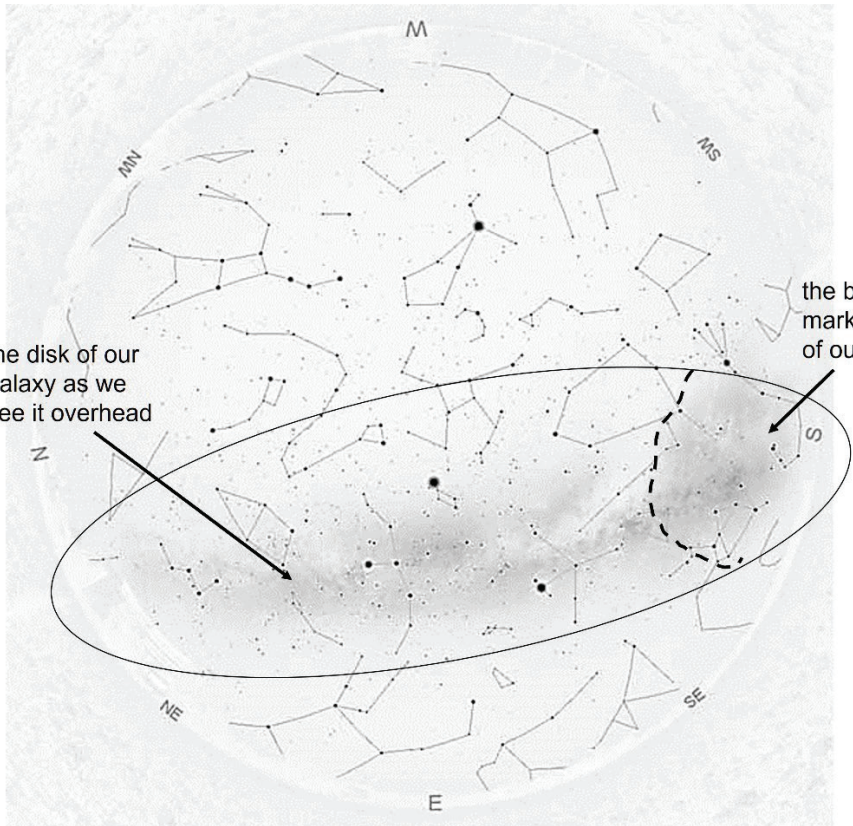


# WHAT'S UP?

Hello. Well, we haven't had a lot of clear evening skies the past couple of weeks, but that's okay. That makes the clear nights all the more special. (How's that for making lemonade out of lemons?) When last we met, I told you a bit about our view of our home galaxy, the Milky Way. To recap, our galaxy, is a flat(-ish) spiral disk with a bump at the center of it. We are located within this disk about one-third of the way out from the center. Think of being inside of a pancake that has a big lump of butter on it (and under it). If we were to look around us, we would be looking into the thickness of the cake. We'd see a band of cooked dough. That's what we are seeing when we see the band of the Milky Way stretching across the sky. We are seeing all of the stars that make up the disk. When we look to the south, in the constellation *Sagittarius*, the band of the Milky Way bulges a bit. This is the center of our galaxy (that lump of butter). When we look above and below the band, we are looking out of the plane of the galaxy's disk. The disk and the central bulge are marked in this fish-eye lens view of our summer night sky. The *Gaia* satellite has been imaging our galaxy since shortly after its launch by the European Space Agency (ESA) on December 19<sup>th</sup>, 2013. The data from Gaia is allowing astronomers to create a three-dimensional map of our Galaxy to an incredible degree of accuracy. As of 2018, it has determined the positions of 1.7 BILLION stars to within 7 BILLIONTHS of a degree. I find that mind-blowing. You can find a great video by the ESA of how Gaia does this mapping at <https://www.youtube.com/watch?v=VINs-JcNmKs>.

When we look to either side of the band of the Milky Way in our sky, we are seeing some scattered stars, clusters of stars, and things called nebulae. Except for three fuzzy patches of light that we see from our area, *everything* that we see in our night sky is part of our Milky Way galaxy. Here are some of the Milky Way's stats. In future articles, I'll talk about some of these.

the disk of our galaxy as we see it overhead



the bulge that marks the center of our galaxy

**Planet Roundup:** It's time to say good-bye to Venus in our evening sky. By 9:00 p.m. the planet sits just two degrees above the western horizon, accompanied by Mercury (eight degrees to the right of it) and Mars, just above and to the left of it. We'll start seeing these three planets again in the mornings a few weeks from now. Saturn rises around 10:00 p.m. now and by 11:00 is about 10 degrees above the east-southeastern horizon. By midnight, it's twice that high up. Saturn can be found amidst the much dimmer stars of Aquarius, the Water Bearer and is easy to spot. A small telescope will reveal its glorious set of rings. We'll talk more about Saturn in September, when it's in our skies at an earlier hour. Neptune follows about an hour later. Jupiter rises at 1:00 a.m. and Uranus rises about an hour after that. All four of these planets will be with us in our night skies through the fall and most of the winter months. The 1Q Moon will be on the 25<sup>th</sup>, the Full Moon is on August 1<sup>st</sup>, 2Q Moon is on the 8<sup>th</sup> and the next New Moon occurs on the 16<sup>th</sup>.

You can reach me at [astroblog@comcast.net](mailto:astroblog@comcast.net) with any questions and comments. This is *What's Up?* installment #73.

Barry

## The Milky Way

- is a *barred-spiral* galaxy, Type: Sbc
- is approximately 87,400 ly in diameter; 1,000 ly thick (at the arms); 10,000 ly-diameter bulge
- has a supermassive black hole (4 million solar masses) at its center
- has four spiral arms plus smaller arms and spurs
- has a spherical halo – old stars and star clusters
- contains over 100 billion stars
- has gaseous nebulae
- has 50-60 satellite galaxies; the Large and Small Magellanic Clouds are the largest of these