THE LUNAR OBSERVER

A MONTHLY NEWSLETTER FOR STUDENTS OF THE MOON — JANUARY 1998

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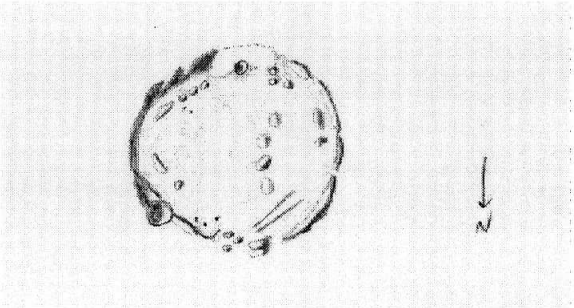
FEATURE OF THE MONTH

Pitatus - (29.8°S 13.5°W)



Sketch by Robert H. Hays, Jr. - Worth, Illinois
150mm Reflector - 136X

On the southern shore of Mare Nubium lies the magnificent crater Pitatus. So large that some call it a ringed plain, it has a diameter of 97km and an incomplete wall. Mare material has flooded through the gaps and now cover the crater floor. Pitatus lacks a true central mountain but does have a small off center hill that measures about 350 meters high. The floor is relatively dark with several bright patches and several series of rills, one of which appears to circle the entire floor near the walls.

Robert Hays, Jr. of Worth, Illinois sketched Pitatus and submitted the following report:

"On the evening of September 11, 1997 I sketched the floor of this crater between occultations of two faint stars. The Lunar Quadrant map shows some rills on this crater's floor, but I didn't see nearly as many rills as are shown there. There were two near the northwest edge, but all the other elongated fractures I saw appeared to be ridges. The central peak appeared to be off-centered toward the west. Three low elevations or domes were seen nearby. The walls of Pitatus were complete except at the north end; the gap there was partially filled by some isolated peaks. The south end was very bright. I saw no craters on the floor, and only two on the inside walls - one to the northeast and the other at the south wall. I concentrated on the floor of Pitatus because the surroundings would have been quite difficult to draw."

Pitatus can be found on Map #54 of Rukl's Atlas of the Moon and should be well placed for observing about 9 nights after New Moon.

Lunar Photography - Part Five

The second means of eyepiece projection is the afocal method. In this method an eyepiece is used on the telescope and the camera lens is left on the camera. The telescope and camera do not have to be physically linked. In fact, some presentable photographs have been made by using high speed film and simply holding the camera to the eyepiece and tripping the shutter. It is far better, however, to mount the camera on its own tripod to eliminate camera shake and ensure that all optical paths are aligned. Misalignment will result in a lack of uniform sharpness across the photograph.

To use the afocal method you simply focus the telescope as you would for normal viewing and set the camera lens at infinity. Move the camera into position at the eyepiece, keeping the camera lens well centered and close to the eyepiece. Final refinement of the focus can be made with the camera lens but is usually unnecessary.

The focal lengths obtained by the afocal method are very easy to calculate. Simply multiply the magnifying power of your telescope by the focal length of the camera lens (in millimeters). Your new focal ratio will, of course, be the new focal length divided by the diameter of the objective.

For example: If you are using a 75mm refractor with a focal length of 900mm (f/12), a 25mm eyepiece (36X), and a camera with a 50mm lens your new focal length will be 36 X 50 = 1800mm, and your new focal ratio will be f/24.

A word of caution: Since the focal length of the camera lens has such a profound effect on the focal length of the system, it is tempting to increase magnification by using a telephoto lens instead of a normal 50mm lens. Resist the temptation. It doesn't work very well and here's why. A 50mm lens sees the image formed by the telescope much the same as your eye does. A telephoto lens, however, magnifies the image and any errors in focus that your eye could not detect. The result is usually an unsharp image. It is best, therefore, to use a 50mm lens and record the image as seen by your eye.

FACTORS AFFECTING SHARPNESS

As the focal length of your system increases, exposure times will lengthen dramatically. Since telescopes magnify motion as well as size, sturdy mounts and clock drives are now a must. Tracking at the lunar rate is ideal but not absolutely necessary. Photographs taken by standard eyepiece projection, with the telescope running at the sidereal rate, will be sharp at a focal length of 7500mm if the exposure is kept below one second. Exposures by the afocal method should always be kept shorter than a second because the telescope and camera are not moving in unison. The motion of the telescope will cause the image to sweep across the film, blurring fine detail.

Precise focusing becomes more critical as magnification increases and the importance of good focus cannot be overemphasized. Take the time to focus as precisely as you can; the photograph you take will last a lot longer than the time spent taking it.

And, finally, remember that the same rules apply to lunar photography as to visual observing. Use the highest magnification that provides a sharp image, but no more. If the image of the Moon doesn't look sharp in the viewfinder of your camera it can't possibly look sharp in the final photograph.

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Observations Received During The Month

ROBERT STEWART - Norfolk, Virginia - Timings of 20 stars occulted by the Moon.

Lunar Calendar for January 1998 (UT)

1	02:00	Moon 3.8 Degrees North of Mars
1	22:00	Moon 2.6 Degrees North of Jupiter
3	08:00	Moon at Perigee (369,230 km)
5	14:19	First Quarter
12	17:24	Full Moon
18	21:00	Moon at Apogee (404,625 km)
20	19:41	Last Quarter
26	23:59	Moon 5.0 Degrees North of Mercury
26	23:59	Moon 3.1 Degrees South of Venus
28	06:01	New Moon (Start of Lunation 929)
30	0:01	Moon 1.6 Degrees North of Mars
30	14:00	Moon at Perigee (363,790 km)

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Lunar Observer's Notebook:

I was 14 years old and the proud owner of a home made refractor. The objective had a clear aperture of 35mm and was mounted between two pieces of wood in a length of downspout. It wasn't coated or even a compound lens but it was my window on the universe. One autumn evening I set up that noble instrument to view one of my favorite sights, the crater chain of Ptolemaeus, Alphonsus, and Arzachel which were right on the terminator. And I got the shock of my life!

When I brought the Moon into focus (the eyepiece was also a simple lens, mounted on a wooden spool, shoved into a brass tube) I couldn't believe my eyes. Alphonsus was sporting a huge crater, at least 10 miles across, in the northwest quadrant of its floor. My heart leaped into my throat, my mind reeled. I was seeing something that no man had seen before! No, wait, surely someone else had seen it first. But I had to be one of the first. A new crater. There must have been some enormous collision during the day. My heart raced as I pulled away from the eyepiece to view the Moon with my naked eye, somehow to reassure myself that it was really there (or something).

I returned to the eyepiece and my discovery.

I noticed now that Ptolemaeus had a central peak. That wasn't right! It's floor should be featureless. (We're talking 35mm refractor here) It was then that I realized that I had misjudged where the terminator would be that night and I was seeing the Theophilus chain not the Ptolemaeus chain.

I was embarrassed. I was alone, but I was embarrassed. What a rookie mistake. But, in spite of the embarrassment, I look back now and treasure that moment. Why? Because I will probably never make an earth shaking discovery. But in that instant ..... in that flash .... in that barrage of rapid heartbeats ..... I knew what it would be like. And I will never forget it!

..... *Bill Dembowski*