

THE OBSERVER

East Valley Astronomy Club

From the Desk of the President

by David Douglass

As we enter October, I am pleased to announce that EVAC has a complete list of candidates that are willing to serve as officers and board members for the 2011 year. This does NOT mean that they are nominated (that will happen at the Oct meeting), or that the list is closed. Anyone willing to serve can still join the election. It is just a thrill knowing that there are people willing to fill the positions, and that EVAC will be able to enter 2011 with a full slate of willing officers.

EVAC held a Board meeting on Sept 30th.

The major item of discussion was an evaluation of the current *mission* of the Gilbert Rotary Continental Observatory (GRCO), as well as the continuing mission, including such things as expanded outreach opportunities, expanding observation time, to science with EVAC members and/or partners, and the resulting possible requirement of additional and/or replacement equipment.

At the present time, Steven Aggas has accepted the responsibility of heading up a committee to work with EVAC and the Raparian Insti-

tute to help develop the answers to some of the questions that come up from these discussions, and to possibly present recommendations for implementation.

Plans are firming up for the 2010 All Arizona Star Party. The dates are Nov 5th and 6th. The location is new, being the site commonly utilized by The Saguaro Astronomy Club (SAC), known as "Antenna Site". It is 2 miles south of the I-10 Hovatter Rd Exit (Exit 53) on I-10. There is a good map, and other information on our web site (<http://www.evaconline.org>)

Continued on page 15

UPCOMING EVENTS:

Local Star Party - October 2

Public Star Party - October 8

Deep Sky Observing Night - October 9

Monthly General Meeting - October 15

Check out all of the upcoming club events in the Calendars on page 8

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The Backyard Astronomer

Refractor or Reflector?

by Bill Dellinges

A lot of people have been asking me what type of telescope to choose. How do you advise someone about this subject when you only have five minutes at a busy public star party and there are so many choices out there? I have an idea. I'll write this article, hope it makes some kind of sense, and say, "Are you crazy, I don't have time for this now, can't you see I'm getting killed out here?" Then I can just hand them a copy, and say, "This may be of some help." OK, here's the deal. There are basically two types of telescopes, refractors and reflectors. They are both fine

instruments, each with their pros and cons.

REFRACTORS: This was the first type of telescope invented about 1608, a simple affair of a lens at the front of a tube and an eyepiece at the back which magnified the image formed by the lens. During ensuing years, the optics were improved by adding a second lens next to the first lens to control color aberrations (chromatic aberration).

These *achromat* telescopes are very serviceable. Recently *apochromats* (apo's), featuring a third lens added for better color control

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The Backyard Astronomer

Continued from page 1

and resolution, have been popular. Purists prefer the more expensive apo's, but an achromat will serve the budding stargazer pretty well. While planets, the moon's rim, and bright stars may show a little purple or green tinge on the edge, the average beginner won't notice or care. He or she can upgrade to an apo later as their tastes become more sophisticated. Anyway, the achromat's color shouldn't be too evident on deep sky objects like nebulae and galaxies.

Refractors are known for their rugged construction and low maintenance, and almost never need collimation. They are renowned for their crisp images. I'm often asked why that is.

Here are a few secrets behind the *magic* performance of refractors: First, there is no secondary obstruction in the light path. The light rays travel only once down the tube. Furthermore, the converging light cone draws itself away from the tube surface which may not have reached thermal equilibrium. High contrast is achieved through a series of light baffles within the tube. The tube is closed – no air currents from outside air.

The objective lens is *permanently* collimated. And finally, smaller apertures are more forgiving of bad seeing. All this is assuming the telescope is a well made one, not a junk department store "600x telescope" costing \$99.

Refractor drawbacks: 1) Refractors are generally more expensive than reflectors because there are at least four and as many as six surfaces of a lens set that require figuring and coatings versus the reflectors one primary mirror surface. 2) The refractor requires a tall mount so the eyepiece will be in a practical position, especially when pointed at the zenith. This problem has been alleviated somewhat by today's short focal length refractors, but even these telescopes can still place the eyepiece too close to the ground when aimed straight up. 3) Chromatic aberration (unless an apo). 4) Limited light gathering power – a 6" refractor is about the largest size refractor found in amateurs' hands due to cost and mounting issues. Yet the amateur is advised to start out with a telescope of at least 6" aperture! So the refractor owners live in a kind of Lilliputian world of telescopic apertures 6" and less. This can still work to their advantage IF they observe intrinsically bright objects like the moon, planets, and stars. Indeed, refractors are superb double star busters. They're no slouch on some of the brighter deep sky objects as well.

In one area, imaging, their "small" apertures can still excel thanks to modern CCD cameras. Some of the finest astrophotography is done with reflectors.

REFLECTORS: Credit for the idea of a reflecting telescope is generally given to James Gregory who came up with the design of a Cassegrain version of the telescope called a Gregorian Reflector in 1663 (though the idea of using a mirror had been kicked around even before the invention of the refractor). Unfortunately, technology didn't exist at the time to

produce such advanced curved surfaces. In 1668, Isaac Newton made the first working reflecting telescope, a small 1.3" prototype of today's *Newtonian* reflector. Less complicated than a Gregorian, it has only one curved mirror at the bottom of an open tube and a small 45° flat mirror near the top directing light to an eyepiece. Being of simple design, it's the least expensive type of telescope available inch for inch of aperture and therefore very popular.

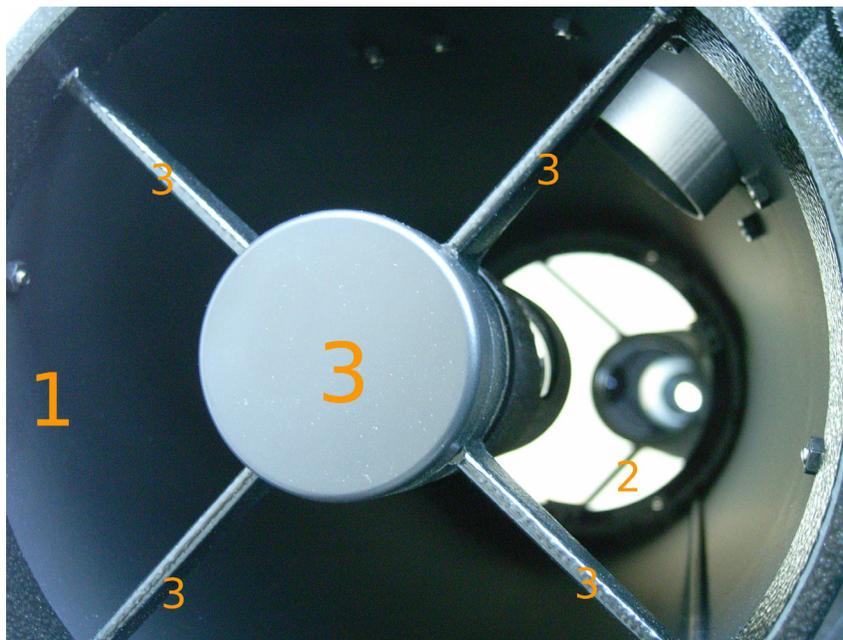
Probably most telescopes used by amateurs are

Newtonians, with Schmidt-Cassegrains a close second. Advantages of the Newtonian reflector are cheapness, lack of chromatic aberration (mirrors, unlike lenses, do not produce this problem) and wide fields of view.

Disadvantages are: 1) Exposed mirrors require cleaning every few years. 2) Coma - comet-like star images at the field edge due to the inherent short focal ratios of Newtonians. 3) Optics that need occasional adjustments (collimation). 4) A secondary obstruction in the light path due to the diagonal mirror directing light to the eyepiece. 5) Spider vanes supporting the diagonal cause stars to show *spikes* – though I always thought that looked kind of cool. 6) Size – in apertures over 8", the scopes can be quite large and unwieldy, sometimes requiring a ladder to reach the eyepiece.

What type of scope is right for you? You need to keep several things in mind when selecting any kind of telescope: Affordability, portability, and style of observing.

Affordability: The least expensive way to go is with a Newtonian telescope on a Dobsonian mount. This mount is a simple wood contraption allowing the telescope to be moved laterally and up and down. A basic 8", the smallest aperture I recommend in Dobsonians, can be had for around \$300. If a tracking German Equatorial Mount is desired, add several hundred dollars to that price. High end



Newtonian optical assembly showing the tube (1), the primary mirror (2), and the secondary diagonal mirror support (also called a "spider support") (3).

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The Observer

The Backyard Astronomer

Continued from page 2 Dobsonians, usually in apertures of 12" and larger, can be quite expensive. The Obsession 12.5" sells for \$3000, the 18" is \$6000. These telescopes are referred to as *Light Buckets* because of their large light gathering mirrors well suited for pulling in dim deep sky objects like galaxies, nebulae, and star clusters. They are a favorite of serious observers.

Next on the ladder of affordability is the popular Schmidt-Cassegrain telescope (SCT). This is a reflecting telescope with a folded light path which keeps the tube half the length of a Newtonian, making for a very portable instrument. The eyepiece is also conveniently located at the rear of the telescope. I especially like system's enclosed tube due to a corrector plate at its front keeping the optics clean. My 1974 SCT's mirrors still look as clean as the day I bought it. It should be noted SCT's have narrower fields of view than Newtonians. Usually sold as a

computerized model, this would be an excellent choice in the 8" size for its ample aperture and combined with portability. Celestron and Meade 8" SCT's are priced at \$1,400-\$2,000.



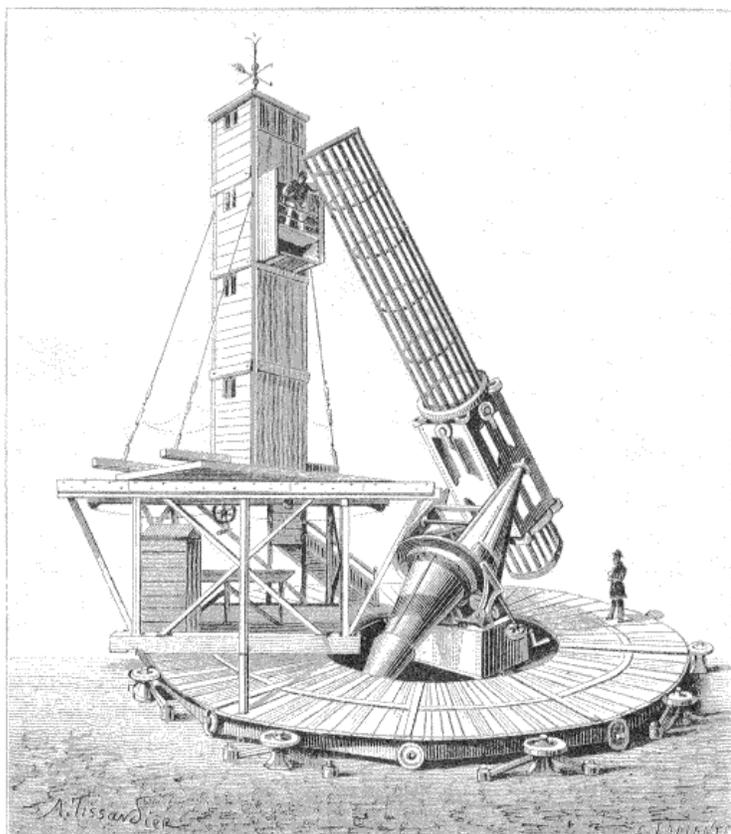
The 40-inch (1.02 m) Refractor, at Yerkes Observatory, the largest achromatic refractor ever put into astronomical use. Albert Einstein and the staff of the Observatory in front of the 40-inch Refractor. Photo Credit: Yerkes Observatory

The most expensive type of telescope is the Refractor. Most are sold as optical tube assemblies (OTA) without a mount. Prices run from about \$400 to \$1500 for a 3" or 4" depending on quality. The lower end prices are possible due to new imports from China. Expect to add the same cost for a mount to support the telescope. A few refractor/mount packages from China can be had in the \$500 to \$1,000 range. But if you're considering the good stuff, be prepared to dish out big bucks. For example, an 85mm Televue on an alt-az mount cost \$2800 ("alt-az is a mount that moves left-

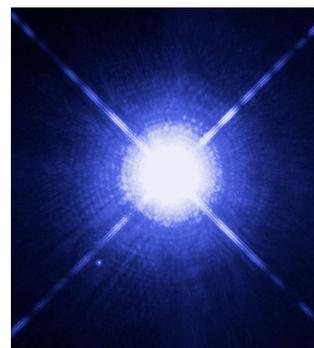
right, up-down, usually without a motor drive). For that much money you could buy a 11" SCT GOTO.

An Astro-Physics 130mm (5") on a Losmandy G-11 mount runs about \$7,000. Dreaming of an Astro-Physics 6" on their 1200 mount? Scrape up \$18,000. Don't let this scare you away from these beautiful little telescopes. They can make an excellent *Grab and Go* scope for that quick look or trip. It should be possible to find a mid-priced decent 3" or 4" refractor on a modest mount for under \$1,000. Refractor vendors to check out online, in order of cost, are: Orion, Astro-Tech, Explore Scientific, Celestron, Meade, William Optics, Stellarvue, Televue, Astro-Physics (long wait!), and Takahashi.

In conclusion, consider the telescope that offers as much aperture as you can afford and yet meets your transportation and set-up requirements. There's a lot to choose from out there – good luck!



A large Newtonian reflector from 1873 with structure to access the eyepiece. Can you say portability?



An image of Sirius A and Sirius B by the Hubble Space Telescope showing diffraction spikes and concentric diffraction rings.

Closest Encounter with Jupiter Until 2022

by Dr. Tony L. Phillips

Been outside at midnight lately? There's something you really need to see. Jupiter is approaching Earth for the closest encounter between the two planets in more than a decade - and it is dazzling.

The night of closest approach was Sept. 20-21st. This is also called "the night of opposition" because Jupiter will be opposite the sun, rising at sunset and soaring overhead at midnight. Among all denizens of the midnight sky, only the Moon itself will be brighter.

Earth-Jupiter encounters happen every 13 months when the Earth laps Jupiter in their race around the sun. But because Earth and Jupiter do not orbit the sun in perfect circles, they are not always the same distance apart when Earth passes by. On Sept. 20th, Jupiter will be as much as 75 million km closer than previous encounters and will not be this close again until 2022.

The view through a telescope is excellent. Because Jupiter is so close, the planet's disk can be seen in rare detail - and there is a lot to see. For instance, the Great Red Spot, a cyclone twice as wide as Earth, is bumping up against another storm called "Red Spot Jr." The apparition of two planet-sized tempests grinding against one another must be seen to be believed.

Also, Jupiter's trademark South Equatorial Belt (SEB) recently vanished, possibly submerging itself beneath high clouds.

Researchers say it could reappear at any moment. The dramatic resurgence would be accompanied by a globe-straddling profusion of spots and cloudy swirls, clearly visible in backyard telescopes.

And what was that flash? Amateur astronomers have recently reported a surprising number of fireballs in Jupiter's atmosphere. Apparently, many small asteroids or comet fragments are hitting the giant planet and exploding among the clouds. Researchers who have studied these events say visible flashes could be occurring as often as a few times a month.

Finally, we mustn't forget the moons of Jupiter because they are also having a close encounter with Earth. These are planet-sized worlds with active volcanoes (Io), possible underground oceans (Europa), vast fields of craters (Callisto), and mysterious global grooves (Ganymede). When Galileo discovered the moons 400 years ago, they were no more than pinpricks of light in his primitive spy glass. Big, modern amateur telescopes reveal actual planetary disks with colorful markings.

It makes you wonder, what would Galileo think?

Answer: "I'm getting up at midnight!"

Article credit: Science@NASA

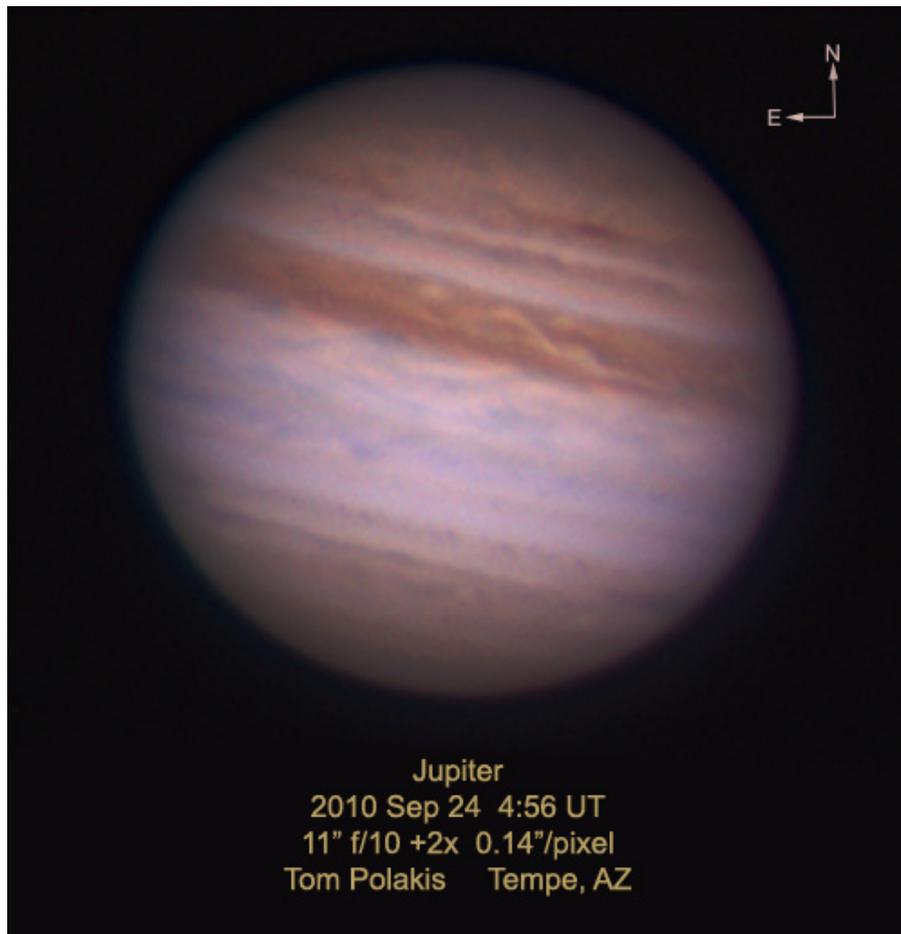


Photo courtesy of Tom Polakis

October Guest Speakers: Frank Pino & Claude Haynes

This month's speakers are EVAC members Frank Pino and Claude Haynes. These gentlemen will be speaking about remote telescope observing

Frank Pino has been in remote astronomy for the past seven years. He works through HOU (Hands On Universe) which is run by UofC Berkeley. He has two scopes in his observatory, a ten inch and a sixteen inch both LX200. His scopes are used from all over the world. The students are from elementary through College. This past school year the 16" took 11,332 images and the 10" took 7,538 images. Besides taking pretty images, some of the students also do light curves, hunt for asteroids and comets. Frank is retired from Los Angeles County Fire Dept. More information on Ironwood North Observatory Arizona can be found on page 13 of this issue.



Claude Haynes is a past president of the East Valley Astronomy Club and is active in public astronomy outreach. He arranges for the SkyWatch public lectures the second Friday of each month at the Gilbert Library (held in conjunction with the EVAC public star party), and participates in many school star parties during the year. His favorite viewers are his two granddaughters who enjoy looking through "Poppa's scope". Claude is employed as a database and systems manager at Pearson Education.

2010 All-Arizona Star Party (AASP)

Normally, the AASP is held in October, but this year it will be held in very early November (specifically Friday 5th and Saturday 6th).

In addition to the new date, there is also a new location!

The new location is on BLM land, and known as the Antennae Site, used regularly by the Saguaro Astronomy Club (SAC). The site is a couple of miles south of I-10 at the Hovatter Road exit (#53). It is about 90 miles west of Phoenix. Complete directions and maps are on the web site.

http://www.evaconline.org/aasp_2010.htm

○ **NEW MOON ON OCTOBER 7 AT 11:44**

◐ **FIRST QUARTER MOON ON OCTOBER 14 AT 14:27**

● **FULL MOON ON OCTOBER 22 AT 18:37**

◑ **LAST QUARTER MOON ON OCTOBER 30 AT 05:46**

Astronomy Calendars for 2011 will be for sale starting at the September monthly general meeting. Suggested cost is \$12.95 plus shipping, but the cost to you at the meeting is \$8.00 cash or check only. Correct change is appreciated. First come, first served at each successive month's general meeting until they are gone.

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Upcoming Meetings

October 15

November 19

December 17

January 21

February 18

March 18

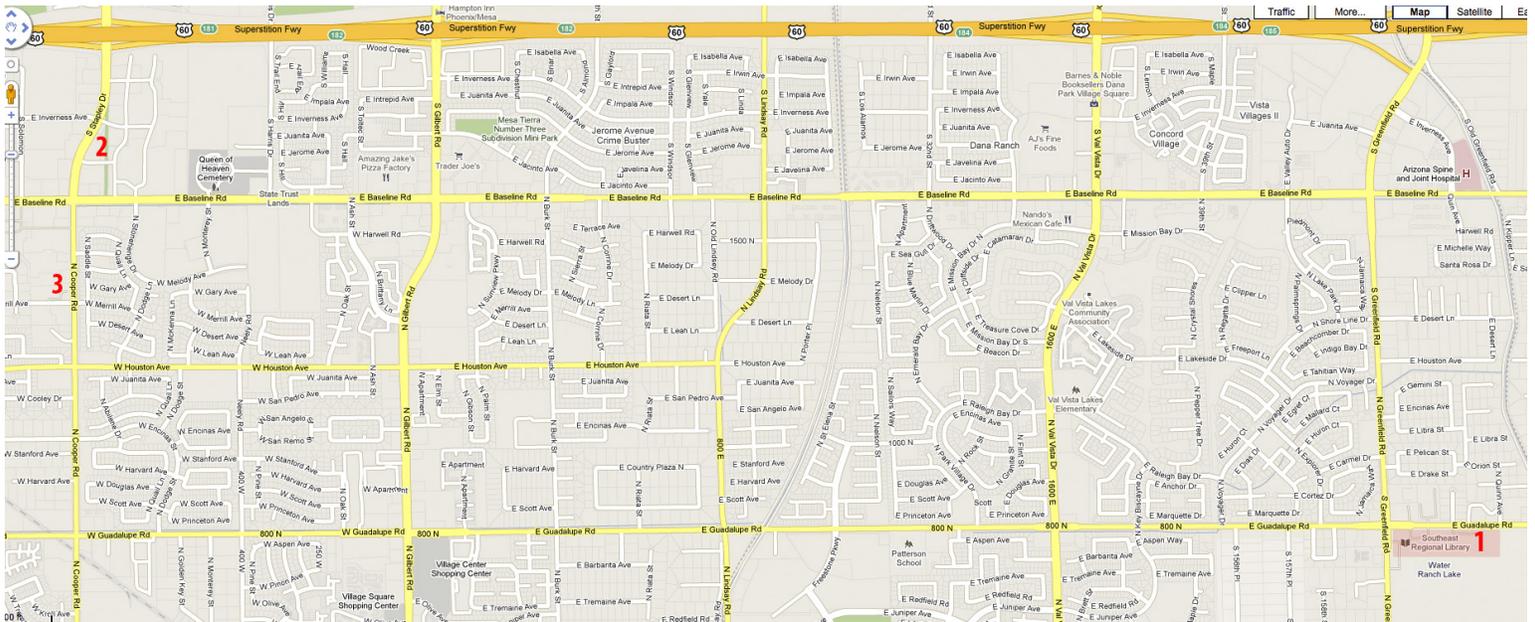
The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30 pm.

All are welcome to attend the pre-meeting dinner at 5:30 pm. We meet at Old Country Buffet, located at 1855 S. Stapley Drive in Mesa. The restaurant is in the plaza on the northeast corner of Stapley and Baseline Roads, just south of US60.

Likewise, all are invited to meet for coffee and more astro talk after the meeting at Denny's on Cooper (Stapley), between Baseline and Guadalupe Roads.

Visitors are always welcome!



2 Old Country Buffet
1855 S. Stapley Drive
Mesa, Az. 85204

1 Southeast Regional Library
775 N. Greenfield Road
Gilbert, Az. 85234



3 Denny's
1368 N. Cooper
Gilbert, Az. 85233



OCTOBER 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

October 2 - Local Star Party at Boyce Thompson Arboretum

October 8 - Public Star Party & SkyWatch at Riparian Preserve

October 9 - Deep Sky Observing Night. Head out to your favorite dark sky site and observe!

October 13 - Dr. Guy Consolmagno at North Valley Regional Library in Anthem, sponsored by DFAC

October 15 - General Meeting at Southeast Regional Library

NOVEMBER 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

November 5-6 - All-Arizona Star Party at Hovatter Road site

November 12 - Public Star Party & SkyWatch at Riparian Preserve

November 18 - Webster School Star Party

November 19 - General Meeting at SE Library

November 27 - Local Star Party at Boyce Thompson

November 29 - Akimel A-al Elementary School Star Party

East Valley Astronomy Club -- 2010 Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

New Member
 Renewal
 Change of Address

New Member Dues (dues are prorated, select according to the month you are joining the club):

<input type="checkbox"/> \$30.00 Individual January through March	<input type="checkbox"/> \$22.50 Individual April through June
<input type="checkbox"/> \$35.00 Family January through March	<input type="checkbox"/> \$26.25 Family April through June
<input type="checkbox"/> \$15.00 Individual July through September	<input type="checkbox"/> \$37.50 Individual October through December
<input type="checkbox"/> \$17.50 Family July through September	<input type="checkbox"/> \$43.75 Family October through December

Includes dues for the following year

Renewal (current members only):

\$30.00 Individual
 \$35.00 Family

Magazine Subscriptions (include renewal notices):

\$34.00 Astronomy
 \$33.00 Sky & Telescope

Name Badges:

\$10.00 Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC

Payment was remitted separately using PayPal
 Payment was remitted separately using my financial institution's online bill payment feature

Name: <input style="width: 300px; height: 25px;" type="text"/>	Phone: <input style="width: 300px; height: 25px;" type="text"/>
Address: <input style="width: 300px; height: 25px;" type="text"/>	Email: <input style="width: 300px; height: 25px;" type="text"/>
City, State, Zip: <input style="width: 250px; height: 25px;" type="text"/>	<input type="checkbox"/> Publish email address on website URL: <input style="width: 300px; height: 25px;" type="text"/>

How would you like to receive your monthly newsletter? (choose one option):

Electronic delivery (PDF) *Included with membership*
 US Mail **Please add \$10 to the total payment**

Areas of Interest (check all that apply):

<input type="checkbox"/> General Observing	<input type="checkbox"/> Cosmology
<input type="checkbox"/> Lunar Observing	<input type="checkbox"/> Telescope Making
<input type="checkbox"/> Planetary Observing	<input type="checkbox"/> Astrophotography
<input type="checkbox"/> Deep Sky Observing	<input type="checkbox"/> Other

Please describe your astronomy equipment:

Would you be interested in attending a beginner's workshop? Yes No

How did you discover East Valley Astronomy Club?

PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org

All members are required to have a liability release form (waiver) on file. Please complete one and forward to the Treasurer with your membership application or renewal.

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as “EVAC”) I hereby affirm that I and my family agree to hold EVAC harmless from any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), which may directly or indirectly be connected to EVAC and/or my presence on the premises of any EVAC Star Party and related areas.

I further agree to indemnify any party indicated above should such party suffer any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), caused directly or indirectly by my negligent or intentional acts, or failure to act, or if such acts or failures to act are directly or indirectly caused by any person in my family or associates while participating in an EVAC Star Party.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance.

EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Please print name here

Date

Please sign name here

**PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org**

The Hunt is On

by Carolyn Brinkworth

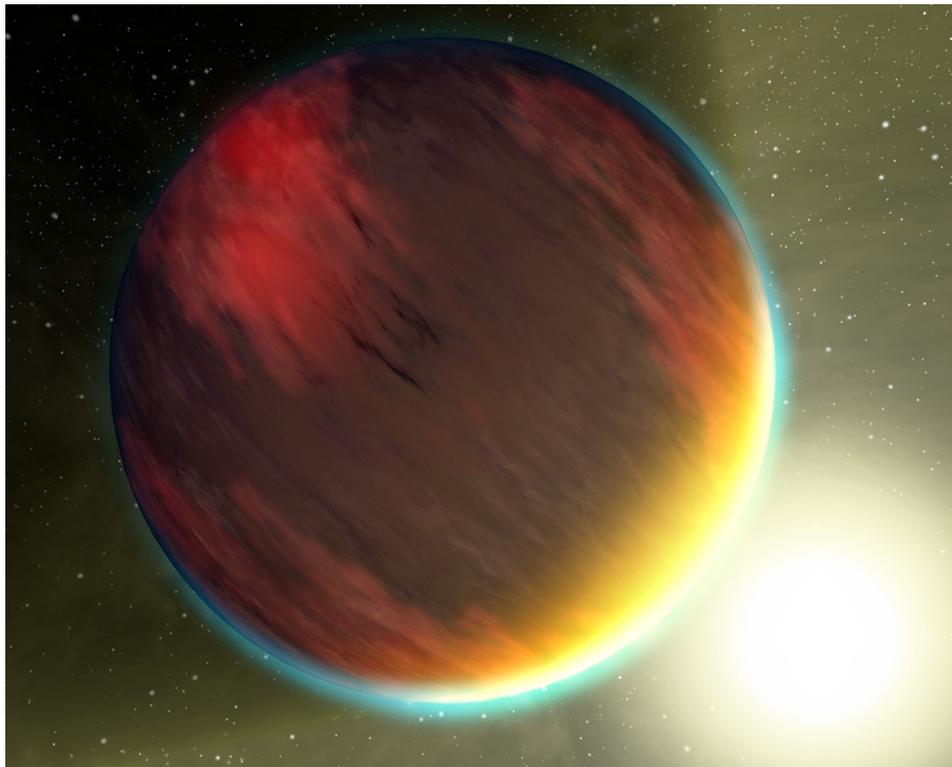
The world of astronomy was given new direction on August 13, 2010, with the publication of the Astro2010 Decadal Survey. Astro2010 is the latest in a series of surveys produced every 10 years by the National Research Council (NRC) of the National Academy of Sciences. This council is a team of senior astronomers who recommend priorities for the most important topics and missions for the next decade.

Up near the top of their list this decade is the search for Earth-like planets around other stars—called “extrasolar planets” or “exoplanets” — which has become one of the hottest topics in astronomy.

The first planet to be found orbiting a star like our Sun was discovered in 1995. The planet, called “51 Peg b,” is a “Hot Jupiter.” It is about 160 times the mass of Earth and orbits so close to its parent star that its gaseous “surface” is seared by its blazing sun. With no solid surface, and temperatures of about 1000 degrees Celsius (1700 Fahrenheit), there was no chance of finding life on this distant world. Since that discovery, astronomers have been on the hunt for smaller and more Earth-like planets, and today we know of around 470 extrasolar planets, ranging from about 4 times to 8000 times the mass of Earth.

This explosion in extrasolar planet discoveries is only set to get bigger, with a NASA mission called Kepler that was launched last year. After staring at a single small patch of sky for 43 days, Kepler has detected the definite signatures of seven new exoplanets, plus 706 “planetary candidates” that are unconfirmed and in need of further investigation. Kepler is likely to revolutionize our understanding of Earth’s place in the Universe.

We don’t yet have the technology to search for life on exoplanets. However, the infrared Spitzer Space Telescope has detected molecules that are the basic building blocks of life in two exoplanet atmospheres. Most extrasolar planets appear unsuitable for supporting life, but at least two lie within the “habitable zone” of their stars, where conditions are theoretically right for life to gain a foothold.



Artist's rendering of hot gas planet HD209458b. Both the Hubble and Spitzer Space Telescopes have detected carbon dioxide, methane, and water vapor—in other words, the basic chemistry for life—in the atmosphere of this planet, although since it is a hot ball of gas, it would be unlikely to harbor life.

to gain a foothold.

We are still a long way from detecting life on other worlds, but in the last 20 years, the number of known planets in our Universe has gone from the 8 in our own Solar System to almost 500. It’s clear to everyone, including the Astro2010 decadal survey team, that the hunt for exoplanets is only just beginning, and the search for life is finally underway in earnest.

Explore Spitzer’s latest findings at <http://www.spitzer.caltech.edu>. Kids can dream about finding other Earths

as they read “Lucy’s Planet Hunt” at <http://spaceplace.nasa.gov/en/kids/storybooks/#lucy>.

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

If It's Clear...

by *Fulton Wright, Jr.*

Prescott Astronomy Club

OCTOBER 2010

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is 1/2 degree or 30 arcminutes in diameter. All times are Mountain Standard Time.

This is the month to look for comet 103P/Hartley which might peak at 5th magnitude about October 20. See Astronomy magazine, October 2010, p. 42 or Sky & Telescope, October 2010, p. 56 for more details and a finder chart.

On Friday, October 1, after sunset, you might be able to see two moon shadows on Jupiter. This will be an observing challenge for a lot of reasons. Twilight will interfere. Jupiter will be low in the east. The second shadow barely touches Jupiter's southern limb. Good luck. Here is the data on this event:

- 5:44 PM Jupiter rises with Io and its shadow on the planet.
- 6:05 PM (approx) Callisto's shadow creeps onto the southern limb of Jupiter.
- 6:14 PM Sunset.
- 6:32 PM Io moves from in front of Jupiter
- 6:39 PM Civil twilight ends. (You should be able to find Jupiter by now.)
- 6:48 PM Io's shadow leaves Jupiter
- 7:20 PM (approx) Callisto's shadow creeps off Jupiter.

On Sunday, October 3, at 7:28 PM, the eclipsing binary Algol is at minimum (magnitude 3.4). You can watch it brighten to magnitude 2.2 as the night progresses.

On Thursday, October 7, it is new Moon, so you have all night to hunt for faint fuzzies. As a matter of fact, tonight is the perfect time to look for comet 103P/Hartley (mentioned at the beginning of this month's events) because it will float by the Double Cluster in Perseus making it easy to find and easy to notice its motion.

On Thursday, October 14, the Moon is at first quarter phase and sets at 11:50 PM.

On Friday, October 22, at 5:22 PM (24 minutes before sunset), the full Moon rises and blots out faint fuzzies for the whole night.

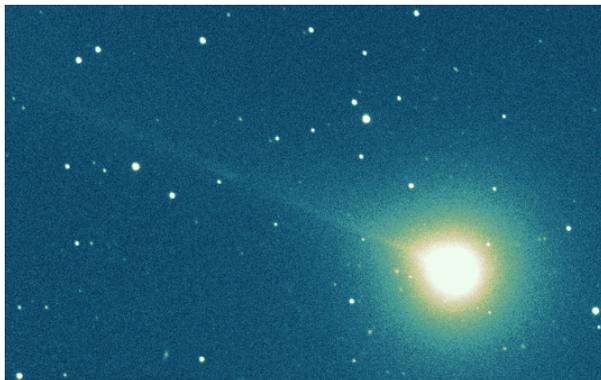
On Saturday, October 23, in the early evening, you can see some events with Jupiter's moons. Here is the schedule:

- 5:45 PM Sunset.
 - Europa is in front of Jupiter.
 - Ganymede's shadow is on Jupiter.
- 6:11 PM Civil twilight ends.
 - (You should be able to find Jupiter by now.)
- 6:40 PM Europa's shadow falls on Jupiter. (2 shadows)
- 6:48 PM Io goes behind Jupiter.
- 7:49 PM Europa moves from in front of Jupiter.
- 8:05 PM Ganymede's shadow leaves Jupiter. (1 shadow left)
- 9:22 PM Europa's shadow leaves Jupiter. (no shadows left)
- 9:50 PM Io emerges from Jupiter's shadow.
 - (to the celestial east of the planet)

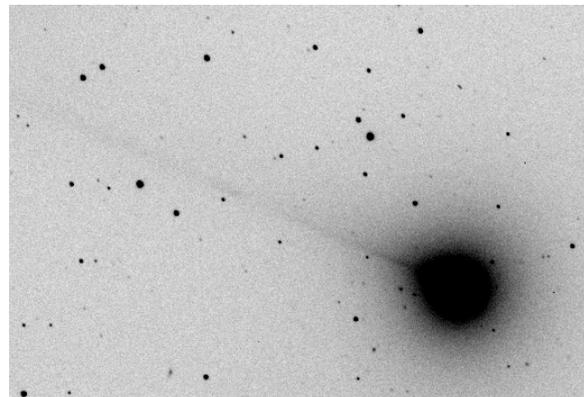
On Friday, October 29, the Moon is at last quarter phase and doesn't rise till 12:36 AM (October 30)

On Saturday, October 30, in the early evening, you can see some events with Jupiter's moons. Here is the schedule:

- 5:20 PM Ganymede moves in front of Jupiter.
 - (too much daylight to see)
- 5:38 PM Sunset
- 6:04 PM Civil twilight ends.
- 7:27 PM Europa moves in front of Jupiter.
- 8:22 PM Ganymede moves from in front of Jupiter.
- 8:36 PM Io moves behind Jupiter.
- 9:07 PM Ganymede's shadow falls on Jupiter. (1 shadow)
- 9:16 PM Europa's shadow falls on Jupiter. (2 shadows)
- 10:09 PM Europa moves from in front of Jupiter.
- 11:45 PM Io emerges from Jupiter's shadow.
 - (to the celestial east of the planet)
- 11:57 PM Europa's shadow leaves Jupiter. (1 shadow left)
- 12:06 AM Ganymede's shadow leaves Jupiter. (no shadows left)



False-color (left) and w-b (right) images of periodic comet 103P/Hartley 2, obtained on 1997 Dec. 28.727UT with 36-cm, f/6.7 Schmidt-Cassegrain telescope, V filter and CCD. Exposure time was 5 minutes. Copyright © 1997 by H. Mikuz.



Ironwood North Observatory - Arizona

Ironwood North Observatory was first built in Haleiwa, Hawaii and fully automated in 2004. Ironwood North Observatory, Hawaii was equipped with a LX-200 10" f6.3 Classic telescope, the main camera is a SBIG ST-9XEI the autoguiding is handled by a Borg 50 scope and SBIG ST-237A camera.

The "Rolling Roof Computer Interface" (RRCI) was designed by Chuck Faranda. With the addition of WeatherWatcher Server ACP the observatory became weather aware and could protect itself from the elements. Both the RRCI and WeatherWatcher Server for ACP are ASCOM compatible and work with ACP Observatory Control System. We also have a standalone program for those who do not wish to use ACP. The RRCI and WeatherWatcher Server ACP can be purchased at our online store for details go to http://ccdastro.net/Roof_Controller.html and <http://ccdastro.net/wwi.html>

Frank Pino joined Ken Archer in the winter of 2004 to built Ironwood North Observatory or "INO". Frank has been doing visual astronomy since the 1970's. He has owned several telescopes. Frank moved to Hawaii from Washington State in November 2002. He and Ken had met a few years earlier through their similar interests of aviation and astronomy. Frank now resides in Arizona where he has built Ironwood North, AZ.

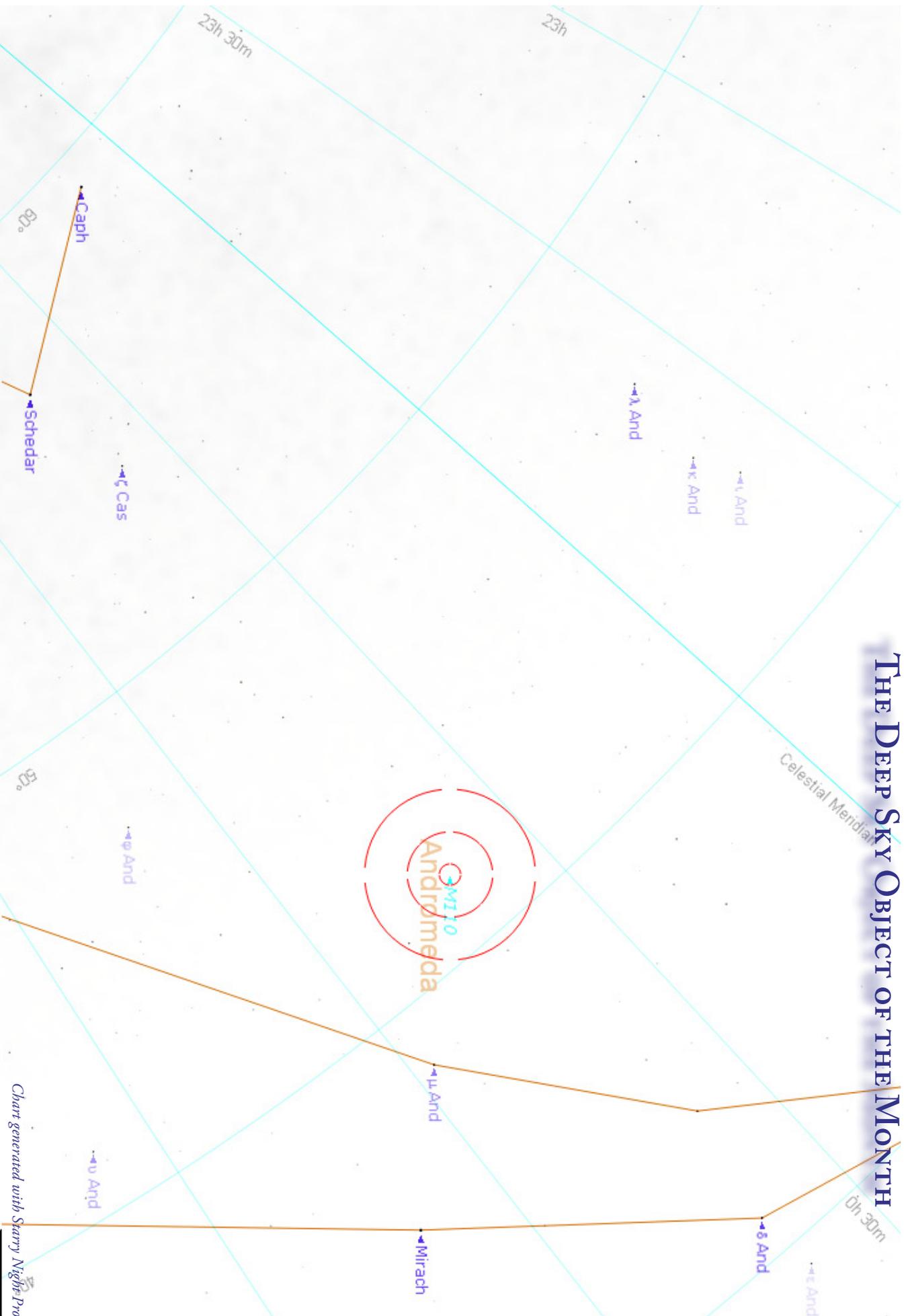
While Hawaii is a great place to live Frank felt he could do more imaging under the clear dry skies of Arizona. Currently about 1000 images a month are taken remotely from schools belonging to the Hands on Universe and the Global Hands on Universe.

Ironwood North Observatory, AZ is now housed a small roll-off roof observatory measuring 8' x10'. Frank Pino owns and runs Ironwood North Observatory, AZ. Equipped with a LX-200 10" f6.3 Classic telescope, the main camera is a SBIG ST-9XEI the autoguiding is handled by a Borg 50 scope and SBIG ST-237A camera.

While we were building the original INO we were contacted by Dr. Carl Pennypacker, head of the Hands on Universe project. He was looking for remote observatories to participate in the program. Hands on Universe, is a run by the University of California, Berkeley and Lawrence Hall of Science. The HOU team has provided financial support for INO.

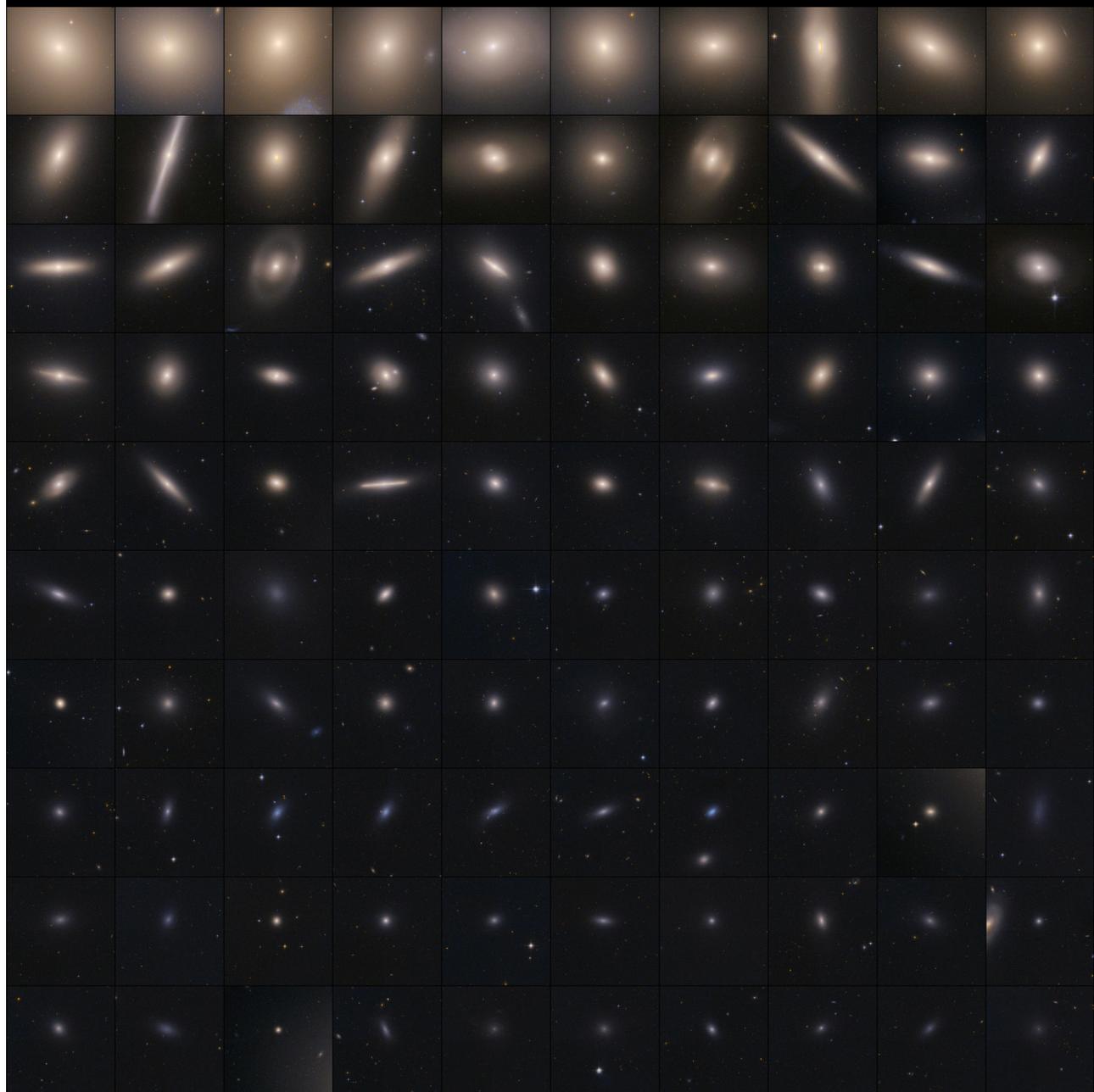


THE DEEP SKY OBJECT OF THE MONTH



M 110 (NGC 205) Edge-On Elliptical Galaxy in Andromeda

RA: 00h 40m 22.3s Dec: +41° 41' 09" Magnitude: 8.90 B Size: 17.8' x 9.8'



NASA, ESA, and E. Peng (Peking University, Beijing)

STScI-PRC08-30c

These images taken by NASA's Hubble Space Telescope show the globular cluster systems of 100 galaxies observed within the Advanced Camera for Surveys (ACS) Virgo Cluster Survey. Globular clusters, dense bunches of hundreds of thousands of stars, have some of the oldest surviving stars in the universe. Most of the star clusters in the Virgo survey are older than 5 billion years. The Hubble study found evidence that these globular clusters are more likely to form in dense areas where star birth occurs at a rapid rate, instead of uniformly from galaxy to galaxy. Comprised of over 2,000 galaxies and located about 54 million light-years away, the Virgo cluster is the nearest large galaxy cluster to Earth. These composite images were made from the advanced camera's full field-of-view observations. Astronomers also used modeling data to fill in a narrow gap between the camera's detectors. The images were taken from December 2002 to December 2003.

Credit: NASA, ESA, and E. Peng (Peking University, Beijing)

From the Desk of the President

Continued from page 1). Find the link at the bottom of the left column on the home page.

Lynn Young has done an excellent job researching and presenting information on hats and jackets for EVAC. Initial orders have been taken, and orders placed. Well done Lynn! Lynn is also busy providing support for the EVAC Outreach Program, acting as Randy Peterson's assistant.

EVAC has renewed our sponsorship of our 4 prima-

ry observing areas with CSC. EVAC members certainly do rely on that information it seems. Attilio Danko, the author of the Clear Sky Charts (CSC) has extended to thanks to EVAC members for our continuing support.

I look forward to returning to the EVAC monthly meetings on October 15th. See you then. Until then, remember to Keep Looking UP !!

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