



THE LUNAR OBSERVER

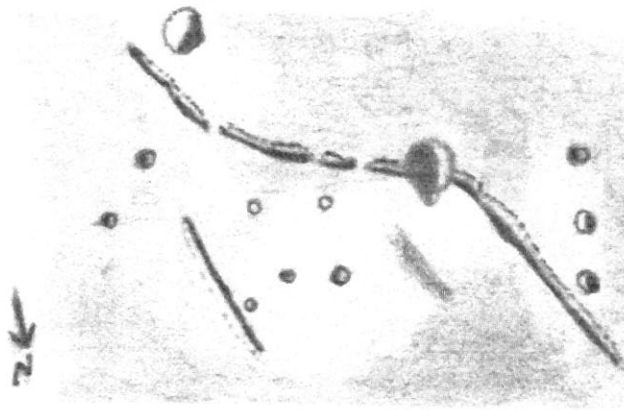
A MONTHLY NEWSLETTER FOR STUDENTS OF THE MOON
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FEATURE OF THE MONTH

Hyginus Rima (7.8° N 6.3° E)



Sketch by Robert H. Hays, Jr. - Worth, Illinois
June 13, 1997 - 15cm Reflector - 170X

Near the center of the Earth-facing Moon is a relatively small crater named Hyginus. With a diameter of only 11km it would attract little attention if it were not for the rille which runs through it. Flat floored and grabenlike, Hyginus Rima contains several crater chains. These crater chains are almost certainly associated with the formation of the rille and not just coincidental impacts. A graben, incidentally, is a strip of planetary crust, between two parallel faults, which has sunk below the level of the surrounding terrain.

The Hyginus Rille is 220km long but is only 400 meters deep and averages only 2-3 km in width. In a small telescope it often appears to be unbroken but, in larger scopes, it proves to be otherwise. Most rilles require grazing light to be seen but Hyginus can be observed under a high sun. Robert Hays of Worth, Illinois recently sketched Hyginus and its surroundings and submitted the following report:

"On June 12/13, the Hyginus Rille looked well placed, so, after timing a faint-star occultation I tried sketching that feature. Hyginus itself looked polygonal at first glance (as it sometimes does on photos) but on closer inspection it is circular. Any apparent distortion of its shape is an illusion caused by the rille. The western part of the rille angles fairly smoothly from Hyginus with a slight swelling about a third of the way along this stretch. Eastward of Hyginus, however, the rille was broken by at least three

gaps as it meandered along an irregular curve. I have tried sketching it as I saw it. The eastern end was between Hyginus C and a vague low dome. A long fairly straight ridge started northwest of this crater and ended near a tiny peak and two tiny craters. Two tiny bright spots were also in this area. Towards the west, between Hyginus B and the rille, were two round domes, the northern one being more prominent. This was another clear evening with a steadier sky than two nights earlier. I might add that the Hyginus Rille is surprisingly bright near full moon. I noticed it as such on the morning of June 22 while awaiting the emersion of two 7th magnitude stars."

Hyginus can be found on Map #34 of Rukl's Atlas of the Moon and experiences sunrise about one day before first quarter.

Lunar Photography - Part One

In many ways the Moon is the easiest celestial object to photograph, in others it is one of the most difficult. Since it is relatively large and bright it does not require special films or extended guiding techniques. It does, however, contain a wealth of detail that can be frustratingly difficult to record.

Although the Moon can appear quite large to the unaided eye, especially when near the horizon, the eye is more easily deceived than the camera. When photographed with an ordinary camera lens of 50mm focal length the Moon's image on the negative will only be a half a millimeter in diameter. Even if we were to enlarge the image ten times, the Moon's diameter on the resulting print would still be less than a quarter of an inch across. The question is "How do we get a larger image?"

IMAGE SIZE

Image size is related to the focal length of the lens being employed. A handy rule-of-thumb is that the Moon's diameter on the negative will be approximately equal to the focal length of the lens (in millimeters) divided by 110. Obviously we need to use a lens of considerable focal length to achieve a lunar image of any appreciable size.

A 500mm telephoto lens will produce an image on the negative that is 5mm across. Enlarged only five times, the final image will be a very respectable one inch in diameter. Obviously a one inch lunar disk will not show a great deal of detail, but not all lunar photos require infinite detail. The photography of lunar appulses, the close approach of the Moon to other celestial objects, does not demand a high degree of resolution but can be a very enjoyable and rewarding pursuit. And, of course, a lunar eclipse can be recorded very nicely with a series of one inch or two inch images.

LONGEST PRACTICAL EXPOSURE

Simply attaching a telephoto lens to your camera, pointing it at the Moon and snapping away, is not going to get you very satisfactory results. Long lenses are impossible to hold steady and must be tripod mounted for acceptable lunar photographs. The Earth's rotation can also be a problem since it appears to carry the Moon across the sky at the rate of one lunar diameter every two minutes. In order to offset the apparent motion of the Moon a suitably short exposure must be used. The longest practical exposure time for a fixed camera (one that is not electrically driven to match the apparent motion of the Moon) is equal to 250 divided by the focal length of the lens being used. For example: a 500mm lens requires an exposure time of no longer than 1/2 second (250/500) to record an acceptably sharp image of the Moon.

The Lunar Calendar for September 1997

(All Times UT)

1	23:52	New Moon (Beginning of Lunation 924)
2	21:18	Moon at Apogee (406,475km)
5	12:00	Moon 3.1 degrees North of Venus
7	09:00	Moon 5.2 degrees North of Mars
9	01:31	First Quarter
13	01:00	Moon 3.8 degrees North of Neptune
13	14:00	Moon 4.4 degrees North of Uranus
14	02:00	Moon 4.2 degrees North of Jupiter
16	15:23	Moon at Perigee (356,966km)
16	18:51	Full Moon
16	19:00	Total eclipse of the Moon (Not visible from North America)
18	10:00	Moon occults Saturn (Not visible in extreme NW or NE)
23	13:36	Last Quarter
29	23:00	Moon at Apogee (406,330km)

Observations Received During the Month

Robert H. Hays, Jr. - Worth, Illinois - Timings of 59 stars occulted by the Moon

Sketch of Maskelyne and vicinity

Sketch of Hyginus Rille

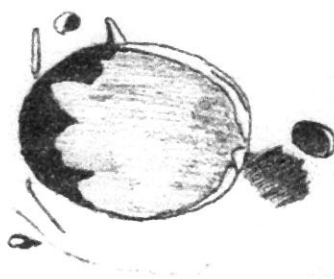
Patrick Craig - Riverside, Ohio

Sketch of Plato

Close, But No Cigar Hook

Sketch by Patrick Craig - Riverside, Ohio

90mm Refractor - 222X



On July 14, 1997 Patrick Craig went in pursuit of Plato's Hook. His sketch was made between 02:30 and 02:57 UT, a time when lighting conditions closely approximated those at the time of Patrick Moore's original drawing, but the elusive feature was not to be seen. Perhaps Pat or another observer will have better luck on one of the following dates: 9/10/97 at 21:57 UT; 11/8/97 at 20:15 UT; 2/5/98 at 17:17 UT; or 4/6/98 at 00:23 UT. Please note that some times given are under bright skies.

From the Editor:

On September 18th the Moon will occult the beautiful planet Saturn and provide us with an opportunity to view a celestial event for the sheer pleasure of it. If you would like to direct your efforts toward a more serious matter, however, why not consider taking part in the Vertical Studies Program proposed in the August issue? In any event remember that lunar observations of all kinds, by observers at all levels of skill and experience, are welcomed for inclusion in The Lunar Observer.

Clear and steady skies **WMD**