The Astronews

HUI KILOLANI

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March 2003

Strings Attached

Barry Peckham

All across the mainland comes the cry against music at star parties. At some point in time the idea of "space music" was thought to be a good one. "Amateur Astronomy" magazine's publisher, Tom Clark, confessed that he liked some ambient music for his observing sessions and printed plans to build a portable case for a car audio system. Then the complaints began coming in.

It seems that we don't all like the same kind of music! One man's Mozart is another man's Metallica, and audio-trespass is unavoidable at a star party (we know what headphones are, but we don't use them). My point here is that music at star parties is a sore point na-

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Inside this issue:

Upcoming Events:

- The next meeting is 7:30 on Mar. 4th at Bishop Museum
- **Sam Rhodes** next Planetarium show on Mon. Mar. 3rd. Hanauma Bay shows have been cancelled until further notice.

Upcoming Star Parties

Club Party	**Mar. 29**	**Dillingham**
Public Party	**Apr. 5**	**Dillingham**
Public Party	**Apr. 12**	**Kahala Park**
Club Party	**Apr. 26**	**Dillingham**
Public Party	**May 3**	**Dillingham**
Public Party	**May 10**	**Kahala Park**

Editor's Message

I would like to take the opportunity to thank all those who have contributed to the Astronews. Kudos especially to Ron Paul Smith, Jay Wrathall, Barry Peckham and Jim MacDonald for their regular and continued contributions to the Astronews.

At our last star party we had lots of clouds but also saw lots of stars. Although the seeing wasn't fantastic, we still got some great view of Saturn and Jupiter, as well as decent views of Canis Major and Orion most of the night.

We have been contacted by Paul Maley, Vice President of the International Occultation Timing Association (IOTA), to drum up interest in the occultation of a magnitude 6.7 star by (704) Interamnia on March 23 UT. The path crosses all of the major Hawaiian islands. We are passing the information along to the HAS to see if some members would be interested in trying to observe and time the event. It's a whopping 4 magnitude drop (easy to see), and the duration could be as long as a minute for a central event.

Ideally, stations should be located orthogonal to the path, so we'd want to spread out mainly north-south (or north-northeast to south-southwest), which unfortunately is the short dimension of the island. Also unfortunately, it largely duplicates the chords that could be seen from Maui and Kauai, for example. The Big Island is fairly crucial to the experiment, covering the southern half of the path. If you're interested in helping out, please contact Dave Tholen <tholen@IfA.Hawaii.Edu>.

Paul

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Planets Close to the Moon

Times are Hawaii Standard Time

Mar 1, 05h, M 2.9° SSE of Mercury
(16° from sun in morning sky)
Mar 11, 01h, M 2.8° N of Saturn
(92° from sun in evening sky)
Mar 14, 15h, M 3.8° NNE of Jupiter
(134° from sun in evening sky)
Mar 25, 08h, M 2.9° S of Mars
(81° from sun in morning sky)
Mar 27, 15h, M 4.9° SSE of Neptune
(54° from sun in morning sky)
Mar 29, 01h, M 4.4° SSE of Uranus
(37° from sun in morning sky)
Mar 29, 01h, M 4.4° SSE of Venus
(36° from sun in morning sky)

Other Events of Interest

Times are Hawaii Standard Time

Mar 2, 16:36h, New Moon
Mar 12, 11h, Venus 0.20° N of Neptune
(40° from sun in morning sky)
Mar 18, 00:35h, Full Moon
Mar 20, 15:03h, Vernal or Spring Equinox
Sun crosses equator from South to North
Mar 21, 13h, Mercury at superior conj. with sun,
passes into evening sky
Mar 26, 12h, 4 Vesta at opposition
Mar 28, 03h, Venus 0.05° N of Uranus
(36° from sun in morning sky)
Closest conjunction of planets since 1990.

The Planets in March

Mercury
Mercury is near the moon on Mar 1 at dawn. After that, it cannot be observed this month.

Venus
Venus still dominates the morning sky, about 36° from the sun, with a magnitude of -4.0.

Mars
Mars becomes brighter than nearby Antares as it passes near several M objects in Sagittarius.

Jupiter
Jupiter is in the southeast at nightfall and well placed for viewing all evening.

Saturn
Saturn is past it best, but still shows up very well. Look for the prominent shadow of its rings.

Uranus
Uranus is too near the sun to be easily viewed, but has a very close conj. with Venus Mar 28.

Neptune
Neptune is in the predawn sky, very close to Venus on Mar 12.

Pluto
Pluto is visible in the morning sky before dawn, but will be easier to view later in the year.

Astro Quotables

"Smoke from multiplying factories...has joined with electric lighting to help put out the stars. These concomitants of an advancing civilization have succeeded above the dreams of the most earth-centered in shutting off sight of the beyond, so that today few city-bred children have any conception of the glories of the heavens which made of the Chaldean shepherds astronomers in spite of themselves." Percival Lowell (1906)

2003 Star Party Dates (revised)

Club Meeting	Dillingham Star Party Public	Club	Kahala Public
		March 1	March 8
March 4	April 5	March 29	April 12
April 1	May 3	April 26	May 10
May 6	May 31	May 24	June 7
June 3	June 21	June 28	July 5
July 1	July 19	July 26	Aug 2
Aug 5	Aug 30	Aug 23	Sept 6
Sept 2	Sept 27	Sept 20	Oct 4
Oct 7	Oct 18	Oct 25	Nov 1
Nov 4	Nov 15	Nov 22	Nov 29
Dec 2	Dec 13	Dec 20	Dec 27

Strings Attached *(Continued from page 1)*

tion-wide. But every rule has its exceptions.

'Twas a few nights after Christmas, and Dillingham Airfield was sparsely sprinkled with club stargazers under clear skies. We saw someone driving in late and noted that headlights had been turned off at the appropriate time, so they were “friendlies,” In a few minutes **Steve Huffman** appeared along with his wife **Becky**. Remarks were traded about sky conditions and then the couple disappeared, as if for a conference.

The next thing I heard was rumbling and saw the silhouette of a tall object wheeling its way toward the line of scopes. Of course I thought, “Hey, this must be Steve's new Christmas scope,” but we were in for a bigger surprise. The hand truck stopped about 20 feet away and there were some rustling noises. I had an eye to the eyepiece when an inadvertent musical note sounded. This was no optical toy! And then Becky began to play her full size harp on the tarmac.

What a sound! It was as loud as she was good (both surprisingly!) and the rich harmonics filled everyone's ears with a sensation both serene and stimulating. The stars never sounded so good!

Dillingham's calm conditions gave the big harp's acoustics an interior tone. The highs and lows were all there in the night air. We could also hear Becky's trepidation as she admitted that she had never before played in the dark, but play she did, missing nary a note, and her melodic collection spilled into the Winter Milky Way.

If every star party had a harpist, “space music” would once again find favor among amateur astronomers. Those well-plucked strings go so well with celestial things!

School Star Parties

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

As a reminder, upcoming scheduled school star parties are:

6 Mar 2003 Helemano School (4th grade)
7 Mar 2003 Pearl Harbor Elementary
10 Mar 2003 Iroquois Point Elementary
11 Mar 2003 Ala Wai Elementary
4 Apr 2003 Lanakila Elementary
7 Apr 2003 Voyager School (Kakaako)
25 Apr 2003 Niu Valley Middle School

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.

Meeting Minutes

by Gretchen West

The February 4, 2003 meeting was called to order by President Chris Peterson at 7:33 p.m. Thirty-three members and three visitors were in attendance. Chris greeted our two visitors and welcomed them to the meeting. President Peterson acknowledged the untimely and devastating disaster involving the NASA Space Shuttle, Columbia, Saturday February 1, 2003. Gretchen West read Gillespie Magee's 1940 poem, *High Flight* in response to the events of Saturday, February 1, 2003.

Old Business: President Peterson requested help from member with telescopes. Anyone interested in helping a visiting amateur astronomer from England, who will be on Oahu March 3rd through the 5th and would like to observe the night skies, is asked to contact him at.

School Star Parties: School Star Party Coordinator Forrest Luke is on the job. A growing list of school star parties have been scheduled, from February through April. A list of scheduled parties were distributed. Volunteers are asked to contact Forrest so that we will be ready to handle the spread of parties.

New Business: Slide show for schools- There is interest in obtaining and maintaining a slide show presentation to be taken to school star parties to supplement when skies are too poor for viewing. Forrest Luke brought two slide carousels for club use. CD presentations, purchase of NASA slides, as well as, on-line picture selection were discussed. President Peterson indicated that he will be looking into slide selections from NASA. Anyone interested in helping to select ,collate a collection , and work on slide show presentation script is asked to contact BOD members.

Barry Peckham advised the membership that Kahala Community Park Star Parties will resume as of February 8, 2003. Alterations have been made by the City Dept. of Parks and Recreation to shield the formerly glaring

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March Meteor Log

by Mike Morrow

March is characterized by low sporadic rates and a few minor showers. The Virginid shower complex produces its best rates about now.

Early March-early April, several peaks the Virginids. Radiant 13h00m - 04 deg.(Position for March 25th). Expect 5 meteors or less per hour. This complex series of minor showers is active from a cluster of near-ecliptic radiants. perhaps the best activity occurs in early March (good news the Moon is new).

Virginids are normally slow, but some can be bright, though few leave trains. Activity is generally low.

If you are interested in observing meteors contact on Tom Giguere on Oahu at 672-6677 or write:

Mike Morrow
P.O. Box 6692
Ocean View, Hawaii 96737

Minutes *(Continued from page 5)*

lights. **Myra Vega** and Barry will be placing monthly star parties announcements in various city publications. Star parties listings for 2003 will be re-published in the AstroNews.

Difficulties with the club's lock at Dillingham were discussed. A new combination lock with a long hasp is being sought. Unlinking of the club lock by unknown individuals continues. Any suggestions?

Barry shared a new and somewhat unfamiliar theoretical term, hypernova, from Sam Rhodes' Feb. 3rd, talk in the Planetarium. March is Messier Marathon month. Books: ***Bad Astronomy***—confronts and debunks misconceptions and questions from newbies in astronomy. ***Backyard Astronomer¹s Guide-Revised Edition***—Wonderful guide for all amateur astronomers.

Back to Basics - New member Alex Dailey spoke to the members about his experiences in attempting to find the elusive M1, the Crab Nebula. Even though you don¹t always find what you¹re looking for, there is the fun and the exhilaration in finding other objects with friends.

Treasurer **Jim MacDonald** asked anyone having problems with their magazine subscriptions to please contact him and not the magazines. T-shirt orders have been backlogged due to problems with the postal service.

Barry mentioned his non-credit University of Hawaii Community Course in "Leisure Astronomy."

Don Tucker gave everyone an update on improvements he has noticed in his vision since laser eye surgery. **John Sandor** informed the membership that the <heavens-above.com> web site will soon be listing times to view ISS and/or Hubble lunar transits in the near future. Opinions were solicited regarding dew heaters. Kendrik and Anacortes <buytelescopes.com> were suggested as resources.

Ron Paul Smith exhibited a NASA award he received for work on laser technology at NASA. Thank you Ron Paul!

The general meeting adjourned at 8:47 p.m. for refreshments. There was a 9:00 p.m. Planetarium show to walk us through the current night skies.

For Scope Rentals - See Barry Peckham.

Focal length? Field of view? Exit pupil? What's it all mean? Let's see if we can explain...

Telescopes come in many different sizes. Likewise, so do eyepieces. One of the first things people are usually surprised about is that telescopes don't have a fixed magnification. Unlike binoculars, which have a single magnification, telescope eyepieces can be swapped.

Each eyepiece has a focal length (a number followed by "mm" is usually stamped on the eyepiece). Likewise, each telescope has a focal length, as well as an aperture and a focal ratio.

The ***focal length*** is the distance from the primary mirror (or objective lens, for refractors) to the focal point (which is also called the prime focus). The focal point is where the light rays converge.

The ***aperture*** of a telescope is the diameter of the primary mirror or objective lens.

The ***focal ratio*** (the number following the "f/") is merely the focal length of the telescope divided by the aperture. So, the *focal length is equal to the aperture times the focal ratio*.

The one confusing item in this is that sometimes sizes are expressed in inches, and other times in millimeters.

To convert back and forth, remember that there are 25.4 millimeters in one inch. So, to convert from millimeters (mm) to inches, divide the mm by 25.4. To convert from inches to millimeters, multiply the number of inches by 25.4.

So, here is your test. What would the focal ratio be for a telescope with an 8 inch mirror, and a focal length of 1200 mm? (answer on page 10)

Magnification and Focal Length

As we've said, both telescopes and eyepieces have a "focal length". Magnification is a measure of the number of times the image is enlarged (e.g. a pair of 7 power binoculars magnifies the image 7 times).

To find the magnification for a particular eyepiece in your telescope, first find the focal length of the eyepiece. This is probably stamped on the eyepiece, or the available sizes are listed in astronomy catalogs. Second, find the focal length of the telescope.

Magnification is the focal length of the telescope divided by the focal length of the eyepiece (use the same units, if the eyepiece is specified in mm, then make sure the telescope focal length is also expressed in mm). If you don't know the focal length of the telescope, it is equal to the focal ratio times the aperture.

For example, a 26mm eyepiece, placed in a telescope with a focal length of 1200 mm, will have a magnification of about 46x (which is 1200 / 26). The same eyepiece, placed in a telescope with a focal length of 1430 mm will have a magnification of 55x (which is 1430 / 26).

Notice that the longer the focal length of the telescope, the greater the magnification from a given eyepiece.

You may hear a rule that says that the maximum usable magnification is 50x or 60x per inch of aperture. This is a rough guideline, and it can vary depending on the kind of telescope

Numbers *(Continued from page 7)*
you have, the seeing conditions, and what kind of object you are trying to view. But, in general, extremely high magnifications are not useful.
(*ed. note: Heck try it, it's free!*)

Exit Pupil

The exit pupil is the diameter of the light beam that exits an eyepiece. The pupil of a human eye dilates to about 7 mm when accustomed to darkness. This varies a little from person to person, and shrinks a little with age.

If the exit pupil is greater than 7 mm, then some of the light will be lost, and the eye will not be able to take it all in. This can be a problem when viewing from an urban or light polluted sight—the eyepiece is not only transmitting star light, but also sky glow.

On the other hand, very small exit pupils are only good for some types of astronomical targets (e.g., an exit pupil of about 1mm might be OK for splitting a double star, but it wouldn't be good for viewing a dim galaxy).

To find the *exit pupil, divide the aperture of the telescope (in mm) by the magnification*. Or, the *exit pupil is also equal to the focal length of the eyepiece (in mm) divided by the focal ratio of the telescope* (the f number).

Field of View

Most eyepieces list an "apparent field of view." These range from a narrow field of around 30 degrees to a wide field of 60 to even 80 degrees or more (for example, TeleVue Naglers have an 82 degree field). How does this translate into what you will actually see when you look through the eyepiece?

Field of view is measured in degrees, which is the same way that we gauge angular distance in the sky.

The apparent field of view is the view through the eyepiece alone. The apparent field of a 50 degree eyepiece is bigger than the field of a 30 degree eyepiece. If the apparent field is large, the true field is also relatively larger than an eyepiece of the same focal length with a smaller apparent field.

The "true field of view" is approximately equal to the apparent field divided by the magnification.

For example, a 26mm Plössl with a 50 degree field of view, placed in a telescope with a focal length of 1200 mm, will have a magnification of about 46x (which is 1200 /26), and a true field of view of just over 1 degree (1.09 degrees, which is 50 /46). The same 26mm Plossl eyepiece, placed in a telescope with a focal length of 2032 mm, would have a magnification of 78x, and a true field of view of 0.64°.

So, what does that number mean?

How do you know how much of the sky you can see through a true field of view? Amateur astronomers use several handy techniques to determine distances in the sky.

If your telescope is equipped with a Telrad finder, the three rings in the bullseye pattern you see through it are 0.5°, 2°, and 4° in diameter.

The distance between the two pointer stars in the end of the Big Dipper is about 5 degrees. A fist, held at arm's length, is about 10 degrees wide. Three fingers at arms length, are about 5 degrees wide. The full moon is about a half a degree wide.

Now you should have an idea of what all those numbers on telescopes and eyepieces mean, and how to calculate magnification and exit pupil!

Paul

Star Lore — (τ Canis Majoris)

Editor

As the brightest star of the infamous "Dog Butt Cluster" Tau Canis Majoris is located 2.5° east of δ Canis Majoris or ***Wesen*** (the "butt" star).

The cluster (NGC 2362) was originally cataloged by Hodierna in 1654, and lost until it was rediscovered by William Herschel in 1785. With Tau sitting right in the center, is a wonderful and "fun" sight! Fun? How can that be? Well, although not politically correct, Tau has taken on the name of ***Mexican Jumping Star***. Many of us remember "Mexican Jumping Beans" when we were kids... how they would "wiggle" around. Well, when this cluster is centered in the eyepiece, and one taps their telescope, Tau seems to move independently of the dimmer stars in the cluster. The illusion, which can be quite striking in a large Dob, presumably has something to do with persistence of vision causing the perceived image of the bright star to remain in place longer than the perceived images of the much fainter cluster stars.

Since we are so close to the dog's butt, there is another star we should mention. Moving just under 2° north,

we find (in the words of that old astronomy rap song), "We do the Dob box shuffle to the dog butt double." A beautiful winter sky target, this is actually not a binary but rather an optical double (like Albireo) with a 26" separation. The "blue" star (HIP35213) is a mere 258 ly away, while the "gold" star (HIP35210) is 6,523 ly from earth.

35213 is a main sequence star (luminosity of 22 suns) with an apparent magnitude of 6 making it barely naked eye visible in very dark skies, however the close proximity of 35210, a red giant (with a staggering luminosity of 363,640 suns) at mag. 4.81 makes this pair naked eye visible as a single star even from moderately light polluted locations (like Kahala Community Park).

Equipment for Sale

Edmund Scientific Astroscan 4 1/8" f/4.2 rich field reflector in original box. Includes finder, base, carrying strap, 25mm Plossl eyepiece, detailed instruction manual. Shows stars down to mag 13.3 and even planets show well with a high power eyepiece. Weighs about 11 lbs, super portable and a complete package. $185.
Contact Mike 225-3144, <linnolt@hawaii.edu>

Treasurer's Report

by Jim MacDonald

HAS Financial Report as of February 15, 2003

Initial Balance:	$5,621.27
Receipts:	
Astronomy Payment	58.00
Deposit	20.00
Donations	65.05
Dues Received	410.00
Polo Shirts Deposit	105.00
S&T Payment	89.85
T-Shirt Sales	30.00
Telescope Fee	40.00
Total Income:	$817.90
Expenses:	
Astronews	160.12
Magazine Subscription Payment	354.65
Polo Shirt Payment	67.70
Refreshments	17.99
Total Expenses:	$600.46
Final Balance	$5,838.71

Since last month, the club increased by five new members. They include **Beth** and **Tony Helms**; **Lynne Williams**; **Linda Goodson**; and **Jaurene Judy**. Welcome to the club and clear skies to the many members renewing their membership during the month! We would also like to thank **Warren Arakaki** and **Jeffrey Brennan** for their generous donations.

HAS' Swap Meet

The big event is coming soon. The club's swap meet will be held at our next meeting in April. Remember to look through your astronomy equipment for those items that you no longer need or want in hopes of finding a new home for them. This is a good opportunity to turn your surplus equipment into some ready cash as well as clearing space in your storage area. Of course, there is always the possibility that you might also find a sweet bargain or two for sale at another table. Come one, came all, and let's have a good time looking *at* equipment rather than through it for a change.

Here's the answer: The mirror has a diameter of 8 inches or 203 mm. 1200 divided by 203 is 5.9, so the telescope would be an f/5.9. Did you get it right?

Hawaiian Astronomical Society
Membership Application
2003

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_____

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Fill out this form and send with your check payable to:

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