

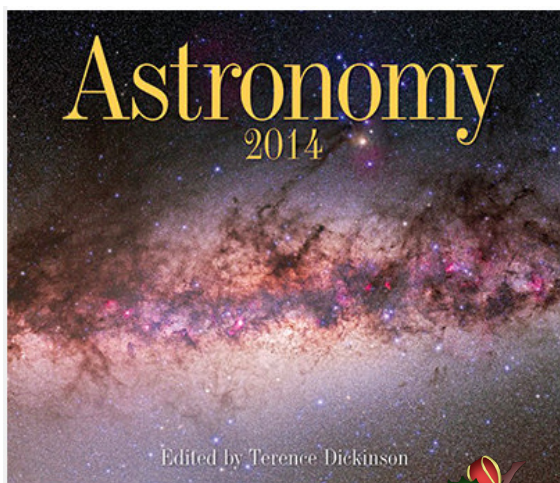
The Astronews



Volume 61, Issue 10

October 2013

www.hawastsoc.org



CHRISTMAS SALE!
('tis the season...)

2014 Calendars available

"Deep Space Mysteries" presented by Astronomy magazine, extra large size, is filled with stunning images of stars, planets, galaxies, and other deep space wonders, with highly informative essays accompanying each photograph. They are available at a discount through our club for only \$6.50.

TO ORDER:

Please order from *April Lew*, at the Oct 1st HAS Astronomy club meeting with payment of **cash or check.** Or email *April at stardustlounge@hotmail.com* asap.

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Upcoming Events:

- ☆ The next meeting is 7:30PM on **Tues., Oct 1** at the Bishop Museum.
- ☆ Bishop Museum's next evening planetarium shows are every Saturday of the month at 8:00 p.m.
www.bishopmuseum.org/calendar
- ☆ The next Board Meeting is Sun., **Sept 29** at 3:30 p.m. at the POST building at UH.



NSN "Hot" News:

In the June 2013 issue of the Astronews, our club President indicated the need for members to contact each other through our website to arrange for small group observing sessions at other times and places. The Night Sky Network (NSN) provides this capability through Message Groups. Since the club is a member of the NSN, all club members are automatically a member of the NSN with one caveat – you must register on the NSN to enable all the features to be available to you. (Here's the link to register: http://nightsky.jpl.nasa.gov/club-apply.cfm?Club_ID=453&ApplicantType=Member).

Message groups can be set up to serve special interest groups as mentioned above.

a. Message Groups can be Open or Closed. "Open" are message groups that registered Club Members can choose to join – or opt out of – on their own. Club Coordinators are the only ones who can assign people to "Closed" message groups.

b. Message Group membership can be Public or Club. "Public" groups can have any Contact (there is a special roster of contact such as teachers) or Club Member assigned. "Club" groups only have Club Members assigned.

c. Group member messages allowed? The club can allow registered Club Members assigned to the Group to send a message to all other people assigned to that group. If the Club Member is not a Club Coordinator, the message will only go to other club members in the group. If it is a "Public" Group, only messages that Club Coordinators send will go to the whole Group.

d. Group Members Visible to all registered Club Members? The club can allow any registered Club Member to see who the other club members of that Group are. Otherwise, only Club Coordinators can see the members of a Group.

(Continued on page 10)

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The **Astronews** is a monthly newsletter of the Hawaiian Astronomical Society. Some of the contents may be copyrighted. We request that authors and artists be given credit for their work. Contributions are welcome. Send them to the Editor via email. The deadline is the 16th of each month. We are not responsible for unsolicited artwork.

The Voyager 1 spacecraft has been in the news recently. There have been reports for some time that it has reached the heliopause, the region where the Sun's magnetic and solar wind influence becomes less dominant than conditions in the interstellar medium. The Voyager team, still led by Ed Stone (since 1972!), has recently gone on record with their estimate of August 25, 2012 as the date when that happened. Why the delay and uncertainty?

The heliopause is not bounded by a distinct fixed boundary like the end zone of a football field. Think of a block party where two bands are playing on separate stages a significant distance apart. When you're listening to band 1 near their stage, you can't hear band 2. If you walk toward band 2, you will begin to hear it, but the sound from band 1 will still dominate. Eventually you will hear only band 2, but the transition is gradual. In the middle, which band sounds louder will depend on things such as how loud each band is playing, your distance from each stage, the wind direction, and which way your head is pointed.

We know that the Sun's magnetic field and solar wind vary over time. The same is probably true for the conditions in interstellar space as well. This means that we should think of the heliopause as a fuzzy zone rather than a sharp line. While Voyager 1 is probably past the middle of the zone now, the Sun's influence may occasionally be greater than that of the interstellar medium at increasingly infrequent times.

The spacecraft should have enough power to keep sending back data for a few years. By the time we lose contact with it, it should be well beyond the heliopause. Voyager 2 is not as far from the Sun and is traveling in a different direction where the heliopause may prove to be at a different distance.

Of course, both Voyagers are still well within the solar system. It may still take 30,000 years to pass through the Oort cloud into true interstellar space where the gravitational attraction of other stars outweighs that of the Sun.

Chris

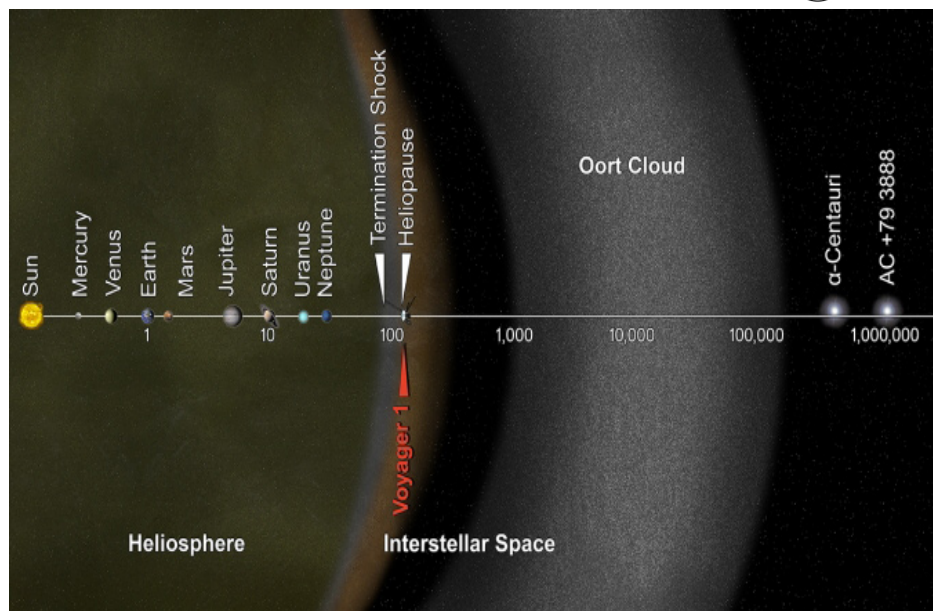


Image Courtesy: NASA

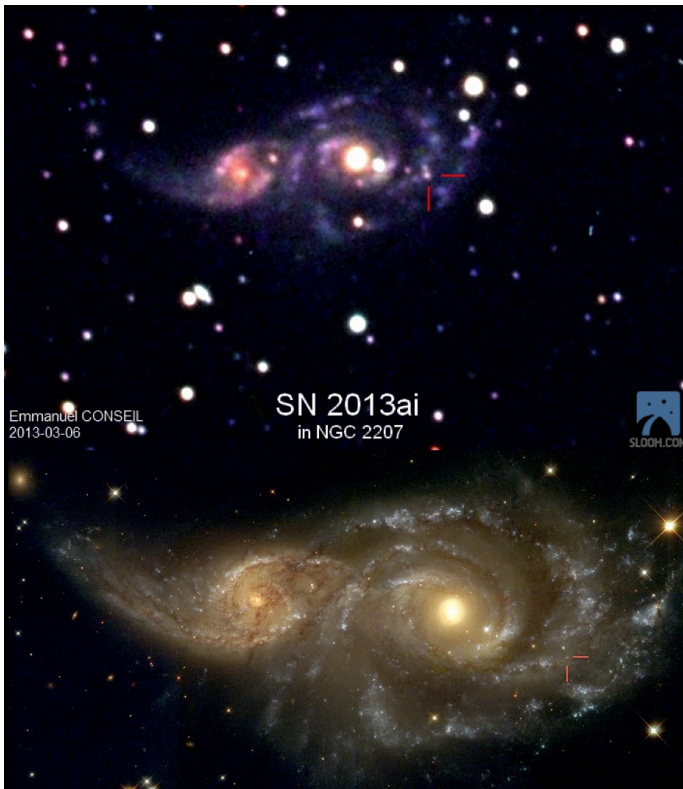
Size Does Matter, But So Does Dark Energy

By Dr. Ethan Siegel

In our day-to-day lives, stars seem like the most fixed and unchanging of all the night sky objects. Shining relentlessly and constantly for billions of years, it's only the long-term motion of these individual nuclear furnaces and our own motion through the cosmos that results in the most minute, barely-perceptible changes.

Unless, that is, you're talking about a star reaching the end of its life. A star like our Sun will burn through all the hydrogen in its core after approximately 10 billion years, after which the core contracts and heats up, and the heavier element helium begins to fuse. About a quarter of all stars are massive enough that they'll reach this giant stage, but the most massive ones -- only about 0.1% of all stars -- will continue to fuse leaner elements past carbon, oxygen, neon, magnesium, silicon, sulphur and all the way up to iron, cobalt, and, nickel in their core. For the rare ultra-massive stars that make it this far, their cores become so massive that they're unstable against gravitational collapse. When they run out of fuel, the core implodes.

(Continued on page 9)



Digital mosaic of infrared light (courtesy of Spitzer) and visible light (SDSS) of the Coma Cluster, the largest member of the Coma Super-cluster. Image credit: NASA / JPL-Caltech / Goddard Space Flight Center / Sloan Digital Sky Survey

image courtesy: NASA

The Orionids, which peak on October 21st, is the highlight meteor shower this month. The full moon on 10/18 will greatly diminish this moderately active shower. Probably the second best shower is the periodic Draconids, which is best when the stream's parent comet, 21P/GiacobiniZinner, comes to perihelion as it did in February of last year. While, 2012 was decent, 2013 isn't expected to be very active – but you never know. And now for something completely different ...

Who says there's no humor in the sciences, let's explore a selection of funny bits from various sources about meteors and meteorites...

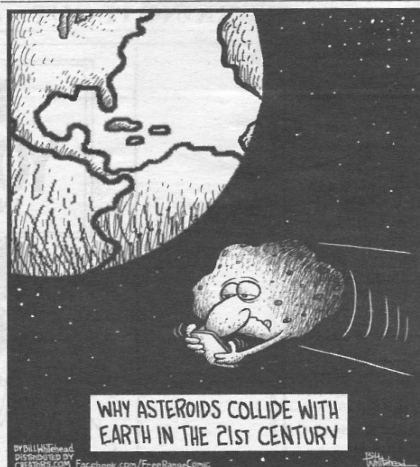
Tweets about the February 15th Russian meteorite:

- I like to think that just before that meteor hit, some guy in Russia said, "This day couldn't get any worse."
- Allegedly from Ms. Palin: "I live in Alaska and I could not see that meteor from my house."
- All this meteor-related violence clearly stems from our cultural obsession with shoot-'em-up video games like ASTEROIDS.
- **BREAKING NEWS:** Baby found in the middle of the Meteorite crash site, he is miraculously unharmed. Wrapped in what seems to be a red cape.

Even the Russian leader got into the action, never missing an opportunity to take off his shirt!



FREE RANGE by Bill Whitehead



THIS SWORD WAS FORGED FROM A FALLEN STAR. ANTIMONY IMPURITIES MAKE THE BLADE SURPRISINGLY BRITTLE AND WEAK.



AND THIS DAGGER IS MADE OF METAL FROM A FAR-OFF KINGDOM. IT GLOWS BLUE. WHEN ORCS ARE NEAR?



NO, ALWAYS. RADIATION FROM THE ACTINIUM CONTENT. ... DOES IT HAVE ELDRITCH POWERS?



IT GIVES THE WIELDER +2 TO CANCER RISK. I THINK WE SHOULD FIND ANOTHER SHOP.



Planets Close To the Moon

Times are Hawaii Standard Time

Oct 6, 14h, M 2.8° NNE of Mercury
(25° from sun in evening sky)

Oct 6, 16h, M 2.0° SW of Saturn
(26° from sun in evening sky)

Oct 8, 04h, M 4.6° N of Venus
(45° from sun in evening sky)

Oct 14, 16h, M 5.5° NNW of Neptune
(131° from sun in evening sky)

Oct 17 11h, M 3.3° N of Uranus
(165° from sun in evening sky)

Oct 23, 11h, M 4.9° SSW of Jupiter
(102° from sun in morning sky)

Oct 29, 11h, 6.1° SSW of Mars
(58° from sun in morning sky)

Other Events of Interest

Times are Hawaii Standard Time

Oct 3, 04 h, Uranus at opposition

Oct 4, 14:33h, Moon new

Oct 6, 20h, Moon, Mercury, Saturn in a circle of 5.07° (27° from sun in evening sky)

Oct 7, 22h, Mercury 5.0° SSW of Saturn
(25° from sun in evening sky)

Oct 10, 13h, Mercury at greatest elongation (25.3° East of the sun in evening sky)










Oct 12 Astronomy Day

Oct 14, 19h, Moon 1.2° WSW of 3 Juno
(106° from sun in evening sky)

Oct 18, 13:36h, Moon full

Oct 21, Orionid Meteors (Unfavorable year for this major shower)

Oct 31, 22h, Venus at greatest elongation (47.1° East of the sun in evening sky)

 Mercury <p>Mercury is visible in the evening twilight early in October, but this is a rather poor appearance in the northern hemisphere.</p>	 Venus <p>Shines brightly in the west after sunset. Reaches maximum elongation on Halloween evening.</p>	 Mars <p>Mars is visible in the morning sky before sunrise at a magnitude of about +1.4.</p>
 Jupiter <p>Jupiter is visible shining brightly in the morning sky above Mars.</p>	 Saturn <p>Very low in the southwest at sunset at the beginning of the month, but disappears into the evening twilight as it approaches conjunction early in November.</p>	 Uranus <p>Uranus reaches opposition this month and is in the sky all night.</p>
 Neptune <p>Neptune rises well before midnight and can be observed late in the evening.</p>	 Dwarf Planet Pluto <p>Pluto is near the meridian at midnight and can be observed in the evening sky.</p>	 Comet Ison <p>Brightens rapidly as it approaches it's rendezvous with the sun in late November. Probably about mag. +8 by the end of the month. .</p>

President Chris Peterson called the September 3, 2013 meeting of the Hawaiian Astronomical Society to order at 7:35p.m. The meeting was held in the Planetarium on the grounds of the Bishop Museum. There were thirty-five individuals in attendance.

Hawaii Space Lecture Series: This month's lecture is scheduled for Tuesday, Sept. 24, 2013. Przemyslaw Dera will lecture on "Tales of Rock and Sand- A Mineral Physics Journey from Hades to Heaven." Lectures take place at the NASA Pacific Regional Planetary Data Center, room 544 in the Pacific Ocean Science and Technology Building on the Manoa campus of the University of Hawaii. For more information contact NASA PRPDC at 808-956-3132 or go to <http://www.higp.hawaii.edu/prpdc>.

Lacy Veach Day of Discovery: This year's Lacy Veach Day of Discovery hosted by Punahou School in Manoa will take place on Oct. 26, 2013. **Gretchen West** will coordinate the display and volunteers. Anyone interested in helping out please contact Gretchen.

SOEST Open House: This year's SOEST Open House will take place on the weekend of Oct. 25th (8:30 am – 2:00 pm) and 26th (10:00 am– 2:00 pm), 2013. SOEST is home to the academic departments of Oceanography, Geology and Geophysics, Meteorology, and Ocean and Resources Engineering, as well as eight research institutes, centers, laboratories, and programs.

Winter Pot Luck: We would like to announce that there will be a **Winter Pot Luck Dinner** prior to the Dec.3rd H.A.S. general membership meeting at the Bishop Museum. We hope that members will join us on that night to celebrate the holiday season, as well as the camaraderie of fellow enthusiasts.

Digital Projector: The club will be looking into purchasing a digital projector for our use at meetings either in the Planetarium or meeting rooms. One prospective projector priced at approximately \$600 was discussed. However, **Paul Lawler** indicated that a projector would need greater lumens and greater resolution, and would probably cost closer to \$1,500. Further information and research will be needed before the project will come to a vote of the membership. Motion for the purchase of the digital projector was deferred to a later date.

Donations: There will be an auction of the Orion Starmax (Moskutow-Cassegrain) 127 mm telescope that was recently donated to the club. There is no tripod, but it does have the counter-weight and shaft from a German equatorial mount. It comes with a right angle prism eyepiece and two serviceable plossel eyepieces. There are instructions for the telescope and instructions for an Orion motor drive. The original price was about \$600. We will look into what a second hand scope of this type is going for on Astromart and/or Craig's List. The scope will be offered on auction to H.A.S. members. Should no one be interested or no one purchase it at the upset price, then the club will put it up for sale on Astromart.

The second donated scope; an Orion SkyQuest 6" dobsonian telescope which will be used as a rental. This scope has two eyepieces and a 2x Barlow.

Perseid Meteor Shower: About 30 people attended the H.A.S. Perseid Watch at Dillingham Airfield on August 11-12. The official count came to 356, and did not include erratics. The count began at 12:30 am and lasted until 4:30 am. Nice night, clear skies, and good people.

Star Party Report: **John Gallagher** reports that school star parties begins with Lehua Elementary (9/6); Palolo Elementary (9/13); Niu Valley Elementary (10/25)

Visitors: There were two sets of visitors at this month's meeting who joined the club.

Quick Contacts: The Board would like to commend **John Gallagher** for all the work he has put into initiating a chat group through the Night Sky Network. It appears to be

Hawaiian Astronomical Society

Event Calendar

List View		Past Events		< October 2013 >		Upcoming Events		Add/Log Event					
Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
29		30		7:30 PM Club Meeting 1		2		3		6:45 PM Mililani Uka SP 4		6:00 PM Public Star Party(D) 5	
										Sunset: 6:16 PM			
6		7		8		9		10		11		5:30 PM Public SP(G) InOMN 12	
												5:30 PM Public Star Party(K)	
										Sunset: 6:10 PM			
13		Columbus Day 14		15		16		17		18		19	
												Sunset: 6:04 PM	
20		21		22		23		24		6:30 PM Niu Valley MS Star Night 25		5:20 PM Club Star Party (D) 26	
												7:45 AM Lacey Veach Day	
										Sunset: 5:59 PM			
27		28		29		30		31		1		2	

<<Upcoming Star Parties>>

Public Party-Dillingham	Oct 05 (MacDonald)
Kahala/Ewa Party	Oct 12
Club Only-Dillingham	Oct 26 (Girard)

☆ ☆

Upcoming School Star Parties

☆ ☆

Fri.	10/04	Mililani Uka Elementary (Mililani)
Fri.	10/11	Niu Valley Middle (Honolulu)
Fri.	11/08	St Patrick School (Kaimuki area)

(Space Place continued from page 4)

The intruding matter approaches the center of the star, then rebounds and bounces outwards, creating a shockwave that eventually causes what we see as a core-collapse supernova, the most common type of supernova in the Universe! These occur only a few times a century in most galaxies, but because it's the most massive, hottest, shortest-lived stars that create these core-collapse supernovae, we can increase our odds of finding one by watching the most actively star-forming galaxies very closely. Want to maximize your chances of finding one for yourself? Here's how.

Pick a galaxy in the process of a major merger, and get to know it. Learn where the foreground stars are, where the apparent bright spots are, what its distinctive features are. If a supernova occurs, it will appear first as a barely perceptible bright spot that wasn't there before, and it will quickly brighten over a few nights. If you find what appears to be a "new star" in one of these galaxies and it checks out, report it immediately; you just might have discovered a new supernova!

This is one of the few cutting-edge astronomical discoveries well-suited to amateurs; Australian Robert Evans holds the all-time record with 42 (and counting) original supernova discoveries. If you ever find one for yourself, you'll have seen an exploding star whose light traveled millions of light-years across the Universe right to you, and you'll be the very first person who's ever seen it!

Read more about the evolution and ultimate fate of the stars in our universe: <http://science.nasa.gov/astrophysics/focus-areas/how-do-stars-form-and-evolve/>.

While you are out looking for supernovas, kids can have a blast finding constellations using the Space Place star finder: <http://spaceplace.nasa.gov/starfinder/>. ☆

.....
(Minutes continued from page 7)

quite a few steps for this to come about. It is felt that an emails to designated individuals seems the quickest and easiest course for those interested in getting together on short notice. We would like to keep the Night Sky Network available for information dispersal and put directions for members who want to join the Night Sky Network on our website.

Get Ready for the Holidays: *April Lew* informed the members that the 2014 Astronomy Magazine calendars will be available for sale again this year for \$6.50 each.

Speaker and Demonstration: H.A.S. member **John Sandoz** demonstrated the construction of a Sun Funnel, using a common oil funnel. John's demonstration followed his article in the August Astronews.

Planetarium: Once again, **Joanne Bogan** shared her knowledge of the night sky. We were taken on a journey through the skies of Hawaii and then through the magic of the Planetarium, we were taken south of the equator and looked at constellations in the southern skies. Joanne ended the night's show with the new Wayfinder's trailer created by the Bishop Museum.

Mahalo: As there was no further business, the meeting was adjourned at 9:00 p.m. Members enjoyed tasty refreshments supplied by **Susan Girard** and **April Lew**.

Respectfully Submitted,
Gretchen West
HAS Secretary



Treasurer's Report

by Jim MacDonald

HAS Financial Report for the month ending as of Sept. 15, 2013

Initial Balance:	\$4,307.07
<i>Receipts:</i>	
Donations	3.00
Dues Received	176.00
Telescope Fee	20.00
Total Income:	\$199.00
<i>Expenses:</i>	
Refreshments	22.86
Astronews	150.17
Magazine Subscriptions	66.95
Liability Insurance	320.00
Postage (Astronews)	8.63
Total Expenses:	\$568.61
Final Balance	\$3,937.46

The club gained seven new members this month. They are **Donald Andera, Donna Hanson, David Tasaka, Karen Renard, Ira and Anna Byerly and Pualeilani Pilai**. Thank you to **James Branchaud** for his donation of a telescope. Come see what the late summer - early fall skies have to offer!



HAS LOGO NOTICE:

Our HAS logo has been registered with the State of Hawaii as a Service Mark to prevent anyone else from legally using this image. Please respect our logo and use it accordingly and for club purposes only.

(NSN Hot continued from page 2)

e. Group Members Visible to Members of this Group? The club can allow any Group Member to see who the other members of that Group are. Otherwise, only Club Coordinators can see the members of the Group.

Once message groups are set up, members selected for the group must be sure they have selected the correct items in their Member Profile.

If you have any questions or for more information, please contact Club Coordinator, **John Gallagher**, Ph: 683-0118 (leave message).



John

The Astronews

Dillingham Public Star Party - Sept. 7, 2013

The March Dillingham Public Star party was pretty much in line with the last few The Sept Public Star Party was a wonderful success! We had clear skies for the most part and the crowd was quite large. There was a group of astronomy students with their teacher from Punahou and about a dozen club members with telescopes, so the sky was well covered.

Saturn and Venus dominated the western sky while a sliver of the Moon drifted toward the horizon. There were many first-timers there and they were quite impressed with their first glimpses through the scopes at these twilight sights. As the sky darkened, the Milky Way shown brightly overhead. However, there was a fair amount of moisture in the atmosphere resulting in less than crisp images of Saturn and the Moon. Views of Venus pretty much 'boiled' and the stars near the horizon twinkled madly offering a colorful view through the scopes!

The sky stayed clear throughout the evening, but most visitors left at 8:30pm. About half of the members left at 10:30pm and the rest of us stayed until midnight.



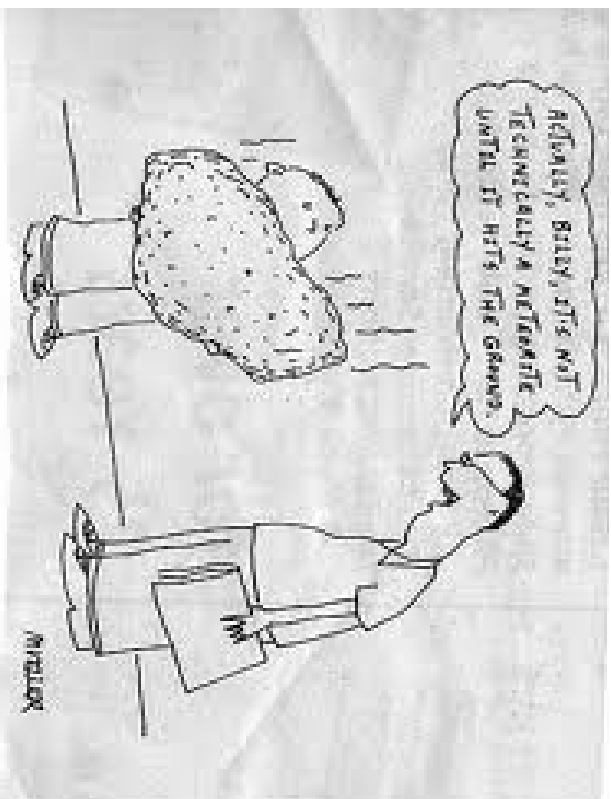
(Meteor Report continued from page 5)

MOON PHASES

New Moon		First Quarter		Full Moon		Last Quarter		
Oct 5		Oct 11		Oct 18		Oct 26		
Shower	Activity	Max Date	λ 2000	Radiant α	δ	V_{∞} km/s	r	ZHR
Draconids (DRA)	10/6 - 10/10	Oct 08	195.4°	262°	+54°	20	2.6	Var
So. Taurids (STA)*	9/10 - 11/20	Oct 10	197°	32°	+09°	27	2.3	5
δ -Aurigids (DAU)	10/10 - 10/18	Oct 11	198°	84°	+44°	64	3.0	2
ϵ -Geminids (EGE)	10/14 - 10/27	Oct 18	205°	102°	+27°	70	3.0	3
Orionids (ORI)	10/2 - 11/7	Oct 21	208°	95°	+16°	66	2.5	20*
Leo Minorids (LMI)	10/19 - 10/27	Oct 24	211°	162°	+37°	62	3.0	2

Keep your sense of humor as you sit in the dark looking up!
For more info or to send in your astro-humor contact:
Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com
Mike Morrow, PO Box 6692, Ocean View, HI 96737

Hawaiian Astronomical Society
P.O. Box 17671
Honolulu, HI 96817-0671



Who says science can't be funny? Astronomical Humor: On the lighter side of astronomy, *Tom Giguere* finds some amusing bits meteors and meteorites (no pun intended). See accompanying article and more funnies on page 5.

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