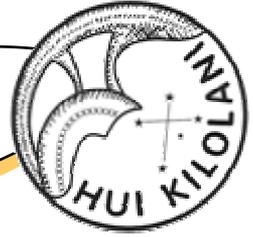


The Astronews



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Observing the Moons of Mars

by Walter Tokushige

Deimos and Phobos, the tiny moons of Mars, are elusive objects because they are so much fainter than Mars. During the close approach of Mars this August, Phobos reached about magnitude 10.5, while Deimos reached about magnitude 11.5. Although objects that are between 10th and 12th magnitudes should normally be easy to see in commonly-used amateur telescopes, the closeness of these moons to brilliant Mars makes observation extremely difficult. Phobos never gets more than about one Mars diameter away from the red planet at greatest elongation. Deimos, which is fainter than Phobos is actually easier to see,

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Upcoming Star Parties

Public Party	Nov 1	Kahala Park
Public Party	Nov 15	Dillingham
Club Party	Nov 22	Dillingham
Public Party	Nov 29	Kahala Park
Public Party	Dec 13	Dillingham
Club Party	Dec 20	Dillingham

Upcoming Events:

- The next meeting is at 7:30 p.m. on Nov. 4th at the Bishop Museum.
- **Sam Rhoads** next Planetarium show on Mon. Nov. 3rd.

President's Message

The Leonids will arrive in mid-November, as always, but this year's meteor shower is a little unusual. There will be two streams separated by about a week. Unfortunately, Hawaii will not be well positioned for one, and the other will be hampered by the Moon.

I'm always looking for analogies to explain astronomical phenomena in easily understandable terms. One way to think about meteor showers is to imagine Earth traveling through a gigantic flow coming from an old showerhead that's partially clogged and lets only a few streams through. Each stream is the result of the passage of the comet responsible for that meteor shower. In the case of the Leonids, that's comet Tempel-Tuttle. Each passage adds a new stream.

As time passes, changes in the positions of Jupiter and other planets alter the gravitational field through which the comet and Earth pass, and each takes a slightly different path on each orbit. Over time, the older debris streams from the comet also change, spreading out and becoming more diffuse.

When Earth passes through the part of its orbit that crosses the streams of cometary debris, there are several possibilities. It can plow right through the middle of a dense stream, and we can have the privilege of witnessing a meteor storm. Earth might also avoid crossing through the densest part of any particular stream, and we get an ordinary year of increased meteor activity. Sometimes, Earth can hit more than one stream.

That is what is happening this year. However, while it's not unusual to encounter two or more streams, the unusual aspect of this year's passage is that the streams we will cross are separated by almost a week. Think of a partially blocked hole in the showerhead through which the water squirts out at an angle. We pass through that stream first, on the morning of November 13th. The Moon will be waning gibbous and right in the way. When we pass through the next stream it will be the night of November 18th. By the morning of the 19th, when we are in position to see the meteors, Earth will be past the densest part of that

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Observer's Notebook - November, 2003

Planets Close to the Moon

Times are Hawaii Standard Time

- Nov 2, 08h, M 4.5° SSE of Uranus
(109° from sun in evening sky)
- Nov 3, 01h, M 2.8° SSE of Mars
(118° from sun in evening sky)
- Nov 13, 10h, M 4.9° N of Saturn
(128° from sun in morning sky)
- Nov 18, 09h, M 3.8° NNE of Jupiter
(70° from sun in morning sky)
- Nov 24, 17h, M 0.37° SW of Mercury
(17° from sun in evening sky)
- Nov 25, 08h, M 2.0° S of Venus
(25° from sun in evening sky)
- Nov 28, 06h, M 5.2° SSE of Neptune
(65° from sun in evening sky)

- Nov 29, 15h, M 5.2° SSE of Uranus
(82° from sun in evening sky)

Other Events of Interest

Times are Hawaii Standard Time

- Nov 8, 15:14h, Full Moon
(Total eclipse of Moon visible in N&S America)
- Nov 14, 10h, M 1.2° NNE of asteroid 1 Ceres
(117° from sun in morning sky)
- Nov 18 Leonid meteors
- Nov 23, 12:59h, New Moon
(Total eclipse of Sun visible in Antarctica)
- Nov 23, 13h, Moon at perigee
(Only 0.4 hours after new moon, very high tides)

The Planets in November

♿ Mercury	♀ Venus	♂ Mars
Mercury is low in the evening sky the last week of Nov. Very close to the moon on Nov 24.	Venus is visible in the evening sky, but sets only an hour or so after sunset. Mag, -3.9.	Mars is still negative magnitude, but is only about 13" in diameter and is fading fast.
♃ Jupiter	♄ Saturn	♅ Uranus
Jupiter is visible in the pre-dawn hours, rising about 1:00 am. Mag, -1.9, Diameter, 35".	Saturn is visible by late evening and is brightening. Mag, -0.2, Diameter, 20".	Uranus is near Mars and is well placed for viewing this month in the early evening.
♆ Neptune	♇ Pluto	
Neptune is near Mars and Uranus and can be viewed in the early evening in October.	Pluto is too close to the sun to be viewed in November.	

(Continued from page 2)
stream, but we may still see a few meteors without too much interference from the waning crescent Moon.

Don't forget, HAS elections are coming up. If the club has been of benefit to you, please think about contributing by running for an office.

Chris

The October 2, 2003 meeting was called to order by President Chris Peterson at 7:30 p.m in the Atherton Halau, Bishop Museum with 25 members and several visitors in attendance. Chris greeted the membership and noted that this past Saturday (October 4) was 46th anniversary of the launch of Sputnik.

Lacey Veach day will be on November 15th. A sign-up sheet was passed around.

Forrest Luke gave a report on school star parties. Fri. Oct. 24 will be Niu Valley Intermediate.

There will be a SOEST Open House on October 10 & 11.

Michael Chauvin has written a book called *Hokuloa: The British 1874 Transit of Venus Expedition to Hawai'i*, which will be published by Bishop Muesum Press in Dec. 2003. Copies will be made available to HAS members at a 20% discount.

Visitors were introduced, including a large contingent of students from Maryknoll High School who came for extra credit in their astronomy class.

Jay Wrathall gave a presentation on astrophotography from the standpoint of a beginner just starting out. He began with a discussion of digital vs. film cameras, and explained that the best way to start in astrophotography is with an old style 35mm film camera with a "bulb" setting and a locking shutter release cable.

Jay explained the various methods of photographing the stars, including short, medium and long exposures, and showed examples of each type.

He also explained the various

methods of attaching a camera to a telescope including mounting the camera directly on the telescope for wide field (e.g. constellation) photography or mounting the camera at the eyepiece holder using a T-adaptor, and also eyepiece projection.

He showed us comparisons of photographs taken by digital cameras and also film camera.

Jim DeLuze showed several images of Mars which he had taken using the "eyepiece projection" method.

Ron Paul Smith showed photos he has taken through his Sony Cybershot digital camera (see article in Oct. 2003 Astronews).

We were then treated to a fascinating bit of HAS history, as Bill Pelzer the originator of our current HAS logo over 28 years ago, recounted the history and meaning of the logo. The logo was officially adopted by an amendment to the H.A.S. Charter at the Feb. 4, 1975 meeting, and described as "A circular emblem, bearing the constellation of the Southern Cross (Crux) beside a hawaiian helmet and the words Hui Kilolani."

As the planetarium is occupied tonight, the meeting was adjourned for refreshments at 9:15 p.m.

Respectfully submitted,
P. Lawler (for Gretchen West, HAS Secretary)

Sporadic raates remain very acceptable through the month, but a very poor year for the Taurids, and not too good for the Leonids.

Wednesday the 5th, the *Southern Taurids*. Radiant 03h20m +13 deg. Less than 5 meteors per hour.

Wednesday the 12th the *Northern Taurids*. Radiant 03h52m +22 deg. Less than 5 meteors per hour. The Moon is full between the maximum of the Taurid showers. Both radiant are above the horizon most of the night.

Taurids may be seen between October 23 - November 15. Some are fireballs.

Tuesday the 18th, the *Leonids*. Radiant 10h12m +22. Rates are variable perhaps 100+ this year. The maximum is at 2 hours UT or 4 PM here locally. Consider yourself luck if you see 10 to 15 and hour.

Saturday the 22nd, the *Alpha Monocerotids*. Radiant 07h48m +01 deg. Rates are variable from less than 5 per hour to a few hundred per hour. The meteors are swift and outbursts may last up to a half hour. there seems to be a 10 year period to the outbursts. 2005 would then be the next outburst for this shower. The peak if one occurs will be about 11 PM local time.

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

History of the H.A.S.

Jay Wrathall

In the October meeting, we had a “blast from the past” as Bill Pelter visited the club. Bill was a member from the late 60’s to the mid 70’s, and played an important role in the club at that time. He introduced some things that are still with us today. He designed the club logo, which was first used on the *Astronews* masthead in March of 1975. In my discussion with him, he also said that he was the one who introduced the word “*Astronews*” as the name of the club newsletter in April of 1967.

The 1970’s were an interesting

time in the HAS. The club was closely associated with the Bishop Museum Planetarium. George Bunton was director of the planetarium and was very interested in the success of HAS. In fact, he was vice-president of HAS in 1970 (Willis Moore was president) and president in 1971. Mike Morrow was president in 1972 and from 1973 to mid-1979 Ray Ayer, who worked at the planetarium, served as president.

Until March of 1974 the *Astronews* was a one or two page bulletin and was prepared and printed at

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On a gray breezy day last month thousands of people got in their cars and reluctantly left home. U.S. east coast highways were thick with traffic. Schools were closed. Businesses shut down.

Perfect!

When powerful Hurricane Isabel arrived some 38 hours later nearly everyone in the storm's path had fled to safety.

Days later Vice Admiral Lautenbacher, in a briefing to President Bush, praised the National Atmospheric and Oceanic Administration (NOAA): "Without NOAA's excellent track forecasts, hurricane Isabel's toll on lives

and property would have been even more devastating. This is NOAA's first year of providing 5-day forecasts and the 5-day forecast for Isabel was as good as our 2-day forecasts have been over the last decade."

Many people in NOAA played a role. A team of pilots, for instance, flew Gulfstream-IV High Altitude Surveillance jets right up to the approaching hurricane, logging 25,000 miles in the days before landfall. Their jets deployed devices called dropson-

des-little weather stations that fall toward the sea, measuring pressure, humidity, temperature and wind velocity as they plummet. The data were radioed back to the aircraft and transmitted to forecasters on shore.

While two Gulfstream-IV crews flew night and day around the storm, a NOAA satellite named GOES-EAST monitored Isabel from above. (GOES is short for Geostationary Operational Environmental Satellite.)



From an orbit 22,300 miles above the Atlantic Ocean, GOES-EAST had a unique view. "It could see the entire hurricane at once," says Ron Gird of NOAA. "Scientists used infrared spectrometers onboard the satellite to estimate the height of the storm clouds, their temperature and water content. GOES can also measure the temperature of the ocean surface—the source of power for hurricanes."

(Continued on page 10)



History (Continued from page 5)

the planetarium, usually as a collaborative effort by George Bunton, his wife, and Ray Ayer. In March, 1974 an *Astronews* editor was chosen – Dennis Stone – who was a young college student at the University of Hawaii. The bulletin was expanded and became a full-fledged newsletter. This led to a situation in which the relationship between HAS and the Bishop Museum became somewhat strained.

In the early months of 1975, Editor Stone reprinted in the *Astronews* articles by a Harvard professor, Barry Fell, who had an “over-the-top” theory that the Polynesians had come from ancient Libya. This idea was in direct contradiction to the theory of the origin of the Polynesians espoused by scientists at the Bishop Museum, and they became quite upset that a publication tied to the museum was printing Dr. Fell’s articles. A couple of stormy meetings were held in which some members called for the resignation of the editor and appointment of a review board to approve *Astronews* articles. Other members defended the editor and criticized the review board proposal as censorship. No motions were passed and a “behind the scenes” solution was worked out so that Dennis Stone remained as editor without a review board, but no further articles

by Dr. Fell were published.

A number of major public star parties, co-sponsoreded by the HAS and Bishop Museum were held in the 1970’s including: **1.** February 9, 1971 over 1,500 people attended an eclipse (of the moon) party. **2.** June 25, 1974, over 1,000 people attended a star party with numerous demonstrations by club members. **3.** November 29, 1974, over 1,500 people attended a star party **at 3:00 am**, for a total lunar eclipse. **4.** September 25, 1975, over 500 people attended a star party that **started at 10:30 pm**. **5.** April 30, 1976 – again over 500 people. **6.** Sept 5/6, 1979, over 1,000 people at another eclipse party.

The success of the late night star parties attracted the attention of one of the editors of *Sky and Telescope*, who wondered how we could get so many people to come so late.

Other popular activities of the club during the 1970’s were yearly dinners, usually at a nice restaurant, hotel, or military installation and field trips to the Big Island, where we had access to UH facilities. This access came about because several members of the UH Institute for Astronomy were members of the club and even officers. These included Dale Cruikshank and Michael Gaffey, who were both vice-presidents of HAS.

School Star Parties

It's that time of year again, and School Star Parties are once again being coordinated by Forrest Luke. If you are contacted for a school star party, please have the school contact Forrest directly by phone at 623-9830 or via e-mail at <lukef003@hawaii.rr.com>.

As a reminder, upcoming scheduled school star parties are:

- 27 Feb 2004 Pearl Harbor Elementary**
- 23 Apr 2004 Lanakila Elementary**
- 27 Apr 2004 Ala Wai Elementary**

If you signed up and need help finding the school, or if you didn't sign up, but still want to participate, please contact Forrest.

Star of the Month: 61 Cygni

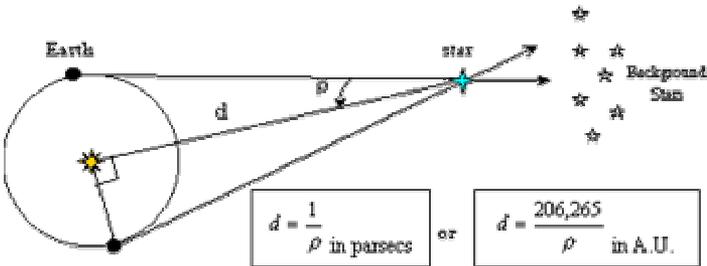
by Marc Ricard

Located in the northeast corner of the great swan. This fifth magnitude double star forms a parallelogram with Deneb, gamma and epsilon cygni (see chart). Components A and B of this system are K type dwarf orange stars approximately half the diameter and mass of the sun. According to 4th Catalog of Orbits of Visual Binaries (Worley+, 1983) their orbital period is estimated to be approximately 722 years. Currently the pair are over 30 arc seconds apart and are easily separated in the smallest of scopes. Burnham's mentions a

Wulff Dieter Heintz of the Sproul observatory failed to detect this mysterious third companion suggesting that the earlier results were "spurious."

61 Cygni's proper motion of 5.22 arc seconds per year led to it being named "The Flying Star" by Piazzini in 1792. Wilhelm Bessel guessing that such a fast moving object had to be quite near set his sights on it and in 1838 he became the first astronomer to measure a stellar parallax.

third unseen companion discovered by Dr Strand of Dearborn observatory in 1942. However later research done by



The concept of a stellar parallax is fairly easy to grasp. Carefully measure

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Star of the Month (Continued from page 8)

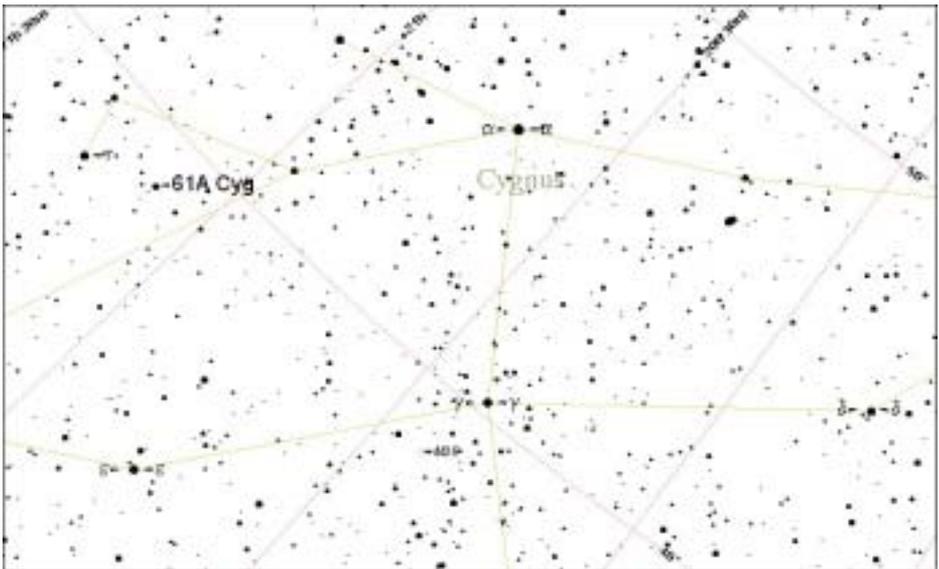
a nearby stars position relative to more distant ones then repeat the exercise 6 months later when the earth has swung over to the other side of its orbit. Through simple trigonometry the angle that you will measure will enable you to accurately determine the objects distance (see drawing). However what most of us don't realize just how incredibly difficult this is to do. William Herschel the man who discovered Uranus and thousands of nebulae had attempted this very feat for years and failed (however in the process he made another discovery that will be discussed in a future article). The measurement Bessel originally came up with for 61 Cygni is 0.314-arc second/year, which is quite close to the Hipparcos value of 0.287. To give you a sense of just how small a value this is, the disk of Jupiter is currently 34 arc seconds in diameter. Now remember that Bessel had to measure this tiny wobble independently of the

Flying Star's proper motion of 5.22 arc seconds/year and you get a sense of just what an accomplishment this was.

Astronomers use the reciprocal of the parallax, the parsec as a unit of stellar distance. Thus given a parallax of 0.287, the distance to 61 Cygni is simply $1/0.287$ or 3.48 parsecs. Now to convert this value to light-years we simply multiply by 3.26 and we obtain a value of 11.36.



Clear Skies!



HAS Financial Report as of October 15, 2003

Initial Balance:	\$5,281.11*
Receipts:	
Astronomy Payment	29.00
Donation.....	85.00
Dues Received.....	30.00
S&T Payment.....	62.90
Telescope Fee.....	20.00
 Total Income:	 \$226.90
Expenses:	
Astronews	153.83
Postage	3.13
 Total Expenses:	 \$156.96
 Final Balance.....	 \$5,351.05

During the month we had one new members join the club. He is Christopher Haig who also made a very generous donation to the club. Many thanks to him and to those renewing their membership this month. Clear skies to all!
(*Error correction. Failed to deduct \$.07 bank maintenance fee last month.)

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Constant streams of data from GOES and the Gulfstream aircraft were fed to supercomputers at NOAA's Environmental Modeling Center in Maryland where sophisticated programs, developed over the years by meteorologists and programmers, calculated the storm's most likely path.

Supercomputers. Satellites. Jet airplanes. Scientists. Programmers. Pilots. It took a big team using a lot of tools to predict where Isabel would go-accurately and with time to spare.

Says Vice Admiral Lautenbacher: "I hope everyone at NOAA shares the pride of being part of a team effort that so effectively warned the public of impending danger and enabled citizens to take action to protect themselves and their loved ones."

Well done, indeed.

To learn more about the GOES, see www.oso.noaa.gov/goes/ . For kids, the SciJinks Weather Laboratory at scijinks.nasa.gov has lots of fun activities and fascinating facts about the wild world of weather.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Moons of Mars (Continued from page 1) because it can get about three Mars diameters away from Mars at greatest elongation.

The August 2003 issue of *Sky and Telescope* recommended using an occulting bar to hide Mars while one attempts to view its moons. I created an occulting bar by dismantling my 4.8mm Nagler eyepiece and taping a very thin (about 1/16 inch) piece of paper at the focal plane.

Around the August opposition of Mars, I used the eyepiece with occulting bar to try to view Deimos and Phobos with my 8-inch Dobsonian from my home in Kaimuki. Although I selected times when the moons would be at greatest elongation, I was not

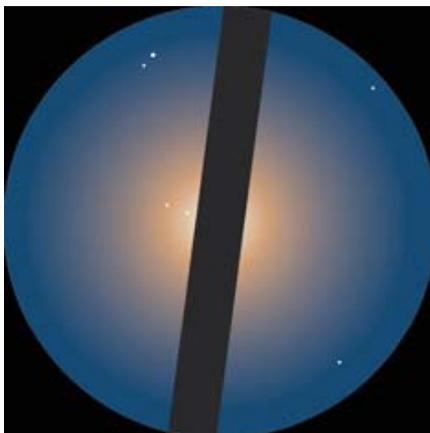


Deimos *photo NASA/JPL*

successful.

Surmising that I needed more aperture to be successful, I asked Barry Peckham at the September 27 star party whether I could make a try with his 15-inch Dobsonian at 8:30pm when Deimos was near its greatest eastern elongation. Barry gracefully agreed to this experiment. We inserted my eyepiece with occulting bar and were successful in spotting tiny Deimos, which was about one month past opposition and had faded to magnitude

11.9. Several others who were present confirmed the observation.



Deimos & Phobos to the left of Mars
photo Sky & Telescope

At 11pm we made an attempt to view Phobos, when it reached greatest eastern elongation. Deimos, although now closer to Mars, was still visible fairly easily to skilled observers. I caught fleeting glimpses of Phobos,



Phobos *photo NASA/JPL*

now at magnitude 10.9, only one Mars diameter from Mars, which had to be kept hidden at the very edge of the occulting bar. It was only visible for a split second at a time and no one was able to confirm this observation

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Kevin Polk stands ready to assist stargazers of all ages