

# Master Webcam Imagers

I began my telescopic astrophotography adventures in 1961 and over the past four and a half decades I have pursued the ultimate lunar and planetary image. I have many that I am proud of, but all pale in comparison to those captured by the “masters” of this art. In the preparation of this book I was privileged to be in contact with some of the finest amateur lunar and planetary astrophotographers. In my opinion, the work of Damian Peach from the United Kingdom and Zac Pujic from Brisbane, Australia, stands out from the rest. Pujic and Peach both use the same webcam equipment available to everyone and their telescopes are modest in size, ranging from 9.25-inch to 14-inch aperture. By careful application of webcam astrophotography techniques and seeking the most stable seeing conditions, they routinely produce images of solar system objects that are not only beautiful, but are of such detail that they have genuine scientific value. The image gallery displayed here presents the work of both these astrophotographers as an inspiration to all of us who enjoy celestial photography.

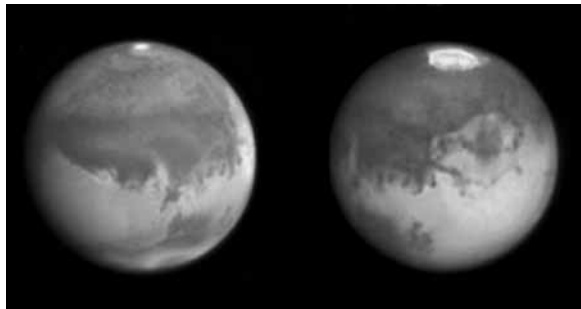
Damian and Zac capture incredible images of both lunar and planetary targets, but in this gallery I present Damian’s planetary work and Zac’s lunar images. Zac uses a homemade 12-inch reflector featuring a mirror crafted by Australian Mark Suchting. The mirror rests in a Novak cell inside a Parks fiberglass tube and is mounted on a Meade DS-16 equatorial head. To achieve the high  $f$ -ratio needed for high-resolution solar system imaging, Zac handcrafted a projection adapter to house a large 9-mm Nagler eyepiece (see Figure Gallery 8) and a Philips ToUcam 840. For his astrophotography adventures, Damian now chooses between 9.25-, 11-, or 14-inch Celestron Schmidt-Cassegrain telescopes. The secret to Damian’s incredibly detailed planetary images is his quest for the best seeing conditions. He achieves this through frequent trips from his home in the village of Loudwater in Buckinghamshire, England, to the Canary Islands which enjoy some of the best astronomical seeing in the world. Recently, Peach has switched from a ToUcam 840 to a high-speed black-and-white Luminera LU075M USB 2.0 camera.

As you browse Damian and Zac’s websites,<sup>1</sup> you will notice that in

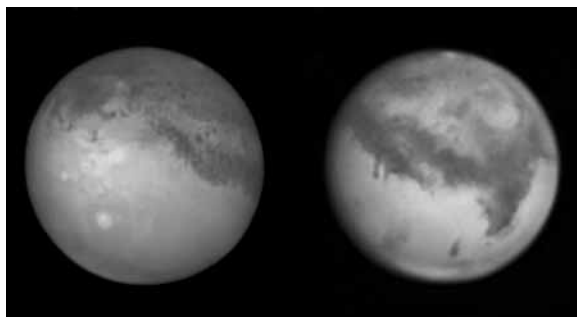
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<sup>1</sup> At <http://www.damianpeach.com> and <http://users.bigpond.net.au/metaplace/home.html>, respectively.

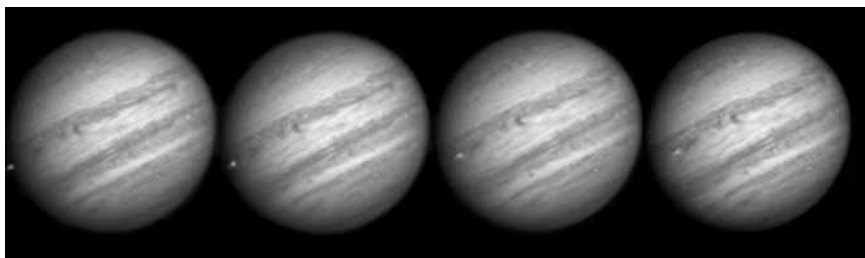
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**Figure Gallery 1** A Luminera LU075M camera and a Celestron-14 operating at  $f/39$  were used to capture the left image of Mars on October 16, 2005. The image is centered on Mare Erythraeum. On the right, Solis Lacus, the “Eye of Mars,” is the prominent feature captured on August 22, 2003, with a 10-inch Schmidt-Cassegrain telescope at  $f/55$  and a ToUcam 840. Photos by Damian Peach.

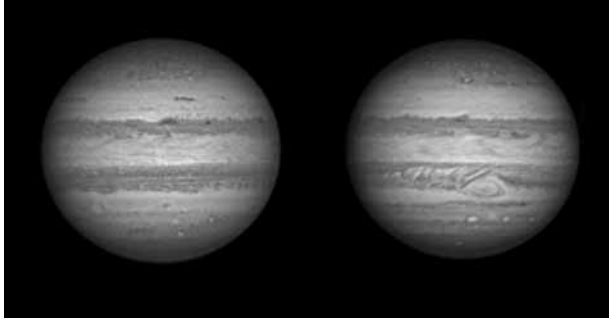


**Figure Gallery 2** (Left) The extinct volcano Olympus Mons is visible as a bright spot recorded on November 6, 2005. (Right) Taken on October 26, 2005, the image displays the prominent Syrtis Major region. Celestron-14 at  $f/40$  using a Luminera LU075M camera. Photos by Damian Peach.

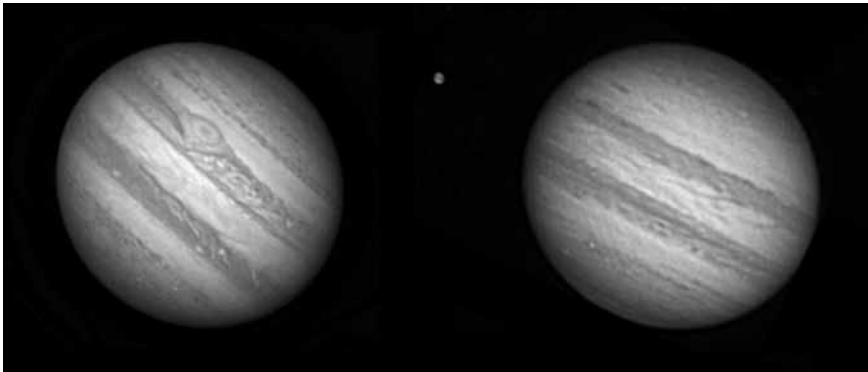


**Figure Gallery 3** The May 16, 2004 transit of Io across the face of Jupiter. Celestron-11 Schmidt-Cassegrain telescope at  $f/31$  using an Atik 1HS camera. Photos by Damian Peach.

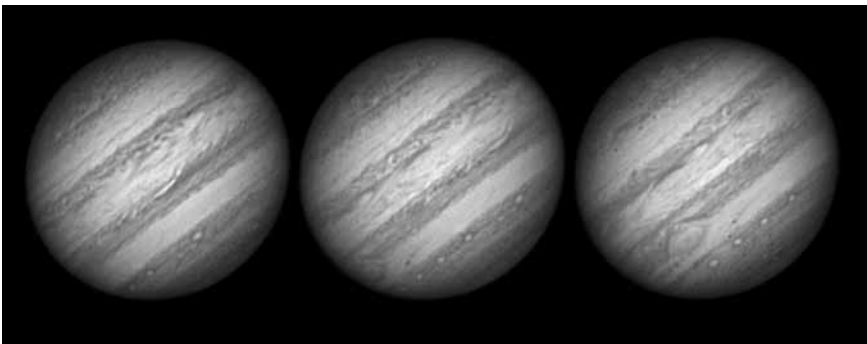
addition to the “landmark” lunar features displayed on these pages, there are numerous obscure and previously ignored features and craters. This is because the tremendous detail-gathering power of webcam astrophotography now allows imagers to record the smaller lunar features that have been out of reach when using conventional imaging methods.



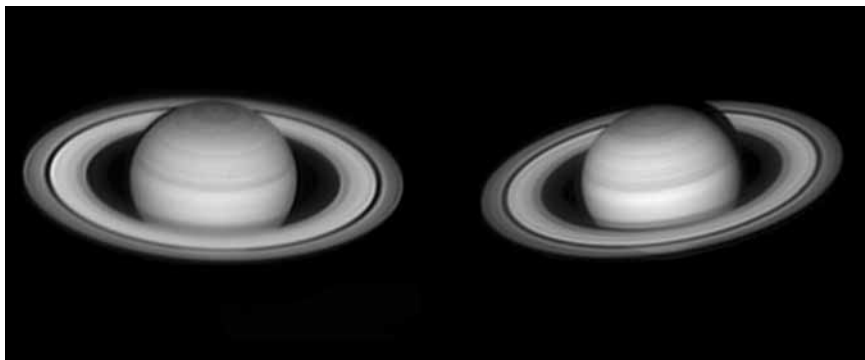
**Figure Gallery 4** The “dull” side of Jupiter (left) was imaged on February 23, 2004, through an 11-inch SCT at  $f/22$  using a ToUcam 840. The same telescope and camera, operating at  $f/31$ , imaged the Great Red Spot on February 19, 2004. Photos by Damian Peach.



**Figure Gallery 5** A Celestron-9.25 SCT and Luminera LU075M camera were used to take the left image of the Great Red Spot on April 30, 2005. On the right, a Celestron-11 operating at  $f/22$  and a ToUcam 840 captured detail on both Jupiter and its moon Ganymede on February 20, 2003. Photos by Damian Peach.



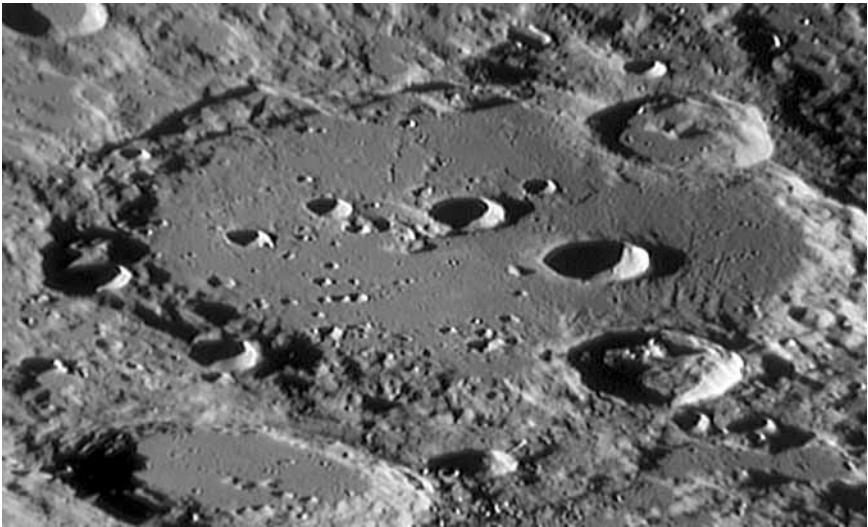
**Figure Gallery 6** A Celestron-11 operating at  $f/31$  and an Atik 1HS captured this series of images of the Great Red Spot rotating into view on March 1, 2004. Notice the white rift cutting into the South Equatorial Belt on the left and center images. Photos by Damian Peach.



**Figure Gallery 7** *The atmospheric features of Saturn remain relatively static for long periods of time; however, the tilt of the ring system and the aspect of Saturn’s shadow on it constantly change. These two images were taken a little over a year apart and show noticeable changes. The left one was taken on December 16, 2003, through a Celestron-11 Schmidt-Cassegrain telescope at f/31 using an Atik 1HS camera. The right image was taken on April 25, 2005, through a Celestron-9.25 Schmidt-Cassegrain telescope using a Luminera LU075M camera. Photos by Damian Peach.*



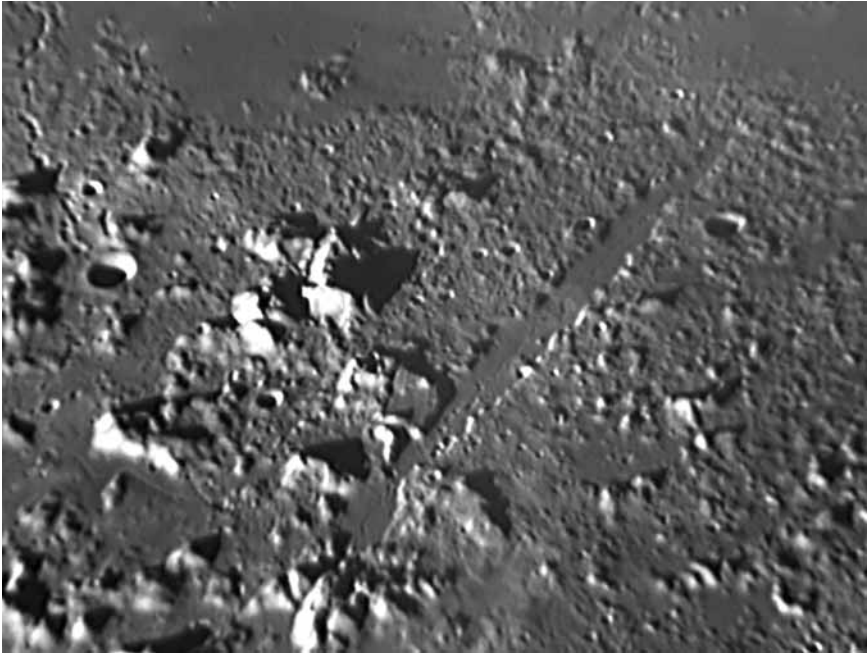
**Figure Gallery 8** *The custom-made eyepiece projection system Zac Pujic uses with a 12-inch Newtonian telescope to acquire his amazingly detailed lunar images is shown here. A brass extension tube attaches to the camera and inserts into an adapter tube that slides over a 9mm Nagler eyepiece. Pujic removes the Barlow lens that is built into the Nagler eyepiece in order to achieve the desired focal ratio. A custom-made barrel locks into the eyepiece and inserts into the telescope focuser. Photos by Zac Pujic.*



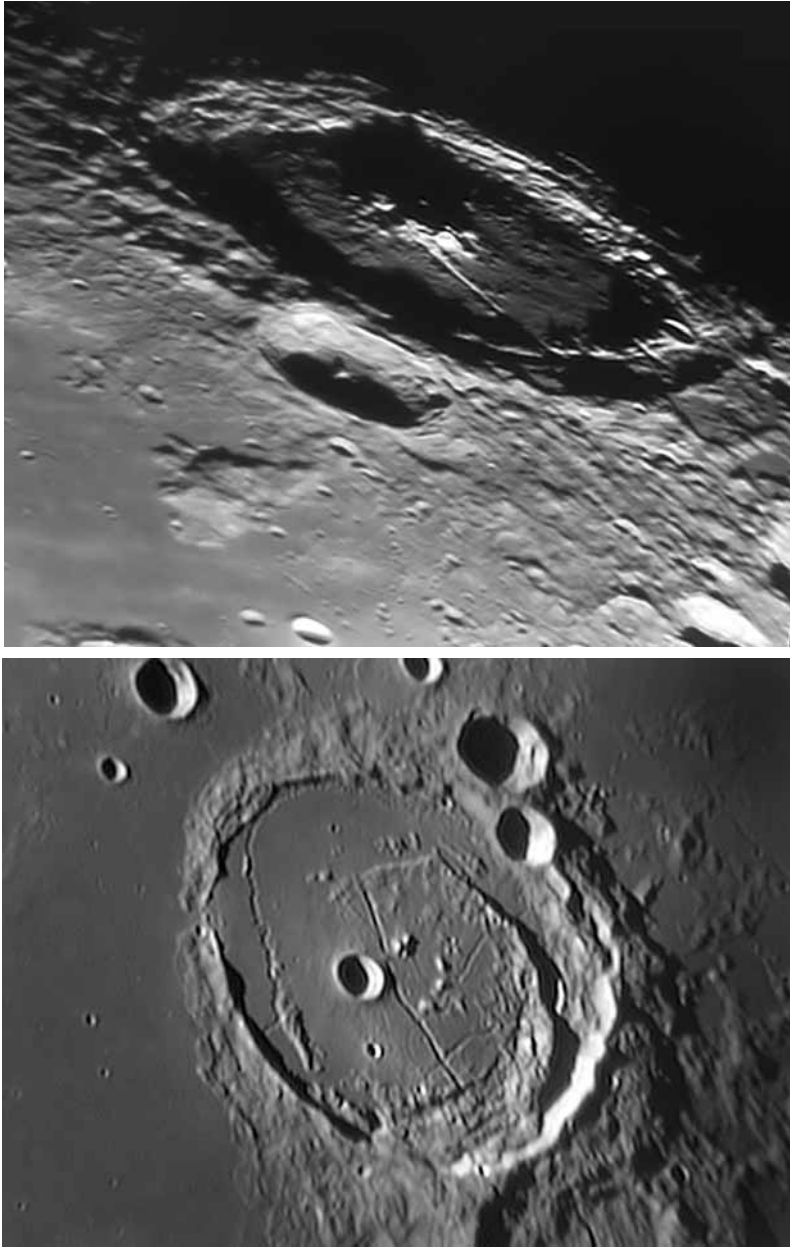
**Figure Gallery 9** *Many craterlets are visible on the smooth floor of the crater Plato (top). A myriad of tiny craterlets are visible within the giant crater Clavius (bottom). The younger craters Porter and Rutherford overlay the upper and lower crater walls of Clavius. Photos by Zac Pujic.*



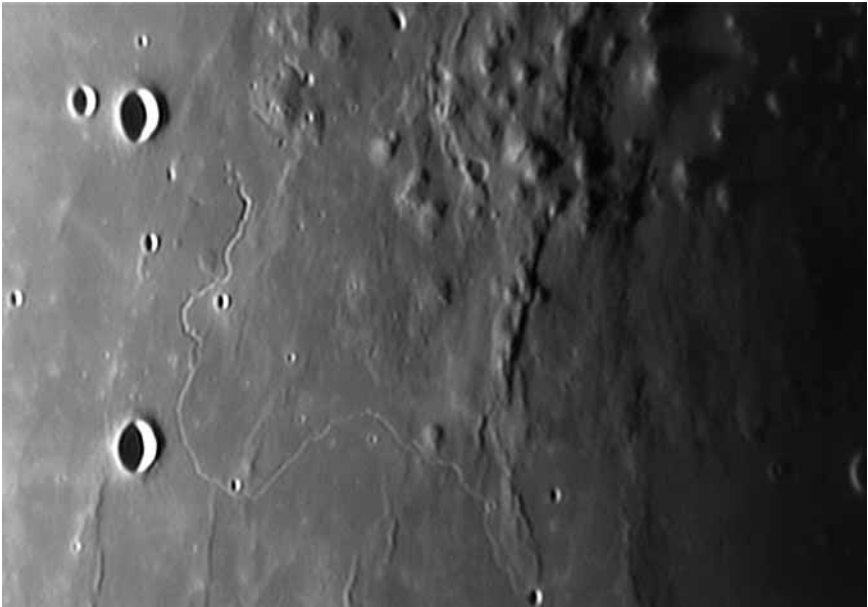
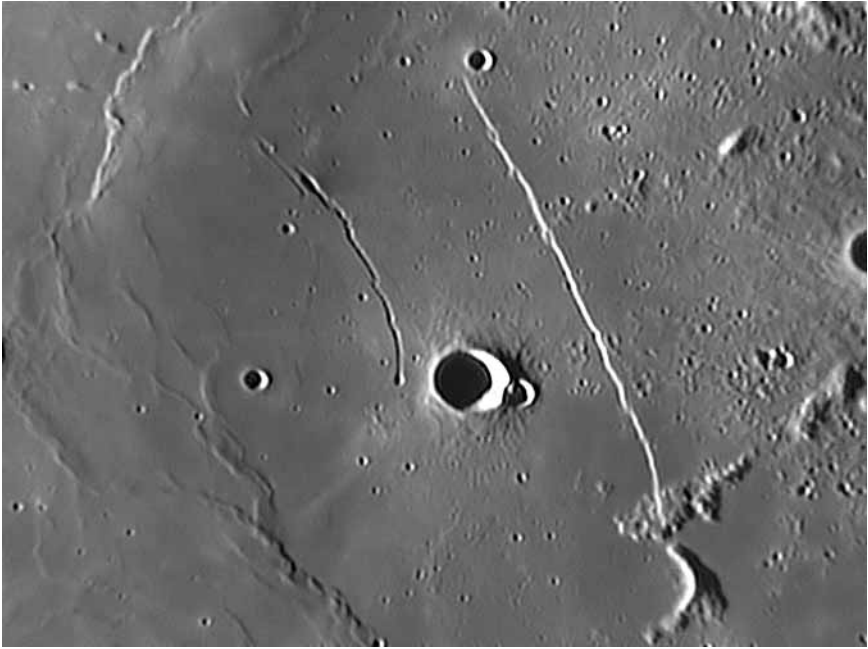
**Figure Gallery 10** *The fractured lava-filled crater Gassendi lies just north of Mare Humorum (top). Schroeter's Valley cuts through the flat plain of Oceanus Procellarum to the west of the bright crater Aristarchus (bottom). Photos by Zac Pujic.*



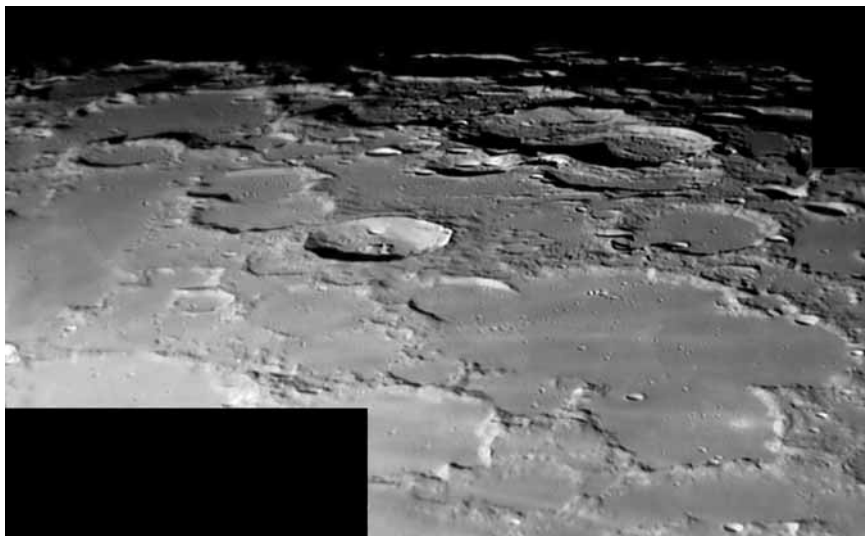
**Figure Gallery 11** *The elusive rille running through the center of the Alpine Valley is visible (top). The twin craters Cyrillus (left) and Theophilus (right) lie to the south of Mare Tranquillitatis (bottom). Photos by Zac Pujic.*



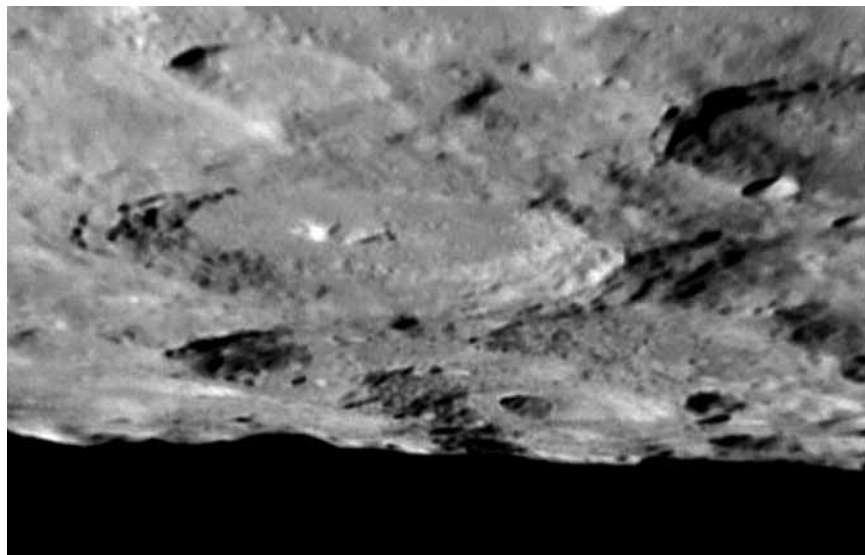
**Figure Gallery 12** *The unusual fractured floor of Petavius near the eastern limb of the Moon is highlighted as the Sun sets on the crater (top). Another fractured crater, Posidonius, is visible along the eastern edge of Mare Serenitatis (bottom). Photos by Zac Pujic.*



**Figure Gallery 13** *Rupes Recta*, also known as the Straight Wall, is visible on the plains of Mare Nubium (top). The Marius Rille snakes past the Marius Hills to the north of the crater of the same name (bottom). Photos by Zac Pujic.



**Figure Gallery 14** *At the center of this two-image mosaic of the Moon's northern limb the sharp-rimmed crater Scoresby lies to the upper left of the broad flat Meton crater complex. Photo by Zac Pujic.*



**Figure Gallery 15** *At the center of this two-image mosaic (top) of the Moons' northern limb the sharp-rimmed crater Scoresby lies to the upper left of the broad flat Meton crater complex. Along the Moon's southern limb (bottom), the crater Moretus features terraced walls surrounding a flat floor and central peaks. Photos by Zac Pujic.*