



## Sun and Planets

As the Earth approaches perihelion, its shortest distance from the Sun, its angular diameter increases from 31'56.9" on 1 October to 32'13" on 31 October.

Mercury will be rather difficult to spot this month. In the month of October, the ecliptic makes a steeper angle to the horizon at sunset; and therefore, even though Mercury is about 25° from the sun at the end of nautical twilight, it is just about 5° above the horizon. It will be at inferior conjunction, that is it will be between the Earth and the Sun on 25 October at 23:44 IST. After that it will rise before the Sun and be visible over the eastern horizon in the pre-dawn sky.

Venus is still shining brilliantly above the eastern horizon at sunrise. It rises about three hours before the Sun. It is worth watching its march during the first four days of October. Venus has been moving towards Regulus. On 1 October Venus can be seen right above Regulus. In the early hours of 2 October, Venus can be seen about 1° above Regulus. The morning of 3 October offers a good spectacle of star and planet pairing up, separated by about 6' of arc. This will be a glorious sight to watch and photograph. The next day on 4 October Venus can be seen right below Regulus.

Mars rises soon after sunset at the beginning of the month and remains visible in the night sky throughout the month.

Jupiter and Saturn are well above the

List of Events in October 2020			
Dt	Dy	Time	Event
01	Th	21:29	Mercury elongation: 25.8° E
02	Fr	02:35	Full Moon
02	Fr	22:39	Venus-Regulus: 0.1° S
03	Sa	08:51	Moon-Mars: 0.8° N
03	Sa	22:52	Moon Apogee: 406300 km
07	Fr	05:03	Moon-Aldebaran: 4.3° N
08	Th	05:59	Moon ascending node
09	Fr	18:37	Moon north declination: 24.6° N
10	Sa	06:09	Last quarter
11	Su	17:57	Moon-Beehive: 2.2° S
14	We	04:40	Mars opposition
14	We	05:27	Moon-Venus: 4.4° S
14	We	09:47	Mercury stationary
17	Sa	01:01	New Moon
17	Sa	05:16	Moon perigee: 356900 km
20	Tu	21:23	Moon descending node
21	We	10:51	Orionid shower: ZHR = 20
22	Th	07:30	Moon south declination: 24.7° S
22	Th	22:40	Moon-Jupiter: 2.1° N
23	Fr	09:19	Moon-Saturn: 2.7° N
23	Fr	18:53	First quarter
25	Su	23:44	Mercury inferior conjunction
29	Th	21:43	Moon-Mars: 3.3° N
31	Sa	00:16	Moon apogee: 406400 km
31	Sa	20:19	Full Moon
31	Sa	21:35	Uranus opposition

southern horizon at sunset.

## Transitions of the Sun and Planets

(Disclaimer: we categorically mention here that we do not believe in astrology and believe that the only influence a planet has on us is to give us the viewing pleasure of its beauty. The sole purpose of giving the transition of planets and the Sun is to acquaint the reader with the Indian nomenclature of the planets and

constellations and also to show that the actual positions of the Sun and planets, which are based on modern computing, are very different from those given in astrology tables.)

The Sun is in Virgo, the Virgin (*Kanya*) in October.

Mercury too is in Virgo. It moves to Libra, the Scales (*Tula*) on 8 October, it is stationary on the 14th and moves back into Virgo on 20 October.

Venus is in Leo, the Lion and crosses over to Virgo on 22 October.

Mars is in Pisces, the Fish (*Meena*) this month.

Both Jupiter and Saturn are in Sagittarius, the Archer (*Dhanu*).

## March of the Moon

This is a month of a 'Blue Moon'. The month begins with the near Full Moon rising above the eastern horizon as the sun sets. On 31 October at 20:19 we have the second Full Moon this month. An additional Full Moon in the same month is called a 'Blue Moon'.

Full Moon is on 2 October at 02:35 hours. Later in the evening, the Moon can be seen rising a little ahead of Mars. On 3 October it passes less than a degree from Mars. On the morning of 7 October the Moon can be seen less than 5° north of Aldebaran above the western horizon.

On the night of 10 October the Moon passes through the Gateway of Heaven. On the morning of 13 October it will be less than 5° north of Regulus. The next day on 14 October the waning Crescent Moon will be less than 5° north of Venus just before dawn. This will be a beautiful sight to look at.

On 19 October it passes close to Antares and then on 22 and 23 October it can be seen sliding below Jupiter and Saturn respectively. Later, on 29 October at 21:43 hours it will be 3.3° north of Mars. The pair rises about an hour before sunrise. The sequence of the changing positions of Mars and the Moon present another interesting photo-opportunity.

The Moon will occult two bright stars this month. The first one is a 3.5 magnitude star,  $\eta$  (Eta) Leonis, on 13 October. This event takes place at the brighter limb of the Moon. And the second event is on 26 October when the Moon occults a 4<sup>th</sup> magnitude star,  $\tau$  (Tau) Aquarii. The details of these events can be found at <https://skytonight.wordpress.com>.

## Moons of Jupiter

The table below gives timings of eclipses, occultations, transits and shadow transits of the moons of Jupiter, suitable for Indian observers. The timings are given in Indian Standard Time, i.e. IST.

The output is given as per the following abbreviations and notations:

Column 1 = date; column 2 = time; column 3 = satellite number; column 4 = event type; and column 5 = phase.

Satellite numbers: 1 = Io; 2 = Europa; 3 = Ganymede; and 4 = Callisto.

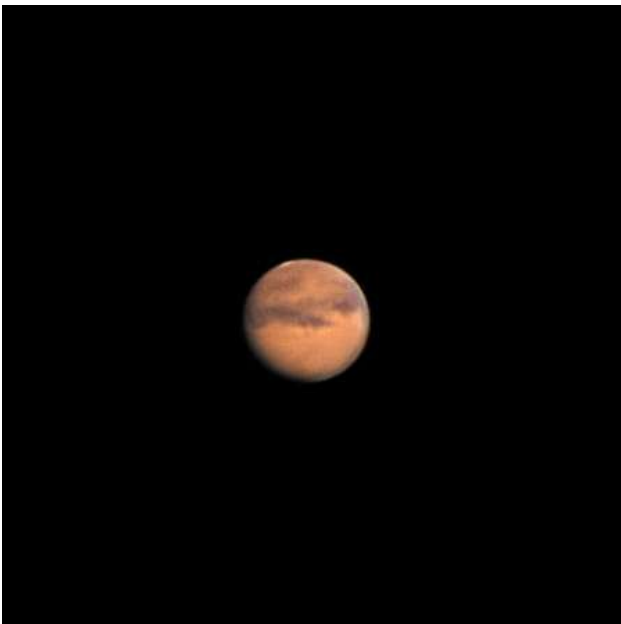
Event type: **Ec** = eclipse; **Oc** = occultation; **Tr** = transit; and **Sh** = shadow transit].

Phase: **D** = disappear; **R** = reappear; **I** = ingress; and **E** = egress.

Example: An event below, listed as **3 21:47:42 1 Tr I** means that on 3 October the satellite Io transits Jupiter with ingress at 21:47.42 hours IST. On the same day, you can also see its shadow transiting over Jupiter, and later egress of Io.

### Satellites of Jupiter in October 2020

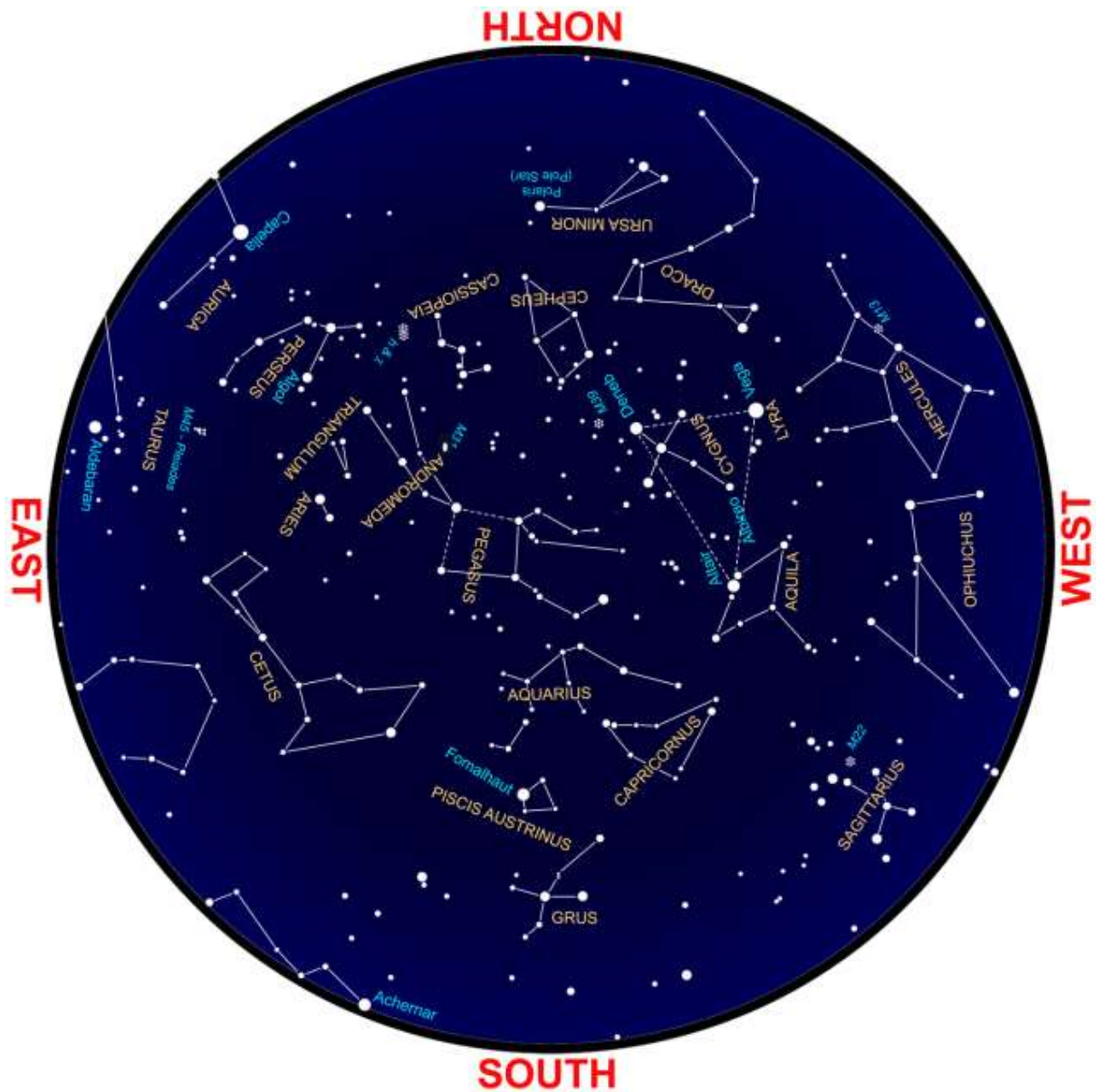
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
1	21:29:24	2	Ec	R	15	21:13:48	2	Oc	D
2	00:25:24	1	Oc	D	17	20:51:12	2	Sh	E
3	21:47:42	1	Tr	I	18	20:06:06	3	Sh	I
3	23:05:12	1	Sh	I	18	22:45:06	1	Oc	D
3	00:03:30	1	Tr	E	18	23:34:00	3	Sh	E
4	18:54:06	1	Oc	D	19	20:07:36	1	Tr	I
4	22:30:48	1	Ec	R	19	21:24:42	1	Sh	I
5	19:50:18	1	Sh	E	19	22:23:24	1	Tr	E
6	23:28:12	2	Tr	I	20	20:50:48	1	Ec	R
7	20:49:00	3	Oc	D	24	20:38:18	2	Sh	I
8	00:11:30	3	Oc	R	24	20:52:18	2	Tr	E
9	00:06:06	2	Ec	R	25	18:57:06	3	Tr	I
10	23:42:36	1	Tr	I	25	22:19:06	3	Tr	E
11	19:33:00	3	Sh	E	26	18:37:18	2	Ec	R
11	20:49:06	1	Oc	D	26	22:04:36	1	Tr	I
12	19:29:24	1	Sh	I	27	19:11:24	1	Oc	D
12	20:27:18	1	Tr	E	27	22:46:18	1	Ec	R
13	21:45:36	1	Sh	E	28	18:49:48	1	Tr	E
13	18:55:12	1	Ec	R	28	20:05:06	1	S	E
					31	20:45:48	2	Ec	R



This photograph of Mars was taken recently by Atharva Pathak, an amateur astronomer from Pune. He used a planetary camera with a 5 inch Cassegrain telescope to capture 50,000 frames and used the 100 best frames for stacking and creating this final picture.

*Readers are welcome to send us their night sky pictures, with details about the date, time, place and instrument(s) used. The decision about what gets published rests with the editors.*

Sky map for the month of October, drawn for mid-northern latitudes, to be used around 9:30 p.m. local time.



For notes on stargazing [click here](#).

Or visit <https://skytonight.wordpress.com/monthly-sky-notes-and-links/>

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