

October 2020 EDITION

Editor: <u>ewellastro.editor@gmail.com</u> Email: <u>ewellastro@gmail.com</u> Website: <u>https://www.ewellastronomy.org</u>

Editorial

Welcome to the October edition of Janus.

This month sees a couple of landmarks. It's now over 6 months since the Covid-19 induced lockdown was imposed, bringing with it a succession of restrictions on social gatherings. The Society's last physical meeting on13 March sneaked in ahead of the lockdown, but was, sadly, not particularly well attended. On a happier note, the second landmark is the Society's first virtual meeting taking place on 9 October. Given that physical meetings are likely to remain suspended for a while yet, let's hope that more will follow.

Once again, there is a significant item from Gary Walker. Along with a summary of his astronomical observations over the last month, he comments on the possibility of life on Venus (or elsewhere!). It would be good to have the views of others on this topic. Personally, I'm undecided, but the scientific discoveries and debate are interesting.

Physical EAS meetings and formal observing sessions remain suspended until further notice, but small Ad-hoc sessions appear to remain possible - at least for now -provided that the "rule of 6" is observed. Members are also encouraged to continue to share their observing experiences on social media.

Finally, many members observed Mars last month. If you missed out - don't worry. October is a great month to observe Mars. With a greatest magnitude of -2.6, it's really bright, and this is the best time to observe the planet for some while - until 2035.



The Solar System September

MERCURY: is emerging into the evening sky as it approaches greatest elongation E. At the beginning of the month, it is not observable – it will reach its highest point in the sky during daytime and is 1° below the horizon at dusk. By the end of the month, it remains not readily observable since it is very close to the Sun, at a separation of only 10° from it.

VENUS: is visible throughout the month as a morning object, having recently passed greatest elongation W. It begins the month visible in the dawn sky, rising at 03:10 (BST) - 3 hours and 50 minutes before the Sun and reaching an altitude of 31° above the E horizon before fading from view as dawn breaks around 06:38. By month's end, it remains just about visible as a morning object, although now well past greatest elongation W and returning closer to the Sun. Rising at 03:31 (BST) – 3 hours and 20 minutes before the Sun - it reaches an altitude of 25° above the SE horizon before fading from view as dawn breaks around 06:28.

MARS: is currently approaching opposition and is visible as a morning object. At the beginning of the month, it becomes accessible around 20:14 (BST), when it rises to an altitude of 7° above the E horizon. It will then reach its highest point in the sky at 01:58, 44° above the S horizon. It will be lost to dawn twilight around 06:38. 16° above the W horizon. Reaching Opposition on 14 October, by month's end it becomes accessible around 16:56 (BST) as the dusk sky fades, 8° above the E horizon, before reaching its highest point in the sky at 22:22, 43° above the S horizon. It will continue to be observable until around 03:58, when it sinks below 7° above the W horizon.

JUPITER: is currently an early evening object, now receding into evening twilight. It begins the month becoming accessible around 18:58 (BST) as the dusk sky fades, 15° above the S horizon before reaching its highest point in the sky at 19:34, 15° above the S horizon. It will continue to be observable until around 22:15, when it sinks below 8° above the SW horizon. By the end of the month, it will become visible around 16:56 (BST) as the dusk sky fades, 16° above the S horizon. It will then sink towards the horizon, setting at 20:50.

SATURN: is also currently an early evening object receding into evening twilight. At the beginning of the month, it is visible in the evening sky, becoming accessible around 19:14 (BST) as the dusk sky fades, 16° above the S horizon. It will then reach its highest point in the sky at 20:06, 17° above the S horizon, and will continue to be observable until around 22:32, when it sinks below 10° above the SW horizon. By the end of the month, it will become visible around 17:14 as the dusk sky fades, 17° above the S horizon, finally sinking towards the horizon and setting at 21:19.

URANUS: is currently approaching opposition and is visible as a morning object. It begins the month visible in the morning sky, becoming accessible around 21:52 (BST), when it rises to an altitude of 21° above the E horizon. It will then reach its highest point in the sky at 02:50, 52° above the S horizon before being lost to dawn twilight around 05:40, 39° above the SW horizon. By the end of the month, it will become accessible around 18:51, when it rises to an altitude of 21° above the E horizon. Reaching its highest point in the sky at 23:43, 52° above the S horizon, it will become inaccessible around 04:39 when it sinks below 21° above the W horizon.

NEPTUNE: is also currently approaching opposition and begins the month as a morning object becoming accessible around 20:42, when it rises to an altitude of 21° above the SE horizon. Reaching its highest point in the sky at 23:37, 33° above the S horizon, it will become inaccessible around 02:36 when it sinks below 22° above the SW horizon. By the end of the month, it is an early evening object, visible in the evening sky, from around 17:55 as the dusk sky fades, 23° above the SE horizon. Reaching its highest point in the sky at 20:37, 32° above the S horizon, it will continue to be observable until around 23:30, when it sinks below 21° above the SW horizon.

MOON PHASES:

Full Moon	1 October
Last Quarter	10 October
New Moon	16 October
First Quarter	23 October
Full Moon	31 October

Possible observing highlights (photo opportunities) involving the Moon

10 October - before dawn: Third quarter Moon close to Polux in Gemini



Before dawn on the 10 October, the third quarter Moon will lie down to the right of Pollux in Gemini.

14 October - 05:30: Venus and a very thin crescent Moon.



Image: Stellarium

Before dawn on 14 October, Venus should be visible below a very thin waning crescent Moon.

22 October - 19:30: Jupiter, Saturn and a waxing Moon



Image: Stellarium

After sunset on 22 October, Jupiter will be seen above a waxing Moon, one day before first quarter, with Saturn up to its left.

October 29th - 19:30: Mars and a near full Moon.



Image: Stellarium

During the evening of 29 October, Mars lies above the waxing Moon just 2 days before becoming full.

Collected Observations (and thoughts) – Gary Walker

This collection of observations begins in early September, and follows my observation that Mars is now appearing in the sky at a reasonable hour and, best of all, approaching opposition, is much higher in the sky than at the time of the previous opposition in 2018 when it was very low in the South.

Moon - Mars Conjunction - 5 Sep 2020

On the night of September 5th - 6th, I watched the Moon - Mars Conjunction. Around 11p.m. they made a spectacular pair, with Mars 3° to the left of the Moon. By around 6 - 7a.m. the next morning, Mars was at its closest to the Moon, at 11' arcseconds.

I managed to see this despite some altocumulus clouds in the morning which, fortunately, progressively, cleared away!

At the closest, I could see Mars, and the Northern limb of the Moon, in the same field of view, even at 222X magnification which shows how close to each other they were.

Of course, with this power, I could see dark features upon Mars - i.e. Mare Cimmerium and the delicate orange colour of Mars, made a beautiful contrast with that of the Moon. It is worth noting that I was able to see the pair even after the Sun had risen!

Conjunctions are of no scientific importance, but they can make spectacular views and images, and they also provide a splendid example of "compare and contrast" between two celestial bodies.

Life on Venus and other things! - 14 Sep 2020

Today, I received the latest "Sky at Night" which announced the discovery of the gas Phosphine, in the clouds of Venus. In the quantities detected (20 parts-perbillion), Phosphine is only known to be formed by bacteria, which makes this a really exciting discovery - always assuming that there isn't just some weird chemistry going on, or that the team hasn't made a mistake.

It has been theorised for a long time that, if life exists on Venus, it could only survive in the clouds, where the temperature and pressure is far lower than on the surface. It is also possible that life could have existed on the surface in the distant past, only to be subsequently exterminated by the run-away greenhouse effect on Venus.

However, previous hints of life on other planets have led to disappointments. In 1976, the Viking Landers on Mars heated up Martian soil in their on-board laboratories, producing results suggestive of life, only to find that it was just some weird chemistry going on. Also, who remembers the Meteorite from Mars that, in 1996, was shown to contain microscopic worms or bacteria, later discarded as some type of chemical formation? This discovery made headline news back then!

As the most Earth-like world, the search for life in our solar system has been particularly focused upon Mars. More recently, however, Venus was thought to be far more friendly than it really is, and some scientists believed that it might be a jungle planet. It was thought to be a heavenly-like world, but the Space probes proved that it is far more like the Biblical version of Hell!

I find it astonishing, that astronomers now seriously consider that there could be life on some of the moons of Jupiter and Saturn. They think that these moons might contain underground oceans that could possibly support life, and even Pluto may have an ocean, too!

Moons such as Europa, Enceladas, and Ganymede, are examples, of these. Indeed, Encelidas, has been seen to shoot out fountains of water vapour.

Not very long ago, the outer Planets and their moons were seen as frozen, dead bodies, where nothing ever happens.

Like the proposed bacteria in the clouds of Venus, it has also been suggested before now that life could exist in the clouds of Jupiter - possibly as balloons, or blimp like objects.

If life does exist in the sulphuric acid clouds of Venus, Mr Spock would have said, "It's life, Jim, but not as we know it", and Sir Patrick Moore would have said, "Frankly, we just don't know"! Another clue supporting suggestions of extraterrestrial life is the spikes of Methane gas, detected on Mars, for several years. Methane could indicate the presence of life, but it could equally be down to something more mundane, such as volcanic activity.

Of course, to really prove or refute the presence of life on any planet, one really needs to have astronauts on the surface. Space probes can provide some answers, but usually tend to throw up more questions than answers, and not necessarily the questions and answers that one was originally looking for! Space probes, especially Landers, can only explore a very small percentage of a given planet's surface, so a lot can be missed.

Even if life is found, the question then arises as to whether this life just came from a space probe that was not sterile enough, resulting in Biological contamination from Earth, or whether the said life forms really have originated on the planet, totally independent of Earth - and, life could even be transmitted from one planet to another, by meteorites!

Mars - 30 Sep 2020

One cannot have failed to notice Mars, rising in the Eastern sky, in the evenings of August and September, as it approaches Opposition in October. As it closes in on Earth, it has become very bright and obvious, as an orange "star". With my 8" SCT, seeing the dark features is now ridiculously easy, being as Mars has exceeded 20' arcseconds in size. In fact, it is similar to seeing the dark lunar maria on the Moon, as seen with the naked eye!

I find that using a magnification of 222X gives me the best view of the Martian features. I can see them, without using a Wratten filter, when they appear as a grey colour. The Southern Polar Cap also appears bright. However, the glare of the planet can make features harder to see, and I usually use Wratten filters No 21 and 25 (Red filters), as these dim the glare of the planet, but darken the dark features, making them much easier to see.

On 26 September, I could see the darkest, and most obvious dark marking - Syrtis Major. I could discern its characteristic threepronged shape, including the "hump" at the top of it. Even at lower magnifications (62X), I could just pick out the dark features whilst, at 100X, I could see dark features, as well as the Southern Polar Cap.

One can really only see features on Mars as albedo features, as it is not close enough to see craters, and canyons etc. - so we can only see the broader features of the planet's surface. It is like seeing our Moon with the naked eye - one can really only see the dark lunar maria, but not the craters, mountains, and rills etc. This means that the dark features, or maria, are the most obvious. They represent areas of Mars where dust has been blown away to reveal the rocky surface, whilst the orange areas show areas covered in dust.

Believe it or not, early astronomers saw these dark areas as green in colour. Hence, they were thought to be areas of plant life! The apparent changes in shape of these areas seemed to indicate the advance and retreat of plant life, responding to the Martian seasons. In fact, the changes seen only represented moving dust, covering and uncovering these dark maria.

As we can only observe large-scale features, it meant that the true nature of Mars was a long time coming. It had to await the arrival of Space Probes, in order for us to see real detail.

Despite the thinness of its atmosphere, Mars does support weather systems such as clouds, fogs and hazes and, as we found to our cost, planet-encircling dust storms that often blot out the surface just when it gets near Opposition. This occurred at the last Opposition in 2018, and also succeeded in finishing off one of the surface probes. I thought I could see a bluish haze along the Northern limb of Mars.

Mars is really the only planet where telescope observers can actually see the surface of a planet. Mercury is another one, but as it is further away, and difficult to observe, it means that only vague surface markings can be seen. I have never convincingly seen surface markings on Mercury, although I did see a bright white patch upon it in 2010, but I am not sure if it was real, or just a contrast effect. The other planets do not show surface features; Venus is permanently covered with cloud, whilst the "gas giants" - Jupiter, Saturn, Uranus and Neptune - don't have solid surfaces, so any features visible, are always cloud features.

I observed Mars again on the night of 29-30 September, to see its most prominent dark feature of Syrtis Major. To one side were the Mare Tyrenheneum and Mare Cimmerum. In the space of about 2 hours, I could see that it had moved across the planet (due to its rotation) especially in the case of its large upward "hump".

I estimated that the naked eye gibbous Moon, (2 days short of Full Moon), appeared about the same size that Mars appeared in my telescope at 166X - 222X magnification. As before, even at 62X, I could still see the dark areas of Syrtis Major, Mare Tyrenheneum and Mare Cimmerum, appearing as a dark line or band, upon Mars.

Mars was now 22.4' arcseconds in size, which is a huge size for Mars. Although it is slightly smaller than at the 2018 Opposition, it does not make much difference, as it is still very good.

Everyone will have noticed that at this Opposition of Mars, it is much higher in altitude than the opposition in 2018. Then, it was actually difficult to observe it as it was only just above the level of my garden hedge to the South!

Up Next:

NEXT MEETING: Friday 9 October 2020 -Virtual meeting via Zoom

Bob Mizon with deliver a virtual talk about "Astrophotographers"

NEXT USER GROUP:

Date to be advised – check EAS web site.

This is an informal session for members to meet and discuss anything related to their telescopes and sky events and, if weather permits, to go up on the roof for observing. Enter via the Main Entrance opposite the Car Park

NEXT DENBIES OBSERVING SESSION:

Date to be advised – please check EAS web site.

AD HOC OBSERVING AT WARREN FARM:

These will be at short notice when the weather is favourable. Please watch our Whats App feed for alerts.