

The Six-Inch Lunar Atlas

Don Spain

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A Pocket Field Guide

 Springer

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USA

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For Bunky, who waits for me near Arcturus

Preface

November 26, 1922. Howard Carter breaks open a hole into the tomb of the Egyptian pharaoh Tutankhamun. His benefactor, Lord Carnarvon, asks, "Can you see anything? Carter answers, "Yes, Wonderful things." His reply is the same answer I would have given if anyone would have asked me the same question on January 1, 1958, when I first viewed the Moon through my first tiny telescope.

It was a cold winter's night, and Selene, the ancient Greek name for our Moon, was beckoning to me. Six nights earlier my parents had presented me with a small spotting scope for a Christmas present. Finally, the skies cleared, and I got the chance to use it to view the heavens. And there she was, riding high in the eastern sky. In her glorious gibbous phase that night, the Moon awaited my arrival. A brilliant white disk, almost like it was just freshly painted, she slowly floated into the field of view. I soon noticed the large, dark, smooth areas and great ray patterns and various other markings. Then along the eastern edge of the disk, craters! Wonderful craters!

That small telescope had a 40 mm objective, magnified 30 times, and was mounted on a tabletop tripod. However, it was more than enough for me to embark on my journey into the world of amateur astronomy, and in particular my lifelong love affair with Selene. I wanted to know what craters and formations I was observing. The next day I looked up astronomy and the Moon in an old set of encyclopedias we had, and I carefully cut out the simple map of the Moon. In the next 3 months I studied the Moon every clear evening. I learned the location of all the major seas and mountains and the 50 craters that were identified on that map.

Over time I progressed to larger and more powerful telescopes. The amount of detail I saw increased geometrically, and I eventually read almost every book our public library had on astronomy and their few books about the Moon. Over the years, I have gathered quite an extensive library of lunar books, maps, and atlases, including a good size collection of NASA atlases and books.

You may reasonably ask why I have compiled this little atlas when there are so many other fine lunar atlases and maps readily available. There are indeed excellent photographic atlases, on-line atlases, and other easily available atlases on CD ROM. And in addition, almost every new introductory astronomy book includes a decent lunar map, and some even have brief atlases that allow the reader to identify the more prominent lunar features.

However, most of the available atlases are too large and too inconvenient for using at the telescope. To use an online atlas or a CD ROM near the telescope you must lug a laptop or notebook computer along. The small size of this atlas should easily fit into any equipment case or bag and can be used right at the eyepiece. This book is titled *The Six-Inch Lunar Atlas* for two reasons. When closed, it is about 6 inches across, and all the photographs and images in the atlas proper were obtained with a 6-inch refracting telescope. Although

designed for the beginning or casual observer of the Moon, this atlas should prove useful to anyone who wishes to locate many of the major features on the Moon or to acquire a little knowledge about these formations.

While we sometimes observe the heavens alone, most of us enjoy being with others of similar interests or teaching or just showing others what is up there. My local astronomy club, the Louisville Astronomical Society, holds dozens of public, private, and school star parties every year. These observations are usually held when there is a thick crescent, first quarter, or gibbous Moon in the evening sky. The Moon is an easy target for any size telescope, and many of the persons who attend these events have never looked through a telescope before. It is always satisfying to hear “Oh, wow!” or “That’s amazing!” or “Look, mom, you can see the holes in the Moon!” And most of them will ask questions about what they see. “What crater is that?” “How big is it?” “Are those mountains?” “What is that long, snakelike line beneath that crater?” “Are those cracks in the Moon?” “How deep are they?” “What is that large, dark, smooth area?” “Where did the *Apollo 11* astronauts land?” These are just a few of the many questions I am asked at these events.

There are usually only one or two members of most astronomy clubs or societies that can answer these and other questions about our Moon. My hope is that the reader of this atlas will be able to recognize many of the prominent and interesting formations and be able to tell other observers what they are viewing through the eyepiece. To do this an atlas is almost a necessity. To locate a street, town, country, or even a continent or an ocean on Earth you need a map or an atlas. An atlas is principally a collection of maps. For the atlas part of this book, there are 60 primary photographs of the lunar surface. Imaged through my 6-inch refractor and a digital camera, they cover regions of the Moon from about the third day after a new Moon right up to nearly the full Moon.

With the introduction of a dedicated digital camera for lunar and planetary imaging I began to take literally thousands of images with the big refractor. After processing with software I was amazed by their resolution and clarity. The best ones show more detail than most of my drawings, and all formations are in the correct proportion and location with the surrounding lunar terrain. Even though 6 inches of aperture is rather small these days, the images it takes with even the inexpensive cameras is impressive. I have a fine image of the great crater Copernicus that was taken under almost the same lighting conditions as a film photo taken with the Lick Observatory’s 36-inch refractor in 1936. The Lick image is a great film image, but the digital image with the 6-inch lens reveals almost the same detail, resolution, and clarity.

However, first and foremost, I am a visual observer. Exploring the terminator night after night, seeking out my old friends and finding new formations is still, in my opinion, the only way to be a lunar observer. Digital and even film images are informative and are a permanent record at any particular time. They are great to study and examine but are just a frozen snapshot of recent lunar history. When observing visually I have the feeling of orbiting the Moon and exploring its surface through the eyepiece. It’s as if I am looking through the porthole of a spaceship. As I view the surface below me I find it rewarding to know the names and basic attributes of the prominent and unique formations.

So take a journey to the Moon with me. Bring this atlas with you to your telescope and observe. The size or type is not important, just a desire to learn more about our sister world. You will find that as you learn the locations and names of the many and varied formations they will become your friends. You will look forward to meeting them month after month and year after year. Many will become your favorites, and you will delight in showing them off to your colleagues and friends.

My hope is that this little atlas will inspire you about Selene, and if you become as bewitched by her as I have been you will wish to learn more. There are still many unexplained formations that are waiting for you to discover. However, they are beyond the scope of this book, so I will leave it to you to search them out for yourself. A lifetime of adventure is there for those who are willing to take up the challenge. Wonderful things await you.

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And to all my astronomy and non-astronomy friends and family whose encouragement is sincerely appreciated.

How to Use This Atlas

This atlas is designed for use with almost any type of telescope. The maps and images will be shown in three different configurations. The first will be normal, or as you would see the Moon with your unaided eye, through binoculars, a spotting telescope, or scopes with a terrestrial eyepiece or an erecting prism. In this view, lunar north will be at the top and lunar east to the right. The next image will be flipped vertical compared to the first. This is the view as seen through a Newtonian, Cassegrain, or a refracting telescope without a diagonal. In this configuration lunar north is at the bottom and lunar east to the left. The next image is a mirror image of the first, or the view as seen through a catadioptric (a Maksutov or Schmidt-Cassegrain), or a refractor with a diagonal. Lunar north will be at the top, but lunar east is to the left. By using one of these three configurations you will find the view as seen with your telescope. There will be no need to flip the atlas upside down or to try and mentally reverse a map in your mind.

The atlas is divided into two parts. The first has general maps of the entire lunar disk and identifies the major lunar seas. Finder charts showing the location of the 60 primary Moon formations are found here.

The second part is made up of 60 separate sections numbered from 1 to 60. The individual charts are subdivided into four pages. The first page is a written description of the formations labeled on the images. On the descriptions of most of the features there will be a number in miles in parentheses next to the name of the crater or formation. This number is its diameter.

The page that follows the descriptions is a digital image of the formations. The next two pages will contain two additional images of the primary digital image. You will immediately notice they are not like the digital photograph. I have converted them to an ink outline image with Adobe Photoshop Elements 4.0. I did not want the atlas to be completely photographic, and the ink outlines give the look and feel of topographical maps. However, the “contour” lines are NOT true contour lines. They are differences in the brightness on the original image. The outlines have somewhat of the wonderful look of the hand drawn images made by many of the great nineteenth-century lunar cartographers, and I believe they enhance the beauty of this atlas.

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