

Cloudy results from the Orion Nebula

This starts out as a story about bonding. Think back to high school chemistry. My teacher was Bob Tadsen (Mr. Tadsen to us).

Remember the Periodic Table of the Elements? It's still in use, of course, but it does have new additions since the '70s. Let's focus on just a couple elements: hydrogen, nitrogen and oxygen.



Outdoors

By Paul Zaenger

The fact that they come together easily is not very mysterious, but when they do it in the nurseries of the universe, our understanding becomes clouded.

First, most of us can find the constellation Ursa Major in the night sky. That's where you'll find the Big Dipper. For many of us, the next constellation we discover is Orion, the Hunter. To see Orion, go out shortly after sunset. In late March it will be moderately high in the southwestern sky.

Orion's brighter stars include Betelgeuse, Rigel and the easy-to-identify three stars of the belt. Orion is located directly above Earth's equator. Because of this, it is visible to people round the globe. So we all have a stake in observing it.

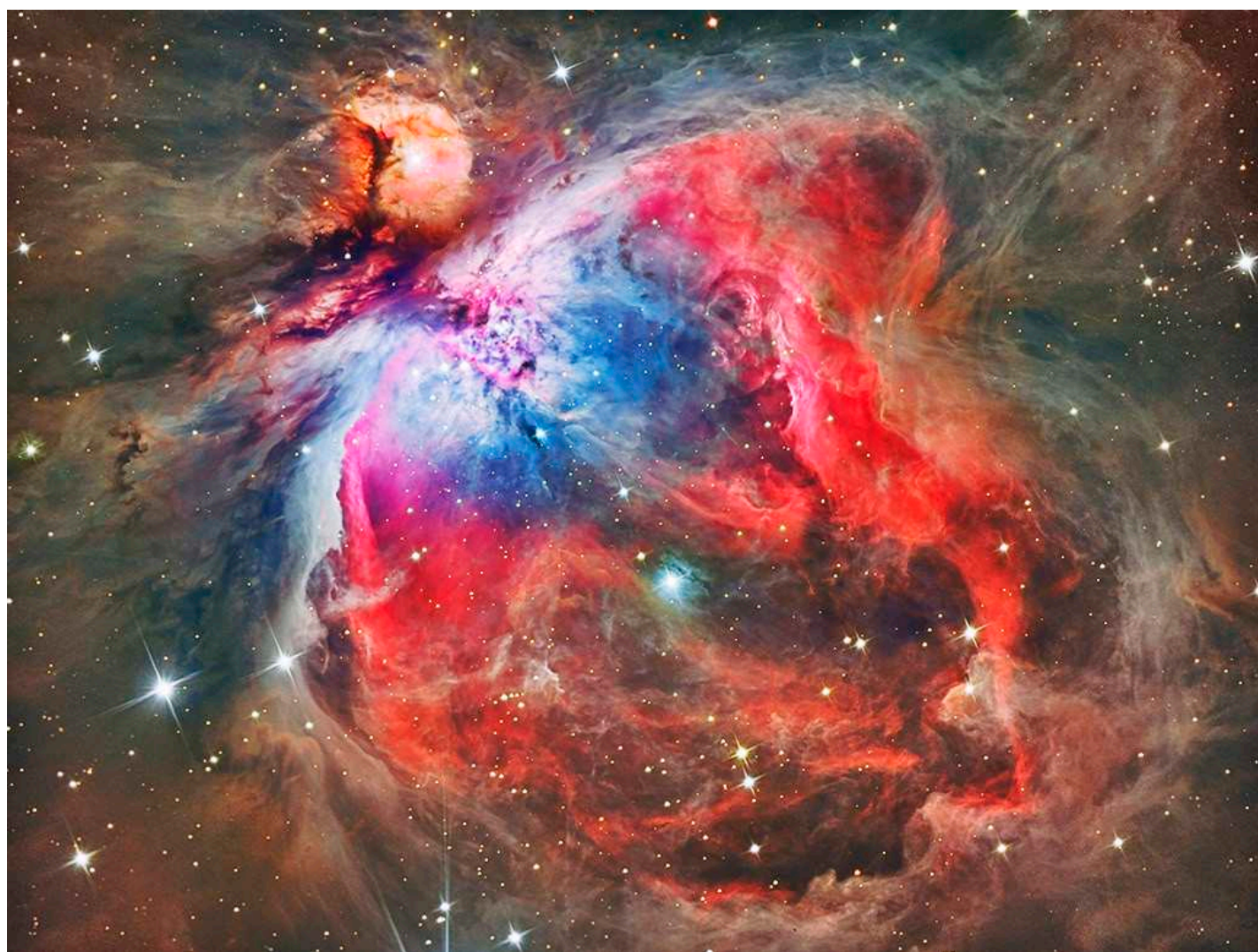
There is a particularly interesting feature, the Orion Nebula, below the easternmost "belt" star in the southeastern (or lower left) part of the "trapezoidal" outline of the constellation. The unaided eye can make out some bright objects, but a pair of binoculars or backyard telescope will give more clarity.

Nebula: the term comes to us from the Greeks (through Latin) who saw small fuzzy spots in the sky. The Greeks seem to have missed this nebula, though they noted others in the night sky.

Star-forming nebulae (multiple nebulas, pronounced NEH-byoo-lee) comprise an interstellar medium of gases and dust that gets pulled together by gravity. They are scattered throughout the universe.

The Orion Nebula is the closest star-forming nebula to us, so it was of great interest when the Hubble Space Telescope swung into operation.

The Orion Nebula is huge. It's 2,000 times the mass of the Sun, and 24 light-years across. A light-year is the distance light travels in a year's time, or 5.88 trillion miles.



The colorful hues of the Orion Nebula are not visible with the naked eye. Yet, cultures around the world developed stories related to the Orion constellation, and it's possible that the Mayan culture described the nebula within their creation story. (Courtesy NASA/JPL-Caltech/STScI)

A number of 24 seems reasonable, but when translated into miles, it's, well, astronomical at 1.41 quadrillion (1,400,000,000,000,000) miles. To compare; Pluto is 327 light minutes or merely 3.7 billion miles from the Sun.

IF YOU GO:

- It's not a long trip out to your backyard. Go on a clear night.
- The Black Canyon Astronomical Society has upcoming events. Check their website for more activities as spring and summer get closer www.blackcanyonastro-my.com

It's hard to get our minds around these numbers, but stars need room in which to germinate and evolve.

More importantly, though, is why Hubble studied this nebula. As hazy or clouded as the nebula is, we are able to learn how stars are born. Remember your chemistry class? Hydrogen, nitrogen, and oxygen form bonds easily because their arrangements are compatible.

Gravity, which must be very important to produce contraction, causes the gases to gradually collapse and combine. Elements merge to form

molecules, and the mass grows larger. Helium gets into the mix.

Given time, the "clump" strengthens, and as it does, temperatures become extreme. Nuclear fusion ignites, and a protostar is born.

This description is admittedly simplified, and details are not entirely agreed upon. Yet, we find new additions to our galaxy out of confusion and uncertainty.

Creation is ongoing, and from hazy, murky, opaque features in the universe we see the cosmos renewed. New stars are born, followed by new planets and new solar systems.

The Orion Nebula isn't the only one. Others include the Lagoon, Horsehead and Eagle Nebulae. It's believed there are thousands in the Milky Way.

Birthing a star takes time: millions of years. Given the number of nebulae, maybe it happens frequently enough, but we wouldn't be able to observe it every day.

New stars and new worlds are in the making. This all happens with some uncertainty and long periods of time. Perhaps we should be encouraged to be patient and tolerant of the unknown. Life on Earth is not charted out with a road map (or GPS in your car). And although our pace of life seems to run at the speed of light, not everything can really happen at that rate.

So, go out into your backyard after sunset. Look up to the southwest for those emblematic three stars of Orion's belt. Gaze on the fuzzy thing below it.

Let the stillness of the night remind you that worlds are born from nebulous features. We won't be able to know everything, but it's okay. Life is big and we don't have to know everything.

Paul Zaenger has been a supervisory park ranger at Black Canyon of the Gunnison National Park since 1993. Other park assignments include Mount Rushmore National Memorial and Glen Canyon National Recreation Area.

Building a shelter

An area that is often overlooked in outdoor skills is that of an emergency shelter. Don't underestimate how quickly a 70-degree day can turn into dangerous situation come nightfall.

Thirty-five degrees with wind and precipitation can quickly become life-threatening.

A shelter does not have to be complicated. You just need some protection from the elements. A shelter can also give you a place to build a fire that is protected from wind and precipitation.

I like to carry several options with me in my pack. A small tarp of a lightweight material with a piece of parachute cord or light rope will make a fine shelter.

You can run the cord between a couple trees; drape the tarp over the rope. Then anchor the corners of the tarp,

and you have a tent. You can do pretty close to the same thing with a couple space blankets.

A quickie shelter can be made with a rain poncho. Place some tall branches in a circle or a teepee shape. Then wrap the poncho around the teepee and climb in.

In a real pinch, a person can use a large, heavy-duty trash bag. I carry one of the bright orange colored ones so that it is visible to searchers as well.

Strip off your wet clothes and boots and climb in. It is waterproof and windproof and takes up very little room in a pack.

Another option is to scout around your location for a natural shelter. A rock overhang or a small cave can provide great protection.

Avoid ridges, as they tend to be windy. Stay away from low or swampy areas as well

because cold air will hover there.

My favorite emergency shelter is inside a tree well. We have many tall spruce trees with low overhanging branches on the Western Slope. These work especially well when they have snow on them. Snow is a great insulator.

The depression in the snow around a tree trunk formed by the protective canopy of the hanging branches above it is called the tree well. Reinforce this natural enclosure by propping up additional branches around the lowest ones. Dig out the accumulated snow from around the trunk of the tree.

Fill the floor area of your tree well with additional evergreen boughs. Pile them up at least eight inches, as this will insulate you from the cold ground.

It will also make a comfortable sleeping place. The temperature inside your finished tree well can be as much as forty degrees warmer than it is outside.

If you are going to plan on one of these tree wells as an emergency shelter, you will need some wood cutting tools in your pack. While a 24-inch chain saw would be nice,

weight restrictions would probably prohibit you carrying one around.

A small hatchet would make the chore of removing branches an easy one, but even a hatchet takes up a lot of pack space. Better would be a folding bow saw.

These weigh very little and can easily fit in a pack. You can also consider a cable saw. These are about the size of a wallet when coiled and weigh just a few ounces.

If you carry a multi-tool, and you should for many other reasons, most come with a small saw blade on them.

You can also find folding knives that have a small saw blade attachment in them. While these are not ideal for serious woodcraft, they will do in a survival situation.

This summer, when you are up hiking around, build a practice shelter. It will hone your skills for the day you may need to build one for real. Until next time, see you on the trail.

Mark Rackay is a freelance writer who serves as a Director for the Montrose County Sheriff's Posse. For information about the Posse call 970-252-4033 (leave a message) or email info@mcspi.org.

CPW to explain license allocations

Colorado Parks and Wildlife will present the proposed big game license allocations for the Gunnison Basin at an open house from 4:30 to 7 p.m. March 29, at the Gunnison wildlife office, 300 W. New York Ave.

Parks and Wildlife biologists and district wildlife managers will be on hand to talk about the status of deer, elk, bears, pronghorn and moose in Game Management Units 54, 55, 551, 66 and 67. Agency staff will also explain CPW's recommendations for license availability for deer and elk for the 2016 seasons and take comments from the public.

CPW staff will also be available to answer questions about applying for big game licenses for those who need assistance.

For more information, call (970) 641-7060.



Tips from the Posse

By Mark Rackay



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