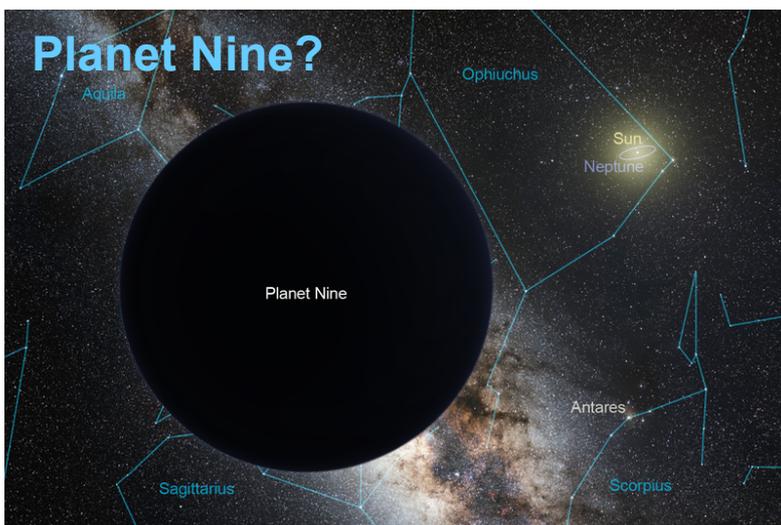
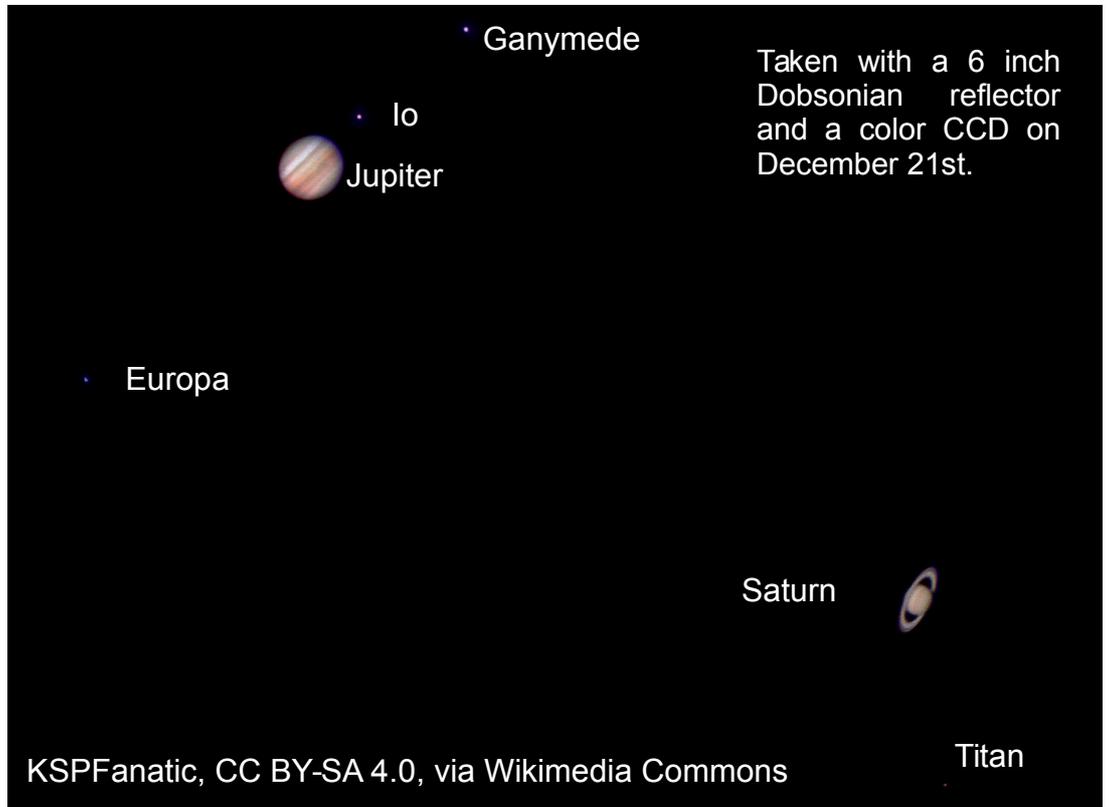




### Clouds ...

The closest Great Conjunction in nearly 400 years happened on the 21st of December. as expected. We didn't see it from Galloway because, as usual, the clouds rolled in just in time to blank it out! Not everyone was as unlucky, though, so here is a "stitched" image, separated by 6-7 arc-minutes, taken four hours before closest approach.

If any of our readers have managed to get an image, please don't be shy - email it in and become famous overnight. That goes for anything else you'd like to contribute as well, of course.



Artist's impression of Planet Nine.

"Planet Nine" might be a planet in the outer region of our Solar System. Its gravitational effects could explain the orbits of a group of extreme objects outside Neptune ("eTNOs") that orbit the Sun at distances more than 250 times that of the Earth. Their orbits are tilted and the objects are bunched. These unusual alignments suggest that "Planet Nine" may be shepherding them. No such planet has yet been found.

Recently, using Hubble Telescope data, researchers have described the 15,000-year orbit of a massive exoplanet, HD 106906b, circling a double star 336 light years away, in a steeply inclined orbit outside a dusty debris disc surrounding the star. The orbit of HD 106906b is like that of "Planet Nine". This suggests that if a planet were responsible for what we see in the orbits of eTNOs it should have an eccentric orbit inclined relative to the plane of the solar system, similar to what we are seeing with HD 106906b.

## Galloway Forest Astronomical Society

Registered Scottish Charity SC035033.

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Secretary: Doug Snell, 5 Elm Grove, Newton Stewart, DG8 6JT

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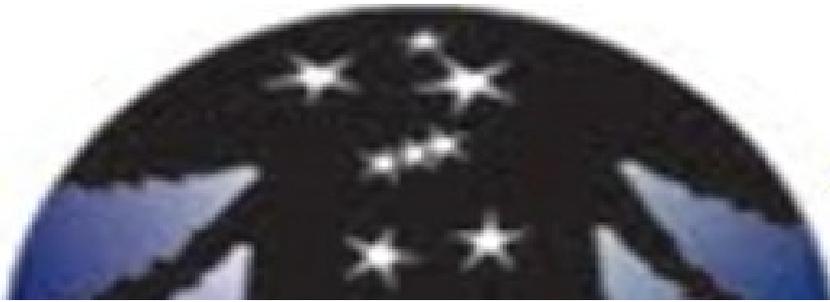
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# Bags of Help

Supported by Kilgallioch Community Fund  
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# Galloway Forest Astronomical Society

## Newsletter #40, December 2020

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### January 2021

#### Observing Calendar

Here is the calendar of night-sky events, taken from the **In-The-Sky.org** website.

The observing location shown here is Belfast, which is the nearest setting to Newton Stewart.

The Moon is in conjunction with Venus on the 11<sup>th</sup>, and should be visible in the south-east after moonrise at 07:30. Sunrise is 08:50.

On the 14<sup>th</sup>, M47 and NGC2403 are both available. Messier 47 (M47 or NGC 2422) is an open cluster in the constellation Puppis.

NGC 2403 (also known as Caldwell 7) is an intermediate spiral galaxy in constellation Camelopardalis. It can be found roughly midway between Capella and Merak in Ursa Major.

M44, the Beehive Cluster, is available in the southern sky on the 30<sup>th</sup>, but it is close to the bright moon all night.

#### GFAS Membership

We now have four new members, a family from the Stewartry, so a hearty welcome to them. Our two-years-for-the-price-of-one subscription offer still holds, so if you join now you won't pay again until October 2022!

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 M41 is well placed	2 The Earth at perihelion
3 Quadrantid meteor shower 2021	4	5	6 Moon at Last Quarter	7	8	9 Conjunction of Mercury and Saturn
10 Conjunction of Neptune and Ceres	11 Conjunction of Jupiter and Mercury Conjunction of the Moon and Venus	12	13 New Moon	14 Conjunction of the Moon and Mercury 134340 Pluto at solar conjunction M47 is well placed NGC 2403 is well placed	15	16 NGC 2451 is well placed
17	18	19 γ-Ursae Minorid meteor shower 2021	20 Moon at First Quarter NGC 2516 is well placed	21 Conjunction of the Moon and Mars Close approach of the Moon, Mars and Uranus Asteroid 15 Eunomia at opposition Conjunction of Mars and Uranus	22	23 NGC 2547 is well placed
24 Mercury at greatest elongation east Saturn at solar conjunction Asteroid 14 Irene at opposition	25 Mercury at dichotomy	26	27	28 Full Moon	29 Conjunction of Venus and Pluto Jupiter at solar conjunction Mercury reaches highest point in evening sky	30 M44 is well placed
31 IC2391 is well placed IC2395 is well placed						



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