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nightwatch

Newsletter of the Pomona Valley Amateur Astronomers

Amateur
astronomers
just get better
looking . . .



Volume 25 Number 5

nightwatch

May 2005

President's Address

The 37th annual Riverside Telescope Makers Conference will be held Friday through Sunday on Memorial Day weekend. It is one of the highlights of the astronomical year. This will be my 12th year to attend the conference, which every year keeps getting better and better.

RTMC is a great place to try out and buy astronomical equipment. A few years ago I bought a Speers Waler 7mm eyepiece. Last year I picked up a pair of Oberwerk 100mm binoculars. The price was good and I have been very impressed with the optical quality of both purchases. If you have all the equipment you need (that's hard to imagine) there are books, back issues of magazines, tee shirts, meteorites, fossils, astro-photos, paintings, jewelry, chess sets, and anything might turn up at the swap meet on Saturday morning.

The last several years RTMC has featured a "Beginners Corner." This provides an excellent opportunity for the novice amateur astronomer to learn more about various aspects of the hobby including telescope building.

Every year RTMC has legions of interesting speakers and presentations to hear and see and this year (I'm sure) will be no exception. This year's theme is "The History of Astronomy." The Keynote Speakers will be Los Angeles documentary filmmakers Todd and Robin Mason. Their talk, entitled "Palomar's 200-inch Telescope: The Impossible Challenge" will be about some of the major technological and intellectual breakthroughs made during the construction of the Hale

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

Telescope. They will also show exclusive footage from an upcoming film on George Ellery Hale and the four telescopes that he built, each of them the largest in the world at the time of their completion.

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 Town Campground

PVAA Events Calendar

Month	Star Party	Star Party	General Meeting	Board Meeting
May	CS	7	20	12
June	CS	4	24	16
July	WM	9	22	14
August	WM	6	19	11

But, what we all love to do is look at the sky and RTMC is one giant star party. In fact if it isn't the biggest in the world it must be very close. There are hundreds of telescopes and binoculars out on Friday and Saturday nights. This year (for those of us interested in deep sky observing) the moon will not rise until after midnight on Saturday and Sunday nights. A few years ago I looked through a pair of 13-inch binoculars someone had constructed. What a thrill! During the day there are solar telescopes set up, often with H-Alpha filters.

Another great thing about RTMC is getting to visit during the day and observe the heavens at night with old and new friends. Each of the last several years up to Camp Oakes I have met up and camped with Joe Hillberg, Bob Akers, and Ludd Trozpek. It will be a chance to catch up with some people I haven't seen for a year and some that I have seen more recently.

I would strongly encourage anyone with any interest in astronomy to attend the Riverside Telescope Makers Conference, May 27-29. It truly is a wonderful experience!

Ron Hoekwater

May Star Party

Although it was completely overcast when I left home, the weather for the May, Cottonwood Spring star party was better than predicted. The clear Sky Clock forecast was for 10% cloud cover and average to below average transparency. I think that the transparency was better than that and we didn't see a cloud all night. Going past Palm Springs, the radio announcer said that the temperature was 10 degrees below normal for the time of year. The nighttime temperature was cool, but comfortable as well.

When I arrived at the campground Mary Katavi, Anita Crawford, and Frank and Barbara Busutil were already there. Frank and Barbara had saved space for PVAA next to a group of amateur astronomers from San Bernardino. The San Bernardino group kindly offered to share some of their space with us as well. Around 5:30 John Sosville rolled in driving one of the nicest motorhomes that I have ever seen. With John were Lou and Chris, two friends of his from work. Bob Akers showed up a bit after dark. With the San Bernardino folks, we had a good-sized group of stargazers.

After John got settled in, he brought out his Takahashi FS 102 mm Flourite apochromatic refractor with a Coronado H α filter. Immediately, a crowd (not

all of them amateur astronomers) gathered round. This was my first glimpse through a Takahashi. It was a real treat to look at the Sun through such a fine instrument and the perfect prelude to the evening's observing session.

Soon after sunset the San Bernardino group had their telescopes all trained on Jupiter. We were invited over for a look at the King of Planets. Later that night, we returned to Jupiter, and saw the Great Red Spot cross the central Meridian of the planet at about 1:00 AM.

When it was dark enough several of us turned our scopes on Comet Macholtz. It was easy to find as it was in the Big Dipper, right next to the star Megrez. On it's way back out to the outer solar system, it now looks like a faint star with a fuzzy patch of light surrounding it.

A great sight is the globular cluster ω Centauri. The hills to the south of Cottonwood Spring are arranged such that even though the cluster never gets more than about a dozen degrees above the horizon it is

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Get the latest news on the star party, club meetings, special events and astronomy happenings.call **909/596-7274**

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visible from the campground. In fact, at Mag. 3.68, it is a fairly easy naked eye object. About 15,000 light years from Earth, ω Centauri is the largest of the Milky Way's globular clusters and may contain 10 million stars. Recently it has been suggested that, rather than a globular cluster, ω Centauri may be the core of a dwarf galaxy which was captured by the Milky Way.

I spent some time looking through Bob's 12-inch Dobsonian. He is rigging it up so that he can power the telescope's computer with a motorcycle battery. I also did a little observing with the 9-inch Celestron SCT which Anita and Mary brought out.

As Sunday was Mother's Day, at a little after 2:00 AM I went to bed. Only Bob had the stamina to stay up and observing until morning twilight. In the morning I had a very good breakfast with John, Lou, and Chris in the motorhome. As I drove out of Joshua Tree National Park and headed for home, I thought about what a pleasant night it had been.

In June, the PVAA star party will again be at Cottonwood Spring on the 4th of the month. I hope that I will see you out there.

Ron Hoekwater

May Program

Russ Tantom, Meade Telescopes Representative, will be our main speaker on Friday, May 20. He will be discussing the new Meade CCD camera. We will also have our usual "What's Up" presentation from Lee Collins. Bob Akers is hoping to give us a Powerpoint presentation of RTMC, if his employer will allow him to attend the meeting.

John Jacobs has a new address
1073 Knoll Crest Drive
Covina, California 91724
Telephone (626) 339-8823

John would welcome a call or visit to talk astronomy. He is very knowledgeable about many of the planetary probes sent out.

HELLISH PLANETS DO A DUO

Just after sunset on June 27, Mercury and Venus will appear closer together than they have been in 15 years. As you observe these two apparently serene planets with their lunar like phases, take a moment to remember just how infernal they are.

Perhaps because they are closer to the gravity of the Sun, both rotate very slowly. In two of Mercury's years the planet has only three days. A sunrise to sunset day on Mercury is 176 Earth days long. Having no atmosphere, this makes for long noons as hot as 820 degrees F, followed by extremely cold nights. Mercury (quicksilver messenger) is hard to observe because of its proximity to the Sun and its small size (1488 miles in diameter). There are several moons larger than Mercury (Titan for one).

In 1974, Mariner 10 provided the first and only views of about half of Mercury's sun grilled surface. Its ancient face appeared extremely cratered and cracked with huge shrinkage wrinkles. Mercury's many craters are named after the world's famous artists, composers, and fiction writers (Michelangelo, Beethoven, Shakespeare). There will always be enough of those to go around, even when scientific probes can photograph the other side (perhaps in 2011).

Venus is even more of a Hades. Considering it's the same size as the Earth it's a tragic real estate disaster. Because of its thick carbon dioxide (96%) filled atmosphere the surface of Venus is hotter than the inside of a self-cleaning oven. Eggs wouldn't be fried, they'd be vaporized at 870 degrees F. As if to make matters worse, Venus rotates even slower than Mercury. One Venus day equals 243 Earth days (20 Earth days longer than its year),

The cloud shrouded surface of Venus appears to be producing ongoing volcanic activity and more clouds. Practically its entire surface has been remade with lava since its creation.

In 1985, the Soviets plopped down two armored landers (Venera), which took pictures of a roasted volcanic surface before they melted down. The atmospheric pressure is over 90 times that of Earth. It can rain sulfuric acid on Venus, but most of it evaporates away before it reaches the surface. Between 1990-94 our Magellan radar probe produced high resolution maps of Venus's devilishly torrid surface. In keeping with Venus being the goddess of love, all its volcanic and impact craters have been named after female goddesses and famous women. Hot women indeed!

So, as you observe the meeting of these two parched inner planets on June 27, take time to appreciate the cool wet green hills of Earth.

Lee Collins

Sailors and Astronomers?

Returning home victorious from Gibraltar after skirmishes with French forces, the English fleet, under the command of Admiral Sir Cloudisley Shovell, sailed into the history books. Dogged by fog for 12 days at sea, the navigators had misgauged their position near the Scilly Isles. On that foggy night, in 1707, the Scillies became tombstones for almost two thousand sailors. The flagship *Association* struck ground first. She sank within minutes drowning all hands. Before the rest of the fleet could react, the *Eagle* and the *Romney*, pricked themselves on the rocks and went down like stones. In all, four warships were lost.

Sea captains of the fifteenth, sixteenth, and seventeenth centuries relied on “dead reckoning” to gauge their distance east or west of home port. For the lack of a practical method of determining longitude, every captain of this period became lost at sea despite the best charts and compasses. From Magellan to Sir Francis Drake, they all got where they were going willy-nilly.

The search for a solution to the longitude problem assumed legendary proportions. Determining longitude required the precise knowledge of time at two different locations. The clocks of the period were notoriously inaccurate, being affected by the rocking of the ship, temperature variations, humidity, and mechanical difficulties. The governments of seafaring nations offered great rewards for a workable method. The British Parliament, in the Longitude Act of 1714, set the highest bounty of all, “a king’s ransom” (several million dollars in today’s currency).

Astronomers approached the longitude problem by looking to the clockwork universe. Galileo Galilei, Jean-Dominique Cassini, Christiaan Huygens, Sir Isaac Newton, Edmond Halley, and others turned to the heavens for help. Observatories were founded in Paris, London, and Berlin for the express purpose of determining longitude by the heavens. In the course of their struggles to find longitude, they struck upon other discoveries that changed our view of the universe. These include the determination of the weight of the earth, the distance to the stars, the motion of bodies in space, and the speed of light.

Galileo worked out a longitude solution by using his observations of Jupiter’s moons and creating tables of each satellite’s expected disappearances and reappearances over the course of several months. His method never found favor with sailors but were accepted after 1650 by surveyors and cartographers and was used with great success in mapping the world. With the borders of kingdoms hanging in the balance, astronomers found employment observing the moons and improving the accuracy of the tables. Cassini improved the accuracy of the tables and published the best set yet based on the most numerous and carefully conducted

observations.

Danish astronomer Ole Roemer made a startling discovery. The eclipses of Jupiter’s moons occurred ahead of schedule when Earth was closest to Jupiter, and that the eclipses fell behind the predicted schedule when Earth was farthest from Jupiter. He concluded correctly that the explanation lay in the velocity of light and he calculated the speed of light for the first time in 1676.

John Flamsteed, the first royal astronomer, established the Observatory at Greenwich with the charge of “rectifying the Tables of the Motions of the Heavens, and the Places of the fixed Stars, so as to find out the so-much desired Longitude at Sea, for perfecting the art of Navigation.” Thus the founding philosophy of the Royal Observatory, like that of the Paris Observatory before it, viewed astronomy as a means to an end. All the stars must be cataloged so as to chart a course for sailors over the oceans.

During his tenure as astronomer royal, from 1720 to 1742, Halley studiously tracked the moon. Mapping the heavens, after all, was merely a prelude to the more challenging problem of charting the moon’s course through the fields of stars. Halley, with much help from Newton, helped reveal the motion of orbiting bodies. He also discovered “proper motion” when he noticed slight shifts in the positions of three bright stars since Tycho’s maps were made.

James Bradley, who succeeded Halley as astronomer royal, also took the perfection of navigation as his primary mission. He out Flamsteeded Flamsteed with his precision maps of the heavens. Along the way, he arrived at a more accurate value for the speed of light. He determined the shockingly large diameter of Jupiter, and detected tiny deviations in the tilt of Earth’s axis, which he correctly attributed to the pull of the moon, and attempted to gauge the distances to the stars.

In the end, the invention of the chronometer by John Harrison, and the ability to accurately keep time, won out over determining longitude by the heavens. Since time is longitude and longitude time, the Old Royal Observatory is also the keeper of the stroke of midnight. Greenwich time even extends into outer space. Astronomers use Greenwich mean time or Universal Time in their celestial timekeeping method. The problem of determining longitude established astronomy, observatories, and furthered our understanding of the heavens.

Allen Whang