

Chapter 2

Sketching Maria (Seas)

Maria formed when impact basins were filled with basaltic lavas. Fractures in the lunar crust, which served as channels for lava flows that were located in the crustal/mantle interface, were created by collision energy. Although basins were produced in minutes by asteroid impacts, the slow inundations by the low-viscosity basalts (about the consistency of motor oil), took several hundred thousand years to fill the basins. Generally, maria exhibit dark, low-albedo characteristics of cooled basalt lava. The relative absence of craters in maria is partly the result of the fluidity of the maria lavas and their unrelenting flow for thousands of years as well as the impact and obliteration of the target areas caused by kinetic energy of the asteroids impacting the Moon.

2.1 Pastels and Conté Crayons on Black Paper – Mare Crisium (by Deirdre Kelleghan)

Suggested Materials

- Field easel
- Mungyo soft pastels – gray selection box
- Conté crayons – black and white
- Quilling needle
- Daler Rowney A3 black paper

Crisium stands on its own like an island on the eastern limb of the Moon. On this particular night in January 2009, my view of Crisium was very different and unusual as the mare was presented on the waning Moon. My view was absolutely engaging as Crisium was sliced down the middle by the terminator. The temperature had dropped to -3°C (26.6°F), and the seeing was good.



Fig. 2.1.1

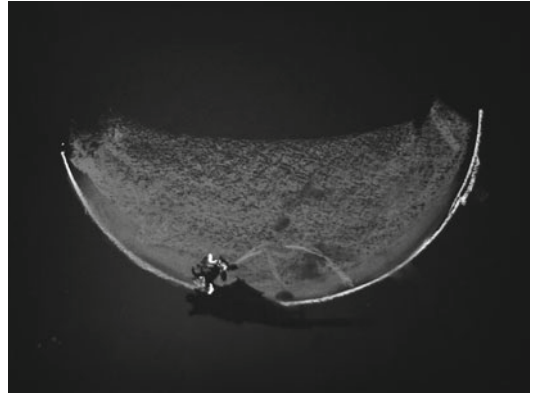


Fig. 2.1.2

Step 1

I set up my field easel with a board and my usual black paper. Using a dinner plate, I created an outline using white Conté crayon (**Fig. 2.1.1**).

Step 2

Quickly, I filled in the lunar surface area with a mid-toned gray pastel used on its side for an even tone. That application gave me a perfect base to work over with detail.

I was so taken by the stark darkness of the terminator and the lighter mare floor that I began to draw that right away. The white Conté line, sketched using the plate, became the waning terminator impinging on the Sea of Crisis. I used the blackest-black in the box of pastels to draw the edge of the terminator and begin the awesome shadows cast by the huge massifs surrounding the mare. The corner of a black pastel was used to draw the black shapes that defined the structures surrounding the area. A hint of shape sketched lightly with a white Conté crayon gave me a template for the Crisium Ring (**Figs. 2.1.2 and 2.1.3**).



Fig. 2.1.3

Step 3

I closely observed the massifs, which were defined by their shadows. The blacks were sketched in first followed by the darker grays. Finally, I used the sharp corners of a white Conté crayon for the higher peaks still clinging to the sunshine (**Fig. 2.1.4**).

Step 4

In order to give a little context and balance to the drawing, I lightly sketched the surrounding areas outside Crisium using Conté crayon over the gray pastel base. I wallowed in the enjoyment of observing

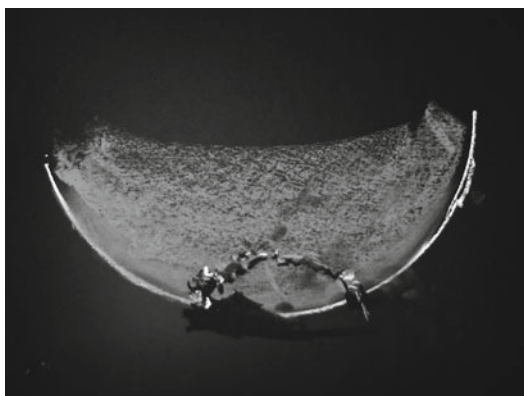


Fig. 2.1.4

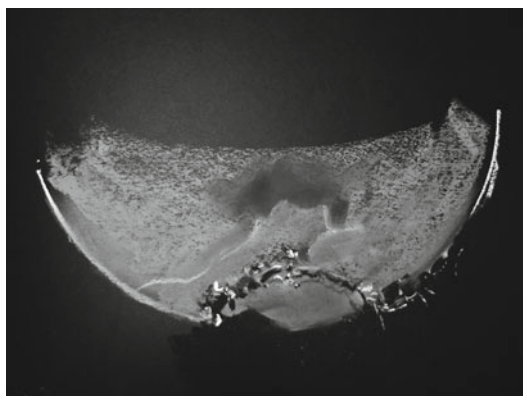


Fig. 2.1.5

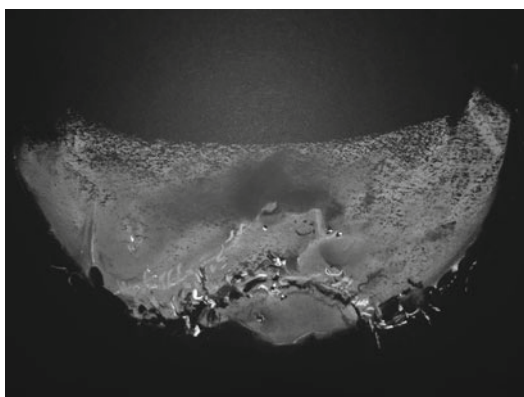


Fig. 2.1.6



Fig. 2.1.7

the sunlight still beaming in the darkness onto the rims of Cleomedes. The sharp hard corner of a new white Conté crayon was my choice for adding the very bright sunlit edges of hidden craters in the darkness beyond the terminator (**Fig. 2.1.5**).

Step 5

I added more detail to the surrounding areas by using a darker gray pastel on my finger to rub over the paler gray base of the lunar floor. Darker gray pastel gives the appearance of higher ground when applied over paler pastel (**Fig. 2.1.6**).

Step 6

My attention then turned to Dorsum Oppel. This wrinkle ridge wriggles its way across the mare floor just inside and below the massifs. Thin shadows and fine lines defining Dorsum Oppel were etched into the pastel using a quilling needle (**Fig. 2.1.7**). A quilling needle is invaluable for sketching dorsa and etching tiny craters or partially visible crater rims.

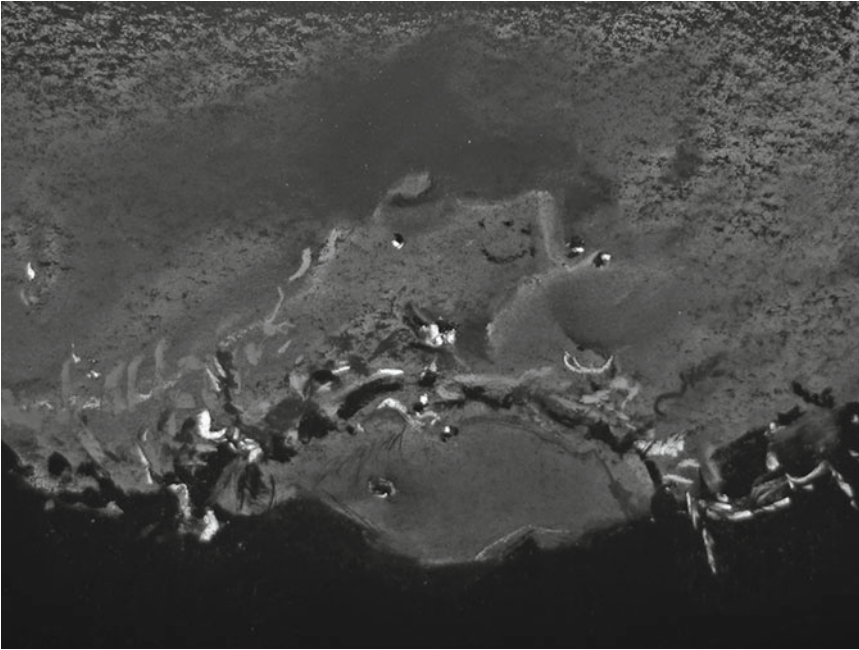


Fig. 2.1.8

The light is so different on the waning Moon – Palus Somni is a bare hint of itself; and Proclus, which so often takes the stage in this area, is barely visible, its ray system rendered imperceptible by the angle of the Sun's light. Standing in my garden looking at Crisium's mountainous ring filling my eyepiece is something I will never forget. I stood a quarter of a million miles away looking directly down on the tops of substantial structures as I was looking up! These massifs sported deep, almost vertical shadows, giving up waning secrets not privy to eyes viewing as the Sun rises on the lunar surface earlier in the month (**Fig. 2.1.8**).

Supplementary Sketch Information

January 13, 2009, 22:30–23:54 UT, 8-in. reflector on a Dobsonian mount, 8 mm Hyperion eyepiece, 150x, seeing Antoniadi I
Bray, Co Wicklow, Ireland

2.2 Conté Crayon and Pastels on Black Paper – Palus Epidemiarum (by Sally Russell)

Maria are relatively smooth plains on the lunar surface that present us with very different sketching opportunities compared with more-defined targets such as craters or mountains. Palus Epidemiarum is a small mare region in the southwestern portion of the near side of the Moon and is well presented a day or so after last quarter as illustrated in this tutorial.

Note: The tutorial sketch is a mirror image view as the refractor used for the observation was fitted with a mirror diagonal.

Suggested Materials

- Drawing board (plus masking tape to fix the paper in place)
- Black paper, 12" × 16½" in size (90 lb weight Daler-Rowney 'Canford' paper was used in this tutorial)
- White Conté crayon
- White chalk pastel
- Craft knife for sharpening Conté crayon, pastel, and vinyl eraser
- Kneadable eraser and vinyl (plastic) pencil eraser
- Blending stump

Step 1

With a slightly sharpened Conté crayon, very lightly sketch the rounded outlines of the mare region and its major neighboring features (**Fig. 2.2.1**).

It is important to get the layout and relative scale of these as accurate as you can, as the remainder of the sketch is built up on and around them. Try to visualize the size and distances between the various features as being a multiple of one key feature to help you in mapping out the area of your sketch. In this example I used the brightly lit sinuous crater rim on the terminator at the top left of the sketch as my mental yardstick when gauging sizes and distances. It can also sometimes help, before drawing any lines at all, to put small dots of Conté crayon on the paper to mark the center top, bottom and sides of the planned sketch – these can then act as anchor points once you start applying Conté crayon to paper.



Fig. 2.2.1



Fig. 2.2.2

Step 2

Run your fingertip along the side of a piece of pastel to pick up some pastel dust (**Fig. 2.2.2**), then apply this to the paper to start filling in the mare regions, making sure to leave gaps where the major shadows occur (**Fig. 2.2.3**).

Applying a thin layer of pastel nearer to the terminator where the light level is low (at the top in this sketch), and a thicker layer of pastel where the light level is more intense under the higher sun angle further away from the terminator, will help achieve the effect of the curvature of the mare region. Pick up more pastel on your fingertip as many times as you find necessary and block in the entire mare region in this way, blending and smoothing the pastel on the paper with your fingertip as you go (**Fig. 2.2.4**).

Step 3

Now take up the Conté crayon again and start building up the major highlights on the crater rims and ridges. Begin to add in the smaller feature details (craters, mountains, etc.) that define the mare edges, adding any smaller areas of mare background as needed with pastel.



Fig. 2.2.3

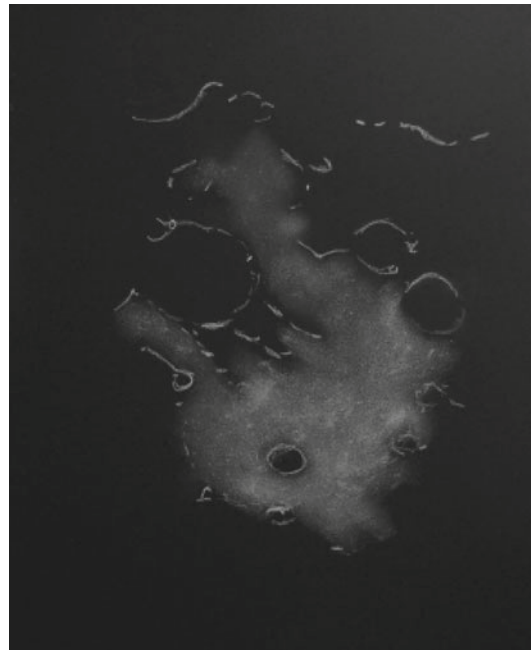


Fig. 2.2.4

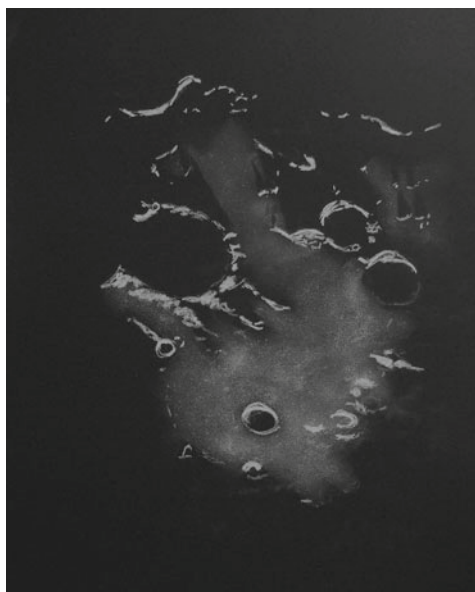


Fig. 2.2.5



Fig. 2.2.6

Step 4

Sharpen up the edges of the major shadows being cast by the largest crater rim by using the kneadable eraser to remove small quantities of pastel background. In a similar fashion (and with either the kneadable eraser shaped into a small point or using the vinyl pencil eraser), define the smaller triangular shadows being cast by isolated peaks and smaller craters throughout the sketch area (**Fig. 2.2.5**).

Using the vinyl pencil eraser so that the long edge of the eraser is aligned with the direction of the rille, carefully rub out a very thin line of pastel to show the rille (Rima Hesiodus), which is just visible under this lighting (**Fig. 2.2.6**).



Fig. 2.2.7

Step 5

Now pick up a small amount of pastel dust directly onto the blending stump by rubbing it onto the side of the pastel (**Fig. 2.2.7**), then use this to fill in any small mare background areas missed when the main area of pastel was applied using your fingertip (**Fig. 2.2.8**). The narrow tip of the blending stump allows very small areas to be reached and filled in without disturbing the surrounding drawing.



Fig. 2.2.8

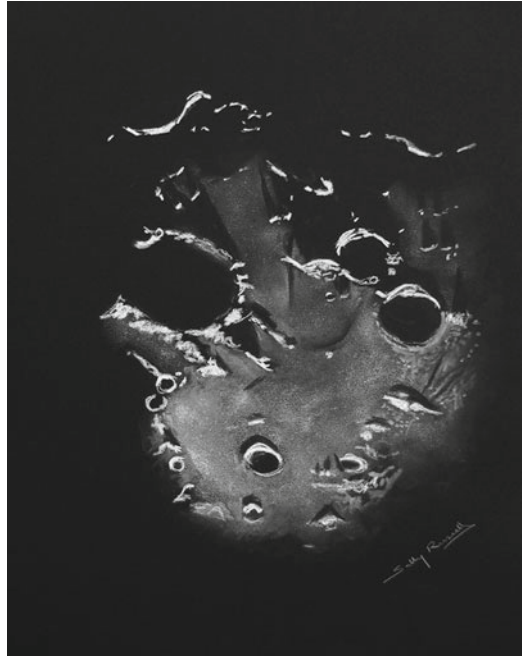


Fig. 2.2.9

Step 6

Your sketch is now almost complete! With the Conté crayon, add in any further small features (craters, hills, etc.) around the edge of the mare, and add texture (representing ejecta from crater Campanus) onto the mare background using a dotting motion. Now take the pencil vinyl eraser again and ‘draw’ in (by erasing away a little of the background, thus leaving dark markings against the bright mare) any further small shadows and rilles (such as Rimae Hippalus seen on the right of the sketch). Clean up the sketch surrounds by gently erasing any smudges with the kneadable eraser.

Figure 2.2.9 is the finished sketch.

Supplementary Sketch Information

The tutorial sketch was completed on September 3, 2010 at 03:00–04:35 UT with the Moon at 24 days old (35% illuminated) under clear and calm conditions (seeing: Antoniadi II). I used a 105 mm f/5.8 refractor on a driven mount with a 2.5 mm eyepiece giving a magnification of around 245x.



Fig. 2.2.10 Sally Russell with her trusty Astro-Physics 105 mm (f5.8) Traveler

2.3 Graphite Pencil – Mare Serenitatis (by Thomas McCague)

Suggested Materials

- Graphite pencils: 2H, HB, B, 2B, 4B, 6B
- Paper: acid-free, lignin-free paper of medium weight in a 9" × 12" size. You can use ordinary copy paper, but a better quality paper is recommended for sketches you plan to keep indefinitely.
- Erasers: gum, plastic and shaped pencil erasers
- Clipboard
- Bright light
- Cloth, paper towels, or facial tissues for wiping graphite from fingers
- Blending stumps
- Small brush
- An eraser shield may also be useful for correcting mistakes made along the way

I selected the 670-km diameter Mare Serenitatis for a graphite sketch of a lunar sea. This mare has three interesting features that come to mind: first, its overall shape is somewhat like a scallop shell; second, its floor brightness changes rather abruptly due to variances in lava composition; and finally, a bright ray (known as the Bessel ray) from a distant crater impact passes across the center of this sea near crater Bessel and points back to crater Tycho 2,000 km away.

One of my favorite ways to begin a graphite sketch of the Moon is to spread graphite dust shaved from a pencil across white paper to equal the tone of the gray lunar surface. Although light features can be erased away and darker features added with softer, darker graphite pencils, I chose a different approach for this sketch simply because there are a number of ways to begin any sketch.

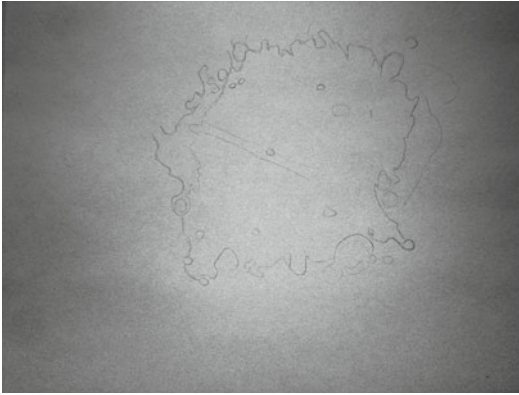


Fig. 2.3.1



Fig. 2.3.2

Step 1

As shown in **Fig. 2.3.1**, we will mark an outline in the shape of this entire feature using a 2H pencil. Be sure to use the lightest touch with your pencil as you may want to adjust and reshape this outline until you are satisfied that you have it right. If you have trouble seeing the outline, use a softer pencil such as HB or B and avoid the urge to press too hard.

You may also find that you can use brighter lighting, which will assist in seeing faint marks on the sketch paper. Since you can sketch the moon in full daylight during some phases, do not be afraid to use plenty of light at night.

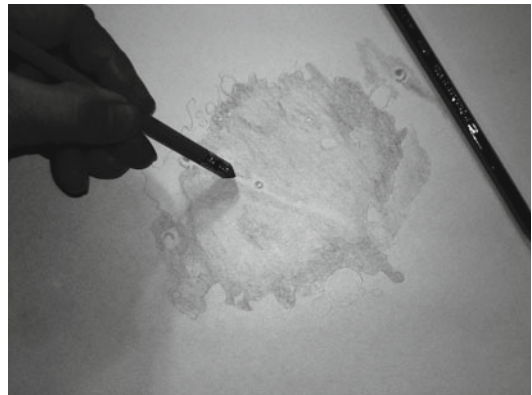


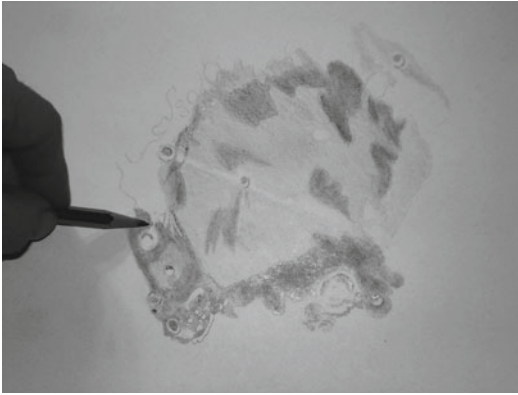
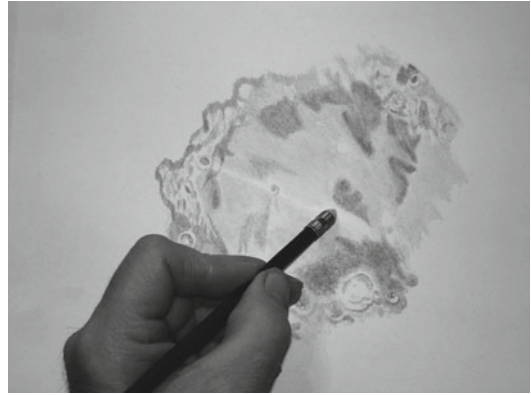
Fig. 2.3.3

Step 2

Next, using an HB pencil held at a shallow angle and varying the pressure a little, we begin to shade in the gray tones for the mare floor (**Fig. 2.3.2**). Work across the paper by doing the near side first and then make your way towards the far side. If you are left-handed like I am, you may want to work from far side to near side to minimize smearing your sketch.

Step 3

At this point, some of the features, that were supposed to be bright, might have become covered with graphite and will need to be cleaned up by erasing. For this step, we use shaped erasers that have been sanded to wedge shapes as with the pencil end eraser shown in **Fig. 2.3.3**. This same step can also be accomplished with the proper placement and use of an eraser shield in combination with a plastic eraser.

**Fig. 2.3.4****Fig. 2.3.5**

Step 4

We now move on with the HB pencil to outline the darker features, followed by filling in the outlined regions with a (softer and darker) 2B pencil. By applying progressively softer pencil graphite (such as going from HB to 2B), you will not need to apply hard pressure to achieve a darker appearance, which could damage the paper (**Fig. 2.3.4**).

Step 5

Return to the previous shading done with the HB pencil to adjust the shadow darkness. It will be necessary to go over several previously shaded regions to adjust the appearance to darker tones as well as erase some additional smudging that may have occurred in the brighter areas.

Looking over the sketch, undesirable pencil lines may be seen. To eliminate these, use a blending stump to even out the appearance of all the gray tones. It may be necessary to load graphite onto the blending stump to aid with this adjustment. Before blending, load the blending stump by rubbing the pencil directly onto the tip of your blending stump. If a sketch is large enough, you may be able to blend with your fingers. A clean cloth or tissue can be used to remove the graphite from your fingertips if you choose this method. By moving from the use of a pencil to blending stump to eraser in succession for several cycles, you will be able to achieve the desired level of gray tones from lightest to darkest (**Fig. 2.3.5**).

Step 6

Finally, for the darkest features in this sketch, we use pencils through 4B or 6B. These pencils work nicely for the deepest shadowed regions. When you are satisfied that the sketch matches the eyepiece view, you can consider the drawing complete.

The finished sketch is in **Fig. 2.3.6**. You may want to include information concerning the circumstances of the sketch such as the time, date, and Moon phase. That is generally up to the discretion of the sketcher.

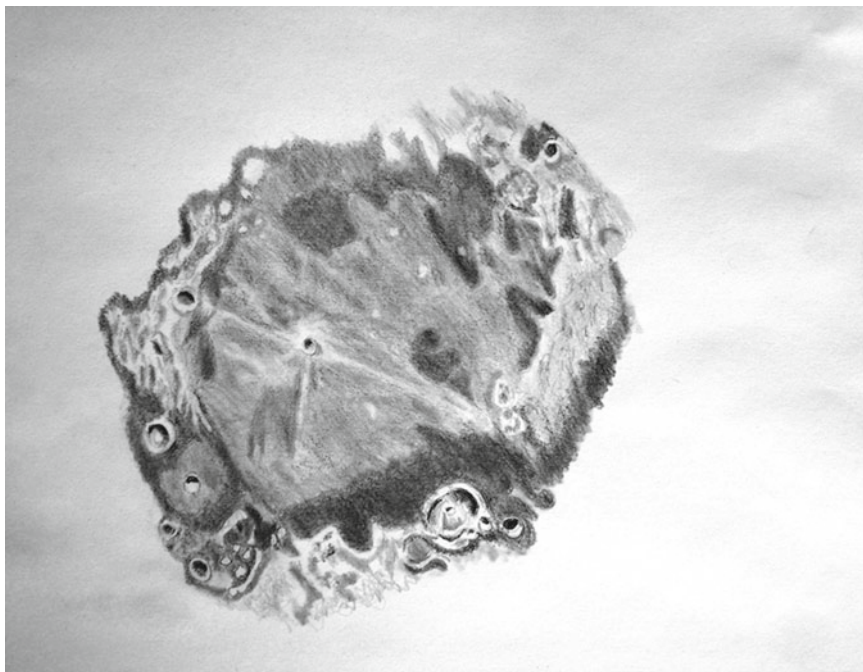


Fig. 2.3.6

Supplementary Sketch Information

Graphite Sketch of Mare Serenitatis on white sketching paper

Age: Nectarian Period Feature 3.9 billion years old

Size: 670-km across

Date and Time: February 13, 2009, 07:20–09:00 UT

Lunation: 18 days

Waning gibbous phase

Weather: clear, cold

Seeing: Antoniadi III

Illumination: 83.4%

Equipment: 10" f/5.7 Dobsonian with 9 mm eyepiece at 161x, riding on an equatorial platform

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Sketching the Moon

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