



TRANSIT

The December 2011 Newsletter of



NEXT TWO MEETINGS at Wynyard Planetarium

Friday 9 December 2011, 7.15 for 7.30 pm

What we still don't know

Dr John McCue, CaDAS

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Friday 13 January 2012, 7.15 for 7.30 pm

Building the Universe

Prof. Carlton Baugh, Durham University

(Note change of speaker and topic)



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Editorial

Rod Cuff



I hope you've got your lists ready for Santa: a new eyepiece, hand-warmers, a 14.5" Richey–Chrétien scope, that sort of thing. Me, I'd settle for clear, wind-free nights.

Please note (see page 1) that the speaker and topic for our January meeting has changed. Dr Pete Edwards is sorry to have had to cancel his talk on extrasolar planets, but we're pleased that one of his Durham University colleagues, Professor Carlton Baugh, will take his place, with the topic of 'Building the Universe'.

The February meeting includes our AGM. While many things tend to go by on the nod at most AGMs, one very important thing this time is that the excellent Dr Alex Menarry will be retiring as our General Secretary (see the Letters page) for personal reasons. Alex has been a major force on the committee since it was revived a few years ago, and we will miss his energy and wisdom (and chocolate biscuits). But: **we need a volunteer to take over his role. Please consider putting yourself or someone else forward**; the job isn't arduous, but it *is* important and can make a big difference to CaDAS. Please let Alex know as soon as possible (general-secretary@cad-asastro.org.uk) if you are or could be interested in helping to run your Society in this way.

The deadline for *Transit's* January edition is **Thursday 29 December**. I hope you have an excellent Christmas and that 2012 becomes a memorable year for you for all the right reasons.

Rod Cuff, info@cad-asastro.org.uk, 1 Farndale Drive, Guisborough TS14 8JD (01287 638154)



Letters

My resignation

from Alex Menarry

Dear Editor,

It is with deep regret that I must resign as General Secretary of CaDAS as from the AGM 2012. Anyone who would care to stand for election to the position would be assured of the maximum help and assistance from all the Committee in the transition period. Please don't be reticent! The Committee needs new people with new ideas and commitment to invigorate the organisation.



Yours sincerely – Alex

[To Alex as Gen Sec] BBC Stargazing LIVE

*from Helen Connify
BBC Learning Project Manager - NE and Cumbria*

BBC2 will be running Stargazing LIVE presented by Prof. Brian Cox and Dara O'Briain again on 16, 17 and 18 January 2012 (find out more about the show at bbc.co.uk/stargazing). The show was a massive success earlier this year, with events run by local partners across the UK to tie in

with the programme. This year we're hoping to run more events and a big regional showcase event too.

There are two great opportunities for societies such as CaDAS to become BBC Stargazing partners. The first is by running local events any time in January – such as viewings, talks, or hands-on sessions using free resources we'll be providing (BBC activity packs and star guides – great for family events or to hand out at events; a PDF is on the Events page of the website).

We'd also like to invite you to be a participant of our showcase event. We're open to suggestion on what your involvement could be – perhaps some members could do viewings with telescopes and/or run some other 'sessions' – show-and-tell sessions, astrophotography, space art, what you can do without a telescope – anything you think may work. We can certainly cover costs if that's necessary. This event would be on one of 16, 17 or 18 January (to be decided).

Please do talk through with your colleagues and let me know your thoughts and don't hesitate to get in touch if you have any queries

Best wishes – Helen (helen.connify@bbc.co.uk)

[Please send ideas or offers of involvement to any of the CaDAS committee. – Ed.]

[My original question for the Quiz](#)

from John Crowther

This was given orally some years ago at an Open Night. It even baffled Neil ...

You are on an alternative Earth. The only difference is that all the maps are globes that have Antarctica at the top. Why?

(See the end of this month's Quiz on the last page for the answer)



Best wishes -- John

OBSERVATION REPORTS AND PLANNING

[Skylights – December 2011](#)

Rob Peeling

[The Moon](#)

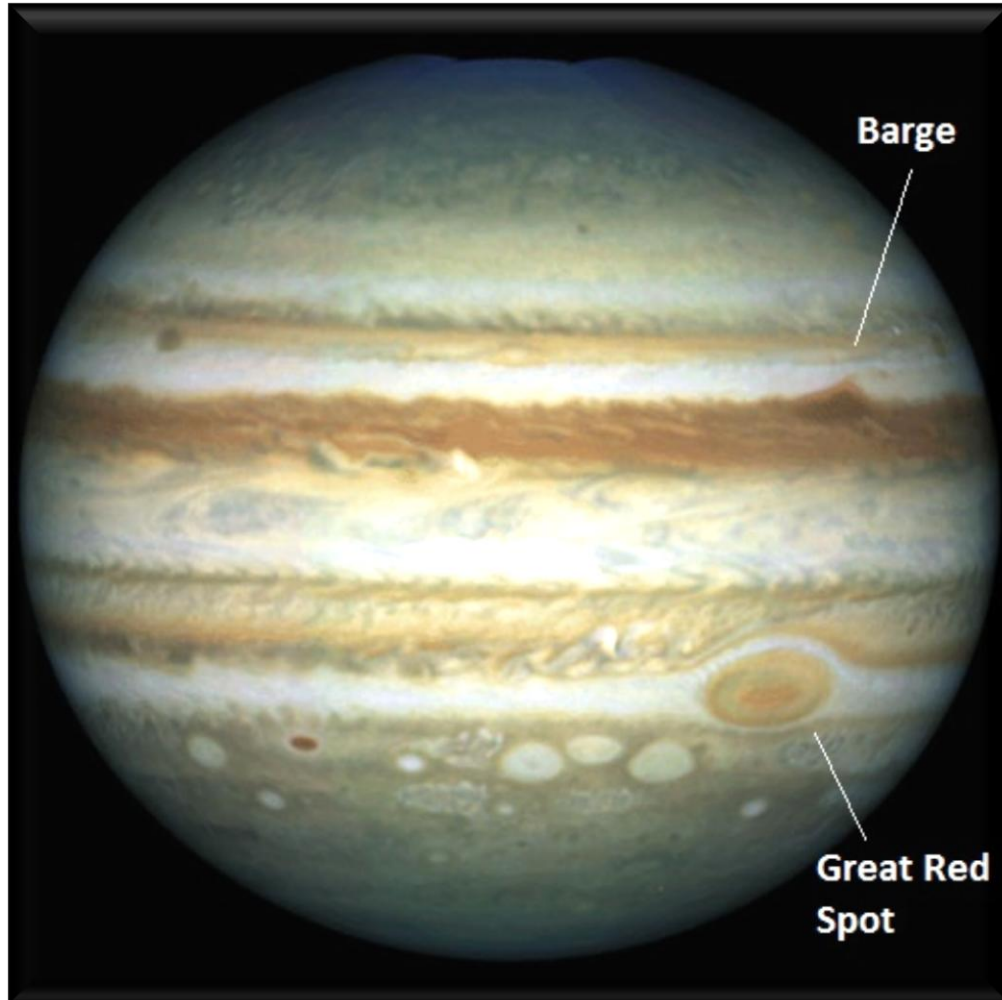
2 December	10 December	18 December	24 December
First Quarter	Full Moon	Last Quarter	New Moon



On 27 December look out for the crescent Moon and Venus setting together, with the Moon following Venus below the horizon.

The planets

Jupiter remains the principal interest, high to the south. As well as the Galilean moons, look out for barges (dark patches) in the orange equatorial bands. I saw a particularly prominent one on 18 November. The same night I saw the Great Red Spot. You can find [transit times on the internet](#).



Uranus is relatively close to Jupiter but much lower in the sky, in Pisces.

Neptune is setting earlier in the evening now. Probably a target for next autumn.

Mars starts to feature in the evening sky, rising before midnight. It's always a favourite for imaging, but can you spot the polar cap with only your eyes at the eyepiece?

Saturn can be seen rising in the east if you're up and about early in the morning.

Meteors

The **Geminid** meteor shower reaches maximum on 13–14 December.

Comets

Comet 2009 P1 (Garradd) is still lurking in Hercules and just about bright enough for binoculars. [Heavens Above](#) will provide directions to find it.

Deep sky

NGC 752 is an **open cluster** in Andromeda. Look for the two stars marking the shortest side of Triangulum (β and γ Tri). Using these stars as pointers, move about twice their separation distance up towards Andromeda and scan with averted vision. I glimpsed it from the Planetarium on 20 November and from the moors it is quite clear. This cluster is one of Sir Patrick Moore's **Caldwell objects (#28)** and is an excellent low-power telescope target as well. It is an unusual cluster because the stars are quite old for a cluster, about one billion years.

Of course, Orion is back in December. When you've finished enjoying the spectacle of **M42**, see if you can find the **nebula M78** for a change. It lies north of Orion's Belt. While not as breathtaking as M42, it is still an interesting object. This is a reflection nebula rather than an emission nebula because the embedded stars are cooler than those of the Trapezium. I usually see a fuzzy area with two stars embedded in it.



Recent sketches and photos from members

Rob Peeling, Ed Restall & Keith Johnson

[Firstly, on the next pages are three sketches that Rob made in November. – Ed.]

Figure 1

M33 (Pinwheel Galaxy – spiral) and NGC 604 (giant extragalactic HII region):
20:02 UT, 1 November 2011.

Seen through a 12" f/5 Newtonian, with a 32mm eyepiece and CLS filter.

Figure 2

M57 (Ring Nebula – planetary): 19:33 UT, 1 November 2011.

Seen through a 12" f/5 Newtonian, with a 4.9mm eyepiece.

Figure 3

M76 (Little Dumbbell – planetary nebula): 19:55 UT, 17 November 2011.

Seen through a 12" f/5 Dobsonian, with a 15mm eyepiece and OHC filter.

Figure 1. M33 and NGC 604

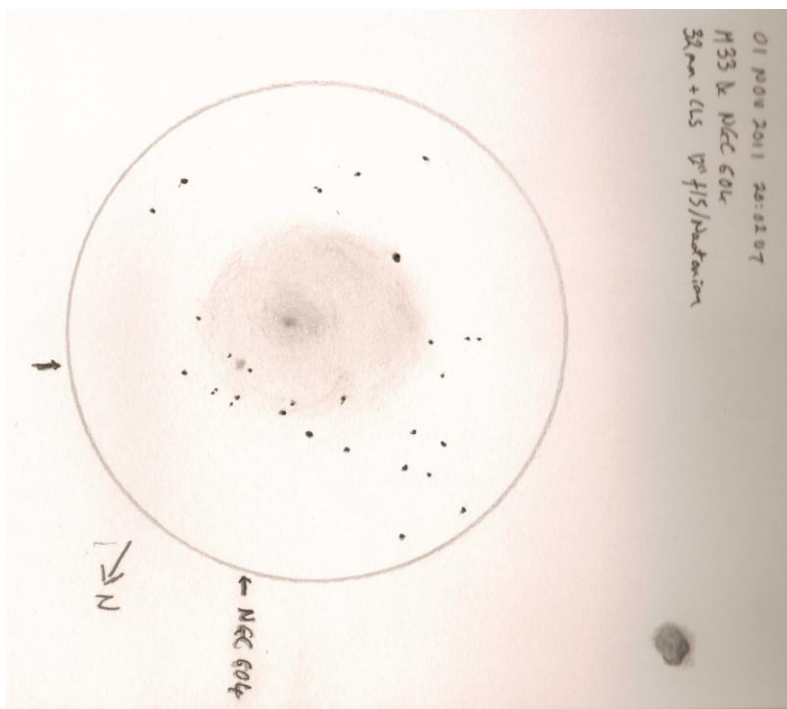
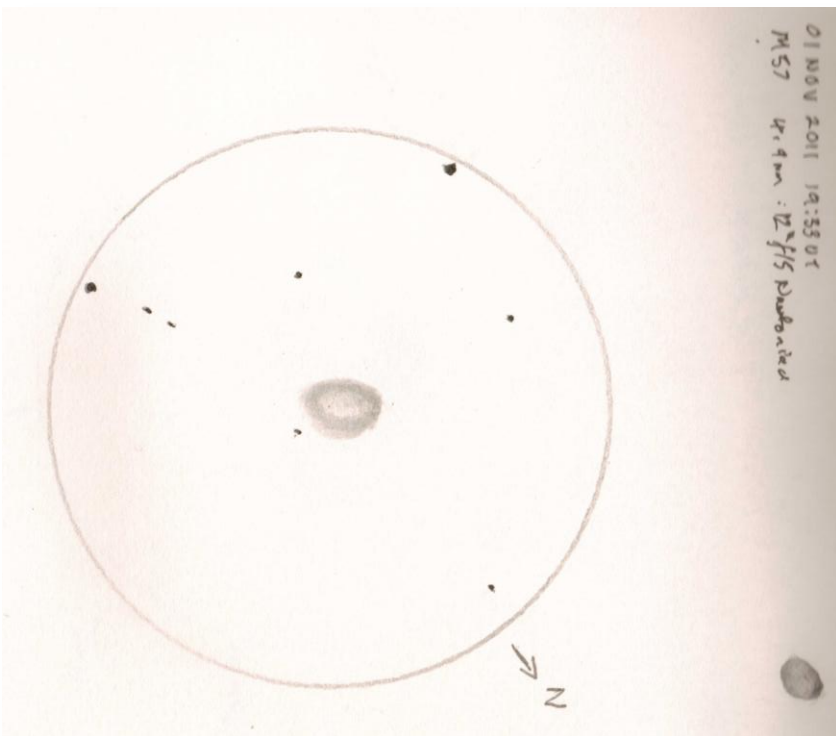


Figure 2. M57



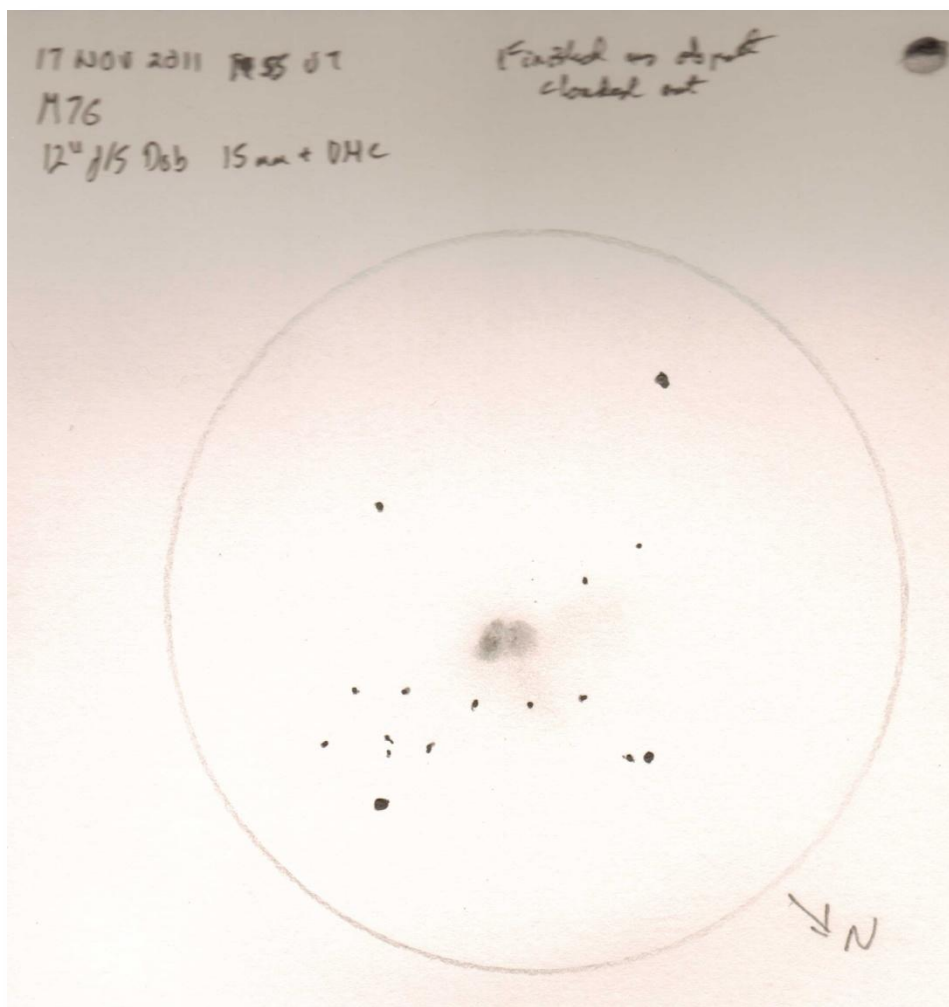


Figure 3. M76

Ed Restall

[Next, Ed supplies these details of his smashing photo (on the next page) of the North America Nebula (NGC 7000 or Caldwell 20, in Cygnus) taken on 28 September.]



20 subs of 4 minutes each, plus 10 darks & 20 flats at ISO800 using an astro-modded Canon 1000D camera with CLS clip filter, on SkyWatcher 80mm PRO & HEQ5 PRO mount.

Autoguided with QHY5 on Celestron 102 using PHD, and aligned & stacked using DeepSkyStacker 3.3.2. Enhanced by John Gargett using Photoshop CS2.



Keith Johnson



[Finally, Keith writes:]

Here's the best from a Jupiter imaging session carried out on 15–16 October. North is up. There's some nice detail showing the moon Io (middle picture), activity around the Great Red Spot (right-hand picture) and white-spot activity near the Southern Equatorial Belt.

Equipment

Skywatcher EQ6 Pro. Mount

C9.25" carbon-fibre Schmitt Cassegrain O.T.A.

Philips ToUcam Pro.2 webcam with infra-red blocking filter attached

4x Astro Engineering ImageMate.

Capture details

90-second video sequence captured at 10 frames per second.

Aligned and stacked in Registax 6.

Images combined in Adobe Photoshop CS2.



[Keith was interviewed (again <grin>) for The Sky at Night recently and was asked to put together a set of his best planetary image captures, which we show on the next page. Not bad, eh? – Ed.]



GENERAL ARTICLES

Centenaries for 2012

Barry Hetherington



- 212 An eclipse of the sun recorded from Utica, North Africa.
- 412 Proclus the Successor born; wrote on the astronomy of Hipparchus and Ptolemy.
- 712 A comet appeared in Leo in the summer.
- 812 An eclipse of the sun seen from Constantinople.
- 912 Halley's comet appeared in the spring.
Qusta ibn Luqa died; wrote on the spherical astrolabe.
- 1012 A nova appeared in Aries in May.
- 1112 There were three black spots (sunspots?) in the sun in May.
- 1312 Jacob ben Machir ibn Tibbon (Prophatius) died; a French Jewish translator and astronomer; wrote a work on a quadrant which he had invented; wrote a book of astronomical tables giving positions of stars at Paris.

1512 Johann Angelus died; a physician and astronomer; corrected Purbach's planetary tables; wrote on astronomy.

Amerigo Vespucci (*right*) died; an explorer and navigator; made astronomical observations from the Americas.

Gerard Mercator born; a Flemish geographer and instrument maker; made an astronomical ring, an astrolabe and celestial globes.

Cornelius Valerius born; a writer on astronomy who stated that the Earth does not move.



1612 Christopher Clavius died; a German mathematician; in 1581 was employed by Pope Gregory XIII to reform the calendar.

Anton Deusing born; a writer on astronomy who maintained a stationary Earth but with a rotation about its axis, and a moving Sun.

Gellio Sascride died; a Danish physician and astronomer; assistant to Tycho Brahe.

who



Andreas Tacquet born; a Belgian Jesuit scholar wrote on astronomy.

M31 re-discovered by Simon Marius on 15 December.

A nova in Andromeda observed by Simon Marius and Fabricius.

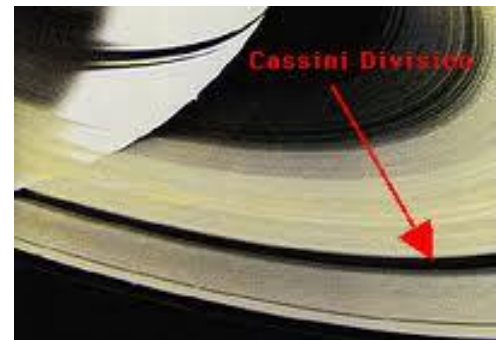
In September Galileo (*left*) perceived the importance of the occultations of Jupiter's satellites for geographical determinations of longitude on land.

Epistolae tres ad M. Velsorum de maculis solaribus by Markus Welser, being three letters sent to Welser by Christopher Scheiner reporting his observations of sunspots.

1712 Giovanni Domenico Cassini died; an Italian-born French astronomer; appointed the first French Astronomer Royal; he discovered four satellites of Saturn; noticed a division in Saturn's ring, now known as Cassini's division.

Uranus observed by John Flamsteed, who catalogued it as a star.

Jacques Cassini appointed director of the Royal Observatory, Paris.



Historia Coelestis by John Flamsteed, edited by Edmund Halley, published without the consent of Flamsteed.

1812 John Mortimer Agardh born; a Swedish astronomer who wrote on astronomy.

John Coventry died; an English telescope maker.

Ercole Dembowski born; an Italian astronomer who established a private observatory at Naples which was later transferred to Milan; observed double stars and made tens of thousands of micrometric measurements.



Johann Gottfried Galle (*left*) born; a German astronomer; worked at the Berlin Observatory; discovered the planet Neptune from the position given by Leverrier (*right*); Director of the Breslau Observatory.



Peter Horrebow died; a Danish astronomer and meteorologist; observed the 1761 transit of Venus.

Robert Stirling Newall born; a British engineer and astronomer; made a series of drawings of the Sun.

Abraham Pether died; an English landscape painter of moonlight scenes; constructed telescopes.

Stepan Yakovlevich Rumovsky died; a Russian astronomer.

Benjamin Franklin Sands born; superintendent of the Naval Observatory at Washington

A six-foot transit circle erected at Greenwich Observatory by Edward Troughton.

A fall of meteorites at Stannern, Bohemia, on 22 May.

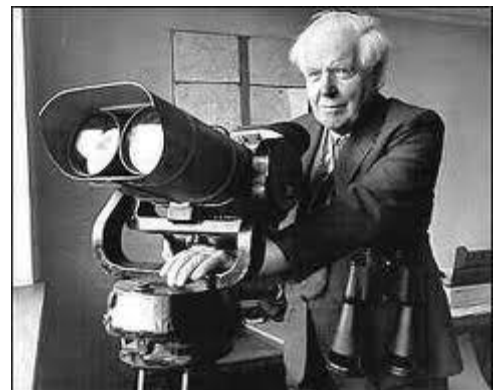
1912 John Franklin Adams died; a British amateur astronomer; he built a private observatory at Machrihanish in Argyllshire; made a photographic survey of the sky.

Eva Ahnert-Rohlfs born; a German astronomer; worked at the Sonneberg Observatory; observed variable stars,

George Eric Deacon Alcock (*right*) born; a British visual discoverer of comets and novae.

Heikki A. Alikoski born; a Finnish astronomer; worked as an assistant at Turku Observatory; discovered 13 asteroids; helped to establish the Turku Astronomical-Optical Institute.

Horace Welcome Babcock born; an American astronomer; invented and built astronomical instruments; proposed the idea of adaptive optics; studied spectroscopy and magnetic fields of stars.



Lewis Boss died; an American astronomer; appointed Director of the Dudley Observatory.

Wernher von Braun born; a German rocket scientist; director of the Marshall Space Flight Centre; helped to develop the Saturn V rocket.

George Howard Darwin died; a British astronomer and mathematician; studied the tidal forces involving the Sun, Moon and Earth.

Frank K. Edmondson born; an American astronomer; studied stellar kinematics, galactic structure and the history of astronomy.

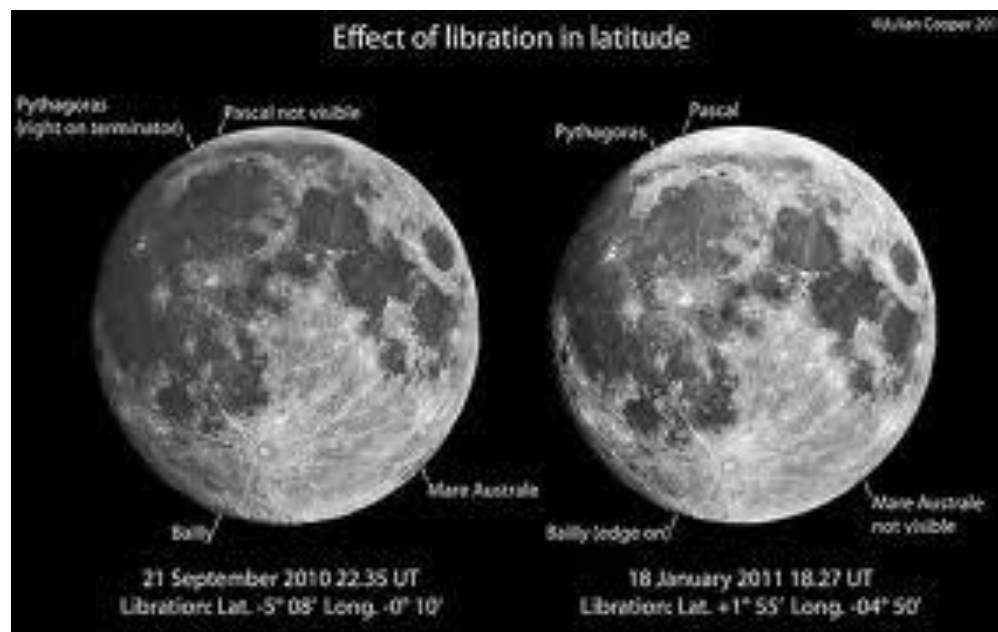
Nikolaj Fyodorovich Florya born; worked at the Sternberg State Astronomical Institute; observed variable stars.

Hans Haffner born; a German astronomer; Director of the Astronomical Institute of Würzburg University; studied open clusters.

Joseph Hewitt born; a British physicist who conceived and designed a satellite tracking camera.

Fritz Hinderer born; a German astronomer at the Potsdam and Babelsberg Observatories; studied variable stars.

Arthur Ernest Hodgson died; worked at the Natal Observatory; in 1908 he took a series of lunar photographs for a determination of the physical libration of the Moon.



Walter Scott Houston born; an American populariser of amateur astronomy; observed variable stars and studied meteors.

Masaaki Huruwata born; a Japanese astronomer; Director of the Tokyo Astronomical Observatory; did work on meteors, variable stars, photoelectric photometry of the zodiacal light and airglow.

Walter Jaschek born; director of the Kuffner Observatory, Vienna.

Shigemaro Kibe born; a Japanese amateur telescope maker; made the 0.6-m reflector mirror for Kyoto University's Hida Observatory; observed the sun, planets and variable stars.

Dmitri Kuzmich Kulikov born; a specialist in geodesy and fundamental astronomy.

Boris Julevich Levin born; a Russian astronomer and geophysicist; researched the evolution of the solar system; worked on meteors and meteorites.

Borge Lunn born; a Danish civil engineer and metallurgist; encouraged the study of metallic and iron meteorites.

Oleg Aleksandrovich Melnikov born; a Soviet astrophysicist; worked at the Pulkovo Observatory; studied the Sun, the stars and interstellar matter by spectroscopic methods.

Shoji Ohsaki born; a Chinese amateur astronomer and historian; undertook historical research on the Chinese constellations, and on the astronomical histories of the far-eastern countries.

Jules Henri Poincaré died; a French celestial mechanician; studied the three-body problem and the rings of Saturn.

Edward Mills Purcell born; an American physicist; helped to develop radio astronomy; the first to detect the 21cm hydrogen line.

Samuel A. Saunder died; an English selenographer; catalogued the position of 3,000 points on the Moon.

Martin Schwarzschild born; a German American astronomer; worked in the fields of stellar structure, stellar evolution and galactic structure.

Jane M Smith died; an American patron of astronomy.

Max Waldmeier born; a Swiss astronomer and director of the Swiss Federal Observatory; studied the Sun.

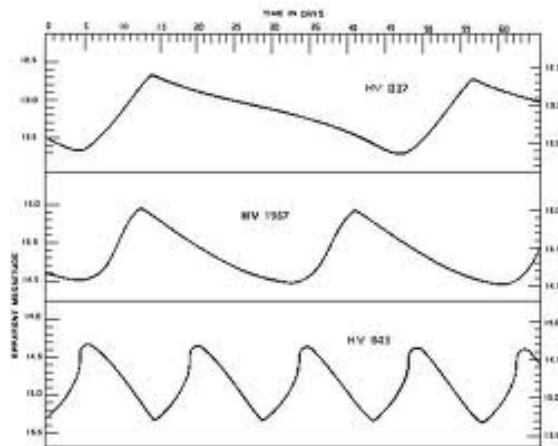
Carl Friedrich von Weizsaker born; a German physicist; studied the nuclear processes in stars and the evolution of the solar system.

A partial eclipse of the Sun on 17 April photographed from Greenwich with the Thompson photoheliograph, when 15 exposures were made.

Vesto Melvin Slipher began observing spiral nebulae and obtained the first radial velocity of a galaxy – M31.

A fall of meteorites at Holbrook, Arizona, on 19 July.

Henrietta Leavitt (below) discovered the period–luminosity law for Cepheid variables.



The observatory at Turin moved to a new site at Pino Torinese, overlooking Turin.

The observatory at Durban closed.

Takhtasinghji's Observatory, Pune, closed and dismantled – the instruments going to Kodaikanal Observatory.

Henry Crozier Plummer appointed Director of the Dunsink Observatory.

The Cape Astronomical Society founded on 8 November.

The Astronomical Society of Southern Africa founded on 12 December.

Moscow Society of Amateur Astronomers founded.

The Russian astronomical journal *Mirovedenye* founded.

THE TRANSIT QUIZ

Answers to October/November's quiz

1. Why will we eventually know a very great deal about Gale Crater? **It's the target for the Mars Science Laboratory rover, Curiosity, launched from Earth in November.**
2. The biggest known reservoir of water vapour in the universe has recently been discovered. What is its unexpected location? **Close to a supermassive black hole in a galaxy 12 billion light-years away. It may hold 140 trillion times as much water as Earth's oceans.**
3. The ALMA telescope in Chile is now ready to start observations. What do the initials stand for? **Atacama Large Millimetre/submillimetre Array.**
4. We've now had several pictures in *Transit* of Comet Garradd. What's the other bright (mag. ~5–6) comet in the skies at the moment, in Leo? **C/2010 X1 Elenin.**
5. Who is President of the Society for the History of Astronomy? **Dr Allan Chapman.**
6. Why was the object designated as 3C 273 a first, and what does the label mean? **It was the first object to be identified as a quasar – it was 273rd in the Third Cambridge Catalogue survey of radio sources.**
7. What is a shepherd moon? **A minor moon whose gravitational influence holds the particles of a planetary ring in place, preventing them from dispersing. For example, Prometheus and Pandora stabilise Saturn's F ring.**
8. If you add a Whirlpool and a Butterfly, what do you get? **A Ring. Think Messier objects – M51, M6 and M57.**
9. Most amateur astronomers know about the Hertzsprung–Russell diagram. What were the nationalities of the two men? **Danish and American.**
10. What are the popular names for the Pointers – the stars α and β Ursae Majoris, which point towards the Pole Star? **Dubhe and Merak.**

December's quiz

Beats there an astroheart that doesn't thrill just a little bit at the first glimpse of Orion in the autumn or winter sky? This month's questions are all about this 'most magnificent of all the constellations', as Sir Patrick has described it.

1. If you moved to the South Pole, for what part of the year would you be able to see Betelgeuse? How about Rigel?
2. Orion the mighty hunter of myth boasted of being able to kill any creature on earth, but he forgot one, which got him in the heel, causing them both to be put up in the sky but as far apart as possible. What was the creature and its constellation?
3. 'Rigel' is Arabic, derived from 'Rijl Jauzah al Yusra', meaning what?
4. Rigel is famously very luminous – at least 60,000 times as luminous as the Sun. What's the next most luminous of Orion's major stars?
5. The three Belt stars all have the same letter in their spectral classification. What is it?
6. What can you say about the apparent diameter of Betelgeuse as viewed from Earth?
7. How many Messier objects are in Orion, and what are they?
8. Orion's 'bow' is a line of six stars to the right-hand side of the constellation that is more than half as long as the main 'body'. What's the curious thing about this set?
9. When does the Orionids meteor shower reach its peak?
10. What is IC 434 better known as?

And here's the answer to John Crowther's quiz question on the Letters page ...

On this alternative Earth, the early civilisations comparable to Greece, Egypt and China were situated in the southern hemisphere, so naturally the maps were reversed.

