

## What's Up – June 2020

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#### Sun and Moon

The full Moon occurs on the 5<sup>th</sup> of June at 21h12. The last quarter Moon falls on the 13<sup>th</sup> of June at 08h24 and the new Moon occurs on the 21<sup>st</sup> of June at 08h41 while the first quarter moon falls on the 28<sup>th</sup> of June at 10h16.

The Moon will be at perigee (closest approach to Earth) on the 3<sup>rd</sup> of June at 05h36 at a distance of 364 400 km. On the 15<sup>th</sup> of June at 02h56, the Moon will be at apogee (furthest from Earth) at a distance of 404 600 km and it will reach again reach perigee on the 30<sup>th</sup> of June at 04h09 at a distance of 369 000km.

The Winter Solstice will occur on the 20<sup>th</sup> of June at 23h44.

Two eclipses occur this month, firstly a penumbral lunar eclipse on the 5<sup>th</sup> of June and an annular solar eclipse on the 21<sup>st</sup> of June. The penumbral lunar eclipse will commence at 19h45, will be maximum at 21h25 and will end at 23h04. The annular solar eclipse will not be visible for many parts of South Africa. Only the Northern parts of Limpopo, North West, Free State and Gauteng will see a small portion of the eclipse, otherwise the eclipse is best viewed in the Northern countries of Africa, Asia, Middle East and South- Eastern Europe.

#### Planetary and Other Events – Morning and Evening

Mercury, the smallest planet in our solar system is located near the stars of the constellation Gemini. It can be observed in the west at dusk. Mercury will be near the Moon on the 22<sup>nd</sup> of June. Venus can be seen before sunrise from mid- month in the east and is located near Aldebaran. Mars, the red planet, is still visible in the early morning sky and can be located in the north near the stars of the constellation Aquarius. Mars will be near the Moon on the 13<sup>th</sup> of June. Jupiter and Saturn are also still visible in the morning sky and are located near the stars of the constellation Capricornus in the west. Jupiter will be near the Moon on the 8<sup>th</sup> of June, while Saturn will be near the Moon on the 9<sup>th</sup> of June.

Two meteor showers are active in June, the theta-Ophiuchids and the June Lyrids. Observing prospects for both these showers are good. The theta-Ophiuchids are active from the 8<sup>th</sup> June to the 16<sup>th</sup> June peaking on the 13<sup>th</sup> June. They are best viewed between 20:00 PM and 05:30 AM looking between the constellations of Sagittarius, Scorpius and Ophiuchus. The June Lyrids are active from the 11<sup>th</sup> June to the 21<sup>st</sup> of June, peaking on the 16<sup>th</sup>. They are best viewed between 23:30 PM and 02:00 AM low down between NW and NE. They will appear to come from the general direction of the constellation Lyra (low in the North), but the longest trails will be visible about ¼ of the sky from here, either NW or NE. or higher in the North

#### The Evening Sky Stars

Leo the Lion's upside down question mark should be easy to spot in the NW early in the evening, with the right triangle of the Lion's hindquarters and tail following in the NNW. Bright orange Arcturus guards the Great Bear (invisible from the Cape except for its feet) from the NE, with the dimmer semicircle of the Northern Crown a bit to the right for an observer looking N. Snaking its way across the sky above the constellations of the Lion, the Virgin and the Crow is the great water monster Hydra,

with lonely Alpheratz at its heart fairly high in the NW at evening's beginning. Alpheratz is an orange giant star, 175 light years away and 400 times as bright as our Sun. If Alpheratz were at the centre of our solar system, it would extend halfway to the orbit of Mercury, and we would be toast. Arcturus is a similar star, also an orange giant, which appears brighter in our skies because it's only 37 light years away – but is really only half as bright as Alpheratz. It's always a good idea to remember that the universe is NOT two-dimensional, but that stars are at varying distances from us!

By month's end the Milky Way follows a path from west to ESE across the southern sky, with the bright stars Sirius and Canopus nearby in the W and SW, and the Large Dog, the great ship Argo, the Cross, the Fly, the Centaur, the Wolf, and the Scorpion tangled in the Milky Way itself. By late June the centre of our Milky Way has begun to rise even in early evening, and by late evening the winter the Milky Way is at its most majestic, with the centre of the galaxy passing nearly overhead. Notice the way the brighter stars are mostly in a belt almost, but not quite, coinciding with the Milky Way. This is 'Gould's Belt', showing where young stars in our part of the galaxy have been forming in the last few million years. From outside, our Milky Way galaxy would look like a glowing pancake with a lump in the middle, but the pancake would not be perfectly flat – some parts would appear slightly tilted or warped. Below the Milky Way are the bright stars Canopus in the SW and Achernar (very low in the SSW), the 'horn' and 'little horn' stars of African legend.

#### The Morning Sky Stars

By morning, the Milky Way has nearly set, running near the horizon from north around through the west into the south. Deneb shines in the NW predawn skies of early June, marking the top of the Northern Cross, with bright Vega near the northwestern horizon. In the WNW, Altair is the brightest of the stars of Aquila the Eagle, flying southward through the Milky Way. Low in the WSW and SW are the stars of the Archer and the Scorpion, with the stars of the Pointers and the Cross low in the SSW and S as seen from the Cape. From northern South Africa they will typically be invisible.

Almost overhead in the predawn sky at the beginning of the month is the Southern Fish with its brightish star Fomalhaut ('mouth of the fish'), the 17<sup>th</sup> brightest star in the sky. It's only 25 light years away and about 16 times brighter than our sun. Around it is a celestial doughnut, a giant disk of icy dust four times the diameter of our solar system. But the centre, around the star itself, is largely free of this material, possibly because planet formation has swept this area clean.

To the south of Fomalhaut are the stars of the Crane, with bright Achernar a bit further southeast. Canopus rises low in the SE before the Sun in early June, and by late June, bright Sirius is visible low in the ESE as well, while Orion can be seen low in the east before sunrise.

High in the northern sky are the stars of the Great Square of Pegasus. The Fishes are above and to the right of the Square (tied together by their tails). Beyond the Fish, high in the NNE sky, is the Whale. With the Water Bearer and the Sea Goat to the SW of Pegasus, and the Southern Fish nearly overhead, this is a fairly waterlogged part of the sky!