Sonoma Skies

Newsletter of the Sonoma County Astronomical Society
A nonprofit scientific and educational organization
www.sonomaskies.org

November 2004 Volume XXVII No. 11

Board Elections Coming in December!

Two of our Board members are retiring at the end of the year—June Ferguson and Harry Linder.

June Ferguson

As Vice President and Program Coordinator, June has done an outstanding job of recruiting interesting speakers and publicizing the meetings, and everyone has enjoyed her comprehensive and enthusiastic speaker introductions.

As Membership Director, Harry has given wonderful service—signing up new members, coordinating the annual membership drive, keeping the membership roster current and providing it monthly for newsletter mailings, corresponding with our membership and other clubs.

Harry Linder

They are a tough act to follow, but we know there's someone YOU know who would fit the bill perfectly. It could even be you. If you are interested in volunteering but want to know more about what's involved, just ask Harry or June for details at the November meeting, or contact them by phone or email.

It's a great opportunity to become an integral part of SCAS decisions and functions. Board meetings are fun and interesting. Since I joined the Board as Publications Director I've gotten to know more of the club's members. I've been able to participate in activities I was only peripherally aware of before. I've learned so much by searching for articles and events I think you'd find interesting. Last, but certainly not least, there's a lot of satisfaction to be had in making a contribution.

Think about it. Your club needs you. Nominations for 2005 Board positions will be held at the November meeting, with elections at the December meeting.

Young Astronomers: See pages 6 & 7

What's Going On Out There?

Deep Space missions and other events of 2004, with Robert Davis

SCAS November 10 Meeting, Proctor Terrace School

The program will cover events as close to home as Genesis and its crash landing on the Utah desert to Cassini in orbit around distant Saturn, and everything in between related to space and year 2004. We will meet new friends–SpaceShipOne capturing the X Prize, a topic that excites SCAS President Keith Payea. We will look at what's next for the X Prize and some future challenges that could be met with similar prizes. We will check in with old friends, Hubble and SOHO. What discoveries has Hubble made lately? What did SOHO see in the sun that has not been seen for six years? The talk will include a bit about Deep Impact, scheduled for launch in December 2004. Why blow a big hole in a comet? We will try to figure out what blueberries, popcorn and little bunnies have to do with Mars, and ponder the meaning of "Flying Triangles."

Speaker Robert Davis grew up in Sonoma County and is a software engineer. He writes programs at work because that is his assignment. He writes programs at home because he can do fun stuff. Robert enjoys painting, music, and the great outdoors. Interest in astronomy blossomed when he bought a GoTo telescope, an instrument that showed him all kinds of things unknown to him. He discovered and enrolled in the Night Sky class at RFO and began paying more attention to space activities. An active docent at RFO, he has shared his knowledge with the public and has contributed stories and news events at the quarterly docent meetings.

Our program is intended to give a little more information than folks get from the evening news and have a little fun along the way. November, a time to be thankful; November 10, a time to see and think about space endeavors. Come and enjoy!

SCAS Membership

Meetings and Star Parties

Membership Meetings take place at 7:30 PM on the second Wednesday of each month, in the Multipurpose Room of Proctor Terrace Elementary School on Bryden Lane near Fourth Street in Santa Rosa, unless otherwise announced in this publication. The public is invited.

Star Parties are held monthly on the Saturday nearest the 1st quarter moon at Youth Community Park in Santa Rosa.

Access to Geysers Observing Site: The site is locked to public access. For use during monthly star parties, SCAS members can obtain the combination to the gate lock to the site by contacting any board member listed to the right.

Dues

Membership dues are $25, renewable June 1 of each year. New members joining between December 1 and May 31 may pay partial-year dues of $12.50.

Discount Subscriptions

SCAS offers discount subscriptions to ***Sky & Telescope Magazine***. New subscribers, send a check for $32.95 payable to "SCAS", along with your complete mailing address, directly to: Larry McCune, 544 Thyme Place, San Rafael, CA 94903. For renewals, send him your check with the completed renewal card and return envelope.

Discount subscriptions to ***Astronomy Magazine*** occur yearly in October. Check ***Sonoma Skies*** for details.

Rental Telescopes

NEW! SCAS members are eligible to borrow telescopes for a **$10 per month** donation—or ***FREE*** each month you participate in a SCAS-related Public Star Party. Five telescopes are available: 8" and 5" Celestron SCTs, each complete with clock drive and inverter; 8" and 12.5" Newtonians on Dobsonian mounts; an 80mm refractor on motorized equatorial mount. Contact Joan Thornton at 707-762-0594.

Newsletter

Sonoma Skies is the newsletter of the **Sonoma County Astronomical Society (SCAS)** and is published each month. Subscription is included as part of membership.

Articles, news items and member announcements for ***Sonoma Skies*** are welcome. Submissions must be typed or, if on computer media, in a commonly used word processing and/or graphics format, and may include graphics (pictures, drawings, etc.) They are published on a first come, first served basis, space permitting, and may be edited.

The deadline for submissions is the last Wednesday of each month.

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www.sonomaskies.org

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SCAS Appointed Positions

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Librarian
Joan Thornton 762-0594 phonyjoanie@earthlink.net

Public Star Party Coordinator
Bruce Lotz 576-7833 ablotz@sonic.net

Library

SCAS has a library of astronomy books that may be checked out by members at SCAS meetings. College textbooks donated by Joe Tenn of SSU are available. Books may be borrowed for a period of one month and returned at the next meeting. Videotaped lectures on astronomy are available for rent at $3 per month. Requirements: SCAS membership and your name and phone number.

For more information, contact Joan Thornton at 762-0594, *phonyjoanie@earthlink.net*

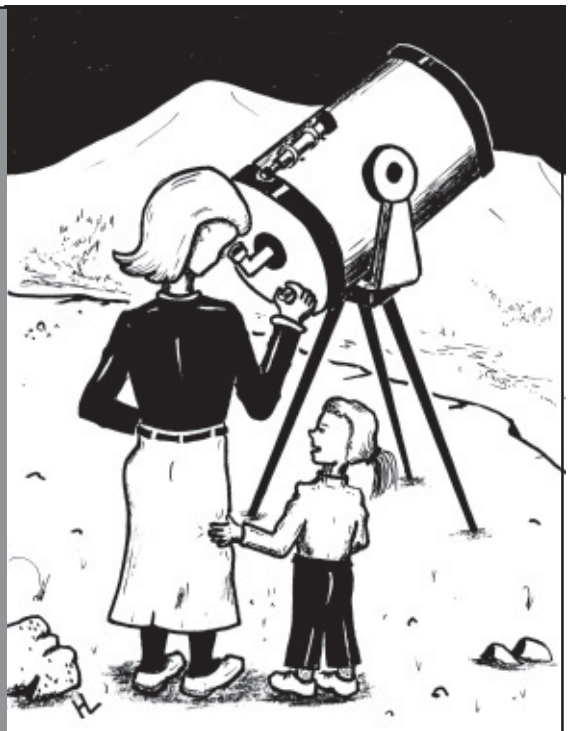
SCAS Egroup URL

Any SCAS member is welcome to join. Hosted by Robert Leyland at *r.leyland@verizon.net* the majority of traffic is about going observing, observing reports and astronomy-related news. We get news items from AANC and Sky & Telescope and chat about astronomy.

To join, either visit *http://groups.yahoo.com/group/scas* and click the "Join" button, or send an email to *scas-subscribe@yahoogroups.com*

The Semi-Sirius Astronomer

by Herb Larsen



Hey, Mom! If two spiral galaxies merge and form an elliptical galaxy, how do we know if it's a boy or girl galaxy?

MEMBERSHIP NEWS

If you have address or email changes, contact our Membership Director, Harry Linder, at 542-9167 or via email at *harry@sonic.net*

SCOPE CITY
New Member Bonus!

Scope City at 350 Bay Street, San Francisco, is offering a **$25 merchandise discount to new members**. Sam Sweiss, Manager of Scope City, has supported SCAS and the Striking Sparks project by donating merchandise for the awards. Scope City offers a huge selection of telescopes, binoculars, microscopes and accessories.

Obtain a receipt from Harry Linder, Membership Director, to show that you have paid the $25 SCAS membership dues. To arrange for your merchandise discount at the store, contact Sam at 415/421-8800, or email *sanfrancisco@scopecity.com*

Refreshment Person Needed

A volunteer is needed to gather ingredients and heat water for coffee and tea at the SCAS monthly meetings. For your efforts, SCAS offers one year of free membership as a thank you. If you'd like to help, please contact any Board member.

President's Column

Holidays and Astronomy

by Keith Payea

With Halloween just behind us, and Thanksgiving, Christmas, and New Years just ahead, it got me thinking about the astronomical roots of many of our oldest holidays. Thanksgiving is a relative newcomer as holidays go, and is really only celebrated in the USA. However, the others have very old meanings which have just changed over the years.

According to *www.AstronomyDaily.com*, the 31st of October is the "cross-quarter day", falling roughly between autumnal equinox and winter solstice. In a time when people's lives were more closely tied to the seasons, these events were very important. This holiday was celebrated by the Celts as "Samhain", which means Summer's End. Even though we now consider the autumnal equinox as the official end of summer, in our latitude, and that of the Celts, summery weather lasts through October. The celebration went through many interesting transformations, and we now celebrate it as Halloween.

Christmas and New Years were originally winter solstice celebrations. As the calendars moved around, they ended up where they are now, and the true solstice is on December 21.

Easter falls on the Sunday after the first full moon after the vernal equinox. This was the time of an ancient spring festival of Ishtar, which started in Babylonia and Assyria and had been adopted throughout northern Europe. When early Christian missionaries were spreading through Europe, they realized that the time of the celebration of the resurrection of Christ coincided with this older holiday, so they gradually converted the meaning of it, rather than try to change everyone all at once.

Passover is based on the Jewish Calendar, which is based on both the lunar year and the solar year. Calculation of the date of Passover is best left to Jewish scholars, but the end result is that it falls in the spring every year.

I'm sure I'm just scratching the surface here. If you would like to find out more, check out *http://www.AstronomyDaily.com* or *http://www.infoplease.com/spot/easter.html*, which is where I got much of my information about Easter and Passover.

FOR SALE: MEADE MODEL 102ACHR/500 TELESCOPE

* 4" Refractor * LXD 500 Equatorial Mount
* Tripod * 1702 Dual-Axis Drive System * $400
Contact Bill Kinder at 894-9591

Events

Sonoma State University Series "What Physicists Do"

Mondays at 4:00 PM
Darwin Hall Room 108

Nov. 15—"Light Brings Us News of the Universe..."
Professor Emeritus Tony Siegman of Stanford University will describe how the striking phrase in the title—the opening words of a 1931 Christmas Lecture on astronomy by Sir William Bragg for the Royal Institution of London—might be extended today to include recent advances in science and technology made possible by lasers and fiber optics.

Nov. 22—Biomaterials and Biosensors
Dr. Enrique Izaguirre of the University of California, San Francisco (formerly of Sonoma State University) will describe the work done in biomaterials and organic biosensors with several students from the SSU departments of Chemistry and Physics & Astronomy during the past three years.

Nov. 29—Robotic Telescopes at Sonoma State University
Dr. Gordon Spear of Sonoma State University will describe the nature of robotic telescope systems, describe how they are likely to change the way astronomy is done, and provide some preliminary results and experiences with such telescopes at SSU.

Contact *http://phys-astro.sonoma.edu/wpd/*

SSU Observatory Public Viewing

Nov. 19—7PM-9PM: Moon, Uranus, Triangulum Galaxy
Dec. 3—7PM-9PM: Helix Nebula, Andromeda Galaxy companions

Observatory located inside the football field at the SE corner of the campus (E. Cotati Ave. and Petaluma Hill Rd., two miles east of US 101 at Cotati). Follow signs from freeway to campus. Call 707/664-2267 before coming if it appears that clouds may force cancellation. *http://www.phys-astro.sonoma.edu/observatory/pvn.html*

Silicon Valley Astronomy Lecture Series

Wednesday, November 10, 2004, 7:00 PM
"Black Holes: The Science Behind the Science Fiction"
UC Berkeley Astronomer Eliot Quataert will discuss what black holes are (and what they are not), how they are discovered and how they give rise to some of the most remarkable and bizarre phenomena in the universe.

Please come early as seating is first come, first served. Held in the Smithwick Theater, Foothill College, Los Altos Hills. Free and open to the public. Parking on campus costs $2. Call the series hot-line at 650/949-7888 for more information.

SCAS School Star Parties

Nov. 19 (Fri.) 7:30 PM, LaTercera Elementary in Petaluma
Dec. 15 (Wed.) 7:30 PM, Dunbar Elementary in N. Petaluma

Star parties are given free to any school or organization that requests them. To make arrangements, contact SCAS Community Activities Director, Len Nelson, at 707/763-8007, *lennelsn@comcast.net*. Get on his volunteer list if you are interested in being notified of upcoming school star parties.

Robert H. Ferguson Observatory

Public Viewing: Saturday, November 13
Solar Viewing: 11:00 AM - 3:00 PM
Night Viewing: Begins 6:00 PM

Leonid Meteor Shower: Wed., November 17, 6:00 PM

Public Solar Viewing: Friday, November 26
11:00 AM - 3:00 PM

Three scopes are operating: The 14-inch SCT with CCD camera in the east wing, the 8-inch refractor under the dome and the 24-inch Dobsonian in the west wing.

There is no admission fee for the solar viewing, but donations are appreciated. The Park charges $6 per vehicle for entry. A $2 donation is requested from adults 18 and over for admission to the observatory during the night viewing sessions. SCAS members may set up telescopes in the observatory parking lot to assist with public viewing. Automobile access closes at dusk, late arrivals must carry equipment in from the horse stable parking area.

Classes

Nov. 9	Night Sky Fall Series, 7:00 PM
Nov. 16	Night Sky Fall Series, 7:00 PM

Classes are held at the Observatory. Reservations required for classes. Contact: (707) 833-6979, or visit *http://www.rfo.org*

Morrison Planetarium Dean Lecture Series

"NASA's Great Observatories" Series

December 6—The Chandra X-ray Observatory
Dr. Harvey Tananbaum, Director, Chandra X-ray Center, Smithsonian Astrophysical Observatory

New Location: During reconstruction, lectures are held at the Jewish Community Center, 3200 California Street (at Presidio). Parking in the UCSF Laurel Heights campus parking lot is $1.25/night. Parking in the JCC garage is $1.25 per half-hour.

All programs begin at 7:30 PM in Kanbar Hall at the JCC. Contact: 415/750-7141*http://www.calacademy.org/planetarium/*

Events

The Geysers Star Parties

Excellent dark sky observing at ~2700' for members and guests. **Location:** Palmieri Observatory, Mercuryville (near The Geysers). Longitude: 122deg 49min., Latitude: 38deg 46min.

Saturday, November 6

Sunset: 5:05 PM PST
End Astronomical Twilight: 6:36 PM PST
Moonset: 2:21 PM PST

Saturday, November 13

Sunset: 4:59 PM PST
End Astronomical Twilight: 6:30 PM PST
Moonset: 5:47 PM PST

Both dates are available to cover the possibility of bad weather. Dress warm. If it's your first time to the Geyser site, go with someone who has gone before, or contact Mario Zelaya at (707) 539-6423, *zelayadesigns@sbcglobal.net*

SRJC Planetarium

"Exploring Mars"

Ends November 21

"Mithra and the Celestial Sphere"

November 26 - December 19

The ancient pagan religion known as Mithraism has captivated the imaginations of scholars for generations. The constant presence in Mitraic imagery of the night sky and its movement leads us to believe that Mithraism was connected to the end of the astrological "age of Taurus" and the beginning of the "age of Aries." Key to the Mithraic mysteries are the constellations of the Zodiac, Perseus, and the combined movements of the celestial equator and the ecliptic. Join us as we take you back 4000 years to the "age of Taurus" and reveal the cosmology of the ancient world.

Shows are held at Santa Rosa Campus, Lark Hall, Room 2001, on Fridays and Saturdays at 7:00 PM and 8:30 PM, Sundays at 1:30 PM and 3:00 PM during the Fall and Spring semesters. Admission is $4 General; $2 Students and Seniors. Tickets are sold at the door only, beginning 30 minutes before show time. No children under five, please.

A parking permit is required and is included in the Planetarium admission price. Pick it up at the planetarium when you pay admission. Please arrive early enough to place your permit on your vehicle's dashboard before the show. Contact: (707) 527-4465 or 527-437 *http://www.santarosa.edu/planetarium/*

SCAS Public Star Party

These are public events—all are invited. Members with scopes are encouraged to attend.* Great for planetary astronomy with fellow observers at an easily accessible site.

Saturday, November 20

Sunset: 4:54 PM PST
End Astronomical Twilight: 6:27 PM PST
Moonset: 12:39 AM PST 11/21

Youth Community Park in Santa Rosa, on the west side of Fulton Road, between Guerneville Road and Piner Road, just opposite Piner High School. Contact: Bruce Lotz, Coordinator (707) 576-7833, *ablotz@sonic.net*

Note! Rental telescopes listed on Page 2 are ***free*** each month you participate in a SCAS-related Public Star Party. Join us in introducing the night sky to eager participants.

Chabot Space & Science Center

November 6, 7:30PM—Hunting for Worlds Around other Stars, Debra Fischer, Ph.D

In 1995 the first planet was discovered orbiting a star other than the Sun. Since then, well over 100 planets have been detected around other stars. These discoveries have launched a new direction of research for NASA and pave the way for finding more Earth-like planets in the not too distant future. Debra Fischer will present a nontechnical overview of these discoveries—how they are being detected, how our solar system compares, and implications for the possibility of life in the galaxy.

Lectures are held in the Tien MegaDome Theater. Tickets are $5. Call 510/336-7373. Seating is limited and advance purchase is recommended. *http://www.chabotspace.org*

Telescope Makers' Workshop

Every Friday night, the Chabot Telescope Makers' Workshop meets at the Chabot Space and Science Center. The workshop is a place where you and your fellow astronomy club members can learn the art of telescope mirror making and Newtonian telescope construction. Nothing compares to making your own scope, and you will end up with an instrument far superior to those available commercially.

For the first time in years, the workshop has ample space for new students. Visit us any time between 7 and 10PM Friday nights. The club is free; grinding and polishing materials are free; and the cost of glass (available from the workshop) is quite reasonable.

For more information, contact Paul Zurakowski, Director, at 925/447-6837 or email Richard Ozer of the Chabot Telescope Makers' Workshop at *rozer@pacbell.net*

Young Astronomers

Micrometeorites!

with Gary Jordan

YA November 12 Meeting, Apple Blossom School

This meeting will be about micrometeorites and we will even be trying to collect and observe our own cosmic dust! This event is sure to be outstanding, so bring your telescope and a friend.

Special Directions: The November 12th meeting will be held as usual at 7:30 PM at Apple Blossom School. However, this month YA members should drive straight up the driveway (past the lower parking lot) to the upper parking lot, where we usually meet for our telescope viewing. We will be meeting in one of the upper classrooms at the school. The buildings and some of the parking lot will be illuminated. Signs will direct you to the classroom.

YA Newsletter Submissions

Hello to all fellow Young Astronomers. My name is Scott Grubb and I am the new newsletter editor for YA. First, a few words about myself…I am sixteen and a junior at Rancho Cotate High School. I was awarded a Striking Sparks telescope in 1999 when I was in fifth grade. Since then I have been a member of YA and this year I became the YA newsletter editor.

It is my job to encourage all members of the Young Astronomers to submit articles of interest for the monthly SCAS newsletter. Now here's where you come in. Simply write an article about anything that interests you in the field of astronomy and submit it to me by email (*fivegees@sonic.net*) or snail-mail (Scott Grubb, 154 Fescue Way, Rohnert Park, CA 94928-1338). Be sure to enclose your name and age, so you can receive credit for your submission. All ages are encouraged to participate.

Meeting Updates

At the Young Astronomers meeting on October 8, everyone was treated to a fascinating presentation on comets given by YA adult advisor Gary Jordan. The night began with an interesting history on how ancient civilizations viewed comets as bad omens. As humans increased their knowledge about the night sky, the origins and behaviors of comets became much more intriguing. Gary then began to describe how most comets have huge orbits that start in the Kuiper Belt surrounding the solar system and are often onetime visitors to our relatively tiny planet.

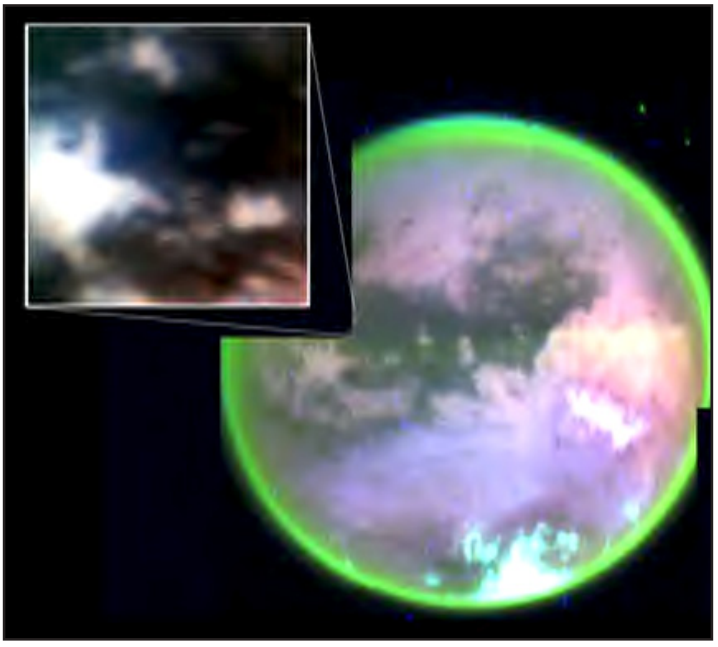
Cassini Makes Close Flyby of Titan

adapted from a NASA press release

On October 26 the Cassini spacecraft beamed back information and pictures after successfully skimming the hazy atmosphere of Saturn's moon Titan. As expected, the spacecraft came within 1,200 kilometers (750 miles) of Titan's surface. At the time, Cassini was about 1.3 billion kilometers (826 million miles) from Earth. Numerous images, perhaps as many as 500, were taken by the visible light camera and were being transmitted back to Earth. It takes 1 hour and 14 minutes for the images to travel from the spacecraft to Earth.

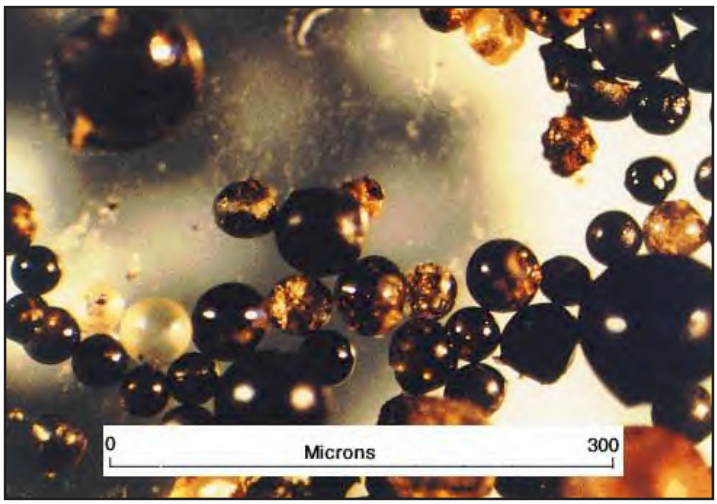
The flyby was by far the closest any spacecraft has ever come to Titan, the largest moon of Saturn. Titan is perpetually drenched in a thick blanket of smog. It is a prime target of the Cassini-Huygens mission because it is the only moon in our solar system with an atmosphere, making it a cosmic time capsule that offers a look back in time to see what Earth might have been like before the appearance of life.

The Huygens probe, built and operated by the European Space Agency, is attached to Cassini; its release is planned on Christmas Eve. It will descend through Titan's opaque atmosphere on Jan. 14, 2005, to collect data and touch down on the surface.



Titan's Complex Surface

This image taken by Cassini's visual and infrared mapping spectrometer clearly shows surface features on Titan. A methane cloud can be seen at the south pole (top of image). This picture was obtained as Cassini flew by Titan at altitudes ranging from 100,000 to 140,000 kilometers (88,000 to 63,000 miles), less than two hours before the spacecraft's closest approach. The inset picture shows the landing site of Cassini's piggybacked Huygens probe.



Collecting Micrometeorites

Courtesy of the Jet Propulsion Laboratory

Shooting stars are not, of course, really stars. They are actually small bits of rock and metal that collide with Earth's upper atmosphere and, because of friction, burn up. On rare occasions, man-made satellites and spacecraft parts fall into the atmosphere and burn up the same way.

The flash of light from this incineration is correctly called a meteor. A meteor is formed when an object, usually the size of a marble or a piece of popcorn, hits the atmosphere at an altitude of 80 to 100 kilometers (50 to 62 miles). The air at that height is very thin but the objects are moving at tens of thousands of kilometers per hour. To get an idea of what friction does, place your hands together and rub them back and forth. Now rub faster. What is happening? That is what is happening to the particles in the upper atmosphere. Larger objects do not burn up completely. Surviving fragments fall through the atmosphere and land on Earth. Once one of these objects lands it is called a meteorite. Most meteorites fall into Earth's oceans.

Meteorites can be either rock, metal (nickel and iron) or a mixture of both. Stony meteorites are difficult to identify. They do not glow or give off radioactivity. Stones outnumber metals. But metallic meteorites are easier to find. Rarely are chunks of metal found lying about. A metal detector can be used to search for metallic meteorites. Dry barren areas where there is little vegetation to cover up the ground and turn over the soil are the best. Dry lake beds are good places to search because wind can blow dust off of the surface, leaving the meteorites exposed. Many meteorites are found on the Antarctic ice sheet.

There is an easy way to collect meteorites, but we must be satisfied with finding small metal ones. They are actually microscopic and are known as micrometeorites. Tons of these fall on Earth each day.

To collect micrometeorites you need to find a place where they can become concentrated. The drains of a house or building work well since rainwater can wash particles off of an entire roof and collect them at the drain spout. Tile roofs are best since they drain very well and do not produce many other sorts of particles or debris. But dust, plants, pieces of window screens and all other sorts of airborne material also collect there. To find the metallic micrometeorites, collect and dry some of the material from a deep bowl at the base of the drain spout. After removing leaves and other debris, place the remaining material on a piece of paper and place a magnet under the paper. Tilt and tap the paper so that all of the nonmetallic particles fall off. Many of the remaining metallic particles are pieces of space dust!

To examine them, place the paper under a microscope. High power will be required to see them clearly. Most of the particles are not from space, but the micrometeorites will show signs of their fiery trip through the atmosphere. They will be rounded and may have small pits on their surfaces. Much of what you are observing are particles that date from the formation of the solar system around 4.6 billion years ago! They are the debris remaining from the raw materials that formed into the nine known planets and the asteroids. Most particles have been broken off or ground down from larger objects.

YA Officer Position Open

The position of recorder is still open. The recorder is responsible for taking notes at the monthly YA board meetings, and issuing minutes to serve as an official record. If you are interested in becoming more involved in what happens "behind-the-scenes" for the YA, come to the November meeting and get involved!

YA Calendar

November 12 — Micrometeorites, Gary Jordan

Meetings start at 7:30 PM at Apple Blossom School, 700 Water Trough Road, Sebastopol in the Multipurpose Hall—the large building on the right side of the school. Meetings are open to all students in Sonoma County, and are held the second Friday of each month. **Telescope viewing** is held in the upper parking lot after the meeting.

Directions: From Hwy. 116 (Gravenstein Hwy.) in Sebastopol, turn west onto Bodega Ave. Continue on Bodega Ave. almost two miles to Water Trough Rd. Turn left and go about 1/3 mile to the school, on your right. From Hwy. 12, go straight through Sebastopol, past Main Street, and continue as above.

YA Elected Officers

President: Melissa Downey 632-5661
Vice-President/Program Director: Olivia Turnross
Recorder: Open
Newsletter Editor: Scott Grubb *fivegees@sonic.net*
Librarian: Jacob Gaynor
Adult Adviser: Gary Jordan 829-5288

Sonoma County Astronomical Society
P.O. Box 183
Santa Rosa, CA 95402

November 2004 *Sonoma Skies*

NOVEMBER 10

Robert Davis

What's Going On Out There?

November Observing Notes

Nov. 8: Saturn rises in ENE by 10PM, in Gemini

Nov. 8-11: Mars, Spica, Venus and Jupiter dance with the crescent Moon in the predawn hour

Nov. 12: N. Taurid meteors peak

Nov. 12: New Moon, Double Shadow Transit on Jupiter

Nov. 17: Leonid meteors peak

Nov. 19: First Quarter Moon

Nov. 23: Jupiter eclipses Ganymede bet. 1:30AM and 4:30AM

Nov. 26: Full Moon; **Saturn** rises around 8PM

Links featured this month:

The SJAA Astronomical Swap Meet at Houge Park in San Jose Sunday Nov. 21 starting at noon. Directions: *http://www.sjaa.net*

Steve Gottlieb's observing challenges at Adventures in Deep Space, *http://www.angelfire.com/id/jsredshift/*.

NASA's Mars Reconnaissance Orbiter is being readied for sendoff next year. See *http://www.space.com/businesstechnology/technology/mro_tech_041013.html*

A crossword puzzle for kids about the Multi-angle Imaging SpectroRadiometer (MISR) project to identify UFOs is at *spaceplace.nasa.gov/en/kids/misr_xword/misr_xword1.shtml* Answers are located on the site. See also *www-misr.jpl.nasa.gov*

Lunar Eclipse Joys

Len and Charlotte Nelson hosted about 60 people at Austin Creek Middle School, along with Dave Smith, Eric Chazankin, Loren Cooper, John Whitehouse and Melissa Munro. The Moon rose in a beautiful blur of white through the last of the clouds that had threatened all day. Len took these gorgeous photos of the event (we have to ask Len how he manages to take photographs at a public star party!).

The long eclipse showed us very unusual light on some of the craters. The emergence light seemed much brighter than the slow beginning of the eclipse—we dove for our filters early in the reemergence. What a beautiful evening!