



Finally!

Editor

At last... a night without clouds! The sky was a deep blue, with hardly a cloud, which boded well for our club's monthly star party. With high hopes, I cranked up the Herschel 400 list in SkyTools 2 and started printing.

This would be a perfect night for hunting faint fuzzies! Or at least that's what I said to myself as I drove in a virtually cloudless sky toward Dillingham Airfield last Saturday night. When I got to our observing site, I discovered the only spot on the island with clouds. ;o(But they didn't last long, and after setting up we amused ourselves by observing the fat crescent of Mercury and bidding adieu to Saturn (4 moons easily visible) and Mars.

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Upcoming Star Parties

Public Party	July 15	Dillingham
Club Party	July 22	Dillingham
Public Party	July 29	Kahala/Waikele
Club Party	Aug 19	Dillingham
Public Party	Aug 26	Dillingham
Public Party	Sep 2	Kahala/Waikele
Club Party	Sep 16	Dillingham

Upcoming Events:

- The next meeting is at 7:30 p.m. on Tuesday, July 11th at the Bishop Museum.
- Bishop Museum's next planetarium show with **Joanne Bogan** is on Friday, July 7th at 7:00.

President's Message

In about 5 to 7 billion years, the Sun will exhaust the hydrogen in its core. The core, now made of helium, will contract while no heat is being produced there. The contraction will generate new heat that allows hydrogen to continue fusing in a shell around the helium core. As more helium is produced by hydrogen fusion and added to the core, the core will eventually become hot enough to fuse helium into carbon. The Sun will become a red giant, expanding at least to the size of Mercury's orbit, perhaps even to engulf the Earth. A series of helium flashes will cause pulses in the Sun's size. When helium fusion ends, the Sun will shrink down to a white dwarf and gradually cool down over billions of years.

Long before the hydrogen is exhausted, however, the Sun will increase its temperature to the point that life cannot continue to exist on Earth as it does now. When the Sun was young, it was only about 75% as hot as it is now. In the next half billion to one billion years, it will become about 10% hotter. This will cause the temperature at the Earth's land surfaces to become too hot to support life. Eventually the oceans will evaporate, and Earth will be unable to support life. Now that's an inconvenient truth!

This assumes that Earth stays in its present orbit. It is, in theory, possible to increase the size of Earth's orbit by diverting asteroids into orbits that bring them close enough to give Earth a gentle gravitational tug every few centuries or so. This could carry our home planet outward as the Sun expands and extend its habitability for another few billion years.

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The Astronomer 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

- July 5, 12h, M 4.4° SSW of Jupiter
(115° from sun in evening sky)
- July 12, 19h, M 2.9° SSE of Neptune
(151° from sun in morning sky)
- July 14, 13h, M 0.38° SE of Uranus
(128° from sun in morning sky)
- July 22, 14h, M 5.6° N of Venus
(25° from sun in morning sky)
- July 27, 08h, M 0.97° NE of Mars
(29° from sun in evening sky)

Mercury and Saturn are closer than 15° from the sun when near the moon in July

Other Events of Interest

Times are Hawaii Standard Time

- July 1, 05h, 2 Pallas at opposition.
- July 3, 12h, Earth at aphelion (farthest from the sun in 2006). Earth-Sun distance 1.0167 a.u.
- July 10, 17:03h, Moon Full
- July 16, 21h, Mercury at inferior conjunction (passes into morning sky).
- July 22, 06h, Mars 0.64° NNE of Regulus
(30° from sun in evening sky)
- July 24, 18:31h, Moon New

Planets in July

<p> Mercury</p> <p>is visible low in the west below Saturn after sunset during the first week of July.</p>	<p> Venus</p> <p>rises about 2 hours before the sun in the morning sky at magnitude -3.90.</p>	<p> Mars</p> <p>low in the SW at dusk at a magnitude of 1.8, about as dim as it ever gets. Very close to Regulus on Jul 21&22.</p>
<p> Jupiter</p> <p>shines brightly at magnitude -2.2 in the southwest evening sky and doesn't set until after midnight.</p>	<p> Saturn</p> <p>starts the month visible low in the west at dusk, by the end of the month is too close to the sun to view.</p>	<p> Uranus</p> <p>visible after midnight in Aquarius. It will be better placed for viewing toward the end of the summer.</p>
<p> Neptune</p> <p>can be observed after midnight in Capricornus.</p>		<p> Pluto</p> <p>This is one of the best months to try to see this elusive planet. Try late in the eve. when it will be high in the southern sky.</p>

The June 6, 2006 general membership meeting of the Hawaiian Astronomical Society was called to order at 7:41 p.m. by club president Chris Peterson. The meeting was held in the Atherton Halau on the grounds of the Bishop Museum. There were twenty-six members and four visitors in attendance.

July Meeting Rescheduled - The regularly scheduled general membership meeting of the Hawaiian Astronomical Society will take place on Tuesday, July 11, 2006.

President Chris Peterson announced that the NASA Pacific Regional Planetary Data Center might yet have a speaker. There may be a speaker on June 20th, but you may wish to call later to get information.

Old Business

Club Bumper Stickers & Club Tee Shirts – We are awaiting the arrival of the new “Join Us Under the Stars” bumper stickers and the new “Summer Skies” H.A.S. tee shirt.

New Business

Bits & Pieces – As many have already observed, we have Mercury, Mars, Saturn, and Jupiter in the evening sky this month. These objects will draw even closer together around June 17th. Mercury is easily visible in the west in the early evening sky.

NASA has reported that the Voyager II has detected the outermost edge, called the “termination shock,” of our Solar System. It appears that the space probe may pass beyond this boundary sometime in the coming

year, based on factors such as solar wind and magnetic field.

A Native American stone carving or petroglyph in Arizona has been discovered that depicts the ancient explosion of a star in the constellation Lupus near Scorpius. The petroglyph depicts a supernova, which occurred in the spring of A.D. 1006.

Visitors – Three visitors joined us at this month’s meeting. Back with us after three year is former member, **Mike Jones**. **Stephanie Taba**, a teacher and budding enthusiast, joined us, as well as a Mr. **Tony Polegano**, who came to hear **Dr. Michael Chauvin’s** talk this evening.

Telescope Workshop/ Mentoring – We continue to urge newcomers and longtime club members who want to become more involved in learning the night skies, but who may not have a scope to come to our suburban and dark sky star parties and pair up with a veteran member with a scope. Come and “Join Us Under the Stars!!”

Scopes and Scope Rentals – The H.A.S. Board reports that the tripod for the Coronado Personal Solar Telescope was not as strong as hoped and has broken. We will be replacing the tripod with a stronger and more durable tripod.

All H.A.S. scopes, including the Coronado P.S.T., will rent at \$20 per month to club members. Contact Vice President Barry Peckham if interested.

Star Parties Report – Forrest Luke reports that as a result of the end of school, H.A.S has no pending school star parties. We did receive thoughtful

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Minor showers and a few early **Perseids** spice up July.

Sunday the 9th, the **Pegasids**. Radiant 22h 40m +15 deg. There are only about 3 meteors per hour for this minor shower and the Moon will make it about hopeless.

Friday the 28th, the **Piscis Austrinids**. Radiant 22h 44m -30 deg. Rates are less than 5 meteors per hour. July's new Moon creates splendid viewing circumstances for this shower. Low rates of faint, medium speed meteors coming from near the Southern Fish's mouth (Fomalhaut) can be anticipated. Best seen after midnight.

Friday the 28th, the **Southern Delta Aquarids**. Radiant 22h 36m -16 deg. Rates are a bit less than 20 an hour. Occasional bright meteors do happen with a few leaving trains.

Sunday the 30th, the **Alpha Capricornids**. Radiant 20h 28m -10 deg. Rates are generally less than 4 an hour. The meteors are slow, bright, and sometimes of fireball class.

If you are interested in observing meteors contact Tom Giguere on Oahu at 672-6677 or write to: Mike Morrow, P.O. Box 6692, Ocean View, Hawaii 96737

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Thank-you notes from the Third Graders at Ala Wai Elementary.

Bishop Museum is asking for help with a Girl Scout function on August 12th, from twilight until 9:00 p.m. This is also the evening of the Leonids. We will be asking for sign-ups at our August meeting.

Light Pollution Bill – The light pollution bill that was before the Hawaii State Senate this session was defeated. President Chris Peterson pointed out that although the bill was defeated this time, it would reemerge in the future with greater support. We will continue to support such as motion each time it is put forward to the legislature.

Telescope & Tripod Donation – a 4" refractor with tripod has been

donated to the club. This fixer-upper will be available for viewing before the meeting July 11 and will be auctioned later in the evening. If interested, contact Vice President Barry Peckham.

Planetarium Show July 7 – **Joanne Bogan** will be usurping time from Barry Peckham on Friday, July 7th. She will be presenting a "Sky Tonight" Planetarium show on "How the Solar System Works." Make reservations for the 7:00 p.m. show.

Guest Speaker for June- Dr. Michael Chauvin presented excerpts from his upcoming book, ***Astronomy and Astronomy Education in 19th Century Hawaii***. Dr. Chauvin traced the roots of astronomy instruction for the young Ali'i of Hawai'i at the

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HAS Financial Report as of June 15, 2006

Initial Balance:	\$4,451.40
Receipts:	
Donations	42.05
Dues Received	152.00
S&T Payments.....	131.80
Astronomy Payments.....	102.00
T-Shirt Sales	45.00
Telescope Fees	40.00
Total Income:.....	\$512.85
Expenses:	
Astronews.....	164.11
Magazine Subscriptions.....	389.22
T-Shirt Supply	243.23
Refreshments	14.53
Postage	4.64
Total Expenses:	\$815.73
Ending Balance:	\$4,148.52

This month the club welcomes seven new members. They are **Travis Le**; **Denis Yang**; **Stephanie Taba**; **Keri Matsumoto**, and **Bob, Patricia, and Jay St John-Payne**. A special thank you to **Mark Rezentes** and **Stephanie Taba** for their generous donations and aloha to all of those renewing their membership this month. Clear skies to all!

Minutes (Continued from page 5)

Royal School, in Honolulu. He stressed the instruction of "Astronomy, as Natural Philosophy," and spoke of the individuals who developed and taught these texts.

The meeting was adjourned at 9:02 p.m. and refreshments were served. A few members congregated at the Planetarium get an overview of the night sky from Joanne Bogan.

Respectfully submitted,
Gretchen West, HAS Secretary

Telescope Wanted

Travis Le is looking for a used 10" Dobsonian Telescope. If you know anyone interested in selling, please let Jim MacDonald know.

President (Continued from page 2)

In addition, Mars and Europa may become more hospitable to Earth life as the Sun heats up and expands.

Now if we can just avoid destroying our planet ourselves, we may be able to save it from the Sun for a good long time!

Chris

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Space Shuttle Discovery STS-121 lifts off from
Cape Canaveral on July 4th (AP photo)