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Amateur
astronomers
just get better
looking . . .

nightwatch

Newsletter of the Pomona Valley Amateur Astronomers

Volume 25 Number 6 ***nightwatch*** **June 2005**

As usual, the June General Meeting will begin at 7:30 p.m. in Galileo Hall on the campus of Harvey Mudd College

President's Address

For the amateur astronomer, there are objects of great visual beauty. Two examples of objects that I would place in this category are the Orion Nebula and the Cygnus Loop. And then there are objects of great intellectual beauty. It is this second type of object that I want to write about in this month's President's Message.

One of my most exciting observing experiences was back in January of 2002 at Cottonwood Spring. At that time Bob Akers and I saw "QSO 0957+561A/B" the famous "Double Quasar" in the constellation Ursa Major. This quasar was at first believed to be two separate objects but, the Double Quasar is now known to be one object split into twin images of itself by the gravitational lensing of an enormous elliptical galaxy, 3 billion light years distant from Earth. The lensing galaxy was completely invisible to us, but the quasar was just possible to see. "QSO 0957+561A/B" with a red shift of 1.41, is believed to be between 6 and 7 billion light years away. At 17th magnitude this was not an easy object to see even in my 22-inch scope, but it was one of the most satisfying objects that I have observed.

This month, again out at Cottonwood, I observed my second quasar. This second quasar was much easier to see. In fact it is a little brighter than Pluto, which is a mere 6 billion miles away. At 13th magnitude, 3C273 is the brightest quasar in the sky. Although it is a much easier object to observe, it is none the less an object, which I have wanted to see for several years.

The 3 in 3C273 is the third Cambridge Catalogue of radio sources. It is the 273rd object in that catalogue. In addition to being the brightest it is also one of closest of all quasars (which will give you some idea of how far away all of these objects are). It has a red shift of .16, so that this object appears to recede from us at 16 % of the speed of light, or about 48,000 km/sec. (This direct correspondence between red shift and recessional velocity holds true only for

Additional Star Party on July 30
Location: Cow Canyon Saddle

Star Party Sites

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

PVAA Events Calendar

Month	Star Party	Star Party	General Meeting	Board Meeting
June	CS	4	24	16
July	WM	9	22	14
August	WM	6	19	11
Sept	LNDRS	1	16	8

very small red shifts. i.e. a red shift of 3.0 does not correspond to a velocity of 300% the speed of light.) Assuming a Hubble constant of 75 km/s/mpc this recession velocity corresponds to a distance of about 640 Mpc, or about 2 billion light years. A Hubble constant of 60 km/s/mpc would correspond to a distance of 2.6 billion light years). At 2 billion light years, light fades by 38.9 magnitudes, so its average apparent magnitude of 12.8 corresponds to an enormous absolute brightness of -26.1 magnitudes visually. From a distance f 32.6 light years, this object would shine in the sky about as brightly as our sun. This quasar's luminosity is, therefore, about 2 trillion times that of our sun, and about 100 times that of the total light of average giant galaxies like our Milky Way!

Even at such a great distance, because of its enormous intrinsic brightness, 3C273 is accessible in modestly sized scopes. At the June star party, we saw it in a 16 inch Dobsonian and even in a 4-inch refractor. Even though these objects appear as tiny pinpricks of light, I feel that knowing what they are makes them terribly exciting objects to observe.

There are but a few activities that allow one to see things, which are billions of years old. Only one, astronomy, allows one to see things that are more than 5 billion years old. The Universe exists on an unimaginably vast scale. It is so incredibly full of wonders. It is the home of both exquisite subtlety and awe-inspiring power. This is why I marvel at the night sky. This is why I drive hundreds of miles out of town to observe. This is why I am an amateur astronomer.

Ron Hoekwater

The Globulars of Summer

The warm evenings in June bring into view some of the sky's best globular clusters. When most observers in the northern hemisphere think of globular clusters they think of Hercules and M13. M13 is one of the premier telescopic objects in the sky. It was first mentioned in 1715 by Halley who discovered it the previous year. Charles Messier, describing it in 1764, said it appeared as a round "nebula containing no stars". Fortunately we have much better optics at our disposal and M13 can be resolved into hundreds of stars. Under a dark sky, M13 can be glimpsed with the naked eye as a 5.9 magnitude fuzzy star located in the "keystone" of Hercules, about a third of the way along a line drawn from Eta to Zeta. M13 ranks among the most spectacular objects in the sky despite it's huge distance of 24,000 light years. Astronomers estimate M13 contains nearly a million stars within a sphere 100 light years across, although some of the outer wanderers extend it out to nearly 200 light years across. Although it appears incredibly crowded, calculations estimate that the density is no greater than about one star per cubic light year.

Although M13 gets most of the attention, Hercules contains two other very nice globulars. M92 is a beautiful rich globular cluster which in almost any other constellation would be a major show object, but in Hercules it is overshadowed by M13. M92 is almost as big and as rich as M13 but lies 2000 light years farther away so it appears fainter at magnitude 6.5. NGC 6229, a much more distant globular at 100,000 light years, rounds out the globular clusters of Hercules. It shines at magnitude 9.4.

There are many other examples of spectacular globulars in the summer constellations. M5 in Serpens, M3 in Canes Venatici, and M22 in Sagittarius are some of the finest after M13. And then, if you are blessed with a low southern horizon, there is the greatest of the globular star clusters, the magnificent Omega Centauri. It is one of the nearest to earth at 17,000 light years. Although usually considered a show piece of the southern sky, it is possible to see Omega Centauri from the southern United States. It was observed by many of the RAS members that attended last June's star party at Mt. Laguna just above the horizon after sunset. It

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should also be visible from Joshua Tree. Whether you have seen these objects for the first time or the hundredth, they are inspiring each time.

Alan Whang

Report on the May meeting

Claire Stover was not at the meeting, so I will attempt to fill in this month.

What's up

Lee Collins spoke about the summer star clusters visible in the sky at this time of the year. He provided us with a star chart for the month. showing the deep sky objects. M13 in Hercules is a most spectacular star cluster. It looks like salt sprinkled on black paper. Easily visible in a small scope at a dark sky site. There are many globular star clusters visible in the summer sky.

Other objects are also available, like M57, the Ring Nebula in Lyra and M51, the whirlpool galaxy. near the big dipper.

Speaker of the evening

Our speaker this month was Russ Tantum representing Meade telescopes. He spoke about Meade's new Deepsky Imager, new Meade's Ritchey Chretien RCX series of telescopes and their new cordless control paddle.

The new telescopes now have a wireless controller, so if you are tracking an object with your computer, you are no longer physically tied to the telescope. Each one is coded like your garage door opener, so that a nearby observer with a similar set-up will not control your scope.

The RCX telescopes have some unique features. Collimation is done via the control paddle. There are three motors near the corrector plate that control the position of the secondary mirror. The focus knob is gone from the telescope. This is also done with the control paddle, running the three motors at the same time.

The Deep sky Imager has a Sony Super HAD color CCD. It runs off your computer's USB port. It does not have thermoelectric cooling, but with many short exposures stacked by your computer, hot pixels are

After the meeting, Russ set up a 12 inch RCX telescope on the campus. It was imppresive to see the scope align itself, and the view of Jupiter was very clear.

There were a bunch of students burning their school papers and playing loud music nearby. They asked us for a request and within a few minutes the STAR WARS theme was heard.

Ray Magdziarz

June Star Party

The June star party at Cottonwood Spring turned out to be a multi-club affair. When I arrived, practically the entire eastside of the campground's loop B was occupied by amateur astronomers. From PVAA Bob Brawn was there. Mike Hardin and his son Bennet were out for their first PVAA star party. There were several representatives from the San Bernardino club, a father and daughter from Torrance, and even someone all the way from Colorado. Other areas may have been represented, but those are the ones that I know were there. I ended up sharing a campsite with the pair from Torrance. It is great observing while surrounded by other amateur astronomers.

Soon after the sun set Jupiter, Saturn, and Venus became visible. A little while later the stars started to appear. By about 9:30 it was dark enough to start looking for the deep sky stuff.

One of the earlier treats of the night was Omega Centauri. I read recently that it is now believed Omega Centauri may not be a globular cluster after all. It may be the central part of a small galaxy from which all the other stars have been stripped away by the Milky Way. This belief is partly based on the fact that not all of the stars in Omega Centauri are old. Normally all the stars in a globular cluster would have formed together and all would be very old. Omega Centauri has stars of differing ages.

A number of other fine globular clusters were also out over the course of the night. M 13 in Hercules, M 4 in Scorpius, and M 22 in Sagittarius all received their share of attention.

Josh, who was visiting from Colorado, trained his 16-inch scope on the quasar 3C273. Although I have wanted to see this object for several years, this was the first time that I have done so. Quasars are believed to be powered by massive black holes, which reside at the centers of young galaxies.

It remained clear all night. The transparency was good, but I was told that it was even better on the previous two nights. The nighttime temperature was very comfortable. It was a little windy around sunset but fine the rest of the night. Everyone had good time.

I finally went to bed at twenty minutes till four.

The next morning I got up at 8:00. Nearly everyone had already gone. While I was packing up I saw my first rattler out at Cottonwood. He was all stretched out sunning himself. He was so lethargic that he scarcely paid any attention to me. I pointed him out to the few remaining campers, so that no one would accidentally step on him. As the small group gathered he became a little more concerned. Gathered himself up, he slithered off under some brush. At one point he got up enough gumption to coil, but then as he began to feel safe again, he spread back out to continue his siesta. Although this is the only rattlesnake that I have ever seen out at Cottonwood, obviously there are some around and one should exercise the appropriate caution.

In July, we have two star parties. Our first July star party will be at one of the darkest sites that I know, Grandview Campground on White Mountain. Our second will be on the 30th up at Cow Canyon Saddle.

Ron Hoekwater

Ron Hoekwater

Award Winning Astro-photographer to Speak

In June our speaker will be the astro-photographer Wally Pacholka. Mr. Pacholka is originally from Canada. He became interested in astronomy in 6th grade. He joined the Montreal Royal Astronomical Society of Canada at age 13. At 16 his family moved to the Long Beach area. His interest in astronomy continued. He started doing astro-photography and found that there was a market for his pictures. His pictures have won wide acclaim and he has managed to make a small business out of his hobby.

With a 1997 image of Comet Hale-Bopp he garnered his first TIME magazine "Picture of the Year" award. Later the same image was included in TIME's "Images of the Century". Wally has continued to develop his technique and now he has received a double honor. Two of his Mars images have been selected as being among their "Pictures of the Year". One of the honors comes from TIME magazine. The other comes from LIFE magazine. He missed the LIFE 2001 'Pic of Year' "by an inch" when they called desiring to use of one of his Leonid meteor shots of the 2001 storm. He gained worldwide exposure when "Astronomy Picture of the Day" selected four of his images in one year. His images have been used in the Encyclopedia Britannia and National Geographic.

Mr. Pacholka will tell the story of his success and speak about his photographic technique.

July Star Party to be at White Mountain

Grandview Campground on White Mountain, east of Bishop, is one of my two favorite observing sites. (The other is Mesquite Spring in Death Valley.) On July 9th, PVAA will be having its star party at Grandview. For those who wish to stay closer to home on July 30 there will be a star party at Cow Canyon Saddle. I am going to attempt to convince you to give Grandview a try, if you have the time (and can afford the gas).

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 of those visits. They are the Veil Nebula (NGC 6992-95) in Cygnus 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 *Uranametria*. 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. (The brightest galaxies in the cluster are 13th magnitude.)

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. I am writing about this a month in advance so that those who are interested in going can make the necessary arrangements.

Ron Hoekwater

Conjunction of Venus and Mercury

On June 27th at sunset PVAA will be up at Cow Canyon Saddle to observe the close conjunction of Venus and Mercury. At their closest there will be .07 degrees of separation between them. However by the time we will be seeing them they will have already started to separate. It will still be a very close conjunction though. This will be a public event.

Ron Hoekwater