



# Comet, Asteroid and Meteor Section

CAMNotes 2024 No.2 April-June

The second quarter of the year sees a couple of comets which might be visible in binoculars, and a possible outburst of eta-Aquariid meteors. Prospective observers are welcome to contact me should they require further information.

**COMETS** – the following comets may be suitable for observation:

**Comet C/2021 S3 (PanSTARRS)** some predictions were made that this comet might be visible with the naked eye in early 2024. However, these predictions did not materialise, and the comet reached its peak brightness during March 2024 at magnitude 10 or slightly brighter. It is likely to fade slowly during the next three months, reaching magnitude 12 by end of June.

**Comet 12P/Pons-Brooks** was not expected to become bright but underwent a couple of outbursts in 2023, firstly in July, and then again late in the year, which increased the brightness by up to 6-7 magnitudes. It should continue to brighten on its way to perihelion on 21 April 2024, when it might reach magnitude 4 and be visible with binoculars from dark sites, low above the horizon in the west just after dark. Any further outbursts while in proximity to the Sun may result in the comet brightening further.

The comet will remain very low in the west until after perihelion, and might first be observed about 25 or 26 April, when on the latter date the comet sets at 19h25 SAST (for Johannesburg) and is at altitude  $10^\circ$  at the end of evening twilight. On 4 May the comet crosses from Taurus into Eridanus, and on 10 May is within  $1^\circ$  of the magnitude 3.9 star nu Eridani. Practice locating this star with binoculars, before looking around nearby for the comet, which will appear as a diffuse patch. Do not expect to see the greenish colour shown in images of the comet, which is simply not bright enough to stimulate the colour receptors in your eye.

During the second half of May, comet 12P starts to climb higher in the sky after sunset, although the waxing Moon will pose some interference, with first quarter on 15 May, and especially around Full Moon which occurs on 23 May. A nice opportunity for astro-imagers however occurs on the evening of 17 May, with the comet located just  $2^\circ$  from the Witch Head Nebula, NGC 1909.



*Comet 12P/Pons-Brooks is close to the Witch Head Nebula on the evening of 17 May. The 70% illuminated Moon will interfere for visual observers.*

From now, the comet passes into Lepus. The first opportunity to observe after the Full Moon will be on the evening of 26 May, when the comet will be  $18^\circ$  above the horizon, located about  $3^\circ$  below right of the star Arneb (magnitude 2.5, alpha Lep). Two days later the comet will be just  $1.5^\circ$  from this star, and in line with the stars Nihal and Arneb which will aid in locating the comet, which will likely have faded to magnitude 6 by now.



*On the evening of 28 May, use the stars Nihal and Arneb to locate comet 12P.*

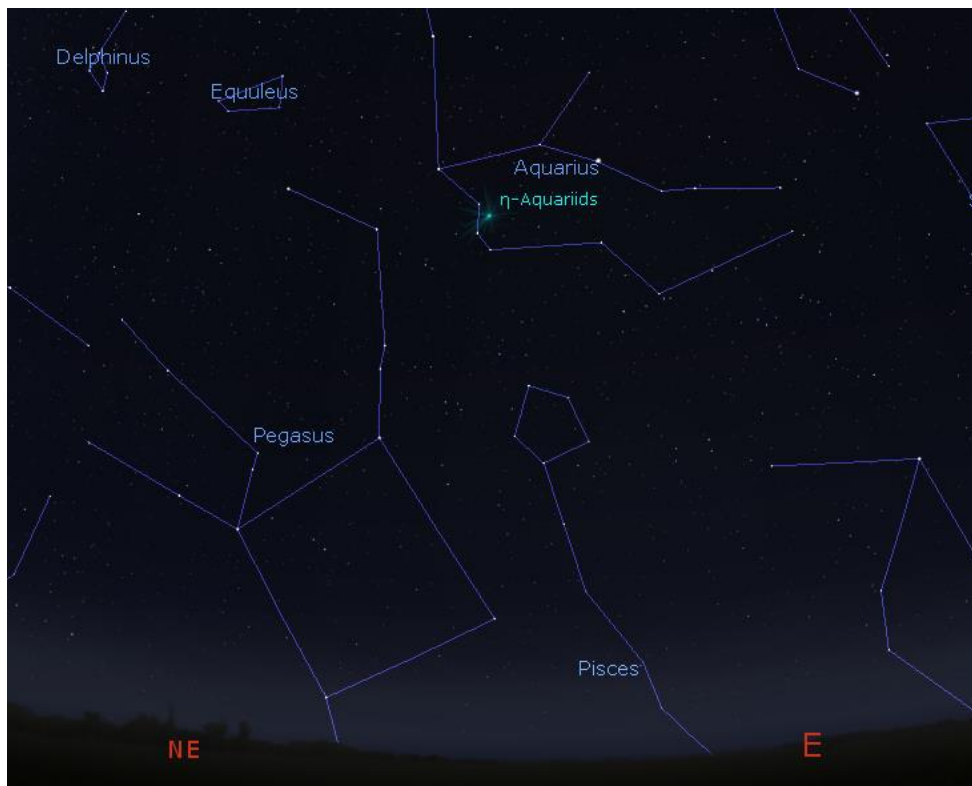
**C/2023 A3 (Tsuchinshan-ATLAS)** is another comet that has been hyped up, with some mention that it might become 0 magnitude later in 2024, close to perihelion on 27 September, and becoming marginally brighter a few days later at closest approach on 12 October. What actually happens remains to be seen, and at the present time the comet is still a magnitude 12 object. If the current brightness equation holds, then it might reach magnitude 9 at the end of the period covered by this issue of CAMNotes, well placed in the evening sky moving from the constellation of Virgo into Leo. However, the best opportunities will be in the third quarter, and if it does live up to the initial hype, the comet may become a spectacle in the eastern sky just before dawn during the last week of September. Thereafter it moves into the evening sky and is out of view for us at its brightest, but emerges from the solar glare from about 15 October, hopefully still about magnitude 1. After this we are well placed to observe the comet as it fades, becoming unobservable again about mid-November. Depending on how it brightens during the next three months, I will say more about this comet in the next issue of CAMNotes.

**METEOR SHOWERS** - a highlight for meteor observers in 2024 is the eta-Aquariids.

**The Eta-Aquariids** are the most active of the southern meteor showers, and these remnants of comet 1P/Halley normally peak around 5/6 May at a ZHR of 50-60/hour. In some years however, activity can be higher due to Earth crossing filaments of particles which are in mean motion resonances with the planet Jupiter. Such was the case last in 2013, when the ZHR reached 130/hour during the mornings of 5-7 May as Earth crossed filaments left behind by the comet at its -910 and -1197 apparitions. In the years since, the shower has returned to its normal activity profile. At a talk given at the 2020 online-International Meteor Conference, Auriane Egal predicted possible enhanced rates again in 2023 or 2024. Though observing conditions were badly affected by the Moon, Magda Streicher and I observed no undue activity in 2023, though enhanced rates were detected elsewhere by radar from particles too small to produce visual meteors. This year, any enhanced activity is likely to be from larger particles, and hence brighter meteors. My observations showed the meteors during the 2013 enhanced activity to be about 0.5 magnitude brighter than outside the maximum. In our favour this year is the fact that the Moon will pose no hindrance around the date of maximum, with New Moon occurring on 8 May. In addition to the traditional peak, calculations by Mikhail Maslov predict Earth may cross another filament of particles from the -985 apparition, which might result in enhanced activity around 05h to 08h UT on 3 May. If this activity does materialise and occurs slightly earlier than predicted, then enhanced activity may be visible from Southern Africa just before dawn on 3 May. This activity is also predicted to be brighter than normal. Note that for this earlier date, the Moon may pose slight interference, with the waning crescent located just 11° from the radiant.

Normally, activity picks up in the early days of May, and peaks about May 5 or 6. Rates can remain quite high until about May 10. On May 6 the radiant rises at 01h30 local time, and observations can begin from about 03h00 when the altitude is about 15°.

Observations will be cut short by encroaching twilight at about 05h30 or shortly thereafter (later for observers in the Western Cape), by which time the radiant has risen to a respectable altitude of nearly 50°.



*Radiant position of the eta Aquariids, close to the Water Jar asterism of Aquarius*

Note eta-Aquariids are fast moving meteors, entering the atmosphere at 66 km/sec. Brighter members often leave trains, that can be persistent. There may be activity from several other minor showers nearby, so be careful to report these separately from your ETA counts. Anyone who would like to observe this shower, which is particularly important this year, can contact me for further information on what is required.

I hope the foregoing gives visual observers and astro-imagers plenty of opportunities. If you do observe or image any of these events, I will be pleased to receive any reports or images for analysis.

Clear skies,

*Tim Cooper*

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### **Acknowledgements**

Star maps were drawn using Stellarium 0.20.1, Copyright © 2000-2020 Stellarium Developers.