



LACUS MORTIS

BÜRG

POSIDONIUS

SERPENTINE RIDGE

CYRILLUS

THEOPHILUS

MARE NECTARIS

CATHARINA

FRACASTORIUS

ALTAI SCARP

JANSSEN

HOMMEL

# A WALK ALONG THE TERMINATOR

The waxing crescent Moon is rich with fascinating features

**A**SI WROTE HERE in the March/April issue, spring is the ideal season for viewing a waxing lunar crescent. The Moon is positioned high in the evening sky and offers an inviting target for telescopic exploration.

The wonderfully detailed image presented on the facing page was captured by Jim Thompson of Ottawa, Ontario, with a 10-inch f/8 MallinCam VRC-10 Ritchey-Chrétien telescope and a ZWO ASI290MM monochrome video camera. Most of the features shown in Jim's photo can be viewed in a small telescope, and many can even be seen in tripod-mounted or image-stabilized binoculars. On April 1, May 1, May 30 and June 29, the Moon's phase will be similar to that depicted in the picture, but you can readily identify most of the highlighted items a night or two following these dates. Let's get exploring!

**LACUS MORTIS** This "lake" is a lava-flooded, 150-kilometre-wide crater that likely formed when the Moon was very young—sometime between 3.85 and 4.55 billion years ago. Slightly offset from the centre of Lacus Mortis is the 40-kilometre-diameter crater Bürg, a much younger formation that's probably less than one billion years old. (Clearly, youthfulness on the Moon is a relative thing.) If you have steady seeing conditions, boost your telescope's magnification and try to spot the fine rille called Rima Bürg. It extends 100 kilometres southwest from Bürg across Lacus Mortis (remember that east and west on the Moon are the opposite of sky directions).

**POSIDONIUS** One of the star attractions of the lunar northeast is this fascinatingly complex 95-kilometre-wide, floor-fractured crater. Under favourable illumination, you can easily spend an evening using high magnification in your scope to tease out fine details in and around Posidonius. The rilles on the crater floor are an intricate system of cracks that formed as the result of upward subsurface pressure.

**SERPENTINE RIDGE** When the Moon is full, big maria like Serenitatis seem smooth and featureless. But as this image shows, the reality is quite different. Snaking its way for hundreds of kilometres along the eastern edge of Mare Serenitatis is a wrinkle dubbed the Serpentine Ridge. It rises only a few hundred metres above the surrounding terrain, which is why it's difficult to notice except when the terminator is nearby.

## THEOPHILUS, CYRILLUS AND CATHARINA

This dramatic trio is one of the two "Big Three" crater groupings on the Moon (the other three—some consists of Ptolemaeus, Alphonsus and Arzachel). Although Theophilus, Cyrillus and Catharina are individually remarkable, their proximity to one another invites comparison. The northernmost crater, 100-kilometre-wide Theophilus, is arguably the most eye-catching, with its complex central mountain peak (which reminds me of a clenched fist) and deeply terraced rim. Cyrillus is only a bit smaller (98 kilometres across) but appears more shallow and eroded than Theophilus—both aspects implying a greater age. And since the rim of Theophilus bites into the northeastern edge of Cyrillus, it's clear that the latter is older than the former. Most ancient of the three is Catharina. Although it's the same size as Ptolemaeus, it looks very different. Not only does it lack a central mountain peak, it's relatively shallow and sports a huge interior crater—46-kilometre-diameter Catharina P. The ravages of time have clearly taken their toll on poor ol' Catharina.

**ALTAI SCARP** Despite superficial similarities, Moon mountains are very different from their Earthly counterparts. Nowhere is that difference better illustrated than with the Altai Scarp—a 427-kilometre-long mountain range that is part of the Nectaris Basin rim. Only part of the southwestern rim appears in our photo, but even that small segment is impressive in telescopes. Don't be fooled by the jagged appearance of the Altai Scarp under stark lighting. These mountains are, in reality, gently rounded hills.

**MARE NECTARIS** After the Nectaris Basin was excavated by a tremendous impact some four billion years ago, lavas eventually seeped to the surface, filling the depression. The result is the 333-kilometre-wide "sea" known as Mare Nectaris. When the terminator is nearby, you can see that, as with Mare Serenitatis, the Nectaris surface isn't as perfectly smooth as it appears under high-Sun illumination.

**FRACASTORIUS** One of the biggest craters in the Nectaris region is Fracastorius, situated on the mare's southern shore. This crater is a survivor. Given its 112-kilometre-diameter size, you might expect to see a full complement of complex-crater features, such as a terraced rim and a prominent central mountain peak. But these details are mostly submerged under Nectaris lavas, which breached the crater's northern perimeter and flooded in.

**JANSSEN** Old craters tend to be large. They also tend to appear badly degraded, thanks to the pulverizing effects of subsequent impacts. Janssen is a good example. It spans (very) roughly 190 kilometres but is quite indistinct. The numerous smaller craters that pockmark Janssen give it a slightly out-of-round—almost hexagonal—shape.

**HOMMEL** The so-called Southern Highlands on the Moon are chockablock with craters. Perhaps nowhere is this overcrowding better illustrated than with Hommel, a battered crater 125 kilometres in diameter. So many impacts cut into its rim that Hommel itself can be difficult to discern. Among the intruders are several large craters that, were they located elsewhere, would be noteworthy. Take Hommel A, parked on Hommel's northeast edge. Hommel A is 51 kilometres across. In fact, it's big enough to sport a substantial crater within its own rim—13-kilometre-wide Hommel V. Chockablock, indeed! ♦

*Gary Seronik is a dedicated lunaphile and this magazine's editor.*