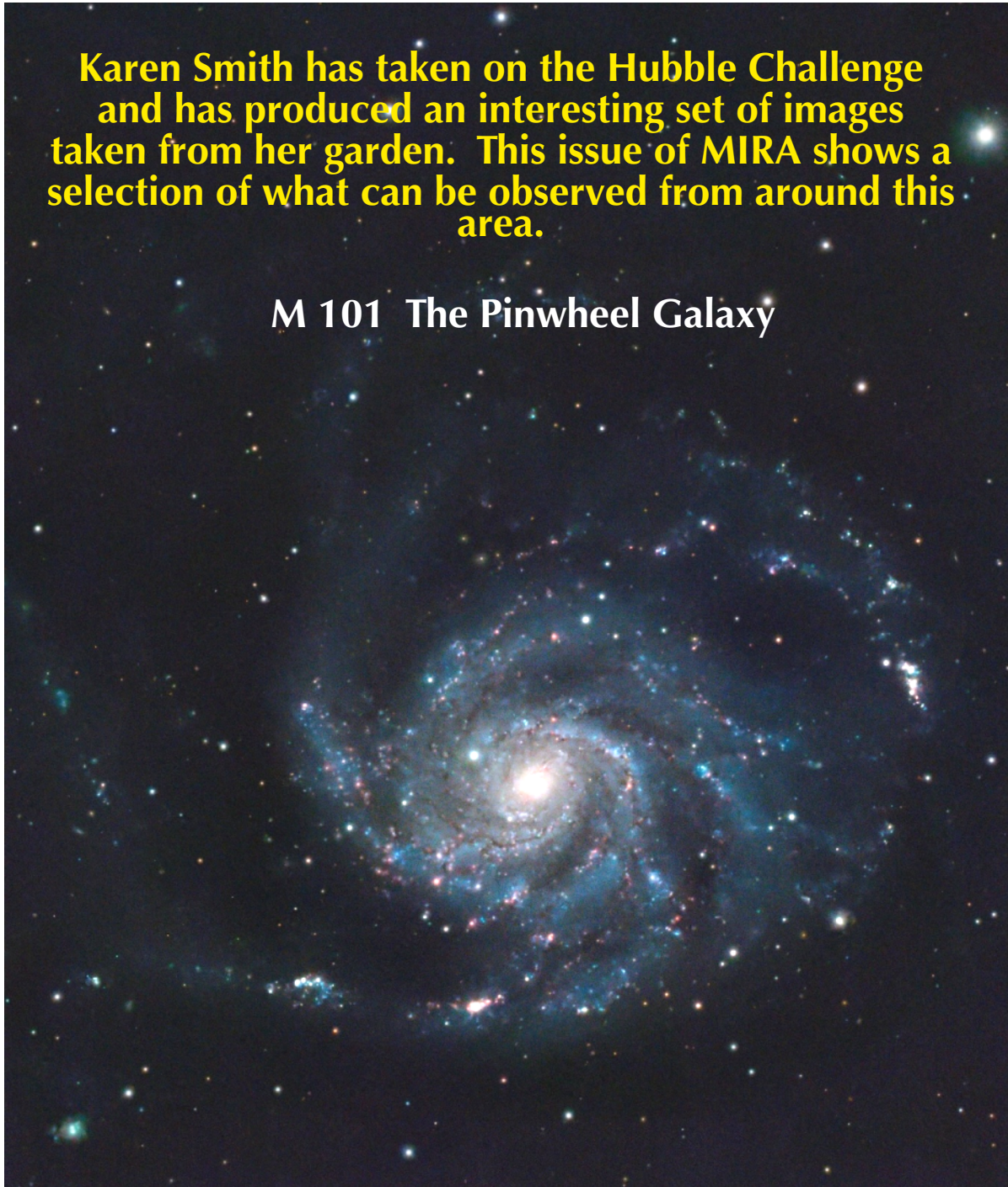


## **Astronomical League – Hubble Telescope – 35<sup>th</sup> Anniversary Observing Challenge 2025**

**Karen Smith has taken on the Hubble Challenge and has produced an interesting set of images taken from her garden. This issue of MIRA shows a selection of what can be observed from around this area.**

**M 101 The Pinwheel Galaxy**



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# ***Astronomical League – Hubble Telescope – 35<sup>th</sup> Anniversary Observing Challenge 2025***

By Karen Smith

To celebrate the Hubble Telescope's 35<sup>th</sup> Anniversary, NASA and the Astronomical League have released a special year-long Observing challenge. I discovered the challenge whilst browsing online in early March 2025. The main webpage, detailing this challenge can be found here: - <https://www.astroleague.org/nasa-observing-challenges-special-awards/>. It is definitely worth a look. The gold award challenge, which involves imaging or observing four or more objects each month, started in January 2025. Because it had been running for a couple of months, I had assumed I was too late to enter this challenge. However, I was able to participate in the month-by-month silver award challenge. Every month, several objects are listed on the webpage to image or observe and draw, these are all objects that the Hubble telescope has captured in the past and participants are encouraged to compare their image with that of the Hubble Telescope.

The silver award requires an image and an outreach activity to be completed during the same month. For a few years now, I have presented a talk on Astrophotography to A-level students at the school where I work. My talk was originally planned for March, so I selected Caldwell 48 (NGC 2775, a Spiral galaxy in Cancer) from the March list and spent a night imaging the target.

However, due to A-level Mock exams, my talk was then postponed until April! Not to be outdone, I waited until the April objects were released, and chose to image Caldwell 59, NGC 3242, the Ghost of Jupiter. I submitted my image of C59 with information about my outreach activity, and I was awarded the silver certificate for April.

After being awarded the silver certificate, I was kindly given the opportunity to try for the gold certificate and pin, with the conditions that I still imaged/observed at least four objects from each month and included a further three outreach activities over the year. Unfortunately, I had missed the best possible observing time for the majority of the January to

February objects, but we had a rare clear night in the UK on 16<sup>th</sup> April 2025, so I decided to go for it! I imaged as many of the objects I could in that one evening, it was so much fun! I usually spend a night or two, or sometimes three, imaging a single target, but due to how many objects I needed to capture, and how quickly many of the winter objects were setting, I had to limit the time to 10 to 20 minutes per target! I planned a rough order in which to image the objects, starting from the objects that would drop out of range the quickest, to those higher in the sky where I thought I had more time. This worked really well except for one object – Caldwell 7, NGC 2403, a spiral galaxy.

As this target was high in the sky, located in the constellation Camelopardalis (near Ursa Major), I assumed I had plenty of time to capture it. I therefore placed Caldwell 7 towards the bottom of my schedule. However, I failed to take my home roof into consideration! When it came around to imaging this target, I only managed a single 60 second image before it dipped behind my house! Fortunately, I was able to image Caldwell 7 again about a week later.

Once I had captured the required January to March objects, I was able to spend a bit longer capturing the April, May and June objects. The weather in the UK has been surprisingly good over the past few months and I have made the most of the clear nights. I'm keeping everything crossed that the clear skies continue.

## **Outreach Activities: –**

1. Astrophotography talk

Date and time: - April 2<sup>nd</sup> 2025 - 1:15pm - 3:15pm

What was the outreach activity: - Astrophotography talk (1 hour 30 minutes) – I spoke about the types of

telescopes and equipment that I have used, showing many of my images from when I started the hobby in 2020 and how I have progressed. I wanted to encourage students to try astrophotography themselves, showing them what is possible with even the most basic of equipment. I mentioned the Hubble telescope, its contribution to science and showed one of its images (C59). I also mentioned this





challenge and handed out printouts of a couple of PDF files that I found on the Astronomical League website. These printouts were designed for outreach activities and were great to help students navigate the mid-April Night Sky. I then took the students outside and we all observed the Sun through my Coronado PST. One of the students found me the next day, she showed me

photographs of the moon that she had taken through her telescope. They were brilliant!

Group and group size: - Astrophysics Enrichment group - UK school year 12 (Age 16-17). Fifteen students attended.

Nuneaton, Warwickshire. UK.

### Observations: -

The following pages contain a selection of images that I have taken for this challenge so far. Only four observations are required for the gold challenge per month, however, there are often more than four objects to choose from. The monthly object lists for the challenge can be found here: - <https://www.astroleague.org/nasa-observing-challenges-special-awards/>. Only the January to June object lists are currently available, each list is released a few days prior to the start of each Month. I hope to continue the challenge throughout July to December and I'm really looking forward to finding out what targets I will be trying to image next! All Hubble photographs shown below for comparison, were copied from the Hubble's Night Sky Challenge website: -

<https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubbles-night-sky-challenge/January2025>

### Observation Requirements: -

Observer's Latitude: - 52.4814° N

Observer's Longitude: - -1.4689° W

Observer's Location: - Warwickshire, UK

**All the following images are taken with the following instruments and filters, unless otherwise noted** - Meade LX90 telescope (~15 years old). ZWO ASI2600MC Pro camera, ZWO AM5n mount. No guiding. Optolong L-Pro filter. Controlled by ZWO ASIAir Plus. All images were stacked and processed in PixInsight.

### Target 1: - M 42: The Orion Nebula.



Above: - Infrared Hubble image of M 42 Trapezium.

Left: - My image of M 42  
Date and time: - April 16<sup>th</sup> 2025 - 21h17 to 21h31 BST

The Orion Constellation was dipping quite low on the horizon and could only be seen above my garage for a few minutes after sunset. 20x30 second images were taken, but only 3 images were stacked. Unfortunately, a rather annoying cloud was also obscuring the target which rendered many of the images unusable. Thankfully it is an extremely bright target, so I was able to generate an image despite such a short acquisition time!

The above image of M 42 has been cropped. Similarities to the Hubble image: - The small window of time that I had to capture this part of the sky, before it dipped to low for me to image, made this target

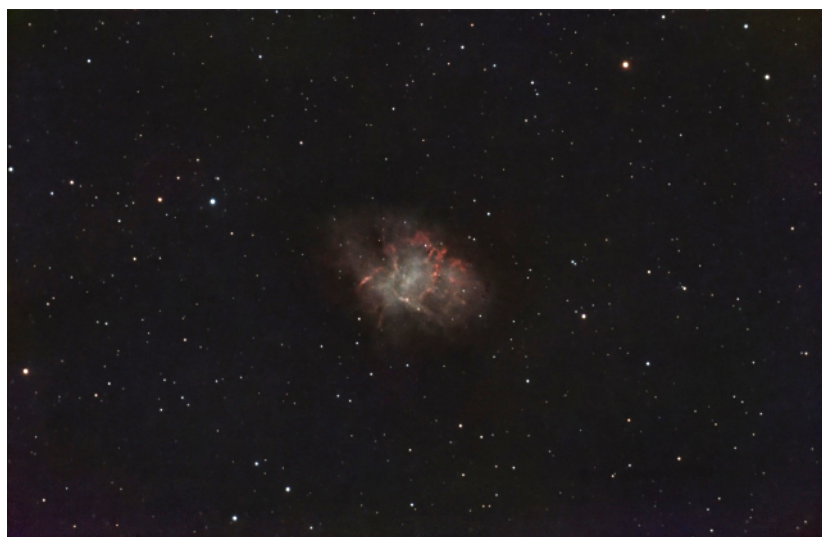
particularly challenging. I decided it was necessary to include the second target, M 43, within the same image. Therefore, I was only able to capture the top section of the Orion nebula.

Due to the short 30 second exposure time, I was able to make out the individual stars in the Trapezium cluster. I have captured the Orion Nebula a number of times in the past with different OTA's but this is the first time I have captured so much detail in the core! I am definitely hoping to revisit this target in the future. The Hubble image clearly shows 5 stars that make up the Trapezium, however I seem to be missing one which I found surprising as the stars are so clear in my image. I

initially wondered if it had something to do with the editing software BlurXterminator which was used to make the stars in my image smaller and more pinpoint, I thought that maybe it had merged two stars into one! However, looking at the unprocessed images, I am still missing the 5th smallest star. I therefore believe my telescope is not able to resolve

this star from its closest companion. I have also caught many of the dark clouds of dust that can be seen in the central area around the Trapezium. These are shown much clearer in the Hubble image, but I am hoping with more integration time in the future, I will be able to improve the detail. Although probably not up to Hubble standards!

### Target 3: – M 1: The Crab Nebula



Above: - Hubble image of M 1.  
Left: - My image of M 1  
Date and time: - April 16<sup>th</sup> 2025 - 21h50 to 22h01 BST

The above image of M 1 has been cropped. For this image, 20x30 second exposures were captured, 15 of which were stacked to produce the image. Similarities to the Hubble image: - The main veins of the nebula can be seen running through my image and it is possible to match them with those from the Hubble image. The Hubble pallet or similar colouring has been used to process the Hubble image to showcase the different structures that can be seen in this amazing nebula. I have increased the natural saturation of the

colours in my image, so although it does not show the vibrant colours and detail of the Hubble image, increasing the saturation did help to increase the detail seen in my image. Due to the limited time that I had with this target, I was really pleased with the amount of detail that I captured. I believe I may have also captured the main pulsar star of this nebula; the brightest of the two faint stars near the centre. This is another target that I would like to image again in the future. If only the UK had more clear skies!

### Target 4: – Caldwell 46, NGC 2261 – Hubble's Variable Nebula



My image to the far left and above left, Hubble telescope image right. (NASA/ESA and the Hubble Heritage Team (AURA/STScI))  
Date and time: - January 30<sup>th</sup> 2025 - 20h10 to 20h52 GMT 13x180 second exposures were captured and stacked. ZWO OAG with ZWO ASI120mm mini camera for guiding.



One of my favourite YouTube channels is Astrobiscuit, produced by a Londoner called Rory. During one of his videos, he captured Hubble's Variable Nebula. As soon as I obtained a telescope with a narrow enough field of view, I wanted to image this target and was really looking forward to detecting a change in the nebula myself. I have imaged this target over several nights this year; 25<sup>th</sup> and 30<sup>th</sup> January, 4<sup>th</sup>, 22<sup>nd</sup>, 27<sup>th</sup> and 28<sup>th</sup> February, 15<sup>th</sup>, 18<sup>th</sup> and 30<sup>th</sup> March 2025. But so far, I have been unable to detect any change. I am planning to return to the target in the early winter and maybe I will see a difference then.

The above image of C 46, has been cropped considerably.

Similarities to the Hubble image: - The Hubble telescope has captured the nebula in much greater detail, being able to see the individual wisps of nebula within each dark and light section. It is difficult to say for sure, but there doesn't seem to be any noticeable change between my image and that from the Hubble telescope, the main structure does look very similar to my image! I do not know when this image was captured by the Hubble telescope, but it looks like the nebula has been relatively quiet over the past few months. I plan to continue capturing this target when it becomes visible from my location again, and maybe I'll detect a change at some point!

## February 2025

### Target 1: - M 46 - Open cluster with planetary nebula NGC 2438



Above: - Hubble image of NGC 2438 located in front of the star cluster M 46.  
Left: - My image of M 46 including NGC 2438

Date and time: - April 16<sup>th</sup> 2025 - 21h35 to 21h47 BST  
20x30 second exposures were taken and 19 of which were stacked to produce the image.

The above image of M 46 and NGC 2438, has been cropped slightly.

Similarities to the Hubble image: - I knew M 46 to be a star cluster, so it was a lovely surprise to see the little planetary nebula pop up in the first exposure I captured of this target. It really is a bright little thing to appear in a single 30 second exposure! I was also really pleased with how the colour of the nebula turned out once processed.

The image from Hubble telescope again uses the Hubble pallet or similar to show the location of the different gasses, mainly OIII, HA, NII and SII. Although I have not been able to separate the gasses so clearly, I can definitely see the OIII (green) and possibly a mix of HA, NII and SII in the red external ring. The stars in the open cluster of M 46 also vary in colour, there are many stars that are blue in colour, but also plenty that are yellow to red.

### Target 2: - Caldwell 25, NGC 2419 - Star cluster. The Intergalactic Wanderer

The image below of C 25, NGC 2419, it has been cropped slightly.

Similarities to the Hubble image: - Due to the time constraints in capturing these targets, I decided not to waste time setting up and calibrate my guiding. My mount can usually track well enough on its own, to take 30 second images without star trailing, so I again used 30 second exposures to take this star cluster. However, I think this target would have benefitted from a longer exposure time, as it is quite faint. I will have to

visit this target again when I have more time. The Hubble image shows many orange and red stars that stand out from the pale blue core of the cluster. Although the blue core of the cluster is not as bright in my image as in the Hubble image, you can clearly see many tiny orange and red stars in the target. Given more acquisition time, I think the red stars would look spectacular in the midst of the bright white stars in the surrounding area.



20x30 second exposures were taken, 18 of which were stacked to make the image left.

Above: - Hubble image of C 25.

Left: - My image of C 25

Date and time: - April 16<sup>th</sup> 2025 - 22h04 to 22h16 BST

### Target 3: – Caldwell 39, NGC 2392 – The Clown Nebula.



Above: - Hubble image of C 39.

Left: - My image of C 39

Date and time: - March 2<sup>nd</sup> 2025 - 20h26 to March 3<sup>rd</sup> 2025 - 00h21 GMT

100x120 second exposures were taken, 99 of which were processed for this image.

ZWO OAG with ZWO ASI120mm mini camera for guiding.

The above image of C 39, it has been cropped. Similarities to the Hubble image: - My image was taken using the Optolong L-Pro filter, which is a general light pollution filter. I usually take 180 to 240 second exposures, but this image was so bright I decided to reduce the exposure time to 120 seconds to avoid over exposing the bright core of the nebula. I enhanced the natural green colour of this nebula by increasing the saturation. The Hubble image has been processed using a different colour scheme to highlight the intricate

pattern of this nebula. Although the colours are different, the pattern inside the nebula of my image is very similar to that taken by the Hubble telescope. The central star can also be seen in both images and the lines of gas in the outer ring. Hubble's image does show a lot more detail in the centre circle – the face of the nebula, however I was happy to see that I was able to capture the smiley mouth/chin section (seen ~ 2pm next to the right of the central star in my image).



## Target 4: – Caldwell 7, NGC 2403 – Galaxy



Above: - Hubble image of C 7.  
Left: - My image of C 7  
Date and time: - April 21<sup>st</sup> 2025  
– 22h13 - 23h07 BST  
80x30 second exposures were  
taken, 77x30 second exposures  
were stacked to make the image

The above image of C 7 has been cropped. I initially missed this target on 16<sup>th</sup> April due to it hiding behind the roof of my home. I could have moved my telescope to a better position, but it would have taken me a while to do this and reset the polar alignment, therefore I decided to carry on with the targets that I could capture that evening. The next clear (ish!) night was 21<sup>st</sup> April. This time, I set up the scope on the grass in my back garden, rather than on the patio. This is a few meters further away from my home which enabled me to capture this target. The weather forecast was mixed for that evening and I could see a number of clouds in the distance, therefore I decided to take 30 second exposures again to ensure I had at least sometime on this target if the weather worsened. Unfortunately, the clouds did return. I managed to capture about 40 minutes of data before packing away for the evening.

Similarities to the Hubble image: - The Hubble image shows a section of this spiral galaxy. This section can be seen on the left-hand side of my image. This includes the bright star in front of the left side of the galaxy, the core of the galaxy and the pink “Pacman” shaped nebula at approx. 11pm. Hubble’s image also contains the type II supernova 2004dj, it was located above the bright left hand side star and appeared as a bright star like object. However, this supernova has since faded and can no longer be seen in my image. The distinctive blue colour of this galaxy can be seen in my image and also some of the pink nebulous regions (including the pink “Pacman” shaped nebula). The dark nebula running through the core of my image also shows a similar structure to that of the Hubble image, just not in as much detail. This is another target that I would like to capture in more detail at some point.

**March 2025**

## Target 1: – Caldwell 48, NGC 2775 – Spiral Galaxy



Above: - Hubble image of C 48.  
Left: - My image of C 48.  
95x3 minute exposures  
Date and time: - March 5<sup>th</sup> & 6<sup>th</sup> 2025  
ZWO OAG with ZWO ASI120mm mini  
camera for guiding.

The above image of C 48 has been cropped.  
My Astrophotography talk to A-level students was originally planned for 19<sup>th</sup> March. I had seen this challenge online sometime during the beginning of March, so I thought it would be fun to enter for the silver award. I added information about the Hubble telescope and this challenge into my talk and decided I would try the Spiral galaxy C 48, NGC 2775 as my March target. I took 95x3 minute exposures on 5<sup>th</sup> to 6<sup>th</sup> March, but unfortunately my guiding was playing up so only 54 of the images could be stacked. A couple of days later, I was asked to postpone my talk until April due to their mock exams starting. Although I no longer needed this image for the silver challenge, I was still really happy with this image and I would not have

thought about imaging this target had I not taken part in this challenge.

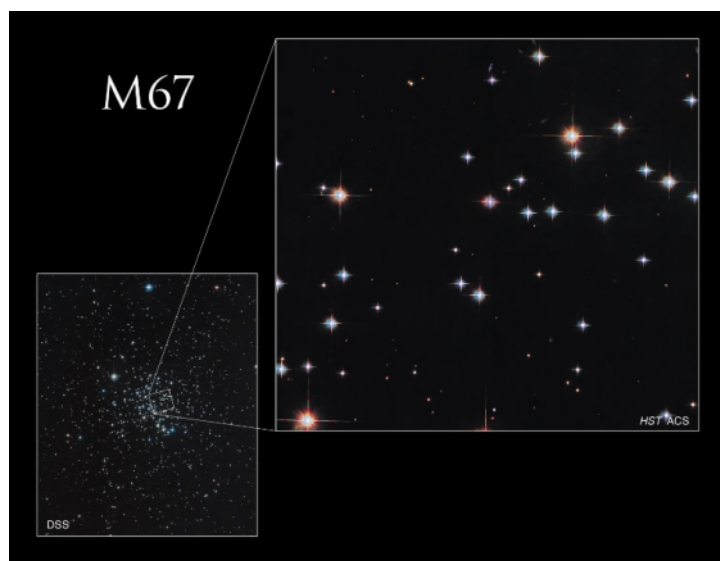
Similarities to the Hubble image: - Although the galaxy in my image is significantly smaller than the image taken by the Hubble telescope, the general structure of the galaxy is definitely recognisable. In both images, the very centre is bright, with a smooth featureless yellow core. The outer ring is more of a reddish-brown colour, showing spoke-like features that make up its spiral arms. The Hubble telescope was also able to capture many clusters of young blue stars within the image, but I was unable to capture these with my OTA. I decided to leave the galaxy off-centre because I liked the tiny edge-on galaxy that can be seen in the lower right hand side section of the image.

## Target 4: – M 67 – Golden Eye Cluster



20x30 second exposures  
Date and time: - April 16<sup>th</sup>  
2025 - 22h19 to 22h36 BST

This image of M 67 has been cropped only slightly.  
Similarities to the Hubble image: - The Hubble telescope only looked at a small area of the M 67 cluster which is shown below. I have copied the same area taken from my image above. Although the colours are not as vibrant in my image, and I do not have the diffraction spikes that the Hubble telescope creates, the majority of the stars captured by the Hubble telescope can also be seen in my image. Stretching my image further may have revealed a few more of the stars.

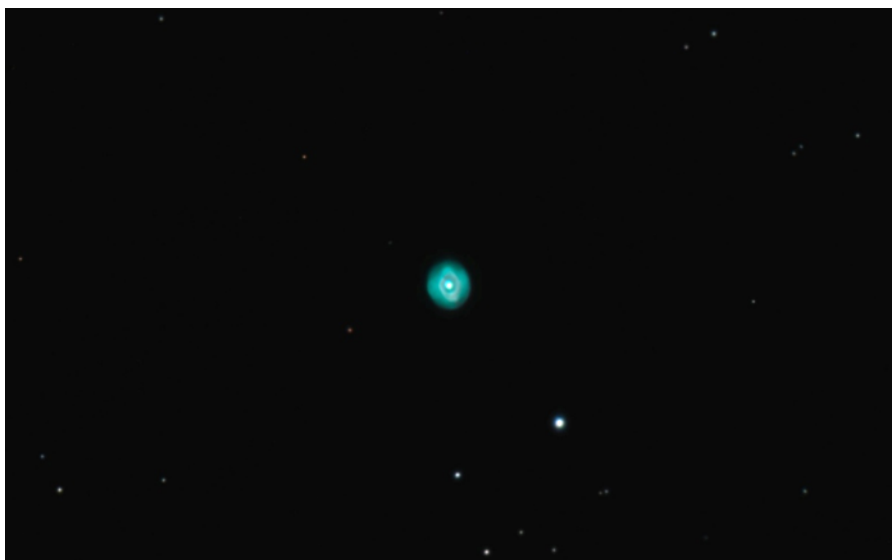


LEFT:-Ground-based image: Digitized Sky Survey;  
Hubble image: NASA, ESA and J. Krist (Jet Propulsion Laboratory): Processing: Gladys Kober (NASA/Catholic University of America).  
RIGHT:- The same area taken from my image. Slightly different crop and rotated 180° from my complete image above.



April 2025

## Target 1: – Caldwell 59, NGC 3242 – Ghost of Jupiter



Above: - Hubble image of C 59.  
Left: - My image of C 59.  
Date and time: - April 7<sup>th</sup> 2025 - 21h07 to 23h38 BST - 171x10 second images were taken, but only 119 images were stacked.

The above image of C 59 has been cropped significantly.

Similarities to the Hubble image: - I was surprised at how green the planetary nebula looks in my image compared to the blue colour of the Hubble Image. I was also really surprised about how bright this nebula is! I usually take 3-to-4 minute exposures, but to avoid blowing out the nebula, especially the core, 10 seconds was the longest exposure time that I could take! The Hubble image shows significantly more detail than

what I captured, however, I was still able to capture the central “Pear” like shape in the centre and the fuzzy area around the base. The central star is larger in my image than in that of the Hubble telescope image.

During processing I removed this star using StarXterminator, and then replaced it back after stretching the stars. I believe this process made the star larger than it should be. I could have masked this area from StarXterminator, but I liked the final image, so decided to keep it as it was.

## Target 2 and 3: – M 65 and M 66 – Spiral Galaxies



Above: - My image of M 65 (bottom right) and M 66 (top left).

Far Right Top Image: - Hubble images of M 65. Far Right Bottom: - M 66

Date and time: - April 17<sup>th</sup> 2025 - 01h28 to 03h48 BST - 40x180 second images were taken; all 40 images were stacked. ZWO OAG with ZWO ASI120mm mini camera for guiding.

The above image of M 65 & M 66 has been cropped slightly.

Similarities to the Hubble image: - M 65 and M 66 are two of the Leo triplet galaxies. I was just able to fit

them both in a single exposure. The black banding around M 65 (lower right in my image) looks very similar to that of the Hubble image, including the dark nebula streak to the North West of the core and the star

featured in front of the main dark band. Hubble has also captured blue nebula within the dark band of this galaxy; however, this is not visible in my image. M 66 (top left galaxy) is a Spiral galaxy. The core is off-centre due to the gravitational pull of the other two galaxies in the Leo Triplet. The Hubble image only shows the bottom half of the galaxy. The Hubble telescope image highlights the red nebula spots which

can also be seen in my image, as well as the blue silvery background to the galaxy can also be seen. Although the Hubble telescope was able to capture significantly more detail in both of these galaxies, I was really happy with the detail that I captured. I still find it amazing as to what my telescope can see from a small ~Bortle 6 back garden!

#### **Target 4: – M 82 – Cigar Galaxy**



Above: - Hubble image of M 82.  
Left: - My image of M 82.  
Date and time: - April 16<sup>th</sup> 2025 - 23h56 to April 17<sup>th</sup> 01h09 BST - 23x180 second images were taken; all 23 images were stacked.  
ZWO OAG with ZWO ASI120mm mini camera for guiding.

The above image of M 82 has been cropped slightly. Similarities to the Hubble image: - M 82 is a starburst galaxy, undergoing a significantly high rate of star formation.

The Hubble telescope captured the magnificent core of this galaxy, showing the streams of red hydrogen gas bursting out from each side. I can see faint wisps of this gas in my image, however a longer integration time is

definitely required to capture it clearly. I have managed to capture details around the core of the galaxy, mainly the stunning dark dust web and the pretty red central region. These details are shown more clearly in the Hubble image; however, the galaxy core of my image does look significantly redder than that of the Hubble image

#### **May 2025**

#### **Target 1: – M 64 – Black Eye Galaxy**



Above: - Hubble image of M 64.  
Left: - My image of M 64.  
Date and time: - March 1<sup>st</sup> 2025 5.04am – 6.05am, March 3<sup>rd</sup> 2025 3.32am-4.20am, March 29<sup>th</sup> 2025 1.51am-5.01am  
30x180 second and 45x240 second images stacked.  
ZWO OAG with ZWO ASI120mm mini camera for guiding.



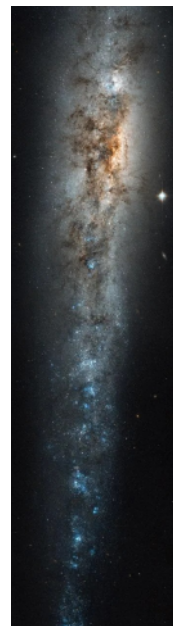
I decided to image M 64 back in March, before I knew about this challenge. I started the evening by imaging the galaxy NGC 2905. In the early morning, when NGC 2905 was too low to continue imaging, I switched to M 64, which by this time had risen high enough for me to capture it. I continued imaging M 64 in the early hours of the next two clear nights. These three mornings of imaging, enabled me to gather over 4 hours on this galaxy. The above image of M 64 has been cropped slightly. Similarities to the Hubble image: - The Hubble image of

M64 focuses on the core, the eye of the galaxy. Hubble was able to capture many bright blue stars and red hydrogen gas areas, amongst the dark dust that gives the galaxy core its distinctive pattern. I was also able to capture the dark dust of the core, including the little loop coming away from the dark edge (about 2 o'clock in my image). I can also see several faint brighter areas, with a slightly blue tinge, towards the bottom of the core in my image. Although I am unable to see the individual stars at the core, I believe it is in these areas where the new stars are being formed.

### Target 3: - C 32, NGC 4631 - Whale Galaxy



Left: - My image of C 32.  
Right: - Hubble image of C 32.  
Date and time: - April 30<sup>th</sup> 23h35 – May 1<sup>st</sup> 04h01 BST - 60x240 second images were stacked.  
ZWO OAG with ZWO ASI120mm mini camera for guiding.



The above image of C 32 has been cropped. Similarities to the Hubble image: - The Hubble image of C 32 shows the galaxy from the core to the bottom of the tail. The "Whale head" of the galaxy was not imaged by the Hubble telescope. Due to my larger field of view, I was able to capture the entire Whale galaxy and its small elliptical companion galaxy, NGC 4627. The Hubble telescope did not capture NGC 4627, but it did capture an even smaller distant galaxy, close to the bright star above the core. I believe I can

also see this distant galaxy in my image, however, due to the reduced detail, it looks more like a faint star in my image than a galaxy! The lovely pink-orange core can be seen in both images, with the dark dust lanes obscuring some of the light. The dark dust fades towards the "tail" of the Whale galaxy and the blue areas of star formation can be seen. Although the detail is not as clear in my image, the lovely blue colour of the "tail" was still captured.

### Target 4: - M 87 - Elliptical Galaxy



Above: - Hubble image of M 87 core.  
Left: - My image of M 87.  
Date and time: - April 28<sup>th</sup> 22h54 – April 29<sup>th</sup> 2025 02h18 BST - 45x180 second images were stacked.  
ZWO OAG with ZWO ASI120mm mini camera for guiding.

The above image of M 87 has been cropped significantly.

Similarities to the Hubble image: - When I read about the jet of subatomic particles shooting out of the black hole of M 87, I immediately wanted to see if I could capture it from my back garden. The jet, when imaged by the Hubble telescope, looks like an iridescent blue ribbon shooting out from the very centre of the galaxy core, and can be seen clearly against the yellow background of the elliptical galaxy. The core of my

image is too bright, so unfortunately, I cannot see the jet towards the very centre of M 87, however, I was thrilled to have captured the tip of the jet! It can be seen at approximately the 2 o'clock position, leaving the outer edges of the galaxy. The Hubble image shows that the jet has a brighter section toward the edge of the galaxy, it is this section that I believe I have captured in my image, it also shows the galaxy NGC 4478, bottom right corner.

## Target 5: – M 53 – Globular Cluster



Above: - Hubble composite image of M 53.

Left: - My image of M 53.

Date and time: - April 30<sup>th</sup> 22h00 – 22h19 and May 17<sup>th</sup> 2025 22h20 BST – 15x60 second images were stacked.

ZWO OAG with ZWO ASI120mm mini camera for guiding.

The above image of M 53 has been cropped slightly. Similarities to the Hubble image: - M 53 is a globular cluster found in the constellation Coma Berenices. Whilst studying the Hubble image I noticed an elongated patch of light which I presumed to be a distant galaxy. I tried to find this possible galaxy in my image, but as you can see below, in the blue eclipse, the elongated patch of light is not visible. On further inspection, I also noticed that the star situated below this patch of light (inside the red circle) is also missing from my image!

Could this have been a supernova that the Hubble telescope caught, and has faded by the time I took my image? Or, could it be a variable star? The elongated patch is fainter and more diffuse than the stars, so that could explain why I could not capture this object, however, the missing star is actually brighter than some

of the stars I did capture, so I am not sure why this star is missing. I am hoping to image M 53 again, possibly with longer exposures to see if I can pull out more detail and maybe detect this missing star and “galaxy”.



Left image - Cropped section of the Hubble image of M 53

Right image - Cropped section of my image of M 53

showing the same area as the Hubble image on the left. Blue eclipse showing the elongated patch of light and the red circle showing the star.

Both are missing in my image. June 2025

## June 2025

### Target 1: – M 101 – The Pinwheel Galaxy

It was a clear night on 10<sup>th</sup> April, but the Moon was high in the sky and almost full (96%). Not wanting to miss a clear night, I decided to shoot a narrow band target with my Optolong L-eXtreme filter, which is great at reducing the effects of light pollution. Being galaxy season, I chose to try and capture the nebula within the

large Pinwheel galaxy. The 24<sup>th</sup> April was another clear night. The moon was only 12% illuminated and did not rise until the early morning, so the conditions were much better for capturing this galaxy in broadband. I used my Optolong L-Pro filter for the second night on this target.



The cover image of M 101 has been cropped.  
 Similarities to the Hubble image: - Looking very closely at the Hubble image, many tiny distant galaxies can be seen though the spectacular blue arms of the Pinwheel galaxy. Unfortunately, my image does not have adequate detail to capture these tiny galaxies. I am able to identify the location of several of these galaxies within my image, but they appear like little stars, no features can be seen. I did manage to capture a small galaxy to the top left of the image though, but this was not captured in the FOV by the Hubble telescope. Using the narrowband filter really helped me to bring out the HA signal in the Pinwheel galaxy, more so than that seen in the Hubble image. I have also captured the lovely blue colour of the galaxy arms and the bright orange core, although neither are as bright as in the Hubble image. Additional broadband data will hopefully help me to increase the brightness and detail within my image.



Above: - Hubble composite image of M 101.  
 Page 1: - My image of M 101.  
 Date and time: - April 10<sup>th</sup> 2025 22h20 to April 11<sup>th</sup> 02h51 (L-eXtreme Filter), - 49x240 second exposures stacked.  
 April 24<sup>th</sup> 21h55 – April 25<sup>th</sup> 2025 04h22 BST (L-Pro Filter) 67x240 second exposures stacked.  
 ZWO OAG with ZWO ASI120mm mini camera for guiding.

## Target 2: – Caldwell 45 – NGC 5248 – Spiral Galaxy



Above: - Hubble image of C 45.  
 Left: - My image of C 45.  
 Date and time: - June 10<sup>th</sup> 2025 23h22 to June 11<sup>th</sup> 01h23 and June 12<sup>th</sup> 23h31 to June 13<sup>th</sup> 2025 01h06 BST (L-Pro Filter).  
 ZWO OAG with ZWO ASI120mm mini camera for guiding.  
 Optolong L-Pro filter- 48x180 second exposures stacked.

This target was extremely faint from my Bortle 6/7 location. In a single 3-minute exposure, I could only see the tiny core of the galaxy! If I had not had a Goto mount, I would have really struggled to find it! I had only planned to capture data on this object for a single night, however, once I saw how faint this target was, I decided another night was required. Unfortunately, the second night clouded over as soon as I went to sleep! But the few additional exposures helped and I was able to produce the image above.

The image of C 45, NGC 5248 has been cropped.  
 Similarities to the Hubble image: - The Hubble

telescope only captured half of the C 45 Spiral galaxy in the above image. Due to the pattern of the dark nebula around the core of the galaxy and the position of the bright patches of starburst activity on the spiral arm, I am able to determine that the Hubble image matches the top half of the galaxy in my image. A slight pink hue can be seen on the galaxy arms in my image; however, this is very faint compared to that of the Hubble image. Perhaps my L-eXtreme filter would have brought out more colour here, but I'm sure additional integration time would have definitely helped.

## Target 4: – M 5 – Globular Cluster

When taking 30 second exposures, my mount (ZWO AM5n), usually tracks extremely well, so does not require guiding, despite the long focal length. Maybe it was to do with the orientation / balance of my

telescope in this case, but the tracking was unfortunately poor and many exposures showed significant trailing. Only 9 out of the total 29 exposures could be used to create the image below. Luckily star



Above: - Hubble image of M 5.  
Left: - My image of M 5.  
Date and time: - June 1<sup>st</sup> 2025 01h08 to 01h20 and June 12<sup>th</sup> 2025 23h07 to 23h20 BST. 29x30 second exposures, L-Pro filter taken in total, but only 9 stacked.

clusters are very forgiving, and I was able to create a decent image with only a small number of exposures. The image of M 5 has been cropped slightly. Similarities to the Hubble image: - The Hubble telescope used 3 filters, F435W (blue), F625W (Green) and F814W (Red) to produce this image of M 5, taking a total exposure time of only 28.6 minutes. Although

my total exposure time was only 4.5 minutes, it is still quite easy to match up my image with that of the Hubble, and the individual red giant stars are easily identifiable. There does appear to be a small galaxy to the bottom left of the Hubble image, although even by zooming in on this area within my image, I cannot find this galaxy!

*July to December - To be continued . . .*

## NOT The War of the Worlds

Geoffrey Johnson & Ivor Clarke

### Mars

By James Henry Worthington

Geoffrey sent me an email last month mentioning an article in the BAA Journal for June 2025, of an interesting poem about Mars written around 1915 for a book by JH Worthington & RP Baker called *Sketches in Poetry Prose Paint & Pencil* and published in a large lavish edition with hand-made paper in 1916. The writer of the poem was a James Henry Worthington (1884 - 1980) who had been staying in the USA at the Lowell Observatory at Flagstaff, Arizona, where Percival Lowell (1855 - 1916) had been observing and drawing his famous 'canals' during the close opposition of 1909 and again in 1911/12 and was an enthusiastic supporter of Lowell and the canals and the belief in the existence of martian life.

HG Wells famous book *The War of the Worlds* had come out in 1898 and was a very different offering with the war like Martians trying to take over the earth with the heat rays on their three legged machines.

It is not known what Worthington thought in his old age of the Mars revealed by fly-pasts and orbiters that Mars was a crater strewn world with no canals. What did he think of the old ideas of Martians?

*'ACROSS the vacant void of space  
The dying Martians call  
To us upon a newer world  
Before they lose their all  
In bygone days when mortal man  
Did crawl in virgin slime  
This vast and ancient stranger race  
Aspired to things sublime  
They drew their hope we know not whence  
Perhaps from a long dead star  
And now they pass us recompense  
For the hope they brought from far  
Shall we be blind who now can see  
Across the measured space  
The last request of a brother  
Expressed on his planet's face  
For they must die while we survive  
To pass to worlds unborn  
The torch of peace through endless night  
Which cannot dream of dawn  
Nay brothers though we dimly see  
Across the blue of space  
Traitors we stand who refuse our hand  
To save the light of the race  
We all are links in a mighty chain  
Forged by some power sublime  
Shall we let it break for our blindness sake  
Choose Eternity - or Time'*