

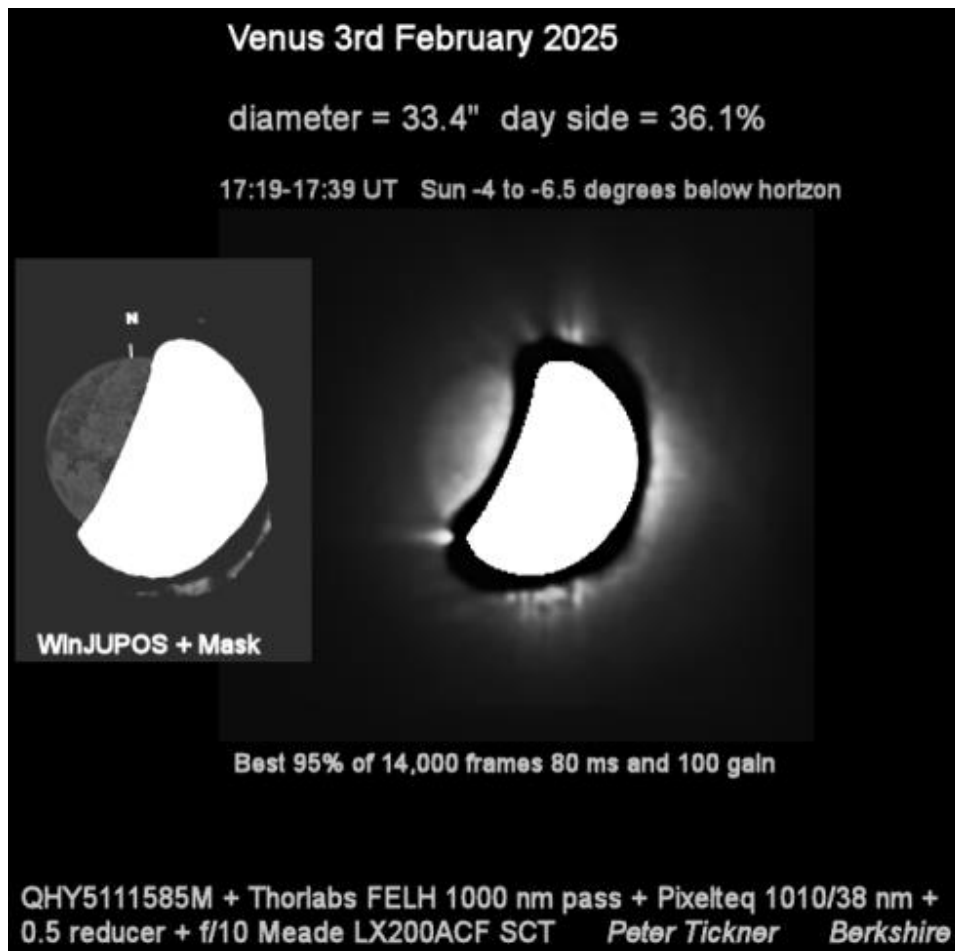


Mercury & Venus Section Newsletter

Director: Dr Paul G. Abel

Messenger

No. 16, February 2025.



The night side of Venus. Image by Peter Tickner

Contents

From the Director	3
From the Mercury Coordinator	4
Venus in 2024-2025	8
News and Notes	9
Observation of the Cusp Anomaly	9
New BAA Guide to Observing Venus	10
The Clouds of Venus – some recollections	11
Recent observations of Venus	14

From the Director

Dear Members,

I hope this newsletter finds you all well. By now, you can't have missed Venus blazing away in the evening sky. We are well past dichotomy and telescopically the planet now appears as a waning crescent. The planet will come to inferior conjunction on 23rd March passing just 8.4° from the centre of the Sun. Very experienced will be able to observe the planet at inferior conjunction (I will do this using setting circles) and at 1200UT, telescopically Venus will appear as large 1% illuminated crescent of apparent diameter 59.5". If anyone makes observations of Venus at Inferior Conjunction, please send them to me. I will reiterate however: if you are in any doubt about observing Venus this close to the Sun then don't attempt it! Even a glimpse of the Sun through a finder is enough to do permanent damage to your eyesight.

I have received a number of observations of Venus over the past few months, unfortunately the weather in the UK has been very poor- I can't recall a cloudy period this extensive in many year! I must thank our international members for sending me their results on a regular basis; without their work there would be substantial gaps in the coverage of Venus during this elongation.

In this issue of Messenger we have an update from Chris Hooker about recent observations of Mercury. Mercury will become prominent in early March so do keep a lookout for our enigmatic inner neighbour. Please send Chris any observations you make.

Also in this issue we have a excellent piece by Bill Leatherbarrow about the cloud markings on Venus and the role the BAA had in helping to establish the four day cloud rotation of the planet's upper atmosphere.

I would like to thank all contributors to this issue of Messenger and of course to all the observers who have sent Chris and myself their observations of Mercury and Venus. Finally, if you have an idea for an article for Messenger (perhaps discussing some observations or equipment you have been using) then please do get in touch- articles can be as simple or advanced; the purpose of this publication is to showcase the work of the Section.

Clear Skies,

Paul G. Abel,

Director of the BAA Mercury & Venus Section

From the Mercury Coordinator

With Mercury always low in UK skies during the winter months, and the large number of cloudy days we experienced from October onwards, it is not surprising that the Section has received no detailed observations or images of the innermost planet since the last issue of Messenger. However, James Weightman in Cirencester captured a pleasing wide-angle view in the morning sky on the 23rd December, showing Mercury and some stars in Scorpio:

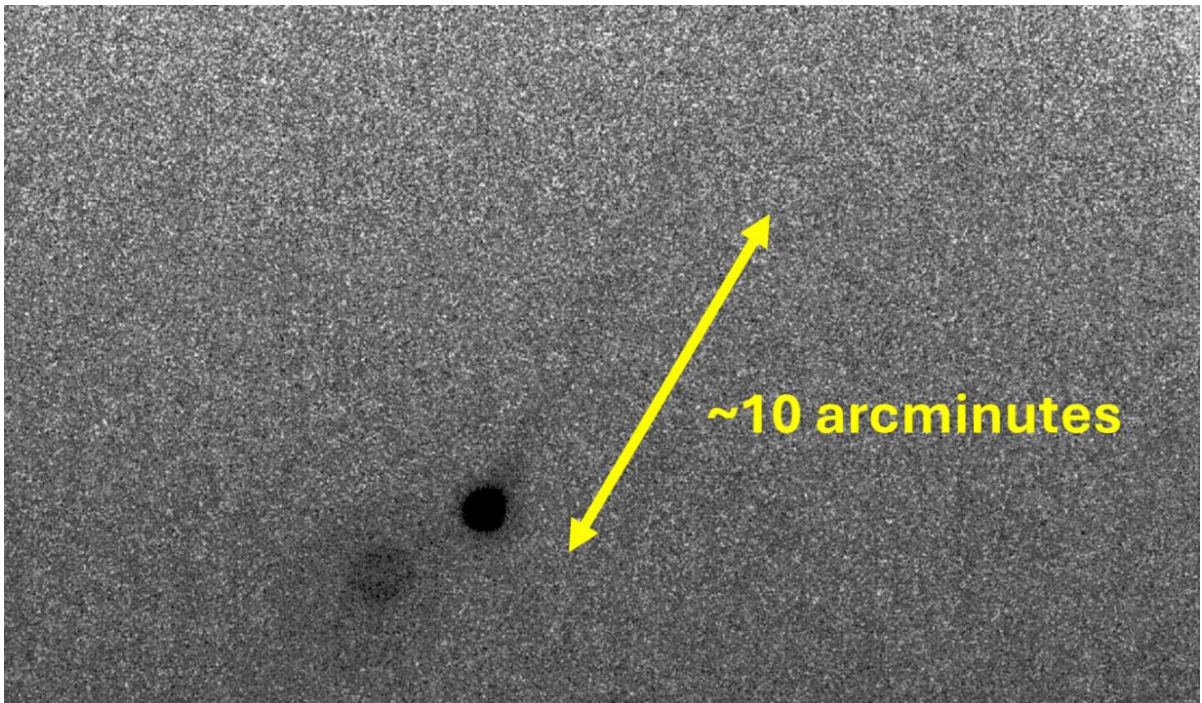


There was a brief opportunity to image Mercury's sodium tail in mid-December. For most of the period the morning skies were cloudy, but a on couple of days I managed to get images of the tail, in one case in a gap in the clouds that lasted only about three minutes. The image (below) from the 19th December shows Mercury with the tail extending up and to the right where the edge of the rapidly advancing cloud layer can be seen!



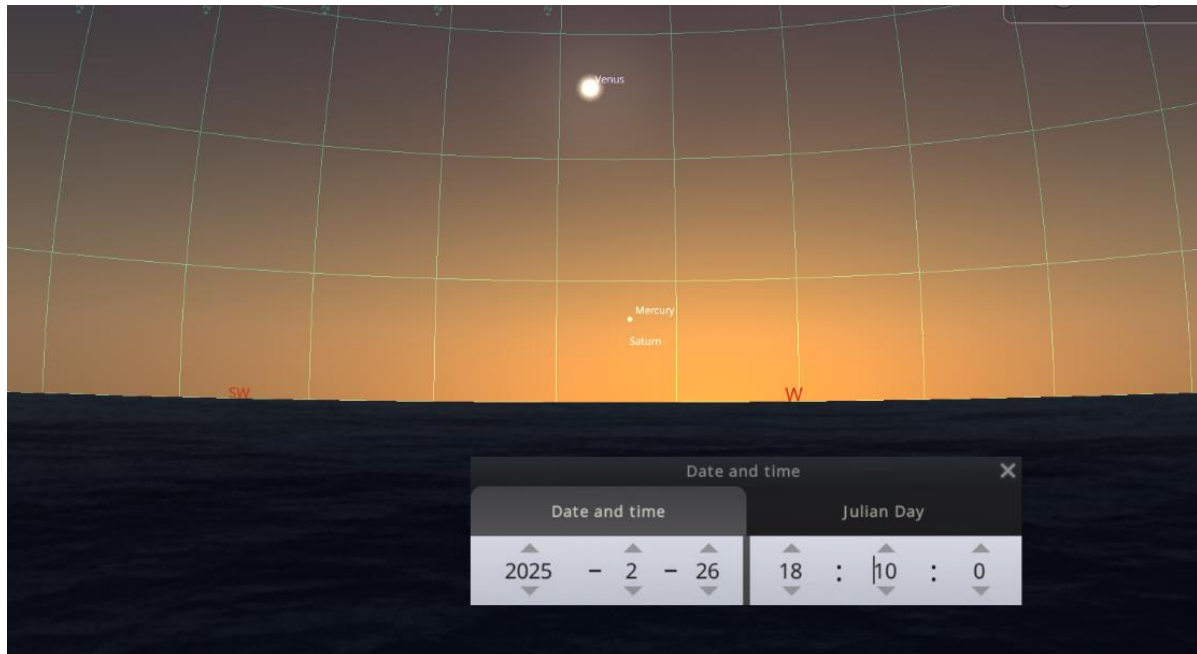
The bright spot below and to the left of Mercury is an internal reflection in the optics. This would not be there if Mercury had been positioned behind the filter strip at the lower left. If I had taken the time to do that, however, there would be no image at all because the clouds would have blocked everything. The star that is just visible in line with the tail at the edge of the clouds was about half a degree from Mercury.

James Dawson in Nottingham also succeeded in recording a short tail on the 23rd December, and his image is shown below. The spot at the lower left is a ghost reflection from the optics.



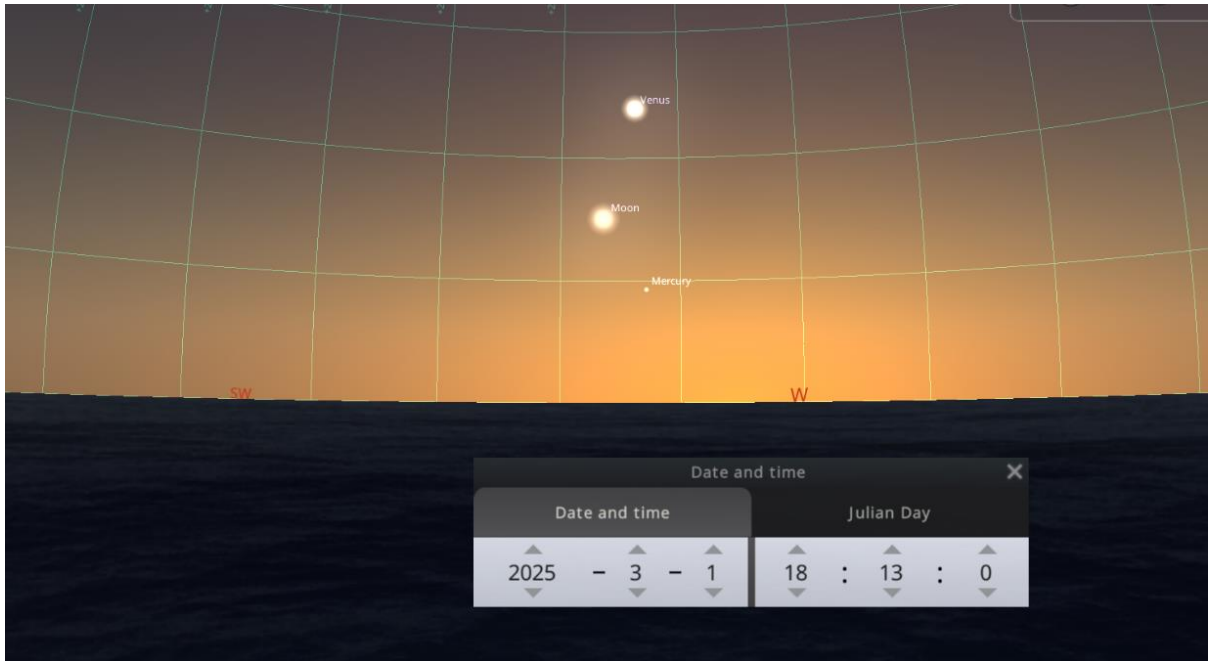
James Dawson, Nottingham

My own image from the 23rd shows a greater length of tail, but it was fainter than expected. For some reason it is more difficult to record the tail during western (morning) elongations than during eastern (evening) ones. Another opportunity to observe the tail occurs during the forthcoming eastern elongation in early March.



Starting in the last few days of February, Mercury will put on its best appearance of the year for northern hemisphere observers. On Spring evenings the ecliptic is steeply inclined to the western horizon, and Mercury lies north of it, having passed its ascending node a week or so earlier. The screenshot above from *Stellarium* for the 26th of February shows the western sky half an hour after sunset. Venus will be the most prominent object, with Mercury below it at an altitude of 7 degrees and magnitude -0.14, and the much fainter Saturn a degree and a half below that.

On succeeding days Mercury rises rapidly into the evening sky, becoming fainter as the phase of its disk shrinks, and approaching Venus which is moving in towards the Sun. On the 1st of March the thin crescent Moon will lie between Venus and Mercury forming a very attractive grouping. Saturn will still be present but so low that it is unlikely to be visible. The screenshot below shows this grouping half an hour after sunset. Observations and images of this event, and of either Mercury or Venus at any time, are welcome. Please send them to either myself or Paul Abel directly or via the links that can be found on the BAA web-pages.



By the 14th of March Mercury will have faded to around magnitude 2, but it may be possible to find it with reference to Venus, which will be at the same altitude and 6 degrees to the right of Mercury. Venus will be a thin crescent only 3.5% illuminated but 57 arc minutes in diameter, compared to Mercury at 19% illumination and 9 arc seconds diameter. It will be interesting to note the differences between the two if Mercury can be located telescopically. Mercury reaches inferior conjunction on the 24th of March, one day after Venus, and both will subsequently reappear in the morning sky.

Chris Hooker

Mercury Co-ordinator

Venus in 2024-2025

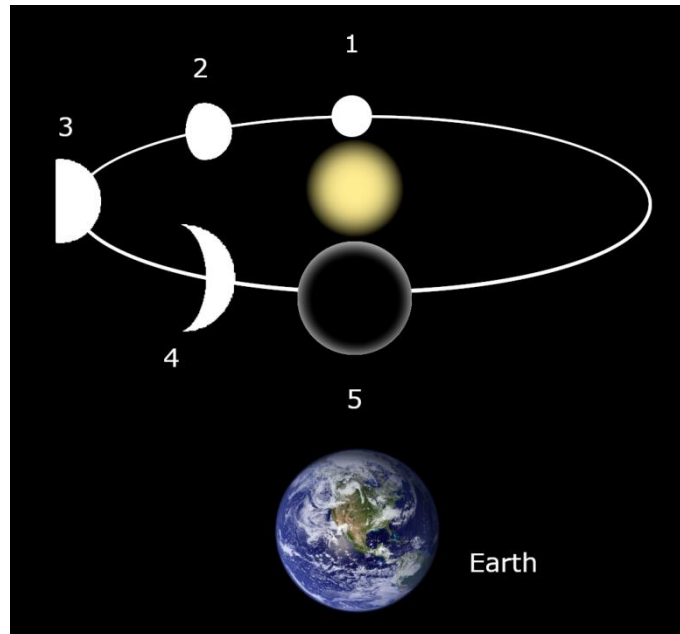


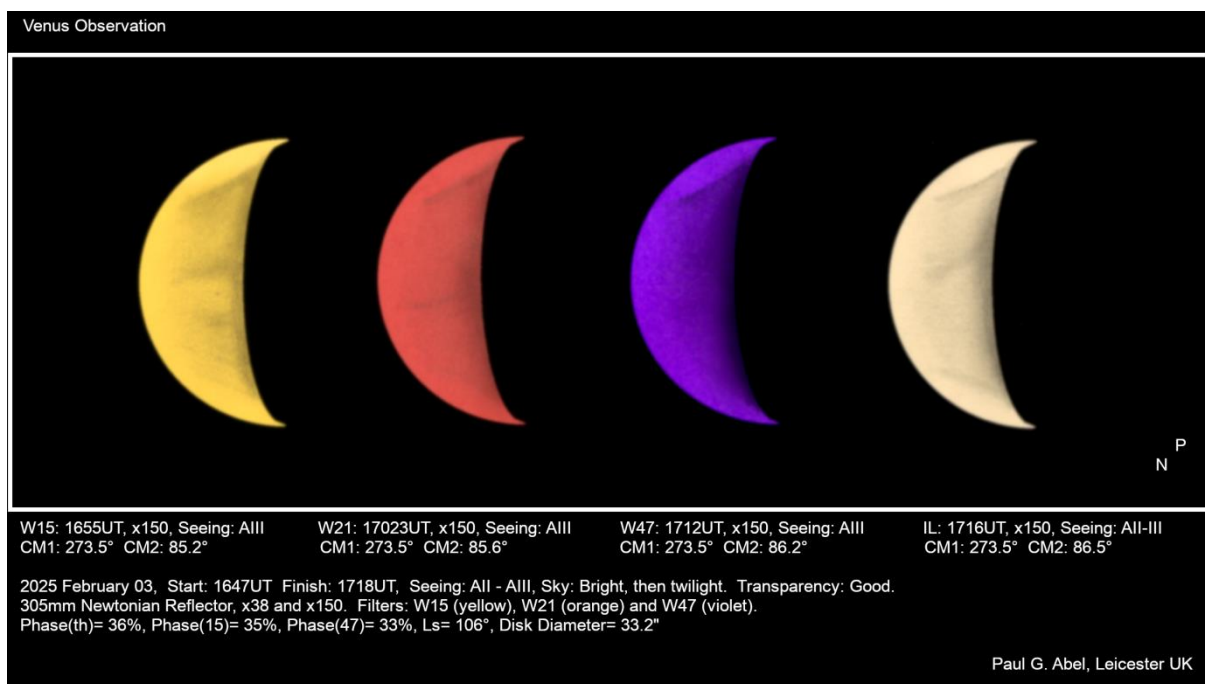
Figure 1: The orbit of Venus from superior conjunction to inferior conjunction in 2022-23

Date	Event	Position
2024 June 04	Venus is at superior conjunction- this marks the start of the 2024-25 eastern elongation and Venus returns to the evening skies.	1
2024 June – 2025 January 10	Venus is now an evening object, albeit it low in the evening sky. Telescopically it appears as a waning gibbous.	2-3
2025 January 10	Venus is at greatest eastern elongation	2-3
2025 January 12	Venus reaches theoretical dichotomy and should appear to be exactly 50% illuminated on this date	3
2025 February 07	Venus reaches its highest altitude in the sky	3-4
2025 February 16	Venus at greatest brightness	4
2025 February – 2025 March 23	Venus now appears telescopically as a waning crescent. The planet is moving closer to the earth and has a large apparent diameter.	4-5
2025 March 23	Venus is at inferior conjunction and lies between the sun and the earth. This marks the end of the 2024-25 eastern elongation, and the planet moves back into the morning sky.	5

News and Notes

Observation of the Cusp Anomaly

On 2024 February 03 at 1647UT, I started observing Venus with my 300mm Newtonian Reflector. The seeing conditions were fairly good and I was immediately struck by the unusual appearance of the cusps. The *cusp anomaly* is an effect whereby the terminator deviates from its usual path at the cusps and becomes much flatter. I have observed the effect in previous elongations (and it can be seen in previous elongation reports published in the *Journal*), but this was the most obvious I have seen it. I made a series of drawings using different filters and I believe the effect was most pronounced in the W47 violet filter:



Obviously getting confirmation is vital so I called Pete Lawrence and Bill Leatherbarrow. Pete confirmed he could see the effect visually and took some images which I believe show the effect. Bill was less certain and also took images.



I will report on this more fully in the elongation report covering the current elongation. In the meantime, can I ask Section members to keep both original and electronic eyes on the cusps of Venus as we approach inferior conjunction!

New BAA Guide to Observing Venus

A new guide to observing the planet Venus is currently in production. The current guide is now somewhat out of date- in particular the recent developments involving imaging the night side of Venus are absent. The new guide will contain an introduction to Venus, its orbit elongations, the aims and objectives of the Section and has chapters on:

- Visual observations and filter work (by the Director)
- Making UV observations of Venus (by Chris Dole)
- Making IR observations of Venus (Peter Tickner)
- Imaging the night side of Venus (Martin Lewis)

It is hoped that the new guide should be available in spring- like the recent Mercury guide by Chris Hooker, it will be available for download on the BAA Mercury and Venus Section website (this is free for BAA members). Hard copies will also be available. Along with Chris' Mercury Guide, this should bring the reference guides for the Section up to date.

The Clouds of Venus – some recollections

Bill Leatherbarrow

In the autumn of 1966 I moved from my parental home in Liverpool to Exeter in the far southwest of England. Shortly after my arrival I was invited to visit Hedley Robinson, then Director of the Mercury and Venus Section, at his home in Teignmouth, just a short train ride from Exeter. I had been a member of Hedley's Section and an active observer of Venus for a couple of years, so I was delighted at the opportunity to meet him face to face. As it turned out, we got on very well and shortly afterwards Hedley invited me to help him in the role of Section Secretary, a role I carried out for the rest of Hedley's period as Director.

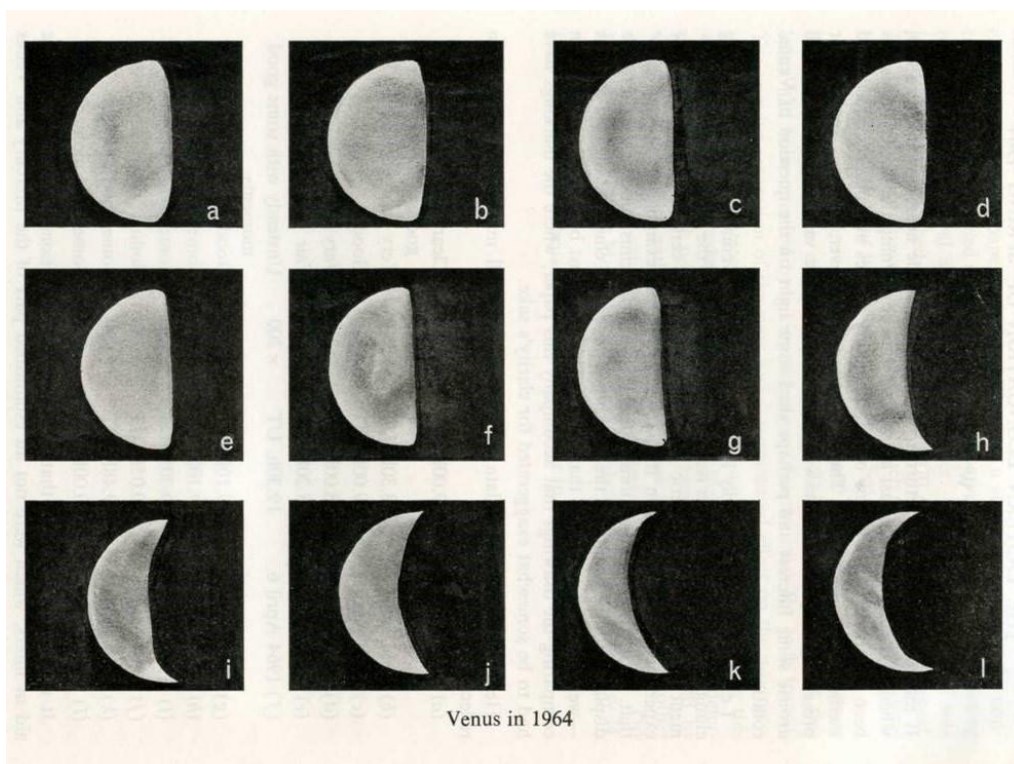
At that time Hedley was keen to reactivate the Section after a rather stagnant period under his predecessor. He devised an updated programme focussed primarily on observations of the Ashen Light, the planet's elusive cloud markings and measurements of phase anomalies and terminator irregularities. In order to standardise such measurements he encouraged the use of the Wratten 15 yellow filter and also recommended the use of other colour filters to enhance the visual appearance of cloud markings.



Hedley Robinson at his home in Teignmouth, 1977

During one of my visits I showed Hedley a series of observations I had made from Liverpool during Venus's favourable evening elongation in the spring of 1964, when the UK (or at least my part of it) enjoyed an unusually sustained spell of settled weather. I was struck by the apparent recurrence of a particular dusky patch at regular intervals. Hedley was of the view that my observations provided some support for recent ultraviolet imaging conducted over a period of 68 days by Charles Boyer and Henri Camichel--the latter using the 60cm reflector at the Pic du Midi Observatory--which suggested a rotation period of about 4 days for the Venus cloud layer. I wasn't totally persuaded, but Hedley encouraged me to write up my observations in a paper for the *BAA Journal* [1].

My eyes have never been particularly sensitive to light at the blue end of the spectrum--and now, in my eighth decade, they are even less so! I have always found the markings on Venus to be extremely elusive and uncertain, so I am unwilling to stake a confirmatory claim to the findings of Boyer and Camichel. The rotation period of Venus's atmosphere has now been well established, but it remains a project of great interest to try to see this for oneself. Given the confluence of several favourable (but elusive) factors – a sustained run of good seeing when Venus is well located in a twilight sky and the persistence of a particularly distinctive cloud pattern – it should be possible to follow Venus's rotation visually with a modest telescope and perhaps a Wratten 47 violet filter.



Alternatively, and particularly for those like myself with limited sensitivity at the blue end of the spectrum, modern imaging techniques allow one to capture the Venusian cloud markings using a suitably sensitive planetary camera and an ultraviolet pass filter such as the Baader Venus filter. Images recently posted on the BAA members' pages have shown the Venus clouds very well, and a

time-lapse GIF by Peter Tickner, dated 2 February 2025, clearly shows atmospheric rotation over a 50-minute period. Of course, suitable UV filters are not cheap, but if affordable they can transform our view of Venus. Ideally, they should be used on pure reflecting telescopes such as Newtonians or classical Cassegrains, where the UV light is not absorbed by transmission through glass lenses or corrector plates, but they do still produce worthwhile results in many Schmidt-Cassegrain and Maksutov-Cassegrain systems.

At the time of writing (mid-February 2025), Venus is showing a reducing crescent phase as it moves in towards inferior conjunction with the Sun, so the phase is not ideal for following the movement of any markings detected. But when the planet regains its gibbous phase in the morning sky during the summer and autumn of this year, conditions will be very favourable for such observations from the northern hemisphere.

References:

[1]. W.J. Leatherbarrow, "The Rotation of Venus – Observations made during the Eastern Elongation of Spring 1964", *Journal of the British Astronomical Association*, vol. 81 (1971), pp. 177-80.

Recent observations of Venus

Part One: Visual Observations

Paul G. Abel, Leicester UK:

Venus Observation

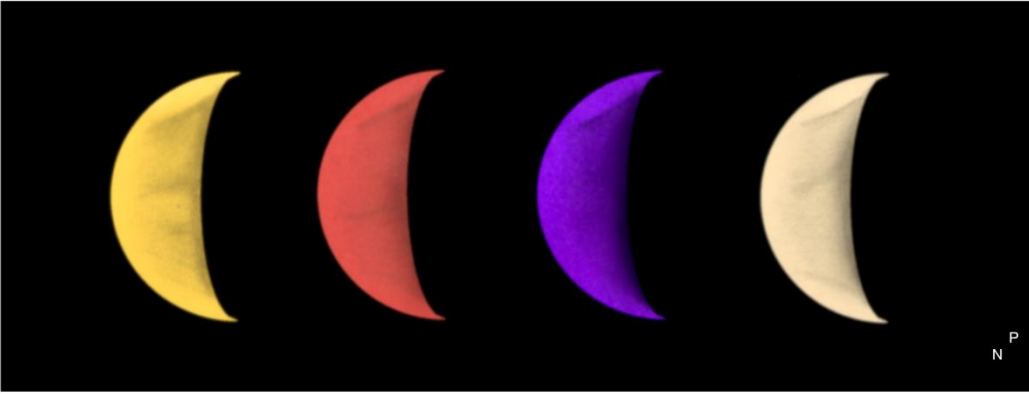


Disk Drawing: 1310UT, x100, Seeing: AIII-IV. CM1: 268.3° CM2: 153.9°

2024 September 16, Start: 1304UT Finish: 1314UT, Seeing: AIII - AIV
Sky: Bright (daytime), Transparency: Good.
305mm Newtonian Reflector, x100. Filter(s): None- IL Only.
Phase(th)= 88%, Ls= 242°, Disk Diameter= 11.6"

Paul G. Abel, Leicester UK

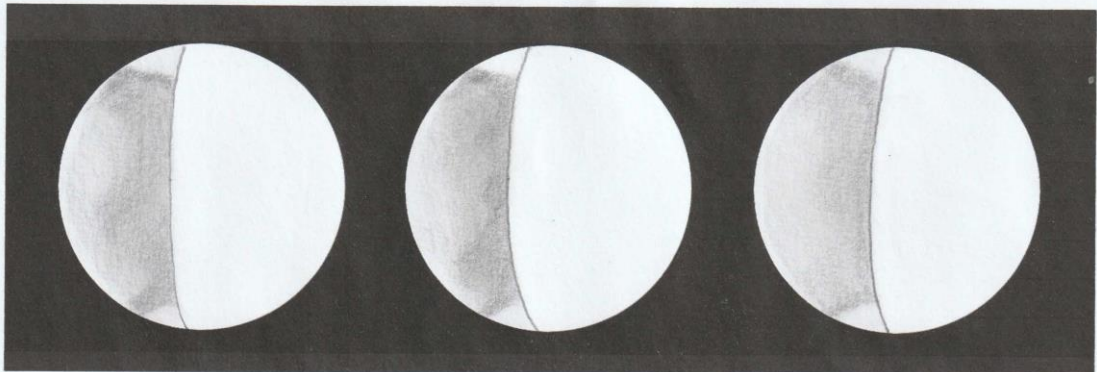
Venus Observation



W15: 1655UT, x150, Seeing: AIII CM1: 273.5° CM2: 85.2° W21: 17023UT, x150, Seeing: AIII CM1: 273.5° CM2: 85.6° W47: 1712UT, x150, Seeing: AIII CM1: 273.5° CM2: 86.2° IL: 1716UT, x150, Seeing: AII-III CM1: 273.5° CM2: 86.5°

2025 February 03, Start: 1647UT Finish: 1718UT, Seeing: AII - AIII, Sky: Bright, then twilight, Transparency: Good.
305mm Newtonian Reflector, x38 and x150. Filters: W15 (yellow), W21 (orange) and W47 (violet).
Phase(th)= 36%, Phase(15)= 35%, Phase(47)= 33%, Ls= 106°, Disk Diameter= 33.2"

Paul G. Abel, Leicester UK



UT: 14:39	Mag'n: 255 X	UT: 14:47	Mag'n: 255 X	UT: 14:54	Mag'n: 255 X
Filter W: 15	Phase Est: 39 %	Filter W: 47	Phase Est: 36 %	Filter W: 25	Phase Est: 41 %

Date: 30/01/2025 Start: 14:39 U.T. Finish: 15:00 U.T.

Name: David Basey Location: Diss, Norfolk

Seeing: (Antoniadi Scale I-V): III Instrument: 358mm Newtonian

Sky: Very Bright **Bright** Fair Twilight Dark Disk Diameter = 31.3 " Theoretical Phase: 39 %

Illuminated Disk:

Unilluminated Disk:

Bright Limb Band:

- Limb band not seen
- Limb band visible & complete
- Limb band visible & incomplete

Terminator:

- Terminator geometrically regular
- Terminator geometrically irregular

Cusp Regions:

- Neither cusp cap visible
- North cusp cap only visible
- South cusp cap only visible
- Both cusp caps equally bright
- North cusp cap brighter
- South cusp cap brighter

Cusp Collars: Neither visible Both visible North only visible South only visible

North Cusp Extension: N/A ° South Cusp Extension: N/A °

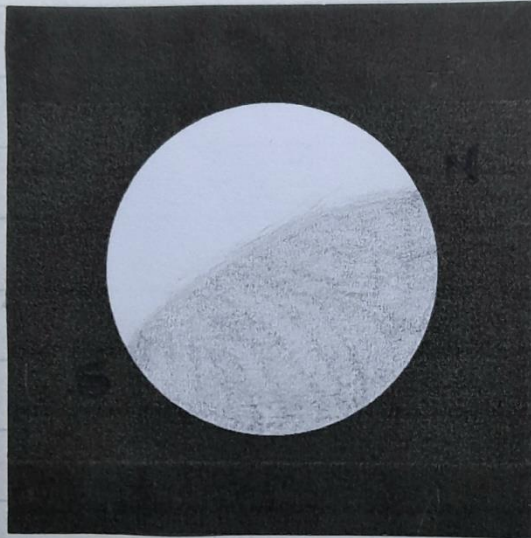
25th January 2025

Neatishead, Norfolk. Duncan Hale-Sutton.

Venus $\sim 23^\circ$ alt. in SSW. Very thin cloud.

147x

No filter



start: EN

16:56 UT

End:

17:21 UT

Seeing

AII/AIII

NexStar 102 SLT Eyepiece 9mm Ortho

102mm aperture + 2x Barlow

660mm focal length star diagonal

Estimated phase 41% by comparison to
to 11 phase diagrams ranging from 40 to
50% in steps of 1%.

BAA Handbook

Phase ~ 0.425 , Elongation $+46^\circ$

$V \sim -4.65$, Diam. $\sim 29.6''$

Part Two: Digital Observations

David Basey, Norfolk UK



*30/01/2025 1522 UT
358mm Newtonian+ADC
Original Resolution 0.10"/pixel
Disk diameter - 31.3"
David Basey.*

*Sky Bright
Baader U-Venus 320-380nm*

Ant. III

Diss, Norfolk.

Clyde Foster, Africa:

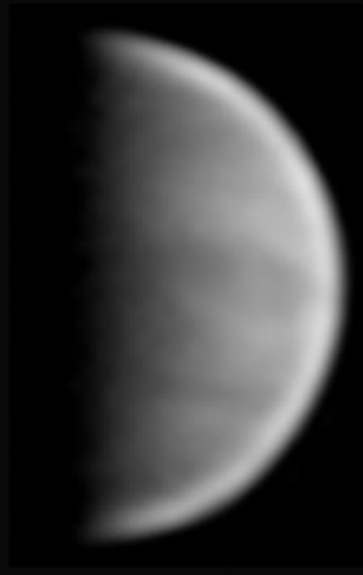
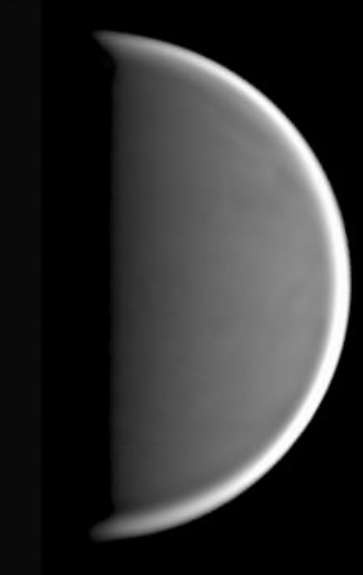
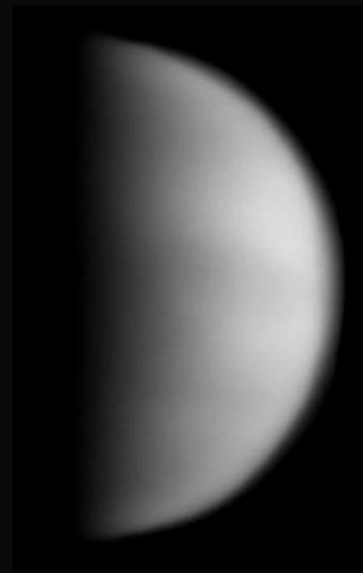
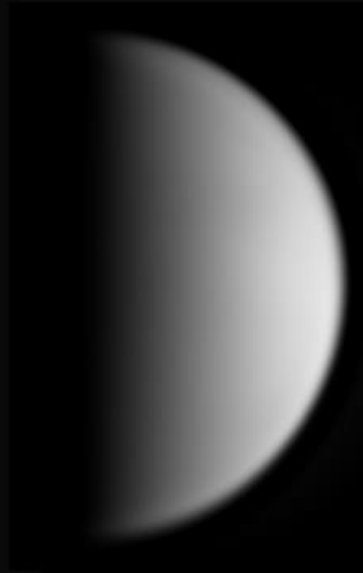
Venus

11 January 2025
Diam 24.8"
Phase 0,502
Altitude 50-41 deg

Astronomik
IR Pro 742
16 45.8UT
/ 219 // 253

North up

UV
Chroma Bessel U
17 01.2UT
/ 219 // 254



Additional
sharpening

11 x 10 000 frames(20%)
stacked

4 x 10 000 frames(20%)
stacked,

355mm Celestron Edge HD SCT
2x Televue Powrmate
Player One Mars -MII

Clyde Foster
Oryx Observatory
Farm Goellschau
Khomas, Namibia

Nick Haigh, Southampton UK:



Pete Lawrence, Leicestershire UK:



Luigi Morrone, Italy:

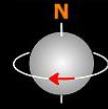


Mike Karakas, Curacao:

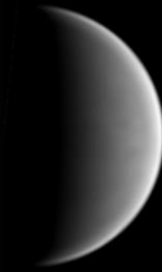


Mike Karakas
Curacao

VENUS

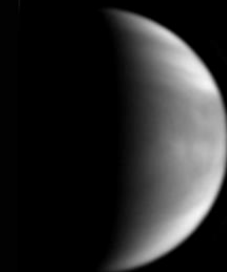


JAN. 24, 2025
D = 29.07"



22:09 UT

C11 @ F20
ASI 462MM
742nm IR

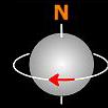


21:56 UT

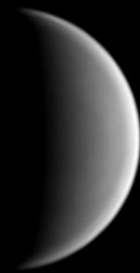
C11 @ F11
ASI 178MM
CHROMA U BESSEL UV

Mike Karakas
Curacao

VENUS

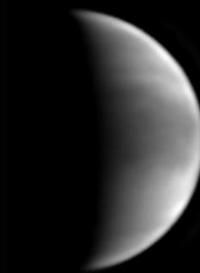


JAN. 25, 2025
D = 29.45"



22:16 UT

C11 @ F20
ASI 462MM
742nm IR



21:48 UT

C11 @ F11
ASI 178MM
CHROMA U BESSEL UV

Peter Tickner, Berkshire UK:

