Mercury Section

CALLING ALL MERCURY OBSERVERS

The Mercury section needs your observations! Please send me your sketches and images for the previous apparitions.

ESPECIALLY IMPORTANT, I HOPE SOME CCD IMAGERS WILL TRY TO TAKE SOME MERCURY IMAGES. I've recently acquired a ST-5C camera and will try to learn how to use it in time to take some Mercury images over the next four months. The June issue of S&T contains an article by William Sheehan and Thomas Dobbins, starting on page 109. The image created from video made with the 60" Mount Wilson reflector has inspired me to try a CCD camera with more modest 10-20cm telescopes.

Upcoming apparitions

At present, Mercury is beginning a good evening apparition. It will be visible all month, and at its greatest eastern elongation of 24 degrees on June 9th. Watch for it 20-30 minutes after sunset with binoculars and then catch it in your telescope before it gets too low.

Next, there will be a morning apparition in July and August, with greatest western elongation on July 27th (20 degrees). Set your alarm clocks to find it low in morning twlight and then follow it up higher after sunrise for better seeing at higher altitude.

THE LEAST VISITED PLANET

Mercury remains less understood than most planets, as it has been visited by only one spacecraft. Its slow rotational period (58.646 days) meant that less than half of its surface (45%) was illuminated by sunlight for mapping during the three passes Mariner 10 made between 1974 and 1975. Mercury also has the unfortunate distinction of being the only planet never imaged by the Hubble Space Telescope (HST). Mercury's close proximity to the Sun does not allow the HST to be pointed in that direction. Careful study by earth based telescopes is very important in trying to answer some of the questions we have about the closest planet to the Sun.

New missions to Mercury have been proposed for the near future. As with other ALPO sections, this section may be asked to provide information to help plan the mission. You can help by making observations and reporting them to me.

THE DIFFICULTIES OF OBSERVING MERCURY

Despite the importance of such observations, few are made. The tight orbit of Mercury about the sun means that it is visible for at most a couple hours after sunset or before sunrise. For much of the time that it is visible each evening or morning, the planet is very low in altitude, leading to poor seeing conditions. Mercury is quite small, not much larger than our Moon, and also far away. This means that the observed size of the disk is quite small. I urge you to overcome these difficulties in observing Mercury. With patience and perseverance, you will get good results.

Much popular astronomy literature contends that surface detail cannot be seen on Mercury, but I disagree. Under excellent seeing conditions, I have seen unquestionable detail on the surface. With practice, clean optics, appropriate filters and magnification you should also see features on the planet.

The following sections are meant for beginning Mercury observers. Others may also find them of interest.

EQUIPMENT NEEDED

The naked eye is sufficient to view Mercury, since it is usually very bright, even against the sky glow of sunrise and sunset. Binoculars will aid you in spotting the planet in twilight. The crescent phases of Mercury can be seen in telescopes as small as 50 mm in aperture, while a 75 mm telescope will allow you to detect all phases of the planet.

To see surface detail on the planet, a magnification of at least 200 to 250x is recommended. Following the generally accepted rules of maximum magnification (2 times the aperture in millimeters), at least a 100 mm telescope is recommended to resolve detail at this high power.

To counteract some of the detrimental effects of the atmosphere and reduce the glare of the bright disk, an orange or red filter is suggested. I prefer the Wratten #23A light red. Others find #21 orange to be best. #25A red is useful with large apertures. I find blue filters, #80A and #38, are also worth trying after I've made a drawing with a red filter.

The above advice is just a guideline. I suggest you experiment with some different filters and magnifications to find out the best combination for your eyes and equipment.

OBSERVING PROGRAM

As a minimum, you should observe and sketch Mercury every three days in the best and second-best morning and evening apparitions of the year. At least one observation should also be attempted on the best days of the worst apparitions. Mercury's slow rotation means that observations made even a few days apart may be compared as nearly simultaneous observations. The subtle shadings require many observations to allow atmospheric effects to be ruled out. We need all the observations we can get, so please go out and observe at every opportunity!

I find it best to draw a line sketch of the phase and make intensity estimates of all features seen while at the telescope. I spend all of my time looking at Mercury rather than doing a shaded final sketch. After the planet has sunk too low in the atmosphere for the seeing to be usable or the sky has become too bright, I put away my scope and make final shaded drawings based upon my outline sketch and intensity estimates.

It can be tough to wake up early in the morning but I find morning views are often the best views. There is no rush to find the planet before it sets and it is rising out of thick air, rather than falling down into it. As well, the planet is bright enough to observe for a time after sunrise before contrast suffers terribly; with very large telescopes, the planet may be followed for hours into daylight. The seeing is also often better in the morning than in the evening.

The features of Mercury's surface are usually very subtle but you must be sure of what you are drawing. If you observe only the phase, draw only the phase. With practice, you will train your eyes to see subtle features on the small disk. Try to observe objectively, without trying to make today's observation mesh with the last day's or with the accepted ALPO map of Mercury. Just draw what you see.

You can download and print out the Mercury observing form on the ALPO Mercury Section web page. If you do not have access to a printer, send a self addressed envelope to my address (with stamps if you live in

Canada) and I'll send you a form to photocopy.

If you have access to a scanner, I would appreciate receiving a scanned image as an advance copy so I can begin analysis and send out observing alerts if necessary. You will still need to send in your originals. Those should be sent in as a package after each apparition.

Photographs and CCD images are also desired. I am going to experiment with some CCD imagery of Mercury in the near future.

ABOUT THE COORDINATOR

You can email me at FrankJ12@aol.com. You can mail observations or requests for forms to:

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