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The logo for 'nightwatch' features the word in a large, white, lowercase, sans-serif font against a dark, starry background. A bright, multi-lined beam of light or telescope viewfinder lines extends from the top left towards the 'n'.

Newsletter of the Pomona Valley Amateur Astronomers

Amateur  
astronomers  
just get better  
looking . . .

Volume 27 Number 3

*nightwatch*

March 2007

### President's Address

The 2007 Carnegie Astronomy Lecture Series is beginning at the Huntington Library in San Marino. This is a chance to see and meet professional astronomers, as the speakers stay after the lecture to answer questions. I attended this series of lectures for the last two years and greatly enjoyed it. The lectures were informative and not so highly technical as to be difficult for the lay person to follow.

The lectures for this year will be on March 21, April 4, April 18, and May 2. The lectures are free and open to the public, but seating is limited so please arrive early. All lectures start at 7:30 p.m. and will be held in Friends' Hall. Parking is free. To access the parking lot, enter The Huntington via the Allen Avenue gate. More info at: [http://www.ociw.edu/Events/2007\\_huntington\\_lectures/](http://www.ociw.edu/Events/2007_huntington_lectures/).

There was a good turnout for the Kelso Dunes star party. The weather was great and we all had a good time. Our April star party is on the 14th at Mecca Beach on the Salton Sea. If it has been a while since you have enjoyed looking up at a dark sky come join us. I'm hoping for the same conditions as Kelso and even better attendance.

The Riverside Telescope Makers Conference is my favorite astronomy event of year. In fact it might be my favorite event of any kind. The 39th annual RTMC Astronomy Expo will take place on Friday, May 25, through Monday, May 28, 2007 (Memorial Day weekend). It will be held at YMCA Camp Oakes, five miles southeast of Big Bear

### April Speaker

Our speaker in April will be Pomona College professor of Geology Dr. Eric Grosfils. Dr. Grosfils is the recipient of the 2001 Biggs Award for Excellence in Earth Science Teaching from the Geological Society of America. At Pomona College he teaches planetary geology. Dr. Grosfils has helped students participate in several NASA-funded investigations of geological processes on Venus and Mars. These efforts have focused primarily on assessing the formation and development of volcanic and

### Star Party Sites

- (MBC) Mecca Beach Campground
- (CS) Cottonwood Springs campground, Joshua Tree Natl. Pk
- (CC) Cow Canyon Saddle, near Mount Baldy Village
- (MS) Mesquite Springs campground, Death Valley National Pk
- (CWP) Claremont Wilderness Park parking lot
- (KD) Kelso Dunes
- (WM) White Mountains ( Grandview )
- (CGT) Calico Ghost Town Campground
- (LNDRS) Riverside Astronomical Soc. Landers site

### PVAA Events Calendar

Month	Star	Star	General	Board
April	4/4(MBC)	4/23(CS)	4/6	4/26
May	5/12(CC)	22 (Ont)	5/4	5/17
June	16(CS)		6/1	6/21
July	14(WM)		6/29	7/19

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City on State Route 38 at Lake Williams Road. If at all possible you should be there. If you can't go for the whole weekend at least be there Saturday. More info at: <http://www.rtmcastronomyexpo.org/>.

Also, the organizers of RTMC are still looking volunteers to help out. If you can help contact Alex McConahay or let me know and I will put you in touch with the right people. I plan to be helping out with the Beginner's Corner Observing session.

Its Spring, the weather is getting warmer, so let's do some astronomy! I hope to see you all soon, under a sky full of stars.

Ron Hoekwater

General Meeting

Two visitors joined our meeting – Kitty, who came with a two other members and Sharon who read about our meeting in the paper. We hope they enjoyed their visit and will join us again soon.

Club member Alex McConahay reminded us that RTMC, a popular local astronomy expo held over the Memorial Day weekend, is coming up soon. You can register for the event either on line or with the forms Alex passed out. Many members attend this event every year and you can visit for one day or stay for the whole weekend. Alex can also use some more volunteers to help with the event. Please contact him if you are able to assist. Their website is [www.rtmcastronomyexpo.org](http://www.rtmcastronomyexpo.org).

The Club has several events coming up in February including a star party in Death Valley the weekend of February 17<sup>th</sup>, a trip to Griffith Observatory on February 24<sup>th</sup>, a school star party on the 26<sup>th</sup> and a public event at the Southern Branch of the Ontario Library on the 28<sup>th</sup>. I hope you were able to attend some of these events with your observing equipment, your knowledge to share, or just your eyes to watch. Coming up on Monday, March 26<sup>th</sup> is Space Science Night at Sycamore Elementary School in Upland. This is a fun evening which includes a meal of hot dogs and hamburgers, hands on science experiments, a lecture on astronomical objects, and our part – observing the sky with telescopes and binoculars. The event has been well attended in the past by students along with their parents and families.

Lee had an interesting topic for us this month. We were able to study an area of the sky few of us had seen before without even leaving our homes in the Inland Valley. Lee showed us the sky around the South Pole which includes many faint constellations. The earliest were named for birds and fish. In the 1730s, the remaining areas were filled in with man-made objects like the telescope, clock, table, octant, easel, and the air pump. I think the mythology found behind our Northern

and Southern Lights and the resources he uses to view the Aurora Borealis from his home in the desert. While the Aurora is an infrequent phenomenon at our latitude, we've all seen news items when these rare events occur here after periods of intense solar activity and were interested to learn more.

The word aurora comes from the name of the Roman Goddess of Dawn and the Greek name for the north wind, Boreas. The phenomenon was named by Galileo. The northern and southern lights are the same phenomenon and are caused by the collision of the Earth's magnetosphere with material ejected from the sun during periods of high magnetic activity. The solar material is called a coronal mass ejection and is produced during periods of high sunspot activity. The solar particles energize atoms in the Earth's atmosphere and the colors of light are emitted as the atoms return to their previous energy state. Most of the emissions are from oxygen atoms and the green and dark red colors they produce are common from auroras. Nitrogen produces the more rarely seen blue and purple displays. In addition to the dramatic colors we see in visible light, the solar particles also cause infrared, ultraviolet, and X-ray emissions which are observed from satellites orbiting the Earth.

**PVAA e-mail and hotline**

Those interested in getting information which was not received in time for the newsletter, please send your e-mail address to Ron Hoekwater at [astro.ron@juno.com](mailto:astro.ron@juno.com)

To get the latest news on star parties, club meetings, special events and astronomy happenings call **909/596-7274** or **visit our website at [www.pvaa.us](http://www.pvaa.us)**

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These particle interactions move along Earth's magnetic field lines, which converge at our north and south poles which explains why these phenomenon are most commonly seen near the polar regions since the field lines come down and touch the Earth's surface there. During periods of very high solar activity, however, the lights can be seen from lower latitudes as well.

Dennis has put together a series of instructions to increase the likelihood of successful aurora observations. The first step is to look at [www.spaceweather.com](http://www.spaceweather.com) to see when high levels of activity are observed on the sun. That will put you on alert that this material will reach the earth in a few days and have the possibility of causing high levels of interaction with our magnetosphere. Another website gives a real time picture of the position of the auroral oval, the area on the Earth where the lights can be observed. It grows during periods of high activity and occasionally comes close to our latitude. It is during these times we might want to consider a trip to a dark sky site for a chance at an observation.

While in our area we cannot see the bright auroral colors seen at higher latitudes, we can compensate somewhat by using digital cameras. Our view with the naked eye will show the aurora as grayish and cloud-like. A long exposure (20-30 seconds) will bring out the green, pink, and red colors which you can observe in almost real time by using the display on a digital camera. Dennis shared some beautiful photos of aurora from his desert home – complete with palm trees in the foreground. Dennis' website contains all the steps and links for you to monitor solar activity and predict the likelihood of displays throughout the world. I think many of us plan to keep a closer eye out the next time we travel to the north as we head back into a period of high sun-spot activity over the next few years. We may even try during some of our dark sky observing locations if we hear solar weather is coming our way. Dennis' site is [www.dennismamma.com](http://www.dennismamma.com).

Thank you for an exciting talk, Dennis, I think we all left with increased hope that the tools and tricks you shared with us may enable us to have a shot at aurora spotting ourselves.

References:

[http://en.wikipedia.org/wiki/Aurora\\_\(astronomy\)](http://en.wikipedia.org/wiki/Aurora_(astronomy))

Claire Stover

## DEEP IN THE DARK MOJAVE

PVAA's monthly star party was held at the satisfyingly dark Kelso Dunes in the now 12 year old Mojave National Preserve. Here the dunes parking area provides a site far from camping areas, and ten miles from the glowing windows of the newly restored Kelso Depot (now Park Headquarters and Museum). But there remains, although it's nearly 100 miles away, a glowing casino bulge from Las Vegas. With binoculars we could study the showy vertical beam from the Luxor pyramid.

However, the existing freedom from light pollution was good enough to let me see globular M13 with my naked eye. Ron Hoekwater's telescope let him proudly view the Double quasar in Ursa Major. This quasar, the first identified gravitationally lensed object, is 3.7 billion light years away. It's actually only one quasar, its doubling demonstrates the effects of Einstein's space-time theory. Quasars are the remote energetic cores of ancient galaxies. They must be the brightest known astronomical objects in order to be seen at such space-time distances. Highly redshifted, this quasar has an apparent magnitude of 17. It shows the conic outflow of an Elvis structure (a Martin Elvis, not the other one).

Others at the star party had to be satisfied with viewing the Antenna Galaxies or M51, the Whirlpool Galaxy, a mere 25 million light years away. Seen studying the blue Ghost Of Jupiter planetary nebula were Dennis Lumbert, Jim Bridgewater, Bob Griffin, Don Clark, and Craig Matthews. Joe Hillberg and I pointed out constellations to passing campers who asked challenging questions like, "How many stars can you see tonight?" Also present were Clair, John, and Lucy Stover -- who heard the dunes sing their growling sliding song.

In addition to admiring a closer than usual Saturn, I had come early to tour nearby Mitchell's Caverns. This four dollar tour is certainly the best public limestone cave show in Southern California. Nearby, past Wild Horse Mesa, is Hole-In-The-Wall Campground. It should be called "holes in the rocks", since it features many window-like portholes in its porous lava conglomerate rocks. There's also a pock marked canyon with a 'grab the iron rings or you fall and die' trail -- the Rings Trail. This is definitely a trail for agile rock climbers. All this is in an open range, Joshua Tree covered area called Gold Valley. Wandering cattle could be seen crossing the road to see what better fodder might be on the other side. Not having a jeep, I didn't get to travel into the volcano littered Devil's Playground. Nor did I go to the hot springs toasted Desert Studies Center hissing called Zzyzx. This is at salty Soda Dry Lake where the Mojave River, unable to reach the Colorado River, comes to a sinking end. But it has dumped enough sand to form the huge Kelso Dunes.

This brings me back to our successful star party enjoyed by all. This protected Mojave wilderness provides a dark viewing location unusual in a light polluted world. Just before dawn, in a night not as cold as I

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thought it would be, I was serenaded by the timeless songs of howling coyotes.

Lee Collins

### Messier 44

*Open Cluster M44 (NGC 2632), type 'd', in Cancer*  
**Beehive Cluster, Praesepe**



Known to Aratos 260 B.C.

This famous cluster, M44, is also called Praesepe (Latin for "manger"), or the Beehive cluster. It is also one of the objects easily visible to the naked eye, and thus known since prehistoric times. Some ancient lore is associated with it: Greeks and Romans saw this "nebula" as the manger (Greek: Phatne) associated with two asses who eat from it, Asellus Borealis, the Northern Ass (Gamma Cnc; Spectral type A1 V, mag 4.7, distance 155 ly) and Asellus Australis, the Southern Ass (Delta Cnc; Spectrum K0 III, mag 3.9, distance 155 ly). Eratosthenes reported that these were the asses on which the gods Dionysos and Silenus rode into the battle against the Titans, who were frightened by the animals' braying so that the gods won. As a reward, the asses were put in sky together with Phatne. Aratos (260 B.C.) mentioned this object as "Little Mist", Hipparchus (130 B.C.) included this object in his star catalog and called it "Little Cloud" or "Cloudy Star." Ptolemy mentions it as one of seven "nebulae" he noted in his Almagest, and describes it as "The Nebulous Mass in the Breast (of Cancer)". According to Burnham, it appeared on Johann Bayer's chart (about 1600 A.D.) as "Nubilum" ("Cloudy" Object).

Galileo has first resolved this "nebulous" object, and reported: "The nebula called Praesepe, which is not one star only, but a mass of more than 40 small stars." It was probably later seen and partly resolved in 1611 by Peiresc, the discoverer of the Orion Nebula (M42), and observed as a cluster by Simon Marius in 1612. Charles Messier added it to his catalog on March 4, 1769.

With larger telescopes, more than 200 of the 350 stars in the cluster area have been confirmed as members (by their common motion). Some others are foreground or background stars, and others may not yet have been determined.

According to the new determination by ESA's astrometric satellite Hipparcos, the cluster is 577 light years distant (previous estimates have been at 522 light

years distant (previous estimates have been at 522 light years), and its age was estimated at about 730 million years. Curiously, both this age and the direction of proper motion of M44 coincide with that of the Hyades, another famous naked-eye and longly known cluster, which however was neither included in Messier's list nor in the NGC and IC catalogs, which is currently estimated at an age of about 790 million years (older estimates had given, for both clusters in each case, an age of 400 and 660 million years). Probably these two clusters, although now separated by hundreds of light years, have a common origin in some great diffuse gaseous nebula which existed 700 to 800 million years ago. Consequently, also the stellar populations are similar, both containing red giants (M44 at least 5 of them) and some white dwarfs.

M44 also contains one peculiar blue star. Among its members, there is the eclipsing binary TX Cancri, the metal line star Epsilon Cancri, and several Delta Scuti variables of magnitudes 7-8, in an early post-main-sequence state. Look at our list of the brightest stars of M44.

The Praesaep cluster was classified by Trumpler as of class I,2,r (according to Kenneth Glyn Jones), as II,2,m by the Sky Catalog 2000, and as class II,2,r by Götz.

As mentioned in the description for the Orion Nebula M42, it is a bit unusual that Messier added the Praesepe cluster (together with the Orion Nebula M42/M43 and the Pleiades M45) to his catalog, and will perhaps stay subject to speculation

Observation data: J2000.0 epoch	
<b>Class:</b>	II,2,m
<b>Constellation:</b>	Cancer
<b>Right ascension:</b>	08 <sup>h</sup> 40.1 <sup>m</sup>
<b>Declination:</b>	19° 51'
<b>Distance:</b>	0.577 kly (177 Pc)
<b>Apparent magnitude (V):</b>	3.7
<b>Apparent dimensions (V):</b>	95'
Physical characteristics	
<b>Mass:</b>	(M <sub>☉</sub> )
<b>Radius:</b>	16 light years
<b>V<sub>HB</sub>:</b>	
<b>Estimated age:</b>	730 million years
<b>Notable features:</b>	
<b>Other designations:</b>	M44, Praesepe, NGC 2632