

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

14th December

**The Scientific and Cultural Legacy of the
Hubble Space Telescope
Professor Martin Barstow
University of Leicester
Talk will be on Zoom**

EDITORIAL

Well here is the last Spacewatch of 2020 and the end of a very challenging year for the society. I hope you have enjoyed what we have managed to put together in terms of virtual meetings. The virtual observing sessions seem to have gone very well as well and my thanks to Trevor, Tony and Steve for these, despite Steve having issues with software and Zoom. Unfortunately, from what I see and hear this is likely to go on for the majority of the next session in 2021, at least until the summer. It seems however that we may well be Zoomed out in terms of the increasing number of these being available.

I hope that with Christmas approaching, whatever the government allows us to have, that you manage to add whatever astronomical goodies you want to the list. I have a bad feeling that with Brexit now coming the price of things is likely to go up a lot next year. Perhaps surprisingly I understand that most astronomy dealers have had a good year, although I see that David Hinds Ltd, the Celestron distributors, have closed, I am not sure if this is Covid related or just getting out of the business. I assume someone else will pick up the slack. Willmann-Bell the specialist astronomy publishers have also closed which will be a loss.

I note the AAPG is releasing its report on light pollution on the 9th December so I will sign up to hear what they plan and then can't do.

I see that the upcoming conjunction of Jupiter and Saturn is probably going to cause a lot of Star of Bethlehem and end of the world stories. All I can hope is that the weather at least co-operates,

something it has not done for the majority of the autumn, although the hazy skies have probably been OK for the imagers so I expect lots of images to adorn the Jan Spacewatch 😊

The editor of "SpaceWatch" is Owen Brazell, who would very much appreciate your stories & contributions. In particular whilst many fine images are being posted on the discussion group it would be nice to have some in the SpaceWatch. Please send any news, observations, photos, etc. to:

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REPORT OF LAST MEETING

Gwyneth Hueter

Novembers Talk

Dr James Fradgley was quite happy to call himself a grumpy old man having a rant, when he introduced his talk: 'Bad Science (or, be alert for unscientific science)'.

He is a member of the Bournemouth Natural History Society but has much interest in astronomy.

It's difficult to do a resumé of this talk, as it is really a collection of observations and grouses about what are supposed to be science truths and suppositions.

For a start...

- Astronomy is really the naming of stars. Astrology is the reasoning or planning behind stars, so we should really be astrologers.
- Meteoric rise - is the opposite of what meteors do.

- Quantum jump - is actually tiny; it refers to the minimum possible changes in energy levels in an atom.
- Many people think the Pole Star is the brightest star in the sky. It is number 50 as viewed from Earth. Shakespeare has Julius Caesar referring to the constancy of Polaris as well as the brightness. Polaris is a multiple star system containing a Cepheid variable. At the time of Julius Caesar it was much further away from the pole than it is now.
- Dark Side of the Moon. Pink Floyd album. What else?

The rest of his talk drifts away from the astronomical side, but was interesting none the less in that he highlighted how we can word the facts so they fit the science, when it should be the other way around. For example, evidence exists that homeopathy works, when it's really the placebo effect.

Scientists are under great pressure to publish, so may leave out bits of research that don't fit in. Once it's out there it's difficult to dismiss. James mentions more than once the MMR and autism link put out by Andrew Wakefield. It was proved wrong but the media took ages to accept that. His research was based on biased sampling, or cherry picking, and he had a financial interest on the litigation side. There is also a thing called probability hacking, where some research throws something up that was not what was being researched so the result is reset to fit a different initial proposition. Then there is the need to use hyper inflated descriptions such as 'unique', 'unprecedented', 'ground breaking' - anything to grab attention.

Remember the little green men pulsar? Life on Venus? Phosphine is only PH₃. Exoplanets are plenty but it's water we want. Water equals life but we shouldn't make assumptions. Remember Percival Lowell's Martian canals? They were probably just the effects of Mars' bright light falling on his retina. (A 24" refractor would give a pretty dazzling view of Mars at opposition, after all.) The face on Mars? Just a line of sight effect. The Great Moon Landing Hoax? Can all the 450,000 people working on the

Apollo missions have kept it quiet that the missions were faked?

Absence of evidence is not evidence of absence. Remember Occam's Razor - keep it simple. The simplest explanation is usually the best possible.

A few film bloopers that he finished off on were that the film Titanic showed some night views, apparently with equatorial background constellations. Did you see that?

Classic bloopers are the noises you hear in space films and also the density of asteroid numbers in our asteroid field as depicted in space films.

Yes, these are his grouses. I'm sure you have your own and please feel free to send them to our Editor. I am sure he is happy to be called an astrologer too.

THE NIGHT SKY FOR DECEMBER 2020

Steve and Cristina

What's Up – December 2020

After getting first light with my new camera and, at last, getting used to APT (Astro Photography Tool), a camera, mount, focuser, filter wheel and plate solving software, I was looking forward to November's online observing session. Well that was until around 20 seconds after logging into the Zoom meeting. Laptop froze and nothing was operational, I had to do a hard shutdown, and after a restart, cameras and plate solving wouldn't work, so I spent most of the meeting trying to figure out how to fix it.

At least Trevor and Tony had better luck and the session was still a success.

Hopefully December will bring us some better weather than November gave us, as there is plenty to look at this month, including one of the best meteor showers of the year and hopefully an opportunity to see and image what will be an impressive conjunction of two of our Solar Systems most majestic planets.

Make the most of any good weather this month as I'm sure January will be awful due to the amount of new equipment bought for Christmas.

The Planets

Mercury

In its superior conjunction with the Sun on the 20th, it is hardly likely to be seen during December; although experienced astronomers may be able to glimpse it in the bright twilight 30 mins before sunrise very low in the SE, taking care not to attempt the observation near to sunrise.

Venus

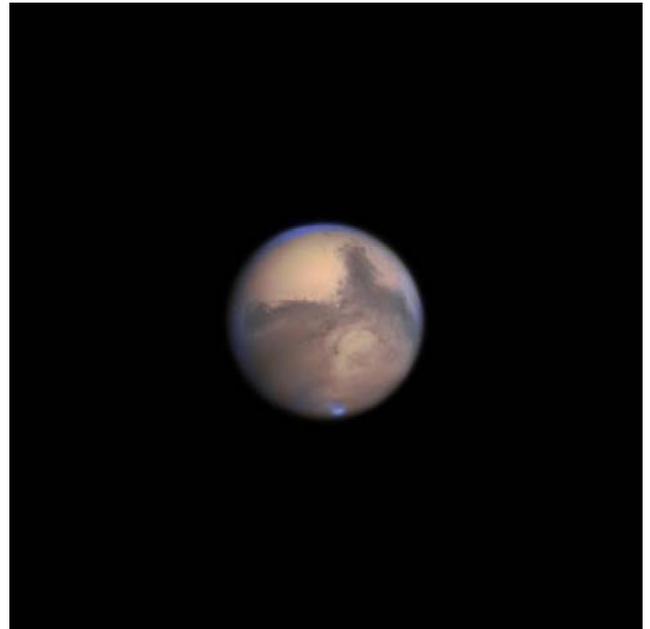
The planet rises a couple of hours before the Sun during December. It lies in the constellation of Ophiuchus at the end of the month and may be seen rising at around 07h in the SE. However, on the 12th when Venus is in the constellation of Libra, the thin waning crescent Moon may be seen approaching the planet, when at 07h Venus lies 7° to the lower left of the crescent Moon, a pretty spectacle as the Earth will be illuminating the night hemisphere of the Moon at the time.



Mercury, Venus and Moon – Steve Creasey

Mars

Around mid-December, Mars lying in Pisces, is at magnitude -0.68 , fainter than Venus, Jupiter and the ‘Dog Star’ Sirius. It now fades as the distance between Earth and Mars increases. The planet is now culminating in the south at around 20h UT; and on the 23rd at 22h, Mars and the waxing gibbous Moon are in conjunction, with Mars lying 6° to the north of the Moon.



Mars – John Napper



Mars – Chris Pickford

Jupiter & Saturn

Jupiter approaches Saturn for one of their closest conjunctions just over the border from Sagittarius in the neighbouring constellation of Capricornus. At 18h on the day of the Winter Solstice (21st), the two planets are separated by only 0.1° (6 mins of arc). Jupiter lies to the south of Saturn; look for the two low in the SW at

around 17h. Both are visible in the fields of a pair of binoculars and small telescopes. With enough magnification in a small telescope, the four major satellites of Jupiter and the rings of Saturn may be seen. This is a very rare occurrence and we suggest that everyone takes the opportunity to witness this rare event. On the 16th at 16h, the very thin waxing crescent Moon may be seen approaching the two planets. The Moon will be low in the SW twilight, and the two planets will be seen 8° to the upper left of the Moon. The following night, the Moon moving eastwards is 7° to the left of Jupiter and Saturn.

A chart showing the conjunction is given later but note you will have to be out very early, like 17:00 to see this as both Saturn and Jupiter are already low by then.

Uranus

To be found passing the constellation of Aries. It culminates at around 20h 30 during this month. The planet lies some 10° below Hamal (alpha Arietis), the constellation's brightest star at +2.0 visual magnitude. Uranus is on the threshold of naked eye visibility at visual magnitude +5.72. Its angular diameter is 3.7 secs of arc.

Neptune

The planet crosses the S meridian at just before 18h mid-month. It lies in the constellation of Aquarius and has a current magnitude of +7.9 and an angular diameter of 2.3 secs of arc. The planet lies 47mins of arc (0.8°) to the east (left) of the 4th magnitude star phi Aquarii.

Meteor Showers

The Geminids - The maximum of the Geminid meteors takes place on the 13th at 20h00. Geminids may be seen from the 4th to the 17th, and this year, the time of Maximum is very favourable because there is no Moon to interfere. This 'Shooting Star Shower' is now the richest of the annual showers. (Weather permitting of course!) The bright shooting stars are associated with asteroid (dwarf planet) 3200, Phaethon, the remains of a spent comet. Geminids tend to be most numerous around 02h00 when Gemini, their point of origin, is almost overhead. On good nights it is possible to see up to

100 meteors an hour. This shower produces a good proportion of bright events. The meteors also seem to be made of stronger material than the usual cometary debris so they may have longer trains.

The Ursids - Peaking overnight on the 22nd/23rd is the Ursid meteor shower (fragments of comet Tuttle), which produces about 10 meteors an hour, with occasional outbursts resulting in a greater number. Conditions this year are quite favourable. The radiant (point of origin) of the meteors is in Ursa Minor, The Little Bear, some 12° from the celestial North pole.

Comets

After the rush of comets this year the number seems to be winding down. C/2020 S3 (Erasmus) is probably the brightest but it has now disappeared from our skies.

C/2020 M3 (ATLAS) is getting easier to see as it climbs higher into our skies but is now receding from both the Sun and the Earth so it is fading. It will still be possible to see with a telescope in early December but its tail will be shortening. This comet has been relatively gaseous so if you are trying to see it visually and you have access to a Swan band filter then this may help. A chart for this is given towards the end of this Spacewatch



Tony Booer



C/2020 M3 (ATLAS) – Clifford Marcus

Asteroids

153201 (2000 WO107) is a small asteroid whose orbit could bring it in close proximity to Earth. NASA JPL has classified 2000 WO107 as a "Potentially Hazardous Asteroid" due to its predicted close pass(es) with Earth. Closest approach happened on November 29, 2020 at 05:08 UTC. The asteroid is an estimated 1,640 feet (500 meters, which is half a kilometre or 1/3 mile). It passed at 11.19 times the Earth-moon distance. 2000 WO107 orbits the sun every 318 days (0.87 years), coming as close as 0.20 AU and reaching as far as 1.62 AU from the sun. Its orbit is highly elliptical. 2000 WO107 is about 0.5 kilometres in diameter, making it small in absolute terms, but larger than ~97% of asteroids, comparable in size to the Golden Gate Bridge.

2000 WO107's spectral type None ([Tholen](#)) / X ([SMASSII](#)) indicates that it is likely to contain nickel, iron, and cobalt.

Deep Sky Objects

We will be trying to go through this list in the January (zoom) observing session, I hope you are able to join us.

IC 3568 The Lemon slice nebula, planetary nebula in Camelopardalis

IC 2149 Planetary nebula in Auriga

M38 An Open Cluster in Auriga

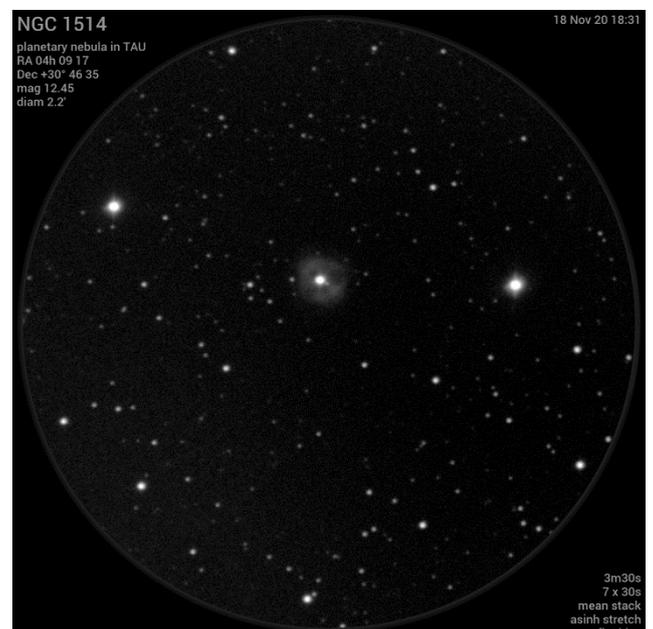
NGC 1535 Cleopatras eye nebula, planetary nebula in Eridanus

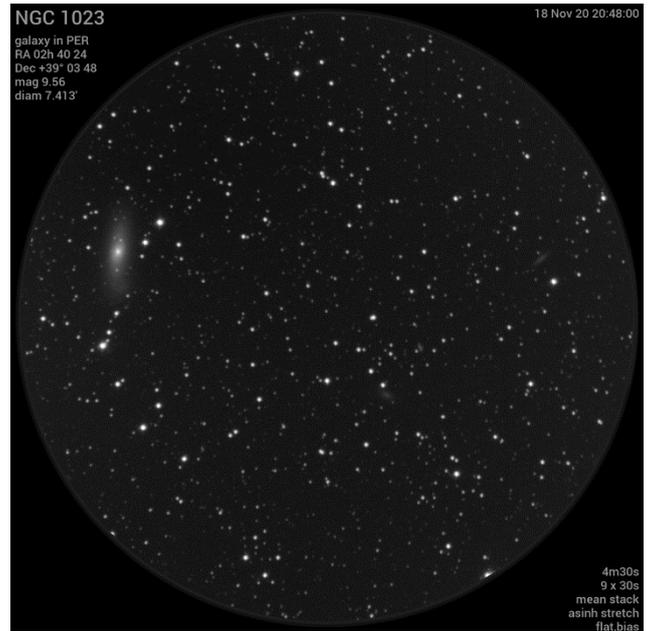
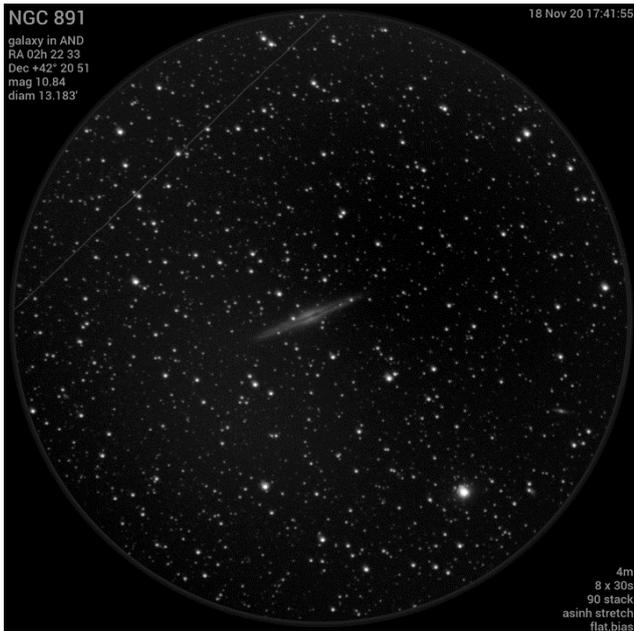
NGC 7662 The Blue Snowball nebula, Planetary nebula in Andromeda

M74 Spiral galaxy in Pisces

NGC 7741 A Barred Spiral galaxy in Pegasus

The Holmberg 124 Galaxy group in Ursa Major, this one might be a bit of a challenge to spot the whole group, **NGC 2805** An Intermediate Spiral galaxy, **NGC 2814** A barred spiral galaxy, **NGC 2820** Edge on Galaxy, **IC 2458** A small lenticular galaxy. There is some interaction between NGC 2814, NGC 2820 and IC 2458





All images by Tony Booyer from the last virtual observing session

Clear skies and Happy Christmas

Steve and Cristina

OTHER ONLINE TALKS

All meetings for the first half of the session will now be online using Zoom.

The Virtual Astronomy Club:

<https://www.star-gazing.co.uk/WebPage/virtual-astro-club/> who are offering free 7 pm Zoom meetings on a Tuesday and Thursday. PDFs of recent talks are here:

<https://www.dropbox.com/sh/9k7medirj1gkwlt/AA-C4dqakRuUiYIJHgz0KKqma?dl=0>

The BAA are also doing virtual webinars which are open to all at <https://www.britastro.org/meetings>

Look for the webinars page. They are also doing some presentations via Zoom as well which can be seen on their web page. If you miss them then they are available on their YouTube channel afterwards

AstroFest 2021 – as expected this has been cancelled but there will instead be an online event called worldwide astrofest in February. Details on worldwideastrofest.com

Observing evening: The virtual Observing sessions have worked well so look on the FB page and newsgroup for information on when these are likely to happen. The next one hopefully will be in January

Beginners meetings: As we no longer have access to our hall due to the Covid situation we are going to be running a series of Zoom beginners meetings. The next one will take place on December 7th and the topics to be covered include DSLR imaging and a constellation, although subject to change

New Mailing List: If you have not already done so, why not subscribe to our new email mailing list. The list is called 'aaslist'. Members use the list to alert each other about celestial events and to chat about amateur astronomy. The list is quite active, with several messages most weeks. This will also in the current circumstances be the main form of information going forward To subscribe to aaslist and to read through previous messages click on:

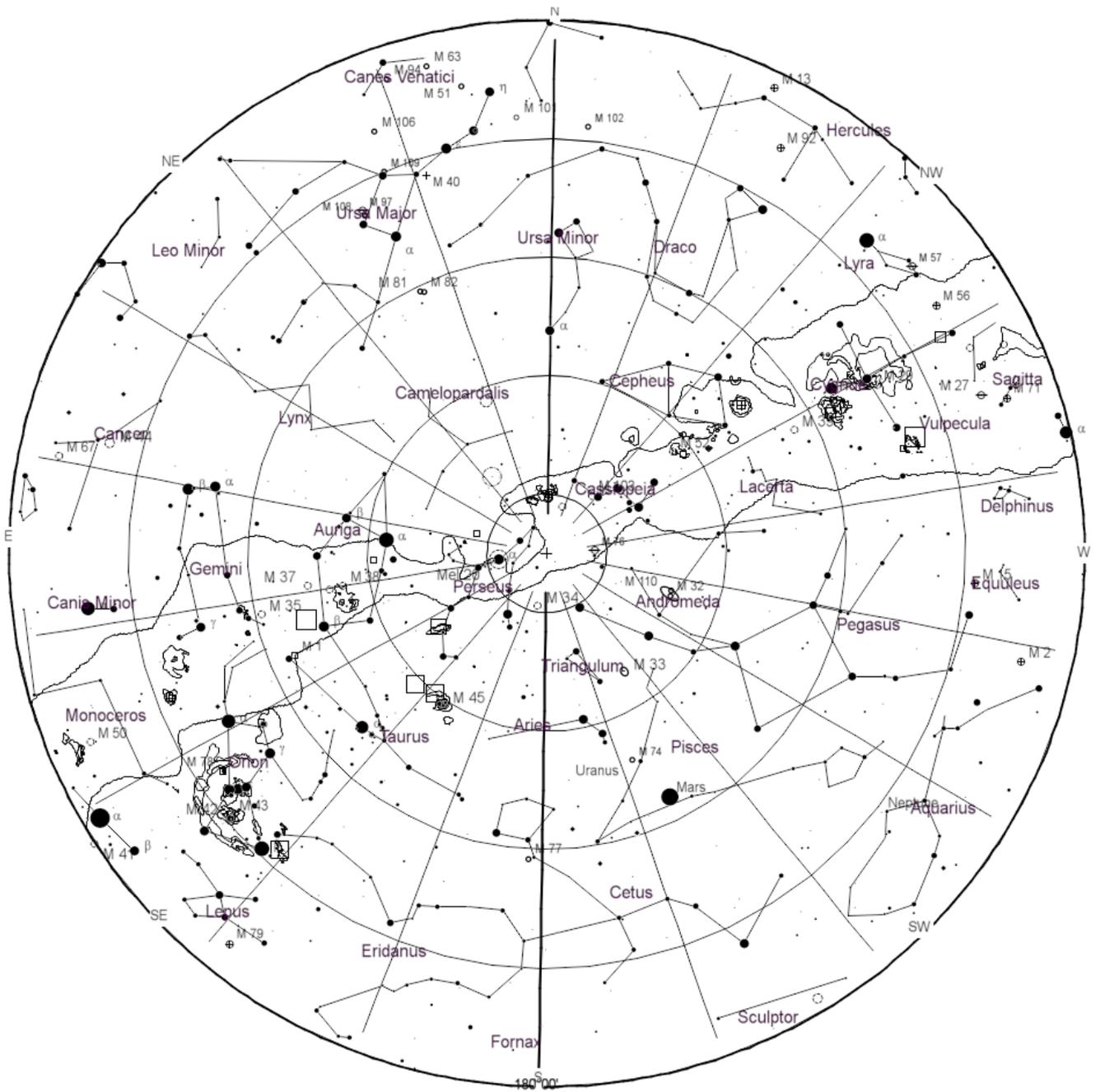
<http://lists.abingdonastro.org.uk/mail.cgi/list/aaslist>



NGC 884 – Roland Goody

STAR CHART

The night sky at 21:00 (GMT) Tuesday 15th December 2020



MOON PHASES: DECEMBER 2020

Moon phases and solar and lunar rise and set times for December 2020

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 ↑16:43 ↓08:52	2 ↑17:27 ↓09:55	3 ↑18:22 ↓10:49	4 ↑19:28 ↓11:33	5 ↑20:41 ↓12:08
		↑07:59 ↓15:52 05:49 18:02	↑08:00 ↓15:51 05:50 18:01	↑08:01 ↓15:50 05:51 18:01	↑08:03 ↓15:50 05:52 18:01	↑08:04 ↓15:49 05:53 18:00
6 ↑21:59 ↓12:35	7 ↑23:19 ↓12:58	8 ↑--- ↓13:17	9 ↑00:40 ↓13:35	10 ↑02:03 ↓13:53	11 ↑03:28 ↓14:12	12 ↑04:55 ↓14:35
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13 ↑06:23 ↓15:05	14 ↑07:49 ↓15:45	15 ↑09:06 ↓16:36	16 ↑10:08 ↓17:41	17 ↑10:55 ↓18:55	18 ↑11:29 ↓20:11	19 ↑11:54 ↓21:26
↑08:13 ↓15:48 06:00 18:00	↑08:14 ↓15:48 06:01 18:01	↑08:15 ↓15:48 06:02 18:01	↑08:15 ↓15:48 06:02 18:01	↑08:16 ↓15:49 06:03 18:01	↑08:17 ↓15:49 06:04 18:02	↑08:17 ↓15:49 06:04 18:02
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27 ↑14:11 ↓05:31	28 ↑14:42 ↓06:39	29 ↑15:23 ↓07:45	30 ↑16:14 ↓08:43	31 ↑17:18 ↓09:32		
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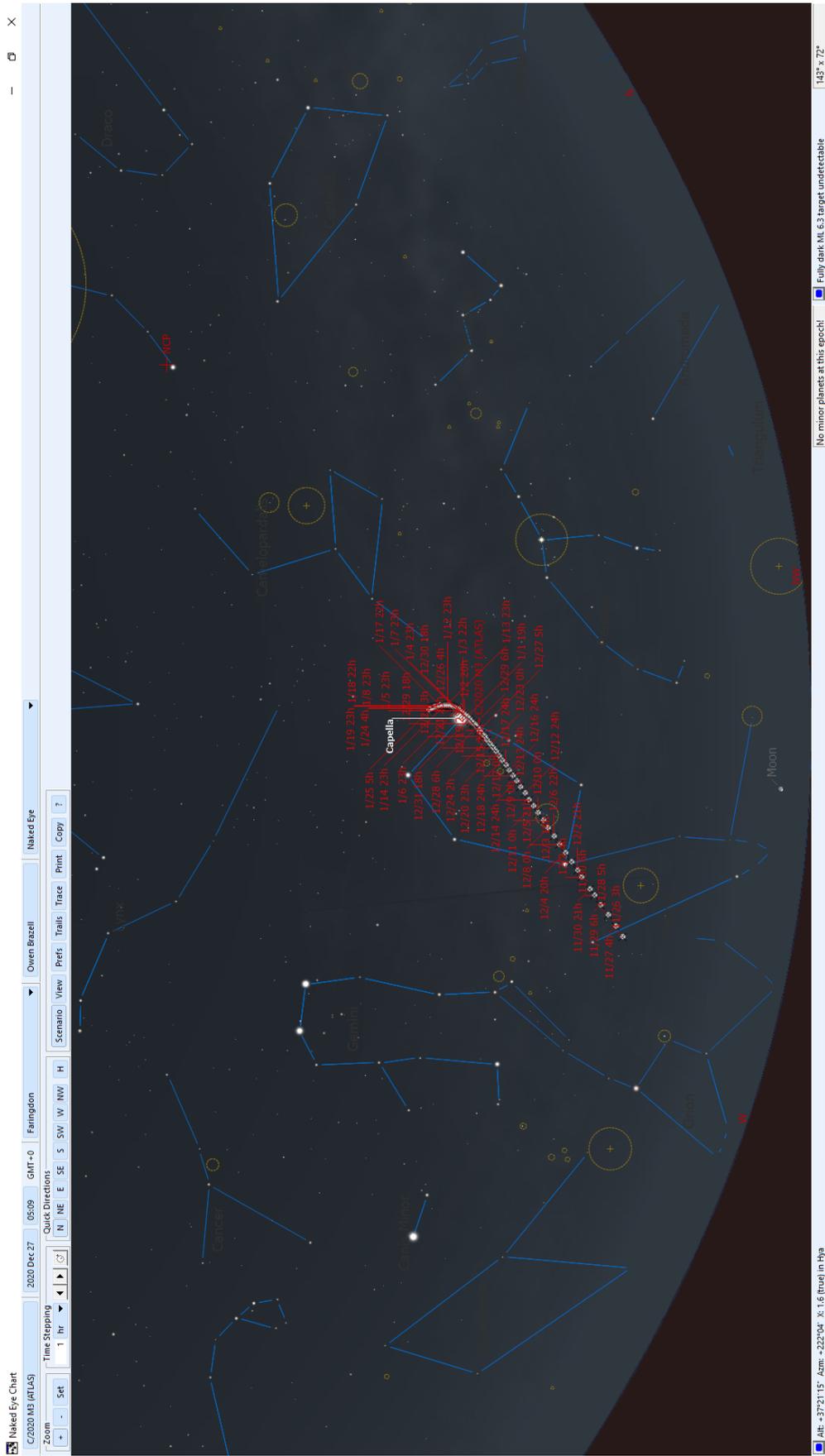
Heart Nebula – David Mainwaring



NGC 625 – Clifford Marcus



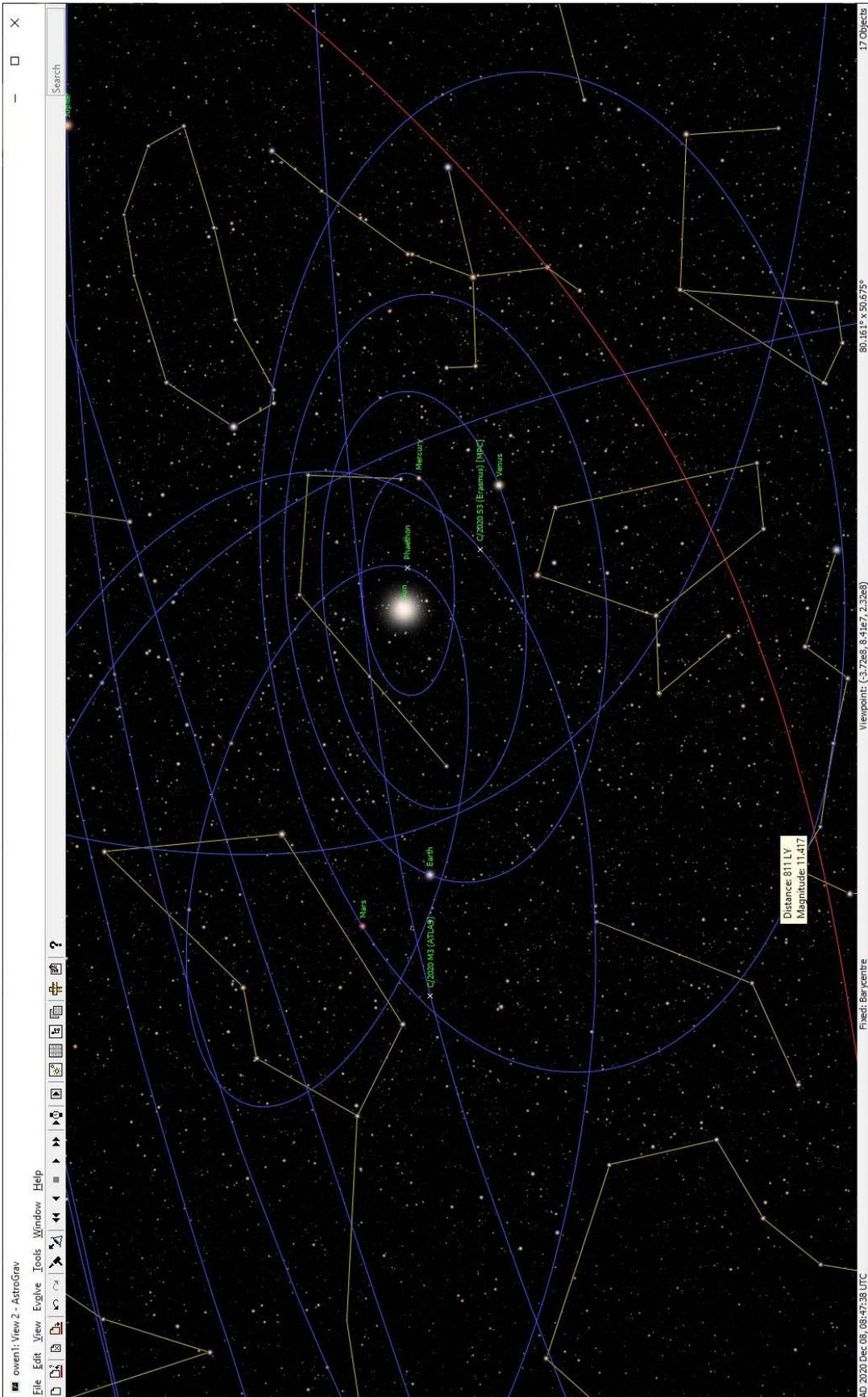
Heart and Fish Nebula? – David Mainwaring



Path for C/2020 M3 (ATLAS) in December/January



Jupiter and Saturn Conjunction, 21st Dec at 17:00



Comet orbits for early December – note location of Phaethon (progenitor of Geminids)

Beginners Meeting Program 2020/2021

2020/21 Long Talk

DEC DSLR Imaging Part 2

JAN Making the Elements

FEB Types of Telescopes

MAR A space mission TBA

APR Celestial Co-ordinates

MAY Dwarf Planets, Asteroids, & Comets

JUN Imaging Planets

Short Talk

Constellation

Stellarium

Asterisms

Constellation

Star Spectra

Sun in White Light

Astronomy 150-1543 AD: A 1400 year wait,
and then Copernicus'