the star therein, by John Toone (pp 93-94), and from the Webb Society Variable Star Handbook.



R CrB is a yellow, very luminous star of a type which is vary rare, indicating a short-lived phase in stellar evolution. They have probably passed through the Red Giant stage and having ejected their hydrogen-rich envelopes are about to evolve into white dwarfs. Their atmospheres are rich in carbon and other elements pumped up from the stellar interior by helium flashes. They exhibit sudden fades down to deep minima when clouds of carbon particles are ejected in our direction at irregular intervals, sometimes only once in many years, and may remain faint for any length of time up to several months or even years, sometimes with partial recoveries and dips. R CrB itself faded to about mag 8 then 10 from its usual 6 in late 1998, recovering in early 1999, and was observed by some of us. Unfortunately its "timing" wasn't very good because like the fades before that (1989, 1993) it happened in the autumn when the star was low in the western sky then we lost it until the spring. However, this present fade happened in early spring when the star was coming up in the east in the evening and with the remarkably fine weather we have enjoyed this year a lot of observations were possible. By a happy coincidence R CrB was chosen as the BAA's "Variable Star of the Year" for 2003.

Dave Gavine and Des Loughney made systematic estimates using binoculars and telescopes with a set of detailed BAA charts. The star became so faint at the end of February that Dave had to borrow Lorna's 203 mm Schmidt-Cassegrain but by the first week of March we lost it completely. Now the star has recovered to its maximum brightness but should be watched because it could fade again. The light curve shows the variation in magnitude from January to the start of July. Observations from the discovery by Piggott in 1795 suggest that the period of the star may be shortening.

Dave Gavine

A Wee Bit About Nora Jenkinson

Your Editor recently found a book in the Edinburgh Room of the Public Library :

A Millennium of Fame of East Lothian
by David Dick, (Haddington 2000)

It is a compilation of short biographies of county notables over the last 1000 years, such as John Knox. And there is a 3-page write-up, with a photo, of our Honorary Member and Lorimer Medallist of 1993, Mrs Eleonora (Nora) Jenkinson.

Nora, now in her nineties, is still running her astronomy club at Harperdean farm after an amazing 26 years, interrupted on only 6 occasions by severe weather. The many young folk who have been enlightened by Nora included her own nephews, nieces and grandchildren, and some have gone on to take degrees in science, one of them in Astrophysics! They have a formidable array of instruments up to 14 inches including an 8-inch reflector which they built entirely themselves, grinding and testing the mirror. Robert McNaught at Siding Spring in Australia, who knows Nora very well, discovered an asteroid (one of many), number 4504 and had it named "Jenkinson" in her honour.

It is a good biography but has a few small errors, eg. The author thinks Siding Spring is in New Zealand. I got in touch with Nora a few weeks ago and she had never heard of the book. When I described it her reaction was characteristic :

"Oh, that rascal Davie Dick. Just wait til I see him!"

Dave Gavine

Bibliographic information:

Dick,David,1929-
A millennium of fame of East Lothian :200 lives of achievement /David Dick /foreword by Sir Hew Hamilton-Dalrymple
Haddington: Clerkington Pub. Co., c2000
448 p.; 21 cm

Philip's Mars Observer's Guide

Some members will remember when Neil Bone was Vice-President of the ASE. He is director of the BAA Meteor Section and has written several papers and articles in the BAA Journal. He is a regular contributor to Astronomy Now and author of five popular astronomy books. His latest has just been published by Philip's. We will be getting a copy for this for the library as soon as it reaches Edinburgh's bookshops.

Bibliographic information:

Bone, Neil, 1959-
Philip's Mars Observer's Guide / Neil Bone
ISBN: 0540083879
Price: £8.99

Publisher's notes

In 2003, Mars will be closer to Earth than it has ever been. Aimed at the practical astronomer, this book looks at what you need to know to make the most of the opportunity. It includes maps of the surface of Mars and colour photographs taken by spaceprobes.

Mars Opposition - August 2003

This article is the text of the Society's leaflet about the opposition of Mars. Pick up some copies at for your friends.

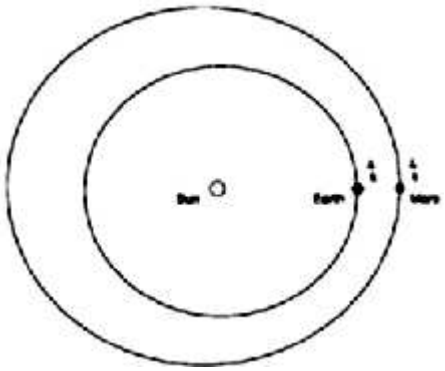
The Observatory will be open to the public in the evenings from Saturday 23rd to Friday 29th August to coincide with National Astronomy Week. There will be an exhibition about Mars and illustrated talks. Weather permitting, we will also be observing Mars through the main telescope.

For further information see our website at www.astronomyedinburgh.org/mars or check the answering machine at 0131 556 4365.

Graham Rule

What is an opposition?

Mars takes 687 days to travel round the Sun, compared with Earth's 365 day year. Once every two years or so, Mars catches up with the Earth to take up position opposite the Sun in our sky - opposition. This is the best time for viewing the planet from Earth as it is visible all night. The actual date of opposition (August 28th) is not crucial, as the weeks either side should provide excellent opportunities for observation.



Orbits of Earth and Mars

Mars brightens rapidly towards opposition and its apparent size increases as the distance between Mars and the Earth decreases. The next illustration shows this increase in size and that, just like the moon, the phase also changes. During opposition, we see "Full Mars", but, unlike the Moon, the phase never gets any less than around 85%.

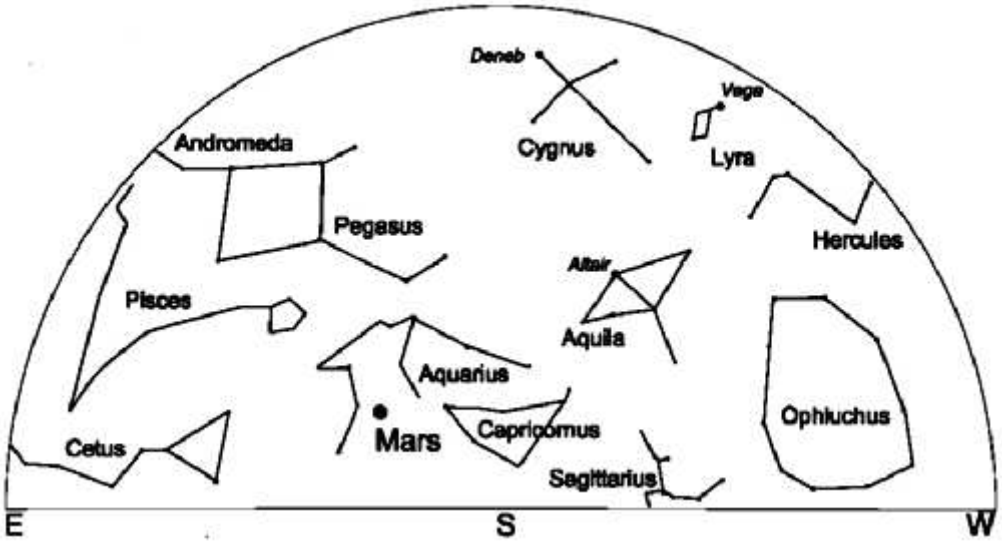
Relative Size and phase of Mars at 4 week intervals from 8/6/2003 to 23/11/2003

Why is 2003 special?

This year, Mars is not only at opposition, but the relative placing of the two planets means that its distance from Earth falls to around 35 million miles (56 million km) - its closest since records began. The "Red Planet" will appear bigger and brighter than at any time for more than a thousand years!

How can I find Mars?

The map shows the night sky looking South around midnight on the 28th August, 2003 - the day of opposition. Mars will be the brightest object in the sky and, due to its red colour - unmistakable. High above, to the South West will be the "Summer Triangle" made up of the bright stars Deneb, Altair and Vega.



When should I observe?

The following table indicates the rise, set and transit times either side of opposition. The transit time is the time at which the planet is due South and at its highest elevation above the horizon - the best time for observation. After opposition, Mars rises earlier and transits during the evening - a much more sociable proposition. However, for telescopic observation, the disc of the planet will also be getting smaller as the Earth pulls ahead in its orbit and the distance between the two planets increases again.

	Sun		Mars		
Date	**Rise**	**Set**	**Rise**	**Transit**	**Set**
29/06/03	03:30	21:02	23:40	04:18	08:53
27/07/03	04:07	20:30	22:09	02:51	07:29
31/08/03	05:14	19:11	19:49	00:13	04:31
28/09/03	06:09	17:57	17:40	21:59	02:23
26/10/03	07:06	16:47	15:41	20:27	01:15

Times are GMT - please add 1 hour for BST for the first 4 dates

What can I expect to see?

Mars will be easily visible to the naked eye as a bright, red, steady, star-like object in the night sky. Binoculars do not magnify a great deal and may not even show Mars as a small disc rather than a point. However, they can be used to track the planet as, week by week, it slowly moves through the constellation of Aquarius. Even at opposition Mars is a difficult

object to observe. It will never be higher than about 20° above the horizon and the disc will still be very small at 25 arc seconds (0.007 degrees) - around half the apparent size of Jupiter. A good amateur telescope should provide views of the main surface markings, such as the V-shaped, raised plain of Syrtis Major. Atmospheric conditions on Earth and Mars can have a major impact on observing, however. During the last opposition in 2001, all surface detail was obliterated by a massive sand storm which covered the planet for several weeks!

Are telescopic views available?

We hope to arrange public viewing through the Societys 6" Cooke refractor on Calton Hill. Unfortunately the best views should be had around 1.30 am. during the weeks either side of opposition. This will improve after opposition.

What if I have any other questions?

Come to our exhibition. We have also produced a more detailed, 6 page observing guide which is available from the Society. Come to our monthly meetings - visitors are always welcome! Check out magazines such as Astronomy Now, Sky and Telescope and Astronomy.

BAA Honours Dave Gavine

The British Astronomical Association has awarded the Lydia Brown Medal and Gift to Dave Gavine in recognition of meritorious service to the Association in an honorary capacity over many years.

I am sure that all ASE members will join me in congratulating Dave.

Graham Rule

From the Former President

I have greatly enjoyed my extended term as President of the ASE, largely due to the excellent support of the officers and members of the council. Whilst it was a lot of fun and for me, a novel experience, it did involve a lot of time consuming work which I found to be manageable - in the short term.

It is worth remembering therefore, that there are posts within the ASE which have no time limit of service such as the Treasurer and Secretary. Secretary of the ASE for many years, Graham Rule, has stuck to what can at times be a thankless task and during my Presidency has always been there to research and advise no matter how ticklish the problem.

So too, the editor of "The Journal", Dr Dave Gavine gives of his time to cajole members into contributing to the Society's mouthpiece and record. Dave recently gave me to read a folder containing all the past editions of the Journal from the very first issue to the present day and I found them to contain a wealth of information as well documenting the ongoing history of our Society. "The Journal" is also, I believe, the longest continuously produced publication of any astronomical society. The Journal can be held up as a fine example of the effort put in by members who quietly give freely of their time to the benefit the ASE.

Officers and Councillors give up a lot of time to the running of the Society and I would like to acknowledge their efforts and give them a well deserved (virtual) pat on the back.

Also worthy of special mention is Alan Pickup, who has very generously prepared a short presentation each month to keep the Society well informed of forthcoming interest in the heavens and thanks too to Russell Eberst who stands in when Alan is unavailable.

Finally, as I return to more practical amateur astronomy, the presidency has passed to the safe hands of Dave King and I wish Dave well in his role as President of the ASE and hope he finds his term as exciting as I did.

Lorna McCalman