



Newsletter of the Pomona Valley Amateur Astronomers

Equipped with his five senses, man explores the universe around him and calls the adventure Science.

Edwin Powell Hubble

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nightwatch

June 2008

President's Address

Well, it is that time again; time for my yearly trip up to White Mountain. Like Memorial Day weekend at RTMC, an observing session in the White Mountains has become an eagerly anticipated annual event. Since my first trip there in July 2000 I have tried to make at least one visit each summer. When it is clear this is a terrific observing site! The night sky suffers from very little light pollution and the faint fuzzies that I like to look at really show up beautifully.

Located east of Bishop, White Mountain is one of my two favorite observing sites. (The other is Mesquite Spring in Death Valley.) On White Mountain, Grandview Campground is the place to go. On July 5th our PVAA star party will be at Grandview. This year the price of gas is higher than ever, but I still think that it is well worth the long drive.

As I said earlier, my first experience observing at Grandview was in the year 2000. I was there in July and August. During each month I stayed four nights. Half of the nights it was cloudy (or raining), two of the nights were good, and two of the nights were great. A pair of objects stand out most in my memory from the two "great" nights during those visits. They are the Veil Nebula, which is a part of the Cygnus Loop (NGC 6992-95) and the galaxy cluster Abell 2151 in Hercules. The Veil was exquisite! I could see every section of the Cygnus Loop that is charted in *Uranometria*. They were easy to see and fine details abounded. As for Abell 2151, I could see at least a dozen galaxies simultaneously through a 16 mm wide-field eyepiece. (This eyepiece yields  Pg2

Site Legend

(CC) Cow Canyon Saddle above Mount Baldy Village
 (IA) Idyllwild Astro Camp
 (WM) White Mountains - Grandview Campground

Trip to Edwards Air Force Base

By the time you read this, we should be just a couple of days away from our tour of Edwards Air Force Base on Wednesday, June 25th. It is now too late to sign up for this tour but for those of you already scheduled to attend, here are a few reminders.


Cameras are welcome – we will be informed if there are any no-photo areas.
 Please bring along plenty of drinks, water and sunscreen.
 The desert in June is usually pretty sunny and hot.

Those interested may meet at 7 AM in the College parking lot near our General Meeting location for the drive up there so we can share cars and gas money! If you plan to drive on your own, we will be meeting a bus from the Base at their Northern entrance around 9:30 AM and our tours should end about 3 PM. Below are two links for maps to Edwards.

[http://www.npwrc.usgs.gov/
 resource/birds/chekbird/r1/edwarmap.htm](http://www.npwrc.usgs.gov/resource/birds/chekbird/r1/edwarmap.htm)
[http://www.planetware.com/
 map-of/california-edwards-air-force-base-us-ca-eaf.htm](http://www.planetware.com/map-of/california-edwards-air-force-base-us-ca-eaf.htm)

PVAA Events Calendar

Month	Star Party	General	Board
July	5(WM)	18	10
August	2(CC) 30(IA)	15	7
September	27	12	4

Pg1  a half-degree field-of-view and the brightest galaxies in the cluster are 13th magnitude.)

Last year I attempted to observe a gravitationally lensed quasar that has been called the "Einstein Cross." After much effort, I think that what I finally saw was the light of the Quasar and of the core of the lensing galaxy all jumbled together. So, "saw" might be too strong a word for my observations of the Einstein Cross, but I believe some photons from the quasar hit my retina and created an impression. I was excited to have had any perception of this amazing object. The Einstein Cross has a red shift of 1.695. Its distance is estimated at 8-9 billion light-years, making it the most distant object that I have "seen."

There is plenty to do besides observing the sky in the area around Grandview. During the daylight hours, I have as much fun as I do at night. As a few examples of things to do, I have visited Law's Railroad Museum, which is kind of a reconstructed rail depot and ghost town north of Bishop. (I've also visited some of the area's other ghost towns.) I have driven through Wyman Canyon, visiting prospectors' shacks along the way. I have walked to the top of White Mountain, 14,246 feet. (White Mountain Peak is the third highest mountain peak in California.) I've visited the Owens Valley Radio Observatory. I have seen Deep Springs College, a truly unique institution. The White Mountains are home to the Bristlecone Pines. I hiked along the forested slopes of the Schulman Grove among the world's oldest trees. Some of these trees are more than 4,000 years old. One, "Methuselah" is nearly 4,800 years old. There is never enough time to see and do everything that I'd like.

White Mountain is about a 260 mile drive, but when the conditions are right, it is the best dark sky site that I have ever observed from. Unfortunately, conditions like those occur on less than half of the summer nights. As summer is monsoon season on White Mountain, I recommend that you make your plans to spend at least three nights at the site if that is at all possible. This year I plan to continue on up to White Mountain after our PVAA tour of Edwards Air Force Flight Test Center on June 25th and stay until the star party. I hope some of you will be able to join me for at least part of that time.

Ron Hoekwater

Girl Scout Star Party

On June 7th we had our star party at the Firestone Scout Camp in Brea Canyon for the Girl Scouts of Pomona. Ron and Craig had their dobs, Frank and Ken had their 8" Mead telescopes and I had my refractor. We had 50 Girl Scouts camping for the weekend. The night was nice and clear. We had a good view of the moon, Saturn, Mars and the Big Dipper for the girls to look at. I think the moon by far was the most interesting object the girls seemed to like. They could see mountain ranges and craters. Debbie, head leader of the Scout Troop, expressed their appreciation with a gift for each of us for sharing our interest in astronomy with all of them

Jim Bridgewater

Camporee 2008

On May 31st, Club members enjoyed sharing views of the sky from a Girl Scout camp located at about 2000 feet along Highway 74 above Lake Elsinore. Members Craig Matthews, Bill Connelly, Bill Vaskis, Ron Hoekwater, and Bob Griffin braved the steep and twisty mountain roads and the last few miles of rutted dirt to join about 200 Scouts and their adult support crew for star gazing under a nice dark sky. After a barbeque chicken dinner, they set up in a wide flat field while the kids joined the ranger on a night hike. By the time the Scouts returned, it was dark enough for us to show them some planets, stars, and nebulae. Since we were setting up in the dark, Craig even spotted some unusual wildlife inside a small animal burrow which was a big hit with the kids – small bioluminescent worms. Thanks to all who journeyed to the mountains. The event was appreciated by all who attended and judging by the Club business cards I passed out the next morning, we may see a few of these Ontario and Montclair Scouts and their families at our Club events in the future.

Claire Stover

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Back to Camp Bloomfield

Our second annual *Summer Skies Star Party* at Malibu will be on Sunday, July 13th and again on Saturday, August 9th. We are doing weekend dates to make attendance by astronomers easier. We will have the moon and maybe Saturn and Jupiter depending on horizon limitations.

Contact me and I will give you details, maps etc. Thanks Again for all you do to make Project Bright Sky a huge success.

Frank Busutil

May General Meeting

Our local newspaper came through again as two visitors found us through articles in the Daily Bulletin. After Lee's entertaining and very accurate What's Up presentation where we learned in great detail about the night sky at this time of year, we were treated to a less precise but more visually impressive view of the night sky. Mark Garkow showed us the Starscapes method he uses to paint stars, nebula, and comets on home ceilings. In an unusual twist, this evening found John Stover hunting for an **indoor** dark sky so our guest could show us his paintings under the best conditions. We could only see some of the brightest stars in our Beckman Hall meeting room so during our break, John tracked down a small classroom that has acted as our emergency meeting location in the past. After our main speaker was finished, we took a stroll down the hall to the classroom, had a seat in the front row, and Mark charged up his posters with photons. The effect was easy to gauge when the lights were turned off and the Oohs and Aaahs were heard around the room. The effect was kind of 3-D and a multitude of fainter stars could be seen along with the brighter ones. The painting can either be entirely random objects or can be done to include some accurate depictions of constellations. After being exposed to light it will fluoresce for several hours. So – next time your bedroom ceiling needs a new paint job, you might consider contacting Mark so you can enjoy creating your own constellations and enjoying a view of the night sky from the comfort of your own bed. His Starscapes website is: <http://www.starscapesfx.com/fontana/>

Our main speaker for the evening was Alex McConahay. Alex is not only a member of our Club but is the President of the Riverside Astronomical Society as well (www.rivastro.org). Many of those in his Club are involved with the annual RTMC Astronomy Expo, RTMC – which used to stand for Riverside Telescope Makers Conference. It was founded in 1969 by Clifford W. Holmes. In 1975 it moved to its present location at YMCA's Camp Oakes, located near Big Bear City. The event takes place over Memorial Day weekend and our Club has heard a lot of great things about this fun this event not only from Alex but from Ron and other members of our own Club who have enjoyed attending the Expo for years themselves.

Alex also shared with us other significant contributions made by the Inland Valley and Southern California to both amateur and professional astronomy. Albert Michelson of the famous 1887 Michelson-Morley experiment, which was the first to provide evidence against the existence of a luminiferous aether, did some of his studies at Mount Wilson Observatory. Another well-known astronomer, Edwin Hubble, performed groundbreaking studies at Mount Wilson that led to the understanding that nebulae were actually other galaxies located outside of our Milky Way. Studies done here also provided the first evidence that the universe is expanding. Studies of the speed of light were conducted between Mt Wilson and the area around our own Mt. Baldy and between Mt. Wilson and Pine Cove, located near Idyllwild.

Alex shared photos from the Citrus Belt Amateur Astronomers, a Club of amateur telescope makers which formed in the 1930s and met near Riverside. Riverside Amateur Astronomers formed in 1957 around the time of intense interest in space as Sputnik launched, the space race between the Soviet Union and the United States began, and the Aerospace industry took off in Southern California.

The strongest message I received from Alex' talk, though, was about the need to preserve our history so it can be shared with other in the future. Some astronomical work done in Southern California is documented for us in pictures and news reports, since the experiments were important in expanding our knowledge of the universe and the people who did them were well known scientists – at least after their research was published. The stories of what is done on a more modest scale to further scientific knowledge are no less important. Tales of how our Club was founded, how former Club members went on to market Planispheres in science gift shops throughout the country and to head world-class observatories, our successes at public outreach during Scout star parties, library events, and Frank Busutil's outreach to the visually impaired, have all had an impact on others and ought to be remembered. These efforts are significant and add to the history of our local area and of the PVAA. RAS has done a wonderful job of compiling the activities of its Club throughout the decades using stories, news articles, and photos. We all enjoyed pictures of the lineup of amateurs and their scopes at early RAS meetings as well as the very first call to meeting from their local paper.

If helping gather local history is of interest to you or if you know some of the Club's history yourself – by all means, please contact a Club officer and we can help make sure your contributions are recorded. You don't need to be a computer expert; some old stories in an email, research at the local library, an audio tape of your recollections, even a handwritten memory will be a great start. The one thing we can always count on in this life is change and the march of time. People move away and memories are lost – preserving them for the future is a lasting gift you can give to the Club, and to the future.

Thank you so much for your visit to our Club, Alex. We received a wonderful history lesson and you have hopefully inspired us to document some of our own.

References:

http://en.wikipedia.org/wiki/Edwin_Hubble

http://rivastro.org/ras_history.html

http://en.wikipedia.org/wiki/Michelson-Morley_experiment



Claire Stover

What's Up – Trailing The Bear's Tail

Trailing the tail of Ursa Major (Big Bear), which is also the handle of the Big Dipper, you can “arc to Arcturus” that bright star of northern skies. Arcturus means bear guardian, its name is related to the word Arctic (from Arctos, the bear). It's a giant red star, 25 times bigger than our Sun. Just north is Izar, a beautiful color double. Both stars shine in the constellation Bootes. A shouting herdsman is what Bootes means. He is also called the bear follower, as he rises after the Big Bear.

This reminds us that in ancient days herdsman stayed out under the stars with their flocks watching for marauding bears from northern lands. In England, the Big Bear or Big Dipper is often called the plow. Then Bootes becomes the inventor of the plow, watching his invention rise before him. People have always seen stars and constellations as representing those things they valued most.

Orange-red Arcturus had a publicized moment of fame when its light was used to trigger the opening of the 1933 Chicago World's Fair. It had been 36 years since the previous Chicago World's Fair and the light from Arcturus takes 36.7 light years to reach Earth.

Arcturus is the fourth brightest star. The brightest is Sirius (the Dog Star). It's followed by the second brightest star, Canopus, which just peeps above Southern California's horizon. Even farther south (invisible here) is Alpha Centauri, the third brightest star and closest (4.3 light years) to Earth. Some think Arcturus should take third place because Alpha Centauri shines with a combined brightness of two twin stars. The system even has a third red dwarf star called Proxima because it's more proximate to us. At present it's the closest star to our Sun.

If we continue the Bear's arcing tail (or Dipper's handle) south beyond Arcturus, we reach another giant star, Spica (a spike of wheat seeds). This great star, some 2,300 times brighter than our sun, glows in Virgo (Virgin), the goddess of fertility. So the herdsman and the fertile virgin appear in Spring when it's time to start breeding stock and sowing seeds of wheat and other crops. A timely message from the sky gods.

But other smaller, fainter constellations trail the Big Bear's tail. There is the half circle of Corona Borealis (Northern Crown). This was seen by some Indian tribes as the curve of a tribal council meeting with the chief seated in the middle position of the star Gemma. Also trailing the tail is Canes Venatici (Hunting Dogs) who run alongside the herdsman. The two hunting dogs of Canes Venatici were established in the 17th century, mainly by English chart makers. The constellation's brightest star is called Cor Caroli (Charles' heart). This is a now-dated reference to the beheaded English King, Charles I. Nothing dates faster than a politically motivated star name.

The faintest of all constellations that rise trailing the Big Bear is Coma Berenices (Berenices' Hair). It's just a glowing tangle of open star clusters and distant galaxies. In legend, Queen Berenices was a queen of Egypt whose husband was fighting in a Middle Eastern war which never seemed to end. She cut off her long hair and put it in the temple as an offering for his safe return. In the night it vanished and was immortalized, by star gods, as a fuzzy constellation. The legend concludes that uplifted by seeing Berenice's hair in the sky her husband returned safely home.

For present-day astronomers, Coma Berenices is the location of the North Pole of our Milky Way Galaxy where we can clearly gaze out into a Realm Of The Galaxies.

Here in an infinity of space lie vast groupings of other star-filled galaxies. Centered around the Coma-Virgo Galaxy super cluster are some 40,000 galaxies, 60 to 300 million light years distant in both space and time. For looking into deep space is also looking back millions of years into time, as light travels at a mere 186,000 miles per second

As a side note, both the experiments determining both the speed of light and the true nature of galaxies as being outside our own Milky Way Galaxy were resolved at Mt. Wilson Observatory in our local San Gabriel Mountains. The theory of a multitude of remote galaxy systems was established by Edwin Hubble in 1925. However, the term Milky Way Galaxy is an old one, having first appeared in print in a 1380 work by Geoffrey Chaucer.

Of course, amateur astronomers with modest telescopes can see only fifty or more of the brighter galaxies that trail the Big Bear's tail. Famous for their appearance on book covers and calendar pages are the Whirlpool (M51), the Pinwheel (M101), the Sunflower (M63), the Blackeye (M64), and the edge-on Sombrero (M104). Many are conveniently grouped together like Bode's galaxy (M81) and its companion the Cigar Galaxy (M82) with its mysterious “cigar band.” As for galaxies out beyond the power of backyard telescopes, their vast receding clusters receive only ever lengthening catalog numbers

What gravitational force causes galaxies to cluster into groups is not really known. Scientists invoke the existence of “dark matter” to describe this unknown force. This shows how much we don't know about the Universe. Across the entire sky lie billions of galaxies, each containing billions of stars. That's certainly adds up to a lot of stars.

Which brings up the question of the existence of life in the universe. Are we alone? The odds seems to say no. But how common is life? How close is our nearest alien neighbor? Of course, most life forms (like my cats) probably have no interest in interstellar communication, let alone travel. It's even been suggested that once life reaches a technical level capable of sending interstellar messages they are also very capable of destroying themselves. Humans have been sending radio messages into space for only a few generations and overpopulation and pollution already threaten our future.

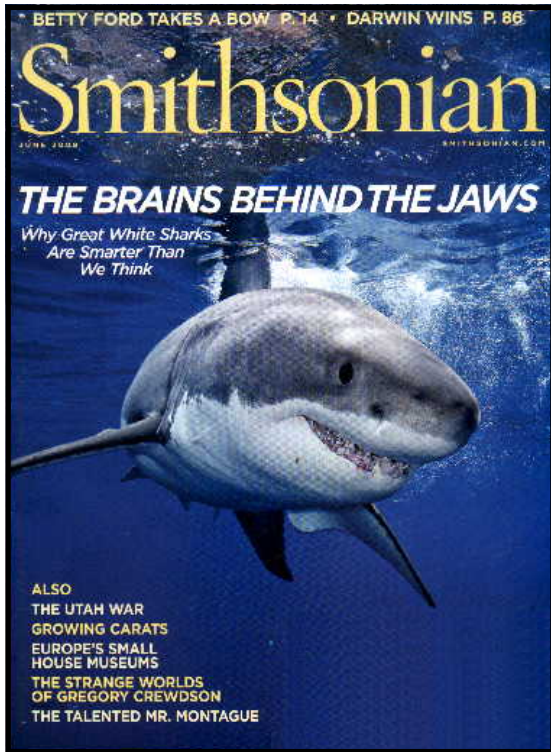
So, while you still can, go outside and look up at the splendid stars and galaxies that trail the Big Bear's tail.

Lee Collins

Local Astronomer Get Quoted

Our very own Alex McConahay of RAS, RTMC and PVAA fame was quoted in the June issue of Smithsonian. Maybe someone can lure a journalist from the east out to California and visit RTMC next year. Having weathered through this years twenty year cycle, we look forward to a record setting conference next year.

See you at PATS - John Stover



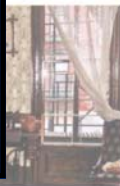
Work Ahead

GLACIER, MONTANA A mere 18 feet wide in stretches, the scenic 50-mile Going-to-the-Sun Road traversing Glacier National Park's cliffs and switchbacks, making a drive as white-knuckled as it is beautiful.

Repairs to the road this summer, park officials will provide shuttles in large-windowed shuttle buses to ease congestion. The park's verdant valley shimmers 3,000 feet below. Waterfalls cascade down rocky parapets. Snowcapped Rockies pierce the sky. There are many reasons aplenty to relish the delays. **BY BOB WYSS**



House



NEW YORK CITY It stands on what was once the most crowded block in the densely populated Lower East Side. Built in 1863, the five-story, 20-unit tenement at 97 Orchard Street had housed 7,000 immigrants by the time it closed in 1935. Twenty years ago a nonprofit group turned it into the Lower East Side Tenement Museum, restoring six apartments to reflect the lives of former residents. It's 1918 in the apartment of the Rogarshevskys, from Lithuania. Abraham, a presser in a garment factory, has just died and a meal of bialys and hard-boiled eggs is on the table.

Nathalie Gumpertz, from Germany, lived here in 1875. Her sewing machine sits in the parlor. She makes dresses to support her three children since her husband disappeared on his way to his job at a shoe factory. In 2001, Nathalie's great-great-grandson was lost in the World Trade Center attack. A year later, his widow visited the apartment, contemplating the husbands who never returned. **BY MARIANA GOSNELL**

SPRINGFIELD, VERMONT A grassy hilltop is home to Stellafane, the nation's oldest convention of amateur telescope makers. Stargazers have gathered here since 1923, bringing their homemade inventions to view the dark sky—and show off. The motley display of ingenuity includes no-frills contraptions fashioned from plywood and copper tubing as well as elegant polished mahogany scopes with painstakingly hand-ground mirrors. One scope last year resembled a three-foot wooden salad bowl with a superstructure of black tubing. Another was so large it came with a stepladder. At this year's annual festival, July 31 to August 3, judges will award prizes for craftsmanship and optical performance. Workshops and swap meets round out the festivities. Stellafane (Latin for shrine to the stars) dates to 1920, when Russell Porter, an arctic explorer, taught 15 men and one woman to hand-grind their own mirrors at a local factory, sparking a build-your-own scope craze. "The amateur movement started here," says Alex McConahay, from California. "It's like going to St. Peter's in Rome." **BY CHRIS GRANSTROM**

Celestial Mechanics

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Photos by Sherry and Raul Martinez.
at Joshua Tree National Park
with Project Bright Sky



Photos by Frank Busutil.
at Summer Skies Star Party 2007
Camp Bloomfield, Malibu



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