

Gnomon

Newsletter of the Association of Astronomy Education

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Winter 2012

We wish you all a very Happy New Year and plenty of clear skies in 2012

Dark Skies come to Exmoor

We offer our warm congratulations to Exmoor National Park which has been awarded special status as an "International Dark Sky Reserve". This award is granted by the International Dark-Sky Association. Exmoor is only the second place in the world to become a Dark Sky Reserve and it is the first one in Europe. There is a lighting management policy throughout the park that encourages the use of low wattage, shielded lighting. It is hoped that the public will be encouraged to come to Exmoor to enjoy some of the best skies for stargazing in the West of England.

The mission of the International Dark-Sky Association (IDA) is to preserve and protect the night-time environment and our skies through environmentally responsible outdoor lighting. It seeks to reduce light pollution and this should lead to energy savings, a better night sky, conservation of nocturnal wildlife and ecosystems, the safeguarding of scientific and educational opportunities such as astronomy, the preservation of cultural heritage and inspiration for the arts and increased visibility, safety and security at night. This award has certainly raised local awareness of the



issue of light pollution and it will promote responsible legislation on lighting policies. This award is a credit to the efforts of those people who pressed for Exmoor's Reserve status.

Jodrell Bank Discovery Centre

The new Jodrell Bank Discovery Centre is now open for visitors. Its most obvious feature is the massive Lovell Radio Telescope – an internationally renowned landmark. You can walk along a pathway close to the base to wonder at its size.



There are two buildings for visitors, The Planet Pavilion and The Space Pavilion. The Planet Pavilion has the reception, shop and café and a large area with an introduction to the planets of the Solar System and the scale of the Universe.

Across the internal road system is the Space Pavilion housing the main exhibition covering the wonders of the Universe including sounds of the Big Bang. There are a wide range of hands-on activities. This building also houses a classroom and a large flexible space for ad-hoc events. The

buildings have been designed to be as "green" as possible with water-saving and lots of insulation. Sadly there is no planetarium but one is being considered.



The Jodrell Bank Gardens (arboretum), Sir Bernard Lovell's special project, has a new fully accessible pathway and a new playground and picnic area. A new Galaxy Garden has been created by TV Gardener Chris Beardshaw with Space

and Astronomy themes.



At an anniversary some years ago, Sir Bernard admitted to being a "tree warrior"! When there were surplus saplings from the arboretum he would recall a Cheshire lane that was lacking in trees and go out in his car and make good the deficit!

The Centre is open from 10am to 5pm. School parties must make a booking. Special visits including an astronomy lesson are available. Watch the web site for details of school holiday events and evening astronomy lectures.

www.jodrellbank.net

Stargazing LIVE Legacy

BBC Learning has created many resources so that you can get the most out of Stargazing LIVE. You and more importantly your pupils can get hands-on with astronomy and look to the skies with pockets full of handy information.

Activities

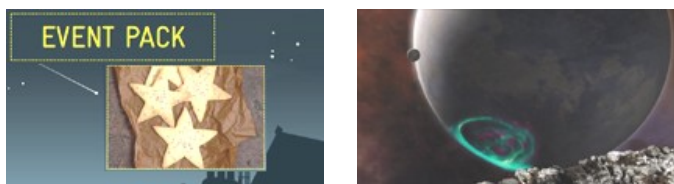


Updated Star and Moon Guide

With updated star maps and a Moon atlas, this handy guide will help with your star-spotting all year round.

Planetary Activity Cards

These nine collectible Activity Cards offer some great ideas for Stargazing events or for experiments to try out in the comfort of your own home.



Event Pack

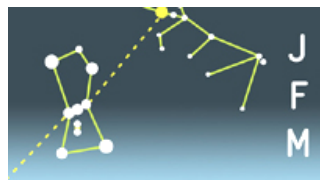
An accompaniment to our Planetary Activity Cards, this pack offers extra ideas for events organisers.

Big Picture: Exoplanet Poster

Download an A4 or A3 poster of a planet in orbit around a distant star, and read the illustrator's description of his fantastic image.

Audio Guides

These brand new downloadable guides are immersive explorations into the night sky. There are four to listen to online or keep as MP3 files – one for each quarter of the year.

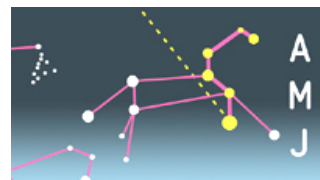


January to March

Learn how to spot wonders including the Orion Nebula, Betelgeuse and the planets Venus and Jupiter.

April to June

Find the magnificent star cluster M44, the planet Saturn, and try galaxy hopping in the constellation of Virgo.



July to September

Explore the Summer Triangle and get tips on how to see the Milky Way and the Aurora Borealis.

October to December

Don't miss the Geminid meteor shower and learn how to find the furthest object you can see with your naked eye!



How-to Videos

How do you choose a telescope? What are the perils of light pollution?



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 (e.g. schools, colleges etc.)..... £28.00
 Members receive yearly four issues of *Gnomon*. Corporate Members will receive three copies of each issue. A £2 discount is made on all annual subscriptions paid by direct debit.

Extra Copies:

0 - 10 £1.00 per copy
 11 - 50 £0.75 per copy
 51 + £0.50 per copy
 (Back numbers, not less than one year old, half these prices.)

There will generally be a 10% discount to AAE members on all publications and advertising rates. Practising teachers may claim their subscriptions as an allowance against income tax, effectively reducing their contributions.

All communications (except those to the Editor) should be addressed to:

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 Quarter page £30
 Inserts £75

(Inserts may be of any size which may conveniently be inserted in the newsletter. Heavy items may incur an additional charge for postage.) A 25% reduction is made for advertising in all four issues.

Publication Dates:

These are at the equinoxes and the solstices, that is four times a year. Copy deadlines are four weeks before these dates.

Mark's Guide to Buying a Telescope

Find out the difference between reflectors and refractors and work out which telescope could be right for you.

Astrophotography Guide

Astronomer Mark Thompson shows you how to capture great images of space without using expensive kit.

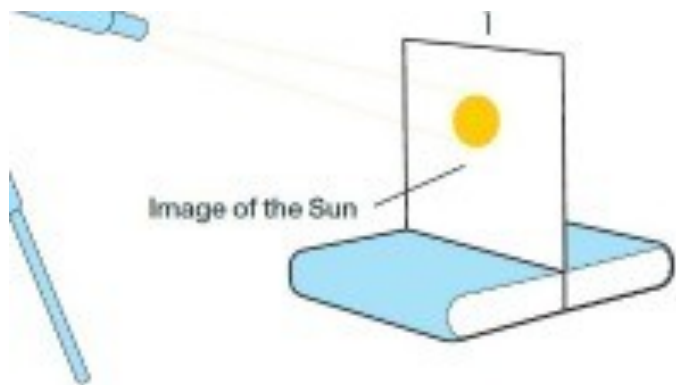


Mark's Mini-Planetarium

Mark Thompson puts his umbrella to use to show how the Earth's rotation affects the night sky.

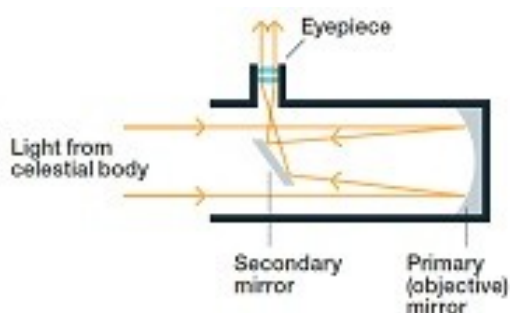
Written Guides

Find out how to take photos of deepest space and how to take in the transit of Venus in June safely. Plus guides to choosing astro equipment and using some of the exciting star apps available for your mobile device.



Viewing the Sun Safely

Looking directly at the Sun can cause blindness. Read our guidelines to view or photograph the Sun safely.



Choosing a Telescope

Feeling ready to take the next step, but a bit bewildered by the array of telescopes on the market? Check out our guide and find the right 'scope for you.

Mobile Star Apps

There are hundreds of apps available for smartphones which can help you further explore the night sky. Take a look at this handy guide and get started!



Desktop Star Apps

There's a great range of computer apps that can further your astronomical investigations. This guide will show you a couple to get you started.



Astrophotography

Ever wondered how photographers get such incredible images of space? See how simple it can be with our beginner's guide and share your images in our Photo Group.

Stargazing for Schools

Teachers and students can find out more about the exciting Stargazing offer for schools by following the Schools Link on the BBC Stargazing Live web page.

www.bbc.co.uk/tv/features/stargazing/schools.shtml

Many Thanks

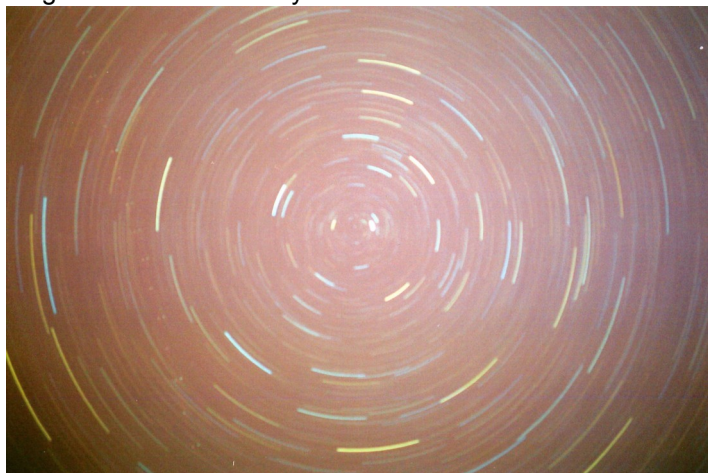
I am sure that readers of Gnomon will want to join me in offering Anne Urquhart-Potts an enormous vote of thanks for editing Gnomon since September 2009. ACP

New 'controlled assessment' structure for GCSE Astronomy

This summer marked the first examination session for the new GCSE Astronomy specification from Edexcel. The new specification represents an updating of the syllabus for this increasingly popular qualification, to take account of recent discoveries and advances in the world of astronomy.

However, a significant change to the qualification this summer, in line with other GCSE subjects, has been the change from the familiar coursework to 'controlled assessment'. This development was primarily motivated by a need to improve the security of work completed by students outside the formal written examination. Following wide consultation with a number of professional astronomers, this change has also been used to re-focus this aspect of GCSE Astronomy firmly on observational work.

Students now have to complete two pieces of astronomical observational work for their GCSE, one with the naked eye and the other using some form of optical aid such as binoculars, telescope or camera. Although they may complete the actual observations in their own time, the written report which is finally submitted must be completed under supervised conditions within their school or college. There is a wide range of observational tasks to choose from such as drawing lunar features, estimating stellar magnitudes, measuring light pollution levels, observing a meteor shower, using a shadow stick to determine longitude or photographing star trails to determine the length of the sidereal day.



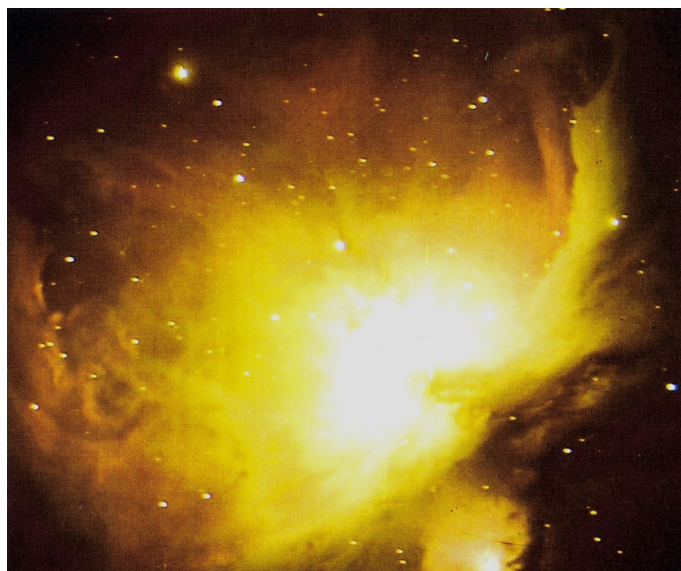
Photograph of Star Trails (Photo courtesy J King)

The new system also encourages students not to focus both their controlled assessment tasks on the same astronomical body. Full details of all the controlled assessment observational tasks can be found in the Specification document available from the GCSE Astronomy page at:

www.edexcel.com

The quality of candidates' final reports on their observations is now assessed under four areas – design, observations, analysis and evaluation. This new system helps to emphasise the fact that all astronomical observations are scientific measurements and, following the first year of its use, seems to work well.

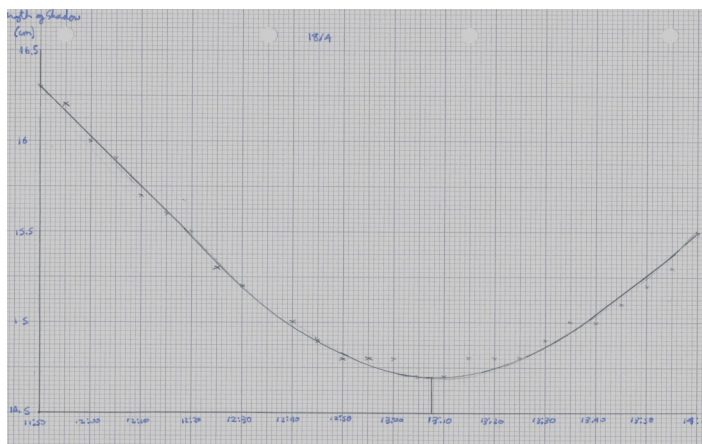
Although many of the tasks in the new system were popular activities in the former GCSE Astronomy coursework system, this updating of the qualification has led to a significant increase in the use of robotic telescopes by **4** GCSE Astronomy candidates. There are now several



Robotic Telescope view of Orion Nebula (photo J King)

such devices available for use by schools and colleges which allow students to log on via the internet and request the telescope to take images of their chosen astronomical object. This facility obviously increases dramatically the range of observations available to GCSE candidates. All the robotic telescopes available are relatively large devices, well beyond the standard usually available to most school or college students. This summer has therefore seen an increase in the number of students taking detailed photographs of Messier objects – an example of observations now easily accessible to GCSE candidates through the robotic telescope facility.

Interestingly, although the robotic telescopes increase significantly the standard of optical equipment to which students have access, their other benefit for candidates trying to obtain observations for a controlled assessment deadline in early May has been their vastly improved seeing conditions compared to the UK! A number of candidates, hampered by poor weather in the UK between September and May have used the 'wide field' cameras on robotic telescopes to obtain excellent constellation photographs.



Shadow stick graph

Although this has been only the first year of the new system, the continuing popularity of the GCSE Astronomy qualification and positive feedback from centres suggest that its increased focus on the observational work at the heart of the subject has been a welcome one.

Julien King

Principal Moderator for GCSE Astronomy with Edexcel and former Chair of the RAS Education Committee. He currently teaches physics and astronomy at Ermysted's Grammar School in Skipton, North Yorkshire.

Letter from Japan UMOJ

In the mid-1990s, two teams of astronomers embarked on a race to see who could make the most accurate measurement of the rate at which the universe's expansion is slowing down due to the gravitational influence of all the matter, luminous and dark. What they found not only changed completely our understanding of the universe and its ultimate fate, but has made some of them famous beyond their wildest expectations.

The 2011 Nobel Prize for Physics has been awarded jointly to Brian Schmidt and Adam Reiss, leaders of the "High-Z Supernova Search team", and to their rival Saul Perlmutter who led the Supernova Cosmology Project. Both teams sought to use a particular class of supernova event, the "Type Ia" supernovae as a way to measure distances to galaxies, independently of Hubble's famous law that the distance of a galaxy is directly proportional to the speed at which it appears to be moving away from us. Because Type Ia supernovae are the result of a white dwarf star accreting mass and exceeding a maximum stable mass of 1.4 solar masses, they all explode with roughly the same energy. In the late-1980s astronomers in Chile led by Mario Hamuy and Mark Phillips worked out how to standardize Type Ia supernovae as distance indicators for nearby galaxies. The teams led by Schmidt, Reiss, and Perlmutter set out to apply this technique at much greater distances, expecting to find that supernovae at greater distances would appear brighter than they ought to due to the deceleration of the Universe.

By the end of 1998 however both teams independently concluded that the supernovae all appeared fainter than they expected. Having ruled out dust and evolution effects, they were left with only one conclusion – the Universe was not decelerating, but accelerating! Strangely this is exactly what Einstein himself had allowed for in relativity by invoking a "cosmological constant" to stop the Universe from expanding at all, which he subsequently abandoned when Hubble showed the Universe was indeed expanding.

Perplexed, they published their results and waited for someone to show where they had gone wrong. On the contrary, their findings were greeted with relief by many who had encountered similar difficulties getting their measurements of the large-scale distribution of galaxies to agree with the then standard model. Today astronomers accept that we live in an accelerating universe, driven by a mysterious "dark energy" which in fact makes up 73% of space itself. The Universe will not slow down, stall, and ultimately collapse back on itself, but will expand forever, eventually carrying our Galaxy beyond the visible horizon of every other galaxy. Think how difficult it will be to do cosmology then!

Brian Schmidt is a colleague and friend of mine, and all of us in Australia are quite chuffed with his success and deserved recognition. Brian grew up in Montana, did his undergraduate degree at the University of Arizona, then his PhD on supernovae with Robert Kirshner at Harvard. While at Harvard Brian met and married Jenny Gordon, an Australian economist. In 1994 they decided to move to Canberra to raise their two sons, and Brian was able to get a postdoctoral position at the Mt Stromlo Observatory of the Australian National University (ANU). Since then he has become an Australian citizen. For Brian, leaving the US just as the High-Z supernova search was getting underway was a gamble, but his colleagues and the ANU gave him the freedom to drive the project. Meanwhile Australian astronomers Brian Boyle, Warrick Couch, and Chris Lidman were

contributing to the effort of the rival Supernova Cosmology Project. All of them have been enjoying a week of celebrations in Stockholm leading up to the official award of the Nobel Prizes. In the weeks since the prize was announced Brian's life has been turned upside-down, with a never-ending stream of functions and interviews. He has been assigned two personal assistants just to organize his schedule. Brian intends to use his elevated profile in Australia to highlight the value of science to society, and education in particular. He has announced he will donate \$100,000 of his prize money to continuing a primary school science education



Professor Brian Schmidt at an AAO function shortly after the announcement that he was one of the three co-winners of the 2011 Nobel Prize for Physics. (Image credit: Helen Sim, AAO)

program which is about to lose its government funding. Some years have seen drought, but more recently rain. At harvest time around Easter he invites staff and students from the observatory to contribute a day's labour in exchange for lunch, and a bottle or two of previous vintages. Having done this myself for the past few years it's hard work, but deeply satisfying when you get to taste the results. No doubt it's passions like these that will help keep Brian grounded even with his newfound fame.

While the formal citation for the Nobel Prize reads "for the discovery of the accelerating expansion of the universe through observations of distant supernovae", where Brian, Adam, and Saul deserve most credit is for having the courage to go public with results that flew completely in the face of "conventional wisdom", at a time when none of them had academic tenure. How many professional scientists would take the "safe" approach of playing down their results, or not publishing at all, for fear of what it might do to their reputation and livelihood? The three winners all freely acknowledge that without the efforts of everyone in their teams who helped carry out the observing, wrote the telescope proposals, and developed software to detect and analyse the supernovae, then none of this would be possible. Although there can only be 3 named winners, we congratulate everyone on the High-Z supernova team and the Supernova Cosmology Project on this prestigious award.

Stuart Ryder

Going Dark - a new play

This is the story of Max – an astronomer who works in his local planetarium. When he is diagnosed with an eye condition which is causing him to lose his sight, he must re-evaluate his relationship with the world around him.

Using the latest software in projection, lighting and sound technology, theatre company Sound&Fury create a truly immersing environment for audiences. Mesmerising sound and visuals guide theatre goers on Max's journey as his 'view' of the world begins to take on a new meaning.



Going Dark explores parallel separations – one of a man being separated from his immediate environment and the other of modern society having lost an immediate appreciation of the cosmos. How do we actually perceive the world? How might losing our sight allow us to understand the world better?

This play has some great astronomy/science in it and I've been recommending to the planetarium community – we're hoping to show it at the next BAP meeting.

The production has already toured a number of dates in the UK this autumn, but will be visiting the Young Vic Theatre in London, Plymouth Drum Theatre and Hull Truck Theatre in the spring.

For tickets and tour dates, visit the IOPblog website:

www.iopblog.org/go-in-dark-play-exploring-relationship-cosmos/

Tom Large
Marketing and Press Assistant
The Corner Shop

Fully-funded Teacher Training Workshops in Portugal, France and Germany in 2012

The European Hands-On Universe (EU-HOU) project is offering new 5-day training sessions on 'Bringing Frontline interactive astronomy to the classroom' and 2-day seminars on radio astronomy to all interested teachers. The dates and links to more information on these courses can be found in the Training Sessions link at:

www.euhou.net

If you are a teacher from the UK, you can apply to the British Council for funding to attend these courses. The funding will cover everything - course cost, accommodation, subsistence and travel.

6

If you are a teacher from outside the UK you can apply for funding from your Comenius National Agency.

For more information on these courses, including step-by-step- instructions on how to apply - please go to:

<http://www.faulkes-telescope.com/EUHO>

Sarah
(UK EU-HOU Coordinator)

Astronomy Education

Astronomy Education is a web site and physical collection of materials set up at the National STEM Centre in York. It is funded by the Science and Technology Facilities Council (STFC), the Dill Faulkes Education Trust and the Faulkes Telescope Project. The site is maintained by Dr. Paul Roche (Cardiff and Glamorgan Universities) as part of his STFC fellowship and by the new ESERO-UK office (The European Space Education Resource Office – UK).

The site aims to educate, inform and support space-related education in UK schools by:

- * Enhancing the study of astronomy in UK schools by supporting specific projects and provide material relevant to the curriculum.
- * Collecting resources that have been produced specifically for UK schools.
- * Adapting existing (international) education resources for use in UK Schools.
- * Creating links to the best materials produced by NASA and other organisations.

Being hosted on the STEM site means that the resources are stored in the eLibrary. This is an amazing collection that covers all of STEM (Science, Technology, Engineering and Mathematics) and is an excellent source of trusted material. The eLibrary also directs you to "Web feeds" if you want today's news items. It is worth a browse if you are involved in any branch of science education.

www.astronomy-education.com/

StarTeach Astronomy Education

StarTeach Astronomy Education is a multimedia web-based astronomy education program designed especially for K-12 students and their teachers. The primary goal of the program is to aid in the classroom instruction of astronomy by providing multimedia resources. It can also be used as research material for individual students. It covers such topics as:

- * Our Solar System
- * Deep Sky Objects
- * A History of the Universe
- * Famous Astronomers
- * Space Missions
- * Telescopes
- * Astronomy of Ancient Cultures
- * Creating Stars in the Laboratory

The StarTeach Astronomy Education Program was created by Leslie Welser when she was a graduate student in the University of Nevada, Reno Physics Department. It is obvious that a great deal of effort was put into the project but it has been largely dormant of late. However it is still a valuable resource.

www.starteachastronomy.com

For your Library

“Eye and Telescope v3.0: The Deep Sky Observing Planner” by Thomas Pfleger, DVD published by Cambridge University Press. ISBN 9780521151153. Price £45.00 (\$75).

This observing planner is aimed at the serious active deep sky observer with a well equipped private observing set up. Installation is not too much of a problem the serial number has to be entered etc which is fair enough. However "to prevent bootlegging" a secure license mechanism is incorporated, the code is generated from the serial number and the owners name. This seems to us to be a step too far in view of the relatively modest price of a new DVD. To many astronomers proper planning is a distant aspiration. "Eye and Telescope" deals with this problem with a series of embedded training videos. These include an introduction with basic information about the types of objects listed and whether they are visible with the instrument and observing parameters available. The "Star Maps" section allows the observer to establish the relative position of the class of objective under study. The Observing Project section allows objects to be sorted, copying data into Excel for further analysis. "Log Book basics" allows you to display notes and observations, copying into log books and digital files. Finally, "Log Book import and export" allows observation and data to be brought in to the E and T systems. Although the DVD brings to the keen observer a professional approach to record keeping it is much more complex than many people will be used to. It does employ a intuitive approach which is good to use and develop. Our plan at the Roseland Observatory is to use it with Work Experience Students, those doing the A Level Extended Project and the Gold Crest Award as well as students involved with the various OU Programmes. This DVD will be a very useful asset for anyone seeking to bring some order and control to their observing programme. One word of warning though - this is a deep sky programme and is therefore not concerned with the positions of planets, asteroids or comets. Many observers follow up a successful hunt with an image of a moving quarry, so far as I can see an alternative system will need to be employed. Additional information is also available via the web with a couple of marketing sites and a blog.

Brian Sheen
Roseland Observatory

“The Cambridge Photographic Star Atlas” by Axel Mellinger and Ronald Stoyan (ISBN 9781107013469) Price £30 (\$48). Cambridge University Press, hardback.

The Atlas is based on more than 3000 images taken by Alex Mellinger, and presents the heavens down to 14th magnitude as a series of 82 plates covering the entire sky. Each plate is presented as part of a two page spread opposite an inverted labelled image (annotated by Ronald Stoyan) which includes celestial coordinates, simplified constellation diagrams, the positions of significant deep sky objects and the locations of emission nebulae.

The volume commences with a fascinating five page introductory section describing the diverse challenges involved in collecting the imagery upon which the Atlas is based. Obviously an all-sky survey requires photographic dark-sky sites in both hemispheres – in this case locations in the USA and South Africa were chosen – but dark sky isn't always as dark as it appears. The initial imagery montage contained artefacts attributed to terrestrial

sources such as sky glow, zodiacal light and galactic and extragalactic sources. The intriguing solution to this problem was to use wide area imagery from the Pioneer 10 and 11 satellites as a means of indentifying the light contamination due to terrestrial and zodiacal sources, enabling this to be subtracted from the final product. If there is any criticism of the Atlas, this process appears to have de-emphasised the emission nebulae in the original three-colour imagery, and hence it is hard to correlate such regions with the corresponding features marked on the maps on the opposite page.

It might be assumed that an Atlas is an unchanging, temporally invariant reference work, but in subtle ways this is not entirely true. The authors highlight the fact that their images captured variable stars at particular phases in their cycles. Also only those double stars which were separated by 60" were able to be differentiated. In addition, although the imaging campaign was carefully planned to avoid the bright planets, both Uranus and Neptune are present in the imagery, along with several asteroids and a couple of comets.

Reference works are never likely to be a source of high entertainment, but the authors do their best to emulate the tradition that once saw the speed of light in furlongs per fortnight included in a book of physical constants. The unanticipated challenges of compiling the Atlas provide the measure of humour content here, including the unwanted reflections from the solar panels of geostationary communications satellites. Most amusing, though, was the South African pet pig which attempted to chew through the camera cables during an observing session. The pig's motives are not clear, but it may have been a distant relative of the Erymanthian Boar still chafing at the fact that, despite contributing to the labours of Hercules, its illustrious ancestor was not rewarded with a constellation!

Clearly not everyone is in a position to appreciate the skies down to 14th magnitude, but for those that are, the Cambridge Photographic Star Atlas has clearly been compiled with considerable attention to detail.

Stuart Eves

“The Complete Guide to the Herschel Objects” by Mark Bratton. Cambridge University Press 2011. ISBN 978-0-521-76892-4, £45.00 / US\$70.00 Hardback pp584.

William Herschel's catalogue of deep-sky objects, compiled in the eighteenth century, lived on as a primary reference well into the twentieth. The hundreds of clusters, nebulae and galaxies he meticulously observed and recorded, aided by his sister Caroline, appeared in my 1950 Norton's Star Atlas and I always found it useful that Herschel allotted them informative designations: for example, a class I object was likely to be a relatively bright galaxy, while a class VIII would be a coarsely scattered star cluster. Later editions replaced them by NGC numbers, removing the useful references.

This new Guide to the Herschel Objects brings the catalogue firmly into the twenty-first century, listing the objects by constellation, retaining their designations but complementing them with highly detailed descriptions of each, together with a wealth of Deep-Sky Survey photographs, and sketches by the author: in all, a welcome and complete re-examination of Herschel's discoveries. An interesting addition is that of the locations and instruments used by the great man and his worthy sister for their observations.

Historical and biographical notes are usually quite sparse in books of this kind, but Mark Bratton has taken great trouble to describe the Herschels' lives and work, their

☞ (cont. from p7) techniques of telescope-making and the various sites from which they observed.

Readers who are also observers of the night sky may well have seen Messier's "lollipops"; with this book they can take up the challenge, undoubtedly more daunting, of hunting down Herschel's often fainter deep-sky objects. Herschel, in the words of the author, was "the man who almost single-handedly breached the gates of heaven". This new Guide allows us, with our modern instruments, to see and understand what lies beyond those gates.

This reviewer agrees with the introductory assessment of the Guide: "the ultimate reference on the Herschel objects". A worthy addition to any astronomer's bookshelf.

Bob Mizon
Mizar Travelling Planetarium
BAA Campaign for Dark Skies

What Can I See Tonight?

Welcome to "What Can I See Tonight?", a new feature designed to answer that question and to give a few simple observing tasks for homework.

The descriptions are set for one hour after Sunset in the middle of each month. In the winter this will be just as the pupils arrive home. Specific events are given their date in the month.

The Moon is best observed when the terminator, the line between the Sunlit and shadowed parts, is in the centre of its face. The craters on the terminator show up spectacularly well when observed with even the most inexpensive binoculars. Also time to get that telescope down from the top of the wardrobe or from under the bed, where it has been collecting dust!

Meteor showers are generally disappointing unless there is no Moon. Even then you might have to wait several minutes to see even one event. Good for the enthusiasts. Best observed from a garden chair or a sun-bed!

January. Observe at 17:30

- * The W of Cassiopeia and Andromeda Galaxy (M31) are overhead. Andromeda is by far the most distant object you can see with the naked eye in the Northern Hemisphere. All the other objects visible to the naked eye are within a few thousand light years
- * Venus is low in the South West
- * Jupiter is in the South
- * Capella is high in the East
- * Vega is in the West

The Moon

- * 1 First quarter
- * 31 First quarter

Interesting Events

- * 3 + 4 Quadrantid Meteor Shower (40 per hour) – Unfortunately with 75% Moon

February. Observe at 18:15

- * Capella is overhead
- * Venus and Jupiter are in the South West, Jupiter higher than Venus
- * Orion is in the South
- * Square of Pegasus is in the West

The Moon

- * 14 Last quarter

March. Observe at 19:15

- * Venus and Jupiter are very close in the West
- * Capella is overhead
- * Mars is in the East
- * Orion is in the South
- * Sirius is low in the South

Interesting Events

- * 20 Spring Equinox - Opportunity to record and/or observe Sunset and Sunrise times

The Moon

- * 1 First quarter Moon
- * 30 First quarter Moon

April. Observe at 21:00.

- * Mars is high in the South
- * Venus is in the West. Capella is above Venus
- * Arcturus is in the East
- * Saturn is low in the South-East
- * Ursa Major is overhead

Interesting Events

- * 21 + 22 Lyrid Meteor Shower (20 per hour) – No Moon, so excellent observing conditions

The Moon

- * 29 First quarter

International Meteor Organization

If you are interested in meteors, you could look at the International Meteor Organization (IMO) web site. The organization was founded in 1988 in response to the need for international cooperation of meteor amateur work. It collects meteor observations from all around the world to ensure a comprehensive study of meteor showers and their relation to comets and interplanetary dust.

The web site has a short-term meteor activity outlook section and reports of observations.

www.imo.net

The British Astronomical Association has a meteor section which can be found by going to the Sections tab on their home page.

www.britastro.org