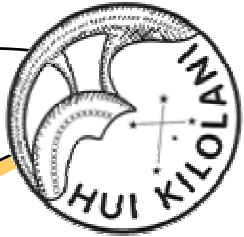


The Astronews



Volume 50, Issue 9

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September 2002

Mars Time

by Kevin S. Polk

Here's the story of my brief involvement with NASA's Mars Polar Lander mission, told in snippets from my personal email to friends and family.

November 9, 1999

Humans have made over 30 attempts to send probes to Mars, of which 9 succeeded. Now I'm on the latest team to give it a shot. NASA's Mars Polar Lander, en route to Mars, carries a Russian instrument called LIDAR, which measures atmospheric structure. Because it weighed less than expected, the Russians invited my employer, The Planetary Society (TPS), to attach its tiny Microphone experiment, like a

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Upcoming Star Parties

- | | | |
|---------------------|-------------------|--------------------|
| Club Party | Sept. 7 | Dillingham |
| Public Party | Sept. 14 | Kahala Park |
| Public Party | Sept. 28 | Dillingham |
| Club Party | October 5 | Dillingham |
| Public Party | October 12 | Kahala Park |
| Public Party | October 26 | Dillingham |

Upcoming Events:

- The next meeting is 7:30 on Sep. 3 at Bishop Museum
- **Sam Rhodes** next Planetarium show on Mon. Sep. 2nd. Hanauma Bay show will be on Sep. 9th. Gates will close at 7:30pm.

President's Message

by Gretchen West

As we all lay on our backs, faces skyward, in a parking lot in the middle of the night waiting for another meteor to streak across the ink black sky, clouds appeared like phantoms to blanket the midnight sky and obliterate any view we might have had. "Tell me again, why we're here?" you'd hear from time to time. I was thinking the same thing, feeling the gravel dig into the hands behind my head. And then, the clouds would dissipate in a portion of the sky and a finger of iridescent blue light would bring forth "Ahh," "Ooh" (me too).

Yep! It was that time of the year again, the Perseid Meteor Showers. Ok, so they weren't exactly stellar but they elicit the same response, time after time. "Wow!," "How Cool!," "That was Awesome!" It certainly was. "Ooh!" "Ahh!" Clouds or no, more people started looking up and appreciating the night sky. We saw a few more people with a new perspective that night. They'll start looking up more to see the carpet of stars that are so abundant in our night skies.

I was glad that I ended up out under the sky that Tuesday morning, despite the clouds and the crowds and the inevitability of a morning that would drag due to my midnight excess. But to people like Sam Rhodes, and Mike Shannahan who worked so tirelessly to create an experience for the general public -Thank you! Thank you also, to the all the volunteers who got there early and directed traffic and choreographed parking, and to the astronomers who brought scopes and discussed the skies with the public.

We had another positive astronomical event, for the Bishop Museum and for us, the Hawaiian Astronomical Society. *Gretchen*

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Planets Close to the Moon

Times are Hawaii Standard Time

- Sept 1, 07h, M 2.5° N of Saturn (71° from sun in morning sky)
 - Sept 4, 05h, M 3.6° NNE of Jupiter (36° from sun in Morning sky)
 - Sept 8, 13 h, M 7.8° NNE of Mercury (26° from sun in evening sky)
 - Sept 9, 21h, M 7.3° NNE of Venus (44° from sun in evening sky)
 - Sept 17, 01h, M 4.21° SSE of Neptune (134° from sun in evening sky)
 - Sept 18, 11h, M 4.0° SSE of Uranus (150° from sun in evening sky)
 - Sept 28, 16h, M 2.9° N of Saturn (97° from sun in morning sky)
- Mars is closer than 15° from the sun when near the moon in September.

Other Events of Interest

Times are Hawaii Standard Time

- Sept 1, 00h, Mercury at greatest elongation (27.2° east of the sun)
- Sept 4, 06 h, Jupter 1.2° SSW of center of Beehive Cluster (33° from sun in morning sky)
- Sept 6, 17:10h, New Moon
- Sept 21, 03:59h, Full Moon
- Sept 22, 18:56h, Autumnal Equinox (Sun crosses equator into southern hemisphere)
- Sept 27, 10h, Mercury at Inferior Conjunction (Passes into morning sky)
- Sept 29, 16h, Venus Brightest, Magnitude -4.6

The Planets in September

♿ Mercury	♀ Venus	♂ Mars
Mercury is visible in the evening sky early in the month, reaching greatest elongation on Sept 1.	Venus dominates the western sky after sunset, reaching its brightest (Mag -4.6) on Sept 29.	Mars is still too close to the sun to be observed in September..
♃ Jupiter	♄ Saturn	♅ Uranus
Jupiter rises 1-2 hours before the sun in Sept and is visible low in the east before dawn.	Saturn is visible in the early morning sky, rising 4-5 hours before the sun.	Uranus is well placed for viewing this month, near the meridian about 10:00 pm. Mag +5.7
♆ Neptune	♇ Pluto	
Neptune is also well placed for viewing this month, near the meridian at 9:00 pm.	Pluto is in the evening sky in Ophiuchus but is very faint at mag. +13.8.	

Star Party Scopes Needed

The Sept. 14 Kahala Star Party is going to have quite a few people from St. Patrick's school. The science teacher is passing out invites to about 60 students. Figuring the students will bring at least one parent and maybe other sibling, we want to be sure we have enough scopes.

The \$3.50 Eyepiece

by Ron Paul Smith

As an optical (laser) technician by trade and an optical innovator by inclination, I just couldn't resist buying Simmons 8x21mm mini binoculars when they went on sale for about \$7 at Sports Authority.

I immediately removed the right side optical tube assembly, due to its diopter/eyepiece focus, intending to use the OTA as a direct viewfinder magnifier for my 35mm camera. This would be highly useful for astrophotography, by acting as a Keplerian type telescope to magnify lunar planetary and stellar views. Indeed, it worked well for that purpose, but I decided to put it to other use: I cut the tube in half, saving the objective lens unit. I then placed the eyepiece half into a 1.25" eyepiece extension barrel (available from Orion and other suppliers of astronomy products).

What I now possessed was a 9mm (approx.) correct-image/erector eyepiece with its built in roof prism and

dioptric focusing eyepiece. It is terrific as a daytime terrestrial viewing eyepiece, and it only cost about \$3.50. It does make me wonder why no commercial eyepiece manufacturer makes an erector eyepiece. But then if Nagler made one, it might cost around \$350.00!

Oh, you were wondering about the rest of the binocular components? I utilized the 21mm objective to make another Keplerian telescope, using my 1.25" star diagonal and another eyepiece extender, and my 7mm-22mm zoom eyepiece. As a camera viewfinder magnifier, it provides huge, bright and gorgeous camera viewfinder images. A commercial unit made by B&K for Olympus and Nikon cameras costs \$240.

The remaining left side monocular with still operating focusing bridge was given away as a gift. You too can have fun with optics. Try it!

Minutes

by Chris Trusty

Due to an oversight with the reservations department at Bishop Museum, the Halau was not available. The meeting was held in the conference room.

President, Gretchen West, called the meeting to order at 7:35 pm and welcomed visitors. Gretchen presented **Mel and Clare Levin** with a certificate for completing the list of Messier objects.

Forrest Luke has volunteered to be the school star party coordinator. If anyone is contacted by a school for a star party let Forrest know. The coordinator position is to keep track of the star parties and make sure there is

there is someone to take care of that school. The coordinator does not personally have to be at each star party. Forrest already has several school parties on the calendar for Spring 2003. Please let him know if you would like to help out.

Barry talked about the format of our programs. It is designed to meet the needs and interests of the membership. If there is a topic you would like to share, please volunteer. If there is a subject you would like someone to speak about please let one of the officers know.

Jim DeLuze gave a talk on the

(Continued on page 9)



On January 9, 1949 an article appeared in the Honolulu Advertiser with the headline “Little Chance in TH (Territory of Hawaii) For Scientific Star Study.” It started “Is your hobby hitched to the stars? If so, unless you have your own telescope there is little opportunity in Honolulu to make observations. In fact, there is no actively functioning astronomical observatory in the Pacific, between California, on the one side, and Australia, the Philippines, and Japan, on the other.”

The article said that “UH owns an

observatory in Kaimuki housing a 6-inch refracting telescope which belongs to Punahou School, a gift from Judge Lorrin Andrews in 1886...But the University is without funds to make necessary repairs or keep it open for community use.” It adds, “Punahou owns another telescope—a 16 inch reflecting type. The mirror was the gift of W. O. Peterson and the mounting and electrical mechanism were completed in 1939 after three years’ work by Wilbert F. Koehler, then a teacher of science at Punahou.

(Continued on page 8)

Meteor Log—September 2002

by Mike Morrow

This month probably has the years best sporadic rates from northerly sites and a few mysterious minor showers.

Sunday the 1st, the Alpha Aurigids. Radiant 05h36m+42 degrees. This shower runs 4 to 7 meteors an hour. The best time to look is after midnight when the last quarter Moon is also up. On rare occasions the rates have been 15 to 20 an hour (1935 and 1986).

Sunday the 8th, the Delta Aurigids. Radiant 04h00m+47 degrees. Best to watch after 11 PM local time, when the Moon will not be in the way. The shower is really a weak

drizzle with 3 or less per hour. Shower members are normally swift and faint. Brighter ones may leave persistent trains.

That is about it as the other showers for the month. There are only two other showers and one is Mooned out while the other is a radio shower.

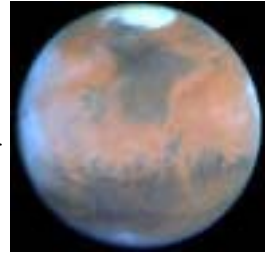
If you are interested in observing Meteors contact Tom Giguere on Oahu at 672-6677

or write to: Mike Morrow, Meteor Group Hawaii, P.O. Box 6692, Ocean View, HI 96737
<halehoku@yahoo.com>

Mats Time (Continued from page 1)

barnacle, to its side. My job? Command the Microphone and decode data from it for half to two-thirds of the 90-day mission, starting December 3rd, landing day.

Last week at MVACS (UCLA's "mission control" for the mission), I traced the wires from our computers and two others into an adjacent cubicle where they ended in the same \$7, 15-amp power strip. It was hot to the touch. After re-wiring, I walked into my first science meeting as our experiment rep and was immediately required to input our final sequence for the first day. Total blindside. I just hope we'll be ready by landing.



November 12

Did you catch the official report on the loss of the Mars Climate Orbiter today? I was struck by JPL Director Ed Stone's comment that it and Mars Polar Lander are "new school" space missions. Unlike NASA's traditional, decade-long efforts, these missions go from paper to orbit in 3 years at 1/20th the cost.

Teams are smaller, but public and academic community involvement is broader. The science has proven more innovative.

NASA's "Better, Faster, Cheaper" policy was heretical a decade ago. Now the pressure's on to take it farther. It's a messy, chaotic time. Equipment disappears and reappears. Ethernet cables and wireless modems dart into our laptops at every meeting. Email and cell phone messages pour in around the clock. Constellations of web pages spring out of nowhere, pull more eyeballs than major TV networks for a week, then vanish. Configurations change. Opportunities open and close like gaps in rush-hour traffic. Under sudden pressure, I'm ashamed to find myself giving hearsay data, and rush to correct it with actuals.

When news reporters asked Ed Stone to describe the mood at mission control, he replied, "focused."

November 15

I was squinting under the stage lights alongside my boss Lou and Microphone PI Janet Luhman. Camera crews from CNN, NBC, Newsweek, Discovery News, and local stations were plugging into the PA system's "mult box" and setting their sound levels. I was the "sound tech" from our end. Resting on the table in front of me in place of a microphone were a laptop computer and an oscilloscope hooked to a breadboard prototype of the Mars Mic.

Luhman had stage fright. Her lips and fingers had been trembling nonstop all morning. It rubbed off on the rest of us, and we got off to a restrained start. The newscasters seemed politely relaxed; bored. Questions came straight out of our backgrounder. When Luhman spoke, she was clear and engaging. Then Lou had me turn on the oscilloscope. I prompted a reporter to let me know when it warmed up and showed a signal. When it did, Lou commented that our voices should be visible as waveforms. Slight nods. So I clapped loudly. That got a chuckle, and more squiggles on the 'scope.' Lou took the next question.

It was a request. For a sound recorded from the Mars Microphone, like maybe the robotic arm. I piped in that I had it right there on the laptop. Nods all around. Yes, Kevin. Play it! So I did; a startlingly loud blast of sound

from the loudspeakers. "Wanna hear it again?" I asked. Laughter. Another blast, longer this time, with a voice in the background going "cool!" Smiles all around. What else do you have? they asked. "How about Bill Nye's Guide to the Sounds of Earth and Mars?" Play it! I did. Bill Nye's a stitch, ad-libbing the sounds of rocks tumbling, spacecraft parts moving, etc. "Wanna hear what he would sound like on Mars?" Yes, Play it! Muffled, deep guttural version of the same routine. How does that work? Can you do that to my voice? "Sure, just see me after this session."

The party was on: a feeding frenzy of break-out interviews, sound bytes shifted down seven semitones in pitch, and newshounds snapping photos of the full-scale Lander mockup, the LIDAR, the microphone and nerds galore.

November 16

No one's seen us on the news yet, but phones were ringing off the hook today at TPS. I was trying to wrap up a project involving labels on CD-ROMs meant to travel to Mars. When I tried to sneak past our media liaison, she nabbed me for live interviews with BBC and Associated Press radio and local newspapers. Off, then, to UCLA, to the relative calm of a mission control built around the periphery of a Tokamac fusion reactor.

Tomorrow we begin the Operational Readiness Test (ORT for short). We'll be simulating the first five sols (Martian days) of spacecraft operations, working late into the night to translate raw LIDAR data into sounds and send them out on the Internet. I'll be on my own at UCLA after Thursday and the test ends Sunday.

I may be crashing on sofas and spare beds in Westwood and Santa Monica for the next few nights, so it may be a while before you hear from me.

November 22

The ORT was chaos, as expected. By Wednesday Noon, the first downlink was coming up fast and JPL staff borrowed from the Mars '01 Surveyor and Galileo programs were making the rounds to be sure everyone had DMD running. DM-what? Even the borrowed '01-er looked a mite unsure: "Downlink Monitoring Display...?" I was alone there (other team cubicles were full), and my computer was balking. But when I prairie-dogged (popped my head up to look into adjoining cubicles), I saw others struggling with DMD, too.

The simulated Lander landed. Telemetry started flowing. The Pit Boss requested everyone's Downlink Report. DMD was running at last, but LIDAR wasn't getting any data. Ops wanted to know what channels to monitor for my data, but the telemetry dictionary said it was non-channelized. The Russians, who ran the LIDAR, will sort it all out when they arrive on the 27th.

Greg, the guy who built the microphone, arrived mid-afternoon. After five hours of testing, LIDAR still wasn't on. Was our sequence broken? I took it to the Pit Boss, who sounded the alarm. Ten minutes later we were phoning Denver, waking up the most competent Lockheed-Martin (LMA) engineer we knew. He was barely coherent with fatigue. MVACS was starting to ask whether LMA was running the right test bed?

To be continued next month...

HAS History (Continued from page 5)

This instrument is now boxed in ‘mothballs’ on a corner of Alexander Field.”

The article concluded with the following, “With the changing island population, an informal group is interested in a census of how many residents today have “stargazing” proclivities which might lead to an amateur astronomers organization and possible use of available telescopes under a responsible committee. If you are one of these, please address a post card to Star Gazer, P.O. Box 2817, Honolulu 3, and give your name, address, telephone number, and occupation.”

Enough people responded to the invitation (we still have the postcards and letters in the HAS archives) that it was decided to organize an astronomy club. It was called “The Hawaii Astronomical Society” and Bob Terry was elected as the first president. We have very little information about the first few years of the club’s existence. No newsletter was published and no regular minutes have been preserved. However, from talks with Bob Terry and fragmentary information in the archives it is clear that the club was quite active for several years. Bob remained president through 1953, then

David M. Dunn (the architect who designed the planetarium) became president in 1954-1955. Monthly meetings were held the 3rd Tuesday of each month at McKinley High School, and special star parties were held for the public. For example, one public announcement read “The Hawaii Astronomical Society promises a real treat to persons interested in Astronomy. Next Sunday and Monday evenings, June 27 and 28 (1954) its members plan to set up a half dozen telescopes on the Diamond Head side of Kapiolani Park and, weather permitting, show all comers the bright planet Mars, now at its closest approach to earth, and probably also the planet Saturn and other objects of interest in the heavens.” A membership directory from that era lists 20-25 members.

President Dunn left the Islands in 1955, along with a number of the other members. Bob Terry recalled “There were only a few of us left” and although they continued with occasional meetings and activities, the club languished until early in 1957. The “rebirth” of the club in 1957 with a slightly different name “The Hawaiian Astronomical Society” will be described next month.

The Green Hornet

Editor

On August 3, I was headed to the club star party. As I drove into Dillingham, I noticed that not only was it partly cloudy, but also somewhat hazy. The sky had a washed out look, the sunset glow was not red, but rather pink and diffuse. “Not a good night,” I thought.

There were several members al-

ready there. **Walter Tokushige** had set up his equipment next to **Warren Arakaki** to do some double and variable star observing.

Evening continued, darkening toward night. A myriad of insects buzzed and chirped. Mosquitoes began to bite. On some summer nights at

(Continued on page 9)

Green Hornet (Continued from page 8)
Dillingham they can be a real problem, on others they are strangely absent. The stars attempted to pierce the mid-summer haze.

Rather than trying to concentrate on deep sky I became interested in Warren's 10" Schmidt Cassegrain scope, which he had masked off-axis so that it was roughly the equivalent of a 90mm objective, but totally removing the central obstruction.

Warren had the scope pointed toward Antares in Scorpius, and announced that he was seeing the companion. Now I have tried to see this alleged companion for a couple of years and have never succeeded. Always the bright orange disk of Antares' light blots out any hope of seeing the faint green companion. Nevertheless it seemed an interesting

experiment Warren upped the power to about 200x. This time when I looked I noticed that Antares' Airy disk was tiny, with two small, distinct diffraction rings. As I studied it I realized that the "seeing" (the stillness of the atmosphere) was very good even though the transparency was poor due to haze. At times the seeing settled down even more and superimposed on that second tiny, orange ring was a small green speck. Antares' companion!

The companion is 3 arcseconds from Antares and is listed as magnitude 6.5. This seems like it should be an easy target, however, because Antares is first magnitude and 150 times brighter, it is somewhat like trying to see a firefly next to a floodlight!

Minutes (Continued from page 4)
book he had won as a previous door prize. **Parallax: The Race to Measure the Cosmos** by Alan Hirshfeld is a book published for lay people about the history of astronomy and early attempts to measure parallax.

By request from several members Barry talked about how to clean the mirror of a Dobsonian type telescope. He noted there are several schools of thought about mirror cleaning, but after a lot of research and practical experience he has a way that is satisfactory to many.

Mike Shanahan announced Bishop Museum's sponsored event at Hanauma Bay for the Perseid meteor shower Aug 11 & 12. They will have the parking lot Sunday and Monday nights for viewing. Mike also asked for volunteers to bring scopes to the Japanese Cultural Center for their star

festival on Sunday, Aug 11.

Paul Lawler talked about the "Miraculous Maximum of Mira." Mira is found in the constellation Cetus and is usually a magnitude 8.4. Every 11 months it shines at a magnitude of 2.4, which is 250 times brighter than its normal magnitude. Watch for Mira around 2am because it won't be visible like this again until 2007.

Barry held the door prize drawing. **Ralph Hare** won the door prize. **Tom Piper, Myra Vega, John Galager, Harry Zisko and Kim DeLoose** will volunteer to present something at a future meeting.

Meeting recessed at 9:55pm for refreshments and to rent telescopes. Reconvened in the Planetarium to learn where Mira is located along with various other late summer and early fall objects. Meeting adjourned at 10:40 pm.

Treasurer's Report

by Jim MacDonald

HAS Financial Report as of July 15, 2002

Initial Balance:	\$5,797.20
Receipts:	
Dues Received.....	70.00
S&T Payment.....	59.90
T-Shirt Sales.....	120.00
Total Income:	\$249.90
Expenses:	
Astronews	175.90
Magazine Subscription Payment	29.95
Refreshments.....	9.00
Excise Tax (T-shirt Sales)	12.14
Club Logo Registration	50.00
Total Expenses:	\$276.99
Final Balance.....	\$5,770.11

Since last month, we have had two new members join HAS. They are **Edward J. Tauro** and **Karla Kasdan**. Welcome to the club!

Clear skies to the many members renewing their membership this month!

Special Congratulations to Glenn Nanamori for being the only one to find the asteroid 2002NY₄₀ at the Kahala Star Party on August 17th as it passed through the constellation Hercules! Despite the intermittent clouds, Glenn was able to find it again each time the sky cleared. The mag. 9.5 asteroid's motion was most obvious when it passed near a star.

Star Lore — γ Draconis

Editor

Also called *Eltanin* the relatively unremarkable Gamma Draconis has a famous place in stellar history for one important reason. It is the "Hokulea" of Greenwich (and London), in other words, the brightest star which passes through the zenith at 51.5° N. Latitude. This made it a perfect target for the first attempts to measure stellar parallax to determine the distance to the stars.

upright at arms length (if other people are around be selective about which finger you use). Now close your left eye and observe the position of your finger relative to some background object. Now close your right eye (open the left one), and again observe the position of your finger relative to the same background object. It will appear to have jumped a few inches to the right. Since we can measure the distance between your eyes, by measuring the distance your finger appears to

Parallax is best explained by a simple experiment. Hold your finger

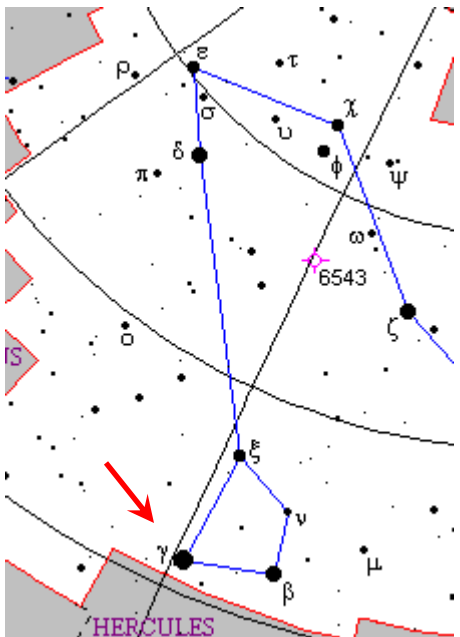
Star Lore (Continued from page 10)

have jumped (or parallax) we can easily determine the distance to the background object.

The first attempts to measure the parallax of γ Draconis were by British astronomer (and future Astronomer Royal), Rev. James Bradley. In 1728, Bradley, in the search for parallax, discovered the aberration of light, due to Earth's motion and the finite velocity of light, from observations of this star.

To this day at the Royal Observatory in Greenwich, off a small passage near the transit room, on the left-hand side, there is a little room of a most curious shape, the *reflex zenith room*. Here is fixed a telescope pointing straight upwards, the eye-piece being fixed by the side of the object-glass. The light from a star--the star γ Draconis--which passes exactly over the zenith of Greenwich, enters the object-glass, passes downwards to a basin of mercury, and is reflected upwards from the surface of the mercury to a little prism placed over the center of the object-glass, from which it is reflected again into the eye-piece.

By means of this telescope the distance of the star γ Draconis from the zenith could be measured very exactly, and, consequently, the changes in the apparent position of the star due to aberration, parallax, and other causes could be very exactly followed, and the corrections to be




γ Draconis M2.2 (the brightest star in Draco the dragon) seen here at left in the dragon's "head."

applied on account of these causes precisely determined.

The name Eltanin comes from Arabic and means "The Snake" or "The Dragon." According to R.H. Allen, several temples in ancient Egypt have been oriented toward it, including one in Thebes, the "city of the Dragon."

This star is a red giant (its color best indicated by the color index, B-V, of 1.5) at distance 100 light years. Therefore, its absolute magnitude is about -0.4 (or up to -0.8), corresponding to a luminosity roughly 100 times that of our sun.

For Sale Garmin eTrex Legend GPS. Like new condition. Contains full basemap of North and South America +8mb. Updated with latest software, and pre-loaded with Hawaii Metroguide (or any other U.S. guide of your choice). \$195. Paul 395-8121 <paul@lawler.net>



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