



AU AstroNews

The Newsletter of the Astronomical Unit

April 2014

Sponsored by the Santa Barbara Museum of Natural History



SB Co. Science Fair participant Daniela Castleberg displays her prize-winning exhibit. Photo: R. Gutierrez.

OUR APRIL MEETING

Our April 4th speaker will be David Yale who will explain his involvement with the Gravity Probe B project. Gravity Probe B is a satellite-based mission that was launched in 2004 to test a number of very sensitive features predicted by Einstein's General Theory of Relativity. David's talk should be out of this world!

OUTREACH SUMMARY

Since the last newsletter, AU volunteers Andy Allen, Angela Bates, Bill Clausen, Tim Crawford, Mike Farris, Sam Goodwin, Art Harris, Jürgen Hilmer, Chris Larson, Sergio Lopez, Pat & Chuck McPartlin, Janet & Martin Meza, Bruce Murdock, Max Neufeldt, Edgar Ocampo, Javier Rivera & the Quasars, Colin Taylor, Tom Totton, Chris Ulivo, and Tom Whittemore showed cool stuff in the sky to 1014 people.

APRIL EVENTS

It's April, and it's getting dark later, but don't hesitate to join us. Here are the AU events scheduled so far. To get the latest information on schedules, or directions, just contact Chuck at 964-8201 or macpuzl@west.net.

THURSDAY, APRIL 3, SETUP 4:30 PM

Telescopes for Science Night (5:30-7:30) at McKinley School, 350 Loma Alta Drive, Santa Barbara. We set up on their front lawn.

FRIDAY, APRIL 4, 7 PM

Monthly AU meeting in Farrand Hall at SBMNH. Start with a short planetarium show, then hear about Gravity Probe B.

SATURDAY, APRIL 5, SETUP 7 PM

Telescopes for Bacara Resort and Spa. We set up on their Miró Lawn. Contact Chuck for access if you haven't come before.

TUESDAY, APRIL 8, SETUP 7 PM

Telescope Tuesday at the Camino Real Marketplace in Goleta, in the plaza by the theater.

WEDNESDAY, APRIL 9, SETUP 7 PM

Telescopes for the Santa Barbara Newcomers Club Graduates (8-10) at the Westmont Observatory.

THURSDAY, APRIL 10, SETUP 5 PM

Telescopes for Science Night (6-8) at Montessori Center School in Goleta. They're in the back of the school lot across Fairview from the Goleta Public Library.

SATURDAY, APRIL 12, 5 PM

AU planning meeting in the classroom outside Javier's office at SBMNH.

SATURDAY, APRIL 12, 7:30 PM TO 10 PM

Monthly Public Star Party at the Santa Barbara Museum of Natural History.

MONDAY/TUESDAY, APRIL 14/15, 10 PM TO 2 AM

View the Total Lunar Eclipse at the Westmont Observatory.

THURSDAY, APRIL 17, SETUP 5 PM

Telescopes for Science Night (6-8) at Aliso School, 4545 Carpinteria Avenue in Carpinteria.

FRIDAY, APRIL 18, SETUP 7 PM

Monthly Public Telescope Night at the Westmont observatory, next to the baseball field.

SATURDAY, APRIL 19, SETUP 7 PM

Telescopes for Bacara Resort and Spa. We set up on their Miró Lawn.

THURSDAY, APRIL 24, SETUP 7:15 PM

Telescopes for Astronomy Night (8-10) at Peabody Elementary School, at 3018 Calle Noguera in Santa Barbara.

SATURDAY, APRIL 26, SETUP 7 PM

Telescopes for Bacara Resort and Spa. We set up on their Miró Lawn.

SO YOU WANT TO PHOTOGRAPH THE STARS?

Dr. Bob Richard.

...and all those other wonders out there. Well, you can, and it is easier than you may think. Most of us were probably first drawn to our hobby through those amazing visual images we first saw through our own or someone else's telescope. Certainly that is the way it started for me those many years ago when I was in seventh grade at Santa Barbara Junior High School. But I was also aware, as we are today, of the many fine photographs circulating in books and magazines (of course back then they were all black and white and done on film). As my telescopes grew in size through high school, I began to wonder, could I also take photographs, at least of the moon and planets? Having my own photographs taken through my own telescope greatly intrigued me. I didn't get much support for this idea. My older mentor, Leland Copeland (a distinguished amateur of the time and the owner of Copeland's Bookstore located where the Art Museum store is now) flatly told me that if I wanted to see pictures there were plenty of good ones in books, and he felt my efforts would be a waste of time. Obviously, his interest in amateur astrophotography was minimal.

Nevertheless, I moved ahead. This brings me to the first lesson I learned about photographing the stars: determination is essential; without it discouragement can become overwhelming. So what happened in those early days? Through a home built 6-inch Newtonian reflector I ended up doing a series of afocal (camera lens to eyepiece

lens) images of the moon on Kodak Tri-X film. The developing and printing was managed by a friend who was attending Brooks. My photos as well as the telescope were entered in Santa Barbara High School's first science fair and won top honors. No one was more surprised than I! From this entire experience I gained two more valuable lessons about astrophotography: it takes patience (for every good photo there are many duds), and there is no substitute for hands on experimentation (in other words, to use the phrase made so popular by Nike, "just go do it!")

We are blessed in our club to have an increasing number of members actively photographing the stars or else very interested in giving it a try. Furthermore, Paul Winn's new Forum addition to our website has a section dealing specifically with astrophotography with the opportunity to share photos and technical information for all levels of expertise, a major improvement over what existed before. Thanks, Paul!

The purpose of this column is to share in the Newsletter some very basic, introductory information that will encourage many of you out there to begin "shooting the stars." To give you an idea of how astrophotography can evolve through commitment, patience, hands-on experience, and upgraded camera and software, I have included two images of Jupiter. Both were taken through the primary focus of my 11-inch Celestron SCT but the outcomes are radically different. The first one is from March, 2003, and the second one is from January of this year.





From the Workshop...

Tim Crawford

In the last essay, I discussed the focal length and how it is up to you to choose which focal length is right for you. I touched upon the relation between f/ratio, focal length and diameter of the scope's objective. I realize most know the idea of focal length but I am using it as a springboard to less obvious conditions within the optical system. One is that the shorter the focal length, the deeper the curve of the scope's mirror. This depth of the curve of your main objective mirror is called the sagitta. This depth can be found by using a simplified

equation $s = \frac{r^2}{2R}$. Here, **r** is the radius of the mirror and **R** is the mirror's radius of curvature. The radius of curvature is twice the focal length. Imagine this: you are holding a lit candle and standing in the center of a glass sphere whose inside surface is a mirror. If wherever you look at the image of the reflection of the candle it is in focus, you are standing at the radius of curvature of the sphere. Now, imagine that any part of this sphere is your mirror. If you place a straight edge over the mirror, you can readily see the curve of your mirror's surface. Already armed with your equation, you can determine the depth of this curve if you know its focal length. Not only can you find this depth at the sphere's center but also at any of the points of the mirror's surface from the center to the edge of the mirror. These points are at different radii. Therefore, it can be said there are an infinite number of "nested spheres" within your mirror's

surface. This will become important when we test our mirror. You will discover this in future essays of From the Workshop. In my next essay, I will clarify what takes place when you go to the eyepiece and see images in a typical reflecting telescope.

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April 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3 MCKINLEY SCHOOL 4:30PM	4 SBAU GENERAL MEETING 7PM	5 BACARA RESORT 7PM
6	7 	8 CAMINO REAL MARKETPLACE 7PM	9 NEWCOMERS CLUB AT WESTMONT 7PM	10 MONTESSORI CENTER SCHOOL 5PM	11	12 PLANNING MEETING 5PM STAR PARTY 7:30-10PM SBMNH
13	14 TOTAL LUNAR ECLIPSE AT WESTMONT OBSERVATORY 10:30PM-2AM	15 	16	17 ALISO SCHOOL 5PM	18 WESTMONT COLLEGE 7PM	19 BACARA RESORT 7PM
20	21	22 	23	24 PEABODY ELEMENTARY 7:15PM	25	26 BACARA RESORT 7PM
27	28 	29	30			

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