

The Shining Stars of HAS by John Gallagher

A new column will appear in the AS-TRONEWS to recognize those individual members that go the extra mile to fulfill one of the club's prime missions to provide outreach services to schools and other non-profit groups. Recognition of these individuals is long overdue for their commendable service on behalf of the club. Volunteering for our public star parties which occur on weekends is also an important commendable mission but it is those dedicated individuals who volunteer during the week for school star parties that should receive special recognition. The initial list will be posted in the ASTRONEWS recognizing individuals who have supported school star parties from 1 Jan 15 through 20 Apr 15. Henceforth, the period to be reported will be from the 21st of a month to the 20th of the following month. The list will show the volunteers name and if

(Continued on page 4)

Early Alert!

We will be having a potluck dinner prior to the June Club Meeting on Tuesday June 2. See Meeting Minutes for details. We have scheduled a speaker as well, Richard Wainscoat.

Inside this issue:

Club Information	2
President's Message	2
Observer's Notebook	3
Meeting Minutes	4
Event Calendar	5
Space Place	7
Stars of HAS	7
Meteor Log	8
Treasurer's Report	9

Upcoming Events:

- The next meeting is on Tuesday, May..5th at the Bishop Museum 7:30 PM.
- Bishop Museum's planetarium shows are every Saturday of the month at 8:00 PM www.bishopmuseum.org/calendar
- The next Board meeting is Sun., May 3 at 3:30 PM in POST building at UH.

President's Message May 2015

Happy birthday Hubble Space Telescope! It has been 25 years since launch, and few space missions have been so successful or popular with the public. For today's young people, Hubble has always been a part of their lives. Even those of us who are older may forget the troubled beginning HST experienced. A simple human error resulted in a mirror that was figured extremely accurately but every so slightly wrong. This was a huge embarrassment and public relations nightmare for NASA at the time. Fortunately, Hubble was designed to be serviced by astronauts from the Space Shuttle, and the addition of a corrective lens on the first servicing mission fixed the problem and enabled the fantastically productive years that have followed.

The idea of a space telescope was proposed in 1923 by Hermann Oberth, and Lyman Spitzer who published a paper in 1946 describing the advantages of such an instrument. Spitzer continued to advocate for the concept and in 1965 headed a committee to define the scientific objectives for a large space telescope.

HST was named after Edwin Hubble, the astronomer who showed that galaxies at increasing distances from the Milky Way tended to move away from us at a speed proportional to their distance. This ratio has been dubbed the Hubble Constant, and one of HST's prime goals was to refine its value. By observing Cepheid variable stars more accurately, HST reduced the errors in the value from about 50% to about 10%.

I will present a slide show prepared for the 25th anniversary at the May meet-

(Continued on page 6)

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The Astronews is the 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 e-mail. The deadline is the 15th of each month. We are not responsible for unsolicited artwork.

Planets Close To the Moon
Times are Hawaii Standard Time










- May 5, 08h, M 2.2° NNE of Saturn
(161° from sun in morning sky)
- May 12, 10h, M 3.3° NNW of Neptune
(72° from sun in morning sky)
- May 15, 02h, M 0.21° SSE of Uranus
(36° from sun in morning sky)
- May 18, 22h, M 5.7° S of Mercury
(15° from sun in evening sky)
- May 21, 07h, M 7.9° S of Venus
(45° from sun in evening sky)
- May 23 19h, M 5.0° SWS of Jupiter
(73° from sun in evening sky)

Mars is closer than 15° from the sun when near the moon in May.

Other Events of Interest
Times are Hawaii Standard Time

- May 3, 17:42h, Full Moon
- May 6, 19h, Mercury at greatest elongation
(21.2° east of the sun in evening sky.)
- May 17, 18.13h, New Moon
- May 22, 16h, Saturn at opposition
- May 23, 19h, Moon 1.8° SW of 3 Juno
(73° from sun in evening sky)
- May 30, 07h, Mercury at inferior conj. with sun
(Passes into morning sky)

Planets in May

<p>Mercury</p> <p> has the best evening appearance of the year, reaching maximum elongation on May 6</p>	<p>Venus</p> <p> shines brightly in the evening - about magnitude -4.2</p>	<p>Mars</p> <p> is too close to the sun to be observed in May</p>
<p>Jupiter</p> <p> shines brightly in the southwest after sunset.</p>	<p>Saturn</p> <p> reaches opposition this month, so is visible all night. Best observed near midnight.</p>	<p>Uranus</p> <p> is low in the east just before dawn. Will be better placed for viewing later in the year.</p>
<p>Neptune</p> <p> low in the east before sunrise.</p>	<p>Pluto (Dwarf Planet)</p> <p> is visible in the east after midnight. Will be better placed for viewing later in the year.</p>	<p>1-Ceres (Dwarf Planet)</p> <p> reaches opposition next month at magnitude +7.2.</p>

President Chris Peterson called the April 7, 2015 meeting of the Hawaiian Astronomical Society to order at 7:38 p.m. The meeting was held in Planetarium, on the grounds of the Bishop Museum, Honolulu, Hawaii. There were twenty-two members and one visitor in attendance.

Hawaii Space Lecture Series – This month’s lecture is scheduled for 7:30 p.m. Tuesday, April 28, 2015. Dr. Lionel Wilson, emeritus professor of Earth and Planetary Sciences at Lancaster University England, will speak on Volcanoes on the Moon: Where, When, and Why?. Regular lectures usually 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. Should you be interested in upcoming lectures or for information you can contact NASA PRPDC at 808-956-3132 or on the Web go to <http://www.higp.hawaii.edu/prpdc>.

Hawaii State Science and Engineering Fair 2015 - This year’s Hawaii State Science Fair took place March 23 through March 25. Chris Peterson, with the help of Jimbo Perry, participated as *special agency judges* to judge astronomy related Senior and Junior Research projects at this year’s competition. This year’s winners were, in Junior Research, Rachel Boursman and in Senior Research, Celeste Jonggeneland. Both students will receive a one-year membership in the Hawaiian Astronomy Club, and a subscription to one of two astronomical magazines. The winner of the Senior Research division also received \$50. We congratulate both winners on a job well done.

Lunar News – The recent partial lunar eclipse was viewed by a few of our members out at the Mona Farms in Makaha Valley. The group watched through cloudy skies but enjoyed the brief views all the same. We want to thank Mona Farms for providing a comfortable area for viewing.

Upcoming Pot Luck Supper – We would like to announce that H.A.S. will have another potluck get-together prior to the June 2015 meeting in the Hall of Discovery at the Bishop Museum. If you are interested in participating and bringing goodies, let Gretchen West to sign up your contribution. We will need someone to bring soft drinks or water, cups, plates and napkins, and ice,

(Continued on page 6)

(Continued from page 1) Stars of HAS by John Gallagher

they volunteered for more than one event during the period, the number of events will be shown in parenthesis after their name. If the event is cancelled before the event takes place, no credit will be given. If the event is cancelled after the volunteer arrives at the school, credit will then be given. See page 7 for the new column.

Hawaiian Astronomical Society Event Calendar

MAY

SUNDAY

CALENDAR YEAR / MONTH

FIRST DAY OF WEEK

May-15

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	01 7:15 PM HBA Star Party (Private)	02
 03 sunset 16:39	04	05 7:30 PM Club Meeting	06	07	08	09 6:45 PM Public Star Party (D) 8:00 PM Globe at Night
 10 8:00 PM Globe at Night sunset 16:44	11 8:00 PM Globe at Night	12 8:00 PM Globe at Night	13 8:00 PM Globe at Night	14 8:00 PM Globe at Night	15 8:00 PM Globe at Night	16 8:00 PM Globe at Night 6:45 PM Club Star Party (D) (Private)
 17 8:00 PM Globe at Night sunset 16:50	18 8:00 PM Globe at Night	19	20	21	22 7:15 PM Once Upon a Star (Private)	23
 24 sunset 16:55	25	26	27	28	29	30 6:45 PM Public Star Party(G) 6:45 PM Public Star Party(K) 6:00 PM Cub Scout
31 sunset 16:59	01	02	03	04	05	06

< < Upcoming Star Parties > >

Public Party-Dillingham May. 9 Peter Besenbruch
Public Party Geiger May 30
Public Party Kahala May 30

Upcoming School Star Parties

Fri	May 1, 2015	Hawaii Baptist Academy Middle School (Pauoa Area)
Fri	May 22, 2015	Hokulani Elementary School (Univ Hawaii Area)

President's Report (Continued from page 2)

ing. We will start out the night in Paki 1 and perhaps move into the planetarium later in the evening.

There has recently been a lot of political activity (mostly) by the Native Hawaiian community in opposition to the Thirty Meter Telescope. Activists have blocked the road leading to the summit of Mauna Kea to deny access to construction workers, and the work has been suspended for now. A petition in opposition to the telescope has garnered a large number of signatures. Now there is a petition in support of the TMT. If you would like to sign it, it's at <http://www.gopetition.com/petitions/wesupporttmt.html>. HAS is on record as supporting the TMT, and I have signed the petition. Supporters haven't been as vocal, but there are a many of us.

Chris Peterson

(Continued from page 4) Meeting Minutes

as well as the special goodies we all look forward to. Help us make the Summer Pot Luck a success.

Star Party Report – John Gallagher reported on the upcoming April star parties.

April 24 – Ala Wai Elementary School

May 1 – Hawaii Baptist Academy Middle School – The school is looking forward to hearing from one astronomer to answer student questions inside while two astronomers reveal the night sky to students, under the stars.

Our star party at Webling Elementary School was nicely received. Thank you to the participating astronomers. Without your help, our outreach to schools and public groups would not be possible.

Speaker - This month, H.A.S. was fortunate to host Dr. Paul H.I. Coleman, of the University of Hawaii, Manoa, Institute for Astronomy. Dr. Coleman received his Ph.D. from the University of Pittsburgh. His areas of expertise are large-scale structures of the Universe, quasars, the interstellar medium, galaxies and radio astronomy. Dr. Coleman's lecture was The Fractal Nature of the Universe. H.A.S. members were given a crash course in the not so randomness of fractal structures though out the universe. He introduced the membership to visual and mathematical examples occurring not only on our own planet but the structures that occur through out the universe. Dr. Coleman's hypothesis regarding fractals is a new perspective on our lives. Dr. Coleman fielded questions from inquisitive members.

Mahalo – As there was no further business, the meeting was adjourned at 9:33 p.m. Refreshments were served in the rotunda.

Respectfully Submitted,

Gretchen West

H.A.S. Secretary

The brilliant specks of light twinkling in the night sky, with more and more visible under darker skies and with larger telescope apertures, each have their own story to tell. In general, a star's color correlates very well with its mass and its total lifetime, with the bluest stars representing the hottest, most massive and *shortest-lived* stars in the universe. Even though they contain the most fuel overall, their cores achieve incredibly high temperatures, meaning they burn through their fuel the fastest, in only a few million years instead of roughly ten billion like our sun.

Because of this, it's only the youngest of all star clusters that contain the hottest, bluest stars, and so if we want to find the most massive stars in the universe, we have to look to the largest regions of space that are actively forming them right now. In our local group of galaxies, that region doesn't belong to the giants, the Milky Way or Andromeda, but to the Large Magellanic Cloud (LMC), a small, satellite galaxy (and fourth-largest in the local group) located 170,000 light years distant.

Despite containing only one percent of the mass of our galaxy, the LMC contains the Tarantula Nebula (30 Doradus), a star-forming nebula approximately 1,000 light years in size, or roughly seven percent of the galaxy itself. You'll have to be south of the Tropic of Cancer to observe it, but if you can locate it, its center contains the super star cluster NGC 2070, holding more than 500,000 unique stars, including many hundreds of spectacular, bright blue ones. With a maximum age of two million years, the stars in this cluster are some of the youngest and most massive ever found.

At the center of NGC 2070 is a very compact concentration of stars known as R136, which is responsible for most of the light illuminating the entire Tarantula Nebula. Consisting of no less than 72 O-class and Wolf-Rayet stars within just 20 arc seconds of one another, the most massive is R136a1, with 260 times the sun's mass and a luminosity that outshines us by a factor of *seven million*. Since the light has to travel 170,000 light years to reach us, it's quite possible that this star has already died in a spectacular supernova, and might not even exist any longer! The next time you get a good glimpse of the southern skies, look for the most massive star in the universe, and ponder that it might not even still be alive. See Photos on page 10.

Who Are the Shining Stars of HAS ?

This is a new column that recognizes and commends members of the club who go the extra mile to support school star parties thus fulfilling a prime mission of the club to provide outreach to the schools on the Wonders of the Night Sky. This initial report covers the period 1 Jan 15 through 20 Apr 15.

John Gallagher (4), Sapavith (ORT) Vanaprucks (4), Barry Peckham (2), Steve Chun, Tom Giguere, Susan Girard, Paul Lawler, Dyron Mack, Jimbo Perry, Chris Peterson, Charles Rykken, Mark Watanabe, and Andre Yanoviak

The moon will interfere with the peak of this month’s η -Aquariids (ETA) peak on May 6th. The duration of this shower is broad spanning the end of April through late May, so if you exercise patience it may be worth waiting until May 16 – 17 to see members of this shower. This coincides with the public star party at Dillingham, which is a good site from which to observe.

A beautiful picture of a bright fireball went viral after the photographer took the image. In case you missed it, I’ve reposted here along with the story.

(Continued on page 11)



John Auldair Macdonald/The Hebridean Explorer

First Quarter	Full Moon	Last Quarter	New Moon
May 25	May 4	May 11	May 18

Shower	Activity	Maximum		Radiant		V_{∞} km/s	r	ZHR
		Date	$\lambda \square$	α	δ			
η -Aquariids (ETA)	4/19→ 5/28	May 06	45.5°	338°	-01°	66	2.4	55
η - Lyrids (ELY)	5/03→ 5/14	May 08	48.0°	287°	+44°	43	3.0	3

What do you think about this months’ meteor picture. Geminid or?!? Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Treasurer's Report

by April Lew

HAS Financial Report March 16, 2015 to April 15, 2015			
Beginning Balance			2,667.11
Income:			
	Dues Received		82.00
Total Income			82.00
Expenses:			
	March Astronews printing & mailing	124.55	
	Science Fair Award	50.00	
	Sky & Tele. Science Fair mag sub	32.95	
	Astronomy Mag. sub	34.00	
Total Expenses			241.50
Ending Balance			2507.61

. We welcome two new members this month. They are **Calvin Oliveria** and **Celeste Jongeneelen**.

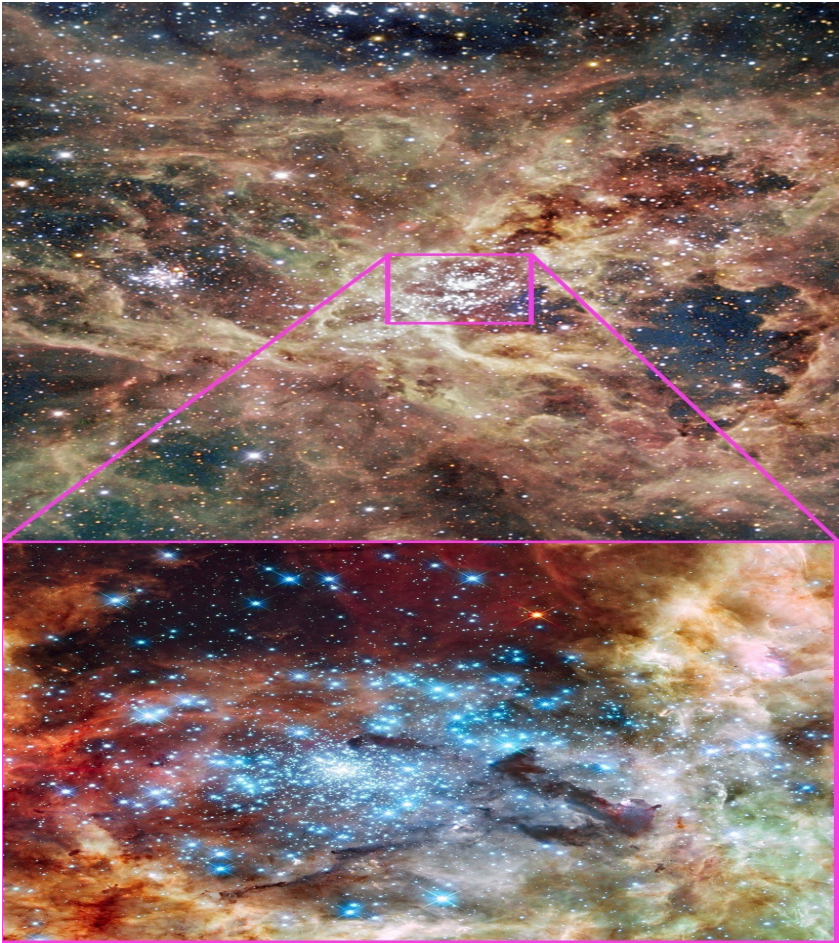
Many thanks to those renewing their membership (Peter Besenbruch, Gerald Miyasato, Charles Murray and Meghan Miner.

As a reminder, please check your membership anniversary date listed on the Astronews ad-dress label. Clear skies to all!

NOTICE!

HAS will publish a complete listing of Club members in the **June 2015** issue of the *Astronews*. This publication is required by Club by-laws, Article III, Section 2 Para C(e) and Article VIII, Section 1B. Unless notified otherwise, this list will include all member's names, addresses, and phone numbers. If you wish to have some or all of your data excluded, please notify the Club Treasurer, April Lew before **May 15, 2015**, at: stardustlounge@hotmail.com. Please be advised that this listing is intended for Club members' personal use only in contacting one another. It is not to be used for any commercial or so-

(Continued on page 11)



Images credit: ESO/IDA/Danish 1.5 m/R. Gendler, C. C. Thöne, C. Féron, and J.-E. Ovaldsen (L), of the giant star-forming Tarantula Nebula in the Large Magellanic Cloud; NASA, ESA, and E. Sabbi (ESA/STScI), with acknowledgment to R. O'Connell (University of Virginia) and the Wide Field Camera 3 Science Oversight Committee (R), of the central merging star cluster NGC 2070, containing the enormous R136a1 at the center.

(Continued from page 8) Meteor Log by Tom Giguere

It was a “beautiful night,” says Scotland-based tour guide John Alasdair Macdonald. So he went outside with his camera to snap some photographs of the stars. That’s when Macdonald, who runs the tour company The Hebridean Explorer, says he enjoyed a stroke of “sheer dumb luck,” and captured a stunning image of a meteor in the sky over Loch Ness, per The Independent. Macdonald, whose photograph went viral after he posted it on his company’s Facebook page, told the BBC that the image was a total “fluke.”

“I will never take a picture like that again,” McDonald, who lives in Drumnadrochit, located on the west shore of Loch Ness, told the news outlet. The image was captured on Sunday night during a meteor shower over Scotland. The Maryport Coastguard Rescue Team was reportedly deluged with phone calls that night from concerned citizens who feared that the flashes of light were distress “flares.”

don’t see Nessie in this photo, she may have been camera shy, but it is a great image and it’s fun to reverse engineer it and see what we can learn. We can see Orion on the right side of the picture. Orion straddles the equator thus will produce the longest star trails for a given time exposure. We don’t know the focal length of the camera lens, it appears to be a wide field lens. Given this information, I would guess the exposure to be 10-20 seconds. Some deep sky objects are visible. M42 in Orion is easily visible, M41 appears in Canis Major, and a couple of faint fuzzy’s appear in the upper left of the image (M44?). The date on the photographer’s facebook page is March 15th, but March doesn’t have any major meteor showers. The media reports include a link to other photos of the Geminid meteor shower in December, which seems to hint that this candidate may be of the same persuasion. Could be a Geminid, the angle doesn’t seem quite right though... this just shows how unscientific some news stories are. The focus is on the esthetic qualities and science is an after thought. A beautiful image yes, but we are still left to wonder about it’s origins...

(Continued from page 9) Notice! Publication of Memberlist

licitation purposes. With the exception of membership in the Astronomical League, HAS does not make this list available to, nor do we sell its contents to anyone for any purpose. Please respect our member’s right to privacy.

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Place cover
up this snudge
with some-
thing. A post-
age stamp is
suggested..



Credit: R. Sahai (JPL) et al., Hubble Heritage Team (ESA, NASA)

Planetary Nebula Mz3: The Ant Nebula

Image Credit: [R. Sahai \(JPL\)](#) et al., [Hubble Heritage Team](#), [ESA](#), [NASA](#)