The Rosette Gazette

Volume 12, Issue 1 | Newsletter of the Rose City Astronomers | January, 2000

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Young RCA Groups Start Up in January

The Junior Rose City Astronomers and the Elementary Rose City Astronomers will have a grand kick-off meeting prior to the General Meeting on Monday, January 17th.

The Junior RCA is for kids 10-13 years of age. Vern Weiss, Chris Steinkamp and Doug McCarty have agreed to be the Junior YRCA adult mentors, with Rob Brown volunteering to be a periodic "special guest speaker."

The Elementary RCA is for kids from ages 6-9. RCA volunteers who will organize monthly activities for this group include Ron Karcher, Dee Oszvath and Mary Ann Buchanan.

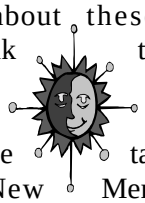
Both the Junior and Elementary RCA groups will meet monthly at 6:30 pm at OMSI in the Auditorium prior to the regular monthly General Meetings. We encourage you to bring your children to this kick-off organization meeting. The kids will meet all of the leaders and discuss the proposed activities for the groups.

Many thanks to Margaret McCrea, mentor for the YRCA (14 and up) for taking the initiative to organize the formation of these two groups. With an outstanding group of adult volunteers to lead the monthly activities of these young astronomers, we look forward to seeing these kids become budding amateur astronomers!

JOIN US AT AN "INFORMATION FAIR" MONDAY, JANUARY 17

The January meeting will feature our annual *Information Fair.* This is the main opportunity each year for the membership to get acquainted (or re-acquainted!) with all RCA activities.

There will be tables set up throughout OMSI's Auditorium with members sharing information about these programs. Take time and talk to the program leaders about the variety of activities you can participate in. There will be tables set up to discuss: New Member Programs, Deep Sky Observing Programs, Solar System Observing, Solar Observing, Dark Sky Interests, CCD Imaging/Astrophotography, Telescope Making, Youth Programs, Cosmology, Weather, and more!! The program begins at 7:30 PM.



WELCOME NEW MEMBERS!

Sally Jones
Tom Ganger
Michael Blaufuss
Larry Leach
Bob Thiman
Jerome Thorp
Mike Culbertson
Robert Stebin Jr.
Roxanne Karnick

January 6 | January 14 | January 21 | January 28

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President's Message

By Peter Abrahams

The RCA is entering the year 2000 with more members, more energy, and more projects underway than ever before. Furthermore, amateur astronomy of today has horizons that are more distant and technology that is more advanced, than in previous times. We are spectators at the arena of professional astronomy, which has far surpassed historical efforts. The world might or might not be entering a golden era, but astronomy certainly is.

The place of the Rose City Astronomers in contemporary astronomy will be determined by the efforts of its individual members. people who run the club can make a schedule, but cannot fill the appointments.

We need members to continue to make telescopes, create observing programs, reach out to the community, teach at schools, and much more. The board of the RCA coordinates efforts, but it cannot implement more than a few of the many excellent ideas submitted by members. We hope to hear from many members this year as we enter a time of major change and much growth.

The total eclipse of the moon on the night of Jan. 20 will be underway as the moon rises. Totality will begin at 8 and last an hour. Some spectacular photography of the moon through trees or over a landscape will be possible—with the cooperation of the weather that day.

RCA Sales

Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary (ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more info.

Cosmology Special Interest Group

Date

Tuesday, January 18, 2000
OMSI Classroom 1

Discussion Leader Dennis Luce - "CCD vs. the Universe"

Reading: Using and Choosing a CCD Camera. By Richard Berry

TOTALITY IN TURKEY: AN ECLIPSE ADVENTURE

By Doug McCarty

In the summer of 1999 I was a "guest astronomer" on a two-week solar eclipse tour to Turkey. Sixty participants from the U.S. and Australia converged in Istanbul where our Turkish guides introduced us to the fascinating mosques and museums of this ancient city.

Our two air-conditioned buses whisked us to some of the most remarkable archeological sites in the world: Troy, Ephesus, Aphrodisias and the oldest human settlement yet unearthed, Catal Hujuk (7th century BCE)

Two days before totality, I accompanied Mike Reymers, Oregon professor and lecturer on Anatolian civilizations and president of Discovery Travel International to check our eclipse site, which he had chosen a year earlier.

Mustafa, owner of the Turkish travel agency, Mike and I drove to the town of Turhal, where we obtained permission from three different officials to reserve our site, a high hill only a stone's throw from centerline. During our visit to the soccer stadium in Turhal, where research astronomers from Korea, Georgia (former U.S.S.R.) and Istanbul University had set up their equipment, I was interviewed on Turkish television. Mustafa introduced me as an "astronaut" but was corrected by a graduate student prior to the interview. I am an "astronom"!

After ten sunny days, I awoke on eclipse morning at 5 a.m., gazed out my hotel window and couldn't see a single star! Clouds from horizon to horizon! "This can't be happening!" I exclaimed.

During breakfast our genial group was uncharacteristically quiet. In an effort to inject a bit of levity, a physician friend put his hand on my shoulder and intoned, "You've down everything you could."

Our two buses headed through the gloom to our destination, a hundred miles to the north. Everyone was lost in thought, hoping for a change in the weather. Transferring to four mini-buses in the small village of Senyurt, we arrived at the summit via a narrow gravel road. The sky was clearing but fluffy clouds lingered overhead.

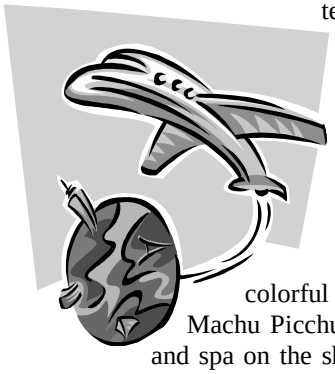
Thirty minutes before the start of the eclipse, many in the group expressed their desire to descend to the valley, which was cloudless. Within minutes, three packed mini-vans were rolling down the mountain. Just as we reached the valley floor, the lead bus I was in stopped and I jumped out to scan the sky. Before I could collect my thoughts, everyone was leaping from the buses. It was clear! Ten minutes later I cried "first contact!" and the drama began.

Everyone on the tour agreed that our eclipse experience was special because many of the villagers joined us. They came by foot, tractor, motorcycle and donkey. Pinhole projectors, telescopes and binoculars revealed the Moon's passage across the Sun's disk. Mylar glasses were passed around and a feeling of festiveness pervaded the group. It was fun seeing Venus in the daytime.

Ten minutes before totality, the sky took on a strange purple/blue quality and an extensive field burning fire three miles distant appeared to suddenly brighten. Dark, distinct shadow bands could be seen for one full minute before totality (and afterwards as well!)

Standing in the Moon's shadow while viewing a total solar eclipse is among life's sublime experiences. During the precious seconds that our star reveals its dynamic grandeur, one briefly enters an unearthly realm. The pearly-white spiky corona and two dozen! vivid pink prominences dazzled our eyes. Totality ended all too soon but the elation we felt lingered for hours, and for some, days! Happily, those who remained on the summit enjoyed a clear view of the eclipse as well.

A 92 year old village woman refused to believe that the Sun would disappear when so informed by our Turkish guide. She now knows better. I will never forget the look on her face after she observed a crescent Venus through Steve Swayze's telescope.



As many of you already know, I will be hosting a small Southern Hemisphere Stargazing tour to Peru and Bolivia from June 22-July 2, 2000 as well as an African solar eclipse tour in June of 2001.

In 2000 we'll visit Cuzco, join the colorful Inti Raymi festival, travel by train to Machu Picchu, and spend four nights at a 5 star lodge and spa on the shores of Lake Titicacca (elevation 12,500 feet, latitude 16 degrees south) which boasts its own private observatory, complete with three permanent telescopes.

The African eclipse tour, which begins at centerline in Zimbabwe, includes a visit to Victoria Falls, wild game viewing from lodges in Botswana and a tour of the wine country near Capetown, South Africa.

If you are interested in joining us, you can call Mike Reymers of Discovery Travel International at (503) 254-5177 (email: reymers.world@ibm.net) or me at (503) 452-7372 (email: mccarty@europa.com)

The Observer's Corner

By Howard Banich

(This column was inspired by a question from the collimation workshop a few months ago. I'll cover a few other related topics in the coming months.)

Cleaning the mirrors of a Newtonian telescope is one of those "little things" that can make owning a scope a bit more of a chore than many people bargain for. Or not – just depends on how you look at it. This article will focus on how to clean a Newtonian primary mirror, not the reason why to clean or how to determine when a mirror is dirty enough to clean. Suffice to say that a clean mirror works better and its coating will last longer when clean. A mirror probably doesn't need cleaning more than twice a year, and that's with heavy use. Right after the OSP is a good time for a wash.

After cleaning a few mirrors I've come up with a procedure that's relatively painless and effective. There are many ways to clean a Newtonian primary, and my method should be taken with that grain of salt – this is a method *I've* found that works for *me* – it may be either too picky or not careful enough depending on your preferences. I've come to this method after reading numerous articles, talking to a few experts and getting lots of practice. If nothing else, you may find this a starting place to come up with your own method.

Regardless of the details, be careful and take your time. The best way to do a lousy job and end up with a few more scratches is to hurry. Prepare your cleaning area (the kitchen sink most likely) in advance, making sure all your supplies are handy. If possible, arrange your time so you won't be interrupted.

Stuff you need:

- Mild dish detergent (any brand, doesn't matter).
- One small dinner plate.
- 2 or 3 towels.
- One bag of sterile cotton balls.
- One roll of white paper towels (optional).
- Two gallon jugs of distilled water.
- 30 minutes of uninterrupted time.
- One hand-held hair dryer.
- One dirty primary mirror.

Here's how I go about it:

Carefully take the primary mirror out of your scope and its cell. Unless your scope is specifically designed to have the mirror washed in place, this is an important step. Put the rest of the scope aside in a safe place while washing the mirror.

The kitchen sink is a fine place to clean mirrors small enough to fit. If the mirror is too big for the sink, use a plastic tub large enough to hold the mirror and provide enough space around the edge so you can easily place the mirror in the tub. Place a towel around the sink (or tub) to wipe up spills, and another to place the mirror on for drying.

Put a small dinner plate in the bottom of the sink so the mirror is resting on its flat back. This makes the mirror easier to handle and insures you won't chip the edge.

Fill the sink with warm water and add a few drops of mild dish detergent. Just a few drops - you want soapy water, not watery soap. Mix up the detergent so it's well mixed with the water and place the mirror – face up – on the plate. The water has to be deep enough so there's about a half inch of water covering it. Then let it soak for 15 minutes or so, just like it was a greasy pan.

While the mirror is soaking, open the bag of cottonballs so they're ready to use. Put them aside near the sink. Also open a gallon jug of distilled water. Somewhere nearby, plug in the hairdryer (close enough to be handy but not so close that it could possibly fall into the sink). Lay down another towel near the hair dryer.

After 15 minutes or so, take the mirror out of the sink, place it on a towel next to sink (always face up!). Drain the sink. Turn on the water, about half force. Carefully pick up the mirror and hold it under the water. The idea is to rinse off all the loosened particles of dirt. Rinse for a couple of minutes then place the mirror back on a towel next to the sink.

Important tip #1: never let a wet mirror sit out long enough to dry. Water spots may form and you'll have a tough time cleaning them off. You'll have a minute or two before having to worry about this however.

Important tip #2: be careful handling a wet, soapy mirror! It can be slippery; use great care in making sure you have a gentle and controlled grip on it at all times.

Fill the sink back up with soapy water just like before. Don't use the water from the soaking – it's full of dirt particles that would only cause scratches. Place the mirror face up back on the plate in the sink. Again, the water level should be about a half inch above the top surface of the mirror.

Now, this is part where exceptional care needs to be taken. Although the big chunks of dirt are gone, there's still lots of small ones on the mirror. Take two cotton balls, hold them together and immerse in the water. Very, very, *very* lightly pull them across the surface of the mirror. Apply no pressure, not even a little bit.

Throw the used cottonballs away, they get only one use. Any grit they pick up goes with them, no longer able to scratch the mirror.

Get two more cottonballs and repeat, drawing them across the mirror. Throw the cottonballs away. Repeat until the entire surface of the mirror has been cleaned. You should now have a relatively clean mirror and a wastebasket full of mildly dirty, soapy wet cottonballs.

Carefully repeat the process, cleaning the entire surface of the mirror, but at a different angle from the first cleaning. Just like mowing the lawn. Be as careful near the end as at the beginning – going too fast will probably result in a scratch.

Now the mirror is almost clean. Take it out of the sink and place on the towels nearby. Drain the sink and rinse the mirror under the faucet.

While still carefully holding the mirror in the sink, grab the gallon jug of distilled water and rinse the mirror thoroughly. Use the full gallon. Use two gallons with a big mirror.

(Continued on Page 9)

The Sun, The PBY, and The Chronometer

By Robert Mc Gown

It seemed like the first sunny day in Oregon in two months. At the Palisades mall, three amateur astronomers, Peter Abrahams, Mark Siebold, and I were doing some recreational solar viewing. We used Peter's antique Thomas Cook refractor to view high-resolution sunspots in visible light. Mark brought the RCA solar scope with a 7 Angstrom H-Alpha filter. We were anxiously testing our equipment in anticipation of the transit of Mercury only two days away. There were numerous by-passers who carefully navigated their way around the tripods positioned on the sidewalk that was rimmed with a garden. Coincidentally, two celestial navigators came by, and shared their stories of WWII and their careers in navigation in the Air Force.

The spectacular sun spot groupings across the sun's disc that rapidly disappeared over the limb's edge, made a great attraction for the passers-by. Solar prominence were looping over the limb of the sun with filaments radiating around the base of the prominence. There were continuous random groupings of sun spots across the entire disc in a curved ecliptic-like formation, with Field Lines in the shape of a volcano.

The conversation switched to solar eclipses, and I discussed some of the early radio telescope eclipse expeditions by Navy ship in 1959. When the moon came in front of the sun during an annular eclipse, the moon covered the sunspots on the disk and the solar radiation would drop off during an annular eclipse. John, who was one of the celestial navigators, shared one of his navigation experiences on a trip in a C-130, a large cargo plane coming from Iceland. As they left Iceland, they flew below 6,000 feet, going 240 mph, for 45 minutes of solar totality. Eclipse chasers and space tourists would crave a flight like this on a 747 Kupier Astronomy jet.

One celestial navigator we made acquaintance with, navigated PBY's in the Pacific during WWII. The PBY was a large flying twin-engine pontoon plane used in the area of the Pacific during WWII. The initials of the plane, PBY, stood for Patrolcraft Bell-Young. Bell-Young were the manufacturers. In the PBY, the navigator sat in a Plexiglas bubble two feet above the fuselage of the plane. He used a sextant, leveled out and shot the zenith angle of the sun. The navigator would shoot from the horizon up and the zenith down to the sun checking the observations against each other. Using the accurate navigational clock known as the chronometer, the navigator would get an ascension angle of the sun. The coordinate positions were checked and continually recalculated by the PBY navigator along the route.

My own personal interest in PBY navigation came about hearing stories of my grandfather who flew a PBY in the arena of the Pacific during WWII. Occasionally in the evening, after returning from the Berlin Air Lift, he would use his sextant and sight the navigational stars in the evening sky with my father. He would describe navigating the islands of the Pacific. To the celestial navigator, the most important star besides the North Star was Betelguese. When Betelguese was in the sky, it was the most prominent because of its' luminosity and bright red color it could be easily identified through the haze, as viewed from the observation bubble. There was a hook in the observation bubble of the PBY where the sextant would hang with the chronometer off to the side. The Navigator would periodically draw navigational lines. His charts using the angle of the sun in day light or the angle of the visible guide stars according to the right ascension establish by the chronometer. When navigating at night and plotting the guide stars, the further apart the guide stars greater than 90 degrees, the more accurate the navigational coordinate. During a flight to the south Pacific, a PBY navigator might make hundreds of angular plots of position using the chronometer and sextant.

The chronometer was also the accurate marine timepiece used by Captain Cook in 1772 to establish longitude on his voyage of the oceans. His chronometer was a reproduction of the original Harrison Chronometer that was developed by an early watchmaker named Kendall. During this period, Hadley's Ouadrant, not the sextant, was developed to track the sun and the stars to establish longitude at sea. The reflecting Quadrant allowed direct measurement of two distant bodies. The earliest instruments used to help locate ones position were the Astrolabe, the Cross-staff, and the Back-staff. Early techniques, used in conjunction with the sightings of the Quadrant, were a set of astronomical tables known as the Lunar Distance Method. They were developed by the Astronomers' Royal Sir James Flamsteed, Sir Edmund Halley, Sir Nevil Maskelyne and others. Maskelyne became known as the Seamen's astronomer for his research with his tables. The Lunar Distance Tables were based upon an 18- year cycle of the path of the moon through the sky. These methods were developed to aid the mariner in navigating the oceans of the world. Numerous handsome rewards were offered by European governments for a reliable method for discovering longitude at sea, so there was a scientific incentive to develop a system to establishing longitude. Sir Issac Newton even theorized that longitude would come from his gravitational equations.

Even Galileo, 150 years earlier, sought to solve the longitude at sea scientific problem. He studied the rotation of Jupiter's moons and realized their position acted as a sidereal clock. The position of the moons could tell the time of day, thus one could tell longitude from the positions of the stars. Galileo designed a longitude helmet that had a small telescope in one eye while the other eye sighted in on Jupiter. Galileo approached Prince Phillip for the Longitude of Portugal. Alas, Prince Philip of Portugal said that this method of longitude could only be used at night. Thus, Galileo didn't get the handsome reward of the time. However, this Galilean method was used by Lewis and Clark in 1804. Lewis and Clark observed the sidereal clock of Jupiter's moons to establish their longitude as they crossed the North American Continent.

The navigators discussed their great feats of navigation with each other. There were many great stories shared while observing the sun that day. When asked, "What is your greatest feat of navigation?" the second navigator reached into his wallet and pulled out a picture of the belly of the Space Shuttle, silhouetted against the blue sky. The shuttle was missing some of the heat shields on its underside. As an emergency assignment to NASA, the navigator flew under the shuttle and photographed its belly in a jet plane. It was his responsibility to determine whether it was safe to land the space shuttle with some of the heat shield missing.

The quest for accurate position does not end with sea and air as the pursuit for celestial coordinates extends into space. A longitudinal telescope was used by the Apollo spacecrafts to the moon. They navigated their way to the moon with a telescope sextant and chronometer. It has been quite a leap of technology from these tools to the Radio Telemetry and the global positioning systems of today's space navigators. The sun was setting. A navigator would try to get his last sextant shot of the day. The orange disc set into a fog bank on the horizon. I squinted to see naked eye sun spots were visible as the Sun's disc of burning hydrogen went out of view. It turned out to be an extraordinarily fascinating day of viewing the sun through an H-alpha filter and sharing stories with individuals who had a historical interest in celestial navigation.

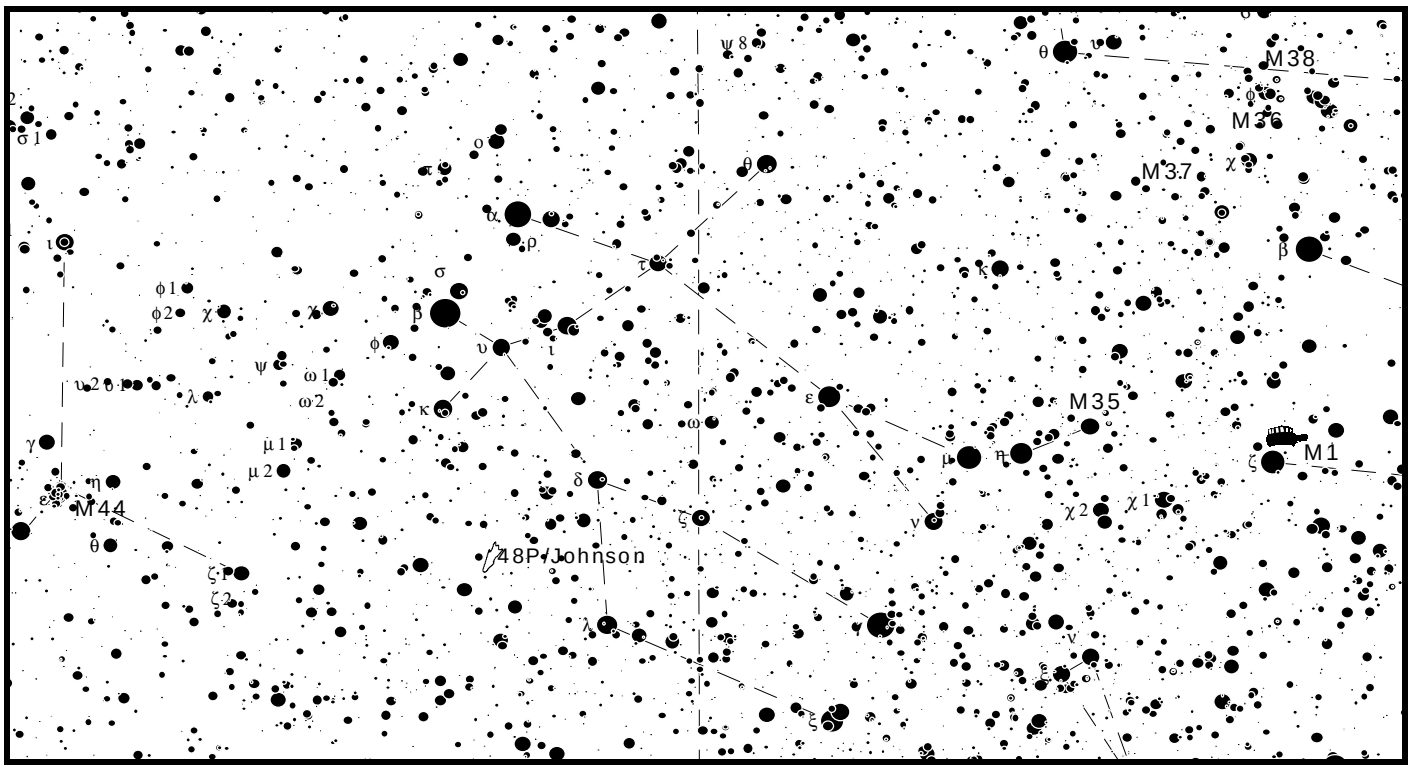
CONSTELLATION OF THE MONTH

by Mike Powers

Gemini, the Twins, is a prominent constellation in the winter sky for stargazers in the northwest, lying east of Taurus. Gemini is one of the few constellations with two first magnitude stars, with the head of the twins being marked by the bright stars, Castor and Pollux. The body of the twins appears rectangular in shape, slanting across the ecliptic, with the feet of the twins being traversed by the Milky Way.

The star pattern in Gemini has been associated with twins since the ancient times of Mesopotamia. The Romans associated the twins with Romulus and Remus, the traditional founders of Rome. According to Greek legends, the Twins were the sons of Leda, the wife of King Tyndareus. Leda laid two eggs, one hatching the mortal Castor and Clytemnestra (offspring of Tyndareus), the other hatching the immortal Pollux and Helen (offspring of Zeus). Castor and Pollux were inseparable and accompanied the Argonauts in their search of the Golden Fleece. They were also associated with St. Elmo's fire, the lightning discharges that played among sailing ships rigging. When the mortal Castor was killed, Zeus allowed the brothers to stay together by letting them alternate days between Hades and Olympus. Subsequently, the twins were placed in the heavens side by side to remind us of brotherly love.

When observing Gemini, I like to start with low power binoculars (7x) in order to view Castor and Pollux in the same field of view. The bright orange-yellow Pollux is only 4.5 degrees from the blue-white Castor providing a pleasing visual contrast. Castor has the visual appearance of a double star in telescopes but is really a complex system of six stars, comprised of 3 binary systems. Pollux is a single star and despite being the brightest in Gemini at 1.14 magnitude it is labeled the beta star on astronomical maps, while Castor is the alpha star (mag 1.6). Another named star in Gemini is Propus (Eta Gem), meaning forward foot, and it can be located at the base of Castor's feet. Star-hopping about 2.5 degrees NW of Propus is the very large and rich open cluster, M35. About 20 stars can be resolved in binoculars and over 75 stars can been seen with a 4.5-6 inch telescope. Only 0.5 degrees SW of M35 is the open cluster NGC 2158. Dark skies are a must in order to visually detect this very old and distant cluster. A glow can be seen in small scopes while stars start to be resolved in 12 inch scopes. This cluster is thought to be about 1 billion years old and about 16,000 light years away, near the outer edges of the Milky Way. An overlooked open cluster in Gemini is NGC 2266, which is located about 2.5 degrees north of Epsilon Gem (the left thigh/knee of Castor). This cluster contains over 35 stars packed into 4 arc minutes which give nice views at medium powers in 4-8 inch scopes. The famous planetary nebula NGC 2392 (the Eskimo Nebula) is also located in Gemini, located about 2.4 degrees ESE of Delta Gem (Wasat). This bright blue-green disk can easily be seen from the city even with smaller scopes. In larger scopes the outer rings of nebulosity can be seen as the fur on the Eskimos parka, with the central star appearing as the nose. For this months deep sky challenge, there is a trio of faint galaxies (NGC 2389, 2388, 2385) located about 2.5 degrees NNW of Castor, being seen in the same field at 150x in a 16-18 inch scope. Hope you enjoy the Twins!



Portland to see four eclipses in 2000!

By Jim Todd, OMSI Planetarium Manager

To celebrate the new millennium, Portland will have a special celestial treat of four eclipses in 2000 - two total lunar eclipses and two partial solar eclipses - including a 70% solar eclipse on Christmas morning! Eclipses are simply the passage of one celestial body through the shadow of another. When the earth passes between the sun and moon casting a shadow on the moon, a lunar eclipse occurs. This is what we will see on January 21st and July 16th of 2000. A solar eclipse occurs when the moon passes between the sun and earth, casting a thin narrow shadow on earth. We will see a 60% solar eclipse on July 31 and a solar 70% solar eclipse on December 25th in the Pacific Northwest. In each case, one-object blocks the sun's light by casting a shadow on the other object.

On the night of January 20, the Full Moon will slide through the dark shadow of our planet. For 39 minutes, the only light hitting the Moon will be the reddish glow from all of Earth's sunrises and sunsets - Total Lunar Eclipse! **Weather permitting, OMSI and Rose City Astronomers Club will set up telescopes at the east parking lot of OMSI to view the lunar eclipse starting at 6:30 PM.**

The eclipse really gets underway at 7:01 pm PST (Moon rises at 4:46 pm PST) when the umbral shadow takes a small, dark bite out of the left edge of the Moon. For the 1 hr and 42 minutes of partial eclipse, the darkness engulfs more of the Moon's disk as it slides into the shadow. The partial eclipse ends and totality begins at 8:04 p.m. PST, when the Moon slides completely within the umbra. The total phase lasts 1 hr and 19 minutes, with mideclipse (when the Moon looks darkest) occurring at 8:43 p.m. PST. Moreover, this eclipse comes with a bonus. The Beehive Cluster will be 7 degrees from the Moon's east. Both Saturn and Jupiter will be visible in the west during the eclipse. Learn how to view the eclipse with the experts and be apart of the event!

Times of Eclipse Events, January 20, 2000
(moonrise at 4:46 pm PST)

Event	PST:
Partial eclipse begins	7:01 p.m.
Total eclipse begins	8:04 p.m.
Mideclipse	8:43 p.m.
Total eclipse ends	9:23 p.m.
Partial eclipse ends	10:26 p.m.

Background:

The moon is always full at the time of a lunar eclipse because earth will lie between the sun and moon. If the moon's true path were exactly in the plane of earth's orbit about the sun, we would have a lunar eclipse at each full moon. Actually, the moon's path is inclined at about 5 degrees to the earth's orbit, so every year of two on average all three line up for a lunar eclipse. We are fortunate that both lunar eclipses will be total eclipses, when the earth casts a dark central shadow, called the umbra, across the moon's surface. The moon should look deep brown, gray or even reddish along the edge. The last major total lunar eclipse in the Pacific Northwest was back on November 29, 1993.

A story is told of '99, in a season once called Spring, when the turning of the seasons failed, and Winter's grip remained. Relentless, 'tis said, were Pacific storms, shrouding the Equinox Moon; would a chill of dread or a warming breath be the fate of the Solstice Sun?

A Stargazer's Lament

I dreamed last night winter's clouds
were gone
The moon was nearly new
And in their place the Milky Way
Exploded into view

At last my winter-weary eyes
In the crystalline black would see
Elusive sights of a perfect night
Reveal themselves to me

I dreamed the countless
stars appeared
And formed their gossamer clouds
Till favorites sought were almost lost
Among the raucous crowds

No curfew loomed this balmy night
As summer conquered spring
Tomorrow would be a Saturday
No morning bell to ring

And yet my dreaming heart still raced
As I sighted the next rare gem
Breath held in haste so not to waste
A moment before night's end

I dreamed of a starry, starry night
Of winter's turning fate
But woe, I woke, and quickly knew –
For summer I'd have to wait

– Catherine Masciola Walsh

AHEAD WARP FACTOR 1 (ALMOST)

By Doug Huston

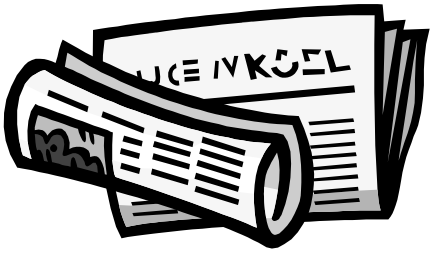
Space propulsion systems today generally consist of some type of rocket power, either the combustion of various types of fuels, or the venting of stored high-pressure gases. These types of propulsion systems generally cannot produce sustained accelerations as their supply of fuel or motive gas is quickly depleted. This fact in turn also limits the top velocities that can be obtained by current space vehicles and lengthens journey times. However, the 27 August 1999 issue of Science reveals that laboratory testing of a device that could give spacecraft a long-term push is scheduled to begin soon. The Science article describes a propulsion system that could achieve velocities of up to 290,000 km/hr for a 140-kg spacecraft. This represents about one-quarter the speed of light. At this velocity, a satellite launched today would beat Voyager 1 out of the solar system despite the fact that Voyager 1 was launched over 20 years ago.

The new propulsion system is called the "Mini-Magnetospheric Plasma Propulsion System (M2P2)" and relies on the solar wind. It is also surprisingly compact. Science describes the system as "pickle jar sized." The M2P2 system generates within itself a small plasma filled magnetic bubble. In physics, a plasma is a highly ionized "gas" of essentially unbound electrons and atoms. Battery powered electric coils in the M2P2 generate electric fields that force the plasma out of a cylinder. The highly charged particles in the plasma drag the magnetic bubble along with them and in the words of the Science article, "inflate a 33 km wide magnetic balloon." This magnetic balloon acts like a sail in the solar wind and propels the spacecraft forward. The M2P2 system could thus provide a sustained acceleration to any spacecraft as long as the solar wind was available as a motive force and the spacecraft could provide power to the propulsion system.

Science estimates that this could be as far as 70 astronomical units. This highly imaginative and efficient propulsion system was invented right next door to us by geo-physicist Robert Winglee of the University of Washington, Seattle.

Science says that if the lab tests are successful, the first M2P2 powered spacecraft could be built for less than 2 million dollars and be ready in 10 years.

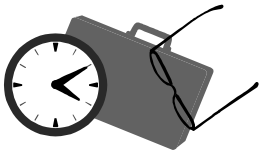
CLASSIFIED ADS



LOST: Red serving tray at the Christmas potluck. If you picked it up by mistake please call Jean at 360 887-8778. It has sentimental value to me.

FOR SALE: Celestron C-8. Includes 3 eyepieces, several filters, 2 camera adapters, spotting scope, motorized, with converter, heavy tripod and customer heavy-duty case. $1000 OBO. Call John Baldwin 541-922-5108.

WANTED: 50's –80's telescope company catalogues, brochures, flyers, and owner's manuals such as Unitron, Clave, Meade, etc. Also any Clave eyepieces – any condition! John Siple, 33230 Primrose Rd., Corvallis, OR 97333. 541-758-8326.



BOARD MEETING MINUTES

Peter Abrahams

Abbreviated minutes of the meeting of the board of the RCA, 06 Dec. 1999. Present: Candace Pratt, Jane Walpole, Peter Abrahams, Carol Cole, Brian Richardson, Sameer Ruiwale, Dennis Martin, Chuck Dethloff, Bob McGown, John Cart, Jim Girard, Margaret McCrea, Bob Ward, Matt Brewster, Jan Keiski, James Synge, Rebecca Gee, Scott Turner.

Treasurer: Jane. 501-C will be done this month. CT-12 already done. Much assistance from Judy Dethloff is gratefully acknowledged. Net worth $15,440. Bill for web page will need to be paid soon.

Programming. Matt. January, 'information fair', organization begun for individual tables.

Membership. Carol. 4 renewals, 9 new members last month.

YRCA. New space for Thurs. evenings has been discussed. Members have already approached their schools, permission granted at Lincoln High (Joey Beeson). Extra funding won't be necessary.

We have 3 volunteers for middle school program, and 3 for the elementary program who are teachers.

John Lang also volunteered to 'teach the teachers to teach'. Preliminary titles are Elementary YRCA & Junior YRCA. First meetings Jan. 17. YRCA membership restricted to RCA members & their families.

Jim Doyle memorial fund. John. Possible purchases: Binocular & stand, 6-8 inch telescope, several eyepieces, have been discussed. Also binocular astronomy books, totaling $103. Available funds total about $1,000. Possibly make the stand, or consider a Bogen-type tripod & pistol grip adapter. Budget about $250. for binoculars. Jan will provide list of books, John & Brian will consider equipment.

Possibly John & Jim will budget some of the money for wood to finish three telescopes that are under construction as club scopes. Carol: Motion we fund purchases, as the Jim Doyle memorial: binoculars, stand, books, and materials to complete 3 telescopes in progress, brass plaque. If any money left over, buy a few eyepieces. Motion passed.

Star Parties: Scott. Tentative program submitted. Board members to send feedback to Scott in the next two weeks, until Dec. 20. In Jan. we will approve the schedule.

OMSI issues. The museum is moving to a fee based structure, and our relationship will change in the next year. The details of our contract with OMSI are not yet decided. Meetings of special interest groups are moving to other locations.

(Continued from page 4)

OBSERVER'S CORNER

Now take the clean mirror over to the towel by the hair dryer. Two options now:

1. Using the hair dryer (set on "warm"), blow the remaining drops of water off the mirror while holding it nearly vertical. This will take a couple of minutes.
2. Or, lay the mirror flat. Take one sheet of paper towel and hold it vertically at the edge of the mirror. Holding the hair dryer in your other hand, turn it on to the "warm" set ting and direct the stream of air to the vertical face of the paper towel, allowing it to be gently blown a cross the face of the mirror. This takes some practice – the idea is for the air pressure to be just strong enough to blow the paper towel on to gentle contact with the mirror, absorbing any remaining moisture. One pass can do the trick if the paper towel is big enough.

Inspect the mirror for any remaining dirty spots. If clean, reinstall the mirror back into your scope. If there's a dirty spot or two repeat the process from the cottonballs on. Remember, no matter how well you clean your mirror, the coating will never be quite as pristine as when you first bought it or it came back from the coater. Take heart, that's just the way it goes.

Like many things in astronomy, this comes across much more involved than it actually is to do. After a couple of cleanings, you'll find the process relatively simple. Good luck, take your time and always make sure you have everything you need nearby before you start.

The Weather SIG

Date: Tuesday, January 25th

Place: OMSI, Classroom 1

Time: 7:00 PM

Come rain or shine . . .

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354

JANUARY 2000						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
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FEBRUARY 2000						
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27	28	29				

January

Jan. 3	Mon.	Board Meeting	OMSI CR#1	7:00PM
Jan. 12	Weds.	TM Workshop	OMSI Bldg. C	6-9PM
Jan. 17	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30PM**
Jan. 17	Mon.	Young RCA	OMSI Audi.	6:30-7:30
Jan. 17	Mon.	Junior & Elementary RCA	OMSI Audi.	6:30PM
Jan. 20	**Thurs.**	**Total Lunar Eclipse Party**	**OMSI**	**7:00PM**
Jan. 18	Tues.	Cosmology SIG	OMSI CR#1	7:00 PM
Jan. 22	Sat.	TM Workshop	OMSI Bldg. C	6-9 PM
Jan. 25	Tues	Weather SIG	OMSI CR#1	7:00 PM

February

Feb. 7	Mon.	Board Meeting	OMSI CR#1	7:00PM
Feb. 9	Weds.	TM Workshop	OMSI Bldg. C	6-9PM
Feb. 19	Sat.	TM Workshop	OMSI Bldg. C	6-9PM
Feb. 21	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30PM**
Feb. 21	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30PM
Feb. 22	Tues.	Cosmology SIG	OMSI CR#1	7:00PM
Feb. 22	Tues.	Weather SIG	OMSI CR#1	7:00 PM

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Planetarium. Occasionally the meeting is held in the Planetarium. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/).

OMSI CR #1 (Classroom 1) is the room just north of the Auditorium. The monthly Board Meeting, the Telescope Making Workshops, and many of the SIG meetings are held there. Go past the Planetarium and the Auditorium, continue down the hallway, and you'll see it on your left.

RCA CLUB INFORMATION
Message Line: (503) 255-2016
Web Site: http://www.rca-omsi.org/rca/

The Rosette Gazette

Volume 12, Issue 2 | Newsletter of the Rose City Astronomers | February, 2000

In This Issue:

VOLCANISM ON JUPITER'S MOON IO

Join us on February 21st at 7:30 pm for the RCA General Meeting in OMSI's Auditorium when Greg Cermak, Solar System Ambassador for NASA's JPL, talks about the solar system's most volcanically active body, Io. The presentation explores the discovery of volcanism on Io by Voyager, radiation hazards at Jupiter, Galileo spacecraft problems, and interpretation of data returned from the late 1999 Io fry-bys (fry-by is correct...not fly-bys) by Galileo.

Greg Cermak is the Director of the Clark County Historical Museum operated by the Fort Vancouver Historical Society of Clark County, Inc. The museum focuses on the culture and natural history of Clark County and the Pacific Northwest. He is also a Senior Software Engineer and Instructor with STEP Technology in Portland Oregon. His interests include reading, history, technology, bicycling and robotic exploration of the solar system.

WELCOME NEW MEMBERS!

Amy Sibal
Randy Nolan
Dan Gerhards
Pat Langston
Martin Johnson
Kevin Joyce
Morris Green
Laurie and Steve McDowell

14th Annual Messier Marathon

The 14th Annual Messier Marathon is just around the corner with this year's event scheduled for Friday March 31, through Sunday, April 2, 2000. Last year's program was a big success with a record number of families participating. Come and observe under Central Oregon's clear (hope), dark skies and enjoy all of the amenities of warm beds, prepared food, and activities at Kah-Nee-Ta Resort. And, once again, the Messier Marathon will highlight the festivities.

For those in the club who many be new to the organization, RCA has been kicking off its star party season every March for 13 years at Kah-Nee-Ta with a Messier Marathon. And, what is a Messier Marathon, you ask? Well, the Messier list contains 110 of the best-known objects in the night sky. During late March, given certain conditions, nearly all of the 110 objects can be seen in one night (from dusk until dawn). An organized blitz to find all 110 objects in one night is called a Messier Marathon.

During our past 13 functions, the weather has been pretty good to us; we have never failed to obtain at least a portion of one night's clear skies for observing, which is nothing short of amazing during Spring in the Northwest. In 1997, we had the added attraction of Comet Hale-Bopp making a glorious early morning appearance, to the delight of all observers. Over the years, the event has become a two-night function, with a Saturday evening banquet as a prelude to the Messier Marathon Star Party. The event is very popular with families since it is one of the few that affords a warm bed and hot shower, not to mention a heated swimming pool, great food, a giant fireplace, and much more.

You don't have to do a Messier Marathon to participate. Some participants come just to spend their time observing their favorite objects, work on their observing programs, or mingle with other astronomers. Others come to tackle the Marathon. You don't need a telescope to participate; other members are enthusiastic to share their views.

(Continued on Page 5)

February 5 | February 12 | February 19 | February 27

Club Officers			
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Telescope Librarian	Brian Richardson	(503) 625-7373	brian_shelly@earthlink.net
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Youth Director	Bob Ward	(503) 203-1540	ak4a@home.com
Light Pollution Rep.	Bob McGown	(503) 244-0078	mcgown@teleport.com
New Members Programs	Carol Huston	(503) 629-8809	StarsCarol@aol.com
Magazine Subscriptions	Johan Meijer	(503) 777-0706	johanm@www.com

President's Message

By Peter Abrahams

The RCA belongs to the International Dark-Sky Association, a group that is becoming more & more effective in fighting & even reversing the spread of light pollution. One of my goals as new Pres is to increase the participation of the RCA in the IDA, and to see their ideas implemented in the Portland area as growth continues.

Any members interested in this, who have a little time & motivation, please contact me, as there is much work that can be done. We have an IDA coordinator on the board, Bob McGown, but this is not a one person job. We need people to bring these ideas to their neighborhoods, to work with conservation & wilderness groups, and some real heroes to work on new property development & sports field advocates.

Check out their web site: http://www.darksky.org/ 3225 N. First Ave.; Tucson, AZ 85719; USA, (520) 293-3198 voice, (520) 293-3192 fax. (They cannot always respond immediately.)

If you would like to become a member or renew, call toll free (877) 600-5888. Individual: $30, $50, $100. Student, Limited Income $15. The IDA is particularly valuable because actually doing something about this problem is not an easy chore. Developers will resist more complications in their plans, lighting engineers can have problems with amateurs informing them of developments in their field, and no one wants more expense. The worst resistance I've found is from sports field supporters, who typically volunteer time, raise money, knowing it is for the good of the kids, and regard objections as unpatriotic cruelty to children.

Of course, we do have to remember that for someone who has never looked at the sky, even when it isn't raining, the idea of protecting the dark is a completely foreign idea. The IDA has dozens of short papers available that can help tremendously in formulating an effective strategy.

Several RCA members have had experiences with promoting proper lighting in Sherwood, Lake Oswego, and Portland, typically with frustrating results. I would like to share one success story, as related on the RCA e-mail list.

(Continued page 5)

RCA

Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information. Please note: Allow two months for your subscription to be renewed from the time you bring or send your renewal to Johan until the magazine has processed the renewal.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary (ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more info.

Cosmology Special Interest Group

Date

Tuesday, February 22, 2000
OMSI Classroom 1

Discussion Leader David Tever
"The Anthropic Principle"

Pursuing a Science of Visual Observing

By Robert Mc Gown

Dale Fenske and I have started an ambitious deep sky project with the Astronomical League's support. The project involves a list of Galaxy Groups and Galaxy Clusters that amateur and professional astronomers will observe. There will be observers in various parts of the country observing these galaxy groups and clusters. The list will be compiled for amateurs of varying skill levels.

One southwest amateur astronomer we are working with is Ron Morales. He suggested an averted vision observing scale for challenging visual observing. Ron has kept an observing log since 1972 and wrote a book on anomaly galaxies. Ron also, saw the need for a stratified adverted vision scale. Observing the Abell Galaxy clusters, Ron introduced the use of these levels with the chart.

Following my discussion of averted vision in the Herschel II Observing Program is a copy of Ron's chart.

Thoughts on an Averted Vision Scale

By definition, averted vision is the attempt to detect an object by observing it without directly 'looking' at it. While I was a member of the Herschel II Observing Program, the observing teams regularly used a variety averted vision techniques to identify the 12th to 14th magnitude galaxies. Depending upon the size of scope, seeing, transparency, power, and the actual visual magnitude, adverted vision usually played a major role in the outcome of the visual observation. Subtle averted detection, scope wiggle, the percentage the visual adverted detection duration, duration of the visible, challenge levels, flickers, threshold of detection, individual dark adaptation, glimpses of faint fuzzies, seeing the object vs. detecting the object, and averted imagination were descriptions I heard from Candace Pratt and Chuck Dethloff referring to averted vision. At the eye piece, a knot in a spiral arm or a low surface brightness galaxy were candidates for seeing the object vs. detecting the object.

Chuck described naked eye adverted vision with low light observations of the gegenschein where the circlet elongated in an oval area, averted vision was not limited to the eyepiece.

Averted vision in the eyepiece would grade the observation to a level where difficult visual observations might have a correlation between conditions, like scopes and observers. The one - five scale may or may not be adopted, however comparing the scale Candace Pratt said , "we need to add a sixth category and call it the threshold of detection." One waits for the sky conditions, the brain, and eye to synchronize. Here the mind can be fooled. Of course, the seeing has to support the observation. This would be at the threshold of detection. Jokingly some people would call this Averted Imagination.

Each time an observer is distracted from one's observing by a bright flash light or by a visual excursion of a planet it can have a major affect on dark adaptation. The sensitivity of the rod cells in the eye physiological ability to send its nerve impulses to the visual cortex is radically impaired. This goes back to Rebecca Gee's experiments with red light green light dark adaptation. In this respect, Ron Morales who is color blind can't see M-101 naked eye. The ability to see low magnitudes on a particular telescope may also involve the use of the cone cells in blue light. The other reason we look off to the side of a deep-sky object is because the cone (color) cells are at the center of the eye and by looking off to the side we are receiving photons of light in the rod cells. The science of visual observing should give the observer every possible physical advantage.

Experienced observers, like Howard Banich, Miles Paul and many others might observe an single object visually for 45 to 60 minutes. Using this technique, one can establish the criteria of the visual limitations. The eye becomes fully dark adapted. Will high power change the averted levels? Perhaps high power used on a small galaxy will bump it to a lower AV level, while diffuse nebula might remain the same AV level. The parameters of visual identification and detection are described and established. The use of various adverted vision techniques are pin pointed to specific levels. This type of observing will give the optimal identification of an image unlike an enjoyable Messier marathon where one may glimpse of the object from a semi-dark adapted eye.

During the development of the Herschel II, there were numerous observers that discussed levels of averted vision to classify their observation. Ideally, adopting the one - five system is the best use for a standardized observation. The important element is that we recognize levels from subtle identification to the physiological limits of detection.

Averted Vision Levels

AV1 Object is seen with averted vision but once found, the object could occasionally seen with direct vision. (see footnote #1)

AV2 Object is seen only with averted vision but it is held steady. Here the sweep of ones vision makes the object detectable.

AV3 Object is only occasionally seen with averted vision as it "comes & goes" with the seeing condition. In this case the object is seen more than 50% of the time.

AV4 Object is only occasionally seen with averted vision as it "comes & goes" with the seeing conditions. In this case the object is seen less than 50% of the time.

AV5 Object is only glimpsed with averted vision after continuously viewing the field for a few minutes or more. This level of averted vision usually occurs when one carefully observes a field for a lengthy period of time. My notes indicated that this often occurs within the first three to five minutes of viewing the field. In this level it is important that the observer have no knowledge as to the exact location of a possible object (i.e. galaxy). Having such knowledge prior to viewing could mislead some observers into believing that they saw something that they did not actually see. One problem associated with viewing extremely faint galaxies is that sometimes an extremely faint star could be misidentified as an extremely faint galaxy. For this level of averted vision I suggest that the observer make a field sketch showing faint stars as well as the object in question. This field sketch can then at a later date be compared to an actual photograph of the field. This level of detection, are you seeing or just detecting the presence of an averted object.

Footnotes:

#1) If an object is first noticed with averted vision but once found this object can then be seen steadily with direct vision, then I consider it to be a direct vision object as opposed to being an averted vision object.

#2) Scope wiggle can be used with averted vision to locate objects and assisting detection. It can help detect an object across the scale of adverted detection. Scope wiggle is a technique that Carol Cole advised during the Herschel 800 to detect an averted, nearly invisible, galaxy lying at the cone cells field of view.

The Observer's Corner

By Howard Banich

Deep Sky Wonders
Walter Scott Houston
selections and commentary by Stephan J. O'Meara
Sky Publishing Corp, 1999
$29.95

A book review this month, but something a bit more than that. Walter Scott Houston, called Scotty by his many friends, wrote the column Deep Sky Wonders for *Sky & Telescope* magazine for almost 50 years. In no small part he influenced me, through reading his column to become the observer and writer I am today. I often think back to his columns when writing this one, wondering how Scotty might turn a particular phrase. His death in 1993 left a large and unfilled hole in astronomical writing.

But now this wonderful collection of his work is available – I bought a copy as soon as I saw it advertised. It is adapted from columns Scotty wrote over the years into 12 chapters, one for each month. Stephan James O'Meara had the huge but enviable task of taking every column Scotty ever wrote and pulling them together into this most enjoyable and readable format.

The book is a treasure. If you enjoy deep sky observing at all, this book is for you. The love of astronomy, the night sky, the people who observe pours from each page as much as his bottomless knowledge and first hand observing skill.

And depth – this man not only wrote this monthly column for 48 years, he observed for several decades before that.

He knew his stuff and he loved it too. A small sample from his January 1926 notes:
Snow crystals sparkle like blue diamonds, but with a dreamy gentle radiance totally unlike the harsh gem. A rail fence as black as Pluto himself runs along the road. The forest is black in the distance. The landscape is a masterpiece in ultramarine and sable.

As if in contrast, the heavens above blaze with a thousand tints. Incomparable Orion leads the hosts with blue Rigel, ruby Betelguese, and bright Bellatrix. His silver belt and sword flash like burnished stellar steel. And more advanced is dark and somber Aldebaran, so heavy and gloomy. In fitting contrast are the delicate Pleiades, who sparkle "like a swarm of fireflies tangled in a silver braid."

How can a person ever forget the scene, the glory of a thousand suns in a thousand hues, the radiant heavens and the peaceful Earth? There is nothing else like it. It may well be beauty in its purest form."

I just finished reading the book. I'm charged up, ready to observe (darn this rain!) and sad at the same time. This is best and the last of Walter Scott Houston's deep sky writing and is not to be missed.

COOL FUN FACTS

Who was first to recognize Saturn's rings?

Although Galileo Galilei was the first to see the rings of Saturn, his telescope did not provide a very good view and he did not correctly interpret them. He thought he was seeing two smaller planets just touching the central planet. When the rings became edge-on to Earth, Galileo was confused by the sudden disappearance of the two "side planets."

For many years, Saturn was a mystery. The strange side protruberances came to be called ansae (handles), but no one could explain what they were, or why they sometimes disappeared.

The first correct interpretation of Saturn's rings was by the Dutch astronomer Christiaan Huygens [KRIS-chan HOW-kenz] in 1656. For some time, Huygens kept his discovery a secret, while he finished other projects. Finally, in 1658 he revealed the secret, then explained it more fully in his 1659 book, "Systema Saturnium."

More about Huygens and Saturn:
http://www.sil.si.edu/DigitalCollections/HST/Huygens/huygens-introduction.htm

More Cool Facts about Saturn:
http://www.cool-fact.com/archive/1997/06/27.html
http://www.cool-fact.com/archive/1998/10/22.html

(Continued from Page 1)

Kah-nee-ta Marathon

Here are the details for this year's party: LODGING: Rooms will rent for $75 per night, single our double, plus $15 per extra person up to a maximum of four per room. Children under 18 are free when occupying the same room as their parents. This represents a 50% savings over regular rates. To register for a room, you should call Kah-Nee-Ta directly at 1-800-554-4786 to make your reservation, mentioning that you are with the RCA star party. RCA has reserved a certain number of rooms at the special rate that will be held until March 1, so please make your reservations as soon as possible. BANQUET: The Saturday evening banquet will feature a roast chicken dinner for adults for $20 per person (which includes gratuity), and barbecued chicken and fries for children 12 and under for $9.00 (which includes gratuity). ACTIVITIES: Information packets will be available when you sign in at Kah-Nee-Ta (ask for one at the front desk). They will include a Messier Marathon guideline plus directions to the observing site. A social room will be set up upstairs on Saturday from 11:00 AM till 4:00 PM. Participants are encouraged to bring pictures, inventions, observation notes, and tall tales to share with others.

EVENT REGISTRATION: There is no general registration or registration fee to attend this event. However, participants will need to register and prepay for the banquet. We will have a table set up for banquet registration and event information at the February and March general meetings. In addition, you can register for the banquet by mail by sending the names of attendees plus $20 per adult and $9.00 per child to Carol Huston, 19360 SW Hennig Street, Aloha, OR 97006. I am also available to answer any questions at 629-8809 or e-mail at StarsCarol@aol.com.

Start off your observing season with RCA by attending the 2000 Messier Marathon. We look forward to seeing you there!!!

(Continued from Page 2)

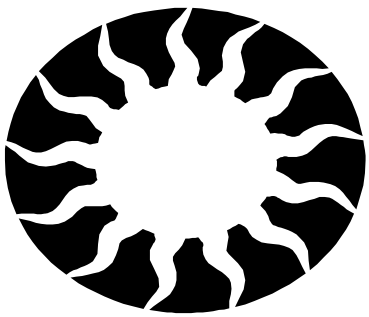
President's Message

"There are certain ordinances that identify light pollution as 'light trespass' and it is also legally identified as a health issue. I learned this just after building my home in Troutdale some years ago. When I got into my backyard and noticed that the old 'cobra head' street lights were shining, not only to inhibit my night star gazing, but into my bedroom window, disrupting my sleep.

I contacted local city officials and found that PGE was more than happy to fit the local street lights with aluminum hoods, directing the light down and noticeably shielding it from my property. I called the PGE lighting director and they had crews out the next day ! The shields are inexpensively attached within minutes.

To insure a firm response from PGE, it would be beneficial to indicate that the lights are disrupting your sleep rather than your star gazing, as health issues are tantamount, where astronomy is not yet viewed as such.

I'm sure this will soon change, as many rediscover the nature of the universe. It obviously has for cities like Tucson, Flagstaff, Carmel by the Sea and Cannon Beach. The city of Los Angeles now replaces all lights with new ground directed fixtures whenever a burned out street lamp occurs." - Mark Siebold



Library Notes

By Jan Keiski

A "Belated" New Year's Resolution - Getting those ***way*** overdue books back to the library!

Our library is fully staffed now with two assistants – Larry Froberg and Rhea Young. A big thanks to Catherine Masciola Walsh for donating copies her newly published book, "Skywatching at Olympic National Park, a Stargazer Field Guide"

New Book

"The Really Big Universe" by Nicolai Baxter, a poster size book full of information. Beautiful graphics.

Recent Donations:

At the November meeting RCA Member Rob King donated a large number of books to the RCA library. It was a regular "star fall"!!

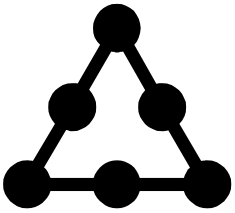
"The Backyard Astronomer's Guide" by Terence Dickinson & Alan Dyer
"The Star Guide" by Kerrod
"The Planet Observer's Handbook" by Fred Price
"The Practical Astronomer" by Brian Jones
"The Hubble Wars" by Eric Chaisson
"Summer Stargazing" by Terence Dickinson and
"The Whole Shebang" by Timothy Ferris

At the October meeting Cindy Franke donated:

"Black Holes & Baby Universes" by Stephen Hawking and "The Vanished Library" by Luciano Canfora

To Infinity and Beyond!

By Doug Huston



Is the universe infinite? What do you think? Well, it depends on what infinite means, doesn't it? Right now, you're probably thinking, "What is he talking about – I know what infinite means!" Well, maybe and maybe not. Let's see.

For a long time, mathematicians and philosophers have struggled with the concept of infinity. It troubled the Greeks so much that they would only talk about "potential infinities." This was kind of a half-baked way of dealing with the results of some of their geometric investigations that seemed to suggest that some things had no boundaries. They said that these things could possibly be infinite, if such a thing as infinity really existed. This kind of mushy concept of potential infinity hovered at the borders of mathematics for centuries.

As mathematics advanced, however, people kept bumping into things that seemed to grow without bound. A serious effort was needed to deal with this concept. Finally, in the latter half of the 19th Century, a German mathematician, Georg Cantor, investigated the properties of infinite numbers and sets and founded the branch of mathematics now known as "Transfinite Arithmetic." His investigations yielded some startling and counter-intuitive results. For example, he found that some infinities were more infinite than others! Consider this question: Which set is larger, the set of all positive integers, {1,2,3…..} or the set of all numbers between 0 and 1, not including 0 and 1? (This is written as {0<x<1}.) By the way, dots placed after a group of numbers or letters in mathematics means "and so forth." It turns out that the set {0<x<1} is more infinite than the set {1,2,3….}! A proof of this is shown below. Those who want to can just take my word for it and skip down to the next paragraph.

We can write the members of {0<x<1} as 0. $a_{ij}a_{ik}$……. where a_{ij}, a_{ik}, (and so forth) are members of the set {0,1,2,3,…….}. Now, if this set is of the same size as the set of integers, we should be able to "count" it. In other words, we should be able to associate one member of the integers with one member of the interval between 0 and 1.

Lets try this:

Let $1 \rightarrow 0.a_{11}a_{12}a_{13}\ldots.$

$2 \rightarrow 0.a_{21}a_{22}a_{23}\ldots$

$3 \rightarrow 0.a_{31}a_{32}a_{33}\ldots$

And so on. Looks good so far. But wait – I can construct another number, 0. $b_1b_2b_3\ldots$ by saying that b_1 can be any number other than a_{11}, b_2 can be any number other than a_{22}, b_3 can be any number other than a_{33} and so on down the line. Well, this means that $0.b_1b_2b_3\ldots$ doesn't equal any of the numbers we have associated with the integers, and we have "used up" the integers. But, it is clearly between 0 and 1 and thus must be a member of the interval we are looking at. The conclusion is that there are more members of the {0<x<1} than of {1,2,3…..} so, the interval between 0 and 1 is more infinite than the set of integers!

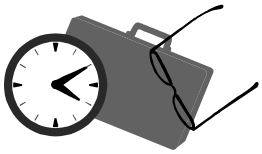
Now, here's a question for you – Compare the sets {… -3, -2, -1, 0, 1,2,3…} and {1,2,3…}. Is one more infinite than the other? (Answer in the next paragraph)

Georg Cantor classified these infinities. He assigned to each type of infinity a "cardinal number." The infinity of the positive integers was assigned the cardinal number Aleph- Null. Aleph is the first letter of the Hebrew alphabet. So, any set that can be put into one-to-one correspondence with the set of positive integers is of cardinal number Aleph-Null. Another Aleph-Null infinity class is {….-3,-2,-1,0,1,2,3…}, the set of all negative and positive integers with 0. (Told you it was pretty counter-intuitive!) The infinities in the {0<x<1} class were assigned cardinal number Aleph-1. Another Aleph-1 infinity is the set of all irrational numbers. An irrational number is a number that can't be written as the ratio of two integers. An example is the number Pi = 3.1415926…….. One question that Cantor wasn't able to answer concerned the ordering of the cardinal numbers. While it is clear that Aleph-1 is greater than Aleph-Null, how much greater is it? Are there infinity classes between Aleph-Null and Aleph-1? In other words, do the infinite cardinals form a smooth continuum like the real numbers do? Accordingly, this is known as Cantor's Continuum Hypothesis.

Although he wasn't able to prove it, Cantor believed that this hypothesis was false. To the best of my knowledge, it still hasn't been decided.

All this seems pretty esoteric, but the fact is that we deal with infinities every day. Take this example: Suppose you are at one end of a room and want to cross to the other side. To do so, you first have to go halfway across, then half way across the remaining half of the room, then halfway across the remaining portion and so on, out to infinity. How can this be, how can you cross this infinitely decreasing set of fractions? This very problem was one of the reasons the ancient Greeks were so bothered by the concept of infinity. It was described by a Greek named Zeno, and has since been known as Zeno's Paradox. It has generated over the years a large body of scholarly work, and several very technical solutions, but the short answer is that this is a sum of the form ½ + ¼+ 1/8+ …. which can be shown to add up to 1. In other words, all these fractions of the length of the room sum to 1 full length of the room. One more example – draw the horizontal and vertical sides of a triangle both 1-inch long. Then by the Pythagorean Theorem, the length of the inclined side of the triangle connecting the first two (the hypotenuse) is equal to the square root of 2. But, this is another irrational number that has a never repeating, never-ending decimal representation. The square root of 2 is approximately 1.414213…….. The existence of numbers like this so bothered the ancients that they tried to keep them secret!

So, the infinite is an unusual place that requires you to twist your brain a little to grasp. However, now when someone makes a comment about the infinite universe, you can ask them what infinity are they speaking of – Aleph-Null, Aleph-1, or what?



BOARD MEETING MINUTES

Carol Huston

ABBREVIATED MINUTES
RCA Board Meeting
7:00 PM, January 3, 2000
OMSI

Present: Peter Abrahams, Jan Keiski, John Cart, Scott Turner, Jim Girard, Sameer Ruiwale, Jane Walpole, Matt Brewster, Dennis Martin, Candace Pratt, Doug Huston, Carol Huston.

Peter: Introductory remarks to lay the groundwork for board meeting and club operations. He will refrain from picking up the slack when people don't, including working with OMSI on projects. He will rely on other people - delegate - including the phone line. Any projects that a member doesn't pick up may be dropped until someone champions that activity. Peter will probably streamline the introductory comments at the general meetings in response to member input. Wants to continue name badges at general meetings.

Treasurer's Report -- Jane: Pointed out that the money market fund where we have RCA money earned $.01 this past month. She will check it out to see if we could have our money in a better spot. Discussion: RCA funds need to be in an insured account. Jane will check out how to transfer into this.

Membership Report - Doug: 365 active member families.

Programming - Matt: The Jan general meeting will host the annual Info Fair.

Youth Program - Candace: Will be held 6:30 Monday the 17th in the Auditorium -- one group on the stage and one in the corner. Kickoff meeting will have all of the leaders (6) so that the kids meet them all. Each of the 3 leaders will do 4 programs a year. Elementary - Ron Karcher, Dee Oszvath, and Mary Ann Buchanan; Junior leaders are Vern Weiss, Chris Steinkamp, and Doug McCarty.

Cosmology SIG - McGown: Meetings have changed to right after the general meeting on Tuesdays for the next couple of months.

Webmaster - Dareth: She needs up to date copies of lists, programs, and meeting information for the schedule. She will make the switchover to the new format tonight and wants to verify accuracy.

Publicity - Dennis: Star party publicity on back burner. Wants to publicize RCA to the public and the newspapers. Needs to get brochures and info about meetings to people. Discussion: What is the purpose of publicity for the club? Increasing membership? Suggestion: board members need to have a bulletin board discussion to get this clear.

Membership Cards: Who is in a position to help put together cards? Doug to follow through on getting bids for plastic and paper cards as well as stationery.

Peter: The Strong's have proposed using Juniper Sky for an alternate dark-sky star party site (dates listed on agenda). Scott and Peter will pursue.

Peter: In regards to talking to Reed about RCA meeting there, Peter indicated that he thought meeting at Reed soon might be too premature. RCA should wait until OMSI is settled before creating confusion within the membership.

OMSI Contract: Rewrote what OMSI originally submitted to us and then added our modifications to that. The big issue is about paying for the Gazette and proposing that OMSI continue with us paying them $2500. The second big issue is having the auditorium for our general meetings.

MOTION: Dale made a motion that the letter be approved with the corrections that were discussed above. Jan seconded. Motion passed. One "no" vote was tallied.

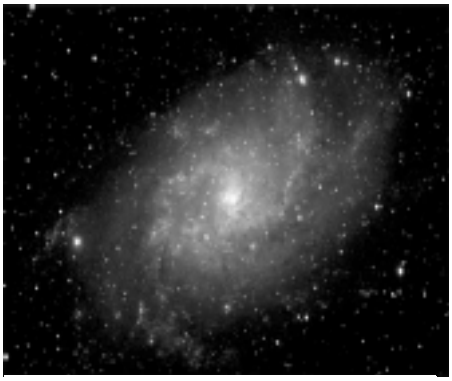
Goals: Peter reviewed 1999 goals noting that RCA had made most of the goals listed. Reviewed Year-2000 goals.

Dale - Alcor: 344 members is the official number for the Astronomical League check.

Phone Tree: Bob McGown (Jan 1-15). Jan 15-31 = Dale Fenske. Feb 1-14 = Dareth

Star Party Schedule -- Scott: Distributed his preliminary posted list for comments. Scott will resubmit to the Board by tomorrow, and approved by the end of the week.

Meeting adjourned at 9:05 PM.



M33 in Triangulum ***By Jim Girard***

CLASSIFIED ADS

NOTE: Although many of our members will help someone fix a telescope, I know of only one professional telescope & binocular repairman in this area. Jim Rose used to work at Captain's Nautical but has now set up his own shop in Vancouver. 360-882-1853 (evenings M, Th,F are best); shop phone 360-882-1858. --Peter Abrahams

FOR SALE: Laser Collimators. $50. Call Ed Elder (503) 292-0612.

FOR SALE: Celestron C-8. Includes 3 eyepieces, several filters, 2 camera adapters, spotting scope, motorized, with converter, heavy tripod and customer heavy-duty case. $1000 OBO. Call John Baldwin 541-922-5108.

The Weather SIG

Date: Tuesday, February 22nd

Place: OMSI, Classroom 1

Time: 7:00 PM

Come rain or shine . . .

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354

FEBRUARY 2000						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
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6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29				

MARCH 2000						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
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5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

February

Feb. 7	Mon.	Board Meeting	OMSI CR#1	7:00PM
Feb. 9	Weds.	TM Workshop	OMSI Bldg. C	6-9PM
Feb. 19	Sat.	TM Workshop	OMSI Bldg. C	10-4
Feb. 21	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30PM**
Feb. 21	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30PM
Feb. 22	Tues.	Cosmology SIG	OMSI CR#1	7:00PM
Feb. 22	Tues.	Weather SIG	OMSI CR#1	7:00PM

March

Mar. 6	Mon.	Board Meeting	OMSI CR#1	7:00PM
Mar. 8	Weds.	TM Workshop	OMSI Bldg. C	6-9PM
Mar. 18	Sat.	TM Workshop	OMSI Bldg. C	10-4
Mar. 18	Sat.	Vernal Equinox Celebration	OMSI	7:00PM
Mar. 20	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30PM**
Mar. 20	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30PM
Mar. 21	Tues.	Cosmology SIG	OMSI CR#1	7:00PM
Mar. 28	Tues.	Weather SIG	OMSI CR#1	7:00PM

3/31-4/2 Fri-Sun Kah-nee-ta Star Party

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Planetarium. Occasionally the meeting is held in the Planetarium. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/).

OMSI CR #1 (Classroom 1) is the room just north of the Auditorium. The monthly Board Meeting, the Telescope Making Workshops, and many of the SIG meetings are held there. Go past the Planetarium and the Auditorium, continue down the hallway, and you'll see it on your left.

RCA CLUB INFORMATION
Message Line: (503) 255-2016
Web Site: http://www.rca-omsi.org/rca/

The Rosette Gazette

Volume 12, Issue 3 | Newsletter of the Rose City Astronomers | March, 2000

In This Issue:

Where in the Universe is Carmen Sandiego?

OMSI introduces its newest show to the Murdock Planetarium on March 4th. The March 20th General Meeting of the RCA will feature a presentation of this show, in the Planetarium at 7:30 PM.

"There's trouble in the Solar System and only one criminal mastermind could be to blame. Join the ACME Detective Agency as a galactic gumshoe on the trail of Carmen and her band of criminal cohorts on a fast-paced chase around the planets. This program, based on the popular television program and computer software, lets the audience gather clues and solve puzzles with a live show presenter to track down Carmen."

RCA Website News

For those who haven't visited lately, the RCA website has a new look! The front page, `www.rca-omsi.org/rca/index.htm`, has been designed so that it fits on a single screen. The new subject index is a handy guide for website navigation. Every aspect of the club is featured, from the Astronomical League awards to Star Party Etiquette to the Young RCA.

A special 'Library' section profiles our ever-growing astronomical library. Librarian Jan Keiski profiles one of her favorite books each month. This month's selection is "The Photographic Atlas of the Stars".

The new kid's clubs (Star Troopers & Star Hunters) have a section which will expand to include information about upcoming meetings and special activities.

Members can reserve some space on the website for their personal webpages such as Glenn Graham (Astrophotography), Ken Auel and Bob Bond have done.

The Rosette Gazette is available as a PDF file which can be downloaded and printed out to look exactly like the 'real' thing. For those who don't have Adobe Acrobat software on their machine, there is a link to Adobe to download the program which is free.

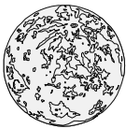
The RCA website is a 'work in progress'. We need contributions from our RCA members to provide updates and create new sections. If you have an idea for a section or would like to create a page on the site, please contact Dareth & Kris Murray: dareth@teleport.com

WELCOME NEW MEMBERS!

Michael Surgeon	Thomas Long
Denis Heather	Doug Gleason
Steven Steinbock	Kartik Raol
June Green	Geoff Larkin
Jacqueline Bell	Brent and Michel
Rick Wisniewski	Ohlgren
Robert Schockley	William Richard
Dennis Stoner	Don Shula
David McClure	

March 5 

March 12 

March 19 

March 27 

Club Officers			
President	Peter Abrahams	(503) 699-1056	telscope@europa.com
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VP Observing	Scott Turner	(503) 788-6484	kings1@teleport.com
VP Community Affairs	John Cart	(503) 775-4208	jwcart@aol.com
VP, Communications	Matt Brewster	(503) 774-0360	brewster@teleport.com
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Telescope Librarian	Brian Richardson	(503) 625-7373	brian_shelly@earthlink.net
Alcor, Historian	Dale Fenske	(503) 256-1840	fenskedf@juno.com
Media Director	Dennis Martin	(503) 363-8851	dmartin@teleport.com
Special Interest Groups	Jim Girard	(503) 643-1813	argo@teleport.com
Youth Director	Bob Ward	(503) 203-1540	ak4a@home.com
Light Pollution Rep.	Bob McGown	(503) 244-0078	mcgown@teleport.com
New Member Programs	Carol Huston	(503) 629-8809	StarsCarol@aol.com
Magazine Subscriptions	Johan Meijer	(503) 777-0706	johanm@www.com

President's Message

By Peter Abrahams

Are there any amateur radio astronomers in this area? This field seems to be overlooked. It certainly is appropriate for our weather. If there are any RCA members, or others, who have tried radio astronomy, please let us know -- we could highlight these projects in a Gazette article or a presentation to a general meeting. Local interest that I know about includes an ambitious project in Corvallis to assemble a radio telescope, status unknown. A couple of RCA members expressed some interest, but no experience. And I know one person who is hoping to assemble (soon) a radio to receive Jupiter. There's a fair amount of radio-related activity found on the web. This was discussed on the RCA email list, and I can e-mail a list of links to others who are interested. A few notes from the web:

★ About sixty five percent of our current knowledge of the universe has stemmed from radio astronomy alone. The discovery of quasars, pulsars, black holes, the 3K background from the "Big Bang" and the discovery of biochemical hydrogen/carbon molecules are all the result of professional radio astronomy.

★ Amateurs can in fact construct affordable systems with sensitivities comparable to professional all-sky search strategies even with antennas of limited aperture.

★ The aim of the radio amateur is to find something new and unusual, such a new radio source, or one whose radiation has changed appreciably.

Cosmology Special Interest Group

Date and Location

Tuesday, March 21st
Univ. Of Portland Physics Bldg.

Subject

Tour of the 1/10 scale model of Hale Telescope

Reading

"The Perfect Machine"

RCA

Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information. Please note: Allow two months for your subscription to be renewed from the time you bring or send your renewal to Johan until the magazine has processed the renewal.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more information.

CONSTELLATION OF THE MONTH

by Mike Powers

Canis Major, The Greater Dog, is low in the southwestern sky for observers in the northwest but it still has a number of open clusters that are easily observed in the month of March. Canis Major has fond memories for me because the open cluster, M41, was my first Messier observed from my city driveway with my first telescope, a 6-inch reflector.

Canis Major can be located by using Orion's belt as a pointer to the southeast and then locating Sirius, the Alpha star. Sirius is the brightest star in the night sky at magnitude -1.4 and the 5th nearest at 8.6 light years. Sirius marks the jaw of the Dog while the triangle of Delta (Wezen), Epsilon (Adhara), and Eta (Aludra) CMa marks the hindquarters of the Dog. Sirius is also part of the Winter Triangle that includes Procyon in Canis Minor and Betelgeuse in Orion.

Canis Major and Canis Minor represents Orion's hunting dogs. The Big Dog is ready to pounce on Lepus, the Hare. The Mesopotamians, Egyptians, and Chinese also related Canis Major to dog themes. However, many of the myths and legends that are associated with Canis Major are directly related to Sirius.

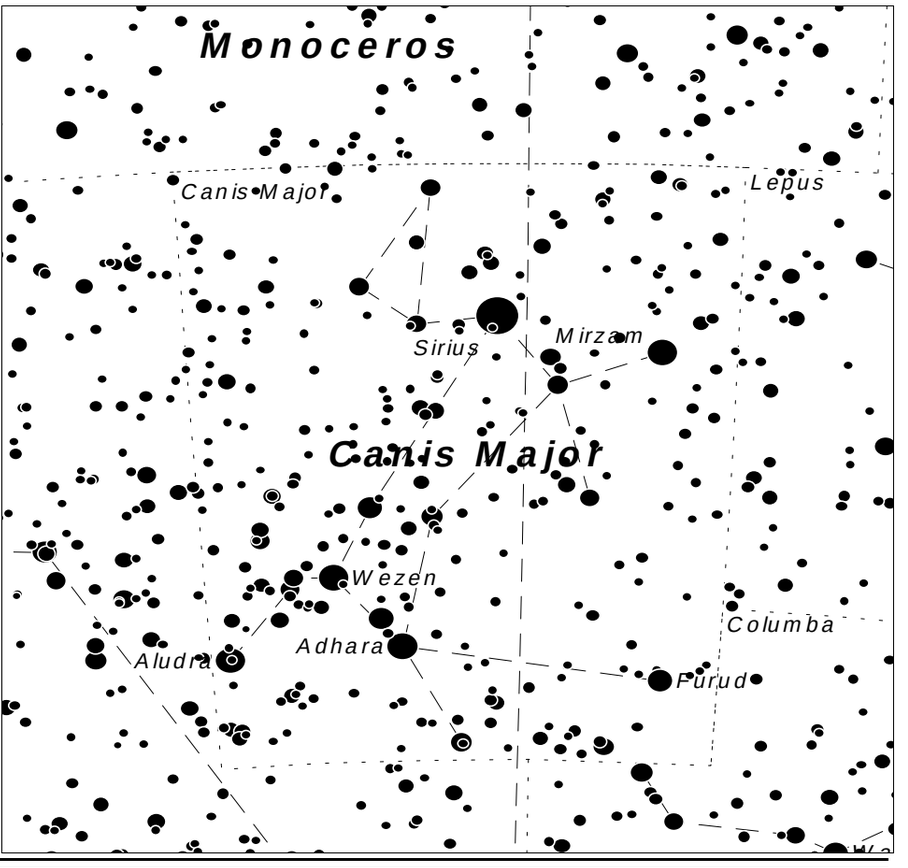
In ancient times Sirius made a brief appearance in the east just prior to sunrise in mid July. The Egyptians associated this appearance of Sirius with the flooding of the Nile. The heat of summer was also associated with the rising of Sirius, hence the *Dog Days of Summer*. The name Sirius is derived from the Greek name, Serios, meaning *scorching*. For further reading about the myths and legends of Canis Major and Sirius I highly recommend *Burnham's Celestial Handbook.*

Obviously the place to start when observing Canis Major is Sirius. This star appears brilliant white to the naked eye, binoculars, and the telescope. Sirius also has a famous tiny companion, Sirius B, a white dwarf star. The companion star is only 8.7 mag and 9" from Sirius and therefore is nearly impossible to observe by amateurs.

The open cluster M41 can be located by dropping directly south of Sirius 4 degrees. M41 appears as a haze to the naked eye from dark sites. Stephen O'Meara, author of *The Messier Objects* comments in his book that M41 reminds him of a little Beehive Cluster. Nearly 50 stars can be seen with a 3-inch telescope, while additional fainter stars are seen with an 8-inch scope. The beauty of the cluster is the result of many stars with contrasting colors.

A second well known open cluster in Canis Major is NGC 2362. This cluster has a rather unique visual appearance, with several dozens stars concentrated around the 4th mag blue-white Tau CMa. This cluster is only 1 million years old and therefore one of the youngest known open clusters.

According to Harrington in *The Deep Sky*, Collinder 140 is an overlooked open cluster in Canis Major that is excellent in binoculars. It can be located 4 degrees due south of Eta CMa in the southeast corner of the constellation. About 30 stars can be seen in low power binoculars marking the tail of the Big Dog. For our deep sky challenge, NGC 2207 and IC 2163 are an interacting pair of galaxies that are located about 3 degrees southwest of Beta CMa (Mirzam). At least 10-inches of aperture are required to appreciate the smaller IC 2163. Good luck this month observing during the *Dog Nights of Winter.*



How The People Arrived at The Middle Place

By *Richard Geller*

The following article is the conclusion of The Tewa Pueblo myth of Long Sash and the Endless trail that appeared in the December *Gazette*. The Tewa speaking Pueblo or village dwelling Native Americans of the desert southwest tell the tale of a great warrior, known as Long Sash, who leads the ancestors of the Tewa Pueblo to their homeland. Long Sash is represented in the sky by the constellation we would refer to as Orion. The road they traveled upon, the Endless Trail, corresponds with the Milky Way Galaxy.

After travelling for many generations through adventure and adversity, Long Sash leads his people down from the sky and onto Terra Firma for the final leg of their journey. The tribe follows their leader through a dark and cavernous region. Off in the distance Long Sash spies a small yet brilliant point of light. As they approach the light the people hear curious scraping and scratching noises. Eventually they discover an opening which leads up and out of the caves. Just inside the opening was the mole, who was hard at working digging and tunneling. Long Sash thanked him for his efforts and for guiding them out of the caverns, to which the mole enigmatically replied, "when next you see my sign you will be home."

The people saw before them a long thin rope hanging down from the opening. Long Sash climbed to the top of the rope and encountered Old Spider Woman who was busy weaving her web. The great leader requested passage for himself and his people through the domain of the Spider. Old Spider woman, grandmother to all life and to the Earth itself, agreed on the condition that her lair not be disturbed by their passage. After all were safely through Long Sash thanked Old grandmother Spider for her assistance. She responded as the mole had, informing the Tewa that when they saw her sign again they would be home.

Once again Long Sash led his people on until they came to a great mountain range to the North. These were the Bear or Taos mountains. Some members of the tribe elected to remain here, tired of wandering and wishing to settle down. Long Sash warned them, "It will be difficult to survive here. You will have to follow the way of the bear in order to have the strength to prevail." He also reminded them that they had not yet encountered the sign of either the mole or the spider and that he intended to find them.

The rest of the people followed Long Sash as they journeyed Westward to the land of the setting sun. Again some of the people chose to stay behind. Long Sash instructed them to emulate the coyote whose adaptability enabled him to prosper in this hot and dry climate.

The remaining tribesmen followed Long Sash East toward the rising sun where they found the land green and luxuriant, with a variety of seasons. Naturally some wished to stay in this most hospitable region. Long Sash told these individuals that their animal guide was the cougar who has the ability to change his ways with the seasons.

The remnants of the tribe walked South until they came to a more temperate land with a longer growing season. The people held high hopes that this was their promised land. Long Sash asked their spirits, or as he referred to them, the above persons for a sign. A passing eagle dropped two feathers pointing the way for the people to follow. They traveled West again until they came upon a funny creature who had the claws of the mole and the pattern of the spider's web on its back. It was a turtle! The people rejoiced in the recognition that they were home. They had arrived at the Middle Place. The mountains in the lands of the bear, coyote, cougar, and turtle encountered along the way form the boundary of the middle place, the home of the Tewa.

If you look into the night sky toward the North you will see the Big Star, also known as Polaris which guided the people on their way. The seven bright stars which resemble an animal with a long curved tail form the constellation Long Tail or as it is better known, The Big Dipper. Each of the seven stars symbolizes one of the animals who aided the ancestors of the Tewa on their journey. The spider, the mole, the bear, the coyote, the cougar, the eagle, and the turtle. If you gaze up at the Winter sky you can still see Long Sash as he continues to guide lost tribes along the Endless Trail. Should you chance upon a shooting star you are

The Millennium Moon

By Bob McGown

My neighbor, Dr. Greg Allers, one of my usual partners in crime when it comes to starry adventure, accompanied me for a moon light hike to Tryon Creek on December 21. Greg has a natural curiosity for the night sky after studying astronomy under James Van Allen of the Van Allen belt notoriety, at University of Iowa. This hike under the full moon was no ordinary night time hike; this was a super bright moon, perhaps brightest in 133 years. The perihelion of the moon coincides with the winter solstice. The perihelion of the Earth and the sun is also close to the winter solstice. This makes the moon angular size larger and about 25% brighter.

We descended into the stream valley on the Boones Ferry trail down a muddy slope with frozen horse footprints. Looking up through the wind blown Alders, the blazing moon washed out the first and second magnitude stars. The only thing visible blinking through the trees was the shimmering Winter Circle of stars. Aldebaran was barely visible, with averted vision one could make out the shape of the Hyades. The faded Pleiades looked like the Hyades. Tall, spindly, white bark maples had an icy coatings that looked like snow under the intense moon light.

As we crossed the Beaver Bridge, there was deep hoar ice that crunched afoot under shiny frozen leaves. The Labrador dog, Alice, jumped into the water and there was the design of a 1000 dancing moonlettes on the shimmering water. Looking up to the sky, there was transparent jet airplane contrail lit up by the moon. This was very bright and appeared to fluoresce in the night sky.

As we rounded a corner, on the wide flat trail there was a rotten log where we viewed a fox fire. This was sort of a bioluminescent stump that looked like a space alien. As we proceeded through the dark shadow of 75 to 90 fir trees on the wide flat trail something struck me about the shadows on the trail. They were all round in a unique regular circular patterns of light and shadow. There were circular patterns about 18 inches in diameter and some about two feet. This larger pattern may have had nothing to do with the Moon, however it seemed too perfect. The peculiar thing about these round orbs of light was also the shadowing like the Moon maria. I'd heard of an effect where during a total eclipse of the moon, dozens of little crescents appear on the ground. These had numerous maria patterns and were seven perfect ones. The air was cold and the branches and leaves were icy. Inside the larger circles were some smaller bright circles less than two to three inches. It seemed that there was some kind of unusual lensing effect going on. Greg and I were amazed at the sight to behold.

We hiked out of the canyon and looked at the Moon through Alder leaves. They were like a very transparent umbrella. In the moonbeams, I wondered if moons powerful tides might trigger an associated earthquake by this Moon's proximity.

Suddenly, the black Labrador, Alice, set off a snare at the junction of a trail. Who set that snare and why? To mark the Coyote's movement? Soon the light of the city shone through the trees. We hiked a half mile back out of the canyon to the parking lot where the light pollution of the street light was almost invisible over the Millennium Moon.

OMSI Star Party March 18th

Vernal Equinox Celebration

Spring officially begins with the vernal equinox on Sunday, March 19 at 11:25 pm PST. On Saturday evening, March 18, OMSI and RCA will celebrate the vernal equinox and the beginning of spring with a free Star Party! Join us as we gaze at the spring sky at OMSI's east parking lot, located on 1945 SE Water Ave, starting at 7:30 PM. From beginners to experts of all ages, here's your opportunity to view the stars, planets, the Gibbous Moon, Orion Nebula, Beehive star cluster, and more! For possible weather cancellation, call (503) 797-4610 on March 18 after 3:00 PM to get the latest information.

The Weather SIG

Date: Tuesday, March 28th
Place: OMSI, Classroom 2
Time: 7:00 pm
Come rain or shine . . .

The Doctor's Guide to the Moon

By *Margaret McCrea*

In the Rose City Astronomers library there is a book that offers in personality what it lacks in current data: it's *A Guide to the Moon* by Patrick Moore, W.W. Norton & Co., New York, 1953. It was donated to the library by former member John Buting, who had it from the private collection of Dr. Bernard Berenson, and it is Dr. Berenson who provides the book with its real value. Dr. Berenson's handwritten notes, footnotes, corrections, supporting data, and quotations are sprinkled throughout the text in an elegant hand and a variety of inks. In addition, he clipped and carefully pasted several newspaper articles and magazine photographs into the book so that the text of the book is augmented by the visuals. The outcome is a personal scrapbook of the moon that covers more than a decade. Try as we might to read the text of the book, the reader is inevitably drawn to the handiwork of Dr. Berenson. It's irresistible.

For beginners, there's the poetry. Dr Berenson quotes Milton's "The starry host shone brightest, till the Moon/ Rising in silvered majesty, at last/ Unrivalled queen, shed her peerless light/And o'er the night her lambent mantle threw," and the more prosaic two-word phrase "Paddy's lantern." He was a man familiar with the range of poetic expression.

Dr. Berenson also quotes from scientific books and articles, some of the same works that are referenced in the text of the book. Dr. Berenson did his homework, which gave him permission to add handwritten corrections into the text. The publication of Copernicus' revolutionary book was not 1546, but 1543. The time it takes light to travel from the sun to the earth is not eleven minutes but eight. And on page 28, the careful doctor notes at the bottom of the page, "All these values are incorrect," makes his correction and cites his own source. A mention of a date being "before Achilles and Hector fought at Troy" brings out the classical in Dr. Berenson, who notes that the traditional date of the fall of Troy was in 1194 B.C. Some corrections show Dr. Berenson's turn of mind. "Thousands of years ago, at the dawn of human history . . ." intones the book. "Before the dawn" interrupts Dr. B. And in a reference to "Chaldean shepherd astronomers," Dr. Berenson firmly crosses out the "shepherd." They may have been ancient, and their cultures pre-industrial, but they were astronomers nevertheless.

Sometimes Dr. Berenson supplies his own comments. "This would favor the impact hypothesis" he writes on page 73. "I would suggest *muees ardentes* as having caused them" says the learned doctor on page 137. My personal favorite is the comment at the beginning of Chapter 4. "Ptolemy, greatest of the old Greek scientists" begins the hapless text. Never one to let a statement like that slide by, Dr. Berenson supplies the words "one of the" in front of "greatest," then notes "He was excelled by Thales, and by Hipparchus (as an observer), and by Democritus (as a thinker) among others (e.g., Eratosthenes)." I wish I could have met Dr. Berenson.

From the quotes, we turn to the clippings. The first of my two favorites is a hazy newspaper photo looking somewhat like a human skull and captioned "This is a view of the hidden side of the moon, the Russians claimed Monday . . ." The article mentions October 7, and the historical-minded Dr. Berenson added 1959. The article ends "The Soviet announcement described the *Lunik* as taking actual photographs, a great technological feat. It is understood the United States in its planned moon shot will use an electronic scanning device to send back signals from which a picture can be reconstructed." Not to be outdone, in other words. My other favorite says "Target Plato," with a red sighting mark centered on a lovely clear sharp photo of Crater Plato. There is no explanation of what this clipping comes from, but it has all the flavor of an ad. I bet the doctor was delighted when he found it.

Dr. Berenson also had his patriotic side. Near the end of the book, on page 200, he notes in an understated way, "Two American astronauts landed and walking on the moon on July 20, 1969." We can feel that the doctor was stirred by one of the grand events of our century. But grand events kept happening. "Repeated with a longer stay, by two American astronauts in November, 1969 [Apollo 12]" he adds in different ink just below. His final addition to the text of the book is "Four more landings (and returns) by Americans up to Dec. 11, 1972." And so our century has gone.

Dr. Berenson had this 1953 book from at least 1959, when the newspaper article was inserted, to 1972, the date of the final entry, perhaps longer. The result is a warm personal book that makes us smile as we read the comments and turn over the yellowed sheets of the insertions. We also feel respectful of the depth of knowledge Dr. Berenson displays. He appears to be a Renaissance Man, familiar with languages, sciences and the arts. Is it possible for someone to be so well-educated today? There is so much sheer raw data out there today, I am not sure we can take to time to become as well-rounded as Dr. Berenson was. But even to that problem Dr. Berenson supplies an answer, indirectly. If we each had not a hundred books, but one to which we return over and over, adding a little, taking away a little, making notes and corrections and supplementing it, filling it in, building it up, we could teach ourselves a great deal. And leave something behind for others to

The Observer's Corner

By Howard Banich

The Messier Marathon, an exercise in deep sky object locating. Well, that doesn't sound like much fun, but really, it is. However, it's not for everyone and if the idea of staying up all night trying to locate and identify 110 deep sky objects makes your eyes spin around, you're not alone. There are a few things you can do to get over the tough spots though. The first is to check just how ready you are to try a Messier Marathon.

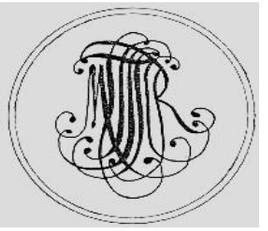
Some experience with deep sky observing is a requirement if you want to try it on your own, otherwise partner up with someone. An average night of deep sky observing might normally include 5, 10, maybe 20 objects (if you're especially speedy and the night is long) so trying for 110 is a big stretch. But since the idea is just to locate and identify, not to observe and describe, there is a realistic chance of success.

I recommend reading the article on Messier Marathoning in the March *Sky & Telescope* for more details on what's involved and why this is the only time of year a Messier Marathon is possible. Check out the following web sites for additional information:

www.seds.org/messier/xtra/marathon/marathon.html

www.ottawa.rasc.ca/astronomy/messier/messier.html

The following are a few tips to help those who haven't tried this before. They represent hard-earned knowledge but your experience may suggest different things. The basic idea is to give this some thought and planning. A Messier Marathon is not a night of casual observing and preparation is key to an enjoyable and successful evening.



Staying awake all night.
It takes a lot of interest, determination and for some, coffee, to be able to do this and still be able to mostly function. It also helps having a lot of rest beforehand. In the last year or so I've found that coffee (a.k.a. caffeine) isn't necessary as long as I'm well rested and have some tasty snacks like cookies and/or nuts handy. A sandwich for a late night meal also helps. A warm or cold drink is refreshing, your preference. I still drink coffee – decaf – just for the taste and positive reinforcement.

Dressing warmly goes without saying. The advice I give people who've never done this before is to pretend they're dressing to sit outside at the North Pole all night. Although I mean this in all seriousness, those who think I'm exaggerating soon find I'm not joking. Nothing drives a person inside like being cold.

An observing companion who is an engaging conversationalist is not only enjoyable but is also helpful in keeping your mind in gear. Walking around the observing area during the few lulls in the action is a fun way to see how everyone else is doing, plus the movement helps keep your blood flowing. Sometimes you'll come across some nice people who'll share their snacks with you.

Have an observing plan.
Having an observing plan is important. As I've mentioned, the March issue of *Sky & Telescope* has an excellent article about Messier Marathoning (page 119), including a checklist of all the Messier objects ordered by when they should be observed. Make a copy to have by your star charts.

I strongly advocate going through your charts and circle each Messier object. Searching for them in the sky is enough – scouring your charts at 2am isn't necessary or much fun. Also, write the chart or page number each is located on your observing list. This will help you concentrate on the actual process of locating the object in the sky with your telescope. Doing this book work beforehand not only helps increase your chances of finding as many Messier objects as possible, you may also find that you've become a little more familiar with the sky.

Check your equipment.
A good idea anyway, but especially so on Messier Marathon night if you're not used to observing all night.

- Fully charge any batteries, make sure you have a spare

(Continued on page 8)

Seeing deeper, further…

By Doug Huston

Astronomy is currently applied electro-dynamics. When we look through our telescopes, we are taking advantage of the information carried on the electro-magnetic radiation emitted by the stars. Our telescopes and eyes are radiation detectors and our brains decode the information these signals are carrying. But, is the electro-magnetic spectrum all the radiation of which we can take advantage? The answer is no. There is another type of radiation that physicists and astronomers hope to tap into soon, and that is gravitational radiation. Let's talk about this and see why this is an exciting possibility!

At the end of the 19th century, the Scottish theoretical physicist James Clerk Maxwell developed a set of equations that demonstrated the relationship between electricity and magnetism. They are known as, surprise, surprise, Maxwell's Equations and are considered among the most elegant and important equations of all time. One of the most important implications of Maxwell's Equations is that electric charges in motion emit radiation. Heinrich Hertz soon verified this prediction. If the radiation emitted by these moving electric charges has wavelengths within a certain range, it is visible to us as light of different colors. Initially, we were able only to exploit this range, the visible range of the electro-magnetic spectrum. Over the years though, we have been able to devise detection devices for radiation at the long wavelength end of the spectrum, the infrared and down into the radio wave frequencies, and, at the short end, ultraviolet all the way to gamma rays.

In the second decade of the 20th century, Albert Einstein developed his General Theory of Relativity. Again, this is a mathematically elegant theory of supreme importance, and again it made a surprising prediction: it showed that masses in motion emitted radiation – gravitational radiation. This prediction has been indirectly verified, but we have yet to detect actual gravitational radiation. The reason for this is gravitational radiation is immensely weak. We haven't yet been able to build a detector sensitive enough to detect these emissions. Several promising experiments are underway, however, that may fix this situation, including one nearby at the Hanford Site in Washington.

Why is this important? Why are we trying so hard to be able to see this radiation? Well, imagine being able to see into the heart of a supernova. The electro-magnetic radiation from this region is scattered, reflected and otherwise stripped of much of its information before it reaches us. Not so gravitational radiation; it would reach us pure and undisturbed. Long wavelength gravitational radiation can be expected to give us information about the formation of black holes. And beyond this, we can be certain that it will reveal to us many hitherto unsuspected and fascinating phenomena just as the electro-magnetic spectrum did when we learned to exploit it.

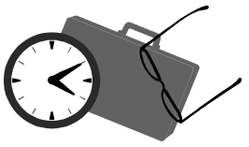
Maybe we will see in our lifetimes the first gravitational radiation observatory. Then astronomy will be not only applied electro-dynamics, but applied geometrodynamics also! Imagine what amazing things we have yet to see!

(Continued from page 7)

even if it's just for your red flashlight or Telrad.

- Is it time to clean your mirror? See my article from a couple of months ago and do it now.
- Have a dew zapper handy, or observe with someone who does. Dew on your optics will really be irritating, especially if everything else is going well.
- Get to the observing site before dark and get completely set up (and collimated) before twilight. Not so easy if you're driving from the Portland area, but to have any chance of seeing M77 and M74 (the first two and often most difficult objects) you have to be ready to rock and roll before the sky is fully dark.

Only one more bit of advice. If despite all your preparations and a beautifully clear sky you just can't stay awake, or you find this isn't as much fun as you anticipated, go back to the lodge and get a good nights sleep. Since this is a hobby, stopping when you're no longer having fun is always a good idea. May you reach this point sometime *after* locating M30 as the 110th object of the night.



BOARD MEETING MINUTES

Carol Huston

ABBREVIATED MINUTES
RCA Board Meeting
7:00 PM, February 7, 2000, at OMSI

Present: Scott Turner, Jan Keiski, Sameer Ruiwale, Dennis Martin, Matt Brewster, Rebecca Gee, Candace Pratt, Rea Young, Bob McGown, Jim Girard, John Cart, Peter Abrahams, Doug Huston, Carol Huston.

The meeting was called to order by President Peter Abrahams at 7:00 PM.

Treasurer's Report: Jane is not here so there is no report.

Membership Report - Doug Huston: RCA currently has 383 member families. He is getting a couple of online-generated forms per week. A new directory will be done for February meeting.

Programming: Peter announced that Matt has resigned as Program Director but will help out for the next couple of months. March was scheduled as a Planetarium show, but J. Todd has cancelled our March show. Candace is working on finalizing what will be done for March.

Peter wants to keep a list of on-going activities needing volunteer assistance. We are developing a more complete list of duties for each position for use in passing along to prospective volunteers.

Newsletter Editor: Submit articles to any one of the three editor folks for inclusion in the newsletter. Candace has been asked to present Jim Todd a formal note requesting OMSI to bid our newsletter for the period after June.

Star Party Schedule: Congratulations to Scott for finalizing. Scott will consolidate and organize the effort to fine new observing sites. Carol will be making all of the arrangements for the Kah-Nee-Tah star party while Scott will serve as the on-site RCA rep for the event since Carol will not be there.

OMSI Liaison: Since OMSI has a new president, RCA's situation seems to be up in the air. We have received verbal approval, but not official acceptance of our proposal. Peter will follow through with soliciting a formal agreement with OMSI.

Telescope Library: Jim Girard requested money for telescope parts. Since the Board approved this expenditure in the budget, it was agreed that Jim would submit requests and paperwork directly to Jane to get the funds. RCA has two telescopes for use by schools in the Telescopes for Schools Program.

A volunteer is needed to coordinate the program. RCA has two scopes for use by schools; only one is currently being used. John Cart will follow up with Brian Richardson about the Jim Doyle binocular fund. The Board had previously approved the expenditure for this equipment plus some additional telescope parts.

Sales: Need astronomy books for sale for kids. Board members are encouraged to submit suggestions and recommendations to Sameer and Jan for good children's astronomy books and materials.

Library - Jan: The library has several new videos.

Buying our own AV equipment: We need to settle the storage issue before we can buy supplies.

Publicity: The general feeling was that Dennis should implement his publicity plan.

General Goals: RCA will support the lunar eclipse activity in July. Candace proposed that we consider doing something for astronomy celebration in April because OMSI won't be doing this. Rebecca will make some location contacts and report back to the board via the board-list.

Phone hot line: Generally, Jim puts out an email about OMSI star parties, and puts the information on OMSI's hot line,

making the go/no-go decision by 5 PM. Scott will connect with Jim Todd as RCA's representitive for these activities.

Light Pollution - Bob McGown: The IDA has a new packet of info on light pollution. Bob will pick out applicable articles and make a folder for use by school teachers. Bob indicated that Roosevelt High School has a unused planetarium that he visited and researched. There will be a call through the Gazette for volunteers at some point to help restore, clean, paint, and help out. Scott proposed that the Board support the efforts to restore the Roosevelt HS Planetarium through publications, publicity, and soliciting volunteers. Jim seconded. Passed unanimously.

Public Activities: Jan K and Jim T put together a Science Bowl activity for BPA's involvement with schools. They will use RCA's tri-folds as handouts. John Cart will be going to the State Prison in May to make an astronomy presentation.

The meeting was adjourned 8:50.

CLASSIFIED ADS

Metal lathe for sale. Small 5" swing 12" btc. 120 volts. Turns wood,plastic, aluminum etc. $200 Call Mark Stoner, (503) 591-9700

13.1" Coulter Dobsonian for sale, with 2" Focuser, 1 1/4 " Adapter, Televue 2" 2X Barlow, University 2" 32mm Konig, Orion 9X60 Finder, $600. Call Fred Dorey, (503) 952-3373 (pager)

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354

MARCH 2000						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

APRIL 2000						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

March

Mar. 6	Mon.	Board Meeting	OMSI CR#1	7:00PM
Mar. 8	Weds.	TM Workshop	OMSI Bldg. C	6-9PM
Mar. 18	Sat.	TM Workshop	OMSI Bldg. C	10-4
Mar. 18	Sat.	Vernal Equinox Celebration	OMSI	7:30PM
Mar. 20	**Mon.**	**General Meeting**	**Planetarium**	**7:30PM**
Mar. 20	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30PM
Mar. 21	Tues.	Cosmology SIG	OMSI CR#1	7:00PM
Mar. 28	Tues.	Weather SIG	OMSI CR#1	7:00PM
3/31-4/2	**Fri-Sun**	**Kah-nee-ta Star Party**	**Warm Springs, OR**	

April

Apr. 3	Mon.	Board Meeting	OMSI CR#1	7:00PM
Apr. 7-9	Fri-Sun	Dark Site Star Party	Camp Hancock	
Apr. 8	Sat.	Astronomy Day Star Party	OMSI	7:30PM
Apr. 12	Weds.	TM Workshop	OMSI Bldg. C	6-9PM
Apr. 17	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30PM**
Apr. 17	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30PM
Apr. 18	Tues.	Cosmology SIG	Powell's Technical Books	7:00PM
Apr. 22	Sat.	TM Workshop	OMSI Bldg. C	10-4
Apr. 25	Tues.	Weather SIG	OMSI CR#1	7:00PM

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Sky Theater. Occasionally the meeting is held in the Sky Theater. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/index.htm).

OMSI CR #1 (Classroom 1) is the room just north of the Auditorium. The monthly Board Meeting and many of the SIG meetings are held there. Go past the Planetarium and the Auditorium, continue down the hallway, and you'll see it on your left.

OMSI Bldg. C is underneath the I-5 bridge over the Willamette River, next to OMSI's north parking lot.

RCA CLUB INFORMATION

Message Line: (503) 255-2016

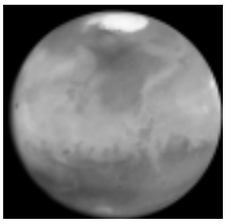
Web Site: http://www.rca-omsi.org/rca/

The Rosette Gazette

Volume 12, Issue 4 | Newsletter of the Rose City Astronomers | April, 2000

In This Issue:

MISSIONS TO MARS



Dr. Jeffrey R. Barnes, Professor of Oceanic and Atmospheric Sciences at Oregon State University will present the April 17th General Meeting key note address at 7:30 PM in the OMSI Auditorium titled, "Extraterrestrial Planetary Climatic Structure."

We are delighted to have Professor Barnes share his involvement with various NASA Mars missions dating back to Viking in 1976. He will describe his team's on going atmospheric modeling of Mars, built mostly upon information sent back to Earth by the numerous NASA Mars missions. Findings from the Pathfinder mission, which landed on the planet on July 4th 1997 and released a robotic rover, helped further this process.

Professor Barnes attended the Cape Canaveral launch of the Mars Climate Orbiter, which was to collect data of the Red Planet's winds and atmospheric circulation. Unfortunately, the MCO orbit insertion failed last September. Dr. Barnes is presently involved in analyzing data from the Pathfinder mission, as well as new data that is now coming back from the Mars Global Surveyor, in orbit around Mars.

Join us for the April General Meeting and hear the latest about the Mars interplanetary spacecrafts and instrumentation, the resulting data, and on-going modeling studies of a neighboring planetary atmosphere.

NATIONAL ASTRONOMY DAY
Saturday, April 8th, 2000

The RCA invites all members to celebrate National Astronomy Day on Saturday, April 8th at OMSI. We will feature both an afternoon exhibit as well as an evening star party. Our Solar Telescope will display fabulous views of the sun! We will have several tables with exhibits for the public on amateur astronomy.

Astronomy Celebration is an annual event at OMSI. We will have our exhibit at OMSI from noon to 5:00 PM. Our star party will begin at 7:30 PM in the east parking lot. If you are able to help during the afternoon or have a display, please contact Candace Pratt at 296-6758. (It will be helpful to know when you can attend.)

WELCOME NEW MEMBERS!

James Antons	Jeff Leonard
Annamarie Askren	John O'Donnnell
Elizabeth Bland	Kirk Peddicord
Ron Forrester	Erik Roth
Sam Kimpton	John Stefan
Maria Lakatos	Norm Trost

April 4 | April 11 | April 18 | April 26

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New Member Programs	Carol Huston	(503) 629-8809	StarsCarol@aol.com
Magazine Subscriptions	Johan Meijer	(503) 777-0706	johanm@www.com

President's Message

By Peter Abrahams

Many RCA members are aware that our relationship with OMSI has been in a state of change for some months. The RCA board has not communicated with the membership on this situation because we are still working out the details with OMSI. However, a preliminary status report seems to be in order.

About 10 years ago, the RCA was a small group that met at OMSI and was allowed to make considerable use of OMSI's resources. We are now a group of 406 members, and we include many diverse meetings & activities in our schedule. We have relied on OMSI for institutional support, and have paid our way by paying $4 a member to OMSI, and especially by volunteering for OMSI events. Our very rough estimate is that in 1999, we contributed 3000 hours of volunteer labor, and provided access to telescopes, equipment, & skilled operators as well.

Most of our members are aware of the extent of OMSI's budget problems. In response, OMSI decided that rental of their facilities was a significant source of income that was not being realized because many non profit, science related organizations were using rooms for meetings & classes. OMSI therefore began a policy of charging rental for all use of rooms by all groups.

There are many groups affected by this decision, none more so than RCA, since general and special interest group meetings have totaled about 135 meetings per year in recent times. We considered our options regarding meeting places for 200-250 people, and negotiated with OMSI regarding the use of their auditorium for the general meetings. The OMSI planetarium offered to pay our room rental for the general meetings and Board Meetings, in exchange for our co-sponsorship of 8 star parties, one or two special events (such as Astronomy Day) and one planetarium work party per year; and we accepted this offer. RCA's general meetings will remain at OMSI. But the special interest groups and the YRCA will find new meeting places, and by now are well along in the process. They can meet at OMSI until June.

A second major change concerns the printing and mailing of the Gazette, which has been provided by OMSI's mail department. OMSI has decided they are only able to continue this service for a fee of over $5000 per year. We have the option of paying this amount for the service; however, we have received less expensive bids from printing/ mailings firms, and we will most likely move this important function as a result.

As noted, our situation is still in flux. We might have to increase dues. Our board members hope this will be done as a last resort. We will have to more carefully consider budget requests. We will certainly be needing an increased level of assistance from the membership. We might have newsletter evenings, to fold-staple-address-stamp the Gazette. We might need members to approach their church, fraternity, school, etc., to investigate meeting places. There are fund raising possibilities. The current situation may be difficult, but there are clear opportunities for growth & increased interactions with the community.

RCA
Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information. Please note: Allow two months for your subscription to be renewed from the time you bring or send your renewal to Johan until the magazine has processed the renewal.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more information.

You know you're a Deep Sky person when...

It's finally spring! So let's add a little humor to our lives. This is the time of year many of us wait for . . Clear, dark, warm nights! If you consider yourself a serious amateur astronomers, read this and enjoy :-)

1.... you consider the moon a major annoyance.
2.... you consider Jupiter 'light pollution'.
3.... you spend most of your time looking at or for objects you can barely see.
4.... you enjoy looking at faint fuzzies with the smallest possible aperture.
5.... you like to choose objects that are easier to imagine than to see.
6.... You welcome, and have even considered instigating, power outages, but only if they occur on clear moonless nights.
7.... you remove the LED on your drive control panel, because THAT ruins your dark adaptation!
8....you actually use 'Uranometria', and can quote page numbers
9....you frequently disagree with Burnhams, and have seriously considered publishing your own "observer's guide"
10....you see absolutely no value in using a Telrad
11....you consider 15 minutes to be a 'quick' exposure
12....you have seriously considered starting up your own anti-satellite lobby
13...."What meteor? Was it that good? Shucks, I missed it again'
14....you think that daytime running lights are some kind of conspracy.
15....you can make ten trips lugging equipment back and forth across a cow pasture without stepping on a single cow pie, using only the illumination of that garishly bright Milky Way to guide you.
16....you consider the HII regions of distant galaxies as individual observing targets.
17....you wear sun screen during full moon periods
18....you're caught by the police climbing light poles at night trying to "unscrew" the bulbs.
19....you keep thinking that if only the stars would go away, it might really get dark.
20....you wonder how your favorite objects missed getting included, in the New General Catalog or the Index Catalog.
21....you're not sure that anything in this solar system counts as astronomy any more.
22....you're amazed that anyone needs artificial light to read charts.
23....you could do a Messier Marathon from memory, if you still bothered with Messier objects.
24....you believe M13 ruined your dark adaptation
25...you observe M42 at the end of the sessions because it does ruin dark adaptation!
26....your choice of a new vehicle is determined by the size of your scope.
27....you find auroras a complete anoyance because they ruin sky contrast and dark adaptation.
28....you take deep-sky pictures during a total eclipse of the moon.
29....you complain about severe light pollution when the limiting magnitude is "only" 6.5.
30....you wear an eyepatch during the viewing session.
31....you paint the LED's on your equipment with red fingernail polish so that they are dimmer.
32....you always set your scope up so that you can't move your car 'til dawn.
33....you bring a gallon of coffee, or a 12 pack of Coca-Cola, to the viewing session. If the caffine doesn't keep you awake the urge to "go" does.
34....you ask your eye doctor if it is possible to get your contact lenses fully multi-coated.

Can I Watch?

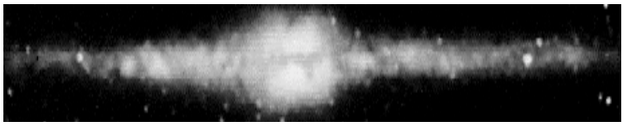
By Doug Huston

Galaxy formation is one of the big, unsolved problems in cosmology. What causes these huge aggregations of stars to form? Why are there clusters and strings and superclusters of these island universes? These are just some of the questions that cosmologists deal with in relation to galaxies. While some progress has been made in answering these questions over the years, much work remains to be done. One of the problems has been that, while we can observe stars in various stages of formation, there doesn't appear to be any galaxy formation currently going on. The search for answers to date has centered on searching for indirect clues in nearby galaxies (near-field cosmology) or looking far back into time at high-redshift galaxies (far-field cosmology).

However, as reported in the 15 July 1999 issue of Nature, a group of cosmologists have suggested that an important clue to the answers to these questions might be right before our eyes, so to speak. Further, we have known about them for almost 30 years now! These clues are what are known as HVCs – High Velocity Clouds. These are intergalactic clouds of hydrogen gas first discovered in 1963. They are so numerous that they cover more than one-third of the sky.

In the 1970s, it was shown that a large fraction of these clouds fall along the Magellanic Stream which is a thin band of gas around our galaxy. This means that they probably represent gas stripped from our companion galaxies, the Magellanic Clouds. Recently however, the group of cosmologists mentioned above have shown that if you exclude these pirated clouds, the motions of the remaining clouds indicate that they are far out in space beyond our galaxy. And, this means that they are probably composed of primordial hydrogen – hydrogen that condensed out of the Big Bang as the universe cooled and expanded.

Further, they contain sufficient hydrogen to support galactic formation. And, there is good reason to believe that galaxy formation may be going on in these distant clouds. Currently, several groups world wide are identifying a statistically significant sample of these clouds for further scrutiny. Maybe some definitive answers to some of cosmology's thorniest questions finally?



Meteor Observing in 2000—A Challenging Year

By Wes Stone

In many ways, 1999 was a great year for meteor watchers. Most of the major showers were free from moonlight interference, and for lucky observers in Europe the Leonids produced a rare meteor storm. In the Pacific Northwest, the skies were clear for the maxima of the Lyrids and Orionids, and some areas got a good Perseid show. It even cleared off for the Leonids, and observers who braved the pre-dawn hours got to see Perseid-strength activity and a couple of amazing fireballs.

While there's no telling what the weather will be like, Moon phases will dictate a difficult year in 2000. The Lyrids, Perseids, Orionids, Leonids and Geminids will peak with a full or gibbous Moon in the sky. The Perseids should be worth watching anyway, but will be greatly reduced from their full splendor. No spectacular activity is predicted from the Leonids, but observers should monitor the shower just in case. Moon-free major showers this year are the Eta Aquarids (described below), the Delta Aquarids, and the 2001 Quadrantids on January 3. All three are difficult to observe, and only the Quadrantids will produce high rates for Northwest observers.

Eta Aquarids

The Eta Aquarids are a major shower with a ZHR~60 at maximum, which occurs during the first week of May. Unfortunately, the radiant is poorly placed from our latitude at this time of year, rising just before morning twilight begins. The low radiant elevation has a devastating effect on the number of meteors seen. An observer in a dark Central Oregon sky might expect to see 5 – 15 Eta Aquarids per hour from around 3:30 to 4:30 am PDT. The date of maximum is somewhat irregular; the IMO predicts it to fall on May 5. Like the Orionids, the Eta Aquarids are related to Halley's Comet and have a complex activity profile. On the plus side, they are typically bright and fast, often leaving a glowing train. The low radiant elevation could produce some long "Earthgrazers." The radiant is just below the well-known "Water Jar" asterism, typically drawn as the head of Aquarius.

Meteor Tips

On what date will a meteor shower peak? Even for the most predictable showers, the date and time of maximum aren't constant from year to year. The culprit is our calendar system. Since the true length of a year is about 365.25 days, our encounters with meteor streams occur 6 hours or 0.25 calendar day **later** each year. During leap years, when we add an extra day, maxima after February 29 occur 18 hours **earlier** than the previous year. When comparing years, activity is often plotted as a function of solar longitude, which is constant.

For the Perseids and Geminids, observing a day early or late may result in a 2- or 3-fold decrease in the hourly rate. For the Quadrantids, with a sharp maximum and a brief activity period, observing on January 3 vs. January 2 or 4 may be the difference between seeing 100 meteors/hour and seeing few or none! When planning observing sessions or star parties around a meteor shower, be sure to account for this along with radiant elevation.

***FINAL ANNOUNCEMENT*:**

CAMP HANCOCK STAR PARTY
April 7-9

OMSI's Camp Hancock Field Station is located near Clarno (central Oregon), and it will be the site of our second dark sky star party of the year! Directions and information can be found on the RCA's Web site at: http://www.rca-omsi.org/rca/index.htm.

Drop ins are welcome; just bring a checkbook to pay for lodging ($13/night cabins; $8/night tents and RVs).

You can contact Scott Turner for further information (see Club Officers Directory, page 2).

Join us for two wonderful nights of observing the spring galaxy wonders!

Photo captions:
Above: Camp Hancock Field Station, Clarno, OR

Right: NGC 4565, the Needle Galaxy

Photos taken at '99 Camp Hancock Star Party
By: Glenn Graham

PLANETFEST '99: CELEBRATION OR BUST?

By Lamont Brock

On December 3, 1999 the whole world's attention was focused on Pasadena, CA for what was hoped to be another successful Mars landing closing out the last year of the 20th century.

Following Pathfinder '97, the Mars Polar Lander was due to set down under its own rocket power on layered, icy terrain near the south polar region of Mars, with two Deep Space 2 microprobes designed to separate from the lander and crash into the surface to give us the first sounds from the surface of an alien world.

I arrived Friday at the Pasadena Convention Center site of the Planetary Society Planetfest celebrations. A huge array of guests were invited to kick off the event with a bang. We all entered the main room with a huge big-screen HDTV in the middle, a speakers podium to the left, and on stage were Buzz Aldrin, former Apollo 11 astronaut and the second man to walk on the surface of the moon, joined by Bill Nye, the Science Guy, to greet all who entered.

After short comments and very funny jokes the focus was again focused on the main screen where the action in mission control at JPL was intense. On stage was Bruce Murry, former director of JPL and project manager of the Mariner 9 Orbiter and Viking 1 and 2 Mars landers, describing the mood in mission control as flight controllers were awaiting the signal for the first images from Mars. His very insight was interesting. We all shared in the action as it was unfolding.

We waited for word on the probes' status, as concern grew. No signal had been detected, and a lot of speculation was given as to what might be happening.

Awaiting further news, we adjourned to the exhibit areas. Full scale mockups of the hardware and vehicles used in the filming of "Mission To Mars' were on display. Other displays filled the halls ranging from current astronomical research done at Mt. Wilson Institute to the SETI Project and NASA, to the many authors and space artists showing their works.

Many vendors of astronomy and space-related companies were represented. The main focus was directed to the New Millennium Symposium seminars featuring a wide spectrum of speakers among whom were Scott Carpenter, one of the original seven Mercury astronauts, and Story Musgrave, a veteran of six space shuttle flights, including a Hubble Space Telescope repair mission.

Representatives from the European Space Agency (ESA) and the Japanese Space Agency presented current and future space projects. Russian space officials talked about the progress of the International Space Station. Dr. Everett Gibson of NASA/Johnson Space Center gave a talk about the recent findings concerning ALH84001 Mars rock and other possible meteorites from Mars that may hold evidence of ancient life.

Robert Picardo, the doctor on Star Trek Voyager and member of the Planetary Society advisory council, was on hand to support the space program and its efforts in education.

As we all know now, the Mars Polar Lander and probes are considered lost, adding to the failure of the Mars Climate Orbiter earlier last year. It has been my experience in attending past events that it is not about the failure of a particular mission, but rather what can be learned from it. Where else can the public and space scientists convene under one roof to share in these magnificent adventures among the stars?

While the event lasted only three days, I stayed with friends for about a week in Long Beach seeing again the Queen Mary. I also caught a glimpse of the Sea Launch support ship docked in the bay. The next Planetfest is planned for the Cassini-Saturn encounter around 2004. See you there!

Cosmology Special Interest Group

Date and Location
Thursday, April 20th, 7:00 PM
Powells Technical Bookstore

Subject Cosmology of Double Stars
Ron Thorkildson
Reading Observing Variable Double Stars, Couteau

WHERE IN THE UNIVERSE IS CARMEN SANDIEGO?™
Now showing in Murdock Planetarium

A billion miles from Earth that dastardly villain, Carmen Sandiego, has just made off with the beautiful rings of Saturn! It's the crime of the millenium and NASA and the ACME Detective Agency need help fast! Do you have the quick wits and outer space knowledge to track Carmen down, bring her to justice...and get back those rings?! In this exciting, interactive program based on the popular television series and computer games, OMSI's own planetarium hosts play the role of ACME Space Detectives enlisting audience members as Gumshoe Assistants. As you travel across the solar system, you'll be challenged to solve clues and puzzles to stay hot on Carmen's trail. For more information and schedule, call (503) 797-4000.

The Weather SIG

Date: Tuesday, April 25th
Place: OMSI, Classroom 1
Time: 7:00 PM
Come rain or shine . . .

Change Ineffective Inner City Street Lighting And Invite the Masses to Discover Astronomy

By Mark E. Seibold

As astronomers, we are all aware of light pollution in the inner cities. It's good to see that there are some questions now being raised that in turn are informing others, thus creating some awareness, hopefully resulting in some changes of ineffective street lighting for the better for all.

Ultimately, wouldn't it be nice to see the lighting engineers and directors allowing a respectable group of evening astronomers the right to conveniently turn off a controlled area of street lights in a neighborhood while observing?

My question has always been, "who's using these lights while we are asleep?" We know the main intent is to light the streets for the safe passage of automobile traffic. If it's a personal residential neighbor who sports one of the so-called prison yard search lights to seemingly protect or is it [display] his prized possessions at night, his misinformation tells us that he is only reaming, or is he, 'day dreaming'? He should be courteously approached by you and other neighbors and informed of the problem. Often, all it takes is a friendly suggestion to aim the light down onto his or her property or add a simple shade. If you notice it from your sleeping position at night, you are using the light while you supposedly are trying to achieve restful sleep. It may be viewed as involuntary sleep deprivation. It becomes an issue of 'light trespass' and involves health concerns which vary with each communities bylaws and ordinances. As last resort, if your neighbor is unwilling to comply, then you must approach the authorities. Hopefully it does not reach this level as we all want to maintain some sense of diplomacy with our neighbors.

As for the local city street lighting in the Portland area, PGE is quite aware of the situation with health concerns. When I approached them over 10 years ago about street lights that were shining into the bedroom windows of my home, the maintenance crews were out the next day to install hoods over the lights I indicated. Of course as an astronomer it helped a little for my night sky observing too. With all of the technology we have available and all of the government funding and all those creative minds out there just passively watching TV picture tubes in the evening, this occurred to me one morning. The technology of the photo sensor that turns on street lights at nightfall could be improved. When are these lights most needed? Again their intent is to light the streets for auto traffic safety. When is the visibility the worst?

During cloudy, rainy, foggy, inclement weather which is usually in the winter. Here's a cliche we haven't heard yet. If they can put men on Mars, why can't they design a street light that only comes on when needed? Or perhaps brightens during conditions of bad visibility? A sensor for moisture, be it rain or fog could control the brightness of the lighting. During dry weather when driving conditions improve, the street lighting would dim. Why even overhead lighting? With all of the in-ground buried cable services now, we could have auxiliary curb edge lights built within the curb that illuminate the shoulder of the street during bad visibility. These would be similar to the small LED footlights at the movie theaters for the patrons walking safety in the dark.

So the first and easiest and most cost effective step is to get the local lighting authorities to modify all of the old 'cobra head' street lights with the inexpensive hoods that direct the light onto the street where it is needed. Similar efforts were exercised in Arizona in the cities of Flagstaff and Tucson years ago. Surely, as an astronomer you have heard of the results by now. The difference is like night and day. We have the International Dark Skies Association to thank for this. The process now continues in Los Angeles to do the same, as the CHARA, the most powerful telescope on the planet perched on top of Mount Wilson is approaching first light soon.

To get an idea of the difference that proper street lighting can make, drive through a newer housing development and note the 'shoe box shrouds' containing the light where it is intended, for the street. You'll notice that there is a great improvement in the sky and that you can actually look up and 'see' the stars.

Unfortunately there is now a new trend. It's the "everything that's old is

new again". I've noticed this nostalgic look of old gas light replica street lighting appearing in some new neighborhoods. Even the architecture mimics the period. It's as if you just walked into a Hollywood movie set. I've noticed that many who live in these new neighborhoods of nostalgia seem to appear as actors on a stage and I think its here to stay. Now we realize why as astronomers we must have star parties at dark remote locations to escape this stage act. Maybe it's a sign of reverse progression and hopefully we will return to only the candle light at night.

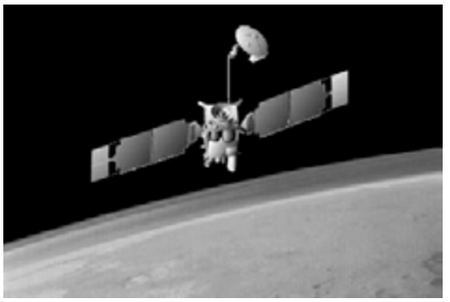
As we wouldn't imagine having a star party on a Hollywood movie set, that's for a different kind of star. I have provided that grandstand act during the day with the use of an h-alpha filtered telescope to view the sun for the publics benefit. That is a different light and a different subject. In day time astronomy we are not concerned with dark skies. So herein lies the dichotomy of this problem of artificial light and our perceived need for it at night.

Conversely, we still have to provide safe passage of auto traffic in the city streets at night, so the efforts to improve our local street lighting is where we must start. If only a few concerned citizens would step forth to speak up to the local lighting authorities, we would soon see results and reap the benefits of the beauty and wonder of the night skies again within our inner cities.

As astronomers we have become experts on distant cosmic light. We are in a good position to educate our local community and improve on the problem of ineffective street lighting that is stealing that appreciation and enjoyment of the night sky from our local denizens.

It's all there and moving at the speed of light. What are you waiting for?

Faster, Better, Cheaper? *By Richard Geller*



In the wake of the loss of two probes en route to Mars last year, NASA's current mantra of faster, better, cheaper is being called into question. The basic premise of this philosophy is that by conducting a series of smaller, less expensive missions with highly focused objectives, NASA would increase the success of the space program. If a mission fails there are many more opportunities to collect similar data. In this era of shrinking space budgets it is risky to rely on old school style probes such as the Mars Observer, lost in 1993. Without backup missions available and a billion dollars lost in space the Mars program was grounded for several years. Nevertheless we now find ourselves in a similar situation as the entire Mars program is being reevaluated and launches scheduled for 2001 and beyond may be postponed.

NASA conducted a detailed investigation into the demise of the Mars Climate Orbiter, issuing a forty-five page report which chronicled a climate of excessive belt tightening, overextended workers, and lapses in communication all of which played a role in the loss of the orbiter. Aside from the well documented discrepancy between thrust measured in the English unit pounds versus the metric unit newtons, which led to the craft's altitude being sixty miles too low upon orbital entry, eight underlying factors were cited as contributing to this debacle.

The NASA panel in its investigation found that team training was inadequate, failure to detect errors in simulated thruster firings occurred, and the navigation team was unable to determine the Orbiter's orientation in space. In addition, a lack of formality in communications was cited, particularly between the designers at JPL and the spacecraft builders at Lockheed Martin. The system engineers were deemed to have been negligent for not double checking the mission overall. Another error that was cited by the panel was not fully considering the importance of an extra engine firing. Finally the navigation team in general was overworked.

While the English, metric mix-up was cited as the primary cause of the Orbiter's loss, the other factors cited created an atmosphere where such mistakes were more likely to occur. The panel also included recommendations for safeguarding the landing of the Mars Polar Lander in December. One of these recommendations was to activate fuel-line heaters early in order to prevent hydrazine fuel for the retrorockets from freezing in space. Such freezing could have delayed ignition and adversely affected landing. Also the lander was to attempt an unprecedented landing maneuver, with twelve thrusters acting in concert and extra attention was deemed necessary. The JPL stated that these issues were addressed and attended to in reaction to the investigation and in preparation for the Mars Polar Lander's descent. After that probe's loss, another investigation was launched which included some of the individuals involved in the initial investigation.

After the two craft were lost in 1999, an independent review of the entire Mars program was established in order to determine the best strategy for continued Mars exploration. It seems likely that the landing originally scheduled for 2001 will be delayed for at least two years. The reason cited is the similarity in spacecraft design with the Mars Polar Lander. The basic science goal of the Mars program, the search for evidence of ancient or current life as well as ancient oceans will remain unaltered, however it will have to be put on temporary hold until reliability can be reestablished. NASA still intends to retrieve a Mars soil sample in 2008. One way to make this happen is to replace one of the scheduled landers with a test craft. The purpose of this craft would be strictly to test and refine landing techniques. This probe could include an enhanced radio transmitter capable of communications through the Martian atmosphere during descent, thus minimizing landing failures. NASA was unable to communicate with the Mars Polar Lander during its plunge into the Martian atmosphere. Another possibility would be to place a series of satellites in Mars orbit, which would act as beacons and help guide incoming spacecraft.

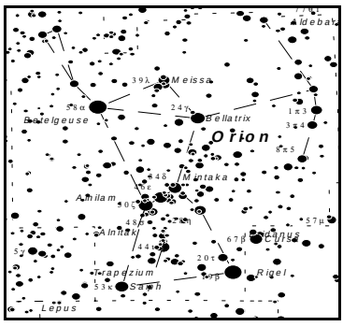
In addition to the crisis in the Mars program, NASA has had other problems in 1999, the most significant being the grounding of the entire four shuttle fleet for nearly six months due to faulty wiring. This wiring problem almost resulted in a catastrophic accident during shuttle mission STS-93 in July, as two computers controlling the main engines failed, leaving backup computers to compensate. In addition to the wiring issue, an incorrectly secured pin in a rocket engine caused a coolant leak, which resulted in an early engine shut down. Even during the subsequent fleet repairs there were numerous errors, one of the most egregious examples being a drill bit being left behind in an engine, necessitating its replacement.

Other probes have failed recently, including the Lewis probe in 1997 which was to study the Earth and the Clark probe in 1998 which was to study the Earth and the Sun. At the same time there have been stunning successes including the 1997 Pathfinder mission to Mars and the recent recovery of the Near Earth Asteroid Rendezvous (NEAR) mission. The latter mission which missed its initial appointment with the asteroid Eros is now in orbit and sending back reams of data and images. The Mars Global Surveyor mission continues to operate and has completed the first topographic map of Mars and has acquired compelling evidence for an ancient Martian ocean. Despite these achievements it is clear that changes must be made.

One major challenge NASA faces is the loss of experienced talent due to attrition. While some workers simply retired in recent years, others accepted buyouts designed to cut costs. A hiring freeze has been in place for similar reasons. NASA has been reacting to years of budget cuts and has attempted to adapt to the new climate. However it makes no sense to reduce the available reservoir of talent and experience. Pending congressional approval NASA intends to hire 1,850 new workers over the next two years. After retirements, this will result in a total of 550 new workers. NASA also proposes increased spending on shuttle safety over six years by approximately $1.5 billion dollars.

The basic concept of Faster, Better, Cheaper is sound. Launching a number of less expensive craft is less risky than putting all of your eggs in one basket. It is equally clear that in its pursuit of a faster, better, cheaper space program, NASA has cut too many corners. Experienced talent must be retained. Hopefully the new hires will eliminate overworking, which inevitably leads to errors. More time and capital must be spent on improving the dialogue between NASA and contractors such as Lockheed Martin. Every individual involved in a mission must have clearly defined achievable goals. Perhaps missions could be spaced out over longer time frames and could at least for the short term be less ambitious. NASA has proven that it can achieve more for less as was evidenced by the Pathfinder mission. The agency needs to be a bit less fast and cheap and it will certainly be better. As NASA administrator Dan Goldin recently stated in The New York Times, "We got set back, but we'll pick ourselves up, dust ourselves off, and we're going to rock this world. The revolution continues."

ORION'S DRESS REHEARSAL
by Dale Fenske



Hi, My name is Orion. After my visit to the Northern King Cepheus and Queen Cassiopeia, I am traveling South through bear and dragon country. Zeus and Hera have decided to immortalize my team and I with one of their "Impressions in the sky". I am to meet the official sky artist at the banks of the Eridanus River for a photo shoot.

As we arrive, I spoke to my faithful steed, Monoceros (the unicorn), "Whoa Mon, there it is". I dismounted Monoceros. He waited patiently by my side.

I scanned the bank of the Eridanus River and observed a large circular clearing. This seemed the perfect spot for the photo impression.

The background includes the southeast bank of the river, where Jason's boat ARGO is moored. Its poop deck, Puppis, is barely revealed. You can see Hydra the snake and Cancer the crab camouflaged in the swamp area just North of the boat . You can also just see in the distance, Leo the lion to the East and Aries the ram to the West.

I say, "gather around everyone, We must get dressed, The sky artist should arrive at any minute."

I am to wear my official centurion uniform with the kilt. It is decorated with gem stars, Betelgeuse on my right shoulder and Rigel at the lower left hem. My official sword has the great Orion Nebula in its hilt. My belt is lined with the second magnitude, blue gem stars, Mintaka, Alnilam and Alnitak. These always point at Sirius, the brightest gem star in the sky.

I will adorn both my faithful dogs, Major and Minor in collars with the gem stars, Sirius and Procyon.

I caution, "Major, Stay away from that cottontail rabbit at my feet! "(Lepus, the Hare). "Look at that bird, just beyond the rabbit. It is a dove." (Columba, the dove)

"Everyone please assemble in a circle in the clearing, we need to be ready for the artist. The twins should stand just to the North of my dog, Minor. Locate your gem star, Pollux, next to Procyon (two P's together as a memory aid). Position Castor just to the North of Pollux. Yes that is good! Those double gem stars in Castor are very interesting, even though they are not quite as bright as Pollux.

Next to the twins, let's set Auriga. Wow!, your gem stars are all arranged into a pentagon shape. Your bright signature gem star, Capella, is captivating. Auriga is our charioteer, doctor, and therapist. He has his chariot filled to the brim. Inside it are asterisms of a smiley face (M-38 is the left ear) and the "Caduceus" (Doctors icon with the two snakes wrapped around a staff). Auriga always carries his two young goats (the kids) with him.

To the West of Auriga, we will place Taurus the Bull. He is a huge, friendly bull, like a big teddy bear. He carries a large load. Today he carries the Hyades and the Pleiades families on his back. These families consist of more than 9 members each, and Taurus has not uttered a complaint. He is quite an asset to our group. The Hyades can be identified by the bright gem star Aldebaran. The Pleiades family is also known as the "Seven Sisters". There are actually nine gem stars since Atlas their father and Pleione their mother are included. All seven of the Pleiades sisters are very beautiful, but I think the brightest one, Alcyone is the cutest.

I plan to make this an action shot. I will raise a willow whip in my right hand and separate myself from Taurus with my shield and say with a commanding voice, "Down Taurus, all passengers can now dismount!"

Everyone is in place, the first magnitude gem stars are all arranged in a tidy circle around me, ready for the artist to photograph. This impression seems to be just perfect for our picture.
"The artist has arrived!" SNAP!!! What a shot!!

To see our picture, look directly South in the sky at sunset during March/April. The results are spectacular, bright gem stars fairly light up the sky. Take some time to analyze our picture before the summer constellations take us away.

Now, on to the next important business. Orion can not rest until that rascally Scorpion is caught. See you next Winter.

A total of fifty-four constellations and fifteen first magnitude stars can be seen from our forty-fifth parallel. This story contains fourteen constellations and seven first magnitude stars.

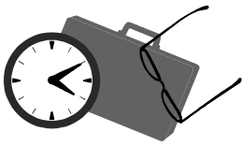
Join the Ventura County Astronomical Society as they host the 54th annual convention of the Astronomical League, the 54th annual convention of the Association of Lunar and Planetary Observers, Astronomical Society of the Pacific, American Association of Variable Star Observers, International Occultation Timing Association, The American Association of Amateur Astronomers, International Dark Sky Association, Search for Extraterrestrial Intelligence Institute and the Society of Amateur Radio Astronomers for the first major Astronomy Conference of the new millennium!

ASTROCON 2000 is a conference that will bring together astronomy groups and individuals that have never met together before. Plan on attending NOW! You do NOT need to be a member of any of the participating organizations to register and attend the conference.

There will be fantastic lectures and exciting field trips. If you have any questions, please contact them at astrocon2000@vcas.org today!

Astrocon 2000 features outstanding tours this year including JPL, Mt. Wilson Observatory, Griffith Park and a star party at the famous Mt. Pinos. Scheduled speakers include Don Yeomans of JPL; J. Michael Straczynski, creator and executive producer of Babylon 5; Rick Fienberg, President and CEO of Sky Publishing Corporation; Tony and Daphne Hallas, astrophotographers; Dr. Edwin C. Krupp, Director of Griffith Park Observatory and renowned archeoastronomer; Richard Berry, author; Don Machholz, discoverer of 9 comets; and Dr. Robert Jastrow, Director of the Mt. Wilson Observatory.

Registration information can be obtained from their website at http://www.vcas.org/astrocon/ , by email at astrocon2000@vcas.org, or by phone at (805) 529-7813. If you register prior to May 1st the cost is $85. Food, lodging and tours are additional.



BOARD MEETING MINUTES

Carol Huston

Rose City Astronomers Board Meeting March 6, 2000 at OMSI Parker Room, 7:00 PM

Present: Peter Abrahams, Dale Fenske, Scott Turner, Jim Girard, John Cart, Matt Brewster, Jan Keiski, Sameer Ruiwale, Carol Huston

Membership Report – Carol subbing for Doug: RCA currently has 406 member families. There was a question about whether or not we send comp newsletters to anyone other than members. Carol indicated that she didn't think this was happening, but Doug should follow through with Candace to see if we are sending any comp newsletters to other clubs.

Programming: At this time, programs for the rest of 2000 are scheduled. April's speaker is Jeff Barnes from OSU, and May's speaker is Steven Tuft of the Lewis & Clark Physics Department. We should alert speakers that the In-Focus style of projection should be discouraged because of the quality of the print for folks sitting in the back of the room is poor.

Web Site: Dareth needs to be kept informed as soon as possible about programs, activities planned, SIG meetings, and associated information so that she can update the web site.

Star Parties - Scott Turner: Plans and sign-ups for the Hancock weekend on April 8 are going well. Messier Marathon banquet sign-ups are coming along, and program information has been developed. Carol will be turning this material over to Scott for him to be the point person at the MM event that weekend.

YRCA Update – Peter subbing for Margaret/ Bob: The youth programs now have 13 volunteers working to support these activities. This is a good sign!

IDA – Bob McGown: Bob is putting together a packet of IDA information for use with City Commissioners and other local key individuals. Johan and Bob will contact the City Commissioner to connect him with our PR rep Dennis. A suggestion was made to connect with get IDA information to PGE and Pacificorp lighting people to influence security and streetlights that get used in the city.

Solar Viewing – Peter subbing for Mark: Mark submitted a written request indicating that he could potentially take the solar scope/filter to schools if he had some gas support.

Volunteer work needs to be noted and recorded. If anyone participates in an activity, send a note to the Board list, and the Secretary will keep an ongoing record. This will especially be important to support our 501c status.

Community Affairs – John Cart: John will be speaking at the State Prison next month.

Librarian - Jan: Regarding the Jim Doyle memorial collection of books, Jan will put an appropriate book plate and notice in each book noting this donation.

Sales – Sameer: January $733 in sales. February was $308. At the general meetings, it seems to work best for the speaker to be done at 9:00 and then tell the audience that Q&A can stay and talk to speaker while others break to tables.

Treasurer Report – Jane: Budget requests for the July 2000 through June 2001 fiscal year need to be submitted from each area to the board by the April Board meeting. Budget discussions will be held during the April and May meetings and voted in June. Jane handed out budget notes for use by Board members in preparing their budgets for this coming year. Regarding a question on the 501c forms, Jane asked if OMSI supported us financially in any way. We all agreed that RCA exchanged services with OMSI for room space.

Telescope Library: We need to keep better track of the OMSI telescopes – the gray and blue 8" Dobsonian scopes that we made at Astronomy day and targeted for loan out to teachers. They haven't been checked in a while. A scope has been loaned out on occasion to some folks at TV Junior Academy, and Jim will follow up on whether or not they brought it back. The blue scope seems to be missing and Jim and John are going to follow through with inventory on all of the telescope library scopes. Brian should set up a check-out system for these scopes as part of the telescope library.

The lights went out at 8 PM and the Board held the rest of the meeting in the dark.

Newsletter Report – Peter subbing for Candace: OMSI bid $5400 for newsletter preparation. Candace met with Printing Today, and they bid $4000 per year including postage and labels. There was a question about whether or not we should buy Acrobat (student version is $200) to support easier uploading of the newsletter to the web site. This might encourage people to download it instead of getting it in the mail, which would save dollars on newsletter preparation.

A dues increase to $24 is evident in order to support long-term this drastic increase in newsletter costs. This dues increase would gain us $2400 annually. Added to the $1400 we pay already OMSI, this gives us $3800 to break even for the newsletter preparation. Our window of opportunity to decide on a dues increase is between now and May because the new membership year starts in July. If we take this step, it needs to be thoroughly explained to the membership. Even though members have indicated that a dues increase wouldn't be out of line, the focus of the board discussion was to avoid a dues increase if at all possible. Scott proposed that RCA accept the cost of the production of the newsletter for this membership year in order to determine what the actual costs will be and to look at implementing some other cost-cutting measures. The board will check into this further and review all factors involved before we vote this decision. Discussion will continue on line with a survey to the email list getting their thoughts on a dues increase.

Astronomy Day: Peter proposed that RCA sponsor a contest asking members to do something astronomy related and submit an essay to us to be judged with prizes awarded. This might be a way to get parents and teachers involved with participation in programs for their kids. Peter will contact Dennis to publicize it.

CLASSIFIED ADS

FREE: Observing shelter, 8 foot diameter, 6 feet high. Made of treated and cedar lumber. Yours for the disassembly. Paul 360 887-8778

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354

APRIL 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
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30						

MAY 2000

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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April

Apr. 3	Mon.	Board Meeting	OMSI CR#1	7:00PM
Apr. 7-9	Fri-Sun	Dark Site Star Party	Camp Hancock	
Apr. 8	Sat.	Astronomy Day Celebration	OMSI 12–5 &	7:30PM
Apr. 12	Weds.	TM Workshop	OMSI Bldg. C	6-9PM
Apr. 17	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30PM**
Apr. 17	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30PM
Apr. 20	Thurs.	Cosmology SIG	Powell's Technical Books	7:00PM
Apr. 22	Sat.	TM Workshop	OMSI Bldg. C	10-4
Apr. 25	Tues.	Weather SIG	OMSI CR#1	7:00PM

May

May 8	Mon.	Board Meeting	OMSI CR#1	7:00PM
May 5-7		Sunriver Star Party		
May 10	Weds.	TM Workshop	OMSI Bldg. C	6-9PM
May 15	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30PM**
May 15	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30PM
May 20	Sat.	TM Workshop	OMSI Bldg. C	10-4
May 23	Tues.	Weather SIG	OMSI CR#1	7:00PM
May 27-28		Klondike Star Party		

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Sky Theater. Occasionally the meeting is held in the Sky Theater. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/index.htm).

OMSI CR #1 (Classroom 1) is the room just north of the Auditorium. The monthly Board Meeting and many of the SIG meetings are held there. Go past the Planetarium and the Auditorium, continue down the hallway, and you'll see it on your left.

OMSI Bldg. C is underneath the I-5 bridge over the Willamette River, next to OMSI's north parking lot.

RCA CLUB INFORMATION

Message Line: (503) 255-2016
Web Site: http://www.rca-omsi.org/rca/

The Rosette Gazette

Volume 12, Issue 5 | Newsletter of the Rose City Astronomers | May, 2000

In This Issue:

We do not have a copy of this issue.

If you have a copy of it we would appreciate knowing.

Webmaster@rosecityastronomers.org

The Rosette Gazette

Volume 12, Issue 6 | Newsletter of the Rose City Astronomers | June, 2000

In This Issue:

We do not have a copy of this issue.

If you have a copy of it we would appreciate knowing.

Webmaster@rosecityastronomers.org

The Rosette Gazette

Volume 12, Issue 7 | Newsletter of the Rose City Astronomers | July, 2000

In This Issue:

We do not have a copy of this issue.

If you have a copy of it we would appreciate knowing.

Webmaster@rosecityastronomers.org

The Rosette Gazette

Volume 12, Issue 8 | Newsletter of the Rose City Astronomers | August, 2000

General meeting—Monday, August 21st, 7:30 PM, OMSI Auditorium

O. Richard Norton is an astronomer, educator, and author of the best-selling book, *Rocks from Space*. He is president of Science Graphics, a company located in Bend, Oregon that supplies science teaching materials worldwide. Over the past 30 years he was a member of the teaching faculty at the University of Nevada and the University of Arizona where he taught astronomy and astrophysics for many years.

He has studied meteorites most of his life and was named a Fellow of the Meteoritical Society, an international professional society dedicated to research on meteorites. Norton is currently writing a book for Cambridge University Press entitled, *METEORITES - Fragments of Other Worlds,* to be published early next year.

"Do Comets Make It To Earth?"

In this lecture we will look at the many different kinds of meteorites, most of which come from the asteroid belt. The solar system is permeated with dust from comets that continuously pass through the orbits of the inner planets. Has the Earth encountered comets in its history and have they made it to Earth in the past? Do they reach Earth today? We will examine some rare meteorites that may either contain cometary material or may, in themselves, be associated with comets. We will look at some recent meteorite falls that contain materials that we know exist on comets and we will compare cometary dust with minerals that make up stony meteorites. There are certain to be some surprises.

The lecture will be illustrated with many slides. After the lecture, Norton will be signing the new Second Edition of his book, *Rocks From Space* and will be available at that time to answer any questions. Attendees are encouraged to bring meteorites they have collected for display at the meeting. There is an opportunity for Mr. Norton to help with identification if desired.

In This Issue:

FINAL NOTICE

This will be your final issue of the Rozette Gazette for those who have not yet renewed your membership. Dues for July 1, 2000—June 30, 2001 are $24 for an annual family membership. Please send your dues to: RCA Membership, OMSI, 1945 SE Water Ave., Portland, OR 97214, or bring to the August General Meeting to avoid a lapse of services.

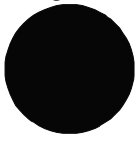
WELCOME NEW MEMBERS!

Eric & Elaine Councilman
Mike Dibona
Scott Fitzpatrick
Ike Isaacs
Terry Johnson
Karl Quade
Joe Rottman
James Shelton
Jeffrey Stevens

August 7 

August 15 

August 22 

August 29 

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VP Community Affairs	TBA		
VP, Communications	Matt Brewster	(503) 774-0360	brewster@teleport.com
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New Member Programs	Carol Huston	(503) 629-8809	StarsCarol@aol.com
Magazine Subscriptions	Johan Meijer	(503) 777-0706	johanm@www.com

RCA
Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information. Please note: Allow two months for your subscription to be renewed from the time you bring or send your renewal to Johan until the magazine has processed the renewal.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more information.

President's Message
By Peter Abrahams

RCA received some mail from the Boise Astronomical Society about the Idaho Star Party Aug. 3-6, at Bruneau Dunes State Park, where BAS has a large Obsession telescope in an observatory. They have a schedule of speakers and other events, and it is supposed to be a good site. This is the weekend after Table Mountain.
http://www.boiseastro.org
I hope some RCA members make the trek out there; I'd like to hear about the observatory & the event.

We are still without a VP Community Affairs; an important board position that serves mainly as our liaison with schools. If we have no volunteers before the school year begins, we will be forced to answer requests from schools in the negative. If you are interested in astronomy & education, please contact me.

Now that it is summertime & people are out hiking the hills & observing the stars, let's have some more input on possible observing sites. There's a lot of countryside surrounding our metropolitan area, far too much for a committee to cover. We need people to keep their eyes open for accessible hilltops, away from lights, available to the public, etc.

Finally....I'm still finding new projects undertaken by RCA members that are really 'pushing the envelope' in amateur telescope building, astrophotography & CCD imaging, software & computers, and other work. I hope members are motivated to share their progress, it will benefit everyone. If you don't want a public platform..... please let me know what you're doing, I'd certainly like to hear about it.

The Observer's Corner

Howard Banich

M13, the great Hercules Cluster.

"This is but a little Patch, but it shews itself to the naked Eye, when the Sky is serene and the Moon absent." Edmond Halley, 1714

"A nebula without a star. Round and brilliant; the center is brighter than the edges. Near two 8-mag stars. Reported on the chart of comet of 1779. It is reported in the English Celestial Atlas. (diam. 6') June 1, 1764." Charles Messier

"An extensive and magnificent mass of stars with the most compressed part densely compacted and wedged together under unknown lass of aggregation." W.H. Smyth, 1844.

"It is the finest of all the clusters in the northern skies and is just visible to the unaided eye on a dark night." Mary Proctor, 1924.

"Ohmygod!" anonymous, ongoing.

M13 is one of the best known and most observed objects in the northern sky. It is one of the first deep sky objects neophyte observers look for and among the first experienced observers go back to. By happy coincidence, along with being bright and splashy, it is conveniently placed in a relatively easy to find area of sky that is nearly overhead this time of year. So what is a globular cluster and why is this one so special?

A globular cluster is, essentially, a spherical ball of stars. M13 is estimated to consist of anywhere from 100,000 to one million stars but the exact number unknown. Globulars are generally ancient objects, and are by most estimates as old as the galaxies they swarm around. Some are packed so tightly in their cores that stars really do sometimes collide and coalesce there.

The Milky Way galaxy has about 150 known globulars, but more are no doubt hidden from view on the far side of our galactic home.

M13 is special for several reasons for amateur observers. Along with its bright appearance in just about any telescope, it is more than a perfectly spherical ball of stars. The edges are a bit ragged, formed into curved chains of stars. There is a dark feature dubbed The Propeller which can be seen just southeast of the clusters core.

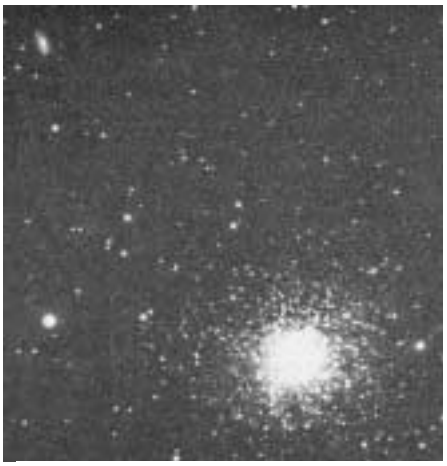
Discovered visually around 1850 by Bindon Stoney while using Lord Rosse's very large telescopes, they were soon confirmed by observers using scopes as small as 9 inches.

Although not immediately obvious, good conditions and the willingness to try several magnifications can show The Propeller well in a 6" scope. A larger scope does help, but this is a case where patient observing is more important than equipment. Actually, I wouldn't be at all surprised if this feature can be seen with a smaller scope yet – it is hard to draw limits when it comes to observing large, extended objects.

I first saw The Propeller years ago with my old 12.5" f/8 scope. I had been observing M13 for about 20 years and never noticed it until reading about it in an article. Once I knew something was there I found it right away. So what was up with me all those years? It *is* subtle, but I suspect the real reason is that I didn't expect to see anything but a smooth distribution of stars within M13. And that's all I saw. A good lesson that many times the limit of what can be seen is imposed by expectations.

As added treats, two faint galaxies lurk nearby. **NGC 6207** is a 12th magnitude galaxy about a half degree to the northeast of M13's core. This object stands up to magnification well as it has a rather high surface brightness. When the seeing is good, you may detect what appears to be a stellar core, but the literature assures us that it is a chance alignment of a foreground star within our own galaxy.

Even closer to M13 is the much fainter galaxy **IC 4617**. With a magnitude of 15.5 it is within reach for those with larger telescopes, but you may be able to locate its position even if the galaxy is invisible. Look for a faint parallelogram of stars about midway between NGC 6207 and M13. Save this one for "when the Sky is serene and the Moon absent".



NGC 6207 is at upper left. Note the parallelogram of faint stars just up from center of the image; IC 4617 is just off the lower right hand star. Adapted from Burnham's Celestial Handbook, page 979.

M13: the Great Hercules Cluster. Mag. 5.7, diameter 16.6 arc minutes. RA 16 hours, 41.7 minutes, Declination +36 degrees, 28 minutes.

NGC 6207: SA galaxy, Mag. 12.2, surface brightness 11.9. Size, 2.1 x 1.1 arc minutes. RA 16 hours, 43.1 minutes, Declination + 36 degrees, 50 minutes.

IC 4617: galaxy, Mag. 15.5. Size 1.2 x 0.4 arc minutes. RA 16 hours, 42.1 minutes, Dec + 36 degrees, 41 minutes.

It sure makes the Math easier (Relatively speaking)!

By Doug Huston

One of the important questions in Cosmology is "What is the shape of our universe?" By shape, cosmologists are talking about what kind of line can we draw between two widely separated points in the universe. Is it a straight line or is it curved? As an example consider two geometric shapes, a sphere and a plane. On the plane, a line connecting two points is straight. But, on a sphere, a line connecting two points is curved. Another way this question can be asked is, "if two lines start out parallel, will they stay parallel over long distances?" This question is important because it effects things like the formation of some types of black holes, and whether or not the universe will continue to expand forever.

Well, it is beginning to appear more and more like the universe is flat. A line connecting two widely separated points would be straight. A team of astronomers and cosmologists using the Microwave Anisotropy Telescope (MAT) has been observing "ripples" in the Cosmic Microwave Background (CMB) radiation. These aren't ripples in the same sense as ripples on a pond's surface, but are actually areas of differing intensity in the CMB. The CMB radiation is a sea of radiation that permeates the whole universe and is left over from the big bang. The ripples in this radiation were caused when the expanding universe cooled enough for light to de-couple from matter.

The important thing about these ripples is: their size can be correlated to the shape of the universe. This correlation is a two step process. First, cosmologists calculate what the size of the most abundant ripple should be. In other words, how much sky should this more intense area of the CMB cover? But, the shape of space-time will make the apparent sky area covered by these ripples different from the calculated area. It's similar to the way the shape of a lens makes the apparent size of an object different than it's actual size when you look at the object through the lens. If the universe is flat, the most common ripple should appear to cover about 1 degree of sky. And, according to the MAT team after almost 1200 hours of observing the CMB, there is a clear and strong predominance of 1-degree ripples. Further data to answer this question will come from the Microwave Anisotropy Probe Satellite, which will be launched in the fall of 2000.

While knowing the geometry of space-time helps answer some important questions in Cosmology, a flat geometry also raises an interesting question. Specifically, where is the matter necessary to flatten space-time? Counting all the possible visible and dark matter, cosmologists can find only 30% of the mass necessary to create a flat space-time. Theorists believe the remainder resides in the fabric of space-time itself. It can be described by a cosmological constant, first postulated by Einstein. It's interesting that Einstein first postulated this to counteract the expansion of the universe implied by his equations, since it appeared at that time the universe was static. Later, he decided the cosmological constant was a mistake when it was discovered that the universe was in fact expanding as predicted by his theory. It seems now his only mistake was in picking the value of the constant. Einstein could truthfully say, "I thought I was wrong once, but it turned out I was right after all." Recent observations on supernovae indicate the cosmological constant has a value that accounts for - guess what - about 70% of the matter needed to create a flat universe!

The evidence is mounting that the large-scale geometry of the universe is flat. Lots of terms in Einstein's equations become zero in a flat space-time, and speaking for physics students and researchers everywhere – whew!!!!

COOL FUN FACTS

Astronomers see countless galaxies for billions of light years in every direction. The farther away a galaxy is, the faster it moves away from us. The whole universe is expanding. How do we know?

When an object moves away from an observer, the light from that object changes color, similar to the way a train whistle changes pitch if the train is moving away. This "Doppler shift" causes the light of receding galaxies to stretch out, becoming more reddish.
Measuring this "red shift," astronomers can tell how fast each galaxy is receding.

If the universe is currently expanding, it makes sense that at one time it was much smaller. The "Big Bang" theory, which describes how the universe might have started in a stupendous explosion, is one possible explanation of how the universe began.

The Hubble Constant is a number for how fast the universe is expanding:
http://csep1.phy.ornl.gov/guidry/violence/hubble_constant.html

How big is the universe?
http://features.LearningKingdom.com/fact/archive/1998/11/02.html

More evidence for the Big Bang theory:
http://features.LearningKingdom.com/fact/archive/1998/09/11.html

NASA BUDGET UPDATE

By Richard Geller

On February 16 of this year, NASA Administrator Daniel Goldin presented the budget request for fiscal year 2001 to the House of Representatives Committee on Science' Subcommittee on Space and Aeronautics. Then on April 13, Mr. Goldin presented the budget request for FY 2001 to the United States Senate. The request was for just over $14 billion. Comparatively, the FY 2000 budget was 13.6 billion. On May 23, the House committee on Appropriations' Subcommittee on VA-HUD Independent agencies gave voice vote approval to their FY 2001 budget which includes NASA's budget. As of this writing, $13.7 billion have been approved for NASA, which while not as much as requested still represents a $112 million increase from the previous fiscal year.

Of this $13.7 billion, $5.5 billion is designated for human space flight, $5.6 billion for science, aeronautics, and technology, and $2.6 billion for mission support.

The budget includes some important and exciting elements for the coming year. They include, investments in improving space shuttle safety, funding for continuing to build the International Space Station, and money to replace workers lost due to retirements and downsizing, who have not been replaced because of a recent hiring freeze.

1,850 workers are expected to be hired over the next two years, resulting in a total of 550 new employees after anticipated retirements.

The budget request is in large part a reaction to the recent well-publicized failures that the space program has experienced. Review panels were assembled and have released studies on the Mars program, shuttle fleet, and the faster, better, cheaper program. In response to these studies some of the budget will be devoted to remedies in relevant areas. The shuttle fleet, which was grounded from August to December of 1999, is targeted for an increase of $1.5 billion over the next six years in order to increase the safety and reliability of the space transportation system. Upgrades are to be completed within the six-year time frame in order to benefit from them prior to a shift to the replacement craft for the Shuttle. Of the FY 2001 budget $3.165 billion has been allocated for the Space Shuttle.

1999 also witnessed a global epidemic of launch failures, which were not limited to NASA but also affected the Russian, Japanese, and European space programs. As part of NASA's strategy to increase launch efficiency, funding has been requested for a new Space Launch Initiative. This ambitious new program consolidates shuttle upgrades and second and third generation reusable launch vehicle research into a single program. NASA, in concert with industry has been investigating more advanced reusable launch vehicles for human and cargo transportation and anticipates operational prototypes perhaps by the end of the decade.

The next step in construction of the International Space Station will be the launching of the long delayed Zvezda service module, which is scheduled for July of 2000. In the event of a prolonged delay in the launch of the service module the U.S. will launch the Interim Control Module as a backup plan. The first crew is expected to board the station before the end of this year. The U.S. Laboratory, named "Destiny" is scheduled to launch in January of 2001. Research and testing is also proceeding on the crew return vehicle.

The FY 2001 budget also makes

provisions for creating a Mars Communication Network. This would be a series of Mars orbital satellites which would greatly increase the odds of successful missions to the Red planet in the future. This concept was initially proposed in response to last year's Mars probe debacles. Another exciting prospect for the envisioned network would be live video links enabling both researchers and the public unprecedented opportunities for study of Mars. The FY 2001 budget would increase funding for exploration of the Solar System by a total of 17% over the previous year's budget.

Closer to Home, the proposed budget for the Earth Sciences Enterprise is $1,405.8 million, which is down from last year. This program will enable the launch of the Aqua satellite, part of a triad of satellites in the Earth Observing System. Aqua will measure atmospheric humidity and temperature and contribute to understanding climactic change. FY 2001 also provides for ICEsat, which will take topographic measurements of Earth's ice sheets.

Astronomy enthusiasts should rejoice at the prospect of increased funding for NASA, especially when compared with recent years. The battle is not yet over and it is important to contact your representatives to let them know the value the voters place in space exploration.

Southern Glories, A report of an astronomical trip to the Cook Islands

By Dale Fenske

The June issue of Astronomy magazine was filled with intriguing descriptions of the Southern Sky. Articles like, "The Sky Down Under", "North vs. South", and "Learning the Southern Skies Online", made my imagination run wild. I had to know what I was missing in the Southern Hemisphere, so May 12th, I took a trip to the Cook Islands---- latitude twenty degrees South----.

The Cook Islands are tropical and beautiful. The Polynesian people of the Cook Islands are very friendly. They speak English with a quaint New Zealand type accent. Anyone would feel safe walking the streets even after midnight. The relaxing attitudes of the people made this a perfect a vacation.

Nights and days in the tropics are approximately twelve hours long any time of year. The Sun sets within an hour of 6:00 PM rises within an hour of 6:00 AM. The autumn month of May is equivalent to the Northern Hemisphere's November and an excellent time to visit, since their rainy season has not started. At dusk, the sky is bright with the Southern Milky Way is at its highest elevation and you can see it from Scorpius all the way through Orion. The good ship Argo and the constellations, Centaurus and Crux and were high in the sky.

Morning skies brought Scorpius, Sagittarius and Capricornus to the zenith. The brightness of central bulge of the Milky Way is stunning when viewed directly overhead. The Lagoon and Triphid nebulae are easy naked eye objects. From Oregon viewing sites this central bulge of the Milky Way is close to the horizon and much dimmer.

I took my 20 X 80 binoculars to document objects for the Astronomical League's Southern Sky Binocular Club (which I completed). The skies of the Southern Pacific Ocean were dark and not polluted, either by dust or light. Most of the list of objects were easy viewing.

The Crown Beach Resort, in Rarotonga, had a sign that invited people to Stargaze with Samson, a local resident. I naturally could not pass up this opportunity. What fun we had, we both perused his skies with the enthusiasm of first time observers. His passion was our Northern Skies and mine his Southern.

He unraveled stories of his ancestors sailing from Hawaii and New Zealand using only the star, Antares, as a guide to steer by. He also disclosed the story of the Polynesian God Mauii using a giant fishing hook to catch an island full of people. Mauii loved these people, who of course happened to be the people of the Cook Islands. As a sign of his love for them he placed the giant fishhook in the sky for all to view. We know the fishhook as the constellation, Scorpius.

Samson then questioned, "You are from the North, what is that U-shaped constellation near the horizon?" I first thought of Corona Borealis, but the U was much too large to be that. It took a while to become oriented, for the moon was bright, hiding the dimmer stars. I slowly analyzed the star patterns from horizon to zenith and identified Orion, Gemini, Cancer and….. Leo was next. Where was Leo? I saw Regulus and three or four stars in an unfamiliar pattern. I finally figured out that this actually was Leo but his backwards question mark was upside down and pointing down towards the northern horizon. The triangle comprising his back haunches was twisted, not in a strait East-West line. Once able to picture Leo, I scanned my way East into Virgo with Spica, and then below (North) to Bootes and Arcturus and on to the horizon and Samson's funny U-shaped constellation. You probably guessed by now that we were looking at the upside down handle of the Big Dipper (Clouds hid the dipper part with the pointers pointing North, to a spot below the horizon).

It takes nearly a whole day of traveling (19 hours including layovers) to get to the Cook Islands. We were exhausted and tired the first day. Everything there is very expensive to the tourist, even though their New Zealand dollar is only worth half of the US dollar. Breakfast for two was $36.00 NZ. Most local people are poor and make only a minimum wage. They could not exist without gardens and their barter trade with one other.

I am satisfied now, I have seen 100 per cent of the Southern Skies. As exciting as it was to view these spectacular heavenly wonders, as beautiful as the islands are and as nice as the people are, I do not know if I would go this far South to view them again. I vacationed in both Hawaii and Southern Mexico. Flying to either place from Portland, if booked correctly, takes only five hours of flying time with no layovers. Both lie South of the 20th parallel, North. This means that you can see everything to within 20 degrees of the South Pole.

From the 20 degrees North vantage, you can see:

- All twenty-one first magnitude stars of both hemispheres
- The Southern Cross with its jewel box and coalsack,
- Centaurus, with the huge bright globular cluster Omega Centauri, the galaxy Centaurus A
- the ship Argo, with all its many bright Southern Milky Way star clusters,
- The Zodiac nearly overhead.

Seventy-three objects are listed in the Southern Sky Binocular club. Only six of these objects are hidden from view from 20 degrees North latitude. There is not much to look at within the small 20-degree circle of the South Pole. It is quite barren. (There are more objects to see in the 20-degree circle of the North Pole. This only includes the constellations Draco, Camelopardalis and Ursa Minor.)

There are two spectacular objects that you do miss from the 20 degrees north latitude sites and that is the globular 47 Tucanae and the Tarantula Nebula. The Tarantula Nebula is in the Large Magellanic cloud, and it is larger and brighter than M42 in Orion. 47 Tucanae is a bright globular cluster, second only to Omega Centauri, much brighter than M13, the Hercules cluster.

The Large and the Small Magellanic Clouds, were quite disappointing. They are huge but they are not bright. They are dim, diffuse objects. You must carefully analyze the area to even distinguish where the clouds begin and end. Looking at them is similar to looking at Coma Berenices. You notice a difference in sky brightness from the background, but it is not a striking difference. The Milky Way is more prominent against its background sky than either of the Magellanic Clouds.

Seeing the Southern Sky with all its glories was a must for me. It still excites me to think about it. I will observe the Southern skies again. The Cook Islands are beautiful and the people are very friendly. But for my money, as long as I live in Portland, I would rather see the Southern Skies from 20 degrees North latitude, be it Hawaii, Mexico or the Southern Caribbean. Very little of the sky is missed and much time, money and travel frustration is saved.

Don't forget to register for:

OSP 2000 — Deadline for Registration is August 21

This year's Oregon Star Party is less than one month away. Can you believe that! Come & join our party at Indian Trail Spring starting on August 31 through September 3. And this is truly an Astronomy Party of 600+ astronomers. Check out our full schedule of speakers, activities and our expanded youth activities on our web page www.oregonstarparty.org. You

This year's program includes a lineup of outstanding speakers including Betty Coleman, Mars Exploration and Settlement; Peter Abrahams, Selecting Binoculars; Candace Pratt, The High Five; Mel Bartels, Improving Dobsonian Pointing; Dave Sandage, Motions in the Sky, and George Labelle, CCD and Photographic Imaging. Three keynote speakers include Tom Clark of Teltron Telescopes, Richard Berry, author, and Adam Block of Kitt Peak National Observatory.

A special thanks to InFocus Systems for providing a projector for our speakers!

The Book Review Corner

by John O'Donnell

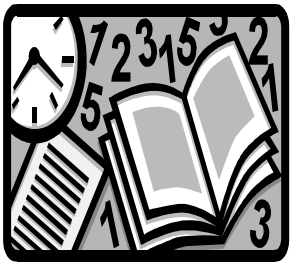
Book Review of First Light: The Search for the Edge of the Universe
Author: Richard Preston
Publisher: Random House Pub. Date: June 1996
Price: $24.00 Format: Hardcover, 1st ed., 272pp.

Written by the author of the recent bestseller about Ebola, "The Hot Zone", it is a factual, but human look at the modern science of astronomy. The book has a cast of quirky but larger than life characters, including the awesome two hundred-inch Hale Telescope at the Palomar Observatory in California that took fourteen years to cast and polish.

The draw for this book is how these astronomers make their incredible discoveries fueled by Oreo cookies, using parts from dumpsters, and keep it held together with Palomar glue (rolls of cheap transparent duct tape).

The book is broken into three interwoven areas: the gear, the folks, and the discoveries. The first looks at the seven story tall Hale, the heaviest working telescope on earth, with a mirror that is two hundred inches wide.

The book is packed with many interesting characters such as Bernhard Schmidt, the inventor of the Schmidt telescope. A one-armed man with many personal flaws, but who could see with perfect clarity how to create a 48" correcting glass (like the front end of a Celestron C8) to such perfection you could photograph tree twigs at two miles lit only by starlight.



I most enjoyed the story of astronomer James E. Gunn, and his skill at scavenging for junk and creating telescope gadgets. His most important gadget called the 4-shooter, used four flawed CCD's produced for the Hubble Space Telescope and fashioned them into a camera so sensitive that it allowed the 200 inch Hale telescope to function as if had a 160 foot primary mirror! This earned him the $220,000 MacArthur Fellowship genius award and gave us a glimpse in 1983 of how redshifts of light in hunting Quasars helped us to see how the universe evolved. The other interesting focus of the book was profiling Carolyn Shoemaker and her astrogeologist husband Gene (of Shoemaker-Levy 9 comet hitting Jupiter fame) racing to discover more comets, and minor planets within our solar system.

The book is packed with facts and insights into what drives the astronomers to use the big eyes to solve the riddles of the universe. This book would also be an enjoyable read for significant others, teens or friends who would like to learn what it is like to be standing in the shoes of the folks that always have their eyes on the skies.

August OMSI/RCA Star Party

Perseids Meteor Shower Star Party - Saturday, August 12

Join 1,000 fellow star gazers at the summer's most popular Star Party celebrating the Perseids Meteor Shower, one of nature's most spectacular nighttime displays. On August 12, the moon will be in the waxing gibbous moon phase as the Perseids Meteor Shower peaks, limiting some views of the bright meteors. Co-hosted by OMSI, the Rose City Astronomers and Oregon Parks and Recreation, the Perseids Meteor Shower Star Party will be begin at 9 p.m. at Rooster Rock State Park, located 22 miles east of Portland on I-84 (east of Sandy River) at exit 325.

ASTROPHYSICS / COSMOLOGY SIG

TIME: 7:00 PM

DATE: August 24th

PLACE: Reed Campus—Meet at the Chemistry Loading Dock

TOPIC: The Reed Nuclear Reactor Tour, Stephen Fraun

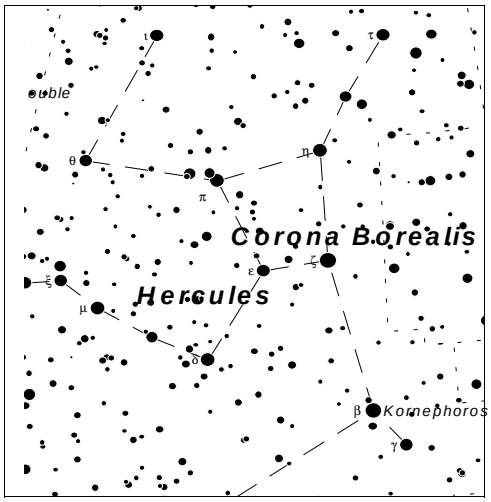
Free to the public - parking is $3 per vehicle. For possible cancellation due to weather, call 503/797-4610 that evening. For more information, call the OMSI Star Party Information Line at 503/797-4610; Rose City Astronomers Club at 503/255-2016; or Rooster Rock State Park at 503/695-2261.

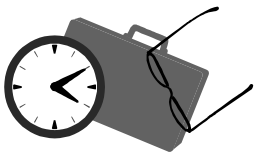
Constellation of the Month *by Mike Powers*

Hercules the Kneeler, Hercules the Hero, is a well known constellation for many observers in the northern hemisphere because of the famous Hercules Cluster (M13) and the familiar asterism, The Keystone. However, the entire constellation is hard to trace in light polluted skies because of its large size and its brightest stars are only 3rd magnitude. When Hercules is overhead in the summer the figure appears upside down, knocking foreheads with Ophiuchus towards the south while towards the north his left foot is placed on the head of Draco the Dragon. When the constellation is rising in the spring some observers see the Hercules star pattern as a butterfly.

Similar to the origins of many constellations, Hercules the Kneeler dates back to Mesopotamia. The Heroic Kneeler was associated with the Sumerian god of war and agriculture, Ninurta. This star pattern was inherited by the Greeks but not until Roman times was the constellation associated with mythical hero, Hercules. The Greek legends associated with Hercules usually describe him performing his twelve labors, which were penance for killing his sons and wife during a bout of madness. For more information about Hercules' twelve labors, visit the Hawaiian Astronomical Society web page, www.hawastsoc.org/deepsky.

While the constellation is known for the globular clusters M13 and M92, it also contains nice double stars, a fine planetary nebula and some faint galaxies clusters. The Hercules cluster was discovered by Edmund Halley in 1714, who was able to see it in a dark sky with the unaided eye. M13 is easy to find in the Keystone asterism, located about one third the distance from Eta (η) to Zeta (ζ) Herculis. M13 is the only decent binocular deepsky object in Hercules, appearing as a fuzzy disk in 7x50s. When moving up to a small telescope, M13 can now be partially resolved and when using a larger telescope (10 inch) dark lanes in the cluster start to become visible. When using a large telescope you may also glimpse a lens-shaped galaxy (NGC 6207) in the same field of view as M13 (Sky & Tel, July 1998). This 12th mag galaxy lies about ½ degree NE of M13, near a yellow double star. Moving up to the right shoulder of Hercules you will find a yellow star, Beta (β) Herculis, the brightest star in the constellation at mag. 2.8. From this location you can jump about 4 degrees to the NE and find a bright blue planetary nebula (NGC 6210) appearing like an out of focus 8th mag. star. This planetary can be viewed from suburban skies but will require higher powers to fully appreciate. Alpha Herculis, marking the head of the strongman, is called Ras Algethi (head of the kneeler). This is a nice double star for small telescopes with an orange primary and a contrasting greenish secondary. For our deep sky challenge (16/18 inch scopes), we jump back to Beta Herculis as our starting point, then hop to the nearby Gamma (γ) Herculis. Moving about 4 degrees SW lies Abell 2151, the Hercules Galaxy Cluster. Drawings and photes of this cluster are nicely detailed in *The Night Sky Observer's Guide.* Now try to get to dark skies this month and really trace out this large constellation, Hercules the Giant.





BOARD MEETING MINUTES

Carol Huston

Present: P. Abrahamson, J. Keiski, D. Murray, D. Huston, R. Young, R. LaBar, C.Pratt, C. Huston.

Jane won't be here for the next couple of meetings. If anyone needs money, contact her by phone to request it because she is having computer problems.

Membership – D. Huston: 447 member families. Renewals are coming in. Names will be dropped from the newsletter and web lists if people haven't renewed their membership by September.

Programming is on track for the rest of this year.

Newsletter – C. Pratt: Streamlining between membership roster queries and newsletter to make sure bar code is used on the address label. Uploading newsletter so that Dareth can access for the web page. By August, we will be ready to offer the newsletter as an on –line service versus receiving it in the mail.

Star Parties: July 15 star party at OMSI. Discussed plans. OMSI would like us to set up the solar filter for this event. July 30 star party has been moved to Rooster Rock. Since the official star party schedule lists it at OMSI, someone will set up at OMSI during the event to inform people that it has been moved.

Peter will follow through with Jim and Scott regarding the State park development in the Vernonia/Banks area. Scott should decide if he wants to be the point person or who he would delegate this to if he doesn't. Candace proposed to make a committee to interface with the Park Service; Doug offered to participate in the public hearings. It was generally agreed that RCA should try to get initial presence in the planning phase in order to influence decisions such as lighting and space. We should: find out when the hearings are; if we can get on their planning group; perhaps scout the area out.

YRCA – This group is doing pretty good. Margaret wrote an article for the Gazette. Attendance is low at the other youth group meetings..

Replacement for VP of Community Affairs: Peter is pursuing/following up.

Librarian: Sameer and Jan are working together on some projects to get info in Library and Sales.

Dareth: Dareth and Candace working to get the newsletter up on web site.

Brian is doing a great job with telescope library.

8/16-31 Phone line: Doug Huston

Name Badges: Candace noted that we got a price break at 1000. MOTION: Carol made the motion to buy 1000; Dareth seconded. Motion passed.

WEATHER SIG

DATE: Wednesday, Aug. 30th

PLACE: Colonial Office Complex
10175 SW Barbur Blvd.
Suite 100-BB, Portland

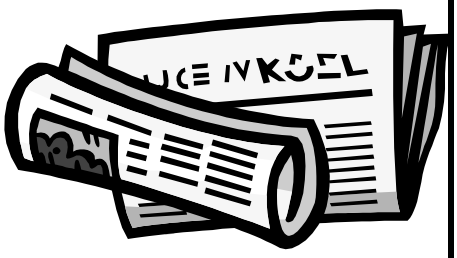
TIME: 7:00 PM

Come Rain or Shine!!

NEW SIG FORMING

A new special interest group is forming on deep sky observing that will focus on observing techniques for all levels of astronomers. Interested? E-mail Alan Davenport at adaven@teleport.com; or write to Deep Sky SIG, Rose City Astronomers, OMSI, 1945 SE Water Avenue, Portland, OR 97214; or call Alan at 257-2480.

CLASSIFIED ADS



FOR SALE: 8" Meade SCT scope + heavy-duty field tripod. Carrying case, dew shield, + various accessories. GREAT OPTICS. $800 Call Carol at 629-8809or email StarsCarol@aol.com.

FOR SALE: 10" Meade SCT scope + heavy-duty field tripod. Carrying case + accessories. $1000 Call Doug at 629-8809 or email Geometer31415@aol.com.

WANTED: UNITRON REFRACTOR TELESCOPE with or without mounting, 60-100mm. Also want older Tasco 2.4" or 3" equatorial refractor as sold with wooden case (1960-70's vintage). Call (541) 758-8326 or write J. Siple, 33230 Primrose Rd., Corvallis, OR 97333.

FOR SALE: 10" Meade 2120/LX3 SCT. Includes equatorial wedge, MotoDec and Motofocus, eyepieces, AC/DC connectors for Motor Drive, etc. $1200, Call Candace Pratt 296-6758.

August 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

September 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

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August

Aug. 5	Sat.	Larch Mtn. Star Party	Larch Mtn. Dusk
Aug. 7	Mon.	Board Meeting	OMSI Parker Rm. 7:00 PM
Aug. 12	Sat.	Perseid Meteor Shower	Rooster Rock S.P. Dusk
Aug. 21	Mon.	Young/Jr/Elem. YRCA	OMSI Audi. 6:30 PM
Aug. 21	**Mon.**	**General Meeting**	**OMSI Audi. 7:30 PM**
Aug. 24	Thurs.	Cosmology SIG	Reed College 7:00 PM
Aug. 30	Weds.	Weather SIG	Colonial Office 7:00 PM
Aug. 31-Sept. 3		**Oregon Star Party**	**Ochoco Mtns.**

September

Sept. 4	Mon.	Board Meeting	OMSI Parker Rm. 7:00 PM
Sept. 9	Sat.	Silcox Hut Star Party	Call R. McGown
Sept. 18	Mon.	Young/Jr/Elem. YRCA	OMSI Audi. 6:30 PM
Sept. 18	**Mon.**	**General Meeting**	**OMSI Audi. 7:30 PM**
Sept. 21	Thur.	Cosmology SIG	Powell's Tech. 7:00 PM
Sept. 23	Sat.	Equinox Star Party	OMSI Dusk
Sept. 27	Weds.	Weather SIG	Colonial Office 7:00 PM
Sept. 29-Oct. 1		Camp Hancock Star Party	Fossil, OR

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Sky Theater. Occasionally the meeting is held in the Sky Theater. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/index.htm).

OMSI CR #1 (Classroom 1) is the room just north of the Auditorium. The monthly Board Meeting and many of the SIG meetings are held there. Go past the Planetarium and the Auditorium, continue down the hallway, and you'll see it on your left.

OMSI Bldg. C is underneath the I-5 bridge over the Willamette River, next to OMSI's north parking lot.

RCA CLUB INFORMATION
Message Line: (503) 255-2016
Web Site: http://www.rca-omsi.org/rca/

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354

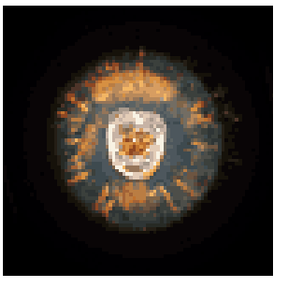
ROSE CITY ASTRONOMERS

The
Rosette Gazette

Volume 12, Issue 9 | Newsletter of the Rose City Astronomers | September, 2000

In This Issue:

The Flamboyant End of Stellar Evolution



The Hubble Space Telescope's images of the mass ejected by dying stars shows that these stars have a rather flamboyant final fling before settling into white dwarfdom. The reasons why are puzzling astronomers: none of the marvelous mass ejection patterns were ever predicted by the theory of stellar evolution, and none have been very successfully explained.

Bruce Balick is a professor of Astronomy at the University of Washington in Seattle. Dr. Balick spoke to the Rose City Astronomers a couple years back. We are so pleased he has accepted our invitation to return and share the latest information on his favorite topic—**PLANETARY NEBULAE.** Dr. Balick is very involved in the Hubble Space Telescope program as an advisor to the program in this interest area of planetaries. Join us Monday, September 18th at 7:30 at OMSI for the General Meeting.

WELCOME NEW MEMBERS!

Lloyd Betts
James Butler
Tim Farley
Tim Glynn
Steven Hart
Michael Lowrie
Thomas Mayfield
Carla Nicholson
Jacob Ramsey
Nathan Smith
Curtis Thomas

September 5 | September 13 | September 20 | September 27

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Light Pollution Rep.	Bob McGown	(503) 244-0078	mcgown@teleport.com
New Member Programs	Carol Huston	(503) 629-8809	StarsCarol@aol.com
Magazine Subscriptions	Johan Meijer	(503) 777-0706	johanm@www.com

President's Message

By Peter Abrahams

We have a new Vice President for Community Affairs, Norm Trost. The RCA gets a few requests a month for speakers or for telescopes. Most requests are from schools or youth groups. The previous VP, John Cart, personally filled most of these requests by speaking on his field of interest, which is meteorites. Norm will be expanding the program by forming a speakers bureau -- a list of members and their expertise. If you have the time to give an occasional presentation, please let us know.

There has been slow but significant progress on the quest for an observing site. We have made some encouraging contacts with the state Parks department. Like the RCA, they are not an organization that makes rapid decisions; so you can expect progress reports -- but don't wait up nights.

We have a new club telescope, an 8-inch dobsonian. Thanks very much to Howard Banich and Jim Girard for fabricating this telescope.

Response to our recent survey was quite low, but one message the board received was that some general meetings should be devoted to amateur astronomy -- observing, imaging, and amateur techniques & technology. We have scheduled a presentation on CCD imaging & others will follow.

RCA
Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information. Please note: Allow two months for your subscription to be renewed from the time you bring or send your renewal to Johan until the magazine has processed the renewal.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more information.

Finally -- for those who are new or just never get out of the house: Oregon Star Party is a blast! If you haven't attended, try to make it out this year.

SEE YOU AT OSP!

Parisian Star Party-Stargazing at Sky Meadows

By Bill Jensen, Northern Virginia Astronomy Club

A few of you may have seen someone who appears lost wandering around the last few OSP's at ITS with a silly grin on his face due to the impossibly dark skies of central Oregon. Well, as that East Coast victim of perpetual light pollution, occasionally I get paroled to your dark, high desert skies. But what about the rest of the year? How does a guy living in the shadow of the lights of the DC Beltway get some stargazing in? Well, he takes a one hour trip to Paris.

Paris Virginia, that is. Tucked away (somewhat) from the glare of the lights of Nation's Capital is a wonderful Virginia state park called Sky Meadows. So if you travel out to visit your favorite (!) Senator here in the city that L'Enfant designed, you can (almost) find a piece of the left coast darkness on a leisurely drive west into the foothills of the Blue Ridge Mountains.

Our club, the Northern Virginia Astronomy Club, shares many of the same concerns as other clubs around the nation. A good sized club (about 350 members) we have permission to use several sites under the control of the regional park authority for observation any weekend. But the viability of these sites is under constant threat, from development, and the attitude of the local park rangers, who often change. Our club has seen its most popular site become suddenly useless due to a combination of these factors. So on June 3rd of this year, with a wonderful clear sky and the moon just over one day old, I decided to forego traveling to a rustic location in order to assist our with our club's other goal-helping others observe, and drove to Sky Meadows State Park.

Monthly, the friendly (really!) park rangers welcome the public for one evening of observing. If you were visiting the DC area, you would find that driving west on Interstate 66 is an unusual mix of typical suburban strip malls which suddenly end in favor of rolling hills, and horse country. Seeing the exit for the Bull Run Battlefield in Manassas, and later passing a photographer getting just the right shot near sunset of an long abandoned stone mill, I am reminded of the history surrounding us. The closer I get to the park, I know that estates nearby often sell for more than ten million. I take the exit for the park, and less than two miles from Paris, Virginia, a hamlet probably best known as a haven for those well heeled arts/crafts shoppers, I turn into the park. Even here, history abounds. It is the former estate of a Confederate officer, with a home built in the 1750's, which still stands. The famous Appalachian trail runs through the park.

We set up behind the house in a field that opens up with fairly good horizons. It helps to keep the cars of the general public from interfering as they straggle home. More than 25 scopes are out, and the public totaling about 40 or so range in age from about 1 year to 70+. Before dusk, people stroll by and wonder at the variety-from Questars, to large AP refractors, to the usual mix of dobs and SCT's.

Shawn O'Brien, the director of the Smithsonian's Albert Einstein Planetarium in the Air and Space Museum serves as host, and begins a talk at dusk. We were already treated to a slim crescent moon combined with a prominent elevation of Mercury nearby, so everyone is pumped up. Shawn leads the public in a mini sky tour, and hands out basic star maps for the general public to follow along. After his talk, they wander from scope to scope. Several folks are like cometary interlopers, sweeping in quickly for a view of the brighter showpiece objects. I try to vary the views, but unfortunately, the timing is such that the only other planet visible is Pluto. No Saturn to entice. But some folks stay in orbit of my 8 inch truss tube dob, especially the smaller kids who can easily handle the eyepiece position. Globular clusters are always fun, so I show 3 sisters ranging in age from 3 to 9 M13, M4, and M92. They get hooked, and then we share views of the Ring, a few galaxies, and then even some bright stars like Vega and Antares, so they see the color differences. They hang in there until about 11, when even the chattiest girl gets sleepy.

The adults who remain behind include those who are attempting to use their scopes for the very first time-and I resist trying to tell a new ETX owner that he can find M13 faster than he can slew to it. His batteries wear out before he does, yet he does bag some targets. By about 1AM, when we are supposed to pack up anyway, the clouds decide to take over the horizons.

With about Mag 6 skies, and minimal light from nearby towns and the distant car headlights, its a shame we normally can't stay longer. But the oohs and ahhs, especially at seeing an occasional meteor or bright satellite make up for the short time. Maybe little Katherine or Clarissa won't grow up to be astronomers, but their mother, surprised by the level of interest, takes my card in order to get more information about the club, and what books to give her small girls. Who knows, maybe one of them will be the next Sally Ride.

As I pack up and head east for my townhouse in the urban sky glow, I am pretty pleased. No real serious observing, but just showing some folks how to find stuff in the binocs, or the traces of the major constellations, is equally rewarding. I know that clubs all over America do the same, and it appears that RCA is even more outgoing in this regard. It really sets the hobby apart from many others. So if you are visiting the Washington DC area from April to October during the new moon, join in with your eastern amateurs in a side trip to Paris. The stars above Sky Meadows are waiting!

The Sixth Annual Imaging the Sky 2000

A National Conference on Astronomical CCD Imaging

This annual event will be held Friday and Saturday, November 3rd and 4th at the Tokyo International University of America in Salem, Oregon. The organizers for the event are Mel Bartels, Richard Berry, Jim Girard, Rick Kang, Nick Liepins, and Dennis Luse.
Early registration (prior to October 1, 2000: $54.00 (Includes lunch on Saturday, ITS 2K CD-ROM) Standard registration (prior to November 1, 2000: $64.00 (Includes lunch on Saturday, ITS 2K CD-ROM) Late registration at the door: $74.00 (lunch not guaranteed, nominal charge for ITS 2K CD-ROM)

For more information, contact:
Jim Girard (argo@teleport.com) or Rick Kang (rkang@efn.org)
http://www.teleport.com/~argo/its2k/its2000.html

Friday, November 3rd Session Highlights:

- CCD 101 – From Photons to Monitors: a pre-conference session featuring an overview of the basics of imaging, for those who are new to the field. Topics to include term definitions, how chips work, pixel size, focusing, exposure times, image calibration, and various tips and tricks of the trade.
- Selecting Hardware Components for Image Acquisition Systems: Matching Mounts, Tube Assemblies, and Cameras (Dave Kenyon)
- Extracting Information from Images: An Overview of Image Processing (Richard Berry)
- High End Results with Low End Hardware: Successful Homebrew Imaging (Al Kelly & Chuck Shaw)
- Show & Tell (individual short presentations; contact us if you would like to make a presentation.)

Saturday, November 4th Session Highlights:

- High Resolution Imaging Technology – the LISAA (Wayne Brown)
- The Center for Backyard Astrophysics – Pro-Am Collaboration on Research of Cataclysmic Variables (Joe Patterson)
- A Technical Comparison of Various CCD Sensors (Doug George)
- The Quest for Highest Resolution Images (Benoit Schilling)
- Breakout Workshops**
- Image Acquisition and Processing Software (Richard Berry, Doug George, Jim Burnell)
- An Evaluation of 'Off-The-Shelf' Systems (Bill McLaughlin, Wayne Brown)
- Do-It-Yourself Systems (Mel Bartels, Chuck Shaw, Al Kelly)

To register: mail check, made out to ITS 2000, to: Jim Girard, ITS 2000 Registrar, P.O. Box 254, Beaverton, OR, 97075

The Weather SIG

Date: Wednesday, September 27th

Place: Colonial Office Complex
10175 SW Barbur Blvd, Suite 100-BB
Portland, OR 97219

Time: 7:00 pm

Come rain or shine . . .

COOL FUN FACTS

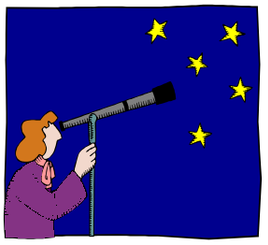
Where's the best place on Earth to find meteorites?

Meteors fall into Earth's atmosphere over every spot on the planet. However, there is one place that's far better than anywhere else to find the meteorites that make it all the way to the ground. That place is a windswept field of ice near the edge of the East Antarctic Ice Sheet.

There, near the Allan Hills (which are actually the tips of huge mountains buried in the ice) one can find hundreds of meteorites lying around on the surface of the ice. There are tons of them. How did they get there?

Meteorites fall into the snow all across Antarctica, then sink down until they hit a layer of solid ice. That ice flows slowly across the continent, to certain places where ice-buried mountains push it up. The upthrust ice evaporates in the dry Antarctic wind, leaving the meteorites exposed.

More about Antarctic Meteorites and the people who hunt for them:
http://wwwdsa.uqac.uquebec.ca/~mhiggins/MIAC/antarc.htm
http://www-curator.jsc.nasa.gov/curator/antmet/antmet.htm
http://www.cwru.edu/affil/ansmet/ NASA has a robot that searches for Antarctic meteorites:
http://www.frc.ri.cmu.edu/projects/meteorobot/



SEPTEMBER OMSI/RCA STAR PARTY

Autumnal Equinox Star Party

Saturday, September 23

Celebrate the beginning of fall at FREE Autumnal Equinox Star Party on September 23 starting at 7:30 p.m. in OMSI's East Parking Lot, located at 1945 SE Water Avenue. View stars, the planets, and other celestial sights in the autumn sky through a variety of telescopes, and learn from local astronomers.

For possible cancellation due to weather, call 503/797-4610 that evening.

ASTROPHYSICS / COSMOLOGY SIG

TIME: 7:00 PM

DATE: September 19th

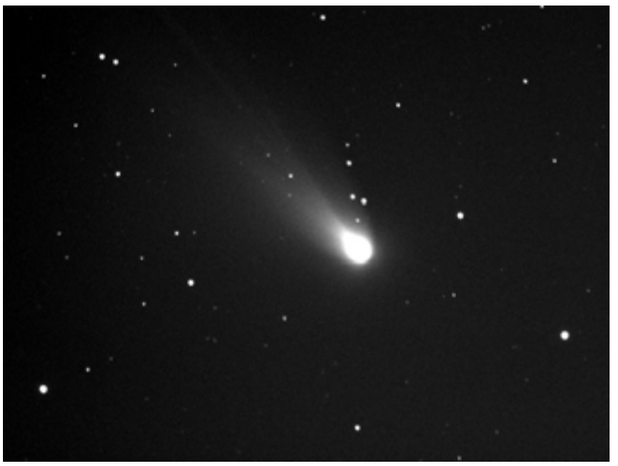
PLACE: Powell's Technical Bookstore

TOPIC: Extraterrestrial Agriculture by Paul Schmidt

RCA Photo Gallery

Right: Brett Watson—Moon over Portland. July 3, 2000. Taken with a Sony Cybershot Digital Camera.

Below: David Haworth— Comet C/1999 S4 Linear. July 23, 2000, 10:42 PM C-8, 30 seconds, @ f/1.95.



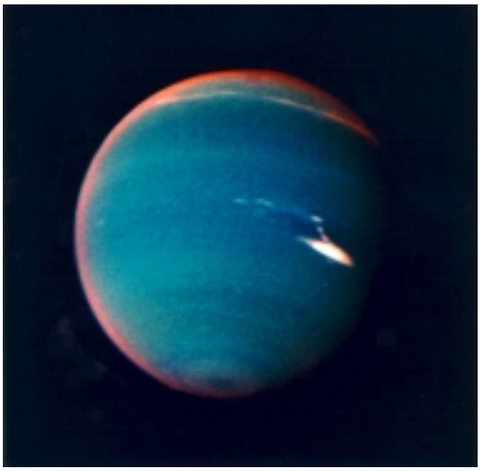
Below: Jim Girard—Bubble Nebula NGC 7635 in Cassiopea. Taken with Takahaski FS 102 at f/8 and ST7 CCD camera.

New Evidence of Astronomical Fraud: Conspiracy to Credit John Adams Couch with Discovery of Neptune Revealed by Recovered Historical Documents

By Michael Meo

An abiding characteristic of astronomical science is the decisive role it gives to mathematical precision. In 1627 Johannes Kepler changed the Copernical model of the solar system from an interesting curiosity to the dominant astronomical world view by means of his Rudolphine Tables, which predicted planetary orbits with greater accuracy than the Ptolemaic Alfonsine Tables. (1) Isaac Newton's law of universal gravitation, which predicted conic-section orbits for all members of the solar system, enjoyed a decisive triumph in 1759 by predicting when and where Halley's Comet would reappear after an absence of 76 years. (2) And in the most celebrated feat of theoretical astronomy ever, in 1846 Urbain LeVerrier predicted the location of the then-unknown planet Neptune by inference from small observed variations of the orbit of Uranus from that predicted by Newton's laws.

Shortly after the September 1846 announcement by the Berlin Observatory that LeVerrier's planet was just where he had said it was, astronomers in England asserted that in unpublished calculations John Couch Adams had anticipated LeVerrier's results in August of 1845. John F.W. Herschel, the son of the discoverer of Uranus, wrote a letter describing Adams's research the very day he heard of LeVerrier's correct prediction; George Biddel Airy, Astronomer Royal and head of the Royal Greenwich Observatory, and James Challis, Plumian Professor of Astronomy at Cambridge University and head of its observatory, confirmed that Adams had shared his research with them in 1845 and that they had unfortunately failed to find the planet before the Prussians (Berlin in 1846 was the capital of the kingdom of Prussia). Until late 1998 English-language scholars accepted this claim, since they presumed that distinguished scientific gentlemen did not lie. The original manuscript calculations done by Adams, however, were never available for scholarly inspection, even though they were kept in the Royal Greenwich Observatory archive; interested scholars were directed to the published version, which appeared after the discovery was announced.



The independent scholar and historian of astronomy Dennis Rawlins began in 1967 requesting photocopies of the original Adams manuscript calculations. After two years of delay, he was told that the file on Neptune's discovery was missing. He asked to see the archival list of what documents had been in the file. That, he was told, was missing as well. Rather suspicious at the coincidence, Rawlins studied the documentations that was available and concluded that, at the very least, there had been a conspiracy of silence by well-placed British astronomers both before and since the discovery of Neptune. (3) Since the iconoclastic Rawlins had had considerable difficulty getting his work published in the established journals of history of science, he founded his own journal, *Dio*, in 1991, and in it published an extensive 1992 examination of the available documentation. He inferred that Adams had never obtained an accurate calculation of Neptune's position.

Then, in December of 1998, the astronomer whom Rawlins had long suspected of stealing the Greenwich Neptune file died, and among his papers the file was found by the Harvard historian Owen Gingerich. In the June 1999 issue of *Dio*, Rawlins finally could announce that the missing documents confirmed his conclusions – Adams's predictions were never as close as ten degrees from Neptune's true position, while LeVerrier's published work was within one degree of the planet. This sensational development has appeared so far (May 2000) in none of the standard scholarly journals concerned with the history of astronomy. I will discuss the details of Rawlins's work at the July meeting of the Cosmology Interest Group of the RCA.

1 Thomas S. Kuhn, The Copernican Revolution: Planetary Astronomy in the Development of Western Thought. Cambridge, Harvard University Press, 1957, P. 219 ff.

2 Cf. Curtis Wilson, "Clairaut's Calculation of the Eighteenth-century Return of Halley's Comet," Journal for the History of Astronomy. 1993, 24 (75):1-15

3 Rawlins's suspicions were mentioned in passing in Robert W. Smith, "The Cambridge Network in Action: The Discovery of Neptune," *Isis*, 1989, 80 (303): 395-422, on p. 418. only to be dismissed in the next sentence.

THE IRISH UNIVERSE

By Bob McGown

During the early scientific revolution of Europe, two great men held the distinction in Ireland above all others. The first of these two figures was the mathematician astronomer the third Earl of Ross (1800-1867). He constructed a telescope that began 60 years of astronomical research. The other Irish scientific figure was mathematician astronomer Sir William Rowan Hamilton (1805-1865). This historical figures set forth a visionary quest of discovery that allowed scientists and researchers to boldly reach out to the mathematical and visual universe.

It is obvious that these two mathematician, astronomers corresponded. Perhaps Sir Rowan Hamilton even viewed through the eye piece on the Lord of Ross's colossal telescope known as the Leviathan. There was a fire that nearly destroyed Burr Castle and some of the records were destroyed. It is known that the Lord of Ross ground an excellent mirror for the Armagh Observatory in northern Ireland. Perhaps, Hamilton viewed at the Armagh Observatory.

An Irish nobleman, who grew up at the Burr Castle and went to the Trinity College in Dublin and then studied at Magdolen College in Oxford graduating in 1822. Lord Oxmantown was the name used by the Lord of Ross to published his scientific papers in. He became the Lord of Ross when father, 2nd Earl of Ross, gave him the castle and moved to Sussex for health reasons.

About 1828, Lord of Ross began to develop a passion for astronomy. The Birr Castle was not in the ideal location for observing, however the Lord of Ross would take advantage of nearly every clear night. This was during a period when the large Fraunhaufer refractors were flourishing. Lord of Ross chose to go with a Herschelian design telescope with a large speculum mirror. For viewing purposes, the Lord of Ross chose a Newtonian mirror for the secondary. Earlier he opted for a prism secondary and finally settled for an optical flat. He

experimented with a forge casting mirrors in a four to one proportion of copper to tin.

In his forge, Lord of Ross cast a blank 36" mirror by 1839. To grind the mirror, he developed the first grinding and polishing machine. The mirror would rotate while as the polishing tool was drawn back form side to side. The engine for the 36" grinding machine was steam driven and generated two horse power. After a couple of years work, he created the 30 foot focal length 36 inch mirror.

Successful viewing in the 36 inch telescope went along with a test by James South of England and Romney Robinson of the Armagh Observatory which is now in Northern Ireland. They thought the 36 inch was better that Hershel's 49-inch. It's a difficult comparison, since the two telescopes didn't exist in the same circa. Romney Robinson wrote of the grandeur telescope project by given the third Lord of Ross. It was of a previously unparalleled effort.

Lord of Ross is about to construct a telescope of unequaled dimension. He intends it to be of 6 feet aperture and 50 feet focus… His character is an assurance that it will be devoted, in the most unreserved manner, to the service of astronomy, while the energy which could accomplish such a triumph, and the liberality that has paced his discoveries in this difficult art within reach of all, may justly be reckoned among the highest distinctions of Ireland.

Design problems for 72" telescope were difficult assessments. A 72 inch mirror would be difficult to mount at over four times the weight of the 36 inch mirror. The telescope mount would be too massive stone walls where the telescope would only be raised in altitude and not be rotated in azimuth. The 58 foot tube was supported between to stone masonry walls 70 feet long and 50 feet high. The viewing time of an object on the celestial equator was a half hour.

It 1842, the 72 inch mirror was cast and figuring had begun. In 1883 and 1884 this strange stationary telescope began to take shape. The seven foot optical tube was supported by each side by pulleys and a windlass. The scope was low power and it had not view finder. Objects just drifted into view at low power. It was complex and difficult to maneuver. One astronomer said " Any one using the scope also had to be a trained mountaineer."

The colossal nature of Lord of Ross's telescope gave it the name of "The Leviathan of Parson Town". The word Levitation is a Hebrew word for a sea monster adversary defeated by Yahweh in scriptural accounts. It was aptly nicknamed which is still used today.

The third lord of Ross produced many excellent drawings of Charles Messier's 104 deep sky objects to avoid. His diagrams showed spiral structure to the nebulas which were some of the early evidence of the spiral nebula structure. There were spiral diagrams of M101, M52, and others. His diagrams of M-31 showed a back ground of stars and high definition. Other Nebula included the Orion Nebula appeared to be shinning regions of gas. Another nebula with unusual shape was the Owl Nebula, M-97. A few years ago, I had the opportunity to view Lord of Ross's diagrams in his original booklet the Hunnington Library. His diagram of the Owl nebula's peculiar shape, gave it the

(Continued on page 8)

On the Philosophy of Science.

By Carol Huston

What is science? What does it do? The first philosopher of science to attempt an answer to these questions was the Greek Plato. Plato was concerned with the pursuit of perfection. In his view, this world was a corrupted, imperfect reflection of a more refined realm. According to Plato, on some plane of existence somewhere, there was a perfect circle, a perfect straight line, the perfect number 2 and so on. From Plato's ideas of perfect love, we get the "Platonic Relationship" (doesn't sound like much fun to me.) More importantly, Plato believed that ideas alone could give true knowledge.

This model, known as Platonism, governed science for centuries. Experimentation, since it dealt with real and therefore imperfect objects, could not give you true understanding. It was the job of the scientist to sit in isolation, thinking about the world, searching out its truths by pure reason. An important point to note here is, in the Platonic view of the world, truths had actual existence. Scientists searched for these nuggets like prospectors searching for gold. During this period, science and philosophy were pretty much indistinguishable. Isaac Newton's epoch treatise on physics was titled "Mathematical Principles of Natural Philosophy."

It was around the time of Newton that this ivory tower dogma began to break down. Newton himself, to verify his theories, conducted some experiments. For example, he calculated, using his new laws, how much the Moon would "fall" in a given period of time, and then observed the Moon's trajectory over that period of time. He found the Moon's path in pretty much exact agreement with his theory's prediction. Another major shock to Platonism came with the discovery that consistent geometries could be developed without using all of Euclid's postulates. N.I. Lobachewsky developed one of the first of these in the early 19th century. He showed that a totally consistent geometry could be derived without Euclid's "Parallel Postulate." At this point, a philosophy of realism began to creep into science. In this philosophy, science was given a special status as an activity whose purpose was to determine the laws by which the natural world was governed. Philosophy became separate from science. Note though, the echoes of Platonism in this new definition of science – there were still immutable, perfect truths out there for science to discover.

This philosophy of science, realism, was predominant until the mid-1960's. Realism took for granted science's exalted station as the one sure way to knowledge and discussed topics like, "the role of auxiliary hypotheses," "quantity, variety and precision of supporting evidence," "testability in principle," and so on. All this began to change in 1962 when a book by Thomas Kuhn, a Harvard trained physicist, titled "The Structure of Scientific Revolutions," started a ferocious debate about what science is, what it does, and how it progresses. In Kuhn's view, science held no special place as a vehicle for understanding the universe; any epistemological system was just as valid. In fact, the term "valid" is really inappropriate; it was incorrect to call one theory true and the other false. Kuhn's premise is that our theories don't describe anything real, just our perceptions of the world we live in. Science proceeds by discarding theories when our perceptions change. In fact, Kuhn discourages the use of the word theory. He prefers "paradigm." This is the book that introduced the word paradigm into the common vocabulary. This philosophy has become known as Relativisim. It has been carried to extremes by some academics. In some discussions of Relativism, the idea is advanced that there is no objective reality – that we create the world around us as we conduct experiments. The debate between realism and relativisim continues to rage.

This has been a very simplified tour of the history and current state of the philosophy of science. For those who want to gain a better understanding of this subject, the following books will help. To understand the foundations of Relativism, "The Structure of Scientific Revolutions," by Thomas S. Kuhn. To get a good view of Realism, "Philosophy of Natural Science," by Carl G. Hempel. For an excellent account of the debate between the various philosophies, "Science and Relativism," by Larry Laudan. To get a glimpse of the lunatic fringe of Relativism, "Science, the Very Idea," by Steven Woolgar.

(Continued from page 7)

name. His diagrams of Mars and Jupiter were as good as any telescope of the time. There were rumors that the 72 inch was not a good mirror but it was only because of wet and damp climate of central Ireland.

The third Earl of Ross gave up observing in 1865 because of poor health and died two years later. The Fourth Earl, his son continued the observing legacy and built the 36 inch into a fork mount pointed at the pole. In the later years no photography or spectroscopy was attempted on these visual instruments.

Research still continued. J.L. E Dreyer was an assistant on the Levitation between 1874-1878. Dreyer went on to construct a catalogue of deep sky objects known as the New General Catalogue (NGC). In 1909 the Forth Earl of Ross died, astronomy on the 72 inch ceased and the mirror was sent to London. Today, it is used as a museum exhibit.

Later descendants took care of the grounds and historical astronomy equipment. Sometime around 1925, the 36 inch polar axis speculum mirror telescope disappeared. It was a terrible misfortune to loose such a historical telescope.

After an exhibition held at the Burr Castle, Patrick Moore and others proposed a renovation of Burr Castle and the "Leviathan of Parsons town". At an Antique Telescope Society meeting, I had the opportunity to meet Michael Tubridy the project engineer. He described the magnitude of the restoration. Much of the hardware had to be reconstructed and the tube was rebuilt Finnish Redwood.

Amateur Astronomers, and historians of science recognize the unique place in history this great "Levitation of Parsonstown". The legacy of the Third Earl of Ross will be remembered as its place in history as the largest telescope in the world.

BOARD MEETING MINUTES

Carol Huston

Attending: J. Keiski, B. McGown, P. Abrahams, S. Turner, S. Ruiwale, J. Girard, J. Walpole, N. Trost, M. Brewster, R. Young, and C. Pratt.

Jane: Gave treasury report and stated that our application for non-profit status is proceeding.

Membership: Doug not present. Many members have not yet renewed their memberships. The August newsletter will be their last newsletter for those who have not renewed. Non-renewals will also be dropped from the email list.

Peter announced that he will not be able to attend the August meeting. Doug will fill in with Scott as his backup.

Matt: O. Richard Norton will talk about meteorites at the August General Meeting, and Bruce Balick from the U of W will talk about planetary nebulae at the September General Meeting. Peter mentioned that there will be more discussions at the General Meetings regarding amateur astronomy topics and have more members involved in programs.

Candace: The Gazette is proceeding well with the new printing company. We are still working on a simple procedure for getting the newsletter on the web page.

Scott: Star Parties have been going very well this summer. Scott will make an announcement on the excessive white light at the star parties. We have many new members, and it is important to share information on reducing the white light. We discussed the importance of having a host at each local star party. Candace stated that the Board decided a couple of years ago that the VP Observing is to ask for a volunteer host for all local parties and attend as long as there is a 'break-in-the-clouds' or clearer. Peter will forward to Scott the minutes from previous years' discussions regarding the duties of the VP Observing in scheduling hosts for local parties, as well as host duties. The Perseid Meteor Shower is Saturday, August 12th. All members can get in free if they show their RCA identification.

Sameer: 18 copies of sky software were sold at the July General Meeting.

Peter: Norm Trost was voted to serve as V.P. Community Affairs to serve the remainder of the term previously held by J. Cart. Norm retired a few months ago and has a major interest in astronomy. He has taken 2 classes at MHCC in astronomy. He lives in Sandy and wants to form a speakers' bureau of RCA members who are willing to participate in our community programs.

Peter will ask Jim Todd to cc: Norm and Dennis on all publicity from OMSI regarding the star parties. Leonid Star Parties, following this year, will most likely not be scheduled. Star parties in November are often cancelled due to weather, and will probably not be arranged after 2000.

RCA Hot Line: Aug 16-31= Scott; Sept 1-15= Bob McG; and Sept. 16-30 = Matt.

Observing Sites: State of Oregon is hoping to establish a new State Park in Washington County. It will be 1200 acres and there is interest in having a dark site preserve designed into the plan for the new state park. It is a fairly hilly, long and narrow stretch of land. The County does not yet own the land, but plans are underway to obtain the land. Peter will serve as the RCA contact with the Parks Department and Jim G. will assist in the effort.

Member Survey: Only 26 surveys were returned to Rebecca. She reported on the results of the survey. Most members who responded are novice to intermediate level amateur astronomers. The areas of greatest interest include casual observing, deep-sky observing, planetary observing and lunar observing. She will place the survey on the web page and bring copies again to the August General Meeting in an effort to get better response.

Peter reported that Mark Seibold has requested a solar charger for the solar scope. Since there will be many chargers at OSP, we will not proceed with this request this year.

New SIGS: In the past, Cosmology is the only SIG requesting funds. At this time, we want to encourage new SIGS to form, but with the current budget crunch, we are uncertain whether we will be able to assist them with funds. However, each request will be reviewed and accommodated to the extent possible.

Elections 2001: Jim Girard will lead the Nominating Committee for the Board of Directors for 2001. Bob McGown and Sameer Ruiwale will also participate in the committee.

Sameer: Eldon Murdock asked that we make available for handout RCA brochures at gatherings that many of us volunteer to do. The Board agreed.

September Board Meeting: Will be Monday, September 4th.

Rhea: Attended the ASP Convention in Pasadena, CA in mid July. About 500 attended the convention. She distributed photos and brochures collected at the conference.

The Meeting adjourned at 8:55 pm.

Proposed By-Laws Change

As you may know, the RCA is attempting to obtain 501 (c)(3) status. The IRS has asked that we add the following paragraphs to our existing bylaws to confirm that we are operating as a non-profit organization. We will vote on these amendments at the October General Meeting.

"This corporation is organized exclusively for charitable and educational purposes within the meaning of section 503 (c) (3) of the Internal Revenue Code.

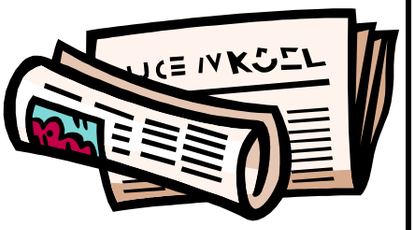
No substantial part of the activities of this corporation shall consist of carrying on propaganda, or otherwise attempt to influence legislation, except as provided in section 501 (h) of the Internal Revenue Code of 1986, and the organization shall not participate or intervene in any political campaign (including the publishing or distribution of statements) on behalf of or in opposition to any candidate for public office, except as provided in section 501 (h) of the Internal Revenue Code of 1986.

Notwithstanding any other provision of this Articles, the corporation shall not carry on any other activities not permitted to be carried on (a) by an organization exempt from Federal income tax under section 501 (c) (3) of the Internal Revenue Code of 1986 (or the corresponding provision of any future United States Internal Revenue law), or (b) by an organization contributions to which are deductible under section 170 (c) (2) of the Internal Revenue Code of 1986 (or corresponding provision of any future United States Internal Revenue law).

The property of this corporation is irrevocably dedicated to section 501(c) (3) exempt purposes and no part of the net income or assets of this organization shall ever inure to the benefit of any director, officer, or member thereof or to the benefit of any private person.

Upon the dissolution and winding up of the corporation, after paying or adequately providing for the debts and obligations of the organization, the remaining assets shall be distributed to a nonprofit fund, foundation, association, or corporation organized and operated exclusively for the purpose specified in section 501 (c) (3) of the Internal Code and which has established its tax-exempt status under that section."

CLASSIFIED ADS



WANTED: The YRCA wants a solar filter for either a 4" or an 8" scope. If there is a club members who could donate one to the Young RCA, we would really appreciate it. Thanks in advance! Call Margaret McCrea at 232-7636 or mags@europa.com

SEPTEMBER 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

September

Sept. 4	Mon.	Board Meeting	OMSI Parker Rm.	7:00 PM
Sept. 18	Mon.	Young/Jr/Elem. YRCA	OMSI Audi.	6:30 PM
Sept. 18	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30 PM**
Sept. 21	Thur.	Cosmology SIG	Powell's Tech.	7:00 PM
Sept. 23	Sat.	Equinox Star Party	OMSI	Dusk
Sept. 27	Weds.	Weather SIG	Colonial Office	7:00 PM
Sept. 29-Oct. 1		Camp Hancock Star Party	Fossil, OR	

October

Oct. 2	Mon.	Board Meeting	OMSI Parker	7:00 PM
Oct. 16	Mon.	Young/Jr/Elem. YRCA	OMSI Audi.	6:30 PM
Oct. 16	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30 PM**
Oct. 19	Thurs.	Cosmology SIG	Powell's Tech.	7:00 PM
Oct. 25	Weds.	Weather SIG	Colonial Office	7:00 PM
Oct. 28	Sat.	White River Star Party	Dusk	

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Sky Theater. Occasionally the meeting is held in the Sky Theater. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/index.htm).

OMSI CR #1 (Classroom 1) is the room just north of the Auditorium. The monthly Board Meeting and many of the SIG meetings are held there. Go past the Planetarium and the Auditorium, continue down the hallway, and you'll see it on your left.

OMSI Bldg. C is underneath the I-5 bridge over the Willamette River, next to OMSI's north parking lot.

RCA CLUB INFORMATION
Message Line: (503) 255-2016
Web Site: http://www.rca-omsi.org/rca/

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354

The
Rosette Gazette

Volume 12, Issue 10 | Newsletter of the Rose City Astronomers | October, 2000

In This Issue:

INTERDISCIPLINARY ASPECTS OF SETI

(ATA—Allen Telescope Array of SETI)

The Rose City Astronomers have a unique opportunity at the October General Meeting to learn more about the well known SETI (Search for Extraterrestrial Intelligence) initiative. Dr. Richard Crandall conducts his research at the Center for Advanced Computation, Reed College; and is an Apple Distinguished Scientist, Advanced Computation Group.

Dr. Crandall will emphasize the blend of fields of thought that seem necessary to carry out SETI in earnest. Of particular interest to the public is the SETI@home program, whereby home users help to analyze radio-telescope data. The lecturer will cover questions such as:

* What really is the probability of existence of extraterrestrial intelligence?

* How far have we transmitted into space ? How far can we transmit into space?

* From how far have we really listened?

* What are the computational issues; how much computer power will it take to detect extraterrestrial life?

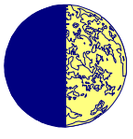
Dr. Crandall is a computationalist, author, lecturer, specializes in interdisciplinary research.

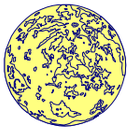
In the SETI@home case the problems are truly interdisciplinary, involving astronomy, physics, mathematics, computation. He has recently worked with SETI@home astronomers, particularly in regard to the use of Apple G4 supercomputing for signal detection.

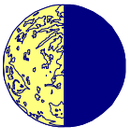
See you October 16th at 7:30 PM at OMSI for the RCA General Meeting. Join us!

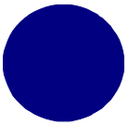
WELCOME NEW MEMBERS!

Tanis Chik
Sam Cronin
Christine Hall
James Jandacek
Erik & Michelle Lutz
Patricia Malone
Kerry Read

October 5 

October 13 

October 20 

October 27 

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President's Message

By Peter Abrahams

The Astronomical League is the national federation of 245 amateur astronomy societies in the U.S. Their many activities and the benefits they provide can be found in the quarterly newsletter, the ***Reflector***, which is received by RCA members, and at their really excellent web site, http://www.astroleague.org/

The AL has many observing programs, with informative and inexpensive books for sale. They work with professional astronomers to facilitate amateur-professional collaboration. NASA and Boeing are working with the AL to place a telescope on the Space Station that would be dedicated to amateur research. The AL provides much assistance in managing a club, they work to promote astronomy to the society, and much more.

The AL is a non profit group run by volunteers, meaning that none of what they do would happen if someone didn't take the time out of their schedule to do it. In the Reflector are found many subtle and not-so-subtle 'help wanted' notices.

We also received the following email concerning the need for assistance, from Karl Schroeder of Seattle, who is chairman of the Northwest Region of the AL. ".....NWRAL can be useful by coordinating regional communication and encouraging programs of regional interest, (especially) Dark Sky Preservation and Young/student astronomy.....Volunteers to work on any of the above areas are welcome!

Most of the activity will be via email and phone.....The position of NWRAL treasurer is open ...Marcie Roundtree, the previous treasurer, assured the meeting that the job of treasurer is not particularly time consuming or difficult, as no checks have been written in the past few years! Please email me if your club has a candidate for this job. Karl R. Schroeder Kschroe225@aol.com "

I hope that RCA members will work with the AL. Any activity that is important to you will be greatly furthered when there is an effective national group with the same agenda; and in particular, amateur astronomy needs a national voice and planning.

Also, the AL had the good taste to use a photo on the latest Reflector cover shot by RCA member Mike Cole, and credited as such.

Congratulations Mike!

RCA

Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information. Please note: Allow two months for your subscription to be renewed from the time you bring or send your renewal to Johan until the magazine has processed the renewal.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more information.

Deep Sky

Few objects in the night sky are brightly colored. At best, a few planetary nebulae may appear bluish-green, maybe the brightest portions of the Orion nebula have a trace of green and brown and the brighter planets have their own range of pastel colors. Nothing brightly colored except for a few stars. I'm not referring to some of the well-known double stars like Alberio but to a relatively rare class of stars called **Carbon Stars**.

Some of these stars shine in a deeply saturated reddish-orange hue and stand out quite vividly in their respective star fields. They're mostly telescopic stars, but you won't need a massive scope to appreciate their distinctive color. Here's a few to get started on:

T Lyrae is perhaps the easiest to find and is also one of the reddest stars in the sky. It varies irregularly in brightness from magnitude 7.8 to 9.6 and is located only about 2 degrees southwest of Vega. Easy to find, it forms a nearly right triangle with Vega and Zeta Lyrae. Look carefully around the indicated field because T won't jump out right away, but as soon as you spot this red spark it is unmistakable – and quite a treat.

While you're in the area, have a look at **NGC 6688**. A perfectly round galaxy about 2 degrees to the east-southeast of T Lyrae and 1.5 degrees south-southwest of Zeta Lyrae, 6688 struck me as a object worth a look on its on merits. I saw it as having a distinct edge, a gradually brightening core with a bright stellar-like center. A little different than the average faint fuzzy.

Just about as red and easy to find as T Lyrae is **RS Cygni**. About 1/3 degree northeast of NGC 6888, the Crescent Nebula, RS is one of those objects that I don't understand - why did it took me so long to notice? I've been enjoying the Crescent for years, and have no doubt swept over RS just about as many times as I've seen the Crescent. I finally noticed RS for the first time only this past August. Hmmm. It is classified as a Carbon Mira and varies from magnitude 6.5 to 9.7.

And how about **NGC 6888**? Prized as a miniature version of the Veil Nebula, the Crescent is formed by a Wolf-Rayat star at its core and is not a supernova remnant like the Veil. The entire 18' x 13' nebula can fit into a medium power eyepiece field of view and with an UHC or OIII filter will show filamentary detail similar to the Veil. A wondrous sight in a large scope.

A bit more difficult to track down is **LW Cygni**. About 3 degrees north of the Cocoon Nebula, it isn't marked in Sky Atlas 2000, Uranometria or MegaStar. However, you can find it at RA 21 hours, 55 minutes, 14 seconds. Declination + 50 degrees, 29.8 minutes. It's in a pretty field and worth the trek.

OK, some real color is nice, and being easy to see is always appreciated. However, the **Cocoon Nebula (IC 5146)** has neither of these properties. In fact, it is easiest to find by tracing the dark nebula **B168** from its western to eastern end, where the Cocoon hides. Regardless, the Cocoon is tough object to detect visually with a 20" scope and filters don't seem to help. It's easy to completely miss despite your best efforts, but then you're certain to not see it if you don't look! Good luck if you give it go.

T Lyrae: Carbon Star. Magnitude 7.8 to 9.6. RA 18 hours, 32 minutes, Declination +36 degrees, 59.9 minutes. SA 2000 chart 8, UA page 117.

NGC 6688: Spiral galaxy (SAO), magnitude 12.6, SB 13.5. Size 1.6'x1.6' RA 18 hours 40 minutes, Declination +36 degrees, 16 minutes. SA 2000 chart 8, UA page 117.

RS Cygni: Carbon Star. Magnitude 6.5 to 9.7. RA 20 hours, 13 minutes, Declination +38 degrees, 44 minutes. SA 2000 chart 8, UA page 119.

NGC 6888: Crescent Nebula (emission nebula). Size, 18'x13'. RA 20 hours, 12 minutes, Declination +38 degrees, 21 minutes. SA 2000 Chart 8, UA page 119.

LW Cygni: Carbon Star. Magnitude 8.5 to 10. RA 21 hours, 55 minutes, Declination +50 degrees, 29.8 minutes. SA 2000 chart 9 (not marked), UA page 86 (not marked).

IC 5146: Cocoon Nebula (emission nebula). Size, 10'x10'. RA 21 hours, 53 minutes, Declination +47 degree, 16 minutes. SA 2000 chart 9, UA page 86.

Solar System

Uranus and **Neptune** won't be easily visible for much longer this year. Lurking in the southern part of our sky, both distant planets are in Capricornus. *Sky & Telescope's* website has excellent finder charts at:
www.skypub.com/sights/images2000/urnep00_3_big.gif

This takes you to a large-scale chart, click on the links for a close up chart for each. I've observed both planets several times this past summer, both from my backyard and from the OSP. Somewhat surprisingly, I found that the dark and smoky skies of central Oregon made little difference in what I could see. Using 417x from both locations, I could see both planets as pale bluish-green disks, with Uranus being significantly larger and brighter. Two Uranian moons were apparent and a third suspected. Triton was plainly visible near Neptune, whose small and less bluish-green disk connoted its great distance.

Saturn's rings are coming into its best viewing angle in years. The sketch below hints at the details that can be seen in a medium size scope under a tranquil sky. Saturn typically can stand more magnification than Jupiter, so go ahead and push a little. Look especially for the **shadow of the planet** on the rings, which will gradually be lost to our view as Saturn reaches opposition on November 19th. After opposition watch for the shadow to reappear on the opposite side of the planet.

(Continued on page 5)

Verdict in on Weather Seers

By Ron Thorkildson

Despite the undeniable progress in science and technology that has taken place in recent years, weather and climate forecasting remains an iffy business. And, except for those individuals who are profoundly shocked by this statement, most of you can probably cite many examples of inaccurate (okay, blown) forecasts that have occurred in the-not-too distant past. Fair enough. But the process of forecast verification—determining how close a prediction comes to the weather that actually transpires—is not as obvious and straightforward as one might suppose. There are many reasons for this that we might explore in a future article. For now, however, I simply ask that you give some thought to this assertion as we revisit some forecasts that were made about a year ago.

Last October at a meeting of the American Meteorological Society's (AMS) local chapter, five brave (disturbed?) individuals faced an expectant audience and unabashedly announced their opinions regarding the sort of weather that was in store for our region during the upcoming winter (see December 1999 issue of the Rosette Gazette). So who were these fearless forecasters and how did they do? Let's take a look.

George Taylor (Oregon's state climatologist) and **Nate Mantua** (University of Washington's Pacific Marine Environmental Laboratory) were of a similar mind. They foresaw a warmer and drier than average November, followed by seasonable temperatures and precipitation in December. Wetter and colder than average conditions were thought to be on tap for January, February and March. **Pete Parsons** (former KGW TV weathercaster) saw things a little differently. November was to have been colder and drier than usual, then turning warmer and wetter in December. He said January would be dry and very cold, but temperatures would rebound to above normal levels in February with average precipitation. **Gary Crandell** (a computer software engineer) speculated that the winter would be characterized by alternating periods of warm/wet and cold/dry weather, at roughly monthly intervals. November, January and March were to be warm and wet; December and February, cold and dry. **Steve Todd** (meteorologist in charge at the Portland weather office) simply offered that the winter's temperatures should seasonable, with above normal precipitation.

Besides speaking to the general trends, the occurrence of specific events was also addressed. **Taylor** claimed there was a 70-75% chance of a least one major snow storm at the lowest elevations of the Willamette Valley. **Parsons** believed a prolonged cold snap would grip the Portland area in January, accompanied by about a foot of snow. **Crandall** was very specific when he called for two "significant" snow events in February—the 8th and 23rd.

Data from the Portland weather office is used to represent what actually happened. November: significantly warmer (+4.0°F) and wetter (+1.47") than normal; December: also warmer (+3.7°F) than average, but was drier (-2.51") than normal; January & February: temperatures were seasonable (+0.2°F & +0.1°F, respectively) and only slightly wetter (+0.31" & +0.65", respectively) than average; March: somewhat cooler (-1.7°F) and slightly drier (-0.35") than normal. As for the cold and snowy extremes, there were none. Yes, for three days in January the freezing level hovered between 500-1000' with occasional snow showers in Portland, but the entire Pacific Northwest was spared even a single outbreak of arctic air.

Somewhat surprisingly, nobody got even the general trends right. Except for March, all temperature departures were warmer than average. It was wetter than normal for most of the 5-month period, but if we sum the precipitation departures, we find ourselves on the dry side by nearly 0.5". Absent also were the periodic swings in weather regimes that some had foreseen. So, based on available information, I would describe last winter's weather as slightly warmer than normal, with seasonable precipitation levels. For my money, the National Weather Service came the closest to getting it right.

Last winter's weather seemed to defy prediction. Will the prognosticators do better this winter? At least come and listen to what they have to say at the jointly sponsored AMS/OMSI Winter Weather meeting on November 9th, 10:00am to noon, in OMSI's auditorium (tomatoes must be surrendered at the door). There is no charge. Or if you can't wait that long, see George Taylor's fall and winter forecast on the Oregon Climate Service website at **http://www.ocs.orst.edu/**.

The Weather SIG

Date: Wednesday, October 25th

Place: Colonial Office Complex
10175 SW Barbur Blvd, Suite 100-BB
Portland, OR 97219

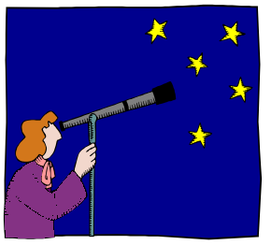
Time: 7:00 pm

Come rain or shine . . .

OSP 2001 KICK-OFF MEETING

When: Wednesday, October 18th
Time: 6:30 PM
Place: OMSI's Parker Room

Join us and help plan the 2001 OSP!



OCTOBER AT OMSI

MURDOCK PLANETARIUM

Starting October 13 in OMSI's Murdock Planetarium

Skywatchers

Journey through history and space as you explore ancient astronomical observatories and learn about the cultures that built them including Egyptian temple builders, Chinese royal court officials, early Native Americans, and Renaissance inventors. Then move forward in time to learn about exciting new research methods and tools.

Pacific Northwest Skies

Take an amazing sight-and-sound journey as you learn about the stars, constellations and celestial highlights that can be seen above the Pacific Northwest region.

ASTROPHYSICS / COSMOLOGY SIG

TIME: 7:00 PM

DATE: October 19th

PLACE: Portland State University
Science Integration Institute
Rm 287, Cramer Hall

TOPIC: First Contact, Bob McGown and Gary Beyl, After Contact, Harrison, Faster Than Light, Herbert

CALL FOR ELECTIONS

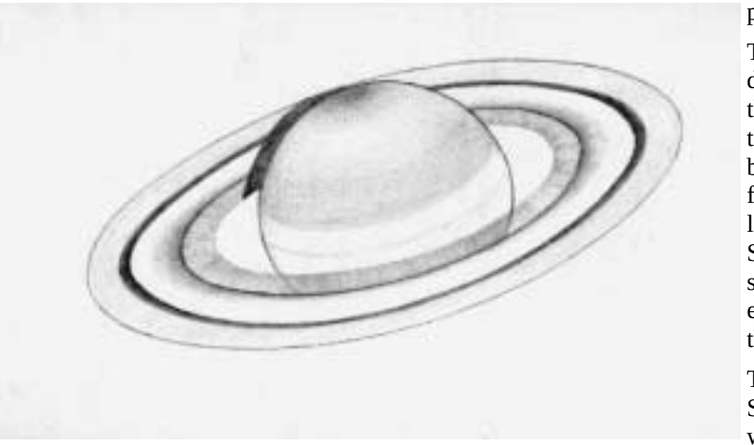
In November at the General Meeting of the Rose City Astronomers, general elections will be held for the 2001 RCA Board of Directors.

If you are interested in running for any office, please contact any officer (see page two for telephone and email addresses).

Currently no individual has come forth to fill the positions of Secretary and SIG Director. Please consider getting involved with your club!

Cont'd from Page 3 - Observer's Corner

The very outer edge of the rings are slightly whiter than the rest of the A ring. **Encke's Division** lies on the inner edge of this bright rim and is notoriously difficult to see. Superior optics and superbly steady skies are the minimum requirement. Encke's Division is only about .05 arc seconds across, but the eye can pick up long, thin and well-defined lines beyond what is normally visible.



Moving inward toward Saturn, **Cassini's Division** is the most obvious detail of the rings, the dark band that separates the A ring from the B ring. This can usually be glimpsed in a small scope and can show some internal detail in larger scopes.

The outer portion of the B ring is the whitest part of the rings and gradually fades into a dusky area that borders the sometimes difficult to see **Crepe Ring**. The famous radial spokes can be sometimes seen in this area. The Crepe Ring can look like the shadow of the rings on the planet where it crosses in front of Saturn, but this darkened area is really a thin band of ring material that is partially transparent – we can see the planet through it.

The **south polar cap** is a dark oval at the pole in this sketch and shows a tendency toward a dark but unsaturated green. So far this year it hasn't looked green at all. At Saturn's equator is a subtle dark band that is easily missed in all but the steadiest seeing.

The overall color of Saturn is a pale yellow-white with a whiff of green. It takes a good long look to see these details and a lot of individual observations for them to become certain. If you're new to planetary observation, there's no better time and place to start. For those already well acquainted with Saturn, this is a great time to see what's going on with an old friend.

OREGON STAR PARTY 2000

A recap by Chuck & Judy Dethloff

A few weeks have passed since the conclusion of the 2000 OSP, only 330 days remain until OSP 2001 which will be held August 16-19th at Indian Trail Spring! This year we had our largest total registration ever at 758. The bad weather held down attendance more than normal, still 650 people checked in at one time or another and picked up their packets.

The cards however were stacked against us this year regarding not only the Hash Rock fire and the smoke it produced early in the week, but also the doom and gloom weather forecast that held true in this instance (When was the last time a 7 day forecast was correct?) and brought the first significant rains to central Oregon in nearly three months. It in fact was one of the few times in our nine years at the ITS location that it has rained at all during the star party weekend. We had a much worse storm in terms of intensity and rainfall amounts at OSP 1993, when 3.5" of rain fell overnight on Thursday/Friday. This OSP our rain gauge recorded a cumulative total of 1.35" during Friday and Saturday. But it was enough to make life miserable for many attendees and limit our observing.

There were two windows of observing this year. The first one occurred for about 90 minutes after dusk on Thursday night and gave many their only views of the star party. The second was the cold sauna experience of viewing in the dripping fog on Saturday night. When it cleared around 10 pm, the crescent moon was beautiful setting to the west. However, all that water captured in the soil combined with calm conditions soon yielded a winter like fog that at its densest blocked all but the summer triangle stars of Deneb, Vega, and Altair.

A brief episode of "light wars" did occur shortly after midnight while the fog was at its thickest. Spotted were several dueling white light sabers, the "electric light show trailer" along the 800 road that featured alternating blinking red and green lights. Also it is strongly suspected that a photon torpedo was launched through the largest telescope (30") set up at OSP!

The fog did clear out completely by 1am and we were rewarded with skies that were quite black. Not the most transparent as the atmosphere was still very humid. Though the limiting magnitude only approached 7th magnitude overhead, we were not grumbling! Jim Reilly broke out his 6" solid tube Dob and gave us views of many deep sky objects including the Pinwheel and Andromeda galaxies.

The articles and web pages we have looked at (along with comments received from attendees) demonstrate that the 2000 OSP was still very successful due to the diversity of activities brought together by the OSP Committee and attendees. Despite the fact that many of the attendees had left before the start of Adam Block's Saturday evening presentation, the activity tent was still packed full of attentive listeners. Course it was the only dry spot left and thunder could be heard in the distance….

For those that missed his talk, Adam gave an inspiring presentation on the advanced observers program that he has developed at Kitt Peak Observatory. You can read more about this program in his article in the October issue of Astronomy Magazine. The other speakers and activities were all well attended and folks seemed to be having a good time wandering around checking out the numerous vendors, etc. Unfortunately rain caused the cancellation of the scope walk-about and also the Friday and Saturday night sky identification programs. All other activities went on as planned though.

The OSP officially started on Thursday the 31st this year. Reverse those numbers and you get 13, and it was also the 13th OSP. Hmmm, maybe we should have skipped directly to OSP 14! The prior evening had already seen one young attendee (Ashley Dettra) injure herself by falling on a broken tree limb. Ashley was very brave despite the fact she required a trip to the Prineville hospital and fifty stitches!

Thursday started with our going to bed at around 3am after observing. Shortly before 8 am, we were awoke by someone knocking on our trailer door. A voice from outside stated " I have just had a terrible catastrophe." It was hardly the wakeup Judy & I had expected. To make a long story short, we had to find a new espresso vendor this summer as the person who did it last year was no longer available. Our new vendor had assured us he was ready and able to come up to the OSP.

Unfortunately some maintenance wiring he had done a couple days before the event was done incorrectly and his entire system fried when it was hooked up to power the night before. To his credit he did make the drive up all the way from Redmond to tell us in person. Somehow, we could not go back to sleep after that.

Some of you are aware that later on Thursday afternoon we had a serious injury to another attendee. A huge dust devil formed over the observing field uprooting a couple tents and gazebos. One gazebo was carried several hundred feet in the air circling and swirling around. Unfortunately it eventually settled down over the 800 road and struck Sharon Froberg on her head. We are happy to tell you that Sharon is currently recuperating at home from this injury and is expected to make a full recovery. We wish her a speedy recovery!

We want to express a huge thanks to this years OSP's first aid coordinator, Renee' Bissonnette. Renee' responded quickly and professionally during this incident. Dr. Rick Olson was nearby and also offered his immediate help which is also greatly appreciated!

Our sincere thanks go out to all who helped make the 2000 OSP successful. Those efforts include not only those who helped organize the event over the past year, but also those that participated as speakers and or with the various other activities. As well as those who helped set up or break down things or worked shifts in the registration tent. We especially want to thank the OSP Committee for their efforts which frankly

made it one of the smoothest running OSP's ever from our perspective.

Several OSP Committee members stand out for their efforts at OSP 2000. Scott Turner (at only his second OSP) was our on site coordinator and did an excellent job of keeping the event running smoothly and seemed to be everywhere at times! Lars Hedbor was our activities coordinator and did a super job of coordinating with the speakers and maintaining and operating the equipment needed to do so. Jan Keiski did a great job with the registration tent and had all those volunteers that she had signed up ahead of time working smoothly together. Dareth Murray, in addition to having done a tremendous job this year with our web site update, was one of our site supervisors. Dareth seemed to work tirelessly covering numerous tasks.

It is hard to thank just a few folks, many others deserve more notice then we can detail in this article. The following OSP Committee members (in addition to those mentioned above) all put in considerable efforts at one time or another over the past year both with meetings and special projects: Gene Dietzen, Rebecca Gee, Jim Girard, Bruce Johnson, Carol & Doug Huston, Susie McClain, Bob McGown, Margaret McCrea, Candace Pratt and Jim Reilly.

We also want to thank both the RCA and Jim Todd at OMSI for the continued strong support of the OSP by both organizations. Also to the National Forest Service personnel who showed a lot of trust in our group this year by not asking us to cancel the OSP despite a large and growing fire burning largely unconfined 20 odd miles away from our site during the days leading up to the OSP.

Thanks to all of the vendors for their appearance and their support with door prizes. Especially Bob Grossfeld with Sunriver Nature Center for their sizeable donation including 50% of the cost of the grand prize Celestar 8 won by Harold Locke of Eugene. For a complete listing of all vendors supporting the OSP, please visit our web page. We hope you do support the vendors listed on our OSP web page when you are looking to make your next astronomy purchase!

Our focus now with the OSP is for next year's event. We hope that all appropriate "gods" have been appeased and that we will have clear skies and dark nights next year! In the meantime we would like to ask a few more of you to become involved with the OSP. **If you are interested in helping out, please consider attending our upcoming 2001 kick off meeting. See page four for specifics regarding the meeting time and location.**

Upper left: Jim Reilly—Smoke clouds and rain clouds over OSP.

Upper right: Jim Reilly—The Rover Races led by Race Commissioner Rob Brown, was a huge success as always!

Left: Marcus Lichtnberg—Sunrise Sunday morning at OSP.

Right: George LaBelle—A popular sight at OSP for TM enthusiasts- - Dan Gray's new "string" telescope.

JPL-Cassini/Huygens Mission Scientist to Visit Portland

The Oregon Section of the Society of Automotive Engineers, a non-profit society responsible for advancing mobility in land, sea, air, and space has invited the Rose City Astronomers to join them in October for their monthly meeting featuring Dr. Kevin Grazier of JPL. We may attend the entire meeting which includes dinner, or for the speaker only. **Either way they need a head count, so please contact them at the number given below.**

- ***WHEN?***

Thursday, October 19th. 6:00 P.M.

- ***WHERE?***

RED LION - COLISEUM
1225 N. THUNDERBIRD WAY PORTLAND, OR 97227
(South of the Broadway Bridge at Interstate Ave, across the street from the Memorial Coliseum and Rose Garden.)

- ***HOW MUCH?***

$18 MEMBERS & GUESTS; $9 STUDENTS
ADVANCE RESERVATIONS ARE REQUIRED! PLEASE MAKE YOUR RESERVATIONS *NO LATER THAN* **FRIDAY OCTOBER 13**. For early reservations by telephone, please call Gregg Woods at 503-297-2776, or via email to ***gregg@gnfreund.com*** .
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- ***WHO IS SPEAKING?***

Dr. Kevin Grazier, *Investigation Scientist, Science Planning Engineer Cassini/Huygens Mission to Saturn and Titan will be with us to give us an overview of Jet Propulsion Laboratory and to discuss the Last of the Big Budget NASA Space Probe Missions - Cassini/Huygens Mission to Saturn and Titan.*

- ***TOPIC?*** ***For additional information go to www.jpl.nasa.gov on the web.***

THE CASSINI/HUYGENS MISSION TO SATURN AND TITAN

Dr. Kevin R. Grazier

Jet Propulsion Laboratory, California Institute of Technology

October 15th, 1997 saw the end of an era with the launch of the Cassini/Huygens Mission to Saturn and Titan. Cassini/Huygens is, by most measures, the most ambitious planetary mission to be launched to date-and with NASA's decree that future missions be "faster, better, and cheaper," it is unlikely we will see missions as ambitious as Cassini/Huygens in the foreseeable future.
From 1 October 2000 until 31 March 2001, Cassini will be in range of the planet Jupiter. As it leaves Jupiter, the orbiter will use the gravity of the giant planet as a slingshot for the last leg of it's journey to Saturn. While at Jupiter, Cassini has an ambitious suite of science observations planned. In July 2004, the Cassini orbiter arrives in the Saturnian system, and will spend four years studying the planet, and it's rings, satellites, and magnetic environment--while the Huygens probe will make measurements of the satellite Titan.

Dr. Kevin Grazier currently holds the dual titles of Imaging Science Subsystem Investigation Scientist, and Science Planning Engineer for the mission, and will provide an overview of the mission and science objectives.

BIG SUNSPOT: The largest sunspot in 9 years, active region 9169, was seen rotating toward the center of the Sun's visible disk on September 21st. It covers an area a dozen times larger than the entire surface of the planet Earth! Magnetic fields above the spot have a tangled beta-gamma-delta configuration that likely harbors energy for powerful X-class solar flares. Despite the potential for powerful eruptions, 9169 has so far been remarkably quiet.

How do other giant sunspots in history compare to AR 9169?

The gigantic sunspot AR9169 is the biggest one to come along since 1991, but it's not a record-breaker, says Dr. David Hathaway, a solar physicist at the NASA/ Marshall Space Flight Center. The Great Sunspot of 1947, which was three times larger than this week's sunspot, and a large sunspot in March 1989 that triggered an historic geomagnetic storm.

Astronomers measure the sizes of sunspots as fractions of the Sun's visible area. Their favorite units are "millionth's." A sunspot that registers 1 millionth has a surface area equal to 0.000001 times the area of the Sun's Earth-facing hemisphere. Typically, a big sunspot measures 300 to 500 millionths. This week's whopper was 2140 millionths on Sept. 20th. The largest spot of the last century as 6132 millionths in 1947! For comparison, the entire surface area of the Earth is only 169 millionths of the Sun's visible hemisphere.

BOARD MEETING MINUTES

Carol Huston

Present: D. Fenske, P. Abrahams, J. Keiski, J. Girard, J. Walpole, D. Huston, D. Murray, S. Ruiwale, C. Huston. Guest: Jim Todd

Peter introduced the proposed OMSI 2001 star party schedule developed by Jim Todd. The board agreed that OMSI was still fine for a central location for public star parties. D. Huston motioned that this schedule be approved for RCA support. P. Abrahams seconded. Motion was passed.

Jim Todd will check on the availability of the cafeteria area for our Christmas general meeting which includes a potluck. The board indicated that our first preference was for the second Monday of December (12/11) with our second choice being the third Monday (12/18). Jim will get back to Peter with that confirmation.

Several board members expressed concern that we've scheduled either board or general meetings on days aligned with holiday weekends. In looking at 2001, the only conflict is with Labor Day and the board meeting. J. Keiski proposed that we reschedule any such conflicts and everyone agreed.

Membership – D. Huston: 300 member families have renewed and renewals are still coming in.. This month, names will be dropped from the newsletter and web lists of those that haven't renewed. Carol is handing out lots of information to new members, including by phone, mail, and email.

Treasurer: 501c3 progress – We need Oregon State filing and approval of bylaws amendments to complete our 501c3 application to the IRS. Carol has received instructions and will follow through with completing this, due to the IRS on 9/18. (Later notation: The IRS needed filing and approval from Oregon State of an amendment to RCA's Articles of Incorporation to complete this action.)

Programming: Peter indicated that programming is on track for the rest of this year. Board agreed that we need an updated, ongoing listing of the confirmed programming schedule each month. Matt needs to address several questions about the Christmas social in December (when/where) and whether we had an OMSI presentation scheduled for October or November.

YRCA: D. Huston spoke to the YRCA group in August and said that there were 7 or 8 in attendance. It was mentioned that YRCA might have greater attendance at all levels if the YRCA meetings extended through the general meetings rather than have the kids join the general meetings. This would mean, however, that whoever manned the YRCA meetings would miss the general meetings.

Sales – S. Ruiwale: Sameer took in $374 during the August general meeting. Ken Cone has volunteered to help out with Sales.

Library – J. Keiski: Jan purchased several new books at OSP. With the addition of the Del Wiseman donation, the library is going to need some additional rolling carts to hold all materials. Dale is going through the Wiseman materials and will get it all to Jan.

Web Page – D. Murray: Dareth has recently added new links to more members' pages. Any member who hasn't renewed membership by end of August will be dropped from the bulletin board.

Solar Filter – P. Abrahams: Peter indicated that Bob Duke has applied to use the solar scope for September and will coordinate with Mark Seibold to pick it up.

SIGs – J. Girard: Jim indicated that the cosmology, weather, and TM SIGs were getting new locations. The TM group needs a select few individuals to hold keys to the TM shop. Jim will find those to be keyholders.

Astronomical League: The Northwest Region of the AL (NWRAL) needs a Treasurer. Peter will be putting a note in the newsletter asking for a volunteer.

Star Parties: Carol has signed a contract with Kah-Nee-Ta confirming our dates for 2001 as 3/24-26. Carol negotiated a price per room equal to last-year's rate, which is less than half of the regular room rate.

Nominations/Elections – J. Girard: Jim took a poll from board members to see who would be interested in continuing their roles. There will be vacancies for the positions of Secretary and SIG Coordinator, with all of the offices being open for nominations/ volunteers for a December election. Jim will follow through with these communications to the membership and actively solicit participation. It was noted that board members and potential board member volunteers should be given a clear picture of the duties for which each position is responsible, including the importance of regularly attending and participating in the discussions and decisions at board meetings.

Phone Line: 9/1-15 = Bob McGown; 9/16-30 = Matt Brewster; 10/1-15 = Carol Huston, 10/15-31 = Sameer Ruiwale.

IDAHO STAR PARTY RECAP *By Ricky Crump*

This past August 3 to the 6, I had the pleasure of joining the Boise Astronomical Society at Bruneau Dunes State Park, for the Idaho Star Party. Bruneau Dunes State Park is located about 18 miles south of Mountain Home, ID, near the Snake River. This puts the site about 1 hours drive down I-84, southeast of Boise. The BAS has worked long and hard with the state parks department and now has a wonderful new facility for astronomy and for public outreach at the park. The site has a 25 inch Obsession scope in a permanent observatory operated by the club. The state and the club have also just finished a new classroom next to the observatory that boasts some very high end audio and video equipment that allows them to make some truly outstanding presentations. In return for providing volunteers for the astronomy programs at the park the BAS gets access to the facilities year round. I should point out that the facilities also include hot showers, flush toilets, and grass.

This has been kind of a tough summer for star parties. The Idaho Star Party this year suffered from smoke from distant forest fires and from afternoon thunderstorms, and some strong winds, as the Oregon Star Party did. My best limiting magnitude was about 6.2 at the zenith, but I know the site is much better than this. The biggest concern for the future is the expansion of Mountain Home and the Mountain Home Airbase. Both of these produce light domes at the site in the north and northwest sky to about 20 degrees above the horizon. It is my hope that both the state parks department and the BAS will work together to convince these neighbors to take steps to reduce the stray light at this site. While this site is not as dark as the Oregon Star Party site it is remarkably dark for being 1 hour from Boise. I will be returning to Bruneau Dunes perhaps this winter or earlier in the summer, it is a wonderful place for a star party and I recommend others visit there.

CLASSIFIED ADS

FOR SALE: Celestron G-3 mount & tripod, never used, $150. (good for 5-inch scopes and under!)
Motor Drive for above Celestron, $100.
Logic drive for G-3 mount $50.
6x30 finderscope $25.
8x52 finderscope (Antares Brand) $90.
Make best offer to Chris 503-257-3861.

OCTOBER 2000						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER 2000						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

October

Oct. 2	Mon.	Board Meeting	OMSI Parker	7:00 PM
Oct. 16	Mon.	Young/Jr/Elem. YRCA	OMSI Audi.	6:30 PM
Oct. 16	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30 PM**
Oct. 18	Weds.	OSP 2001 Kick-Off Mtg.	OMSI Parker	6:30 PM
Oct. 19	Thurs.	Cosmology SIG	PSU	7:00 PM
Oct. 25	Weds.	Weather SIG	Colonial Office	7:00 PM
Oct. 28	Sat.	White River Star Party	Dusk	

November

Nov. 6	Mon.	Board Meeting	OMSI Parker	7:00 PM
Nov. 17	Fri.	Leonid Meteor Shower	Rooster Rock SP	Dusk
Nov. 20	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30 PM
Nov. 20	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30 PM**
Nov. 29	Weds.	Weather SIG	Colonial Office	7:00 PM

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Planetarium. Occasionally the meeting is held in Murdock Planetarium. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/index.htm).

OMSI Parker Room is on the Mezzanine level. Go into the main lobby, past the turbine to the elevators at the end of the turbine hall. Take the elevators to the "Parker Room", which is marked on the elevator. The monthly Board Meeting is held there.

The Weather SIG address is: Colonial Office Complex, 10175 SW Barbur Blvd, Suite 100-BB, Portland. From downtown, go south on I-5 to the Barbur Blvd. Exit. Cross back over I-5 and the Complex will be on your left.

RCA CLUB INFORMATION
Message Line: (503) 255-2016
Web Site: http://www.rca-omsi.org/rca/

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354

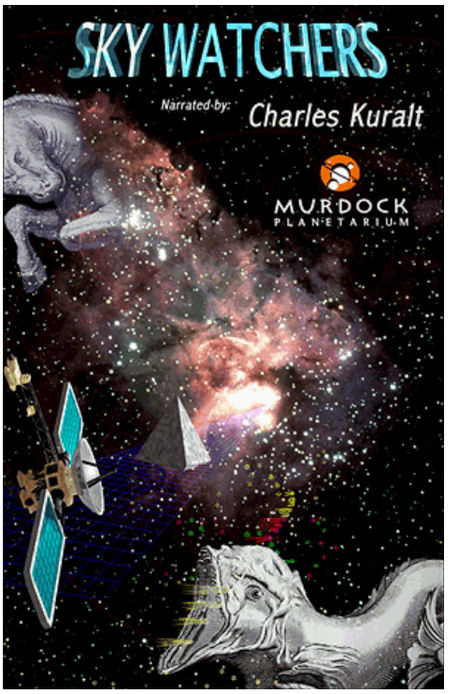
The
Rosette Gazette

Volume 12, Issue 11 | Newsletter of the Rose City Astronomers | November, 2000

In This Issue:

SKYWATCHERS

The **Skywatchers** is a journey through history and space with an eye on those advances that have pushed astronomy upwards and outwards. Narrated by Charles Kuralt, The **Skywatchers** examines the cultures that built astronomical observatories and their reasons for doing so. Both Stonehenge and the Hubble Space Telescope are astronomical observatories and they both tell us something about the people and societies that built them.



As the show illustrates, Egyptian temple builders, Chinese royal court officials, early Native Americans, Renaissance inventors, and modern researchers are among the many who have made important contributions to astronomy.

The **Skywatchers** explores some of the exciting new tools that modern astronomers use to unlock the secrets of the cosmos. The show is also a journey through history and space with an eye towards those advances that have pushed astronomy to a higher plane. Join us Monday, November 20th at 7:30 PM in the OMSI Planetarium!

Following the Planetarium show, Joey Beeson will be giving a presentation (approx. 30 min.) entitled "Experiences from the International Astronomical Youth Camp (IAYC)." Joey is a member of the Young RCA and has attended the last two IAYCs, which are held annually in August.

This presentation will be a balance of astronomical science and social science, discussing camp projects, lectures, activities, plus some good old storytelling.

WELCOME NEW MEMBERS!

Michael Coppernoll
Tina and Thomas Corr
Peggy Degg
Roger Garcia
Brian McLaughlin
Dennis and Frieda Ryland
Tammy Tice

November 4 | November 11 | November 18 | November 25

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President's Message

By Peter Abrahams

The RCA needs a volunteer to serve on the board as Secretary. This is not necessarily very difficult, one board meeting a month and 2-3 extra hours a month should be the extent of your commitment. A notebook computer is very helpful. If you would like to help set direction for the RCA, or would like to be more involved in local stargazing, this would be a good opportunity for you. If the RCA has been useful to you, consider that if someone else hadn't volunteered for these (& other) jobs, there would be no RCA to be useful to anyone.

There are several very encouraging developments in the local astronomy scene. Haggart Observatory at Clackamas Community College has almost completed repairs and will be functioning soon. Also, the RCA is continuing to work with the state Parks department to investigate the possibilities of an observing site on parks land.

What do astronomers do when there's no stargazing for some weeks? Presumably, do other things. If you're as addicted to telescopes & astronomy as I am, in addition to stargazing many of your other interests are astronomic in nature. I find just about anything related to telescopes and binoculars to be interesting; especially their design, fabrication, and history. I spend a lot of time on the internet at related sites, and the resources available on line are very impressive: current research, amateur activities, history, and more. I used to look for old telescopes & books, but they take up too much room, and I'm down to only a half dozen scopes now.

I have acquired some old cardboard planispheres that will make a beautiful display at some appropriate time. My main avocation is writing on the history of telescopes and binoculars, and most of my essays can be found at

http://www.europa.com/~telscope/binotele.htm

I'd be interested in hearing about astronomy related projects that occupy other members in their free time. Please take advantage of the display tables at the general meetings; you'll likely find that there are members who share your interest & have resources that are new to you.

RCA
Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information. Please note: Allow two months for your subscription to be renewed from the time you bring or send your renewal to Johan until the magazine has processed the renewal.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more information.

Deep Sky

Early on the morning of October 7, 2000 I came face to face with a star that shouldn't be where it obviously was. The galaxy cluster UGC 12127 is a small group of 5 galaxies tucked in tightly to each other, just about 2 degrees north of the large and relatively bright galaxy NGC 7331 in Pegasus. Plucked down inside this galaxy cluster was a star that wasn't on any of my charts.

For those of you familiar with this area, the more famous galaxy cluster, Stephen's Quintet is just about a degree south/southwest of 7331.

Anyway, I was over at Chuck and Judy Dethloff's for a evening of observing and was enjoying looking at a bit of this and that – it was a beautiful night. Chuck had printed out a few MegaStar charts of 7331 and its surroundings, including the UGC 12127 cluster. Until then I wasn't aware of it.

The Moon had set a couple of hours before and I had warmed up on a few double stars and a globular cluster or two when I thought to track down 7331 and Stephen's Quintet using Chuck's charts. I was mostly intrigued to have a shot at 7320C, a 16.7 magnitude galaxy just off from the main body of five galaxies that make up the Quintet. Its visibility had recently become a minor topic of conversation the RCA email list, and I was curious how accurate my memory was.

The sky was dark, the limiting magnitude hovering around 6.4 or so. Seeing was ok, about a 5 on a scale of 10. No wind, dew was relatively light. Overall, a pretty darn good night for the first week of October.

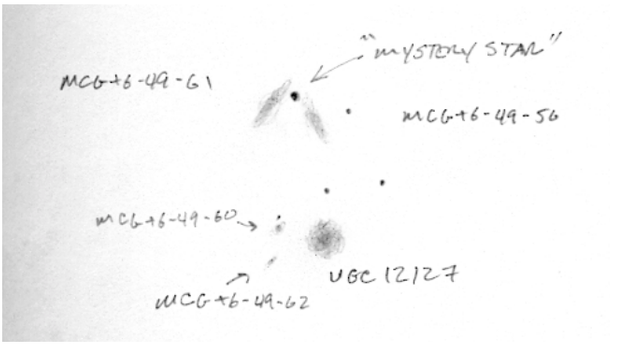
So there I was, checking out 7331 and Stephan's Quintet. Nice view in my 20" f/5 at 287x. Saw NGC 7320C easily enough and then took another look at Chuck's MegaStar printout. He had pointed out the UCG 12127 galaxy cluster as something that might be worth looking at, so I went for it. After a few moments of star hopping I'd found it. Flipping through my eyepieces I eventually settled in with 287x again, nicely framing the group and a bit of the surrounding area.

A few moments of scouring the field and I had all five in the group, then off to look for a few more nearby galaxies, notably NGC 7340 and 7345. Then back to the UCG 12127 galaxies and more in-depth study, comparing the field the MegaStar chart. All the galaxies matched up and so did the field stars.

Except one, the brightest in the field at somewhere around 11th magnitude, and right between two of the cluster's galaxies that nearly touched each other. My first thought was that I had the field mixed up, after all the time was now 2:10am and I was tired. Checked through it all again and sure enough it all checked out except for that intriguingly bright star that wasn't on the MegaStar chart.

Could it be a supernova in one of those galaxies? Maybe I was the first to see it! More likely it was already well known or that it was just a mistake in MegaStar. Chuck came over, went through the field and confirmed the star was there in the sky but not on the chart. I was a little bit excited, and not nearly as tired as I felt just a few minutes before. Who knows, maybe it is a supernova and I did discover it!

We observed until dawn began to lighten the eastern sky and hit the sack a few minutes later. Later that day we thought to check MegaStar on Chuck's computer. Sure enough it wasn't there either. Hmmm. Then we checked his Real Sky CD's for an image. This would tell the tale – and there it was just as we saw it night before. Dang!



A further check of MegaStar showed that the star would indeed pop up if the settings were changed to include GSC "nonstars". The manual explained that most of these were stars but were labeled as nonstars if there was any uncertainty. Well, that explained everything. By the way, the nonstar is labeled GSC 2743:363.

Oh well, the odds had come through in favor of the most likely explanation once again. No supernova discovery, new or otherwise. I was a little disappointed but not surprised. But then I felt silly at my disappointment and remembered how much fun I'd had sorting through all this, and marveling at the resources available to identify what I saw.

And what the heck, I did have the thrill of possible discovery for several hours. For that time the uncertainty was exciting and the possibility of seeing something that no one else had seen was delicious. Not only that, it was a good lesson in being thorough before shooting off an email to Harvard…

UCG 2743:363 – "nonstar" listed in GSC catalog.
RA 22 hours, 38.5 minutes, Declination +35 degrees, 22 minutes. Not plotted in either SA2000 or Uranometria.

(Continued on page 5)

Leonids 2000—A Year Between Storms?

Wes Stone

Last November, observers in Europe and the Middle East got to see the first true meteor storm in 33 years. Perhaps as impressive as the display itself was its prediction. Using a model of "dust trails" ejected from the Leonids' parent comet on previous orbits, David Asher and Robert McNaught predicted the timing of the peak to within 5 minutes. This seemed to be a watershed event in meteor science, since Leonid storms had proven unpredictable in the past. A year later, it is clear that there is still much left to learn about Leonid activity. Other models challenge McNaught and Asher's predictions of relatively weak activity this year and strong storms in 2001 and 2002. Even though this may seem to be a lost year, plagued by low rates as well as a bright Moon, observations are critical to substantiate or reject these models.

Details of the McNaught-Asher prediction can be found in the June, 2000 issue of *Sky and Telescope*, which devotes 20 pages to the Leonids. Information on other models can be found on email lists and various journals. Here are some of the most prominent forecasts, greatly stripped down. Some of these numbers are from secondhand sources, so I hope I don't do anyone too great of a disservice. Really, it just shows how uncertain we are.

Source	Peak Time (PST)	ZHR
Joe Rao	11/16; 11:53pm	250-500
Ignacio Ferrin	11/17; 1:24am	3500-50,000
McNaught-Asher	11/17; 7:44pm*	<100
McNaught-Asher	11/17; 11:51pm	<100
Joe Rao	11/17; 11:51pm	>100?
Peter Brown	11/18; 12:20am	100-1000

*—Not visible from Pacific Northwest

Based on the table, one might schedule viewing sessions for both the nights of November 16/17 and 17/18 from 11pm to 2am. Please realize that it is not possible to see any Leonids at all until the radiant is about to rise (~10:30pm or a bit later). Even after 11pm, rates will still be much lower than the ZHR because of the low radiant elevation and the bright Moon. Still, if you get some clearing on either of these nights, take advantage of it. Even with the moonlight, a site with a minimum of light pollution will help you see more faint meteors. Exclude the Moon from your field of view by facing in another direction. While the Moon will be near the radiant, Leonids can appear all over the sky. Any meteor that can be traced back to the sickle of Leo is likely to be a Leonid, especially if it is very fast. If you wish to make a meteor count, the following data should be recorded for each meteor: time of appearance to the nearest minute, shower association (Leonid or not), and estimated magnitude. You should also estimate your naked eye limiting magnitude twice an hour and keep track of the starting and ending times of your watch and any breaks you take.

At present, the Leonids remain a shower capable of surprises both pleasant and disappointing. Those of us who viewed from Central Oregon last year were thrilled by a brilliant multiple fireball in the midst of moderate rates. Rare events like this are only seen by those lucky and persistent enough to be watching a clear, dark sky. While the general feeling is that Leonid rates in 2000 will be rather poor, and it is certainly possible that observers will only see a few Leonids per hour, the unexpected is also possible. This includes significant activity outside of any of the above predictions, as well as the failure of any or all of the models. Whatever the case, observations of the 2000 Leonids will be important, as they will help meteor scientists refine the models used to predict the possible storms of the next two years.

Web Sites of Interest

www.imo.net
International Meteor Organization

www.arm.ac.uk/leonid/dustexpl.html
David Asher's Explanation of Leonid Dust Trails

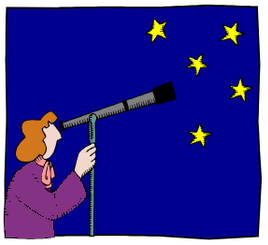
The Weather SIG

Date: Wednesday, November 29

Place: Colonial Office Complex
10175 SW Barbur Blvd, Suite 100-BB
Portland, OR 97219

Time: 7:00 pm

Come rain or shine . . .



NOVEMBER AT OMSI

Leonid Meteor Shower Watch 2000

Every year during the 2nd week of November our earth plows through a meteor stream which is really a river of comet debris spread along the orbit of an old comet called Temple-Tuttle. And when our Earth intersects with these pieces of comet debris we experience the annual Leonid Meteor Shower, so called because the meteors appear, because of perspective, to come from the constellation Leo the Lion. We experience about 10 to 20 bright meteors per hour, which is moderate for a major meteor shower.

But every 33 years Comet Tempel-Tuttle comes back toward our Earth and the Sun and when that happens we sometimes pass through a much denser portion of comet debris than usual and experience a meteor storm with thousands of meteors per hour instead of the usual meteor shower. And since Comet Temple-Tuttle recently passed close by, some part of our Earth may ride through a densely packed area of debris and experience a meteor storm. But if such a storm does occur we can't predict what part of our earth will experience it. Some favor Europe. However, even though the meteor storm will be seen over a limited area, nevertheless you can expect to see many more meteors than usual no matter where you are.

The best time for North America is Friday the 17th from midnight until dawn. This year the Last Quarter Moon (21 days old) will interfere with the shower after midnight: a bright Moon hides 90% of the meteors from view. This Moon, rising at 11:50 pm, provides limited viewing of the Leonids at its peak on November 17-18. To see it bundle up on a lawn chair, stay outside for at least a couple of hours and just slowly scan the sky back and forth. And whenever you do see a meteor remember it's only a tiny bit of comet debris, anywhere from a grain of sand to a small pebble, entering into Earth's atmosphere at 160 thousand miles per hour. But don't worry about getting hit because almost all meteors burn up 50 to 75 miles above the ground. On Friday evening, November 17, OMSI, Rose City Astronomers and Oregon Parks and Recreation host a special viewing of the Leonid Meteor Shower with a Star Party! Astronomers of all ages and levels can gaze at the autumn sky through a variety of telescopes and learn from experts at Rooster Rock State Park, located 22 miles east of Portland on I-84 (east of Sandy River) at exit #25, starting at 6:30PM. Day Use Permit is $3 for nonmembers / $1.50 for OMSI / RCA members per vehicle.

For possible weather cancellation, call (503) 797-4610 on November 17 after 3 p.m. for the latest information. OMSI Star Party Information Line: (503) 797-4610 / Rose City Astronomers Club (503) 255-2016 / Rooster Rock State Park (503) 695-2261.

RIGHT:

Photo of M45, the Pleiades by Michael Cole, September 29, 2000

Cont'd from Page 3 - Observer's Corner

Solar System

Saturn reaches opposition November 19th. If we're lucky enough to have clear skies near this date, note how the shadow of the planet cast on the rings is no longer visible. That's because the Sun, Earth and Saturn are in a straight line. Check again in mid December and you'll see the shadow again, but on the opposite side of the rings.

Another thing to look at is the apparent size of Saturn's planetary disk. It spans 20.4 arc minutes, just about the same **Mars** will appear at its next opposition on June 21st, 2001. Now there's something to think about. However, for now Mars is in Leo, lost in the glare of sunrise.

Jupiter comes to opposition November 28th, spanning an apparent 48.6 arc seconds. That's huge! Combined with the high altitude it has gained in the late evening / early morning sky, we have our best chance to see the most detail on its cloud tops this year. We still have several more months to enjoy both Jupiter and Saturn at their bests as they are slowly coming into the evening sky.

The star attraction of November may very well be the **Leonid meteor shower**. The last quarter Moon will be sitting almost on top of the radiant, but bright meteors should still be visible. Some predictions indicate we may see up to 100 meteors per hour, which would be a great show. The peak is predicted to fall on November 18th at 7:51 UT, or in local time 11:51pm November 17th. This puts the radiant just above the horizon so we have a chance to see some meteors with very long trails. Check out the following excellent website from Armagh Observatory for details:

http://www.arm.ac.uk/leonid/info2000.html

But who knows – meteor showers are fickle things. You have to go out and look, taking your chances with everyone else.

BELOW: Jim Girard: M42 in Orion 50 second exposure (Track & Accumulate: [10] 15-sec. exposures) ST-7 @-20 10" Meade 2120 (f/10) on Losmandy G-11 mount with Optec 3.3 focal reducer Processed using SBIG CCDOPS 4.03 and Photoshop LE 4.0

RCA Photo Gallery

BELOW: Ron Forrester: Aurora borealis from Larch Mountain , digital image, 10/00

Mount Pinos Star Party

By Bob McGown

The Mt. Pinos star party at the Ventura Astrocon was one of the highlights of the Astrocon trip. I went up to Mt. Pinos to observe with my Astrocon acquaintances and the crew from *Sky and Telescope* magazine. We took a bus ride from Ventura and watched a movie en route: an old Ray Bradbury classic entitled "It Came From Outer Space."

When we arrived at the Mt. Pinos observing site at 8300 feet, it was still twilight. While we were waiting for complete darkness, Dennis Di Cicco and I hiked the steep two mile trail to one of the summits of Mt. Pinos. The trail was gated off and eroded away. After following a winding ridge, time was getting short. Darkness came upon us. We went off the trail and bushwhacked for a couple hundred yards across a ravine and up to a granite dome summit. We were using night vision, as twilight had faded during our hike. If we got stranded upon the summit of Mt. Pinos, the Moon would have lit the way. It was rising at 1:30 AM.

From the top of the mountain, we viewed into the constellation Centaurus right off the stinger of the Scorpion. We tried to view Omega Centauri with binoculars, but it had just set. Dennis and I hiked down the scree-covered trail by the light of the Milky Way. By the time we got to the parking lot the star party was in full swing. The parking lot pullout was an alpine setting where many trees were snapped off by the 20-foot winter snow fall.

The star party site was excellent, on a 100 yard road cut at the ridge crest of the mountain. We first viewed Comet LINEAR until it set in the trees. Dennis had some image-stabilized binoculars, and together with *Sky and Telescope* president Rich Fienberg, we looked at some dark Barnard objects. Stephen J. O'Meara wandered through the garden of Messier objects. Can you believe that these astro magazine guys actually go to star parties?! We took a tour of bright galaxies with one amateur. He showed us a striking view was M108 and the Owl Nebula in the same eyepiece field. Another highlight was viewing magnitude 13.4 Triton, the brightest moon of Neptune. It was about 5 planet diameters away. Throughout the night were entertained by a minor display of meteors, including three slow-moving green fireballs that traveled in a North - South direction. Overall meteor rates were about 18 per hour, probably consisting of sporadics and a few Delta Aquarids.

In all, there were about 25 scopes from the Ventura astronomical community. The scopes ranged from giant binoculars to a 25-inch Obsession. It was fun to view Comet LINEAR in the big binoculars. We also viewed globulars and open clusters with a binocular eyepiece on a 12" Dobsonian. The night sky faded when the Moon rose, so the Astro group headed back to Ventura for another exciting day at Astrocon 2000.

Sir Isaac Newton, the Man

Douglas S. Huston

In any listing of the greatest scientists of all time, Sir Isaac Newton's name would figure prominently. He pretty much single-handedly created the science of physics. He invented differential and integral calculus, both of which are absolutely essential to modern science. He laid the foundations for the Calculus of Variations, did groundbreaking work in the statistical science of curve fitting, developed the Binomial Theorem (an extremely important algebraic theorem), developed the first scientific theory of optics and invented the Newtonian telescope. As a result of his many contributions, Queen Anne knighted him in 1705. This list is just a small fraction of his accomplishments – his burning genius continues to illuminate the world today. But, what was he like as a man?

Isaac Newton was born on Christmas Day, 1642 in Woolsthorpe, England. His father had died before he was born and Newton was a weak, sickly baby who was not expected to survive. He obviously did survive, and this miracle played an important part in the development of his outlook on life. He began to believe that God had saved him for a special purpose. He also idolized his dead father. In his mind, his father and God became all wound up into one image. We can see the results of this in his adoption of the Unitarian philosophy. In this philosophy, Christ was merely a prophet, not the Son of God. Newton could not abide anyone but himself as the son of his God/Father.

When Newton was a young boy, his mother remarried. Newton looked on this as a terrible betrayal of his father's memory, and he hated his stepfather. At one point, the tension between Newton and his stepfather got so bad that Newton threatened to burn down the house with his stepfather and mother in it. To alleviate this friction, Newton was sent to live with his maternal grandmother in the neighboring town of Grantham.

As he matured, Newton's messianic complex created certain character attributes that began to have serious negative effects on his life and those with whom he came in contact. He was an angry, lonely, friendless man. He was extremely jealous of anyone else's success. He was not above rigging the game to further his own ends, and woe to anyone who got in his way. For example: Gottfried Leibniz developed calculus at about the same time as Newton. A bitter, protracted fight over priority ensued in which Newton wrote slanderous letters about Leibniz to his colleagues in the European scientific community. He also had his cronies in the Royal Society ghost-write attacks on Leibniz. Newton offered to "settle" the priority issue by an appeal to the British Royal Society, which was recognized at the time as one of the leading scientific societies in the world. Well, first of all, this was a British society, and Newton was British while Leibniz was German. Newton was also president of the Society at the time. Surprise, surprise, the Society decided Newton was the first one to develop calculus. In fact, the opinion granting Newton priority in the development of calculus was written by Newton himself! Many people believe the stress created by Newton's continued vituperative attacks contributed heavily to Leibniz's untimely death. It is rumored that Newton celebrated at the news of his death.

Sir Isaac was also emotionally unstable. He suffered two nervous breakdowns during his life, one in 1678 and another in 1693. There are some who believe the second breakdown may have been caused by chronic mercury poisoning as a result of his long years of alchemical research.

Newton was intolerant to the point of paranoia regarding criticism of his ideas or work, and often refused to acknowledge the contributions of others. It was dangerous to contradict him, even if you were one of his supporters. He was not often wrong, but even questions asked for the purpose of education could incur his wrath. At one time, Robert Hooke (of Hooke's Law fame) claimed that some of his letters to Newton earned him a role in Newton's discoveries. Newton was so enraged that he threatened not to publish book three of his epic work Principia. In the end he did publish this book, but systematically deleted every possible reference to Hooke in it. His hatred of Hooke was pathological.

Newton was a tortured man, beset by insecurities and demons all his life. By every account, he was a thoroughly unpleasant man to deal with. Although we continue today to enjoy the fruits of his unparalleled intellect, I'm not sure I'd want him as a friend.

DEEP SKY OBSERVING SIG FORMED

I am pleased to announce the formation of a new Special Interest Group for Deep Sky aficionados. It is called the Deep Sky SIG. With it we will share observing projects, the pursuit of selected deep sky targets, competitions, observing techniques and much more. With any size telescope, anyone can make quality and meaningful observations. With both advanced observers and neophytes participating, there will be much opportunity to share experiences.

Meetings will be held in the auditorium at 6:30 PM, an hour before the general meeting on the 1st Monday of every month.

There is also an e-mail list to which you can subscribe. This list will specialize in deep sky topics. To subscribe, go to the RCA Home Page and click on, "Membership". Then click "e-mail list", and follow the instructions from there.

Alan Davenport, List Administrator

TM WORKSHOPS START-UP AGAIN IN A NEW HOME

The RCA Telescope-Making Special Interest Group (SIG) is up and running again! Several months ago the popular SIG needed to find a new home after having held the workshops for years at OMSI. Telescope making requires special equipment to allow members to grind their mirrors and test them properly. The new location is Technical Marine Services at 6040 N. Cutter Circle on Swan Island.

Directions to TMS (and the workshop) are as follows: From I-5 northbound take exit 303 (Swan Island exit) and head west. Stay left and heading west on N. Going Street. Follow this past Interstate Ave. and go down the hill towards Swan Island. Get in the right hand lane and at the bottom of the hill follow the signs to Mocks Landing and veer to the right onto Basin Ave. Go about 1.5 miles (not sure if this is the exact number) to Leverman (there's a signal at Leverman); turn right and go over the bridge to the first street on the right, which is N. Cutter Circle. Turn right and go to the end of the Block to 6040 N. Cutter Circle. TMS is in the first building as you turn in the driveway (there's a big TMS on the side of the building. Parking and entry for the workshop is in the back of the building. The door is the first door from the corner of the building in the back (next to the big roll up doors. We'll put a sign on the outside so you'll know you're there.

The schedule for upcoming TM Workshops is as follows:

Nov. 11 (Saturday), 10:30 am -- 3:30 pm
Nov. 15 (Wed), 6:00 pm -- 9:00 pm
Dec. 9 (Saturday), 10:30 -- 3:30
Dec. 14 (Thursday) 6:00 -- 9:00)

THANK YOU

As I write this, my daughter Stephanie sits in a 200 level Astronomy class as a freshman at Case Western Reserve University in Cleveland, Ohio. Many of you do not know Stephanie, but some of you patiently shared your time and knowledge with her on many cold nights from the time she was six years old. She and I are profoundly aware that your patient guidance and tutelage allowed her to reach this goal. Please accept my deep gratitude.

Sincerely, Laura Bush

For Astronomy's Sake . . .

By Keith McFarlen

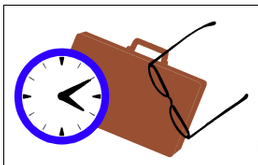
I was teaching an evening survey class in astronomy at a community college in southern Oregon, which drew mostly adult students. On the first evening, a tall, sloppy-looking fellow picked a chair in the rear of the class, collapsed into the chair, and appeared to sleep for the next three hours.

This was not a transfer class and could be considered "slightly" boring to non-majors. Students, as well as myself, were mystified as to why our back-of-the-room friend was hanging in there, even as the end of the quarter approached.

Near the end of the class, a student asked me, "Does the solar system make a circuit of the Milky Way Galaxy, and if it does, how long does it take?"

To put a spin on the answer (and check to see how many students were still awake), I said, "Yes, and as of last Tuesday night, 250 million years!"

Our friend suddenly sprang to his feet and yelled, "***Last Tuesday night?***"



BOARD MEETING MINUTES

Carol Huston

Present: P. Adrahams, J. Girard, C. Pratt, B. Richardson, D. Huston, C. Huston, D. Murray, S. Fitzpatrick, M. Brewster, J. Keiski, S. Turner, N. Trost.

Membership – D. Huston : RCA currently has 319 member families. Renewals keep coming in.

Programming: M. Brewster: October's presentation will be Richard Crandall – "SETI at Home." November is Planetarium show. Joey Beeson wants to give a presentation on his trip to Europe and it might work to combine his talk with the Planetarium show. Candace has written a planetarium show for the Messier Marathon for March The January general meeting will be the annual SIG info session. Each SIG rep will give a 5-minute (or less) presentation on their group: Telescope Making & Astro-imaging – Jim Girard; Deep Sky Observing – Alan Davenport; Cosmology – Doug Huston; Weather – Ron Thorkildson; Kids' Groups – Margaret McCrae; Solar Viewing – Mark Seibold; IDA – Bob McGown; and New Member Programs – Carol Huston. Matt will be contacting folks to arrange.

Editor: Candace – newsletter going good. J. Synge has moved to Connecticut, so Candace is now doing the newsletter by herself.

Star Parties – S. Turner: Hancock was a great time socially – had about 4 hours Friday night and a 3-hour window on Saturday. Scott is starting next year's star party schedule – will probably not use the Goat Mountain site. He will be looking at the potential for Tygh Ridge and for a function with the new park folks to introduce them to astronomy. There is the possibility of having star parties with observational techniques. Maybe do a workshop on observing – Chuck. Ron Karcher from Cornelius has an observatory outside Hillsboro and is possibly interested in hosting a star party on his site.

YRCA: Peter reported that only one kid came to each of the little kids' meetings. He will need to make an announcement at the next general meeting regarding the kids' programs.

Sales - Jan for Sameer: Reported that they could get a flashlight on a keychain for $1.64. The Board indicated that it is Sameer's call within the approval of his budget.

Community Affairs – N. Trost: He is currently working on three opportunities. Needs to get materials from John Cart. He will be setting up a speakers' bureau and putting together a couple of canned presentations that speakers' can use. Brian needs a helper for telescope checkout.

Telescope Library – B. Richardson: He needs a helper for telescope checkout.

New Members – C. Huston: Carol is going to put together some packets of information to give to vendors to pass along with telescopes that they sell.at Christmas.

Library – J. Keiski: Jim Girard volunteered to make some rolling carts for library materials. Jan is getting the library information on a database. Her current focus is to beef up the video materials.

Webmaster – D. Murray: Don't forget to get information to Dareth for the RCA web site. Carol going to send handouts to Dareth for inclusion. The server has been down so currently can't send to Board list.

SIGS – J. Girard: TM starting back up in October. Jim will get info to Candace for newsletter and Dareth.

Phone Line: 10/1-15: Carol Huston; 10/16-31 – Sameer Ruiwale; 11/1-15: Norm Trost; 11/15-30: Doug Huston.

Peter Abrahams on RCA's tax-exempt status: We have received a letter from the IRS that approves our application. He is going to forward it to Judy Dethloff for review. Carol will put a copy in the Secretary's file for a permanent record. D. Huston motioned that we ratify changes to the bylaws that included the wording that the IRS needed. Dareth seconded. Passed unanimously with a quorum present.

Haggart: Justin McCollum is on the Haggart board and is our liaison. They have the place all fixed up and were going to open this month, but it might be delayed. Candace will contact him to get an article in the newsletter.

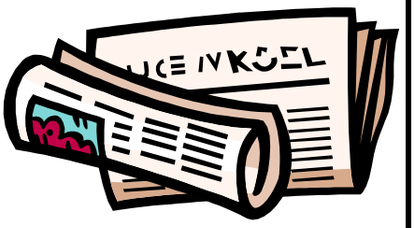
Elections: We will be looking to fill the positions of Secretary and SIG coordinator. Candace will put it in a newsletter article, and Peter will announce at the October general meeting.

CALL FOR ELECTIONS

The November 20th General Meeting of the Rose City Astronomers will be the general elections for the 2001 RCA Board of Directors. The position of Secretary remains open. Please contact Jim Girard or Peter Abrahams if you are interested.

Also at the November General Meeting will the a vote for the by-laws amendments presented in the October newsletter. These by-laws amendments reflect changes to accommodate our 503 (c) (3) status.

CLASSIFIED ADS



FOR SALE: Olympus OM-2S body w/ winder, 28-85 zoom, T-32 flash--$275.00 OBO

Olympus OM-4 body as is--$150.00 OBO

Tamron 300mm f/2.8 LD, w/ 1.4x & 2x conv. $1200.00 OBO

Homebuilt 6" F/4 Newtonian w/ Coulter Optics & homemade mounting--$275.00

Contact: Craig Stott at (Hm)503-692-8116 until 1pm weekdays, or email: niteskyz@yahoo.com

FOR SALE: 20" f/5 Dob that has Galaxy Optics and Baltic Birch woodworking (looks and performs like an Obsession). Great deep-sky telescope. $3200 and will take a small reflector in partial trade (such as a Coulter 13.1", etc.). Call (541) 758-8326, or write John Siple, 33230 Primrose Rd., Corvallis, OR 97333

NOVEMBER 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DECEMBER 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

November

Nov. 6	Mon.	Board Meeting	OMSI Parker	7:00 PM
Nov. 11	Sat.	TM Workshop	Tech. Marine Srvc.	10:30 AM
Nov. 15	Weds.	TM Workshop	Tech. Marine Srvc.	6:00 PM
Nov. 17	Fri.	Leonid Meteor Shower	Rooster Rock SP	Dusk
Nov. 20	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30 PM
Nov. 20	**Mon.**	**General Meeting**	**OMSI Audi.**	**7:30 PM**
Nov. 29	Weds.	Weather SIG	Colonial Office	7:00 PM

December

Dec. 4	Mon.	Board Meeting	OMSI Parker	7:00 PM
Dec. 9	Sat.	TM Workshop	Tech. Marine Srvc.	10:30 AM
Dec. 11	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30 PM
Dec. 11	**Mon.**	**Annual Christmas Buffet**	**OMSI**	**7:30 PM**
Dec. 14	Thurs.	TM Workshop	Tech. Marine Srvc.	6:00 PM
Dec. 27	Weds.	Weather SIG	Colonial Office	7:00 PM

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Planetarium. Occasionally the meeting is held in Murdock Planetarium. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/index.htm).

OMSI Parker Room is on the Mezzanine level. Go into the main lobby, past the turbine to the elevators at the end of the turbine hall. Take the elevators to the "Parker Room", which is marked on the elevator. The monthly Board Meeting is held there.

The Weather SIG address is: Colonial Office Complex, 10175 SW Barbur Blvd, Suite 100-BB, Portland. From downtown, go south on I-5 to the Barbur Blvd. Exit. Cross back over I-5 and the Complex will be on your left.

RCA CLUB INFORMATION
Message Line: (503) 255-2016
Web Site: http://www.rca-omsi.org/rca/

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354

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The
Rosette Gazette

Volume 12, Issue 12 | Newsletter of the Rose City Astronomers | December, 2000

In This Issue:

RCA CHRISTMAS HOLIDAY BUFFET

December 11th

In keeping with annual tradition, the December meeting of the Rose City Astronomers will be a holiday buffet and social gathering for all family members.

Please note this event will be held the **second Monday of December**, December 11th at 7:30 PM in the OMSI **Cafeteria.**

In addition to the pot luck dinner, we will also have a swap meet, holiday door prizes and sharing time for astronomy photos and astro-equipment. Save time to shop at the RCA Sales Table for your favorite astronomy gifts.

Each member is asked to bring a dish to serve 10-12 people.

If your last name begins with . . .
Please bring:

A to G	**Appetizers/Side Dishes**
H to M	**Desserts**
N to Z	**Main Dishes**

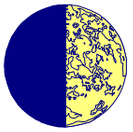
Plates, silverware and beverages/ice will be supplied by the club. Just bring your dish (and a serving utensil) and enjoy the holiday spirit of the RCA membership.

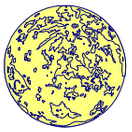
The **Swap Meet** will be back by popular demand for a second year! There will be ample empty tables around the room for everyone who is interested in displaying items for the Swap Meet. There will be excellent holiday deals!

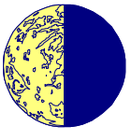
If you have taken any astronomy pictures this year and want to share them, this is your ideal opportunity. Members also bring their latest in new astro-'stuff.' If you have a fun gadget/item/tool—bring it!

WELCOME NEW MEMBERS!

Doug Arnold
Jim and Debbie Kalz
Judith Lake and Warren Moe
Karl Newsome
Robert Reyon
Mark Strand
Larry Woeffer

December 3 

December 11 

December 17 

December 25 

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VP Community Affairs	Norm Trost	(503) 668-7979	normt@europa.com
VP, Communications	Matt Brewster	(503) 774-0360	brewster@teleport.com
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Light Pollution Rep.	Bob McGown	(503) 244-0078	mcgown@teleport.com
New Member Programs	Carol Huston	(503) 629-8809	StarsCarol@aol.com
Magazine Subscriptions	Johan Meijer	(503) 777-0706	johanm@www.com

President's Message

By Peter Abrahams

The RCA now needs three volunteers to serve on the board; as Secretary, Media Director, and (the big one), as Treasurer. Our current Treasurer is Jane Walpole, who has shepherded our application for 501-C-3 status through the IRS and now needs to take care of real life. We owe Jane a large debt of gratitude for the many hours and much frustration involved in this process.

The office of Treasurer is not a trivial task, and while the hours per month are not too large, the position requires some expertise in handling funds and software. We cannot function for any length of time without a Treasurer, and I hope any member who might possibly take the job, will seriously consider it.

This is an indirect way of announcing that we now have attained status as a non profit organization, and deductions to the RCA are now tax-deductible (we have used our OMSI umbrella as a means to this end in the past). The final stages of the process were accomplished by Carol Huston, and as of October, we were successful. We are working out the details of maintenance of this status, and of the procedures appropriate to accepting donations. We expect this status to be a significant aid to any major projects we undertake.

The International Dark Sky Association has a Northwest regional section, 'Dark Skies Northwest'. There was a meeting on 02 Dec. in Seattle of this group; and we hope to establish a Portland presence that can work with them. Please let us know if you can assist in battling light pollution in this way. Their web site is: http://www.scn.org/darksky/

The planets are way up there in the sky this month; and whatever clear nights we have during the cold are often the best seeing all year. I hope some of you can make the best of this time of year; and that someone in the group was good enough this year that they'll get a new parka or eyepiece for the holidays.

RCA
Magazine Subscriptions

One of the main services offered to RCA members is subscriptions to *Astronomy* and *Sky & Telescope* magazines at a much reduced rate from newstand prices. *Astronomy Magazine is $29 and Sky & Telescope Magazine is $29.95.* See Johan Meijer, Subscription Coordinator at the Membership Table at General Meetings for further information. Please note: Allow two months for your subscription to be renewed from the time you bring or send your renewal to Johan until the magazine has processed the renewal.

The Young Rose City Astronomers

RCA sponsors three groups of kids activities: Elementary ages 6 - 9), Junior (ages 10 - 13), and Young Rose City Astronomers (ages 14 - 18). These groups meet from 6:30 to 7:30 on the third Monday of the month in the OMSI auditorium, before the regular RCA meeting. In addition, the YRCA meets on the first Thursday of the month. Kids with all levels of experience are welcome. There's no need to join - just come to the meetings and have fun. Adult volunteers are always welcome. Call Margaret McCrea, 232-7636, for more information.

How to Make a Mirror — Part 1

By Ron Forrester, rjf@skyhackers.org

Admit it. You have considered it. Right? You've heard some zealot explain how the making of their first mirror was a near religious experience (with all the appropriate parallels). But it sounds so complicated, messy, and time consuming.

Well it's not complicated. It is a little messy. As for time consuming, hey, it's winter in Oregon, what else you gonna do during those long wet days and cold cloudy nights? Making your own mirror will be one of the most rewarding endeavors you have ever undertaken, guaranteed.

Some 10 years ago my wife bought me a mirror making kit from Newport Glass. It contained everything I needed to complete a 6" mirror through figuring. I excitedly opened it, pawed through the strange contents, and then began to think about how hard it must be to turn one of these pieces of glass into a parabolized mirror. The box sat in the closet for 9 years, untouched. I did not look through one telescope in that entire period of time. How sad I get when I think about what I might have seen over those years had I just made the leap.

That brings me to our first rule for mirror making: Remember a mirror is only glass. That's it. Nothing magical, just glass. Sure, it might be Pyrex, or plate glass, or even a candleholder. But there is nothing there to fear. The very worst thing you can do is break it. Once you come to grips with that, mentally picturing the glass breaking, you have taken the biggest, toughest step toward completing your mirror. With your fears behind you, it's time to get started.

First, you need to decide what size mirror you want. Many people recommend an 8" as your first mirror. I started with a 6", whose only benefit is it is slightly easier to handle (important if small hands will be helping). All things considered an 8" would be a great place to start, and it get's you a significant amount of light gathering power over a 6" (but don't get too carried away with this logic, or you'll be wanting to start with a 40" as your first).

The next step is to obtain your materials. You have a few options for this. Both Newport Glass (http://www.newportglass.com) and Willmann-Bell (804-320-7016 for a catalog) sell kits suitable for completing various sized mirrors. These kits include two blanks (the tool and the mirror) and all the grits and pitch you will need. Prices for the complete 8" kit range from $100 to $150, a bargain if you compare the price with quality completed 8" mirrors. Willmann-Bell kits have a slight advantage in that the two blanks they send you are both Pyrex, so you can turn around and make a second mirror from the tool when you are finished.

Note that both Newport Glass and Willmann-Bell also sell just the blanks. Willmann-Bell for instance currently sells 8" blanks for $47.95 each. Here is where your first real decision comes. You can save money by not buying a second blank for use as the tool. You do this by making your own tool, called a tile tool. If you are particularly frugal you can make an 8" tile tool for as little as $20, less if you have many of the materials already on hand. I will not discuss the details of making a tile tool, there are some resources on the web to help with that. If this appeals to you, order a single blank, not the kit. You can then order the grits and pitch separately from either supplier mentioned—or a place on the web called "Got Grit", at "www.gotgrit.com".

At this point you need some reference material, i.e. books. There are a number of books available. Most all are out of print or only printed by Willmann-Bell (from whom you can order them—get the catalog). Powell's Books (www.powells.com) is an excellent resource in this respect, as you can often find great used books for a good price. The book I used throughout most of my mirror making is "How to Make a Telescope" by Jean Texereau, ISBN 0943396042. It's a bit terse at times, but widely regarded as the book to have when making mirrors. Another very good book is "Making Your Own Telescope" by Allyn J. Thompson, ISBN 199702846. Check Powell's books, there are copies of both of these books available at decent prices.

Beyond print, the most valuable resource is the world-wide ATM (Amateur Telescope Makers) mailing list. This list is a group of people whose sole purpose in life is to make mirrors and build telescopes. They are the nicest, most intelligent group of people I have ever been involved with. See the ATM page (www.atmsite.org) for a great deal of mirror making information. Reading through the FAQ will give you instructions on how to subscribe to the ATM list, and where to find the searchable archives. Remember to search the archives before asking a question—it's amazing how much information is already there. And of course, there are a number of premier mirror makers on our own RCA mailing list as well.

Now let's discuss a few practical matters to consider before starting. You are going to need some space to use while making your mirror. The biggest consideration is that the area should be clean, as well as easy to clean once you make it dirty. The area should be somewhat stable temperature wise, although I used the garage last winter and things turned out okay. A great resource in this respect is the RCA telescope workshop. The group has a new space in which many of the necessary components already reside, plus a number of seasoned mirror makers to help out. See the RCA Gazette for when this group meets (Usually one Saturday a month and several Wednesdays). (Continued on Page 5)

The Fundamentals

By Doug Huston

Galileo once said that the book of the universe was written in the language of mathematics. It seems though, that five words in this language have some extra importance and power.

Consider the number mathematicians call "e." "e" is the base of the natural logarithm system, abbreviated Ln. Numerically, it is equal to 2.71828….., the dots indicating the decimal continues forever. Logarithms were invented by Charles Napier, an amateur Scottish mathematician, to exploit the properties of exponents. In the days before electronic calculators, logarithms were used to simplify complex calculations. Using logarithms, multiplication becomes addition and division becomes subtraction. Any number can be used as a logarithmic base, but "e" is particularly important in that many things in the universe are related by the natural logarithmic system. Some of the more important of these are: the earth's population growth, the buildup and decay of medication in your blood stream and the activity of a radioactive substance as time progresses. For us astronomers, an important one is this equation: M = 2LnD+10, where M is the magnitude of the faintest star a telescope can show you and D is the diameter (in inches) of the telescope's objective.

The next number that has universal significance is our old friend π, the ratio of a circle's circumference to its diameter. Numerically, π = 3.14159….. Again, the dots mean the decimal continues forever. Initially, this number was only of geometrical significance – in any calculations or relationships that had circular aspects it appeared. However, in the early 19th century the mathematician Carl Friedrich Gauss developed his Fundamental Theorem of Electrostatics. In this, he showed that π had important physical significance. Gauss' Theorem showed that the amount, or flux, of gravity or electric field force at any point in space is related to the charge or mass present by π. Since this time, it has been shown that π relates many important physical properties of the universe to their values at points distant from their source. π even appears as a fundamental constant in Einstein's Field Equations, which describe the large-scale structure of the entire universe.

Do you like to watch TV? Do you have a microwave oven in your house? Do you use a cell phone? If you answered yes to any of these questions, then you are indebted to a number mathematicians call "i." This number first surfaced in relation to the equation $x^2+1 = 0$. If you try to solve this, you end up having to take the square root of –1. Try it – try to think of two identical numbers which when multiplied together give you –1. The Greeks, who didn't like negative numbers to start off with (how can something be less than 0), just abandoned this equation, saying it couldn't be solved. Later mathematicians, realizing that the existence of negative numbers really only depends on where you set your 0 point, decided that this equation must have a solution and so they said i = square root of –1. Overcoming this hurdle opened the door to a particularly elegant branch of mathematics known as Complex Variable Theory – one of my personal favorites! It's a good thing we solved this equation too since it turns out that anything dependent on a wave phenomenon, like TV signals, cell phone signals and microwave ovens has the square root of -1 as a fundamental constant in its description.

Another number with extreme importance to the workings of our universe is plain, old, ordinary, every day 1. The number 1 has two extremely important properties. First, it is what mathematicians call the "Identity Element of Multiplication." This means that 1 x b = b for all numbers b. This property allows mathematicians to construct statements known as "identities." An identity is a statement that is true for all values of the variables in the statement. The simplest identity is the one we talked about just a second ago: b = b. There are many, many identities, some of them extremely complex, but all of them very important in mathematical proofs and the construction of physical laws, and all of them owing their existence to the number 1 and its unique multiplicative identity property. The other important property of 1 is that you can obtain the successor to any integer b with it. The successor to b is b+1, and

(Continued on Page 7)

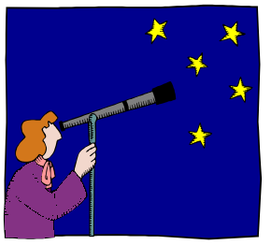
The Weather SIG

Date: Wednesday, December 27th

Place: Colonial Office Complex
10175 SW Barbur Blvd, Suite 100-BB
Portland, OR 97219

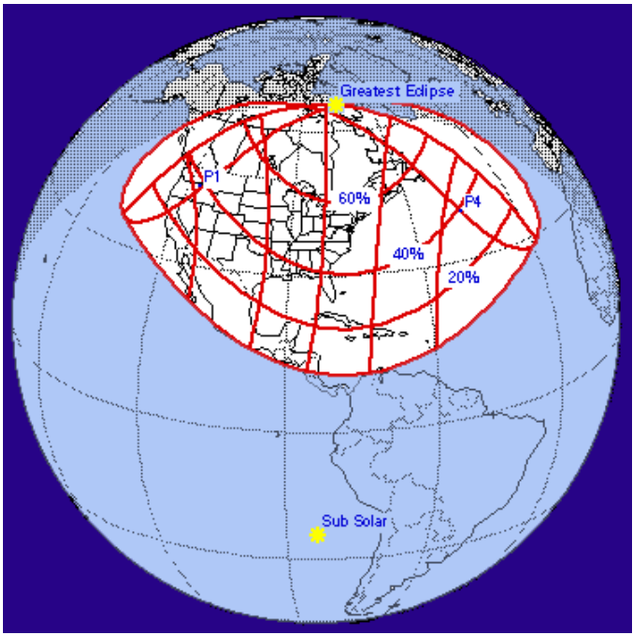
Time: 7:00 pm

Come rain or shine . . .



DECEMBER HAPPENINGS

Partial Solar Eclipse on Christmas Morning!



Portland will see a partial solar eclipse on Christmas morning. At 8:27 AM PST, we will see approximately 33% of the sun's disk blocked by the moon.

During the partial eclipse of the Sun on December 25, 2000, the Moon passes slightly north of the Sun's center as seen from nearly all parts of North America south of the Arctic Circle. No place on Earth will see a "central" eclipse - total or annular— though at its maximum (17:35 Universal Time) about 72 percent of the Sun's diameter will be covered as seen from remote parts of northern Canada.

Skywatchers will see different-sized bites missing from the Sun's disk at mid-eclipse, at different times, depending on where they are in North America. For example, 56 percent of the Sun's diameter will be covered for residents of New York City at 12:47 p.m., while those in Los Angeles get only 15 percent coverage at 8:23 AM. The NASA website for further information is: **http://sunearth.gsfc.nasa.gov/eclipse/OH/OH2000.html#SE2000Dec25P**

Geographic Location	*Eclipse Begins* h:m	*Maximum Eclipse* h:m	*Eclipse Ends* h:m	*Sun Alt* o	*Sun Az* o	*Ecl. Mag.*	*Ecl. Obs.*
Eugene, OR	- r	16:25	17:29	5	130	0.300	0.183
Portland, OR	- r	16:27	17:33	5	130	0.331	0.211
Salem, OR	- r	16:26	17:31	5	130	0.317	0.198
Seattle, WA	- r	16:29	17:38	4	131	0.370	0.247

(Continued from Page 3) **How to Make a Mirror**

Also in this area you should have a nice large workbench on which to keep the various materials you'll be using. You will also want to build a mirror grinding stand. The two books mentioned cover various designs. I built one from a small metal garbage can with a pipe cemented vertically in the center (can is half full of cement, 3 bags). The top of the pipe is threaded and I got a matching flange to which I bolted a circular piece of ¾" plywood (23" diameter, which is good for mirrors up to 10 or 12 inches). Being able to easily remove the top is great since I can just take it out and hose it off for cleaning. Total cost was something like $18. The important thing is to make it a comfortable height, as you will be spending most of your time walking around it. Mine is just about waist high.

After getting your area and stand ready, between now and next month try and accumulate each of the following:

- a dozen little glass jars with lids—baby food jars are great.
- half-a-dozen 1", clean (new) bristle paint brushes
- a dozen new sponges (Home Depot, large orange ones are nice)
- a couple of dozen clean, soft cotton towels
- an old hotplate and skillet to fit
- a clean, 5 gallon bucket
- a clean spray bottle full of filtered water
- a set of small diamond hones (these are important – check Harbor Freight Tools)

Next month we'll discuss focal length and then get down to grinding.

Jupiter reached opposition on November 28th and will remain huge in the eyepiece for a couple of months after this date. If you haven't enjoyed views of Jupiter yet this year, you still have plenty of time, plus it is now moving into the more convenient evening sky.

The area around Jupiter is eye catching. Along with Jupiter, Saturn joins the Pleiades and Hyades open clusters. Aldebaran (alpha Tauri), the 1st magnitude slightly orange-yellow star in the V-shaped Hyades cluster, is also prominent. But Jupiter is brightest object here and naturally draws your eye. With binoculars, held steadily on a tripod or braced against something solid, the four Galilean satellites can be seen. Actually, if Jupiter wasn't so bright these large moons would be naked eye objects.

The moons, especially large Ganymede, can be seen as disks themselves in steady seeing conditions with a 6" or larger scope. At least moderately high power is needed and you'll need to pay attention to the moons themselves. Seeing them as disks can be routine in larger scopes. If the images of the moons are very bright, try a polarizing filter or color filter. Under exceptional conditions look for a dark splotch on Ganymede itself – this is a relatively difficult observation though. Io will show a ruddy yellow color almost all the time and is pretty easy to spot on its own. Callisto and Europa are close in appearance and you'll probably need to consult a ephemeris to sort out which is which.

However, Jupiter is the star of its own show. First, it is huge, showing an apparent disk of 48.6 arc seconds at opposition this year. Notice that its disk is not perfectly round but is somewhat elliptical, a result of its 10 hour rotation. The two main equatorial bands are usually the most prominent features on Jupiter's cloud tops. Intricate details can be seen within these two orange-salmon-brown bands; dark spots, white ovals and the ragged edges of the bands themselves. Between the bands is the place to look for the cobalt blue festoons, beautiful coma shaped features that speak of the great winds in Jupiter's atmosphere. Sometimes the equatorial bands are bisected by an irregular white band or lines of ovals, an amazing sight at times.

The Great Red Spot (GRS) is, to my mind, the most intriguing feature of Jupiter. The name is a bit misleading as it is neither a spot nor red. It is however rather great and worth planning an observing session around to make sure you see it. A more accurate description would the Great Ruddy Storm, which has the added benefit of preserving the GRS acronym. The GRS is sometimes so pale that it can be spotted only by the hollow it makes in the southern equatorial belt (SEB). For the past few months the GRS has taken on an orange-salmon color that is still rather subtle and may at first look like a bump on the southern edge of the SEB. In steady seeing however, the GRS fully lives up to its name and can show an surprising amount of detail.

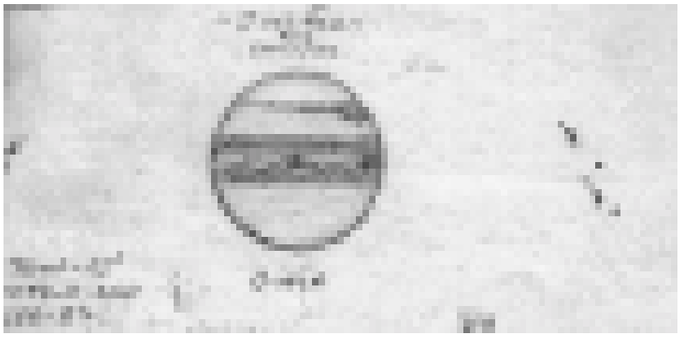
The temperate and polar zones have variable banding with light and dark spots. They are usually more subtle than the equatorial bands but not always. In the best of conditions the polar zones can break up into a series of fine bands and swirls with innumerable white spots – an incredible sight. Just like a Voyager image.

At any time except around opposition you can usually notice that one side of Jupiter looks slightly shaded, an effect caused by Earth being slightly off to one side of the Jupiter – Sun line. You'll have to wait until about February or March for this effect to become apparent again.

A few years ago Jupiter was sliding along the southern part of the ecliptic in Sagittarius, quite low in our Oregon sky and often blurred by our own atmosphere. It is now nearing the northern portion of the ecliptic and high in our sky, well placed for sharp, steady views. Aside from the bright but temporary grouping in Taurus, this is great time to soak in the telescopic sights of Jupiter.

Jupiter sketches

I made the first sketch on August 23, 1974 with a 3" f/15 refractor. I drew the second one a little over 26 years later on October 24, 2000 using my 20" f/5 reflector. What I find most interesting in this comparison is that the 3" scope showed a respectable amount of detail to a novice, even if I did draw the Great Red Spot too far south! Sure, there's a lot more detail in the 20" sketch made with experienced eyes, but the 3" view is pretty darn good too. The moral is that neither a large scope or a ton of experience is needed for detailed views of the planets – but they do help.



(Continued from Page 4)
The Fundamentals

this successor is unique. In other words, b has only one successor, and it is b+1. For example, the successor to 2 is 2+1=3, and 3 is the only successor to 2. This is significant because it means that the set of integers is "well ordered." This "well ordering" principle is a powerful tool in mathematical and physical proof.

Finally, our fifth most significant number is another every day, humdrum number. It is the number 0. 0 again has two critical characteristics. Its first important function is as a placeholder. Without 0, how would you write, in digits, the number two billion, five hundred million, seven hundred thousand, four hundred? More importantly however, is the fact that 0 x b = 0 for all numbers b. This property allows physicists to construct what are known as conservation laws, such as conservation of momentum and energy. Without these conservation laws, believe me, many physical problems would be much more difficult, if not impossible to solve.

Finally, an interesting question to ask would be: Are all these quantities related to each other somehow? The astonishing answer is yes! The German mathematician Leonhard Euler discovered that $e^{i\pi} + 1 = 0$! The five most important numbers in our universe are inextricably linked by this equation. The universe is a fascinating place of wonderful and mysterious beauty and order, and mathematicians keep discovering evidence of this like the relationships above!

COOL FUN FACTS

What is the "green flash" of the sun?

You may have heard stories about the "green flash" that can sometimes be seen as the Sun sets, if conditions are just right. Is it real, or just a myth?

As the Sun descends toward the horizon, its color changes from yellow-white at noon to deep shades of orange and red, because the blue and green colors are scattered by the air. But there's still some green light in the mixture, and that is the key to the green flash.

If the air is very clear, there's a point when the topmost rays of the Sun's light can shine brilliant emerald green. This green flash, which lasts only a few seconds, happens when the Sun's light is split into its component colors, the same way that a prism creates a rainbow. The shortest wavelengths (green at sunset) appear at the top of the Sun just as it drops below the horizon.

Photographs of the Sun showing green flashes:

http://www.isc.tamu.edu/~astro/research/sandiego.html
http://antwrp.gsfc.nasa.gov/apod/ap000507.html

More about the green flash:
http://stardate.utexas.edu/radio/sd_search.taf?f=detail&id=19980711
http://mintaka.sdsu.edu/GF/

How hot is the core of the Sun?
http://features.LearningKingdom.com/fact/archive/1999/05/04.html

What are sunspots?
http://features.LearningKingdom.com/fact/archive/1998/09/24.html

An Evening at Lick Observatory

By Robert McGown

Matt Brewster, Margaret McCrea, Renee Bissonnette, and I had an exciting trip down to Ventura for ASTROCON 2000. The conference at Ventura with the Astronomical League was sensational and well-organized. There were many historical figures and great vendors in a beautiful beach front hotel with good surf.

After 4 days at the conference, with tours of Mt. Wilson, JPL, and a Mt. Pinos star party, our little group headed north on Highway 101 for the final leg on the astronomical "Astro 4" trip. We recieved our pass to Lick Observatory in a lottery over the Internet for a "Music of the Spheres" concert and a night's viewing at the 36" Lick refractor telescope. In the afternoon, we camped in a 900 acre park called Joseph Grant Park next to a beautiful lake. Matt drove up the winding, 10-mile, precipitous, narrow road with out guard rails, blasted into the face of Mt. Hamilton. After the white-knuckle ride, we arrived at Hamilton's broad, astronomy dome–studded summit. We parked and began to view the sun spot covered disc of the Sun with an amateur in the parking lot. We could see the tip of San Francisco Bay, and in the early evening, the converted low pressure sodium lights of San Jose were visible.

The first part of our evening was a concert by the talented Trimble Wyman Duo. They played on an elevated stage in the Hall of Extrasolar Planets. The music was a combination of soprano sax like Kenny G, with the music of nature: from birds to whales and other electronic nature sounds.

The next part of our evening was a galaxy evolution lecture by Raja Guha Takurte, a young astrophysicist from UCSB. He was very entertaining speaking of unique galaxy interactions in the Virgo Cluster and an interaction in a galaxy known as the "Atoms for Peace" galaxy. He was a lucid speaker with refreshing leading edge information.

After the lecture, it was time to observe on the classic 36" f-19 Lick refractor. Rem Stone, an astronomical director, shared views with us as Lick astronomer Ellie Gates gave us vivid descriptions. She was studying super novas on the 40" Crossley refelector. After photographing the Lick refractor, we shared stuffed salmon cakes in the observatory. The views were incredible, although the seeing conditions were not perfect because of a little wind. When we slewed the scope around, there were small vibrations caused by the wind that continued in the images. My favorite object we viewed was M92, with incredible resolution of the core.

A unique view of the great refractor's mount is highlighed where James Lick's coffin is contained in the mount. His bust is also mounted on the side of the telescope like an overseer of all the heavenly observations.

After our final observation, and some drawing at the eyepiece, Rem Stone and a ranger named Ron Bricmont let us view the 20" Lick astrograph. It was on a little path up the mountain. We hiked by the light of the Milky Way. I was especially interested in the astrography because in the late 1940's a dual photograph sky survey was conducted here: one photograph in red and one in blue. The telescope looks like a long focal length pair of refracting binoculars. This was the major sky survey before the Palomar Sky Survey that observed a million galaxies.

We closed the observatory down and met the ranger, Ron Bricmont, to follow down the Mt. Hamilton Road. His last comment was: "Watch out for wild pigs." Halfway down the dangerous, winding road was a huge wild boar. After being scared by the headlights, the black boar, which we dubbed "Niels Boar", climbed a 50' near-vertical rock and dirt road cut and disappeared. We were all howling as we arrived at our campground, where we were told that there were 1,000 wild pigs in the park.

After sleeping in and dreaming of wild pigs, we started the final driving leg of our trip, the 1000-mile drive home.

BOARD MEETING MINUTES

Carol Huston

November 6, 2000

Present: Peter Abrahams, Scott Turner, Jim Girard, Candace Pratt, Norm Trost, Dale Fenske, Sameer Ruiwale, Jan Keiski, Scott Fitzpatrick

General Meeting programs are scheduled through April of 2001. The December meeting will be held a week earlier on December 11th. It will be our annual Christmas Buffet.

Scott: Scott is working on the star party schedule for 2001. He will focus on holding a few joint star parties with Salem, Heart of the Valley, and Eugene clubs. Also being considered as possible joint parties are Seattle, Boeing, Tacoma clubs. In regards to the Washington County State Park, no new news is available. J. Girard is talking to a staff member at Rooster Rock State Park on 11/7/00 and will discuss a number of astronomy issues.

Sameer: Has ordered many items for Christmas sales. Posters, calendars, and star charts have been ordered. Sameer will not be at the November or December General meetings. Sameer needs another order of RCA flashlights.

501(c) (3) The club has received official notification that we have obtained tax-exempt, non-profit status. We would like to find someone in the club who can counsel us on the "annual maintenance" for our new status. Peter has agreed to ask Judy Dethloff if she can provide us with a list of items that we need to complete each year to comply with the non-profit status. Many questions have surfaced as a result of the new status, which we need to have answered by a professional accountant who specializes in non-profits.

Dale: The RCA membership list has been sent to the Astronomical League Secretary for the newsletter, the Reflector. There are currently 338 members in the club.

Jan: She continues to purchase new books and videos in accordance with her budget. She is particularly interested in obtaining a video on telescope making.

Light Pollution Report: There is a meeting in Seattle on December 2nd, sponsored by the NW Region of the IDA to address regional light pollution.

Editor: The December newsletter will be sent out a few days earlier because of the General Meeting in December being a week earlier.

Norm: The plan for the Community Affairs group is to purchase a number of slide shows/videos for school presentations. These shows will be used by RCA members who volunteer to present school programs. He will take an inventory of the available materials and determine what programs need to be purchased.

The phone tree for the remainder of the year is as follows: Norm- Nov. 1-15; Doug- Nov. 16-30; Dec. 1-15 – Dale; Dec. 16-31 – Candace

Web – Dareth is attending a webmaster convention.

Jane: She needs help obtaining and completing the 990 form. .

The solar filter is with Bob Duke for use.

SIG: Scott Fitzpatrick is going to be the new SIG coordinator.

Elections will be held in November at the General Meeting. The slate will be announced and voted on by the membership. At this time the positions of Secretary, Treasurer and Media Director are still open. Also at the General Meeting the membership will vote on the by-laws additions offered in the October newsletter.

OMSI has a program Nov. 24-26 and Dec. 2-3 called the "Science of Toys" and has asked for our participation.

Both Scott and Peter have been in touch with the Haggart Observatory liaison. Announcements will be made each month as necessary for upcoming events.

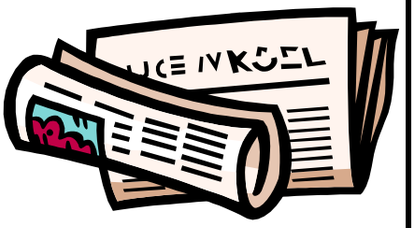
The December Christmas Buffet will be in the Cafeteria on December 11th.

Peter was in Arizona and attended the Tucson Astronomy Club meeting. Miscellaneous topics included having observing workshops for members. Also mentioned was the possibility of exploring a membership that would include an RCA membership and IDA membership.

The meeting was adjourned at 8:35.

(for Carol Huston: Candace Pratt)

CLASSIFIED ADS



A brand new Meade (DS-114EC) Digital Reflecting 4.5" (114mm) Telescope with computerized autolocator and software. It comes with multiple lenses and a very sturdy tripod. This was purchased just two months ago and not even used once. We're moving and we don't want to take it. It also includes Meade's StarNavigator software, which displays more than 10,000 celestial objects for help in locating galaxies, nebulae, star clusters, stars, and planets

This currently retails for over $400. Asking price: $350 OBO.

Richard
(360) 258-1305

DECEMBER 2000						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

JANUARY 2001						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

December

Dec. 4	Mon.	Board Meeting	OMSI Parker	7:00 PM
Dec. 9	Sat.	TM Workshop	Tech. Marine Srvc.	10:30 AM
Dec. 11	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30 PM
Dec. 11	**Mon.**	**Annual Christmas Buffet**	**OMSI**	**7:30 PM**
Dec. 14	Thurs.	TM Workshop	Tech. Marine Srvc.	6:00 PM
Dec. 27	Weds.	Weather SIG	Colonial Office	7:00 PM

January

Jan. 8	Mon.	Board Meeting	OMSI Parker	7:00 PM
Jan. 13	Sat.	TM Workshop	Tech. Marine Srvc.	10:30 AM
Jan. 15	Mon.	Young/Jr./Elem. YRCA	OMSI Audi.	6:30 PM
Jan. 15	**Mon.**	**General Meeting**	**OMSI**	**7:30 PM**
Jan. 17	Weds.	TM Workshop	Tech. Marine Srvc.	6:00 PM
Jan. 18	Thur.	Cosmology SIG	PSU	7:00 PM
Jan. 31	Weds.	Weather SIG	Colonial Office	7:00 PM

The RCA General Meeting falls on the third Monday of each month. We usually meet in the Auditorium at OMSI, next to the Murdock Planetarium. Occasionally the meeting is held in Murdock Planetarium. Check here each month for details, or look us up at the RCA web site (http://www.rca-omsi.org/rca/index.htm).

OMSI Parker Room is on the Mezzanine level. Go into the main lobby, past the turbine to the elevators at the end of the turbine hall. Take the elevators to the "Parker Room", which is marked on the elevator. The monthly Board Meeting is held there.

The Weather SIG address is: Colonial Office Complex, 10175 SW Barbur Blvd, Suite 100-BB, Portland. From downtown, go south on I-5 to the Barbur Blvd. Exit. Cross back over I-5 and the Complex will be on your left.

RCA CLUB INFORMATION
Message Line: (503) 255-2016
Web Site: http://www.rca-omsi.org/rca/

Oregon Museum of Science and Industry
Rose City Astronomers
1945 SE Water Avenue
Portland, Oregon 97214-3354