### Volume 23 Issue 5

# May 2003



#### NEWSLETTER OF THE ANTELOPE VALLEY ASTRONOMY CLUB, INC P.O. BOX 4595, LANCASTER, CALIFORNIA 93539-4595

The Antelope Valley Astronomy Club is a California non-profit Corporation Visit the Antelope Valley Astronomy Club website At <u>www.avac.av.org</u> The A.V.A.C. is a Sustaining Member of The Astronomical League



Up-Coming Events May 1: New Moon May 2: Mt. Wilson trip May 3: Star Party, Mt. Pinos May 9: First Quarter Moon May 9: Monthly Club Meeting\* May 15: Full Moon May 17-18: JPL Open House May 22: Last Quarter Moon May 23-25: RTMC May 30: Mt. Wilson trip, Part II May 31: King's Canyon

#### Anytime: Observe

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

## President's Report

Terry Pedroza

I would like to thank all of the members of the AVAC for the kind compliments given to me in recent months on the AVAC. I would like to pass those compliments on to the Executive Board members of the AVAC and to the dedicated members who are at- and help make- the many community events the successes that they are. This is a members club and the members make it the great club that it is. Without the dedicated Executive Board that I have the privilege of working with, I would not have the honor of hearing all of your compliments! Your Board members, webmaster, newsletter editor and all of your other committee members are doing a fantastic job at keeping the glue strong that helps to hold this Club on its path. Please give each and every one of them your compliments as you have me.

I would like to clear up a miscommunication on our newest sponsor, Woodland Hills Camera. They are giving our club members 5% discounts on Televue and Coronado. The mark up on many astronomical items is so small that other discounts are not possible. I apologize for any misunderstanding that I may have caused on the subject. Woodland Hills Camera is a great company to deal with, as I have bought many, many items from them and have never had a single complaint. When you are dealing with them, please let them know you are with the AVAC so that they may see that their sponsorship dollars are making a difference. I am trying to get a comprehensive inventory of Club property put together and need the help of our members. If you have or know of any items belonging to the AVAC that may not be on our current inventory please let me know. If you are one of the long-standing members and know about items in the past that should be around please let me know. I am trying to make sure that our club property remains with our club now and in the future. Thank you in advance for your help and support

We have many events coming up this month, please try to help out at least at one of these events and feel the joy and contentment that comes with putting a smile on the face of a child and that of their parent. You will not regret it!

#### Vice President's Report

#### Tom Koonce

I'm excited about the great speakers we'll be having at our upcoming meetings. Here's part of the lineup: Jeremy Amarant, Planetarium Director, will be giving a talk for May's club meeting. In June we'll have Gary Peterson, Planetary Geologist. You probably remember the talk he gave to us last year on the deserts of Mars. We have picked an equally fascinating topic for June's meeting. Doug Drake will be our featured speaker in July, giving a timely presentation on Mars. Then at the end of July, we'll be having our Annual Club Picnic at Crystalaire Country Club. There's a lot going on and it's all interesting and fun!

Congratulations to Matt Leone! For the second year in a row he got the most Messier objects (52 this time) at our Messier Marathon. Terry Pedroza got the most astro images during the evening, and Doug Drake got the most dust on his equipment with a close second by yours truly.

#### Twinkle, Twinkle Little Star

Step out some nights and look up. The stars are spread out above you, and on some special nights, they twinkle and shimmer. Sometimes they even appear to change color slightly from white to reddish to greenish and back. What a great night for astronomy! ... Nope.

Would you be surprised to learn that the best nights for astronomy here in the Antelope Valley are during calm nights in the early Spring or early Fall, and when it's nearly foggy? Why? Read on.

When light bends, it's called refraction. Put a spoon in a clear glass of water and you'll see an example as the spoon appears to have its handle bent in the water. You can also bend light with a prism, and even air. As light passes from one medium to another, like air to water or from dense air to less dense air, it will bend a little bit. An example familiar to all of us in the desert is the mirage effect. The less dense, hotter air very close to the ground bends (refracts) light causing the liquid-looking shimmering that we see all of the time when driving down the road on summer days.

The same sort of effect happens higher in the atmosphere. Air masses of different densities mix together when a storm front moves through or when the jet stream passes overhead, or even as a result of convection after a really hot day yields to a cooler night. This chaotic mixing causes light to bend this way and that. Light from the Sun, Moon, planets and stars pass through this swirling atmospheric soup with the resulting image to our eyes appearing as "twinkling."

"Hold on a minute," you say. You've never seen the Sun twinkle. Actually, the Sun and Moon are so big that we just don't notice the effects in our day to day lives, but if you were to focus a telescope at high power on the bright edge of the Moon, you would see the image wavering. Planets appear to twinkle on really bad observing nights, too. If Venus or Jupiter appear to be twinkling, head back inside, the air is really unstable. The twinkling effect is more noticeable for stars, and if you look closely, the dimmer stars will twinkle so much sometimes that they look like they are winking on and off. But if the bright stars look steady, and even some of the dimmer stars look steady, grab your binoculars or telescope and head on out. It'll be a good night for amateur astronomy.

Astronomers call the twinkling of stars "seeing" since it sounds more technical. An interesting point is that seeing changes throughout an evening, even from one minute to the next. After the Sun sets, the air temperature changes as the ground gives up its stored heat. This produces turbulence in the air and most of the time, bad seeing. Sometime after midnight the air typically settles down, and moments of good seeing are more common. For instance, sitting at the eyepiece looking at Jupiter you might catch glimpses of planetary detail in the north and south equatorial bands during some brief moments of really great seeing. Your chances of seeing this incredible detail goes up with the longer time you spend observing.

On nights that are a little hazy and on the verge of being foggy, the air is completely still for those conditions to exist. Dead calm air means great seeing. An appropriate quote from Philip Plait:

#### "Twinkle, twinkle, little planet, can't observe, so better can it."

Now a couple of questions for you to consider: 1) Why do astronomers want to place their telescopes way up high on top of the highest accessible mountains? 2) Can you think of a good reason why you'd want to allow the club Dobsonian telescopes to "cool down" for an hour before use? (Hint – think of the air trapped in the tube.)

#### **<u>Dir. of Community Development</u>**

#### Debora Pedroza

Hello and "Happy Spring" to everyone! Here is an update on our "Youth Exploring Astronomy" Essay Contest. We had a total of 178 essays entered with a total of 14 schools participating. That is 25 essays up over last year but the best part is, we had nine additional schools join in this year. We had schools participate from all over the Antelope Valley. Essays were received from Lancaster, Palmdale, Littlerock, Lake Elizabeth and Acton. These results clearly indicate what a difference teamwork makes. As early as last October, volunteers have joined the various committees; each one dedicated to the goal of broadening the scope of this contest and reaching more kids than ever. Here is a small tribute to all of you who gave this project your time...and you know who you are. Thank you for your **TENACITY**. The time you gave to introduce this contest was further enhanced by your follow-up phone calls and personal appearances. Thank you all for your **ENTHUSIASM**. Sharing your excitement with others has an infectious domino effect. Thank you for giving these students the **ABILITY** to share their love of science and astronomy. Without your focused attention, many kids would not have heard about the contest. Finally, thank you for the **MOTIVATION** created during this **TEAM** project. We may have inspired our next famous individual(s).

The essays are in the hands of the judges at this time and by the time you read this, the winners will have been chosen. The winners will be announced at our next club meeting on May 9<sup>th</sup>. Joining in on this celebration will be Senator Pete Knight, Mayor Jim Ledford and Mayor Frank Roberts. The dignitaries will be presenting award certificates and an inspirational message. Captain Bob Redman will give a special space demonstration and Jeremy will offer a new planetarium show. A raffle ticket will be given to all meeting attendees so come on out and share your support and love of astronomy with the kids. Thanks again and take good care.

# Doug Drake's Planet Watch



#### Mercury

Remember last month Mercury was the evening star, but this month the fast winged flyer catches the Sun on May 7th and becomes the morning star thereafter.

#### <u>Mars</u>

This month is the beginning of amateur astronomy observation of ruddy red Mars. Mars just becomes large enough, in the amateur's telescope, to discern subtle features, but the observer must be focused and persistent. Mars rises in the East at about midnight so you will have to wait until 3 or 4 o'clock in the morning to observe Mars in the Southeast. I shall begin my observation and drawings of Mars and will share them with you.

#### <u>Jupiter</u>

This is still a good time of the year to observe Jupiter. One of the most gratifying Jupiter observations is its moons. The moons eclipse each other with their shadows and occlude each other with their bodies. And, they cast their shadow on their mother planet, Jupiter. The motions of the four Galileo moons are a treasure trove for the amateur astrophysicists. If you're interested, please call me at work (661-572-5482) or at home (661-946-7751).



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# In Search of Alien Oceans

by Patrick L. Barry and Dr. Tony Phillips

A robotic submarine plunges into the dark ocean of a distant world, beaming back humanity's first views from an alien ocean. The craft's floodlights pierce the silty water, searching for the first, historic sign of extraterrestrial life.

Such a scenario may not be as fantastic as it sounds. Many scientists believe that Jupiter's moon Europa conceals a vast ocean under its icy crust. If so, heat from the moon's interior-which would keep the ocean from freezing solid- may also drive subaquatic volcanoes and hydrothermal vents. On Earth, such deep-sea vents provide chemical energy for ecosystems that thrive without sunlight, and some scientists even suggest that Earthly life first got started around these vents.

So a warm Europan ocean spotted with thermal vents could be a natural incubator for life. That's why some scientists hope that someday we will send a probe to Europa that could bore through the ice and explore the ocean below like a submarine.

To plan for such a mission, scientists would first need to put a camera in orbit around Europa. By looking for places where water has welled up to fill the spindly cracks that riddle Europa's surface, scientists can estimate where the ice is thinnest and thus easiest to bore through.

That mission scenario presents a problem, though. Europa orbits Jupiter inside the giant planet's punishing radiation belts. Continuous exposure to such high radiation would damage today's scientific cameras, making the information they gather less reliable and perhaps ruining them completely.

That's why NASA is designing a more radiation-tolerant CCD that could be used on a mapping mission to Europa. A CCD (short for "charge-coupled device") is a digital camera's chip-like core, which converts light into electric signals.

"We've seen the effects of this radiation during the Galileo mission to Jupiter," says JPL's Andy Collins, principal investigator for the Planetary Imager Project. "Galileo has orbited Jupiter for many years, dipping inside the radiation belts only for brief intervals. Even so," he says, "we've seen clear signs of damage to its instruments."

By using the hardier CCD's developed by the Planetary Imager Project, a future probe could remain in Jupiter's radiation belts for many months, gathering the maps scientists will need to finally get a peek behind Europa's icy veil. And who knows, maybe there will be something peeking back.

To learn more about the Galileo mission to the Jupiter system, visit <u>http://www.jpl.nasa.gov/galileo/</u> For children, a fun, interactive "Pixel This!" game at <u>http://spaceplace.nasa.gov/p\_imager/pixel\_this.htm</u> introduces CCDs and how a really tough one will be needed for a future mission to Europa.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



# Did you know?



On the night of March 26<sup>th</sup> of this year, a meteorite fragmented over the Midwest and pelted several states with rock fragments. For more on the story visit: http://skyandtelescope.com/news/current/article 936 1.asp

# Astronomy Links on the Web

http://pages.prodigy.net/sstrott/ (Steve Trotta's website) http://www.astro-tom.com/ (Tom Koonce's website) http://www.projectsandhobbies.com/howtolearnastronomy.htm (Getting started in Astronomy...) http://www.physics.sfasu.edu/astro/jupiter.html (everything Jupiter) http://antwrp.gsfc.nasa.gov/apod/archivepix.html (Astronomy Picture of the Day) http://www.avac.av.org/ (Hey, that's us! So go there!)



# A.V.A.C. Membership Information

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

Membership entitles you to...

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

The Desert Sky Observer is available as a separate publication to individuals at a cost of \$10.00 per year. Subscription to the Desert Sky Observer does not entitle the subscriber to membership in the Antelope Valley Astronomy Club and its associated privileges.

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Steve Trotta	(661) 269-5428 sstrott@prodigy.net

# A Look Ahead...



June Calendar June 13: Club Meeting June 21: Star Party, Prime Desert Woodlands June 28: Star Party, Red Rock Canyon

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# **Our Sponsors**

<u>Al's Vacuum and Sewing</u>: 904 West Lancaster Blvd. (661) 948-1521. Stop by and say "hey" to Matthew and Suzanne.

**<u>ONET</u>**: 1529 E. Palmdale Blvd., Suite 200. (661) 538-2028. As an Internet provider, they are kind enough to provide us with a free website.

**Darkrooms Plus:** 20th St. W. near Pep Boys in Lancaster. (661) 945-1444. They offer all club members a 10% discount on all purchases. Stop by and say "hey" to Dean or Hank.

V106.3 Radio: Please welcome our newest sponsor, who assists in advertising our Club.

Woodland Hills Camera: Please welcome our *newest* newest sponsor and see the ad above.

Thanks for your generous support!