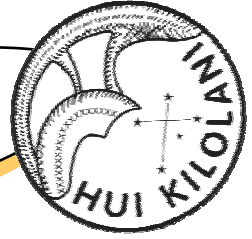


# The Astronews



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January 2005

## The Night Sky Book review by Gretchen West

If you're looking for a step-by-step guide to the universe, sorry your in the wrong place. But, if you like to mess around and get your hands dirty, or you like having fun trying to figure things out, this is the book for you. "You" meaning any child from age 5 to 105.

I stumbled on this book a number of years ago. *The Night Sky Book: The Everyday Guide to Every Night* is the kind of book that has something fun and interesting on every page. How do you read a star map? How can you use your hand to measure time, latitude and altitude with your hands? With explanations, activities and brain teasers, this book is high on my list of good books for the kid in all of us.

Being a teacher I am always look-

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## Upcoming Star Parties

Club Party	Jan 8	Dillingham
Public Party	Jan 15	Kahala/Waikele
Public Party	Jan 29	Dillingham
Club Party	Feb 5	Dillingham
Public Party	Feb 12	Dillingham
Public Party	Feb 19	Kahala/Waikele

## Upcoming Events:

- The next meeting is at 7:30 p.m. on Tuesday, January 4<sup>th</sup> at the Bishop Museum.
- **Sam Rhoads** next planetarium show is on Monday, January 3<sup>rd</sup>.

## President's Message

The year ahead should hold a lot of excitement for skywatchers, be they active observers or armchair astronomers.

Earthbound observers and planetary exploration missions will both see lots of activity in 2005.

January will see the first anniversary of the landings of the Mars Exploration Rovers. Designed for 90-day missions, these hardy robotic explorers have far surpassed expectations. They're both beginning to show their age, but remain remarkably robust as they continue to reveal new Martian vistas and gather data that lead to new insights on the geologic history of Mars.

Saturn has returned to the evening sky and will put on a great show as the only crowd-pleasing planet in the sky at a convenient hour until springtime, when it will be joined by Jupiter. Meanwhile, the Cassini spacecraft's Huygens probe is scheduled to land on Titan on January 14th.

Those in their mid-40s and older remember when nobody had seen any better image of a planet than those obtained by telescopes on Earth. In these last few decades, we have been continually surprised by the unexpected features revealed by spacecraft that have visited most of the large bodies in our solar system. Of those, only Pluto, Titan, and about half of Mercury (to be visited by the recently-launched Messenger) remain virtually unseen. It is truly a great privilege to live in such an age of exploration and to see things that had only been dreamed of since humans first gazed skyward and wondered what was up there. As important as spacecraft are for planetary exploration, it is still possible for amateur astronomers to make discoveries using modest backyard equipment. Comet Machholz was discovered with a six-inch reflector.

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**Hawaiian Astronomical  
Society**  
P.O. Box 17671  
Honolulu, Hawaii 96817

### **President**

**Chris Peterson**

956-3131

chrisp@higp.hawaii.edu

### **Vice President**

**Barry Peckham**

524-2450

barry@litebox-telescopes.com

### **Secretary**

**Gretchen West**

735-0482

gwest@pixi.com

### **Treasurer**

**Jim MacDonald**

261-2162

jim.macd@verizon.net

### **Board Members-at-Large**

**John Gallagher** 683-0118

gallaghej002@hawaii.rr.com

**Steve Huffman**

shuffman@sacredhearts.org

### *The* **Astronews Editor**

**Paul C. Lawler**

395-8121

paul@kilolani.net

### **HAS Webmaster**

**Peter Besenbruch**

prb@lava.net

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**Planets Close To the Moon**

Times are Hawaii Standard Time

- Jan 3, 15h, M 0.36° N of Jupiter (86° from sun in morning sky)
- Jan 7, 08h, M 3.3° S of Mars (39° from sun in morning sky)
- Jan 8, 15h, M 4.8° S of Mercury (20° from sun in morning sky)
- Jan 8, 17h, M 4.8° S of Venus (20° from sun in morning sky)
- Jan 11, 16h, M 4.7° SSE of Nep. (22° from sun in evening sky)
- Jan 13, 00h, M 3.3° SSE of Uranus (41° from sun in evening sky)
- Jan 23, 23h, M 4.9° N of Saturn (168° from sun in evening sky)
- Jan 31, 00h, M 0.85° SW of Jupiter (113° from sun in morning sky)

**Other Events of Interest**

Times are Hawaii Standard Time

- Jan 1, 13h, Earth at Perihelion (Nearest the Sun) (Distance – 0.9833 a.u.)
- Jan 9, Moon, Venus and Mercury are close together in morning sky
- Jan 10, 00h, Moon at Perigee (Only 2 hours from New Moon - very high and low tides expected.)
- Jan 10, 02:03h, New Moon
- Jan 12, 20h, Mercury 0.32° SSW of Venus (19° from sun in morning sky)
- Jan 13, Saturn at Opposition
- Jan 25, 00:32h, Full Moon

**Planets in January**

<p><b># Mercury</b></p> <p>Will be visible near Venus in the morning sky the first two weeks of Jan.</p>	<p><b>\$ Venus</b></p> <p>Shines very brightly in the morning sky. Close to Mercury on Jan 12/13. Mag, -3.9</p>	<p><b>% Mars</b></p> <p>In the east before dawn. Still quite dim - Mag - +1.7.</p>
<p><b>&amp; Jupiter</b></p> <p>about midnight. Can be viewed in the early morning hours.</p>	<p><b>' Saturn</b></p> <p>Reaches opposition this month and is in the sky all night.</p>	<p><b>( Uranus</b></p> <p>Visible low in the SW after sunset. Mag. +5.8</p>
<p><b>) Neptune</b></p> <p>Near Uranus, getting too close to the sun for easy viewing. Mag, +7.9.</p>		<p><b>+ Pluto</b></p> <p>Reached conjunction with sun last month. Still too close to the sun to view.</p>

Meeting was called to order at 8:40 p.m. by Chris Peterson, with 28 members and 6 visitors present.

Chris welcomed Stephanie Choquette back for a visit and Barry Peckham who has returned from his mainland trip.

Planets - The Cassini Mission to Saturn has had its first close fly-by of Titan (one of Saturn's moons) The mission will culminate in the Huygens Probe being deployed to pierce the atmosphere of Titan on or around January 14, 2005. A camera will take pictures as the probe enters the atmosphere and continue recording through the touch/splashdown. It is designed to continue broadcasting 1.5 to 2 days but the design teams are hoping for longer coverage.

School Star Parties Forrest Luke reports that there are no school star parties have been scheduled for December. However, on Jan. 7, 2005 - Le Jardin (Kailua) Science Night at the Old Windward Drive-In site. Will need 4 scopes. Another small school group has asked for a star party on January 13th, with the Saturday Kahala Star Party as a possible backup.

Comets Visible - Macholtz (currently in Lepus) is Mag. 5.1 at present and may brighten to Mag. 4.2 by Christmas. Look for it early in the evening after the full moon.

Nova - January 4, 2005 at 8 p.m. Program titled "Welcome to Mars." Will give update on information gathered by the Mars Rovers

Bishop Museum - Carolyn Kaichi, on behalf of the Bishop Museum, wanted to thank HAS for the generous donation of materials, manpower, and time spent on the repair of the mu-

seum scope. She also asked HAS to help out Sunday night July 3, 2005 to view the possible telescope flash that may be visible from the impact of probe "Deep Impact."

Upcoming Speakers - Chris Peterson announced that Karen Meech of IFA will be speaking in February or March about her new project in Astrobiology as well as updating the club on Project "Deep Impact." Notification of dates will appear in the Astronews.

Kunia Star Party There was a successful if not short Del Monte/Hawaii Nature Conservancy Star Party on November 19.

Elections - As there were no last minute nominations from the floor, Jay Wrathall moved that the slate of officers be elected by acclimation. Tom Piper seconded the move and the general membership in attendance voted unanimously to elect the slate of standing nominees. Board Members for 2005 are as follows:

- President ..... Chris Peterson
- Vice President..... Barry Peckham
- Secretary ..... Gretchen West
- Treasurer..... Jim MacDonald
- Astronews Editor ..... Paul Lawler
- At-Large Members ..... John Gallagher
- ..... Steve Huffman

Astronomer's Watch Available - Jim MacDonald spoke briefly about a new watch that was highlighted in the October issue of Sky & Tel Magazine. Known as the "Pathfinder," the Casio watch is a good find for amateur astronomers with moon phases, sunrise and sunset features , etc. It is available at WalMart, but may be available at other shops in town, like

*(Continued on page 7)*

The Moon spoils the Quadrantids. the Moon also spoils the rest of the month.

Monday the 3rd, the **Quadrantids**. Radiant 15h20m +49 deg. Rates run from about 30 to near 100, but the Moon will make a mess of things. The Moon will be last quarter and both the Moon and the radiant will be up after midnight. That's about it for this month.

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

*(Continued from page 1)*

ing for books that provide quick activities I can offer to a group of kids on the spur of the moment. This book provides it, in spades. The "The Night Sky Book" is just what it says it is, a book you can use to learn about the sky above. It is geared for 10 to 12 year olds, however in my opinion even adults will find this book interesting. Do you want to know about Pegasus, Andromeda, Hercules and other fascinating constellations? It touches on the basics, and provides readers with an explanation of stars and constellations. Vignettes from long ago show how people used signposts in the sky to lead them home through the darkest nights.

The Night Sky Book also draws kids into activities and gives them information that gets them moving and working with the night sky. You don't have to read this book from front to back either. You can turn to any part and jump right in. That's the strong point of this book, and others in the Brown Paper School Book series. Learning can happen anywhere and it doesn't have to cost a lot of money either. Learning is fun with this book!

I would challenge any member of



the club to pick up the book, turn to any "Find that Constellation" page and name the constellation in less than a minute. Peppered throughout the book, this repeated activity provides basic information on cardinal direction and nearby constellations. It also gives kids a couple of hints to help them along. But no constellation lines are drawn, and there are no cute picture overlays to give the constellation away. You're going to have to work to get these. What you might want to do is go outside and try to find it. And the answer, you're going to have to work to get that too. It is hiding on another page in the book.

The Night Sky Book is a challenging book for anyone interested in the night sky. Kids enjoy the book because the author doesn't talk down to them. Here it is, kids! You can think! You can do! You can have fun learning about the night sky! If you're up to the challenge, pick up this book and unlock the night sky. Go for it!

***The Night Sky Book: The Everyday Guide to Every Night*** by Jamie Jobb (illustrated by Linda Bennet). Little, Brown and Company, Boston, 1977. ISBN 0-316-46552-6

## Darwin Designed Antenna

by Patrick Barry and Tony Phillips

Who in their right mind would design this bizarre-looking antenna? Actually, nobody did. It evolved.

Taking a cue from nature, NASA engineers used a kind of "artificial evolution" to find this design. The result may look odd, but it works very well.

"The evolutionary process improves the design of antennas, just as evolution in nature leads to fitter plants and animals," says Jason Lohn, leader of the Evolvable Systems Group at NASA's Ames Research Center.

The improvement comes from Darwin's idea of natural selection: only the fittest members of a generation survive to produce offspring. Over many generations, traits that hinder survival are weeded out, while beneficial traits become more common. "In the end," he says, "you have the design equivalent of a shark, honed over countless generations to be well adapted to its environment and tasks."

Evolutionary computation, as it's called, applies this principle to hardware design. It's particularly useful for tackling problems that are difficult to solve by hand—like the design of new antennas.

Designing a new antenna for NASA's Space Technology 5 (ST-5)

mission was the challenge facing Lohn's group. ST-5 will explore how TV-sized "nano-satellites" can perform the tasks of much larger, conventional satellites at a cheaper cost. Antennas on these satellites must be smaller than usual, yet capable of doing everything that a bigger antenna can do.

The evolution of this bizarre-looking antenna happened inside a computer.

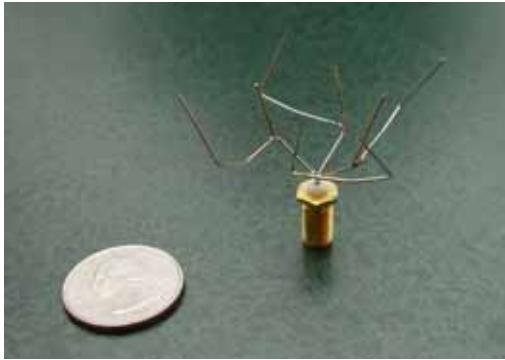
Many random designs were tested in a computer simulation. The computer judged their performance against certain goals for the design: efficiency, a narrow or wide broadcast angle, fre-

quency range, and so on.

As in nature, only the best performers were kept, and these served as parents of a new generation. To make the new generation, the traits of the best designs were randomly mixed by the computer to produce fresh, new designs—just as a father and mother's genes are mixed to make unique children. This new generation was again tested in the computer simulation, and the best designs became the parents of yet another generation.

This process was repeated thousands, millions of times, until it settled onto an optimal, shark-like design that

*(Continued on page 7)*



School and Group Star Parties are 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:

<b>11 Feb 2005</b>	<b>Niu Valley Intermediate</b>
<b>15 Apr 2005</b>	<b>Pearl Harbor Elementary</b>
<b>26 Apr 2005</b>	<b>Ala Wai Elementary</b>
<b>13 May 2005</b>	<b>Lanikai Elementary</b>
<b>27 May 2005</b>	<b>Kipapa Elementary</b>

**Darwin Antenna** (Continued from page 6)

wouldn't improve any further. With today's fast computers, millions of generations can be simulated in only a day or so.

The result: an excellent antenna with an odd shape no human would, or could, design. For more see <ic.arc.nasa.gov/story.php?sid=86&sec>

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

**Minutes** (Continued from page 4)

Sears and Longs.

Stephanie Choquette - here to visit, spoke briefly about the rigors of viewing in Montreal in the winter months. She and husband, Bastien, may be moving back to Hawaii.

Travels with Barry - Barry Peckham spoke briefly on the Florida Star Party in Chiefland Florida, where astronomy is a way of life as well as a hobby. "RV-ing" is a big deal for astronomy enthusiasts who meet at these large events. Refractors are very popular with this crowd and the larger the better.

Beginner's Topic - Barry gave a short talk on the difference between <sup>3</sup>Seeing<sup>2</sup> vs <sup>3</sup>Transparency<sup>2</sup>. Seeing is the measure of turbulence in the atmosphere at @3,000 feet. Movement of the atmosphere created distortion and can either make or break your nights viewing. Transparency is the degree of water vapor, dust, and other organics and inorganics in the atmos-

phere at @30,000 feet, that may create a milkiness to obscure viewing.

Geminid Meteor Shower - Monday night December 13 - viewing is available at the Kunia site for interested members.

Night Sky Network - Night Sky Magazine - Have received @ 140 copies to be used as incentives to get members to come with telescopes to our Kahala/Waikele Star Parties, and as incentives to visitors. Will give log-in paper and copies to Gretchen for distribution at the Kahala party,

John Gallagher showed a short 6 minute slide-show regarding the detection of planets around distant stars. Anyone using Night Sky Network materials are urged to contact John Gallagher to get events logged-in to the web site.

The December 7, 2004 general membership meeting adjourned at 9:18 p.m. Refreshments were served. Respectfully submitted.  
Gretchen West, Secretary HAS

## A Visit with the "Big One"

by Barry Peckham

Tom Clark has never been one to mess around with small telescopes. His first scope may have been dinky but he soon after bought for his wife Jeannie a 17.5" Coulter and then began "improving" it. This was back in the '80s and the place was Sarasota, FL., where Tom owned a machine shop.

Before the '80s were through, he had built 2 ultra-light 20" reflectors on split ring equatorial mounts, then had bought ten Coulter mirrors, all 12.5", f/6. One of the resulting Dobs found its way back to its maker some 15 years later, and Tom showed it to me during my visit to his home in Chiefland, FL, in November. The returnee was trashed, but hopefully had done good work for the astronomical community. Tom told me that he put 40 hours apiece into these solid tube Dobsonians and that they sold for under \$1000 each. In those days a 12.5" Coulter mirror cost less than \$300.

Because of their "small" size, Tom Clark couldn't take these scopes seriously. Soon after building them he started his own telescope company: Tectron Telescopes. The sizes offered were 15", 20", 25" and 30". Prices were much more reasonable than Obsession Telescopes, and Tectron scopes offered a big advantage over the Obsession design, because Tectron's parts nested for transport.

In 1991, Clark and some astro-pals flew to Ayer's Rock in the heart

of Australia, bringing along a 25" Tectron scope. The trip was featured in Issue #1 of Tom's new (and still viable) magazine, *Amateur Astronomy*, which followed on the heels of a booklet by him that got me started as a telescope maker: *The Modern Dobsonian*. Tom's encouragement and his aw-shucks, can-do spirit inspired me far more than any other book on telescope making.

I still wince when an aspiring ATM with twinkling eyes gushes about the Richard Berry book. Berry may be the Daniel Boone of telescope makers, but who wants to live in a log



cabin with a dirt floor? Even Tom Clark is more of a pioneer than I care to be. He told me in his Chiefland workshop that he draws his designs directly on the plywood, makes his cuts with a jig saw and then sands to the pencil lines. Beside us on the shop floor were 2 Tectron-style telescopes in nested positions, waiting impatiently for their 24" mirrors.

Clark claims to be retired from the telescope business. He now builds scopes on whim, rather than on order. But Tom has always dreamed bigger



than most of us. His "Yard Scope", with a 36" mirror (get it?) became famous at the Winter Star Party (in the Florida Keys) in the early '90s. He sold it and built a second Yard Scope with refined features. At the Chief-land Star Party, I set up my 12.5" scope on the concrete pad used to roll

serving field.

The Beast is not for public viewing, due to the endless lines it would create. I believe it is the largest amateur telescope in the world, and probably in the Solar System. Its size gives detail to nebulae and galaxies but makes star images a bit bloated,



the 36 incher out of the workshop for viewing sessions. But this second Yard Scope is also sold and gone. What took its place, less than a year ago is a 42" square tube Dobsonian permanently housed in a home-made dome bigger than the Bishop Observatory dome. This monster scope, dubbed "The Beast" is fully automated. The dome is manually operated, however, and a change in its orientation creates a rumble like thunder that carries across the huge ob-

even on the best nights. I will never see the Dumbbell Nebula more dramatic than in Clark's Beast, but globular cluster M15 still looks better in my 12.5" than it does in 42", and Tom acknowledged that at the eyepiece of my scope. He was psyching himself up to rebuild the trashed 12.5 incher he'd sent out into the world some 15 years ago. It's heart was still good but needed a new body. Tom Clark used the views in my eyepiece to create his need to proceed.

**President** (Continued from page 2)  
tor, and it now graces the early evening skies as it will for weeks to come. Watch it pass the Pleiades on the night of January 7th. It should be

visible to the naked eye from a dark location and a great binocular target.

*Chris*

HAS Financial Report as of December 15, 2004

Initial Balance:..... \$5,441.28

Receipts:

Astronomy Payment.....	145.00
Donations .....	5.00
Dues Received.....	297.00
S&T Payments.....	164.75
T-Shirt Sales.....	45.00
Total Income: .....	<b>\$656.75</b>

Expenses:

Astronews.....	239.40
Dues to WAA.....	20.00
Magazine Subscriptions .....	131.60
P.O. Box Rent.....	70.00
Refreshments.....	7.75
Total Expenses: .....	<b>\$468.75</b>

Ending Balance:..... \$5,626.40

The club welcomes one new member this month. He is **Ron Richmond**. Many thanks to those renewing their membership and to **Gary Shimazu** for his donation. Clear skies to all!

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**Mortal as I am, I know that I am born for a day.  
But when I follow at my pleasure the serried mul-  
titude of the stars in their circular course, my feet no  
longer touch the earth.** —Ptolemy (c. 150 AD)

Telescope for Sale

Don't settle for a mass market import. Lovingly hand made 6", f/8 Dobsonian scope with automotive finishes, rotating tube, metal focuser and Telrad® finder (eyepiece options available but not included). \$400 Call Barry: 524-2450

## 2005 Meeting & Star Party Dates

Club Meeting	Dillingham Public	Dillingham Club Only	Kahala/Waikele
Jan 4	Jan 29	Jan 8	Jan 15
Feb 1	Feb 12	Feb 5	Feb 19
Mar 1	Mar 12	Mar 5	Mar 19
Apr 5	Apr 9	Apr 2	Apr 16*
May 3	Apr 30	May 7	May 14
Jun 7	May 28	Jun 4	Jun 11
Jul 5	Jun 25	Jul 2	Jul 9
Aug 2	Aug 6	Jul 30	Aug 13
Sep 6	Aug 27	Sep 3	Sep 10
Oct 4	Sep 24	Oct 1	Oct 8
Nov 1	Oct 22	Oct 29	Nov 5
Dec 6	Dec 3	Nov 26	Dec 10
Jan 3 '06	Jan 21 '06	Jan 28 '06	Jan 7 '06

\* Astronomy Day

*Ed. Note: This revised calendar corrects some erroneous dates which appeared in the December Astronews. Please disregard the calendar published in the December issue.*

**Hawaiian Astronomical Society  
P.O. Box 17671  
Honolulu, HI 96817**

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*Some people think you can never have too many finders!.*