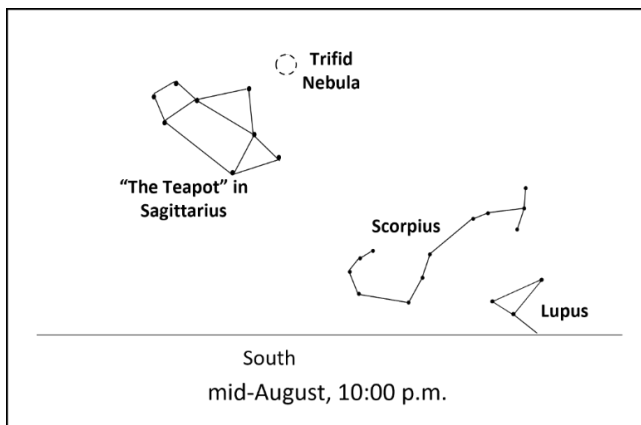
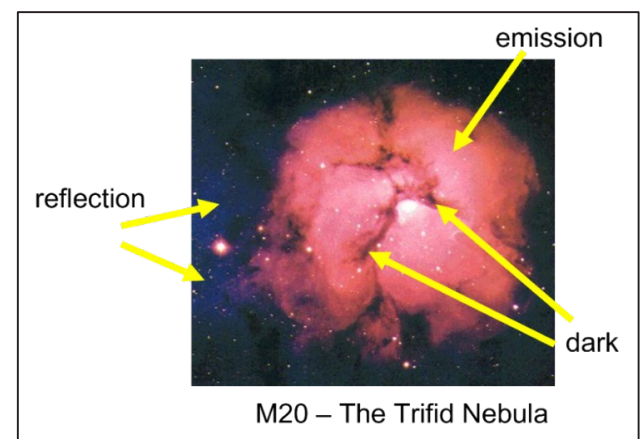


WHAT'S UP?

Hello. We're still not getting good nights for night sky viewing. It's been clear, yes, but "clear" means it isn't cloudy. Our problem has been with the sky's *transparency*. Transparency is a measure of how well we can see through our atmosphere. Water vapor and smoke (we have had plenty of both) make it hard to see through even "clear" skies. We'll get there, though. In the last installment of *What's Up?* we talked about objects in our home galaxy (the Milky Way) that we can see in our sky. Here, I'll tell you about one category of them – *diffuse nebulas*. First of all, *nebula*, is Latin for *cloud*. The nature of these fuzzy patches of light were not known until the technologies of the past century were available for us to use. For lack of any better understanding of the fuzzy patches, they were called nebulas. Diffuse nebulas are...get ready for it...clouds! They are clouds of gas and dust. Diffuse nebulas come in three varieties, often found together in the same structure. In an *emission nebula*, young stars ionize the gasses in the cloud from which they formed. These gasses emit light. The color of these nebulas depends on the gasses present and how ionized they are. Multiple colors are present. To our eyes they usually appear greenish because the cells in our eyes that respond to the dimmest of light, are only sensitive in the green part of the visible spectrum. Electronic sensors and film (remember that?) can detect reds and blues as well. Our eyes only detect reds and blues if the light is bright. So, if someone offers you a glimpse of one of these through their telescope, don't be disappointed that it looks nothing like the beautiful color pictures you see in magazines and online. Just remember that you're seeing the *actual* light from the object and not the light from your living room light that you're using to read by, or the light from your device. Your eyes are detecting the photons that were emitted from the nebula. To me, that's much cooler! But I digress... Another type is a *reflection nebula*. These reflect the light from nearby stars. These usually have a bluish tint to them. The third variety is a *dark nebula*. Dark nebulas are



patches of mostly dust that block the light from stars (and emission and reflection nebulas) behind them. As I said, these are often found together. A beautiful example of this is the *Trifid Nebula*. The Trifid is located among the stars of the constellation Sagittarius and can be found on summer nights about 20 degrees above the southern horizon. Binoculars should show you the fuzzy patch that is M20. Last summer, at a campground in Rhode Island, we could see it directly – not even binoculars were needed!



It's August, so let's remember to get outside and watch the Perseid meteor shower. Weather-permitting (of course), this year's shower should be a good one since the Moon will be just a couple of days before New and won't trouble us with its bright light. When is the peak? The best nights to go out looking for meteors will be the night of August 12th/13th. The best time to look will be after midnight. But, go out *whenever you can* on that night. It's just that midnight-to-dawn is when we'll see the most meteors. Why? Because then we'll be on the side of the Earth that is facing in the direction that the Earth orbits around the sun. The effect is similar to driving in the rain and getting more raindrops on your windshield as compared to the rear window. Meteor showers are especially nice for all of us to view because you don't need any equipment to view a meteor shower. Set up a comfortable chair (one that reclines is best), sit outside in an open area, and look up. And even though it is summertime, you might also want to have a long-sleeve shirt and long pants handy in case it gets chilly and damp. Lastly – don't forget the bug spray! As to where to look, look generally from the northeastern horizon to straight up. Just slowly scan the sky. The point from which all of the Perseid meteors appear to start (the *radiant*) never sets for us at our latitude of 42° North and will be low in the Northeast as night falls and rises higher in the sky as the night progresses. Go out and look for Perseids on the nights before and after the 12th, too. There'll still be some to see.

Planet Roundup: Saturn rises around 10:00 p.m. now and by 11:00 is about 20 degrees above the east-southeastern horizon. 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 by half-past midnight and Uranus rises about a half-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 New Moon will be on the 16th, the 1Q is on the 24th, Full Moon is on the 30th and the next 3Q Moon occurs on September 6th.

You can reach me at astroblog@comcast.net with any questions and comments. This is *What's Up?* installment #74.

Barry