



# Desert Sky Observer

**Volume 29**

*Antelope Valley Astronomy Club Newsletter*

**January 2009**

## Up-Coming Events

**January 9:** Monthly meeting\*

**January 12:** Board meeting @ Don Bryden's house

**January 24:** Dark sky star party @ Pedroza Flats

\* Monthly meetings are held at the S.A.G.E. Planetarium on the Cactus School campus in Palmdale, the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20<sup>th</sup> Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium*



## **President**

### **Don Bryden**

Happy New Year! I am truly honored to be your president and pleased to be working with such a dedicated board. I am also grateful to the outgoing board. This past year was without a doubt one of the most successful years for the AVAC ever. I would personally like to thank Terry Pedroza for his hard work for the club in 2008 as well as all the help he has given me in preparation for 2009.

With Rose Moore as Vice President, Tom Koontz returning as our Treasurer, Deb Basham as Secretary & Karole Barker once again as Director of Community Development, I feel our new board has the experience as well as the fresh enthusiasm necessary to lead the club into the New Year. And with so many experienced committee members returning, 2009 will be better than ever.

Speaking of 2009, it has been dubbed the International Year of Astronomy (IYA) by the IAU. There will be a global celebration of astronomy and its contributions to society and culture, highlighted by the 400th anniversary of the first use of an astronomical telescope by Galileo Galilei. The aim of the IYA is to stimulate worldwide interest, especially among young people, in astronomy and science under the central theme "The Universe, Yours to Discover". With over 100 countries participating, this is truly a global event.

So what can our club do for the IYA locally? For starters, how about a 100 hour-long star party in Tehachapi? The 100 Hours of Astronomy will last from Thursday, April 2nd through Sunday, April 5th and is a worldwide event with a wide range of public outreach activities including live webcasts, observing events and more taking place during a 100-hour period.

Also, get ready for our Messier Marathon in March, RTMC in May and another great trip to Mount Wilson in the fall. There's nothing quite like viewing Jupiter or M13 through a 60" scope! And if you feel the itch to get involved or have any ideas or suggestions please talk to one of the board or any of our hard working committee chairmen such as Steve Trotta, Dick Hague, Phil Evans, Deb Pedroza, Darryl Bennett, or Errol Van Horne.

Get ready for a great "Year of Astronomy" and I hope to see you all at the next meeting or out among the stars!



## Vice President

### Rose Moore

Happy New Year to everyone!

I would like to thank Debora, Terry and the previous (and continuing) board members for their involvement, dedication and hard work this past year! You have made this a great club, and I'm very proud to have been part of this organization for the last several years!

I have contacted several people regarding speaking at our club meetings this year. I am waiting for responses from several at this time. I have contacted a few people from JPL/NASA, among others.

At this time I've not had any confirmations for our upcoming year. I'll keep you posted.

If anyone has any suggestions or information that they would like to share with me in regards to obtaining speakers for our club meetings, please feel free to email or call me!

This year should be a wonderful opportunity to promote interest in astronomy, esp. to our children!

Let's get out there and support our club and communities and show the public what astronomy and our club are about!



## Director of Community Development

### Karole Barker

We had a great turn out for the Prime Desert Woodlands on Saturday, November 22nd we had 96 people, which included club members. The 1st Prime Desert Woodlands for 2009 will be on Saturday February 7th at 6:30 p.m.

We still need volunteers to bring out scopes that night. Please let me know if you can make it at PDW.

The annual Christmas Party was awesome like always. I would like to thank everyone who donated items for the silent auction and the raffle that night.

I just got confirmation as of 12/22/08 that our club is tentatively scheduled for a 1/2 night session on the 60-inch telescope for Saturday, September 19, 2009 at Mt. Wilson. I'll have more details at the January club meeting.

Clear skies.

## The Adventures of Roswell by Roswell

Greetings and salutations to my friends on planet Earth, especially my friends at the Antelope Valley Astronomy Club on behalf of my fellow space travelers from the planet Belluckleonia, or as you pronounce it, Belt Buckle!

Things have been pretty slow lately. I have actually enjoyed some quiet time by spending some time visiting family in Rachel, Nevada. We even went down to Las Vegas to watch the Las Vegas 51's play baseball. What a poor excuse for an alien they have as a mascot!

Back in November, I helped Jeff by making an appearance with his meteorite collection at the monthly club meeting. Jeff was right at home sitting in the back corner of the gymnasium...half asleep!

December 10, I joined the Astronomy Dudes at an outreach event at Crossroads School in Lancaster. What a tough crowd that was! One of the little kids even poked me in the, what do you call it? Oh, yea, the butt! Now I know why you earthlings make such a big deal about alien abductions and the research we conduct!

I didn't make it to the club Christmas party. It seems Jeff forgot to get me a ticket. What a knucklehead! Wouldn't you know, I miss the party and I get recognized! It seems that that very dear, cute and cuddly young man by the name of Terry Pedroza presented me with a certificate for having to put up with the Astronomy Dudes, specifically Jeff! (I enjoy Professor Hague; he's brilliant and fun to talk to!)

For those of you who missed the party, I thought I would share with you what my certificate said. (I may be mistaken, but I believe that I am the first *visitor* to be recognized by an astronomy club on your planet!)

*Certificate of Appreciation is awarded to Roswell. The Antelope Valley Astronomy Club would like to thank you little Astronomy Dude, for the way you delight and entertain the school children of the Antelope Valley and beyond. You make the world Universe a better place. Presented this thirteenth day of December in the year two thousand eight.*

*Signed Terry L. Pedroza, President, Antelope Valley Astronomy Club.*

Anyway, it may be a little late, but I would like to wish everyone in the AV Astronomy Club Peace on what you call earth, good will to all earthlings!!!

Na Nu, Na Nu!

Roswell, Ambassador to the AV Astronomy Club

## International Year of Astronomy

### Telescopes and Space Probes: Today's Starry Messengers

In 1609, Galileo first pointed a homemade telescope to the night sky and looked out into a vastness more spectacular than even he imagined. He noticed the surface of the Moon was not perfectly smooth, saw that Jupiter had moons of its own, and recorded that Venus had phases just like our Moon. And the universe has continued to reveal its secrets to innovative scientists with more detail ever since.

In this modern age, we use telescopes to see objects so distant that their light has traveled for millions, or even billions, of years to reach us. These are the tools that give us clues to some of humanity's biggest questions. Where do we come from? Are we alone? Where are we going? NASA collaborates with space agencies around the globe to investigate science's biggest mysteries, from planets around other stars to black holes in distant galaxies.

## 4

For the first 350 years of telescope use, scientists peered out through Earth's atmosphere, which not only blurred the image of distant objects but actually absorbed and blocked most wavelengths of light. In the last 50 years, NASA has sent telescopes above the atmosphere, out into space- to explore the universe as never seen before. Hubble (right, credit STScI) has imaged some of the very first galaxies; Fermi investigates gamma radiation from supernova remnants; Chandra finds black holes by their X-Ray emissions; and Spitzer has detected infrared light from planets around distant stars.

## Desert Sky Observer



### Want to know more?

[Telescopes From the Ground Up](#) is a fun website for the whole family to learn more about telescopes. For a beautiful history of our journey of discovery with the telescope, be sure to see the public television broadcast of "[400 Years of the Telescope](#)" and the planetarium program "[Two Small Pieces of Glass](#)" both scheduled for release in 2009

Learn more about our Solar System from [NASA](#).

Find more [activities](#) featured during IYA 2009.

See what else is planned for the [International Year of Astronomy](#).

## Member-inspired Searches by Tom Koonce

### "Barker's Beauties"

For the last couple of years I've written a monthly "Observer's Challenge", but in 2009, I'm changing it up a bit... I will offer various level searches inspired by and named after my interactions with **you** at our monthly star parties. So if you attend one or more of the AVAC observing events, you may find a search named in your honor in this column. Hopefully this won't keep you from coming out to star parties! ;-)

At the November Dark Sky star party at Saddleback Butte State Park I set up next to Karole Barker, who is working on her Messier Pin. While her husband Shane was shooting some spectacular star trails and scenes of the nice grouping of the crescent Moon with Venus and Jupiter, I was verifying Karole's Messier finds. The high level Cirrus clouds moved out shortly after sunset, and an INCREDIBLE (Wow!) bright meteor streaked across 140 degrees of sky from west to east out of the sunset leaving an ionized gas trail hanging in the sky to open the night's observing show.

The seeing conditions were an 8 at zenith, slowly degrading to 5 at the increasingly light-polluted horizon. The temperature dropped from 60° F to 50° F throughout the evening, and with the recent rains, the conditions meant we had to deal with some dewing.

### Advanced Search: Find NGC 2158.

One of the objects Karole Barker searched for was the bright "H" shaped Open cluster in Monoceros, M35. Several club members have already located and observed this object but may not have realized that the beautiful globular cluster NGC 2158 just to the south-west of it. Karole inspired this search when she asked

me to verify her find of M35 and I detected NGC 2158 in the field of view through her 6" dob. I went back to my scope, remembering that there are a few tricks involved in observing this Globular cluster that explain why it is frequently overlooked. But not this month, since it is the first of Barker's Beauties that you will search out!!

*Observing Tricks - When you observe M35, it requires **low** power to see all of it, and NGC 2158 might have passed nearly un-noticed to you as a small fuzzy ball off to the south-western side. In fact, as you move towards the southwest, you'll see a small 7-star asterism in the shape of an "X" that is right next to NGC 2158.*



*Overlooked Globular NGC 2158 (BB#1)*

This globular is a real beauty if you are using larger aperture. With a 10 inch scope at 200 power you will see this as a distinct globular. But with a 14 inch scope at 500 power, it is simply stunning as you will resolve around 200 stars. That night with an 18 inch I was able to resolve nearly double that many stars.

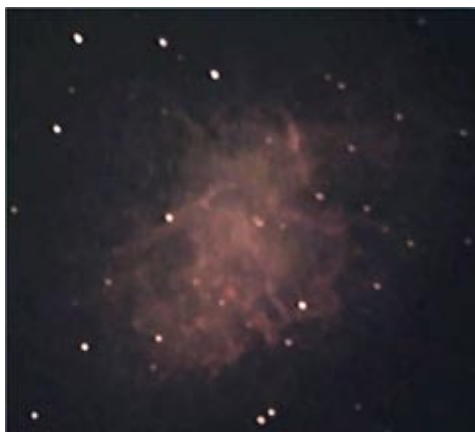
#### **Intermediate Search: Find M1, the Crab Nebula**

Moving south from M35, the supernova remnant M1 was the first comet-like object that Charles Messier logged into his famous list. If you had been around in 1054 AD, you would have witnessed this spectacular supernova (just 6,300 light years away) getting brighter than

Venus and remaining visible during the daytime. Of course that would make you older than 955 years old now, so please have a seat at our telescope and have a rest. M1 is not an easy object to see, but any telescope three inches or larger will show it as an oval shaped magnitude 8.0 nebula oriented northwest to southeast. This oval shape is now 10 light years across. Telescopes 16 inches or larger in aperture will be able to see some of the beautiful details sketched by Lord Rosse in 1844 with his 36" Leviathan telescope, which led to its nickname, the Crab Nebula.

*Observing Tricks - You'll need dark, cloudless, steady skies. A nebula filter helps improve contrast on this one. You'll also need patience to find this for the first time.*

*Below: The Crab Nebula (M1) through A 10 inch Telescope and Nebula Filter*



*Right: The Hubble's Most Detailed Picture of the Crab Nebula (BB#2)*



## Space Place

## Superstar Hide and Seek

 by Dr. Tony Phillips

It sounds like an impossible task: Take a star a hundred times larger in diameter and millions of times more luminous than the Sun and hide it in our own galaxy where the most powerful optical telescopes on Earth cannot find it.

But it is not impossible. In fact, there could be dozens to hundreds of such stars hiding in the Milky Way right now. Furiously burning their inner stores of hydrogen, these hidden superstars are like ticking bombs poised to 'go supernova' at any moment, possibly unleashing powerful gamma-ray bursts. No wonder astronomers are hunting for them.

Earlier this year, they found one.

"It's called the Peony nebula star," says Lidia Oskinova of Potsdam University in Germany. "It shines like 3.2 million suns and weighs in at about 90 solar masses."

The star lies behind a dense veil of dust near the center of the Milky Way galaxy. Starlight traveling through the dust is attenuated so much that the Peony star, at first glance, looks rather dim and ordinary. Oskinova's team set the record straight using NASA's Spitzer Space Telescope. Clouds of dust can hide a star from visible-light telescopes, but Spitzer is an infrared telescope able to penetrate the dusty gloom.

"Using data from Spitzer, along with infrared observations from the ESO's New Technology Telescope in Chile, we calculated the Peony star's true luminosity," she explains. "In the Milky Way galaxy, it is second only to another known superstar, Eta Carina, which shines like 4.7 million suns."

Oskinova believes this is just the tip of the iceberg. Theoretical models of star formation suggest that one Peony-type star is born in our galaxy every 10,000 years. Given that the lifetime of such a star is about one million years, there should be 100 of them in the Milky Way at any given moment.

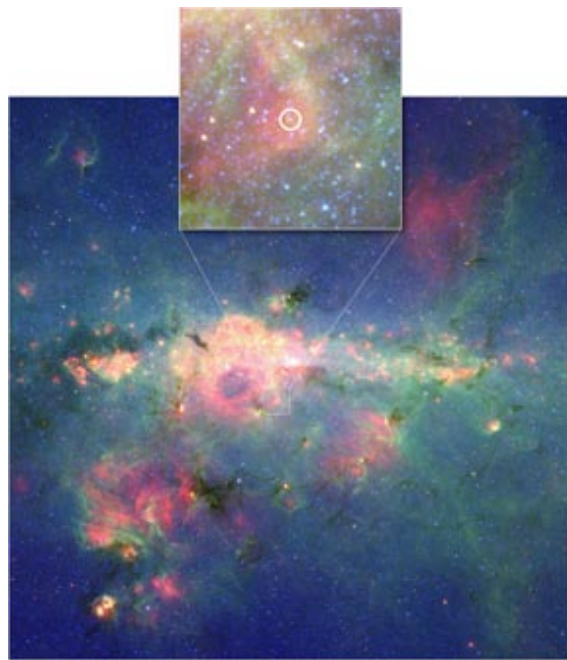
Could that be a hundred deadly gamma-ray bursts waiting to happen? Oskinova is not worried.

"There's no threat to Earth," she believes. "Gamma-ray bursts produce tightly focused jets of radiation and we would be extremely unlucky to be in the way of one. Furthermore, there don't appear to be any supermassive stars within a thousand light years of our planet."

Nevertheless, the hunt continues. Mapping and studying supermassive stars will help researchers understand the inner workings of extreme star formation and, moreover, identify stars on the brink of supernova. One day, astronomers monitoring a Peony-type star could witness with their own eyes one of the biggest explosions since the Big Bang itself.

Now *that* might be hard to hide.

Find out the latest news on discoveries using the Spitzer at [spitzer.caltech.edu](http://spitzer.caltech.edu). Kids (of all ages) can read about "Lucy's Planet Hunt" using the Spitzer Space Telescope at [spaceplace.nasa.gov/en/kids/spitzer/lucy](http://spaceplace.nasa.gov/en/kids/spitzer/lucy).



## Ask Astro-Tom

**Q:** *"I got a new 6" Newtonian telescope for Christmas on an aluminum tripod mount. I finally figured out how to mount the telescope on top and get it aligned to the North Star. The mount now tracks objects that I try to look at. The telescope came with two eyepieces marked "32 mm Plossl" and "25 mm Plossl 1 1/4". The crescent Moon and Jupiter were beautiful sights. Is there anything else good I can see with this telescope?"*

*Signed,  
"A Frustrated Beginner"*

**A:** Dear Frustrated, not to worry! You have a lot of friends who would like to help you that you just haven't met yet. They are at your local Astronomy Club. Do a Google search online for "Astronomy Clubs" and add the name of your city. If you can't find anything this way, re-do the search with your State. These searches will bring up a listing of clubs close by. The Astronomical League at: <http://www.astroleague.org/al/general/society.html> has a listing of its member astronomical societies.

First things first: Do you have a star map yet? If not, get one. The ones that I'd recommend are:

1. Orion **Deep Map 600 Folding Star Chart**, Fold-up Map featuring the 600 Best Celestial Objects for Viewing with Telescopes and Binoculars, \$17.95, at [Telescopes.com](http://Telescopes.com). This is a great first star map/
2. Sky & Telescope's **Pocket Sky Atlas**, (Spiral-bound), by Roger W. Sinnott, \$13.57, at [Amazon.com](http://Amazon.com).

This next one isn't really an atlas, but I highly recommend it if you are just learning the night sky!!

3. **Night Watch: A Practical Guide to Viewing the Universe** (Spiral-bound), by Terence Dickinson, \$23.10, at [Amazon.com](http://Amazon.com).



With a 6" Newtonian reflector, many hundreds of objects are within its grasp. I would like to show you two of my wintertime favorites, the "Double Cluster" in the constellation of Perseus, and the Belt stars and Sword of the Constellation of Orion.

The Double Cluster, seen to the left, can be easily seen in binoculars by sweeping them in a straight line between the "W" of Cassiopeia and the constellation of Perseus through the thick density of stars that lie along our galaxy's central plane, called The Milky Way. Each of the clusters has its own individual designation, NGC 884 and NGC 869. Orienting your star map correctly will

allow you to distinguish which one is which. Through your telescope, use your 32 mm low power eyepiece and you should be just able to get both clusters in one field of view. Stunning! NGC 869 has about 36 stars, many more than NGC 884, but NGC 884 has brighter stars. Take your time looking at these and you

should be able to see bluish, white, yellow and reddish stars in each. The Double Cluster lies approximately 7,600 light years away and is about 13 million years old. Now that you know where to look, take your eye away from the telescope and see if you can detect the Double Cluster with only your eyes.

Turn towards the south at about 9:00 pm this month, and you'll easily locate the constellation of Orion with its three bright Belt stars dramatically aligned diagonally in the sky. Use your star chart and your naked eyes to get the outlines of the figure of Orion the Hunter. If you look at Orion's Belt, you can see that one side is hanging lower than the other. Why? His heavy sword is hanging down from it on the eastern side. Can you see it? Now, take your telescope and follow down the sword to its middle star. You have come to a spectacular region of "cloudiness" called The Great Orion Nebula, also called M42. This area is a vast region of ongoing star formation approximately 1,600 light years away which covers 6 times the area of the full Moon! Try out each of your eyepieces on this one. A "Nebula Filter"\* is not required, but it will dramatically improve the contrast between the faint tendrils of nebulosity, allowing you to pick out details in the nebula to faint to see clearly with just your telescope and eye.

*\* Nebula Filter: 1.25" Orion Oxygen-III Nebula Telescope Filter: Extreme Filtration Gives Bolder Views of the Veil, Ring, and Other Elusive Nebulas. \$102.95 at Orion [Telescopes.com](http://Telescopes.com) (or you can pick these up used for less money at [Astromart.com](http://Astromart.com)). This is among the first accessories that I'd recommend for you to get. You won't be disappointed.*



*Left: The Constellation of Orion. Note the Belt Stars and "Sword". Above: The Great Orion Nebula*

A great list of objects for you to try to observe initially is The Messier List. There are 109 unique objects on this observing list that include nebulae, clusters, galaxies and double stars. Every single one of these can be seen through a 6 inch Newtonian, just like yours, under clear, steady dark skies. There are hundreds more of course, but accomplishing the Messier list will teach you the night sky and teach you how to be a better amateur astronomer observer.

In many ways, I'm envious of you right now. There are so many incredible wonders out there for you to see for the very first time, to cause you to gasp as you find a beautiful globular cluster swing into your field of view. Best of luck to you! Don't forget to meet up with your local astronomy club members. They'll show you hundreds of other sights through your telescope and you'll be "Frustrated" no longer!

Clear Skies!

Astro-Tom.com

## News Headlines

### **Burrowing black holes devoured first stars from within**

SWARMS of tiny black holes forged in the big bang may have killed off the universe's first stars by devouring them from within. The digested end-products could then have grown into the colossal black holes now lurking in the centers of galaxies, whose origins have long been a mystery.

<http://www.newscientist.com/article/mg20026875.600-burrowing-black-holes-devoured-first-stars-from-within.html>

### **Tycho's Supernova in Reruns**

On November 11, 1572, the Danish nobleman Tycho Brahe spotted a brilliant new star in Cassiopeia. In the following days it became brighter than Venus, shone through the blue daytime sky for two weeks, and took 16 months to fade altogether from sight.

<http://www.skyandtelescope.com/news/36062239.html>

### **Where did Venus' water go?**

Venus Express has made the first detection of an atmospheric loss process on Venus' dayside. Last year the spacecraft revealed that most of the lost atmosphere escapes from the night side. Together, these discoveries bring planetary scientists closer to understanding what happened to the water on Venus, which is suspected to have once been as abundant as on Earth.

<http://www.astronomy.com/asy/default.aspx?c=a&id=7764>

### **Dark Energy Found Stifling Growth In The Universe**

For the first time, astronomers have clearly seen the effects of "dark energy" on the most massive collapsed objects in the universe using NASA's Chandra X-ray Observatory. By tracking how dark energy has stifled the growth of galaxy clusters and combining this with previous studies, scientists have obtained the best clues yet about what dark energy is and what the destiny of the universe could be.

[http://www.spacedaily.com/reports/Dark\\_Energy\\_Found\\_Stifling\\_Growth\\_In\\_The\\_Universe\\_999.html](http://www.spacedaily.com/reports/Dark_Energy_Found_Stifling_Growth_In_The_Universe_999.html)

### **Hubble Mission Gets OK for May**

NASA announced yesterday that STS 125, the final servicing mission to the Hubble Space Telescope, is slated for launch on May 12, 2009, about seven months later than planned. For once a mission's postponement has just about everyone smiling.

<http://www.skyandtelescope.com/news/35596959.html>

### **Astrophysicists Aim To Recreate Stars In The Lab**

Astronomers are recruiting the physics laboratory to unravel the high energy processes involved in formation of stars and other critical processes within the universe. Experiments with high energy radiation and plasmas in the laboratory involving temperatures and magnetic fields over a million times greater than normally encountered on earth are also producing spin off benefits for important applications, notably in the drive towards nuclear fusion as a source of clean carbon-neutral energy.

<http://www.sciencedaily.com/releases/2008/12/081212081546.htm>

### **James Webb Telescope Mirrors Chill Out at NASA's Marshall Space Flight Center**

The first of 18 mirror segments that will fly on NASA's James Webb Space Telescope arrived this week at the Marshall Space Flight Center, Huntsville, Ala. to prepare it to meet the extreme temperatures it will encounter in space.

[http://www.nasa.gov/topics/universe/features/mirror\\_chill.html](http://www.nasa.gov/topics/universe/features/mirror_chill.html)

## Astrophoto of The Month

This month's photo was taken by Fred Ley. For those of you who don't know Fred, he has been a member of the AVAC for a long time. Even though he moved to Greece several years ago, he continues to renew his membership every year. One of the advantages of having members in areas other than Southern California is we get photos set in some interesting locations.



**Conjunction of Moon, Venus and Jupiter with temple of Hephaestus in the foreground.**

Athens, Greece Dec. 1 at 1806 local time (GMT+2). Sony DSC-S780 8.1MP camera.

## January Sky Data

**Best time for deep sky observing this month:**  
**January 20 through January 30**

**Mercury** is at its greatest elongation eastwards from the Sun on January 4th, try looking to the south-west around 5 pm. Mercury should appear like a tiny, star-like point of light low down in the twilight.

**Venus** is now a brilliant “Evening Star” in the south-western sky at dusk. At the start of January Venus is setting about 8 pm; but every evening it stays up a little later, and appears a little higher after sunset; by the end of the month, it isn’t setting until nearly 9:30 pm.

**Mars** was behind the Sun at the start of December, and throughout January it’s rising less than an hour before sunrise. So we won’t be able to see the “Red Planet” this month. We won’t be getting good views of Mars until after the summer.

The giant planet **Jupiter** is behind the Sun on January 24th. We may just get a last glimpse of it at the start of January, very low in the south-west immediately after sunset.

**Saturn** is rising in the middle of the evening, and it’s well up in the southern sky by dawn. It lies between the star Regulus in Leo, to its upper right, and the star Spica in Virgo, to its lower left; all three objects will appear similar in brightness, but Saturn shines with a steadier light than the stars. In a telescope, the disc of Saturn appears 19 arc-seconds across. The famous rings currently appear almost edge-on to Earth.

The **Quadrantid** meteor-shower produces a good display of meteors every year during the first week of January. This year the peak is expected around midday on Saturday January 3rd, so the best numbers will probably be seen in the early hours of that morning. These meteors all appear to radiate outwards from a point in the now-disused constellation of Quadrans Muralis, which lies between the bright star Vega and the “handle” of the Plough. You might hope to see one Quadrantid every minute or two, and this year there will be no interference from moonlight.

First Qtr Jan 4      Full Jan 10      Last Qtr Jan 17      New Jan 25



## Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
1/1/2009	10:00	21:55	06:59	16:52
1/5/2009	11:54	01:02	06:59	16:55
1/10/2009	16:43	06:42	06:59	16:59
1/15/2009	22:34	09:47	06:58	17:04
1/20/2009	02:37	12:26	06:56	17:09
1/25/2009	06:36	16:52	06:54	17:14
1/31/2009	09:24	22:53	06:50	17:20

## Planet Data

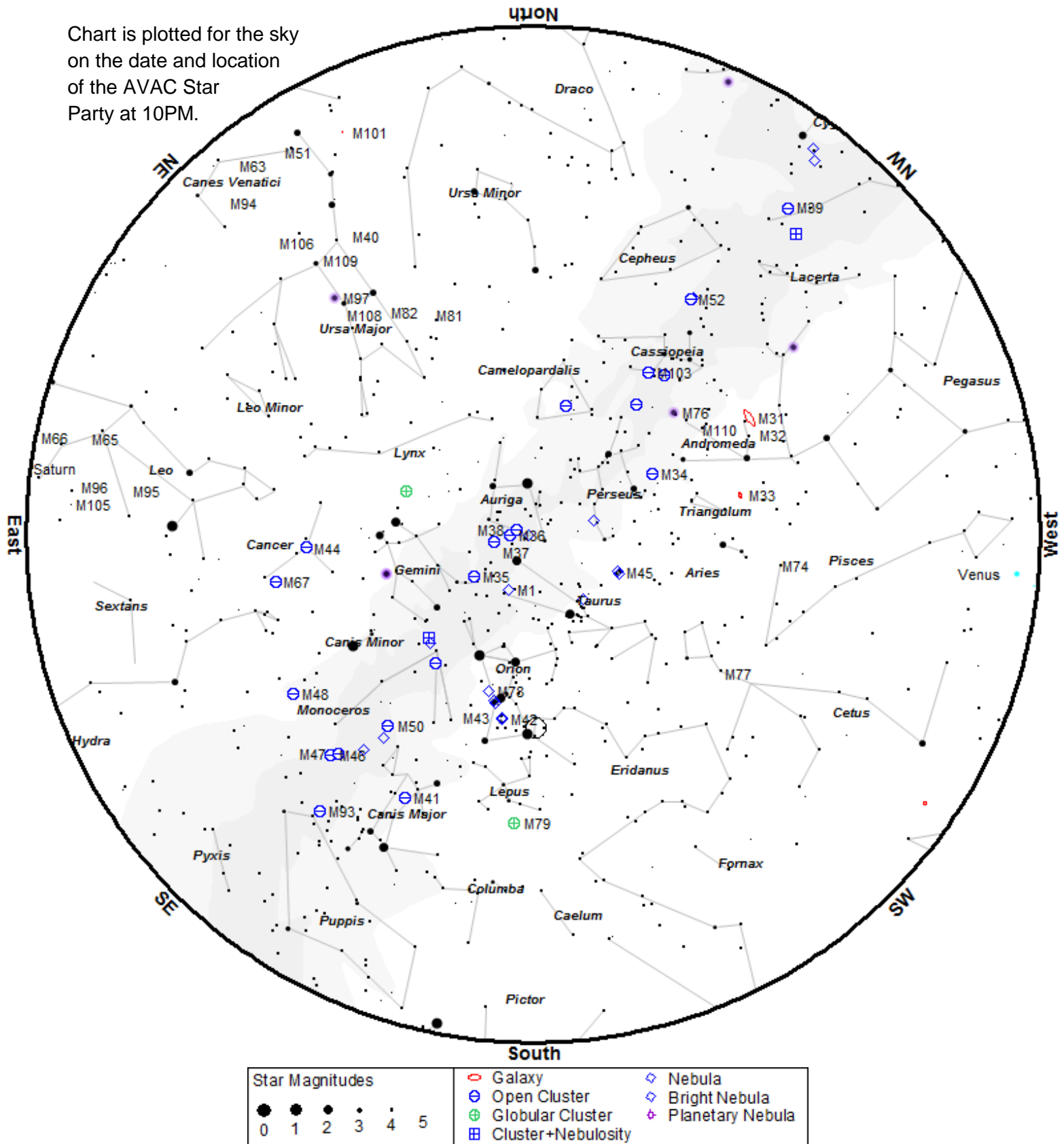
	Jan 1			
	Rise	Transit	Set	Mag
<b>Mercury</b>	08:13	13:19	18:25	-0.6
<b>Venus</b>	09:40	15:19	20:40	-4.3
<b>Mars</b>	06:28	11:25	16:22	1.3
<b>Jupiter</b>	08:04	13:12	18:20	-1.9
<b>Saturn</b>	22:17	04:39	11:01	1.1

	Jan 15			
	Rise	Transit	Set	Mag
<b>Mercury</b>	07:22	12:43	18:03	2.4
<b>Venus</b>	09:20	15:09	20:57	-4.4
<b>Mars</b>	06:16	11:16	16:15	1.3
<b>Jupiter</b>	07:20	12:30	17:41	-1.9
<b>Saturn</b>	21:21	03:44	11:06	1.0

	Jan 31			
	Rise	Transit	Set	Mag
<b>Mercury</b>	05:27	10:40	15:54	0.6
<b>Venus</b>	08:49	14:59	21:08	-4.5
<b>Mars</b>	06:00	11:05	16:11	1.3
<b>Jupiter</b>	06:30	11:43	16:56	-1.9
<b>Saturn</b>	20:15	02:38	09:02	0.9

Planet, Sun, and Moon data calculated for local time at Lancaster, CA

Chart is plotted for the sky  
on the date and location  
of the AVAC Star  
Party at 10PM.



To use the chart, go outside within an hour or so of the time listed and hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge.

## Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Star Party. The list is sorted by the best time to observe the object. The difficulty column describes how difficult it is to observe the object from the current location on a perfect night in a 6 inch Newtonian telescope.

ID	Cls	Mag	Con	RA 2000	Dec 2000	Begin	Best	End	Difficulty
M 39	Open	5.3	Cyg	21h31m48.0s	+48°26'00"	18:15	18:31	18:34	detectable
NGC 7160	Open	6.4	Cep	21h53m40.0s	+62°36'12"	18:08	18:33	19:31	obvious
NGC 7790	Open	7.2	Cas	23h58m24.0s	+61°12'30"	18:11	18:37	21:30	easy
M 31	Gal	4.3	And	00h42m44.3s	+41°16'07"	18:15	18:37	20:32	detectable
M 32	Gal	8.9	And	00h42m41.8s	+40°51'58"	18:15	18:37	20:41	detectable
M 76	PNe	10.1	Per	01h42m19.9s	+51°34'31"	18:17	18:39	20:44	difficult
M 33	Gal	6.4	Tri	01h33m50.9s	+30°39'36"	18:16	18:38	20:26	detectable
NGC 559	Open	7.4	Cas	01h29m31.0s	+63°18'24"	18:11	18:40	22:54	easy
M 103	Open	6.9	Cas	01h33m23.0s	+60°39'00"	18:09	18:40	23:03	easy
NGC 457	Open	5.1	Cas	01h19m35.0s	+58°17'12"	18:11	18:40	22:28	easy
NGC 637	Open	7.3	Cas	01h43m04.0s	+64°02'24"	18:09	18:41	23:24	easy
NGC 663	Open	6.4	Cas	01h46m09.0s	+61°14'06"	18:12	18:41	22:33	detectable
NGC 884	Open	4.4	Per	02h22m18.0s	+57°08'12"	18:09	18:43	23:44	obvious
NGC 869	Open	4.3	Per	02h19m00.0s	+57°07'42"	18:09	18:43	23:41	obvious
M 77	Gal	9.7	Cet	02h42m40.8s	-00°00'48"	18:17	18:43	20:55	detectable
NGC 957	Open	7.2	Per	02h33m21.0s	+57°33'36"	18:13	18:44	22:53	detectable
M 34	Open	5.8	Per	02h42m05.0s	+42°45'42"	18:15	18:44	21:53	detectable
NGC 1342	Open	7.2	Per	03h31m38.0s	+37°22'36"	18:15	19:07	22:38	detectable
M 45	Open	1.5	Tau	03h47m00.0s	+24°07'00"	18:11	19:22	23:40	easy
NGC 1444	Open	6.4	Per	03h49m25.0s	+52°39'30"	18:09	19:25	01:01	obvious
NGC 1502	Open	4.1	Cam	04h07m50.0s	+62°19'54"	18:06	19:39	01:44	obvious
NGC 1528	Open	6.4	Per	04h15m23.0s	+51°12'54"	18:13	19:50	00:15	detectable
Hyades	Open	0.8	Tau	04h26m54.0s	+15°52'00"	18:14	20:02	23:33	easy
NGC 1647	Open	6.2	Tau	04h45m55.0s	+19°06'54"	18:23	20:20	22:53	difficult
NGC 1664	Open	7.2	Aur	04h51m06.0s	+43°40'30"	18:13	20:27	00:46	detectable
NGC 1746	Open	6.1	Tau	05h03m50.0s	+23°46'12"	18:24	20:39	23:19	difficult
M 38	Open	6.8	Aur	05h28m40.0s	+35°50'54"	18:20	21:04	00:27	detectable
M 42	Neb	4.0	Ori	05h35m18.0s	-05°23'00"	18:20	21:10	00:20	easy
M 36	Open	6.5	Aur	05h36m18.0s	+34°08'24"	18:14	21:11	01:33	easy
M 37	Open	6.2	Aur	05h52m18.0s	+32°33'12"	18:17	21:27	01:35	easy
NGC 2129	Open	7.0	Gem	06h01m07.0s	+23°19'20"	18:13	21:36	02:00	easy
NGC 2175	Open	6.8	Ori	06h09m39.0s	+20°29'12"	18:49	21:44	00:39	detectable
M 35	Open	5.6	Gem	06h09m00.0s	+24°21'00"	18:22	21:44	01:24	detectable
NGC 2169	Open	7.0	Ori	06h08m24.0s	+13°57'54"	18:14	21:43	01:52	easy
NGC 2264	Open	4.1	Mon	06h40m58.0s	+09°53'42"	18:39	22:15	01:54	easy
M 41	Open	5.0	CMa	06h46m01.0s	-20°45'24"	20:42	22:21	23:59	detectable
NGC 2301	Open	6.3	Mon	06h51m45.0s	+00°27'36"	19:13	22:27	01:39	detectable
M 50	Open	7.2	Mon	07h02m42.0s	-08°23'00"	20:10	22:37	01:04	detectable

NGC 2353	Open	5.2	Mon	07h14m30.0s	-10°16'00"	20:01	22:49	01:37	easy
NGC 2392	PNe	8.6	Gem	07h29m10.8s	+20°54'42"	18:36	23:03	03:33	obvious
NGC 2423	Open	7.0	Pup	07h37m06.0s	-13°52'18"	20:43	23:12	01:41	detectable
M 47	Open	4.3	Pup	07h36m35.0s	-14°29'00"	20:46	23:11	01:36	easy
M 46	Open	6.6	Pup	07h41m46.0s	-14°48'36"	21:04	23:16	01:28	detectable
NGC 2439	Open	7.1	Pup	07h40m45.0s	-31°41'36"	21:20	23:15	01:09	detectable
M 93	Open	6.5	Pup	07h44m30.0s	-23°51'24"	22:20	23:19	00:18	detectable
NGC 2451	Open	3.7	Pup	07h45m23.0s	-37°57'21"	21:41	23:19	00:58	detectable
NGC 2477	Open	5.7	Pup	07h52m10.0s	-38°31'48"	21:46	23:26	01:08	detectable
NGC 2571	Open	7.4	Pup	08h18m56.0s	-29°45'00"	21:54	23:54	01:53	detectable
M 44	Open	3.9	Cnc	08h40m24.0s	+19°40'00"	20:44	00:14	03:45	detectable
IC 2395	Open	4.6	Vel	08h42m30.0s	-48°06'48"	23:04	00:17	01:29	detectable
M 81	Gal	7.8	UMa	09h55m33.1s	+69°03'56"	20:47	01:26	05:45	detectable
M 82	Gal	9.0	UMa	09h55m52.4s	+69°40'47"	20:24	01:27	05:48	detectable
NGC 3132	PNe	8.2	Vel	10h07m01.8s	-40°26'11"	00:00	01:41	03:21	easy
NGC 3132	PNe	8.2	Vel	10h07m01.8s	-40°26'11"	00:00	01:41	03:21	easy
NGC 3228	Open	6.4	Vel	10h21m22.0s	-51°43'42"	01:10	01:56	02:40	detectable
NGC 3242	PNe	8.6	Hya	10h24m46.1s	-18°38'32"	00:01	01:59	03:56	easy
M 65	Gal	10.1	Leo	11h18m55.7s	+13°05'32"	00:12	02:52	05:33	difficult
M 66	Gal	9.7	Leo	11h20m14.9s	+12°59'30"	00:12	02:54	05:34	difficult
M 106	Gal	9.1	CVn	12h18m57.6s	+47°18'13"	00:44	03:52	05:50	difficult
Col 256	Open	2.9	Com	12h25m06.0s	+26°06'00"	00:15	03:59	05:54	easy
M 84	Gal	10.1	Vir	12h25m03.9s	+12°53'12"	01:22	03:59	05:50	difficult
M 49	Gal	9.3	Vir	12h29m46.8s	+08°00'01"	01:25	04:03	05:51	difficult
M 87	Gal	9.6	Vir	12h30m49.2s	+12°23'29"	01:25	04:05	05:51	difficult
M 104	Gal	9.1	Vir	12h39m59.3s	-11°37'22"	01:50	04:13	05:52	detectable
M 94	Gal	8.7	CVn	12h50m53.1s	+41°07'12"	00:40	04:24	05:55	detectable
M 64	Gal	9.3	Com	12h56m43.8s	+21°41'00"	01:26	04:30	05:54	detectable
NGC 5195	Gal	10.5	CVn	13h29m59.6s	+47°15'58"	02:00	05:03	05:53	difficult
M 51	Gal	8.7	CVn	13h29m52.3s	+47°11'40"	01:04	05:03	05:56	detectable
M 83	Gal	7.8	Hya	13h37m00.8s	-29°51'56"	03:26	05:10	05:52	detectable
M 3	Glob	6.3	CVn	13h42m11.0s	+28°22'42"	01:53	05:13	05:55	detectable
M 5	Glob	5.7	Ser	15h18m34.0s	+02°05'00"	03:50	05:32	05:54	detectable
NGC 6543	PNe	8.3	Dra	17h58m33.4s	+66°37'59"	03:18	05:34	06:03	obvious
M 13	Glob	5.8	Her	16h41m41.0s	+36°27'36"	03:52	05:34	05:54	detectable
M 92	Glob	6.5	Her	17h17m07.0s	+43°08'12"	04:04	05:35	05:53	detectable
M 12	Glob	6.1	Oph	16h47m14.0s	-01°56'48"	04:57	05:37	05:53	detectable
M 57	PNe	9.4	Lyr	18h53m35.1s	+33°01'45"	05:31	05:39	05:55	easy

## A.V.A.C. Information

Membership in the Antelope Valley Astronomy Club is open to any individual or family.

The Club has three categories of membership.

- Family membership at \$30.00 per year.
- Individual membership at \$25.00 per year.
- Junior membership at \$15.00 per year.

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- Desert Sky Observer—monthly newsletter.
- The Reflector – the publication of the Astronomical League.
- The A.V.A.C. Membership Manual.
- To borrow club equipment, books, videos and other items.

### AVAC

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