



# TRANSIT

The January 2012 Newsletter of



## NEXT TWO MEETINGS at Wynyard Planetarium

Friday 13 January 2012, 7.15 for 7.30 pm

**Building the Universe**

Prof. Carlton Baugh, *Durham University*

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Friday 10 February 2012, 7.15 for 7.30 pm

**Members' Night + AGM**



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## Editorial

**Rod Cuff**



Firstly, a Happy New Year to all CaDAS members and to everyone who downloads *Transit* from our website. There are quite a lot of you, I'm pleased to say, from various places around the world – perhaps we should have a summary of website facts and statistics before too long.

After last month's Orion-oriented quiz, the current issue has a particularly helpful and stimulating coverage of the **Orion Nebula area** and beyond from Rob. I'm going to try to work through Rob's list before my favourite constellation gets too low in the early spring.

Alas, that's about it for home-grown articles this month! It's the first time in a year and a half that there hasn't been enough material from members to fill at least a 12-page issue. This is understandable at Christmas/New Year, but please consider writing something for *Transit* this month or soon, especially if you've been wondering about taking the plunge. And even more especially if you have an idea for a series, short or long, that you could start off. Applications of various kinds of filter? Historical characters in astronomy? Places to visit with an astronomical slant to them? (We've had several of those in the past year or two.)

However, it also provides an opportunity to introduce something new. Last year the American Association of Variable Star Observers (AAVSO) launched a scheme offering free articles from their own material for astronomical societies to use. All we have to do is sign up to get the password for their blog that provides the portal, and give them due acknowledgement and a link to the author. So I'm pleased to include the **first article from the AAVSO collection** – a recent one, with a connection to one of last season's best CaDAS talks. When Roger Pickard, Director of the BAA's Variable Stars Section, addressed us, he explained the mysteries of how variable stars have been systematically named (even if it was historically rather ad hoc). No star could be more variable than a supernova, surely, so I've chosen an AAVSO article on how supernovae are named.



To finish with, a couple of brief reminders ... Firstly, the speaker and topic for our **January meeting** have changed from what was listed in Neil's start-of-season programme. Professor Carlton Baugh (Durham University) will speak on 'Building the Universe'.

Secondly, we're looking for **nominees/volunteers** to succeed Alex Menarry as General Secretary as from our AGM in February. PLEASE consider having a crack at this, even if just for a year. Contact Alex as soon as possible ([general-secretary@cad-as-astro.org.uk](mailto:general-secretary@cad-as-astro.org.uk)) if so.

The deadline for *Transit's* February edition is **Saturday 28 January**.

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## Letters

### Astro Trails

*from the Astro Trails team*

We are writing to you in order to ask permission to place a link to your website from ours.<sup>1</sup> We are Astro Trails, a tour operator that offers tours and holidays to locations around the world that provide the best opportunities for our clients to enjoy astronomical and scientific events. For example, we are currently providing trips to:

- Canada's Northwest Territories to see the Northern Lights
- Hawaii for the Transit of Venus
- Morocco for the Geminid meteor shower
- The USA's West Coast for the annular eclipse
- Australia for the total solar eclipse in 2012.

While planning and running these tours is obviously our primary concern; we genuinely believe that this goes hand-in-hand with educating and informing the broadest range of people possible in the field of astronomy. As part of our website, we wish to create and incorporate a database of astronomical societies that allow any of our clients, or even just people who happen to browse our website, an easy way to find their nearest society or group to pursue their interest.

We hope that this simple and completely non-obligatory arrangement will be mutually beneficial in terms of both increasing awareness and website traffic for both parties. If you would like to add a link to our website in return we would of course be very grateful but this is definitely not the purpose of our email.

We would also like to take this opportunity to remind you that, were you to be interested in joining us for any of our tours, we offer a 5% discount to any groups of 10 or more people who book together. With this in mind, we would also be more than happy to sign you up to our email newsletter, which is a monthly or bi-monthly update of new tours and news.

*The Astro Trails Team* ([www.astro-trails.com](http://www.astro-trails.com))

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### Telescopes offered for sale

*from Gary Pluck*

Following a recent death in my family, a couple of large telescopes have come into my possession that I need to sell off as part of the estate.

Rather than follow the trend and offer them to the world via eBay, I thought I would offer them to a group local to me, if they are of any interest.

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<sup>1</sup> [The CaDAS committee agreed to this, and our webmaster Don Martin has also added a link to Astro Trails on our [links page](#). – Ed.]

I will be honest, I'm not an expert in these things and do not know their real value compared to the latest models available for sale brand new. I also have a feeling that there are a few nuts & bolts missing for fixing the tripod, wedge and scope together.

Anyway, the scopes are:

**10" Meade LX50 EMC** and **16" Meade LX200 GPS**

Both scopes have a tripod and a wedge and there are other bits & pieces, including one controller. I can provide photographs if necessary. Up until November 2010 the 16" model was kept at an observatory near Scarborough and looks to be in brand-new condition.

Please let me know if these are of any interest to you or CaDAS in any way. Don't hesitate to contact me if you require any further information.

*Gary Pluck (mobile 07528 8982 12)*

*[At the moment, it would be very difficult for CaDAS – or for that matter, the Planetarium / Observatory – to take on either of these scopes ourselves, though we'll be discussing Gary's approach further at our committee meeting in a few days' time. However, if any reader of Transit is interested in following up his letter with a direct personal approach to Gary, that would be very welcome. If you can't take either of these scopes on yourself, you may know of another individual or organisation who may be interested – please pass the word on. – Ed.]*

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## Re: Articles in December's *Transit*

*from John Crowther*

1. In the picture of Amerigo Vespucci *[see below]*, what is next to him? Is it part of a navigating instrument or part of the steering mechanism of a ship, such as a whipstaff? The year of his death (1512) is a century before the invention of the telescope, which rules out that it's a telescope tube.



2. Question 6 in the quiz *[What can you say about the apparent diameter of Betelgeuse as viewed from Earth?]* is also interesting. What magnification is needed to give the red giant Betelgeuse a diameter? Also, is the current interpretation of its name 'The armpit of the central one'? If so, how come the Arabic name of 10 letters became 24 when translated into English?

Thanks to Barry and to our unknown compiler of quizzes<sup>2</sup> for their work.

*Best wishes -- John*

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<sup>2</sup> *[It's the usual convention, John – anything otherwise unattributed is written by the editor. I've been compiling quizzes for Transit for these past three years, man and boy! That's not to say I wouldn't welcome with open arms any other compiler who'd fancy contributing a quiz or two (or three, or ...). – Ed.]*

# OBSERVATION REPORTS AND PLANNING

## Skylights – January 2012

Rob Peeling



### The Moon

1 January	9 January	16 January	23 January	31 January
First Quarter	Full Moon	Last Quarter	New Moon	First Quarter

There are two pairs of stellar occultations this month. On 6 January, 51 Tauri disappears behind the darkened quarter of the waxing gibbous moon at 12:25 UT, followed by 56 Tauri at 01:25 UT. On 11 January, 60 Cancri reappears from behind the waning gibbous moon at 05:02 UT, followed by  $\alpha$  Cancri at 06:05 UT.

### The planets

**Venus** will be a prominent object in the west at sunset throughout the month in its guise of the Evening Star. In a telescope it will be waning gibbous and getting larger and brighter through the month. On 13 January it will be just over a degree from Neptune, making this a good opportunity to spot the latter planet if you haven't done so before. Remember to confirm your sighting by increasing the eyepiece power to check that the planet shows a disk.

**Jupiter** is still riding high in the evening sky. Here is a list of convenient transit times for the Great Red Spot. You will need steady seeing and high power.

Jan 2	22:30 UT	Jan 17	19:57 UT
Jan 3	18:21	Jan 19	21:36
Jan 5	20:00	Jan 22	19:07
Jan 7	21:39	Jan 24	20:46
Jan 10	19:09	Jan 26	22:25
Jan 12	20:48	Jan 27	18:16
Jan 14	22:27	Jan 29	19:55
Jan 15	18:18	Jan 31	21:34

**Mars** is the principal planetary interest this month. The disk of the planet ought to be large enough to see some surface details. This will require good seeing, but the north polar cap is the easiest detail to pick out.

- If you can see dark markings, then why not roughly sketch what you can see?<sup>3</sup>
- Record the date and time of the observation.

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<sup>3</sup> [And send any results you're happy with to Transit! – Ed.]

- Next, find the longitude of the central meridian of Mars – in other words, which bit of the planet was facing you when you made your observation.
- Finally, find a map of Mars and, given the longitude of the centre of the disk facing you, see if you can put names to the markings you've observed. Use a low-resolution map such as the one in [Phillip's Atlas of the Universe](#) (Patrick Moore). The high-resolution maps from the Mars orbiters would overwhelm you with detail and make it difficult to identify features. Look out for Syrtis Major, a prominent dark feature at longitude 280°.

Here's a table to help you, together with dates when certain features will be fairly central on the Martian disk.

**Longitude (in degrees) of the Central Meridian of Mars at 00:00**

<b>1 Jan</b>	<b>2 Jan</b>	<b>3 Jan</b>	<b>4 Jan</b>	<b>5 Jan</b>	<b>6 Jan</b>	<b>7 Jan</b>	<b>8 Jan</b>	<b>9 Jan</b>	<b>10 Jan</b>		
91.2	81.8	72.5	63.1	53.8	44.5	35.2	25.9	16.6	7.4		
<b>Solis Planum</b>			<b>Acidalia Planitia</b>								
<b>11 Jan</b>	<b>12 Jan</b>	<b>13 Jan</b>	<b>14 Jan</b>	<b>15 Jan</b>	<b>16 Jan</b>	<b>17 Jan</b>	<b>18 Jan</b>	<b>19 Jan</b>	<b>20 Jan</b>		
358.1	348.8	339.6	330.4	321.2	312.0	302.8	293.6	284.4	275.3		
								<b>Syrtis Major</b>			
<b>21 Jan</b>	<b>22 Jan</b>	<b>23 Jan</b>	<b>24 Jan</b>	<b>25 Jan</b>	<b>26 Jan</b>	<b>27 Jan</b>	<b>28 Jan</b>	<b>29 Jan</b>	<b>30 Jan</b>	<b>31 Jan</b>	
266.1	257.0	247.9	238.8	229.7	220.6	211.6	202.5	193.5	184.5	175.5	
								<b>Sirenum</b>			

From *BAA Handbook 2012*

Here are two sketches I made during the last apparition of Mars in January 2010.

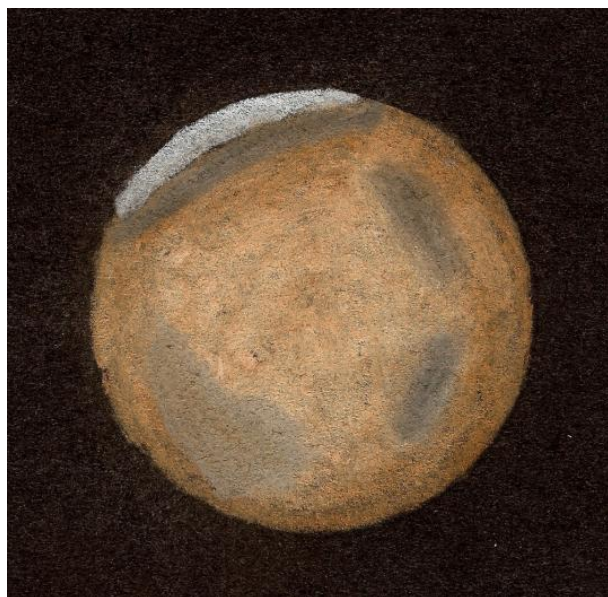


Figure 1. 18 2010



Figure 2. 30 January 2010

**Saturn** is an early-morning object in Virgo near to bright Spica throughout January.

## Meteors

The **Quadrantids** are the principal shower for January, lasting from 28 December to 7 January, with the maximum on the 4<sup>th</sup>. According to David Levy, this shower yields 40–200 meteors per hour and they tend to be bluish.

## Deep sky

**Orion** occupies centre stage to the south throughout January. From a dark site, such as the North York Moors, **M42, the Great Orion Nebula**, can be seen as a fuzzy star with the naked eye. However, it is more easily seen with almost any pair of binoculars.

Through a telescope M42 is a great testing ground for whatever equipment you have. Try several eyepieces of different powers (and nebular filters, if you have them) and see how much detail you can pick out.

- Can you see all four stars in the **Trapezium**,  $\theta_1$  Orionis? Galileo and Huygens only show three in the earliest known drawings of M42 from 1617 and 1659 respectively. Messier shows four in his drawing published in 1771. The brightest of the four,  $\theta_1$  Orionis C, is responsible for most of the ultra-violet light that causes the gas in M42 to glow so brightly.
- Can you see the nebula following the line of three stars away from the Trapezium, and the matching arc heading off in the opposite direction?
- With a low-power lens, look for the faint splotch around a single bright star away from the Trapezium. This is **de Mairan's Nebula or M43**. It is prominent in good observing conditions from all locations.
- Above and to the north of M42 is the **open star cluster NGC 1981**, which should be clearly visible with binoculars.
- If you have a larger telescope (8"+) and nebula filters, it's worth trying for the nebula **NGC 1973,75,79** around the stars lying between NGC 1981 and M42.
- Imagers should attempt to obtain a clear image of the **'running man' (NGC 1977)**.
- Also look at the bright star **iota ( $\iota$ ) Orionis**, below M42 in the sky. On a good night it is possible to see a faint arc of nebulosity stretching all the way from M42 down to this star. Incidentally, this star is believed to have originally been part of the same star system as the 'runaway' stars AU Aurigae and  $\mu$  Columbae before these two were violently ejected, leaving  $\iota$  Orionis behind at their mutual place of formation.



Staying within Orion, have a look for the **emission nebula M78**. Look about a quarter of the way along the line from Alnitak (the leftmost star in Orion's belt) and Betelgeuse. M78 lies about 1° (about a field-width with low power) to the east of this imaginary line. It is not particularly bright, but can be found with a small telescope from a moderately light-polluted site. It is the pair of stars like eyes in the nebula that makes it distinctive.

Also in Orion is **NGC 2169**, a small, bright **open cluster** that I recommend viewing. It completes a triangle with and below xi ( $\xi$ ) and nu ( $\nu$ ) Orionis lying way out along Orion's upstretched arm to the north-east of Betelgeuse. Douglas Adams told us in *The Hitchhikers' Guide to the Galaxy* that the answer to life, the universe and everything was 42. NGC 2169 suggests that he was out by five. The correct answer as written in the stars of this cluster is '37'. Take a look if you don't believe me!

Now move over to the constellation of **Monoceros**.



**Beta ( $\beta$ ) Monocerotis** is a lovely triple of white stars (use high power). To the north-east of  $\beta$  lie the **Rosette (NGC 2239) and Cone (NGC 2264) Nebulae**. These are worth a look in order to see the associated open clusters, irrespective of whether you are at a dark enough site or have the filters to see the nebulae themselves. The star 15 Monocerotis marks the base of the **Christmas Tree cluster**. Where the fairy should be on the top of the tree is the tip of the eponymous Cone Nebula. You will need some sort of star atlas to help you navigate in this region of sky. If you are up for a bit of a hunt, then try the **open cluster NGC 2301** further to the east. This is a lovely, bright little cluster. Steve O'Meara has given it the nickname of 'Hagrid's Dragon'.

To find **M1, the Crab Nebula**, locate the star zeta ( $\zeta$ ) Tauri in your finder and sweep north about half a field's width with a low-power eyepiece. M1 is surprisingly faint, given its fame, and any haze in the sky will probably prevent your seeing it. Once you find this fuzzy blob, think about



how its light is due to the radiation emitted by the tortured matter in the pulsar at its centre, which is undetectable except by imaging. Also in **Taurus**, I recommend the binocular **open cluster NGC 1746**, two-thirds of the way from Aldebaran to  $\beta$  Tauri (Alnath).

## GENERAL ARTICLES

### Supernova alphabet soup

*Mike Simonsen* ([Simoastronomy](#))

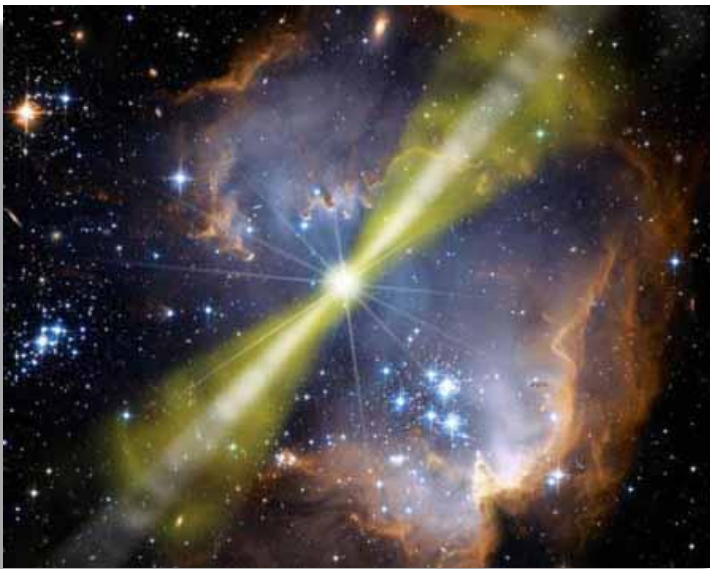
The International Astronomical Union (IAU) is the sole body responsible for the official naming of astronomical objects. So if you have a problem with the way things in the Universe are named, you now know where to send your email and letters of protest.



Before we get into this, a quick grammar note. When we discuss more than one supernova, they are called supernovae (super-no- vee), not supernovas. The same holds true for more than one nova. They are novae (no-vee).

Please don't write and ask me about Novas. Those are old Chevrolets, not stars.

Fortunately, the naming convention used for **supernovae** [SNe] is pretty simple and straightforward. The name is formed by combining the prefix SN, for supernova, the year of discovery and a one- or two-letter designation. The first 26 supernovae of the year get an upper case letter from A to Z (SN 1987A). After that, we start over with pairs of lower-case letters, starting with aa, ab, and so on (SN 2005ap).



Of course there are exceptions – there are always exceptions. That's one of the things about astronomical nomenclature that is maddening, but I digress...

Four important historical supernovae are known simply by the year they occurred: SN 1006, SN 1054, SN 1572 (more commonly referred to as Tycho's Nova), and SN 1604 (also known as Kepler's Star).

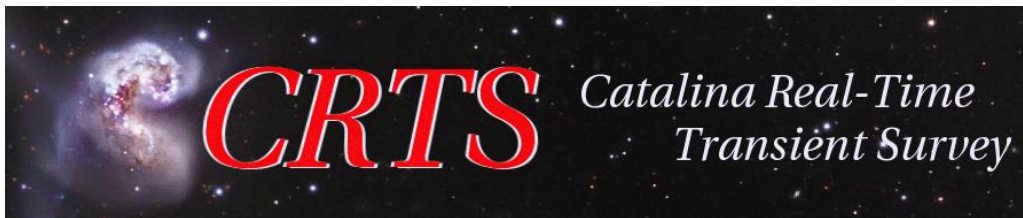
One reason I'm bringing this subject up now is because we are ending the year, so we are approaching the time where we reset the naming schema for 2012 and the first supernova of the new year will get named SN 2012A. With the annual number of discoveries rising each year to well over 500, it is always a bit surprising how long it takes for that first one of the year to get named. So each year we hold an unofficial contest here on Simoastronomy to see who will discover the first SN of the new year.

One of the reasons it usually doesn't occur on the first day of the year is because supernova discoveries have to be officially confirmed spectroscopically before they get an official IAU designation. When someone discovers a possible supernova it gets reported to the IAU and

then listed on the CBAT [Transient Objects Confirmation Page](#). If it is a possible SN it gets a temporary designation of PSN (possible supernova) followed by its coordinates (PSN J01560719+1738468).

Only after someone has taken a spectrum confirming it *is* a supernova does it get a name with the year and letter combination. This can take several days, so it is unlikely a SN discovered on January 1 will be named until later in the week or the second week of the month. If it were discovered on December 23rd and confirmed on the 1st of January it would still get a name from the previous year.

This time lag will not be acceptable in the near future, with surveys like LSST coming on line. Astronomers will want immediate notification of discoveries of all types of transient objects including supernovae, so what has happened is that new groups searching for SNe have begun to make up their own names.



The [Catalina Real Time Survey](#) is one such group. They are discovering dozens of possible supernovae that don't always get official IAU designations. Their discoveries are all named CSS (Catalina Sky Survey) followed by the date in yymmdd format and then the rough coordinates, like this: CSS111227:104742+021815. Crazy, huh?

ROTSE, the Robotic Optical Transient Search Experiment, also discovers SNe and gives them their own designation in the form of ROTSE3 (the third iteration of this experiment) followed by coordinates, such as ROTSE3 J133033.0-313427.

And there is the Palomar Transient Factory, which names its discoveries with the prefix PTF, of course, such as PTF11kly, the nearest supernovae in decades, visible with small telescopes in M101. This SN eventually received an IAU designation, SN 2011fe, but that just created more confusion, since now it is known variously by both names in the literature.

Somehow managing to keep it all together amidst the confusion, David Bishop maintains the [Latest Supernova Website](#) where you can see discovery images and keep track of your favourite supernovae and related news. There is [an excellent article about David](#) and how his website evolved from simple beginnings.

So if you're asking WTF? about the latest SNe, on the WWW the URL that will lead you through the ABCs is definitely [www.rochesterastronomy.org/supernova.html](http://www.rochesterastronomy.org/supernova.html).

Got that? Good, there will be a quiz later...

This content distributed by the [AAVSO Writer's Bureau](#)<sup>4</sup>

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<sup>4</sup> [See the editorial on p. 2. – Ed.]

## THE TRANSIT QUIZ

### Answers to December's quiz

*Last month's questions were all about the constellation of Orion.*

1. If you moved to the South Pole, for what part of the year would you be able to see Betelgeuse? How about Rigel? **Betelgeuse is in the northern celestial hemisphere, and hence is never visible from the South Pole. Rigel is in the southern celestial hemisphere, so is circumpolar there – it never sets.**
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? **A scorpion – Scorpio.**
3. 'Rigel' is Arabic, derived from 'Rijl Jauzah al Yusra', meaning what? **The left leg of the giant.**
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? **Saiph, or  $\kappa$  (kappa) Orionis at the bottom left-hand corner. It's around 50,000 times as luminous as the Sun.**
5. The three Belt stars all have the same letter in their spectral classification. What is it? **O – from left to right, Alnitak, Alnilam and Mintaka are O9.5, O7 and O9.5 respectively.**
6. What can you say about the apparent diameter of Betelgeuse as viewed from Earth? **It's greater than for any star other than the Sun.**
7. How many Messier objects are in Orion, and what are they? **Three: M42, M43 and M78 are all diffuse nebulae.**
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? **They are all denoted by  $\pi$  ( $\pi$ ) –  $\pi^1$  to  $\pi^6$ .**
9. When does the Orionids meteor shower reach its peak? **Around 21 October.**
10. What is IC 434 better known as? **The Horsehead Nebula.**

## January's quiz

1. Which organisation operates the Very Large Telescope in Chile?
2. Visible to people in the Southern Hemisphere at the moment is C/2011 W3 or 'The Great Christmas Comet of 2011'. Who discovered it; what kind of comet is it; what was remarkable (these days) about the discovery; and what is fairly remarkable about its visibility now?
3. Which famous supernova remnant contains Pickering's Triangle? Which constellation is it in?
4. Pickering directed an observatory for over 40 years, and had a famous scientific harem. Can you name the observatory and any of the women?
5. Why might you want to set your alarm for no later than 4.30 a.m. on 6 June this year?
6. The Orion Nebula, M42, is the second brightest diffuse nebula as seen from Earth. What's the brightest?
7. The Kepler space telescope looks for evidence of extra-solar planets – in which constellations?
8. What constellation has Aries to the west, Gemini to the east, Perseus and Auriga to the north, Orion to the south-east, Eridanus to the south and Cetus to the southwest?
9. Abbe, König and Erfle are – what?
10. Why is the Sagittarius A\* region likely to get even more attention than usual for the next few years?

