



The New Horizons spacecraft snapped this picture of Io while on the way to Pluto for a 2013 arrival. Note the active volcanic eruption at the top.

Longmont Astronomy Society Newsletter
May 2007

From the President:

This will be covered as an email after the meeting – we have some late news re the Boy Scout observatory installation that will be covered at the meeting on May 17.

From the treasurer about your subscription:

Please include the following in the newsletter:

Sky Publishing has changed how club member discounts are to be handled for "Sky and Telescope Magazine". Your subscriptions should be renewed directly with Sky Publishing by phone (1-800-253-0245) or by sending in your renewal card by postal mail.

New subscriptions or new members who already have S&T subscriptions and want the club discount should contact:

SKY Publishing
Attn: Jane O'Brien
90 Sherman St.
Cambridge, MA 02140-3264

or call: 866-644-1377

or email: jobrien@skyandtelescope.com

Sky Publishing will contact the club treasurer to validate club membership annually. It is no longer necessary to validate membership at the time you subscribe or renew.

Calendar:

May 25 – JFK made the speech setting the Moon as a goal in this decade.

June 3 – 5th anniversary of the launch of STS-111, Space Shuttle Endeavor

June 4 – Messenger to Venus, Flyby #2

June 10 – 25th anniversary of Venera 13, the last of the Venus landers

June 14 – Mariner 5 launched in 1967

June 18 – Sally Ride becomes the first woman in space. (She's running a nice educational program for girls now, along with making the speeches)

June 22 – Discovery of Charon (1978)

June 23 – 3 Russian Cosmonauts die on reentry of Soyuz 11 in 1971

June 26 – Happy Birthday, Charles Messier (1730)

June 27 – Near Shoemaker flyby of asteroid Mathilde in 1997

In the sky this month:

June 21st, 12:08 PM MDT is the summer solstice (you know you'll be asked....)

Meteor Showers – nothing special this month, but the Bootids might be active a few days either side of June 27. The bright Moon will dim the prospects.

Planets: Great month for planetary observers

Mercury, Venus and Saturn are all in the west in evening twilight.

On June 1st, Mercury is 10 degrees above the horizon 45 minutes after sunset. 10 degrees should be enough to be above the mountains, if you're out there early. At magnitude 0.5,

it outshines both Castor and Pollux nearby. Greatest elongation is on June 2, so get it early in the month.

Venus reaches its greatest elongation on June 9, and will display as a half moon. On June 12, Venus will be very near the Beehive Cluster at low powers.

Mars is visible in the early morning, and will steadily improve through the rest of the year, as the Earth catches up.

Jupiter reaches opposition on June 6th, so will be directly south at midnight, and as bright as it's ever going to get.

Saturn is fading into evening twilight, and will disappear by August. Magnitude is 0.6, and the rings are narrowing.

June 16th: There are no guarantees that you will find all of the planets taking part in this evening's drama, but it can't hurt to give it a try. Just after sunset, look to the western horizon. You can get your bearings by locating the exceptionally bright planet Venus, located above the horizon directly west. From here, look up and to the left of Venus and see if you can find the not-quite-so-bright planet Saturn. Success? Cheers. Now, the hard part....

Low on the horizon, washed out in the twilight, is a thin Crescent Moon, down and to the right of Venus. If you can find this, you've located 3 out of four players on the stage.

Congratulations! Now, below and slightly to the right of the Moon is the planet Mercury- -but the chances of you finding it aren't great, as it is likely buried in the glow of twilight, and will set below the horizon before it gets very dark.

Interesting Challenge: the asteroid Vesta is close to the Earth, and is at magnitude 5.6 in June, just north of Antares in Scorpio. With no brighter stars nearby, you can watch it change position in a dark sky area. Sketch the star field to confirm the changes, it should travel about 8 degrees during the month of June.

Club Calendar:

May: New Moon: 19th – Pawnee
1st qtr: 26th — Flanders (think we've discontinued this)
Meeting: 17th – Topics:

Jun: New Moon: 16th - Members' choice or.....
Rocky Mtn Star Stare: 14th – 17th
3rd qtr: – Tri-Town Party???
Meeting: 21th – Topics

Fiske Planetarium:

May 31: Explore "MESSENGER at Venus" with Matt Benjamin, 7:30pm

June 7 and 8: 8:00 Moon Mineralogy mapping with Dr. Joe Boardman

June 15: 8:00 Black Holes with Dr Andrew Hamilton

And for the kids, don't forget about the Astronomy Camp! Sign up through Longmont Free University.

Internet Resources:

For those who think “the Moon always shows the same face” or who don’t really understand libration or aren’t quite sure how much difference in size the eccentric orbit makes, take a look at http://spaceweather.com/swpod2007/02may07/laveder_512.gif This guy took a picture of every full Moon for two years, and you’re looking at the result made into a 2 second movie!

I was astonished by the pictures of the tornado damage in Greensburg, Kansas. You can look at them, too at - http://www.ultimatechase.com/chase_accounts/Greensburg_Tornado_Damage_Survey.htm Don’t know how much astronomy this is, but the pictures are cool....

This month’s field trip: The Neil Armstrong Museum in Wapakoneta, Ohio. Located beside I-75 between Toledo and Dayton, it can be easily reached on your motoring travels. See <http://www.ohiohistory.org/places/armstron/> for some details, but this place is small enough that it can’t afford a website. Admission is a few bucks, and the artifacts on exhibition are from the Apollo era and earlier. Has an F-4 fighter parked out front (Neil Armstrong was an Air Force pilot). Best place to see “how the astronauts went potty”, to answer all those questions from the kids.... See this one on the way to next month’s field trip – the Air Force Museum in Dayton, Ohio.

And beginning a new series in the newsletter!

Astronomy Club 101: How to collimate your telescope (from Vern Raben)

If you really want to see sharp views through your telescope or want to take great astronomical images you need to check that the optics in your telescope are aligned correctly. It is a task that will probably take a half hour or more the first time you do it. With practice it can be done in 4 or 5 minutes. In my opinion the collimation should be checked whenever you transport and set up the scope. If it is permanently mounted it can be checked less often, maybe once a month. **The instructions that follow are for Schmidt-Cassegrain telescopes.** A somewhat similar process may be followed for dobsonian telescopes as well although the adjustments would be for alignment of the primary.

Collimation procedure may be done either by eye or with a webcam. In my opinion it is easier with a webcam as you can watch the video on your notebook and make the adjustment while at the front of the scope. If you don't have a webcam, then you will probably need someone to help you -- unless you can reach the adjustment knobs or screws at the front of the scope. You might consider replacing the adjustment screws on the secondary with small knobs available from <http://www.bobsknobs.com> It will save you a lot of time and the knobs are inexpensive.

1. Select a magnitude 2 or brighter star that is high enough in the sky to avoid air turbulence but low enough that you can conveniently make the adjustments

2. Start at medium magnification, say with a 10 or 12 mm eyepiece and center the star in the eyepiece. Then defocus it so that you can see the dark disk of the secondary in the center of the out-of-focus star. You want diameter of the dark center circle to be about the thickness of the bright ring surrounding it (more or less, not critical).

3. Adjust the secondary until it is centered in the defocused star image. The difficult part is learning which screw or knob to use and which way to turn the screw to adjust the secondary. Look at the dark center of the secondary in the defocused star. Note which direction is furthest off center.

While looking through the eyepiece, have someone move their hand around in front of the telescope until it is at the same position. The adjustment screw that is closest is probably the one you need to correct. (If the point is exactly between two screws, choose the one on the opposite side. In either case you want to move the defocused star in the direction that is furthest off center). While watching in the eyepiece have them loosen or tighten that screw. The screw should be turned so that the defocused star moves in the same direction that you noted above.

As you tighten one screw it is necessary to loosen the two others an equivalent amount. The adjustment should be very slight, at most 1/8 turn usually 1/32 turn or less. The tension on the screws should be firm, but not overtight to the point they bind. At first this may seem confusing but with practice you'll learn which way to make the adjustment and you'll be able to do it very quickly.

3. Adjust the focus so that you pass through the sharpest focus point. Continue changing it until the defocused star is about the same as it was on the other side of focus. Check that the secondary is still centered. If it is not, your focus tube or diagonal is misaligned and you need to adjust or replace it.

4. If you have at least fair turbulence (5/10), replace the eyepiece with a 6 or 8 mm and repeat steps 3 and 4 above. Unless seeing is quite good (6/10) or better, there isn't much point in trying higher magnifications. Ideally you would repeat steps 2 through 4 again using a 3 or 4 mm eyepiece

5. If you are a true perfectionist, there is a final step in which you detect the direction of flares from the airy disk as it moves through focus. However it requires excellent turbulence condition (8/10) or better -- which are rare (at least here in Colorado).

The procedure for a webcam is identical except that a webcam is used in place of an eyepiece. Set up your notebook on a small table in front of the telescope and lay the notebook screen flat so you can look down on it while making the adjustments. The webcam has very high magnification. It is nearly equivalent to a 3 mm eyepiece. If seeing is exceptional, you can repeat the collimation procedure with a barlow to make the final adjustment.

