



Deep sky

M22: the great Sagittarius globular cluster

Never rising far above the British horizon, even from southern England, Sagittarius is still a distinctive summer constellation for UK observers, with the 'teapot' and 'teaspoon' asterisms – rather sadly replacing the mythological centaur – being particularly obvious. When we look at Sagittarius we are looking towards the centre of the Galaxy and at the rich star-fields and clusters that abound there. The numerous globulars in the constellation include six from Messier's catalogue (M22, M28, M55, M69, M70 and M75) and a further fourteen from the NGC. It was the mapping of these clusters by Harlow Shapley in 1918, and measurements of the RR Lyrae and Cepheid stars within them, which allowed him to determine the position of the Sun relative to the centre of the Galaxy.

Undoubtedly the finest globular cluster in Sagittarius is M22, and at visual magnitude 5.1 it is the third brightest in the sky after Omega Centauri and 47 Tucanae. Although M22 is a clear naked-eye object from southern Europe, I am not aware of any naked-eye sightings from the UK where it typically culminates around 14° above the horizon. As with any naked-eye object it is impossible to determine who first saw it, but its 'discovery' is generally credited to the German astronomer Abraham Ihle in 1665. Edmond Halley also included it in his 1716 *Philosophical Transactions* paper of six nebulous objects that could not be resolved into stars (the others being M11, M13, M31, M42 and Omega Centauri). Halley referred

to M22 as being '...small but very luminous'. Halley's original paper can be read online at http://seds.org/MESSIER/xtra/similar/halley_pt.html.

William Herschel was the first person to resolve the cluster into stars, while his son John regarded it as a good test object for telescopic resolution. Messier himself observed it in 1764 June and remarked that it appeared as a '...round

nebula without star'. Many observers have remarked that it appears to be largely composed of 10th and 12th magnitude stars with very few other magnitudes present.

On the Shapley/Sawyer classification scheme for globular cluster concentration M22 is a class VII cluster, where I is the densest and XII the most open. For comparison M13 – regarded as the greatest globular of the north-

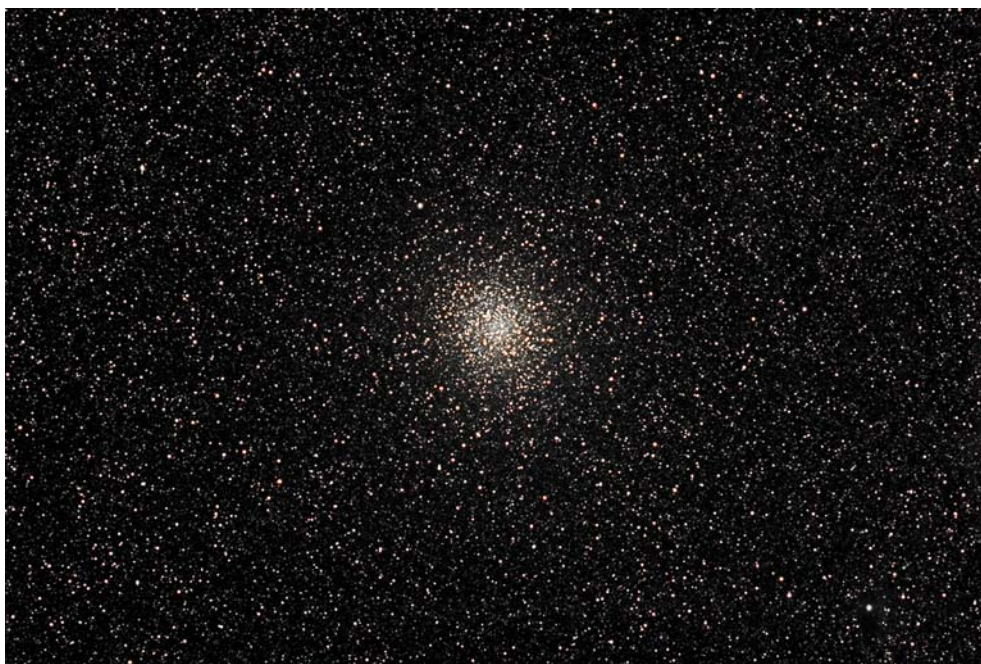


M22 imaged from Sardinia by Andrea Tasselli



ern sky – is class V and magnitude 5.8. M22 is also significantly larger than M13 with a quoted diameter of 0.5° , although determining the size of globular clusters is very subjective. Lying at a distance of around 10,000 light years M22 is also one of the closest globulars to us. It has a true diameter of 110 light years and is estimated to contain up to 300,000 stars. Some references even put the number of stars at over half a million.

M22 lies at RA 18h 36.4m and Dec $-23^\circ 54'$ (2000.0) which puts it $2\frac{1}{2}^\circ$ north-east of magnitude 2.8 λ Sagittarii (Kaus Borealis), the star forming the top of the 'teapot'. The two images shown here are by Paul Downing and Andrea Tasselli. Paul's image was obtained from his observatory in southern Spain (see Observers' Forum, *Scopes in the Sun*, *JBAA* 117(6), 2007 p.350) using a Takahashi FSQ106 refractor at f/5 with an SBIG ST8-XE CCD camera. Image details were 30m L (15x2m) and 30m each RGB (15x2m binned 2x2) while Andrea's image was taken while on holiday in Sardinia using a 152mm Intes Micro MK67 Mak-Cassegrain at f/6 with an SX-HV9 CCD camera and Astronomik IIC RB filter. The final image shown here



M22 imaged from southern Spain by Paul Downing

comprises 12x60sec frames.

Visually globular clusters are among some of the most beautiful objects in the sky, and from a dark site with the cluster at a decent altitude M22 is stunning. A 30cm telescope will resolve the cluster to the centre, the stars appearing to be arranged in curving chains. Liz Downing, observing from south-

ern Spain, comments that this is one of her favourite clusters and shows a softer appearance than M13, which is visibly bluer. She also notes the very different sky background for the two clusters, with literally a carpet of stars framing M22, as you look directly into one of the most star-rich parts of our galaxy.

Buried close to the centre of M22 is the planetary nebula GJJC1, discovered by *IRAS* in 1985. This is one of only four planetary nebulae known in globular clusters, the others being Pease 1 in M15, JaFu 1 in Palomar 6 and JaFu 2 in NGC 6441. If finding M22 is easy then surely finding its planetary nebula must be one of the ultimate observing challenges.

Stewart L. Moore, *Director, Deep Sky Section*

Is this an Antarctic meteor fall?

On my recent visit to Rothera station in the Antarctic (67.57°S, 68.13°W) some of my colleagues mentioned seeing and photograph-



ing a smoke trail in the sky late one evening. This immediately attracted my interest! Their image suggests that the object was approximately due north of the station, and at around 30° elevation.

When I enquired further they also mentioned hearing a sonic boom, and that the trail persisted for around 20 minutes. They don't appear to have witnessed the object itself, so the brightness is unknown. They are also a little hazy about the date, but think that it was around 04:00 UT on 2008 January 9. The description sounds like a meteor with a potential meteorite fall, as there were no known aircraft in the vicinity (Rothera is the local Air Traffic Control), however the chances of any meteorite recovery are remote without further satellite information. The picture was taken by Tristan Thorne and the other witnesses were Andy Barker and David Hardie.

Jonathan Shanklin,
Director, Comet Section; and British Antarctic Survey



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Imaging a transit of an extrasolar planet

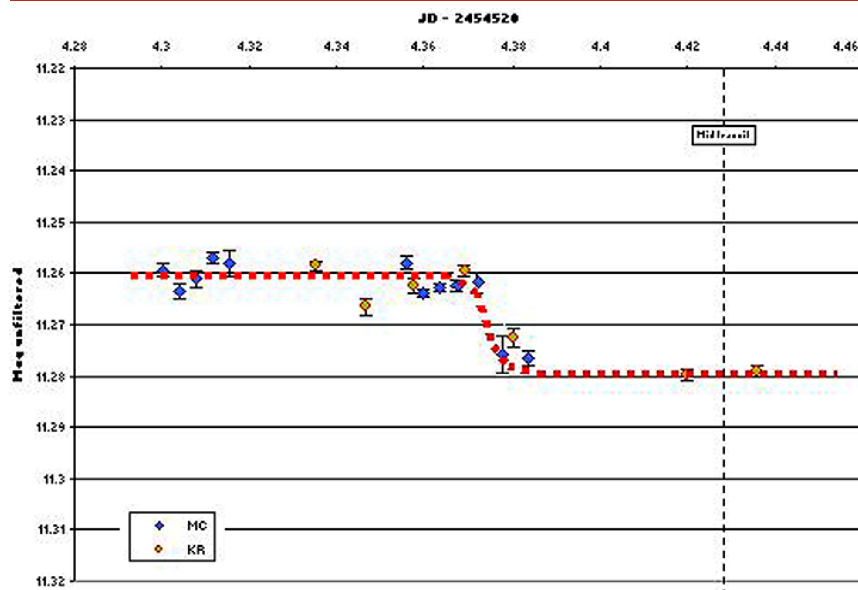


Figure 1. Observations of XO-2b on 2008 February 27

Despite having an active interest in photometry the author had never tried to image an exoplanet transit. When Crayford Manor House Astronomical Society received information regarding the upcoming transits of XO-2b, whose period is accurately known, it was time to have a go. The planet itself cannot be directly seen, of course, but by happy coincidence the geometry of the parent star (also known as GSC 03413-00005) and the planet are in line of sight to the Earth. With care the slight reduction in the star's light as the planet crosses in front of it can be detected. This drop in brightness is typically 1–2% and is within the range measurable with CCD imaging.

Enlisting the help of another active Crayford member (Keith Rickard) a plan was hatched. We would employ unfiltered time series photometry to try to capture the slight reduction in the star's light during the planet's

passage. At 80° altitude XO-2b, located in Lynx, was well placed, and with a visual magnitude of 11.26 it should be easy to get a good signal to noise ratio. This is very important when aiming for accurate measurement.

Using information from the *Simbad* astronomical database a table was produced showing times and dates of mid-transits. The most favourable were those occurring with mid-transit times between 20:30UT and 00:30UT, of which the best were 2008 February 27 at 22:18 UT and April 01 at 22:21 UT. Two earlier possibilities had been identified but were clouded out.

The forecast for the night of Feb 27 looked promising. However, as is so often the case, the cloud scudded in to try and spoil the fun; the author was clouded out by 21:12UT and KR by 23.23UT.

The observations obtained were calibrated and processed using *AIP4WIN* and the

BAAVSS spreadsheet and combined in *Excel*. It is always a danger that you see what you are expecting to see. KR's results looked pretty good on their own whereas the author's showed only a possible drop in brightness having finished prematurely due to cloud. On their own it was difficult to be conclusive but once combined they were much more convincing (see Figure 1). Two telescopes are definitely better than one.

A follow up was carried out on April 01 which produced similar results (see Figure 2). However, the complete lightcurve was unfortunately not obtained due to a variety of factors including cloud and in KR's case, an obstructed horizon. Nevertheless I believe that the results show that even with less than ideal weather conditions it is still possible to detect these distant events.

It never ceases to amaze just what is possible with relatively modest equipment, and the amount of satisfaction it gives.

Martin Crow

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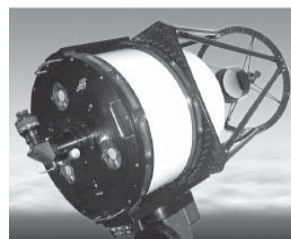
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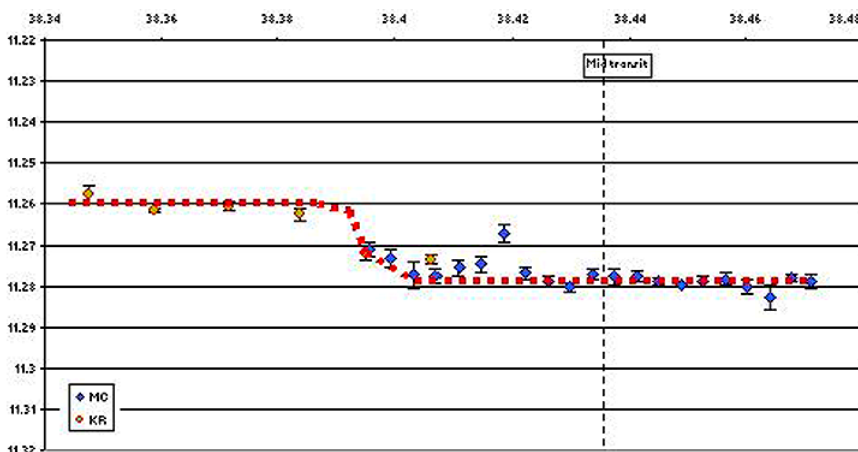


Figure 2. Observations on 2008 April 01



Special report – the inaugural Isle of Wight Star Party

The dark skies on the south coast of the Isle of Wight provided a brilliant backdrop for the inaugural Isle of Wight Star Party in March this year. About forty-five astronomers travelled from as far as Devon and Cambridge for the event, which was held at the Brighstone Holiday Centre between Thursday March 6 and Monday March 11.

The location offered almost 180° southerly views across the Channel, and many astronomers commented on seeing stars, such as the lower half of Canis Major, that were so near the horizon that they are not normally visible from other sites. Unfortunately the worst storms of the winter chose this weekend to arrive and made imaging all but the brightest objects very difficult, but visual observing was good on Friday and Sunday evenings. M42 and M43 were obvious early targets, but later Sirius' 'Pup' was seen, as was NGC 3242 in Hydra – one of the deep south objects visible from the site. M65 and M66 were clear in an 80mm refractor which

was pleasing for at least one attendee, as these are normally swamped by light pollution even in bigger scopes. The equipment used during the event ranged from small binoculars, refractors and Schmidt–Cassegrains, to a 355mm Celestron on a modified mount and a 500mm Dobsonian.

Daytime activities included visits to Vectis Astronomical Society's Isle of Wight Observatory, and



The former rocket testing site at the Needles Battery. Photo: S. J. Griffiths

the Needles New Battery, an ex-rocket testing site now owned by the National Trust, with a talk by someone who used to work on the secret Blue Streak rocket testing programme there.

Saturday evening was completely clouded out, but with a very high level of audience participation, John Murrell, Owen Brazell, Richie Jarvis and David Rayner gave fascinating talks which between them covered rocket testing, deep sky objects, digital image manipulation and eclipse photos.

The holiday centre provided excellent camping facilities, with heated en-suite chalets for those who didn't want to brave the elements. A kitchen/tea/coffee room allowed for free hot drinks to be available all night long and lockable rooms were available for the safe storage of equipment and the trade stands. A large dining area provided accommodation, not only for a wonderful cooked breakfast, but also doubling up as a wet weather location and meeting/reception room.

There was an excellent raffle, with a star prize of a Lanthanum eyepiece donated by Orion Optics. (Thanks also to Springer Books, *Astronomy Now*, David Hinds and BC&F for providing other raffle prizes). Thanks are also due to the ferry company Wightlink, who gave us a very good deal on the ferries.

The event was run by the island's Vectis Astronomical Society (VAS) in association with the Southern Area Group of Astronomical Societies (SAGAS). Information about next year's star party (around 2009 March 26 (New Moon): dates tbc) is available on www.iowstarparty.org.

Lucy Rogers [lucy@lucyrogers.com]



The Eta Carinae nebula (NGC 3372)

Eta Carinae is one of the most massive and luminous stars in our region of the Milky Way, and a prime candidate for the next galactic supernova. It currently varies around 5th magnitude, though for a period of a little over 20 years in the 1800s it was one of the brightest stars in the sky. The nebula is an HII star-forming region, illuminated by Eta Carinae and other young luminous stars in the neighbourhood.

The image was taken on 2007 April 6 using an Intes 152mm MakNew Cassegrain on a Paramount ME with an SBIG ST10E CCD, at Tin Shed Observatory, Australia, using Global Rent-a-Scope. An RGB image with 60 seconds exposure in each colour.

Andrew Wilson