From the President

It gives me great pleasure to introduce the 38th Journal of the ASE. I would like to thank the contributors and, in particular, Dave Gavine for his significant work in continuing to provide the editorship and production of this publication.

Having recently taken over from Jim Nisbet as President, I would like to thank Jim who has amazingly executed the double role as both President and Treasurer over the past two years. I am pleased to say that he has agreed to continue as Treasurer, his prudence being more famous than that of the Chancellor of the Exchequer!

Graham Rule is continuing to represent the Society on the Calton Hill Advisory Group set up to look at all aspects of future developments on the Hill. We will continue to keep you informed at meetings should any significant issues arise. Unfortunately the Society was not in a position to have its usual Open Day during the Science Festival owing to the state of the Playfair Building while essential repairs were taking place.

Council meetings and after-meeting refreshments continue to take place in the City Dome while the repair work continues. The resolution of the dry rot situation within the library is progressing and I am glad to report that we will be able to go ahead with the Open Doors Day on 26th September this year.

In addition, an exhibition on Astronomy is being organised for the summer by Jamie Shepherd. The main theme of the exhibition will be a display of genuine meteorites. Jamie has acquired a particularly superb meteorite for the Society through a donation from a collector in the USA

Although the Summer Solstice has recently occurred and the light evenings make observing the night sky more difficult, remember that the observatory is still open most Friday evenings. You will be able to borrow a book, look through a telescope or simply just chat about astronomy with other members.

Another exciting thing on the horizon, we are currently negotiating with the NERC the setting up of a dark site observing centre at Earliburn, a few miles south of Edinburgh. It is hoped to organise observing parties on a regular basis to allow more effective observing to take place away from the City Centre.

What draws many of us to Astronomy are the variety of different areas that everyone can get involved in. The ASE will help you to fulfil your interest whether it is in observing the Planets, the Moon, the Sun, nebulae, galaxies, star clusters, comets, meteors, satellite tracking, space-flight, telescope making, Aurorae, NLC's, eclipses, occultations, variable stars, double stars, astro-photography, or just plain old star-gazing.

Alan Ellis

Eric George Crisp

An Appreciation

We are very sorry to have to report the passing in April of Eric Crisp at the great age of 96. Eric was always so robust that we expected him to make the century, but it was not to be. Unbelievably he was still cycling, but had an accident around November and this led to his decline in health. He was our oldest member and one of the longest serving, having joined our Society in 1946. But he had to return to London in 1950, and came back to Edinburgh in 1961 when he re-joined. He was also the second longest serving member of the BAA, having joined it in 1922. He became a member of our Council in 1969 and served as President 1973-75. He was not only an assiduous attender at our meetings until shortly before his death but was a regular supporter at the Scottish Astronomy Weekends.

Eric's interest began through his Geography master at school and he was one of the few people to have seen Halley's Comet twice: he saw it in 1910 when he was eight. In 1986 he went to Tenerife with the Explorers' Travel Club to see it again in a decent sky. The previous year he made a tour of Western American Observatories with the Club. He described his adventures in our Journal No.21.

It was unfortunate that the intimation of his death appeared in the press on the day of his funeral so that no representatives from the Society could attend, but we all miss Eric and send condolences to his family and friends.

Recent Observations

Unfortunately we have suffered more than the rest of Britain from prolonged East coast haar, cloud and rain, especially in May and June, so observations have been few and far between.

Aurora: On May 2/3 2240-0130 UT a brightening homogeneous arc was seen at Joppa, it became an active rayed band with faint rays at 2355. It was best seen as a fine rayed band in the clear skies of Bute by Lorna McCalman. Faint light was seen the following night.

Noctilucent Cloud: A poor season so far because of cloud. John Bartholomew, Dave Gavine and Jamie Shepherd saw a moderate but low display on June 16/17, a faint NLC appeared on 17/18, but on 26/27 a spectacular show of strong bright billows up to 60 was watched by John, Dave, Lorna, Alan Ellis and Graham Rule until it clouded over at 2310. NLC were also seen in cloud gaps on July 9/10, 23/24 and August 3/4

Popular Meteorology Class

Dave Gavine begins a class in elementary Meteorology (No Hard Sums or difficult Physics, no tests, exams or whatever) at Jewel and Esk Valley College, Milton Road Centre, on Monday evenings for 8 weeks, beginning on October 5. The class runs from 6-30 to 9-00 PM. Don't know the fees yet - there will be concessions. Just turn up on the first night to enroll. More information from Dave at 29 Coillesdene Crescent, Edinburgh EH15 2JJ, phone 657 2338.

Thomas Henderson 1798-1844

Scotland's First Astronomer Royal

Of all the Astronomers Royal for Scotland, only 3 were Scots, and of these 2 were born in Dundee - Thomas Henderson and Malcolm Longair. Henderson was born on 28 December 1798, the younger son of a tradesman, and educated at Dundee Academy under Thomas Duncan, rector, (later Professor of Mathematics at St Andrews) where he showed a great aptitude for mathematics and science. At 15 he entered a Dundee law office, was promoted to Edinburgh, and eventually became Secretary to the Earl of Lauderdale then to the Lord Advocate.

In Edinburgh he had access to the Observatory of the Astronomical Institution on Calton Hill, which was frequented by various city notables and gentry, and was encouraged by Professors William Wallace and John Leslie to use the modest instruments. On frequent visits to London on legal business he made friends with several astronomers including G. B. Airy, John Herschel and Sir James South who gave him full use of his observatory at Camden Hill. But Henderson had poor eyesight, perhaps a squint, and decided to concentrate on mathematical astronomy rather than observing. In a number of papers he

demonstrated computational methods used in Germany but not then common in Britain, and began to be noticed by the astronomers of the Nautical Almanac, Board of Longitude and the Royal Astronomical Society. In 1830 he compiled a list of moon-culminating stars (for determining longitudes by lunar distances) for Sir John Ross's Arctic expedition.

He was turned down as a candidate for the vacant Chair of Astronomy at Edinburgh, (it was under threat of abolition, the previous incumbent, Robert Blair, having treated it as a sinecure for 42 years) and as Superintendent of the Nautical Almanac, but friends persuaded him to accept the post of Astronomer at the Cape of Good Hope. From April 1832 to May 1833, with one assistant, Lieutenant Meadows, and with indifferent instruments, he carried out a prodigious observing programme including a catalogue of the positions of southern stars, estimates of the distance of the sun and moon and observations of comets.

At the Cape he began observations of the exact position with respect to the surrounding stars of the bright star Alpha Centauri which a fellow astronomer had pointed out to him had an unusually high Proper Motion, i.e. its movement against the sky background, although in itself this was very tiny. Henderson surmised that it might be a close star. However, he resigned in 1833 with his health shattered and having had enough of the "dismal swamp" among "slaves and savages".

He returned to Edinburgh, subsisting on a small pension from his legal firm, and calculated his Cape results. The position of Alpha Centauri showed a residual error of about one second of arc (1/3600 of a degree, or 1/1800 of the moon's angular diameter) which was confirmed by observations of the star at the Cape by his successor Thomas Maclear. This was concluded to be the angle of parallax of the star against the background of distant stars, caused by the motion of the earth round the sun, and therefore the first estimate of the distance of a star at about 3.25 light years. (A later measurement gave 0.75 seconds of arc, at about 4.5 light years.) However, the great German mathematician Friedrich Wilhelm Bessel of Konigsberg, working independently and with a much superior instrument and a different method, announced a parallax for 61 Cygni, a somewhat more distant star in the northern hemisphere, 2 months before Henderson, and thereby got the Gold Medal of the Royal Astronomical Society and all the credit. Henderson had been cautious because his instrumentation was suspect, he needed confirming observations and he feared ridicule because false parallaxes had been announced before. Despite this Henderson and Bessel became friends and even holidayed in Scotland together.

In 1834 the Astronomical Institution of Edinburgh was in financial trouble. It was arranged that the Calton Hill Observatory be taken over by the government to run as a state establishment with the Observer to be jointly Regius Professor in Edinburgh University and Astronomer Royal for Scotland. Henderson was duly elected, supported by his many distinguished friends, and during the last 10 years achieved another prodigious workload with the help of his assistant Alexander Wallace, although he did very little teaching. He made some 60,000 observations, which amazed his successor Charles Piazzi Smyth, and many were published in the first volumes of The Edinburgh Astronomical Observations, but later errors were found, caused by the irregular thermal expansion of the stone pillars of the Fraunhofer transit telescope. He was a Fellow of the Royal Societies of Edinburgh and of London, but never took a degree.

But the daily climb up the hill from his official residence at 1 Hillside Crescent, and the death of his wife in 1842, were too much for a frame already weakened by heart disease. He died on 23 November 1844 and is buried in an almost forgotten corner of Greyfriars Churchyard. There is a memorial tablet to him on the west side of the Playfair Building. No proper portrait of him is known to exist.

You will have noticed that this is a special year - the 200th anniversary of Thomas Henderson's birth.

Dave Gavine

Meteor Notes

A combination of poor weather and unfavourable moonlight conditions has resulted in very few meteor observations in the Northern Network area during the first half of 1998. However, we can only hope that things will pick up over the coming months as the late summer and autumn showers arrive, for there are a number of potentially exciting events on the meteor front.

The August Perseids are one of the year's most reliable showers, and their recent enhanced activity has raised their popularity even further amongst amateur observers. The 'new' activity peak which began to appear in the late 1980s and early 90s occurred about twelve hours ahead of the 'traditional' maximum, and at its most intense produced zenithal hourly rates of up to 200 - considerably higher than the Perseids' typical peak of 80 to 100 meteors an hour. Since 1996, the enhanced activity - associated with the shower's parent comet, Swift-Tuttle, which last returned in 1992 - has become much less prominent, and will presumably soon fade back into the normal background of activity. In 1998, the shower maximum is predicted for the late evening of August 12th, so best rates should be seen overnight into the morning of the 13th. There will be a certain amount of interference from a waning gibbous moon, but dedicated observers should still be rewarded with a good number of meteors. As the Moon moves further into the morning sky over the succeeding nights, the declining activity of the shower may be followed under dark skies with watches in the first part of the night. [The night of 11/12 was cloudy, but Dave Gavine saw 26 Perseids and 5 sporadics in 2 hours on 12/13.]

September is often ignored by many meteor observers, yet reasonable rates may be had from the minor alpha Aurigid and Piscid showers, complemented by the rise of the background sporadic rate during the autumn months. A lot of attention, though, will certainly be directed skywards at the start of October, with the possibility of an outburst from the Giacobinids on the night of October 8th/9th. This shower doesn't usually rise much above the sporadic background level, but has produced spectacular short-lived storms when its parent comet, Giacobini-Zinner, makes one of its 6.6-year returns. The comet is at perihelion on November 21st, so 1998 could be one of those memorable years!

October's best-known shower, the Orionids, is composed of dust particles from Halley's Comet. It is particularly well-placed with respect to moonlight this year, with the October 21st maximum falling just one day after New Moon. Orion rises late in October, so this is one shower that gives best results if observed after midnight. From mid-October right through to until the end of November, there's also activity from the Taurids, which reaches a broad peak around November 3rd, and again around November 13th. Rates are never particularly high, but the slow-moving meteors are attractive to observe.

The highlight of the meteor observer's calendar this year will undoubtedly be November's Leonids. As is probably well-known by almost every amateur astronomer, this normally modest shower puts on a 'storm' of activity roughly every 33 years, when its parent Temple-Tuttle visits the inner solar system. The comet was at perihelion earlier this year, and the resulting enhanced activity is predicted for either 1998 or 1999. The Earth crosses the comet's orbit - and the path of the meteor particles - late on November 17th, 258 days

after the comet itself passed that point. Predicting the actual time of any possible storm is difficult; observations of increased activity in recent years suggests it may occur over eastern Europe. However, the only way to guarantee catching the storm - if it happens - is to keep watch throughout this very important night! The famous outburst in 1966, which produced tens of thousands of meteors, lasted for only 40 minutes - don't expect to be able to glance out of your window at any time and see "meteors falling like snowflakes"! There's still a lot to find out about the distribution of dust around Temple-Tuttle, and its relationship with the meteor stream, so this is one shower that offers us no certainties.

The last major shower of the year, however, is one of the old reliables. The Geminids are active during the second week of December, with the 1998 maximum predicted for the early hours of December 14th. The Moon is well out of the way, being new on December 18th, so an overnight watch on the 13th/14th should be most productive. The high radiant and long hours of darkness combine to produce one of the finest meteor observing sessions of the year.

Brian Kelly Brian Kelly is Northem Coordinator for the BAA Meteor Section. He welcomes observations and correspondence, which should be addressed to him at 13 Rowanbank Gardens, Broughty Ferry, Dundee DD5 2JW. He can also be reached via e-mail at b.kelly@dundee.ac.uk

Farewell to Duncan Waldron

Best wishes from the Society to Duncan who has moved a little out of the Society's "catchment area". The cloud, rain and cold of Scotland finally got too much for Duncan and Heather and they have moved with Mark and Lynsey to Australia. We will miss Duncan's enthusiasm for (and expertise in) astrophotography and his readiness to speak at Members' Night.

CCD Imaging with the Pictor 216

As anyone with an active interest in astronomy knows, CCD cameras seem to be all the rage these days, and many of these devices are advertised as being easy to use and virtually "plug in and play" systems. Having used one such camera for over a year now, I want to present a realistic and practical picture of some of problems associated with CCD imaging.

Most readers will have seen CCD images published in magazines, in particular the planetary images taken by Don Parker, and been amazed at the quality. However, I would suggest that the quality of Parker's images say more about the quality (and aperture) of his telescope optics and tracking accuracy than the camera and the technique of using it. Producing high quality CCD images provides a severe test of the telescope mount, drive system, polar alignment and optics which should not be underestimated.

In particular, I believe that the tracking accuracy of the telescope (which includes alignment of course) is the most important factor, and since most of us probably have portable set-ups, this is the area which is least likely to be up to scratch. When using the Pictor 216 in focal plane imaging in an f 10 telescope, one pixel in the CCD array corresponds to about one arc second of sky. Thus, to get pin- point (faint) star images covering no more than say four pixels, the telescope must track to about two arc second accuracy over the duration of the exposure, which may be anything up to five minutes. Any deviation from this degree of accuracy degrades the image, and at the least it looks out of focus. Such accuracy really requires very careful polar alignment coupled with an accurate drive system fitted with a drive corrector.

The camera image itself is of course acquired by computer. To organise a night's imaging, I need to set up the telescope on the mount, provide power to it and the camera, set up the computer outside (with power and shelter) and plug the camera into the computer. In addition, it is necessary to take flat-field calibration images each night, so a portable light-box which attaches to the telescope (which you need to fabricate yourself) is also needed, with power. Setting all of this up in the dark can be a serious deterrent unless a whole night's viewing is in prospect. As you can see, "plug in and play" is something of a misnomer.

The computer itself is worthy of comment. Having acquired the image, it must first be calibrated and then processed to get good quality. This requires some serious computing power, both in hardware and software. The bottom line is to avoid endless waiting time and frustration, a fast Pentium with plenty RAM and a powerful image processing program like

Photoshop is virtually essential. Certainly, the processing package that is supplied with the Pictor is quite inadequate.

You may be thinking by now that this all sounds pretty daunting, but all the comments made regarding the telescope are just as relevant to conventional photography, and indeed the constraints on your set up apply equally to photography and imaging. If you can't take clean and sharp photographs through your telescope, then you won't be able to take sharp CCD images either. The only possible exceptions to this are the moon and brighter planets, where CCD exposure times are very short. I can image Jupiter in an 8" SCT at f25 in about 40 milliseconds, and the exposure times for the moon are so short that a neutral density filter is really required to avoid over-exposure, even at the shortest exposure the camera can take of 4 milliseconds. Nevertheless, a high degree of tracking accuracy is still very desirable so that successive images still have the object in the field of view. At f25, the field in the Pictor 216 is only about 3 arc minutes wide, and any significant drift means constantly hand correcting the object back onto the centre of the CCD chip.

Let's suppose that you have ironed these problems out - what's actually involved in obtaining a good quality CCD image on your computer monitor?

You begin by instructing the camera to take an image via the camera software, and when the exposure time is completed, a raw image appears on the screen. This image is actually composed of three elements. The target object itself generates an image because light from the object striking the pixels in the CCD array generates an electric charge in each pixel which is proportional to the amount of light striking it. Charge also builds in the pixels from two other sources, and can be considered contamination of the image. These sources are the thermal image and the bias image. The thermal image is produced by the spontaneous generation of electrons in each pixel by heat, and the intensity of the thermal image is directly proportional to the exposure time and the temperature of the array. CCD cameras are generally cooled to at least 20 C below ambient to keep the thermal image to a minimum. The bias component is caused by electronic noise from the camera electronics, and can be considered to be an exposure of zero time duration. These two components are often dealt with together and are then called dark current. The dark current image is therefore an image taken with the same exposure time as the raw image, but with the telescope optics covered so that no light reaches the CCD chip. There is one further source of error in the raw image. Each pixel has a different sensitivity and this needs to be evened out, particularly with high resolution planetary work. This is known as flat- fielding, and requires you to take an image of a uniformly lit field. The best way to do this is to construct a light-box which illuminates a piece of milk plastic and fits over the end of the telescope. The flat-field image also cancels out the effects of vignetting and dust spots which may be registered during the raw image exposure, but in order to do this, a new sequence of flat-field frames must be taken each time the camera orientation is changed with respect to the telescope optics.

I usually begin a night's imaging by choosing an object to image, and concentrating on obtaining a series of images of that object. Using a high power eyepiece, I visually centre the object in the field of view of the telescope, and begin tracking it. The eyepiece is then replaced with the camera, and a number of trial exposures and adjustments made until the object is centered on the CCD chip, and accurately focussed. Once this is achieved, I

attach the light-box to the telescope and take 3 flatfield frames followed by a dark frame and store these images on the hard disc. Having checked that the object is still centered, I then take alternate images of the object and dark current (generally 9 of each) and store them. Given that the raw images of the object look acceptable, I will then try to locate the next object without moving the camera, so that the flat field frames can be used to process the new image as well. It is advisable to take a further 3 flat-fields in the middle of the session, and 3 more at the end, making 9 in all.

Having completed a night's imaging, and having dismantled all the gear, I have saved 9 frames each of the object, the dark current and the flat-field on hard disc. The next step is to calibrate the image. Image calibration is done by the camera software, and basically involves subtracting the dark current frame from the raw image, and dividing the result by the flat-field. However, if only one support frame is used, it tends to introduce random noise into the image, so it is much better to average a number of support frames to create a master dark and a master flat field and then calibrate the raw image with them. Random noise is reduced as a function of the square root of the number of frames averaged, so by making a master dark frame from 9 individual frames, noise is reduced 3-fold. So, I make a master dark and subtract it from the raw image, and divide the result by the master flat field. The resulting calibrated image is saved and is now ready for processing.

Image processing includes sharpening, unsharp masking, contrast enhancement and high/low pass filtering and is best performed by a program like Photoshop. The details of processing are beyond the scope of this article and are obviously dependent on the software used. However, processing is a very powerful tool, and enables images to be greatly enhanced. It is possible to obtain images fainter than sky background, and to image stars in an 8" telescope down to magnitude 20 within 5 minutes.

I began this article by stating that CCD imaging is not a plug-in-and-play system, and no doubt you will have understood what I mean by now. However, it is also true to say that finding and observing visually a 3 arc-minute magnitude 13 galaxy, or obtaining high resolution photographs of Saturn do not fall into that category either. Of all the pros and cons of CCD imaging, there is one big plus for me: on the wind-swept, wet nights following an imaging session, I'm still doing astronomy with lots of image calibration and processing to do.

Charlie Gleed

Hypersensitisation of Photographic Film

Recently, the Society purchased equipment to enable us to make hypersensitised film. For long exposure deep-sky photography, this is essential and this article will attempt to explain why we need it, how it's made and how to use it.

Any literature on this subject will tell you that hypersensitisation is a process which removes a phenomenon known as low light intensity reciprocity failure from photographic film, combined with an actual increase in film speed. To understand what this means, we need to know what reciprocity itself is. It has been stated that the density of an image recorded on photographic film is simply the product of time of exposure and the intensity of the light striking it i.e. time and intensity are reciprocals of each other. However, this was found to be incorrect in practice. Unfortunately for astrophotographers, this relationship only holds for exposure times that are short, typically faster than 1 or 2 seconds. For exposure times longer than this, the relationship breaks down and we have reciprocity failure. If we double the exposure time, we ought to double the image density on the film - reciprocity failure means that this does not happen and in fact in my own experience of black and white film, about 50% of the image density in a 40 minute exposure is generated in the first 5 minutes or so and the last 10 minutes may only be contributing 5 or 10%. Hypering reduces or completely removes this effect, and the image density increases in a linear way with exposure time. In addition, a significant increase in film speed can be achieved by a process termed reduction sensitization.

There are several documented ways of hypering film, but we are involved in two - vacuum treatment and hydrogen soaking. These methods were developed by Eastman Kodak researchers in the 1970s in response to the demands of professional astrophotographers.

It has been established that reciprocity failure is almost entirely due to the presence of oxygen and water vapour absorbed into the photographic emulsion. These so-called contaminants are removed by subjecting the film to a vacuum for a period of time. The time this takes depends on the depth of the vacuum, which in turn is obviously dependent on the vacuum pump and how gas-tight the system is. We are using a Jigtool mechanical pump with a modified paint-spray pressure pot to hold the film, and 2 or 3 hours appears to be sufficient. Once the film has been treated in this way, the hypering gas can be admitted to the pressure pot, to chemically sensitize the film. The procedure that follows depends on several variables, and while guide-lines can be found, each individual system needs to be optimised. Properly hypered film is dependent on time, temperature, pressure and percentage of hydrogen, and these differ for different films. With our system, using 10% hydrogen/90% nitrogen as the hypering gas, Kodak Technical Pan 2415 should exhibit a speed gain of around x8 after 8 hours at + 15psi at 60 C.

With clear skies at a premium in Scotland (particularly this winter), we don't want to be wasting dark sky time testing film by trial and error, so it is fortunate that other astrophotographers have established that TP 2415 is sufficiently "cooked" when a developed strip of unexposed hypered film shows an increase in chemical fog over base fog of 0.3 to 0.7, base fog being measured on a strip of unexposed, unhypered film. We can measure this approximately against a standard step wedge.

TP 2415 can be stored after hypering for a few days at room temperature without losing its speed, or for several weeks in the deep freeze. Colour films are less forgiving and should be used fresh.

Exposure times are typically 30 - 60 minutes at f 6.3.

TP 2415 can be developed in a number of different ways, but the accepted and almost universally used developer for hypered film is Kodak D-19. Typical times for stock solutions are 5 to 8 minutes at 20 C. It has been reported that D-l9 gives film speeds between x2 and x4 faster than Kodak HC110 developer when using hypered TP 2415.

At least until we have the method established in a routine way, I will be doing the hypering myself. Courtesy of Lorna McCalman, Castle Photographic at the Mound are now keeping TP 2415 in bulkloaded form, and a cassette of 12 exposures can be bought from them at a very reasonable price. The Society will be charging. around 50p a roll for hypering to cover the cost of gas etc. Once dark skies are with us again, I intend to establish a methodology for hypering a range of colour print and slide films too. So get those cameras out, and make it snappy!

Charlie Gleed

Society News

The first thing I have to do here is apologise for the late appearance of this edition of the Journal. Dave Gavine gave me most of the material over six weeks ago and it has taken me until now to get it ready for printing. On the other hand I hope that you will agree with me that the new 'Desktop Publishing' look was, almost, worth the wait. An on-line copy of this edition is also on our Society Web Pages at http://www.roe.ac.uk/asewww/ so it will get a slightly larger readership than before.

In his piece at Alan mentions the exhibition of Meteorites "Rocks from Space" to be held during the festival at the Observatory. Jamie Shepherd and Duncan Johnstone have put in an enormous effort and have come up with a truly spectacular display that is well worth a visit. It is open from noon until 5pm until August 31st so try to get up an see it - and tell all your friends about it, of course.

Even if you can't make it during the festival the exhibition will be kept in place until our Open Day on 26th September. This has been planned to coincide with the Doors Open Day run by the Cockburn Association so we hope to have a lot of visitors that day who may look round the Playfair Building, view the exhibition, and (if they are interested) hear some short talks on astronomy by members of the Society in the City Dome. If you feel like volunteering to give one of these small talks please get in touch with Jamie (or Duncan, who is assisting him in arranging the event).

Recent meetings have included our Members' Night (thanks to Russell, Charlie, Maurice, Duncan and Jamie for their contributions). In April we were privileged to hear from Dr M Gadsden about "Noctilucent Clouds" and in May our former President, Dr John Reid told us about some interesting people involved in discovering comets in his talk on "The Comet Men". June saw our annual Quiz Night and Cheese and Wine event (which the ROE won by a very small margin), while Dave Gavine told us the story of "Thomas Henderson - First Astronomer Royal for Scotland" in July.

Forthcoming meetings are in your Syllabus Card but to summarise: September 4th is a discussion on light pollution with Mr. Campbell of the City Council's Lighting Department. In October we will welcome back Storm Dunlop who will speak on Astronomy and Meteorology and in November Professor Bernard Roberts of St.Andrews University will be our guest.

Graham Rule

Memories and Ideas of a New Member

This is how I found out about the A.S.E. and joined. I would love to find out how other members heard about the A.S.E. and joined themselves.

Here is a little background information for those who do not know me very well or haven't met me yet.

I'm somewhat of a Tall Hairy Environmentalist with an overly loud voice at times (Apologies in advance I don't realize I'm doing it half the time!) Please do not be frightened by my Hippie attire and size (as one Member, (who shall remain nameless to protect the innocent) has already said to a few other Members, and I Quote "he's just a big cuddly teddy bear". Personally I take that as one of the nicest ways of describing me in my whole life. (P.S. to the Member concerned thank you for such a lovely comment!))

I'm proud to say that I'm Edinburgh born and bred, to a Scottish father and a German mother. I spent part of my life in Germany and other foreign climes, but my heart remains in Scotland and Edinburgh. I got to know Calton Hill from an early age, as I only lived a block away in Montgomery street. I was one of the notorious children who used to charge around playing soldiers, climbing all over Edinburgh's Disgrace or sliding down the hill on pieces of cardboard or wooden bread crates. (To us back then it was like sledging in the summertime.) And much to my surprise some kids still sledge the grass today, which did make me grin and laugh a bit. The Hill along with Arthur's seat and the Botanics are among my favourite places to escape the hustle and bustle of the city and enjoy a little of what nature has to offer. I found out more about the hill and in particular the Observatory and its grounds, by a chance meeting which was the start of a life long friendship. I was a long time member, supporter and campaigner for the local Edinburgh Greenpeace group. After returning from an extended stay abroad, travelling and visit family, I returned to find the group had changed a lot, many of the familiar faces had gone, to be replaced by new ones. This happens in all groups and societies I know but I was none the less surprised by the changes. (I'm glad to say many have returned to the group and others who moved still stay in touch!) The person I met was Karl Paterson (the cousin of Mr. Jamie Shepherd). Later on I found out Karl worked on the Hill, and came up on various occasions to see him. Unbeknown to me Karl had a lovely Londoner as a work mate and friend called Janine (also a Member), who later became a friend of mine, and with Karl throwing hints like bricks, we started going out together. It is with the utmost pride possible that I say was honoured when Janine married me two years ago. Since meeting Janine three years ago and having been a couple now for most of that time, I had a lot more reason to visit the Hill, because my best friend and girlfriend both worked there. I was introduced through my lovely wife to her friends Jamie Shepherd, Dave Gavine, Duncan Waldron and many others, all of whom I am very pleased to know (if your name is not here I'm sorry there would be too many names and not enough page.)

Here is a special thank you to Dave Gavine; sorry if this makes you blush, Dave! Let me explain I'm dyslexic, I was only diagnosed as such by a friend and fellow sufferer at the age of 21, so it is only in the last 8+ years that I've began reading and understanding things, and that learning can be fun, where as before it always seemed nonsense or to

have been written in a foreign language. Not anymore! I've now done a Geology and an Astronomy course run by Dave, and thanks to the help and encouragement of him and my wife I'm now trying an Open University course in science. And would someday like to try out his Meteorology class sometime.

Jamie, Dave and Janine also took me to a couple of the talks and to many a Friday night observing session, where I helped out, ran errands, made tea, tidied up and just got to meet and mingle with the members, which got me interested in joining. So I did! If ten years ago someone had told me I'd learn, understand and very much enjoy basic astronomy, I'd probably have laughed and asked them not to be so daft, as science was such utter gobble-de-gook at the time.

Over the last few years I have spent an awful lot of time at the Observatory. Not all of this time was spent with the Stereodome staff, So much happens around the place, that just seems to be taken for granted or is thought to be the work of the council. Many are the times I've seen Jamie, the volunteer Gardener Dave Simpson and the odd Member (from time to time) tidying, weeding, planting and repairing things around the grounds and I have joined in. So much so that, I've even gotten into the habit of just going around the place doing odd jobs while I'm up there visiting Janine. I would like to thank from the bottom of my heart all those who have spent money and donated plants and time to care for this unique site. And to say that it truly amazes me at how beautifully it is kept.

I still spend rather a lot of time in and around the Observatory, and many are the times that at little or no notice we (Jamie, Janine, Dave Gavine or I) have had to show amateur astronomers, locals, tourists and school groups (from all over the world) around the Observatory. I am honoured to say that our director Jamie Shepherd taught me how to use and control the 6" Thomas Cooke refractor telescope in the McEwan dome. I know that we all get a lot of pleasure out of showing people around and telling them about our wonderful Observatory, A quick glance at the visitors book reminds me of some of the lovely people we've met (I must admit I am surprised at how many people we have shown around (although not all of them sign the book)). I have also been surprised by the generous size of some of the donations made by visitors we've shown around. I would dearly love to see a time when the Observatory was open to public 7 days a week, 365 days a year (like the Mills Observatory in Dundee) It would be amazing if our Observatory was a bit more people friendly especially to the disabled. I am very happy to see the council doing some of the vital repairs necessary to stop our Observatory from collapsing! (and about time too!) It would be good if they could improve the paths and improve disabled access to the site (which would not be too difficult). This place has so much possible potential open to us, both as a historical site and as a place of science and learning. It surprises and amazes me that we do not use it more often. If the Observatory was open more it would make the our job a lot easier. Job I hear you say? Yes we keep the place warm dry and safe, empty and repair the dehumidifiers when necessary, generally keep the place tidy and do Vital & Important SECURITY Work on the hill on nights like Fire Works Night at the end of the Edinburgh Military Tattoo, Guy Fawkes night, The Beltane and many other events held on or viewable from the hill. I Admire & Commend anyone who has helped to keep Drunken folk (both male & female) from entering, damaging, urinating in and generally littering the grounds of our Observatory.

For those of you who have not noticed yet a new flower bed has been built by the side of the "Jungle Path" and the Edinburgh Meridian Marker Stone has been tidied up and is now clearly visible.

I also look forward to visiting The Earliburn site and to experience the viewing from there soon, and to seeing how our access to the site is used and improved as and when possible.

I look forward to hearing from anyone that wishes to tell me how they found out about the society & joined.

I also look forward to many Long, Happy and Eventful Years as a member of the Society, and that the Observatory and Society, Thrive and Survive well into the next Century (and with a little Hope well into the Third Millennium)

Duncan Johnstone

Rocks from Space

See them at the City Observatory on Edinburgh's Calton Hill

Open August 9th - 31st 1998, 12 noon - 5pm

Admission Free