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# FEDERATION OF ASTRONOMICAL SOCIETIES

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*M27, The Dumbbell Nebula. Image by Gordon Rogers*

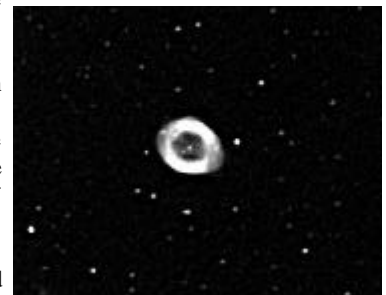
## Planetary Nebulae A Deep Sky Fascination

Deep Sky observing has always been one of the most popular pursuits for amateur astronomers. The first deep sky guide books were written by Admiral Smyth and the Reverend Webb, both amateurs. Observing the deep sky can also be done with relatively simple equipment. A point well remembered in these days of GOTO telescopes and CCD cameras. There is also a thrill to realise that a photon that has just entered your eye may have started its journey many millions, if not billions of years ago. Truly we are observing ancient light. Observing galaxies however can often be a trial from our light polluted shores. Unless you are observing from a dark site all you tend to see is a hazy patch that is the core in most galaxies and the descriptions you read of seeing

spiral arms and HII regions seem to nothing more than fantasy. Observing your first galaxy often turns people off deep sky observing. There are however objects in the deep sky zoo that can be seen from light polluted skies, and with relatively small telescopes and these are the class of objects known as planetary nebulae. These objects have long been favourite targets of deep sky observers. Messier's famous catalogue contains four of the brightest in M27 (the first planetary nebula discovered) M57, The famous Ring nebula, M76 and M97 (the Owl nebula). Of these all are visible in telescopes of 50mm in aperture and M27 is easily seen in binoculars from a dark site. The next major catalogue to be compiled, the NGC, contains 96 objects now classified as planetary nebulae out of 7800 odd. Many of these objects are easily visible in small telescopes. Due to their small size and brightness planetary nebulae are also some of the few deep sky objects to show colour. The range of size and brightness of these objects also means that there is a planetary nebula that is a challenge for all sizes of telescopes from the small ETX up to the giant dobsonian.

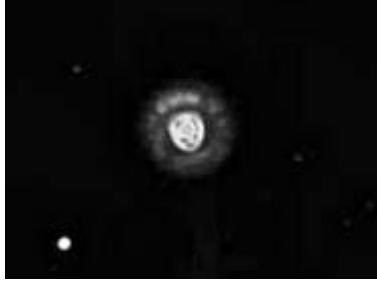
Briefly planetary nebulae are the dying gasps of stars with similar masses to our sun and in many ways illustrate the way the Sun will end in a few billion years. In order to understand a bit about observing planetary nebulae it is necessary to understand how they evolve. When the proto-planetary nebula forms it is surrounded by a dusty shell. As it ages the dust cloud expands and the radiation from the central star causes the envelope to glow and we have a fully fledged planetary nebula. The envelope continues to expand at speeds of 20-40km/s and the lifetime of a planetary nebulae is about 20000-40000 years, truly a blip in the 10 billion year lifetime of a sun like star. For those who would like to know more about how planetary nebulae form and evolve they can be referred to Sun Kwok's excellent book *Cosmic Butterflies* just published by Cambridge University Press which describes our current understanding of planetary nebulae (PNe) as well as containing some stunning HST images. For those with a background in mathematics the same author has also written a book called *The Theory and Evolution of Planetary Nebulae*, also published by CUP. For an amateur perspective Steven Hynes book on *Planetary Nebulae*, published by Willmann-Bell is also a good guide. The venerable Webb Society Deep Sky Observers Handbook Volume 2 on planetary and diffuse nebulae, now out of print but available on the second hand market, also gives a good guide on observing these objects. The popularity of observing PNe has also given rise to several excellent web sites dedicated to observing planetary nebulae such as Doug Snyder's site at [www.blackskies.com](http://www.blackskies.com) and Eric Honeycutt's site at [www.icplanetaries.com](http://www.icplanetaries.com). Both these sites have many pointers out to other web sites dedicated to the hunt for PNe's.

At this point a short digression into the naming of PNe is in order. The four objects in Messier's catalogue are known primarily by their M numbers. The observers that contributed to the NGC saw their objects only known by their NGC and IC numbers. Thereafter things got a little complicated. As observers such as Abell and Minkowski etc. found new PNe the names they were tagged with were those of the paper lists as they were published. Sometimes a number of observers might independently discover the object so the poor PN could be stuck with 6 or even seven names. In 1967 Perek and Kohoutek brought together all known objects thought to be PNe and published the first catalogue dedicated only to PNe. In this work all the PNe were given a PK number which reflected their galactic longitude and position within a galactic latitude band. A given object could then be cross-referenced. In 1992 the IAU suggested that all PNe should be catalogued with a new system which was set up in the Strasbourg-ESO catalogue of Galactic Planetary Nebulae. This gave all objects a number of the form PNG XXX.X+YY.Y. This is the way objects are labelled on the new Uranometria 2000. There is a certain coldness about these numbers and most observers still call them by a discoverer name rather than the PNG or PK number. For instance if you say to me I have observed PNG 205.1+14.2 I would have a hard time knowing what you were on about whereas if you said I have just observed Abell 21 that would mean something. With the Abell list there is an extra confusion as Abell also made a list



*M57, The Ring Nebula. Image by John Fletcher*

of clusters of galaxy's. In most dealings in the amateur literature the Abell PN are known as Abell 1 to Abell 85 and the galaxy clusters have the name AGC 1367 or such like. Just to add to the confusion in 2001 Kohoutek published a new updated version of the PK in which he ignores the new PNG system and extends the PK numbering. Enough anorak stuff!!



NGC 2392, The Eskimo Nebula. Image by Gordon Rogers

Earlier I mentioned that PNe can provide a challenge for all types of observers and this is very true. Many objects outside the Messier four are easily visible in small telescopes. The Eskimo, NGC 2392 and the Cats Eye, NGC6543 immediately spring to mind. Why are these not in the Messier catalogue? Well Messier was not doing an all sky survey. He was looking along the tracks of comets or in areas where comets might turn up so he did not pick up many bright objects. This means that if an object has an NGC number it may not be difficult to locate. Others though, such as NGC7094, are very challenging to find. Most of the others are much easier. The fact that they are bright means they are good targets for small telescopes and they stand power well. They sometimes show strong colours of green or blue. Try NGC6210 in Hercules or NGC7027 in Cygnus for good strong colours. The other device which really helps when looking for these objects is the nebular filter. First appearing on the scene around 1980 through Daystar, the same people that made the Solar filters, they first became really common when Jack Marling at Lumicon using ex-military technology found ways to bring lots of them to market.

These filters have revolutionised the way deep sky astronomy, particularly that involved with observing PNe, is done. For observing PNe two main types of filters can be used. Those characterised by passbands similar to the UHC( this includes the Orion(US) UltraBlock and possibly the Orion (UK) EHC) and the Lumicon OIII filter. The other main type of line filter, the H-Beta filter, has limited use when observing PNe. For observing middle aged PNe the UHC filter is to be preferred. The other factor to be born in mind is that the filter primarily increases contrast, something that is also done by increasing the power. Unlike most deep sky objects PNe take magnification well. On some of the brighter ones powers of 400-600 times can be used if the conditions permit and this will allow detail to be observed in the PNe themselves. Objects that show good structure include the afore mentioned NGC2392 and NGC6543 along with NGC7662 in Andromeda and many others. Having found your planetary using a filter try observing without the filter to see if the object does show colour. Try using a range of magnifications as well as some objects show different behaviour at different powers. A classic case here is IC418 in Lepus. This object is claimed to show a red colourization depending on the combination of aperture and power.

All the above techniques appertain to observing relatively middle aged objects. Finding the youngest and oldest PNe requires that the observer use different techniques. The problem with the young ones is their small size. The two main techniques employed to find these objects are one to blink the field of the suspected object with a nebular filter to see which object does not fade as much the others and then increasing the magnification to show the disk, or use a prism or grating to see which object does not show a continuous spectrum. The latter technique can only be used on the brighter objects unless you have a very large telescope. The prism technique was successfully used by Ed Barker and a number of observers in the early days of the Webb Society and is used today with great success by Yann Pothier, one of the foremost French deep sky observers. Observing the older PNe presents a different challenge as many have a large size and are very faint, indeed one of the older and nearer PNe, NGC7293, is almost half the size of the full moon and is easily visible in binoculars from more southerly climes. Most are not so easy however. The main technique here is to use a low power and an OIII filter to try and spot the ghostly glow. Remember these objects can be quite large. One of the main showpieces of this class is the Medusa Nebula or Abell 21 in Gemini.

When hunting for these objects you will require a good star chart showing quite faint stars. Some of the modern computer star charting programs such as Megastar, Guide, The Sky or SkyMap Pro can be used to generate finding charts. Some of them even allow you to overlay images from the POSS to give the ultimate in star charts. To find many of the brighter PNe however Sky Atlas 2000 or similar is adequate.

In summary observing planetary nebulae can be a rewarding challenge for all observers with every size telescope from the largest to the smallest there are planetaries just right for you. As many have high surface brightness they can be observed from light polluted locales. The large faint ones offer challenges to observers in dark locations and 50cm+ telescopes and OIII filters. There really is something for everybody.

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*Owen Brazell. Owen is a regular contributor to Astronomy Now, and edits the Webb Society journal Deep Sky Observer.*

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## **Earth, Life and the Universe, by Keith Tritton**

*A Book Review by Alan Drummond*

Some fundamental questions are tackled in this book: how did the Earth originate, and how and why did it acquire life? How did life evolve? Is there life elsewhere, and will we ever find it? None of these questions has a complete answer yet and perhaps never will have, but *Earth, Life and the Universe*, written by an astronomer, is a highly readable synthesis of present-day astronomical and biological knowledge, written for a non-specialist readership.

The book has three parts, linking in turn two of the components in the title. The first, *Earth and the Universe* considers the creation of the chemical elements and the formation of the solar system. Much of this part will be familiar to astronomically-inclined readers, but it is an important background to what follows.

The pivotal, middle part of the book is entitled *Earth and Life*. The fossil record of life dates back at least 3500 million years, when single-celled organisms certainly existed. The nature of the cell and role of DNA is illustrated in succinct but sufficient detail, as are the latest ideas on the relationships between organisms and speculations on the origin of life. Particularly fascinating are the examples of the ability of some organisms to thrive in extreme conditions - in sulphuric acid, for example! The evolutionary and environmental changes on Earth, including the mass extinctions, are the other themes.

The final part, *Life and the Universe*, considers the possibility of finding life elsewhere. Mars is the favourite candidate in the solar system, and the aims of the Mars Express mission are discussed as are the infamous 'microbes' on the meteorite ALH84001. Beyond the solar system, the discovery of extrasolar planets is explained, although those found are unlikely to succeed, but that living extraterrestrial organisms will eventually be found.

There is a useful glossary and reading list, and a brief index. Diagrams and images (some very familiar) are well reproduced and the typeface is easy to read. There are just a few minor errors, although as a former chemistry teacher the repeated mis-spelling of phosphorus did irritate me. I learned a lot from this book and thoroughly recommend it to anyone with an interest in astronomy or life sciences.

*Earth, Life and the Universe*, by Keith Tritton is published by Curved Air Publications Ltd, ISBN 0-9540991-0-1. RRP £19.95.

## Saturn Occultation 6<sup>th</sup> November 2001

By Rod Tippet - FAS Education Officer



After a month of work, the day came and the weather forecast was not looking good. Early morning, 8 o'clock I was up and ready to go, with a full days work ahead for the coming evening. My plan was to set the telescope up in our observatory with a CCTV camera and send the image via a video recorder and computer out to a video projector placed in the side door of the observatory and to project the image on to an 8' square screen for all to

view, to get round the problem of only one person being able to watch the event at the eyepiece. To make this a public event press releases went out and it was in all the local papers, and on BBC Radio Derby. We were even mentioned on every Friday and Saturday weather forecast on East Midlands Today News, with our [www.wpaog.co.uk](http://www.wpaog.co.uk) web site being scrolled across the bottom of the screen. This is all great publicity for the group and the event but we have learned from previous experience that if we get a lot of people to an event and the clouds roll in it can be very disappointing, so... Stage two of the plan.... the computer! This was so we could broadcast our images across the Internet for all to see and the previous months work consisted of working out how to do this, and then encouraging others to do likewise. We wanted to create a network of cameras across the country and beyond so that if a site was clouded out, they could log on to another site and receive their images in real time and not miss the occultation. We did have a lot of comments saying it was not possible because the web is not good enough, fast enough, and not reliable enough, but you have to remember that anything is better than looking at clouds. Two days beforehand I did broadcast some video of the moon I had shot with the system and it looked good, the image was not like a normal flowing TV image but really a series of stills updating every one to two seconds, but good enough to watch the occultation of Saturn.

By 6 o'clock we were all set with the large screen projector, two computers, one for broadcasting and one for receiving images, the video camera, a third computer and Starlight Xpress camera for collecting stills on the second scope, and of course the clouds.

The telescopes we were using were a Celestron C150 refractor with a 2x teleconverter for the video, the camera is a simple BW surveillance camera with its lens removed working at prime focus. Its very small CCD chip it gives a field of view similar to a 10mm eye piece and this gives us about 240x magnification. The second scope is a 5" refractor with a 3x teleconverter on to a Starlight Xpress SX5 camera for snapshots. Both scopes ride on a homemade mount sitting on top of a concrete pier and this all sits in a 10' dome. The output from the video camera was taken into a video recorder first, and from here to the computer, video screen, and video projector via a splitter cable. The second computer was logged on to the net and its output could be linked to the projector so we could see what other sites were seeing. By linking this computer and the camera to the projector, it enabled us to switch between both inputs quickly.

At 7 o'clock the BBQ was lit and we got our web site up and running with some old video to test it and the projector. At 7:30 people started arriving, telescopes were set up and we started to look at the other sites involved on the web, firstly the Canaries and COAA. Nothing in the Canaries, they were cloudy, and then we get an e mail from the COAA they are also cloudy. This was a pity as we hoped to watch their video first as the occultation would start 20 mins earlier for them due to their longitude.

Well, it was not to be, this was our worst nightmare, after all the preparation. Cloud all over Europe! And we now have 150 people waiting for something to happen. So to the backup plan, I had made three computer simulations using Redshift 3. I worked through these and gave a talk, answered questions like; why is it always cloudy

when something interesting is happening in the sky? To our surprise, about 100 people waited in the cold for the chance to see re-appearance.

At 9:45 a faint glimmer of the moon was seen but it was not bright enough to get a picture from the camera so I removed the 2x converter and the cloud started to thin. It was now 9:50 and with only a few minutes to go, a few of us started to panic. We needed to set the cameras up and we realized that we did not really know where Saturn was going to reappear, our original plan was to set up on Saturn and leave the scope tracking ready for reappearance. Also the broadcast was closed down on the host site. I now had to shut down, reboot and set the site up again. Don't computers seem slow when you are in a rush, or do they just do it on purpose ?

We cleared the observatory of people leaving two of us, with three and a half minutes to sort it all out. Robin Spencer took over setting the scope up on the limb of the moon using the information in the FAS Calendar and he got it absolutely spot on, I set up the broadcast and checked this on the second computer, all was working well.

As Robin and I watched the screen in the observatory we saw a faint glimmer away from the moon that slowly turned into a small 'c' sitting in space, at the same time we heard a huge cheer from outside the observatory and we knew the projector was working, so we went out, as more of the planet appeared to lots of gasps and wows. Remember a lot of these people had never seen Saturn or the moon magnified before never mind an occultation, what an event for them.

Shortly after the event e-mails started coming from people who saw it on the net, with very positive feedback, so in the end it all worked and it was worth while. We will do more, this all adds to a wider and more positive outlook on what we do from the public.

I hope to help in setting up a network with others so clouds can become less of a problem. For those sceptics out there who said it would not work, remember, it never will unless you try.

This was a great view and a fantastic finish to a long wait for all those who stayed, and well worth it. For me though it was one of the best sights I have seen of two of my favourite objects, I have waited twenty years for my first planetary occultation and I saw it on an 8' screen, it felt like I was out there.

Thanks go out to all those involved with a special thanks to Nick Quinn who helped by putting the FAS web site to good use and letting as many people as possible know what was happening, as far as I know his was the only other site to broadcast live video.

We are now getting ready for Jupiter's occultation on the 26<sup>th</sup> January and I plan to take all the equipment to Yorkshire and video from there to get the glancing occultation, this will be a short occultation but if all goes well we may be able to see lunar mountains crossing Jupiter's face. I will post the video live on the net WPAOGastrocam at (<http://www.teveo.com/live/Live.asp?GoType=Live&GoChar=W&GoPage>) for all to watch again, and it will be played live at the WPAOG observatory. Again any one who wants to have a go let me know if you need any help.

Remember any one south of a line from Yorkshire to Wales will not see the occultation but just Jupiter coming very close to the moon, those north of the line will see the full occultation, I hope you have clear skies.

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### Osborne Optics - Closing Down Sale

Due to ill-health Osborne Optics has closed down. To receive a list of TeleVue Nagler, Panoptic & Possl eyepieces together with a Ranger telescope which are being sold at trade pricing or less, write to Joe Osborne at 139 Dean House Newcastle upon Tyne NE6 4UU enclosing an SAE.

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### The Mountains of Io

In Andy Salmon's review of The Worlds of Galileo in the last Newsletter the example given of Io's high mountains, Tohil Mons, at about 6km is some 2km short of our own Mount Everest. However, other mountains can be found on Io and the highest have been measured to be nearly 16.8km

# Report on Federation of Astronomical Societies Meeting on Saturday 13 October 2001 Rutherford Appleton Laboratory, Didcot, Oxfordshire

Ray Goodwin, Reading AS, and Ewell AS



*Pam Spence recipient of the Eric Zucker award with Malcolm Jones*

Malcolm Jones the President of the FAS opened the meeting and welcomed the delegates to the convention whose theme was 'Life in Our Universe'. He then introduced Dr Helen Walker who welcomed the FAS on behalf of the Rutherford Appleton Laboratory (RAL).

Dr Walker, a senior space scientist at the Rutherford Appleton gave an extremely interesting and informative lecture about the Rutherford Appleton Laboratory and of its role in space projects and plasma physics. She apologised for the cancellation of the visit round the laboratories which had been promised to the members of the convention and explained that, because of the terrorist situation, the laboratories were on amber security alert. Therefore, the members of the convention were restricted to the main lecture hall, the anteroom and the restaurant.

Dr Walker described many of the facilities of the laboratory, including the 12 meter ground station and the thermal/vacuum chamber which can be used to simulate the cold high vacuum conditions of interstellar space. About 1,200 people work in the laboratories and are involved in projects such as the European Mission to Mars, the Cluster Project, the Cassini Huygens Mission to Saturn and Titan, the SOHO Solar Space Observatory, the Rosetta project to the asteroid Wirtanen and the building of the gigantic microwave telescope, 15,000 feet above sea level, in the mountains of the Atacama Desert (the ALMA Project).

Dr Walker was followed by Professor Joseph Silk, Head of Astrophysics at Oxford University. He chose as his theme 'The Creation of the Elements Necessary for Life: From the Big Bang to Galaxies'. Professor Silk tackled the difficult subject of Galaxy formation from the tiny irregularities in the material produced by the Big Bang. He concluded his talk with a discussion of how all the elements needed for life such as carbon, oxygen, nitrogen, sulphur, phosphorus and essential metals are produced from hydrogen in the thermonuclear furnaces of massive stars – in particular supernovae.

Professor Richard Dawkins had been due to speak in the afternoon session but was unable to attend the meeting. Wadham College had arranged a memorial service for one of his colleagues on the same day, at which he would be giving a eulogy

After lunch Dr Monica Grady of the Natural History Museum, gave an illuminating talk on the prerequisites for life to arise on a planet. Special thanks were given to Dr Grady by the President of the FAS, Malcolm Jones, for coming at such short notice to speak to the assembly. She outlined the variety of habitats that have been found to exist on our own planet. Over the last few years bacteria and archae have been discovered in the most unlikely places such as hot springs, in thermal vents, very cold conditions in the Antarctic and even deep down in rocks. Dr Grady went on to compare these types of habitats with Mars as it may have been in the past and is now. She then turned to the fascinating discoveries being made on the moons of Jupiter. Europa seems to be the most probable habitat for primitive life in a vast ocean that is thought to underlie the planet-wide ice-cap. Even so recent discoveries on Ganymede and Callisto also suggest that they too may have large under-surface 'seas' which might harbor primitive life. Dr Grady concluded her fascinating discourse by briefly mentioning life outside the Solar System although as she said this would come under the brief of the



*Dr. Monica Grady*

next two speakers.

After the coffee break Dr Barrie Jones delivered a lively and enthralling talk on the possibilities of life on planets orbiting other stars. He discussed the discoveries of the extra-solar planets that have been made over the last 5 or 6 years. In particular he discussed the way in which these planets orbiting other suns had been detected. He delighted the audience with an impressive demonstration of the Doppler effect. By whirling a whistle on the end of a string around his head he demonstrated in a most graphic way the principle of the Doppler effect. Using this as an analogy he showed how the same physical principle could be used to detect the presence of gas giant planets around nearby stars. He discussed the kind of planetary conditions necessary for life to flourish and enthralled the audience with a clear exposition of the 'habitable zone' in which a planet should orbit its star for life to evolve. He discussed the enthralling SETI projects, both radio and microwave SETI and the newer optical SETI. (SETI = The Search for Extraterrestrial Intelligence).



*Dr. Alan Penny delivered the Ken Marcus Memorial Lecture*

The last lecture of the convention was given by Dr Alan Penny of the Atmospheric Division of the Rutherford Appleton Laboratory. The title of his talk was 'Finding Life on Planets Orbiting Other Stars'. The theme was one of the most exciting topics at the cutting edge of technology. It concerned the next generation of super-telescopes that are being made to 'SEE' extra planetary systems. The first such instruments will carry out their observations in the infra-red rather than the visible for it is in this range of the electromagnetic spectrum that planets radiate most of their energy. Although stars

radiate far more than planets even in this range the ratio is much less than radiation in the visible or ultra violet. Furthermore most visible light given off from planetary surfaces is reflected starlight whereas in the infrared a considerable amount of the radiation actually comes from a planet itself.

Dr Penny then discussed the cunning device of interferometry which he explained more clearly than I have ever heard it explained before. Using this technique it is possible to achieve far greater resolution by using several telescopes acting together as one instrument. Dr Penny explained ESA's plans to put an interferometer into space. Appropriately, it goes under the name of the DARWIN PROJECT and consists of 6 telescopes placed around a central receiving unit at exactly the same distance from each other to an accuracy of one nanometer the distance constantly monitored by laser beams. This amazing instrument will take between 10 and 15 years to construct. When fully operational it really will be able to detect the presence of planets the size of Earth, Venus and Mars out to a distance of 30 light years (optimistically 50 light years). By analyzing their spectra for water, carbon dioxide and above all OZONE it should be possible to know if any of them are inhabited by life forms in which oxygen is present in the atmosphere. Dr Penny ended on a high note when he prophesied that the youngest people in the audience will have children who will witness the launching of the first starship into the vast void of interstellar space to cross the abyss that separates the stars.

The meeting ended at about six o'clock in the evening. The convention was very well attended and those who came were rewarded by a truly superb series of lectures and both the lectures and the organizers are to be complemented on the high quality of the event. The meeting was so well attended that the hall was too small to accommodate everyone and a few latecomers watched the lectures on television in the large ante-chamber outside. In concluding this short account of the meeting I would most certainly urge people to come along next year.

*[Photos illustrating this item were taken by John Parratt]*

## Astronomy Weekend 2001

Malcolm Gibb, Association of Falkirk Astronomers



The Association of Falkirk Astronomers held their second astronomy weekend on the 19th/21st October at the Meggernie Scout Centre in Glen Lyon, Perthshire. It was attended by 16 adults and 2 children. The attendees came from the Falkirk club, Stirling AS and AS of Edinburgh. Due to the inclement weather which seems to dog most outdoor astronomy events, the weekend turned into a cloudwatch, the highlight of which was when the cloudbase went up to 2000 ft.

Indoors however, it was a very different story. On the Friday evening, Bill Ward from Glasgow gave a talk about telescopes and optics. This was a fascinating subject and he covered everything, the F/number, field angle, resolution, optimum magnification, exit pupil, the effect of the atmosphere, our eyesight and the different types of eyepieces to name but a few. Some of it was quite technical but with no limit on time it could all be explained. Bill also exploded a few of the myths concerning telescopes. With the friendly atmosphere and nobody rushing to get home, the questions/answers and discussions just flowed. Every so often someone had a look outside but the clouds would not part and about one o'clock bed seemed to be the sensible thing to do!

Saturday was no different as far as the weather was concerned, so it was a lazy day for most, although one or two went hill-walking in the beautiful Perthshire countryside. After lunch about a dozen sat in the recreation room and discussed astronomy, philosophy, science technology and dreams. Yes dreams! We all want to try out the flying one, it sounds great, but it's the landing that worried me. Bill Ward brought in a light box and large negatives of the night sky, so the Norton Star Atlases came out along with the magnifying glasses and identification became the order of the day for a while. Neil Grubb meanwhile, was busy giving mini workshops on image processing on his laptop using Adobe Photoshop. There was a great ambience about the place and I'm sure we all learned something new.

After dinner, the speaker was Dr. Neil Grubb from Edinburgh. Neil's subject was Webcams, CCDs and image processing. He first showed images taken by a CCD camera then ones taken with a webcam, not much difference until you compare prices with a webcam on sale for between £40 and £60 and CCD cameras running into hundreds. Of course webcams have their limitations but for planetary work they seem like great value. The image processing after you have captured the images was a real eye-opener.

Needless to say the sky did not clear, even if the rain did stop, so Bill Ward gave us a slide show of his visit to the Siding Spring Mountain Observatory in Australia with magnificent shots of the Galactic Plane from South of the Equator and Dr. Russell Cockman gave a show of various slides, including some of the Solar eclipse this year and many of his outstanding aurora images.

Sunday morning and even although we hadn't seen a star, it was voted a most enjoyable weekend and everybody vowed to come back next year.

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## Bringing Local Astronomy History to First Light: An Invitation

The story of the history of astronomy is a fascinating and often dramatic one. The point and counterpoint of momentous discoveries, eccentric and often adventurous characters, remarkable observatories and great telescopes form as much a history of humanity as does the march of armies and the life and death of kings. For the tale of the rise of science brings us to where we are, and what we know about the universe, today. It sets our world in context.

Yet, as with much history, the story of the 'ordinary' men and

women, the amateur scientists who work solely for the love of knowledge and the beauty of the night sky, and that of the working scientists, the assistants, the telescope makers, the observatory architects, the society organisers and magazine publishers, the great lecturers and the popular authors, is all too often lost in the stellar glare of the great men of our great science.

In the last twenty years there has been a tremendous rise in the popularity of local history of the general kind, the history of towns and people where we all live. It is the province of the amateur historian as well as the professional and the academic, and much good research is done 'for the love of it'. Amateur astronomers know well the kind of contribution they can make to their favourite science. They can also make a similar - and in many cases even more significant - contribution to the history of that science, especially at the local level. The amateur especially, being 'on the scene' as it were, can take up the cause of the local astronomer, the forgotten observatory, the unknown observer, the obscure telescope maker or the 'companion stars' of the great names.

Such research is important, as much information is hidden in the mists of time - and in the local and county record offices and the archives of societies and museums across the nation. It is also fun, and if approached in the right way can make a great contribution to the history of science - but it needs time and effort to bring it to light. In cloudy weather, a cosy record office is also more inviting than a wet and windy backyard, and provides a respite from that bane of astronomers - the British weather!

I work as a local historian and archive photographer, and have a great interest both in amateur astronomy and in the history of astronomy. Earlier this year, therefore, I approached the eminent and popular astronomy historian Dr. Allan Chapman of Wadham College, Oxford, with a concept for a national survey of local astronomy history. The idea was to encourage the formation of a network of both budding and experienced astronomy historians, whether amateur or professional, to work on a voluntary basis at the local level, surveying, photographing and researching local astronomers, observatories, planetaria, telescope makers, societies etc, of all periods.

Anyone who has read Dr. Chapman's inspiring book 'The Victorian Amateur Astronomer', or heard him speak on the subject, will know the kind of research of which I write. Dr. Chapman received my suggestion enthusiastically, and further suggested the formation of a 'Society for the History of Astronomy' to coordinate the work, its publication, its dissemination and its preservation. While Dr. Chapman is unable to take part in the day to day running of such an organisation due to other commitments, he has nevertheless kindly offered his support. The Royal Astronomical Society's Librarian, Mr. Peter D. Hingley, has also expressed interest in housing at least a copy of any research at the RAS Library.

I know that there are people out there doing this kind of research in isolation, or who are interested in taking it up but are not sure how. Working together, we can bring the local history of astronomy to light, as well as enjoying its national and international story. I am therefore inviting anyone who might be interested in helping to organise and take part in such a national survey of local astronomy history, and in helping to form a new Society for the History of Astronomy, to contact me, with a view to organising a meeting in the New Year. If there is sufficient interest, then a start can be made. Interested parties should write, stating their interests and research experience, and enclosing an s.a.e., to: Stuart Williams, F.R.A.S., 26 Matlock Road, Bloxwich, Walsall, WS3 3QD. Or, by email, to: [flamsteed@v21mail.co.uk](mailto:flamsteed@v21mail.co.uk)

In addition, astronomy history enthusiasts may be interested to know that a growing international group of like-minded people across the globe are already discussing the subject regularly via the Internet, on the egroup 'Historia Coelestis' which may be accessed at the URL:

<http://groups.yahoo.com/group/historiacoelestis>

Stuart Williams F.R.A.S.

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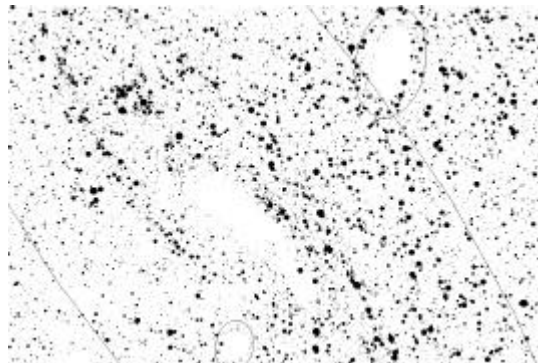
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This 1.5 degree wide Star Chart shows the central region of M31 in Andromeda. The chart is limited to Magnitude 19.5

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## Ilkeston & District Astronomical Society Celebrating 21 Years of Astronomy (1981 - 2002)

The Ilkeston and District Astronomical Society (IDAS for short) celebrates its 21st birthday in October 2002, and this is perhaps a good opportunity to give readers a brief history of our Society.

Founded in October 1981, IDAS was the brainchild of a small band of amateur astronomers, led by the late Bernard Wheeldon. Bernard had the foresight to recognise that there was a large geological gap between the Nottingham and Derby astronomical societies - a gap that was large enough to warrant the need for a new astronomical society to cover Ilkeston and the surrounding Derbyshire and Nottinghamshire towns.

The very first informal meetings were held in Bernard's own home, but with a growing membership it meant that a more suitable meeting place was needed. After some investigation, the Function Room (also affectionately known as the *Hayloft*), at Erewash Museum, in Ilkeston town centre became IDAS's new meeting place - and we have met there, on the second Tuesday of each month ever since.

At our monthly meetings members are entertained by either a Guest Speaker or by one of the more knowledgeable members. We try and organise a good mix of talks that are suitable to all levels.

Besides our meetings, observing sessions have also played an important role within the Society, even from the very early days. They are not only an opportunity for members to learn something new about the night sky, but they also serve as a social get-together. So, even if the sky does cloud over there's always something interesting to talk about!

Long ago, Bernard Wheeldon and his wife Betty would open up their home to members on Friday evenings. From Bernard's modest observatory, which housed a Fullerscopes eight inch reflector he would show members the delights of the night sky. The highlight of the night was Betty bringing out the oven baked jacket potatoes, and the mugs of tea and coffee, which members would eagerly devour under the starlit skies.

These days, IDAS holds observing sessions at nearby Shipley Park, and Alport Height which is in the Peak District. Unfortunately, due to the recent foot and mouth crisis we were unable to hold any observing sessions in 2001. We hope to rectify this in 2002.

The Society currently owns an eight inch Schmidt-Newtonian telescope, which is available to members to use at their own homes - free of charge. Some members do not own a telescope, and by using the society's instrument, allows them to gain experience in using a telescope before they decide to buy one with their hard earned cash. The telescope is also used at public observing sessions.

Society trips are also a popular feature with members. Over the years Jodrell Bank has been a firm favourite, and in 1998 we made our fourth visit to the facilities. Other places of interest have included the Institute of Astronomy (in Cambridge), the Greenwich Observatory, the Science Museum, and the Astronomy Centre. We've also organised several evening trips to meet up with fellow Societies, like the Mansfield & Sutton Astronomical Society and the Derby & District Astronomical Society. Not surprisingly, in recent years the Equinox Sky Camp has also become a major event with members.

From almost the very beginning, members have received a monthly Newsletter that gives details of up and coming astronomical events, and Society news. Articles and observations that have been written by members are occasionally included in the Newsletter, and are of great interest.

IDAS also promotes astronomy to the wider community, and has done so since its inception. Exhibitions and public observing sessions are our main activities. We have helped out at Shipley Park's *Night Watch* event for well over a decade now, and when the weather has been kind to us, members

have had the opportunity to show the public the wonders of the night sky. This event has always been popular, and often attracts large crowds. We'll be helping out once again in 2002.

Even though IDAS has remained fairly small in size (at around 20 members), our membership is not only lively and enthusiastic, but also very friendly as well. Members range from complete beginners, to armchair astronomers, through to knowledgeable seasoned amateurs. In short, everyone with an interest in astronomy is most welcome.

To mark the achievement of reaching our 21st year, we will be holding a very special Birthday Convention on Saturday, May 11th 2002. The event will be held at the Heanor Welfare Centre, Wilmot Street, Heanor, Derbyshire. Four Guest Speakers are currently being arranged, and we hope to invite several trade stands to the event. We'll also be holding a raffle in aid of Society funds. Advance tickets are £5 each, and can be purchased by sending payment (cheques made payable to "Ilkeston & District Astronomical Society") and an SAE to IDAS treasurer Harry Bingham, 38 Broadway, Heanor, Derbyshire, DE75 7GW. Further details will be published soon, but you can find all the very latest information about the event on our website at the following address:

<http://members.aol.com/idasastro/index.htm>

If you want further information about IDAS, please contact Mary McNulty (Public Relations Officer) on 01298 78234, or Mark Thomas (Secretary) on 0115 8490724 (email: [idaswmt1@aol.com](mailto:idaswmt1@aol.com)).

## Get closer to Mars during National Astronomy Week 2003!

As we teeter at the beginning of 2002, August 2003 seems quite far away, but put a date in your diary now. National Astronomy Week will run from August 23rd to August 30th 2003. During this week, on Wednesday, Mars will be at its closest to Earth since records began, certainly since the invention of the telescope. It will be at just under 56 million km, 21,500 km nearer than the last close approach in 1924, at 10.00UT August 27th. From August 23 to 31, Mars will be larger than 25 arcseconds.

The co-ordinator for NAW 2003 will be the Herstonceux Science centre, and already we have a web page (<http://www.astronomyweek.org.uk>). The Astronomer Royal, Professor Sir Martin Rees and the Astronomer Royal for Scotland, Professor John Brown have agreed to be our patrons.

The purpose of NAW is to give all kinds of astronomers the opportunity to publicise themselves, with co-ordinated publicity. So if you want to promote your society, start thinking about it now. Let us have the dates of any events you organise to put up on the website and please feel free to link to our website.

The general public will be very interested in this event, so use this fact to promote your society!

Pam Spence  
Chairman NAW 2003,  
Vice-President, FAS

## Wanted

Books as follows:

1. Nortons Star Atlas, 1st edition only
2. Nichol, "The Planet Neptune"
3. Books by N. Lockyer
4. Ledger, "Sun, its Planets and Satellites"
5. Proctor, "Great Pyramid"
6. Hubble, "Realm of the Nebulae"

Contact Eddie Carpenter on 01454 294561

## SOCIETY NEWS ROUND UP

### ABINGDON AS

Meetings at 8.00 pm in the Methodist Church Hall, Dorchester Crescent, Abingdon. Further details from Bob Dryden, 01491 201620, or Sebastian Linfoot, 01865 725094. Website [www.abingdonastro.org.uk](http://www.abingdonastro.org.uk)  
11th Feb, The Search for Dark Matter, Stephen Parkinson  
11th March, Nicholas Copernicus 1473-1543, Dr. Allan Chapman.  
8th April, Space Weather, Dr. Mike Hapgood.

### BIRMINGHAM AS

Lectures to be held at Aston University, Room 146 at 7.30pm.  
29th January, The Green Flash, Mike Frost  
26 February, TBA  
15th March. Skywatch at Lickey Hills Environment Center.  
19th March, TBA  
30th April, The Origin and Structure of Planets, Dr. Mike Leggett

### BRADFORD AS

Lectures held at Eccleshill Library, Bradford at 7.30 pm. For details call 01274 573210 or 01274 672570, or see website at [www.bradford-astro.freeserve.co.uk/index.htm](http://www.bradford-astro.freeserve.co.uk/index.htm)  
4th Feb, Probing the Universe - the Birth of Massive Stars, Dr. Rene Oudmaijer  
18th Feb, Galaxies, Dr. Philip James  
18th March, Helio-Seismology, Dr. Roger New  
8th April, Colonising Mars, Robert Williams  
22nd April, Paul Money

### BRISTOL AS

Meetings held on Friday evenings at 7:15pm at Univ. of Bristol Physics Dept. Tyndall Avenue, Bristol. Contact Andrew Grasmann, 01275 545212.  
1st Feb, History of the Royal Greenwich Observatory, Dr. George Wilkins.  
15th Feb, AGM  
1st Mar, Observing the Moon with modest equipment, John Pedlar  
15th Mar, The Asteroid Threat, Hon. Lembit Opik M.P.  
26th Apr, The Origin of Star Names, Mark Hurn.  
10th May, The introduction of GMT-Time signals to Bristol and beyond. Julian Lea-Jones.

### CARDIFF AS

Meetings alternate Thursdays, September to July, 7.30 pm. at Dept of Physics and Astronomy, Univ. of Wales, 5 The Parade, Newport Road, Cardiff. Contact David Powell (secretary), 029 2055 1704. Email [CAS@ilddat.demon.co.uk](mailto:CAS@ilddat.demon.co.uk).  
Web site: [http://carina.astro.cf.ac.uk/cas/cas\\_home.html](http://carina.astro.cf.ac.uk/cas/cas_home.html)  
31st Jan, Science V Science Fiction, Martin Griffiths  
14th Feb, Astronomy In Arizona, Martin Chick  
28th Feb, Observing Asteroids And The Outer Planets, Andy Hollis  
14th March, I Love Comets, Rod Jenkins  
28th March, Solar System Mysteries, Dr Barrie Jones  
11th April, Annual General Meeting  
25th April, Meteorology Of The Earth And Other Planets, Dr Damian Wilson  
9th May, Thomas Cooke Telescope Maker, Martin Lunn

### COTSWOLD AS

Meetings at Shurdington Church Hall, Shurdington, Cheltenham. Contact Duncan Willoughby 01452 416405.  
Website now [www.cotswoldas.org.uk](http://www.cotswoldas.org.uk).  
9th Feb, Cosmological Conundrums, Peter Cadogan  
9th March, Members Talks,  
13th April, AGM.

### EASTBOURNE AS

Meetings begin at 19.30, at Willingdon Memorial Hall, Church Street, Willingdon. Further details may be obtained from Peter Gill, 18 Selwyn House, Selwyn Road, Eastbourne, East Sussex BN21 2LF (tel. 01323-646853).  
2nd Feb. The Dark Side of the Universe, Iain Nicolson  
6th Apr. Heating of the Sun's Atmosphere, Prof. Ken Phillips  
11th May. Astronomical Imaging from La Palma, Nik Szymanek & Ian King.

### HAVERING AS

Meetings held on 3rd Wed. of the month at the Cranham Community Centre, Marlborough Gardens, Cranham, from 7.30—9.30 p.m.  
Young Astronomers Club meetings held on 3rd Thurs. of the month at 133 Severn Drive, Upminster. Observing sessions, and talks/visits.  
Contact Frances Ridgely 01708 227397.

### HUDERSFIELD ASTRONOMICAL & PHILOSOPHICAL SOCIETY

Weekly meetings and lecture programme. Contact Lisa Jeffries, tel. 660773, email [l.b.jeffries@hudd.ac.uk](mailto:l.b.jeffries@hudd.ac.uk), or Robert Williams (Observatory events) 348754, email [robert.williams19@ntlworld.com](mailto:robert.williams19@ntlworld.com), or Paul Harper, 606832.  
1st Feb, Planetary Nebulae, Prof. John Dyson  
1st March, Chemistry of the Universe, Robert Williams  
29th March, The Landscapes of Mars and Earth, Dr. Lance Tufnell

19th April, The Galactic Centre a Hidden Treasure. Dr. Susan Cartwright

### HULL & EAST RIDING AS

Meetings held at Wyke College, Grammer School Road, Bricknell Avenue, Hull at 7.30 pm. Further details from Tony Scaife (President) 01482 668665 or Helen Marshall (Secretary) 01482 443397.  
4th Feb, The Herschel 400, Jim Commell  
4th March, Astronomical Record Breakers, Gerry Wilks  
8th April, AGM / Quiz or slide show.

### ILKESTON & DISTRICT AS

Meetings take place at 7:30pm in the function room, Erewash Museum, Anchor Row, Ilkeston, Derbyshire  
Further details from Mary McNulty, 01298 78234  
12th Feb, Video Presentation, Mark Thomas  
12th March, Project Daedalus, James Ince  
9th April, Les Jepsen  
14th May, Meteors, Dennis Ashton

### KNOWLE AS

KAS membership has grown to 38 since its formation in April 2001. A display mounted by the Society in the local library attracted several new members. Our first star party, in November, was well supported, and a second, at a dark site at Preston Bagot, Warwickshire, enjoyed clear skies and good viewing. The year ended with a convivial social evening, with Members competing in an astronomical quiz, the prize being one Mars bar! Meetings are held on the first Monday of each month at 7.30pm at Dorridge Methodist Hall, Mill Lane, Dorridge, Solihull.  
For details call either 01564 775111 or 01564 772617  
4th Feb, We are Not Alone, Neil Haggath  
4th March, Origin and Structure of Planets, Mike Leggett

### LEEDS AS

Meetings held at Centenary House, North Street, Leeds, Doors open from 7pm. For Further Details please visit the Society's Website on [www.astro.leeds.co.uk](http://www.astro.leeds.co.uk)  
13th Feb, Meteorites and their Detection, Dr Chris Trayner  
13th March, Large Telescope Mirrors - personal experiences of the making of some of the World's Greatest Telescopes, David Sinden  
10th April, A New Infra Red View of the Universe, Paul Money  
8th May, Solar Ejection of Huge Plasmas, Prof. G Simnett

### LIVERPOOL AS

February 16th and 17th - LAS Public Star Party at Croxteth Park and Hall 6.30 to 9.30 pm. Entrance £1 via Croxteth Hall Lane only. Contact Chris Banks: 0151 547 3459. Full details on LAS website: <http://www.liv.ac.uk/~ggastro/home.html>

### MANCHESTER AS

Lectures in Room RE7 of the Renold Building, UMIST, Sackville Street, Manchester, commencing at 7.30pm  
Contact Kevin Kilburn, 01625 572453, [kkilburn@globalnet.co.uk](mailto:kkilburn@globalnet.co.uk)  
21st Feb, Astronomy, Telescopes and Beer Drinking William Lassell 1799-1880, Gerard Gilligan  
21st March. Astronavigation, Capt. John Percival.  
18th April. Annual General Meeting.

### SOUTH STAFFORDSHIRE AS

Meetings are on the third Tuesday of the month, 8pm – 10pm, at Bloxwich Church Hall, All Saints Church, Elmore Row, off High Street (A34), Bloxwich, West Midlands. Further details from Phil Burgess, Secretary, SSAS, 136 Coronation Road, Great Barr, Birmingham B43 7AX or from the Society's Web Site at: <http://www.ssas.f2s.com>  
19 Feb, The Deep Sky, Phil Burgess  
19 Mar, The Dead Astronomers Society, Stuart Williams  
16 Apr, The Solar System, Andrew Lound  
21 May, Solar Observing

### SOUTHAMPTON AS

Meetings at the Seminar Room, Floor 5, Physics and Astronomy Building 46, University of Southampton, at 7-30 pm, on the 2nd Thurs of the month. Contact: John Thompson, 4 Heathfield, Hythe, Southampton, SO45 5BJ. Tel 023 8084 2531, e-mail: [John.G.Thompson@tesco.net](mailto:John.G.Thompson@tesco.net), Website:- <http://home.clara.net/lmhobbs/sas.html>  
14 Feb, Victorian Alchemists and Giant Telescopes, Robert Warren  
14 March, Our Vital Moon, Robin Gorman  
11 April, Apollo Moon Landings - Up Close, Phill Parker  
**WOLVERHAMPTON AS**  
Meetings at 7.30 pm at Beckminster Methodist Church Hall, Birches Barn Road, Wolverhampton. Further details Michael Bryce, 01562 742850, [secretary@wolvast.org.uk](mailto:secretary@wolvast.org.uk), website [www.wolvast.org.uk](http://www.wolvast.org.uk).  
4th Feb, Cosmology  
18th Feb, Introduction to Radio Astronomy, Chris Evans  
4th March, Observing Jupiter and Saturn, Sydney Crump  
18th March, The Oort Cloud, Frank Barretto  
8th April, The History of Telescopes, Roger Jones  
13th May, Is there life on Mars ?

## LIST OF OFFICERS 2001/2002

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See front cover for details

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**Treasurer:** **Peter Cooke,**  
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**North West Group :** **Ron Kelley**  
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**West Midlands :** **Andy Salmon**  
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**Devon Group :** **John Parratt**  
See Publicity Officer above

**East Anglia Group :** **VACANT**  
**SAGAS Rep:** **VACANT**

### FAS Publications

The FAS 'Astrocalendar 2002' is now available, along with a new layout/printing of 'Observational Astronomy', the ideal beginners guide to observing the heavens. Quantity pricing is available at [http://www.fedastro.freemove.co.uk/publications/members\\_prices.html](http://www.fedastro.freemove.co.uk/publications/members_prices.html)

Astrocalendar 2002	£1.40 + C5 SAE with 33p stamps
Observational Astronomy	£2.00 + C5 SAE with 33p stamps
Using a Telescope	£1.80 + C5 SAE with 33p stamps
Step by Step Astrophotography	£1.30 + C5 SAE with 27p stamps
Choosing a Telescope or Binoculars	£0.60 + C5 SAE with 27p stamps
FAS Handbook 2001 (Current issue)	£2.00 + C5 SAE with 44p stamps

FAS Handbook 2002 should be out in the Spring and is priced at £3.50 + C5 SAE with 44p stamps. Each paid-up Society will get one free as part of their subscription. It is normally sent to the contact shown in the Handbook.

Queries are usually easier via e-mail to the Publications Secretary:

[publications@fedastro.org.uk](mailto:publications@fedastro.org.uk)

### Advertising Space

Small adverts for members and their societies are free. For adverts of a more commercial nature we can provide up to A5 landscape size in area for a small fee.

The newsletter has a circulation over 4000 to a specialised readership.

Contact the Editor for details.

### ASTROFEST 2002

The FAS will have a stand at this years Astrofest which is on the 8th and 9th of February. If you are visiting Astrofest this year please stop by and say hello.

### Membership Changes

Remember to send society contact changes to the Membership Secretary, Jack Climpson (see above).

### Deadline for submission for next newsletter, 31st March 2002

Please remember to send ALL articles to the Editor, Callum Potter. Regrettably material can only be returned if supplied with a SAE.