

Using this book

The objects appear in this book in a specific order, roughly the order in which they would appear in the sky throughout the year in the central United States.

Each objects starts with the catalog designation and name of the object, such as “Caldwell 49: Rosette Nebula”. Caldwell is the catalog name, 49 is the number, and Rosette Nebula is the common name of the object.

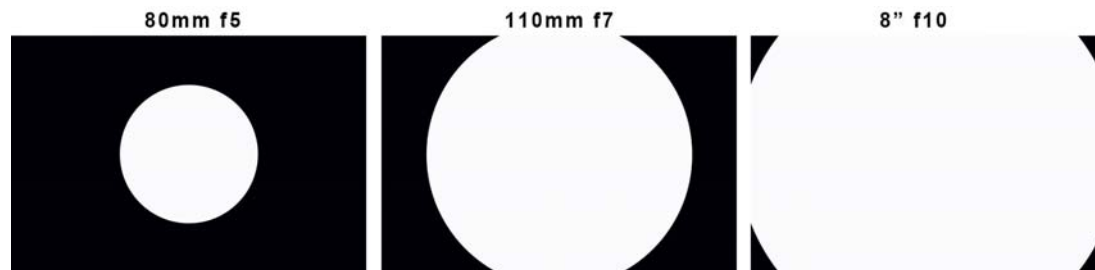
The next thing that appears is a fully processed image of the object. Fully processed means that the image is often stacked (many images combined into one) and stretched (enhanced to bring out details). This is not representative of what comes directly out of the camera.

Next is a timeline like this one:



The gray area below the months shows the best times of the year to image this object, again, from the central United States. This is determined by inspecting the altitude of the object on the 15th of each month at 11:59:59pm CST. The month with the highest altitude is selected for the center of the gray area.

Following the timeline is a set of different masks like the ones shown here:



The three sections of the mask show the approximate size of a processed image relative to the size of an APS-C sized camera (crop sensor DSLR, also roughly the same as a 25mm 68 degree eyepiece field of view) in the telescope listed above each section.

I selected an APS-C size camera sensor because it is overwhelmingly the first camera someone uses who has a real interest in astrophotography.

The three telescopes shows are three of the most popular sized telescopes people use when beginning astrophotography including a small 80mm refractor, a larger and more expensive midrange 110mm refractor, and finally an 8" SCT style of telescope.

The white circular area shows approximately how large the target will appear in the frame of the camera (black rectangular area). Note the last section where the white almost completely covers the box. You will never see the white totally cover the black, I leave the corners black to delineate the edges of the frame even if the object extends well past the edges.

There is now a description of the target, its location, and some text with hints as to how to best capture this particular target. Depending on how difficult it was to process the image this section may be smaller or larger.

Following this text is another image which is a raw image of the target. This raw image is straight out of the camera, no stacking, no enhancements, nothing. I have resized it to print correctly in the book and possibly lightened it slightly (to compensate for printing), then made no other alterations.

On many of these raw images you will look at them and see nothing at all, or possibly very little and certainly nothing of value. The reasons these are here is to show you what to expect coming right out of the camera.

Many beginning astrophotographers get frustrated and even give up because they take a bunch of images and do not see the target in their images. They have no idea that is what the image *should* look like from the camera, and don't know the image needs to be enhanced before you see anything. This is to help those people understand that situation.

Lastly there is a star chart to help you find this object in the night sky. The chart shows a lot of information including the right ascension and declination lines, constellations, stars, and other deep sky objects where applicable.

The object you are looking for is in the center of the chart with a rectangle around it, and a long dark vertical line extending upward through most of the chart.

These charts were made with C2A astronomy software which is a free download should you want to explore more charts like these. The rectangle surrounding the target and the long vertical line were added by me so you won't see those in the charts if you decide to get the software yourself or if you download the original charts from my website.

All the images in this book were shot with a Nikon D7000 DSLR using an Orion ED APO 110mm refractor on an Orion Sirius equatorial mount. They were all processed with some combination of Photoshop, Deep Sky Stacker and/or PixInsight.

Images you see are realistically representative of what you can accomplish as a beginner with beginner equipment.

Throughout this book you will hear me refer to things like stacking, stretching, curves, etc. These terms are the staples of astrophotography and are covered very basically in the following section, but the details of how all this works is beyond the scope of this book.

If you need more information on the how-to aspects of astrophotography, check out my other books such as *Getting Started: Long Exposure Astrophotography* or *Getting Started: Budget Astrophotography* on my website at www.allans-stuff.com.

