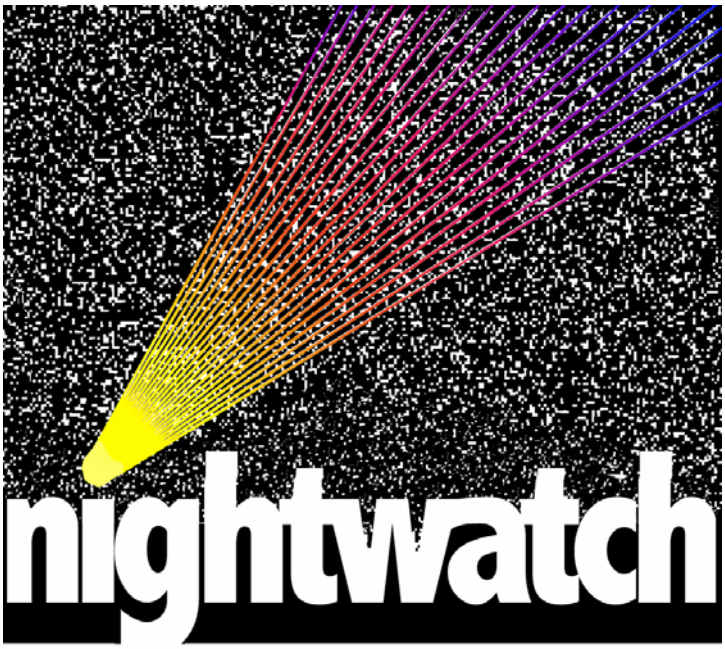

Newsletter of the Pomona Valley Amateur Astronomers

We are all in the gutter, but some of us are looking at the stars.
Oscar Wilde

Volume 32 Number 04 ***nightwatch*** **April 2012**

President's Message

We are on the verge of big things. Next month, May, will bring an annual eclipse of the sun, the path of which will cross the western US from northern California to west Texas. Then in early June Venus will transit the face of the sun, for the last time until 2117.

This month's big event is a lot closer to home. At 7:00 PM on the evening of Tuesday, April 17, the Claremont Public Library will host a special event to celebrate the launch of the Library Telescope Program. As you might be tired of hearing by now, this is a collaborative venture by the Claremont Public Library, the Friends of the Claremont Library, and the PVAA to place a small telescope--an Orion Starblast 4.5" reflector--in the library for patrons to check out, just as they would a book. And it's almost here.

I confess to having a bit of new telescope fever. I've given scopes as gifts before, and I know how I feel when I get a new telescope, so the chance to give a telescope to an entire community is really something special. When I was 16, my physics teacher showed me the moons of Jupiter through his 4" refractor. It took almost two decades for that seed to germinate, in terms of converting me into a stargazer--but the point is that it did eventually sprout. If the library telescope gets a few kids and parents to look up in wonder, I'll consider that mission accomplished.

And speaking of looking up in wonder, our speaker this month is professional astronomer Tim Thompson (http://www.tim-thompson.com/), who will be talking to us about the Kepler mission to detect extra-solar planets.

Matt Wedel

Club Events Calendar

April 13 - General Meeting -

Our April speaker will be Tim Thompson.
His topic will be the Kepler Mission.

April 21 - Star Party - Cow Canyon Saddle , Mt. Baldy
April 25 - Public Outreach - Anaheim Braille Institute 7pm

May 3 - Board Meeting, 6:15
May 11 - General Meeting
May 20 - Annular Solar Eclipse
May 23 - 28 RTMC
May 26 - Star Party - RTMC
May 31 - Board Meeting, 6:15

June 5 - Venus Transits Sun - starting 3:06pm
June 8 - General Meeting
June 16 - Star Party - White Mountain
June 22 - Star Party - Cottonwood Springs - joint with
Palm Springs Braille Institute

July 2 - School Star Party - Colony High School, Ontario
July 5 - Board Meeting, 6:15
July 13 - General Meeting
July 24 - Ontario Library Main Branch Dark to 9pm

August 2 - Board Meeting, 6:15
August 10 - General Meeting
August 18 - Star Party - Mojave River Forks Regional Park
August 30 - Board Meeting, 6:15

September 7 - General Meeting
September 15 - Star Party - To Be Announced

Name The Telescope

On Saturday, March 31st , the Claremont Library set up 10 tables with different arts and crafts. One of the ten tables displayed the new Library Telescope. The telescope will be available to be checked out by any adult patron in good standing with the Claremont Library with a valid Claremont library card starting Tuesday, April 17th.

To kick things off, our table had the telescope, several brand new books on astronomy, and a "Name The Telescope" contest. You put your name and phone number, along with your name for the telescope on a piece of paper that was supplied, and put it in the box on the table. If your name is chosen, then you get to be the first to check out the telescope, and you win a brand new book on astronomy. - Courtesy of the Friends of the Claremont Library. We had an ink pad and a stamp of stars which we used to stamp the kids' bookmark. - This way they were sure to come by so they could get their "star stamp".

From 1pm to 4pm Justin Balderrama and I showed off the telescope, talked to the kids and adults alike about the program. The kids wrote down all kinds of names from "Pickles" to "Zoltar".

I had the telescope for two nights before, so I took a shot of the moon with my cell phone, which we passed out copies of, and I also took a movie of using the USB eyepiece camera. Those impressed the adults. "*You did that with a cell phone?*" A good time was had by all.

Gary Thompson

PVAA Officers and Board

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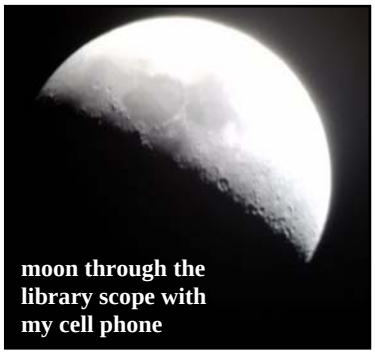
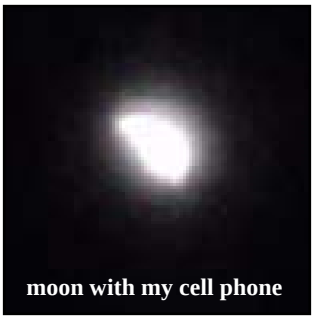
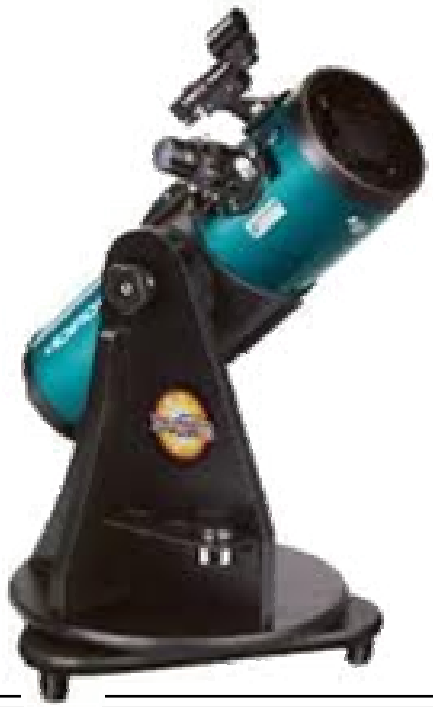
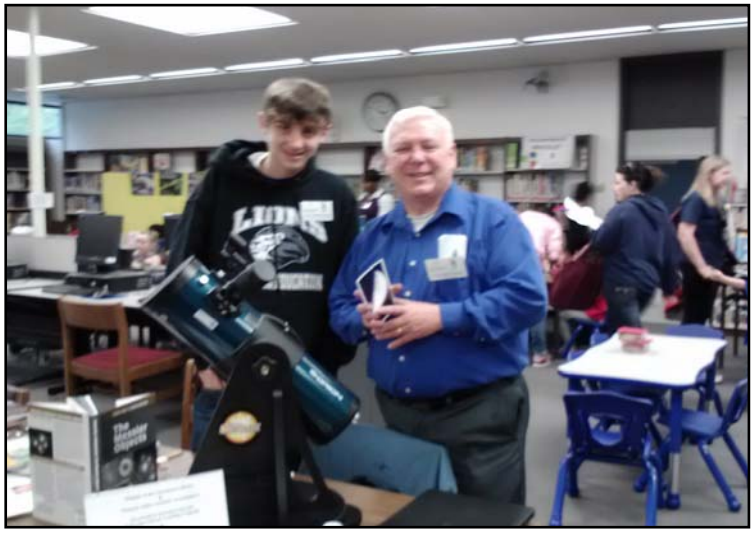


moon through the library scope with my cell phone



moon with my cell phone





Justin & myself at the Claremont Library with the Library Telescope

How Does It Work?

In the previous articles we found that in order to see the faintest star possible, we need to suppress the background until it appears black. Then the size of the objective and the eye detection threshold will determine the faintest star we can see. We can do this by selecting an eyepiece with a sufficiently short focal length.

When we select an eyepiece with a short focal length the airglow seems to diminish. That is because we have effectively spread out the portion of the sky we are looking at and our eye now sees a smaller solid angle. The goal is to be limited by our eye's minimum detection threshold.

Now we can look at the faint fuzzies under the same low apparent background conditions. We found in the last article that the choice of eyepiece focal length only depends on F number. Under fair conditions, an F/5 requires an 8 mm eyepiece while an F/10 needs only a 16 mm eyepiece. Under these conditions what will the faint fuzzies look like?

The difference between seeing a star and seeing a nebula or galaxy is that the nebula and galaxy are extended sources while the star is a point source. We suppressed the background by selecting a short focal length eyepiece in order to see the faintest star possible. We need to do the same thing for nebulas and galaxies. But an extended source is stretched just like the background. The result is that any scope whether it is a 12 inch Dobson or a 70 mm ETX will be limited to about magnitude 11 under fair conditions. That means they can each see all the Messier galaxies and nebulas. Under excellent conditions a magnitude 12 fuzzie might be visible.

What this tells us is that an ETX-70 can see all the Messiers just like the big boys. The shorter focal length limits the magnification, but they can be seen. It may not be able to resolve the bands of Jupiter, but it can see the moons. My binocular with two 50 mm objectives has about the same light gathering power that my ETX-70 has. But it is limited by its inherent magnification.

Even Neptune, about magnitude 7.8, can be seen with a small scope. Of course it may be hard to identify, but it can be seen. The bigger objectives give us better resolution and scene brightness. But we shouldn't sell those small scopes short. The skill required to point them in the right direction is the same and, if we succeed, the satisfaction of finding the target can give just as much pleasure.

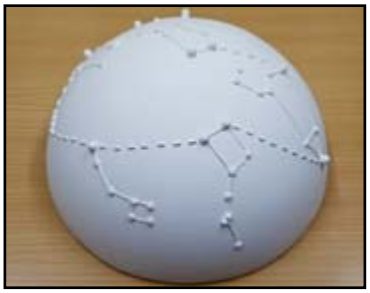
I have often seen beginners discouraged by the size of their scope. They are under the impression that bigger must be a lot better. Aperture fever can even grip experienced amateurs. I hope these articles will help show that although bigger is better, it isn't much better.

If you have a topic you would like me to discuss, please let me know at lcrowder@roadrunner.com .

Ken Crowder

The Sky In Your Hands

A Planetarium Show for Individuals Who Are Blind



A unique planetarium show now makes it possible for individuals who are blind to enjoy and obtain a perception of the night sky. The Astronomical Observatory located at the University of Valencia, Spain presents the Sky In Your Hands. This planetarium show utilizes a seven channel sound track to mark on the dome the position of constellations and other space objects found in the sky the night of the show. Another unique feature is the use of two narrators during the show. The first narrator share information about the celestial objects being projected. The second narrator guides the participants with the use of a tactile semi-sphere on which the same celestial objects are engraved in a raised format. Together the combination of the audio, visual and tactile elements of this show creates an image of the night sky for individuals with low vision to those that are totally blind that is as close as possible to that experienced by sighted individuals. During the show the tactile semi-spheres rest comfortably on the participants laps.

To date eleven planetariums from various countries have expressed an interest in The Sky In Your Hands Program. To facilitate this demand for The Sky In Your Hands, Astronomers Without Borders is translating this program into several languages.

Making the universe accessible to individuals who are blind or who are visually impaired is becoming more commonplace. Observatories, planetariums, and other astronomy educators continue to use existing technology in ways to enable individuals who are blind or with vision impairments to "see" the universe in ways they will never forget.

Frank Busutil

What's Up - Let Loose The Hairy Hounds

The Hunting Dogs (Canes Venatici) are one of the 17th century astronomer Hevelius' fill-in constellations. Said to represent Bootes, the Herdsman's hounds that chase the Big Bear around the pole. Chara and Asterion were their names. Beta Canum is still called Chara but Alpha Canum was renamed Cor Caroli (Charles' Heart). One tale of that naming has Edmund Haley (of comet fame) naming it after Charles II of England (in 1649 when he was restored to the throne) in an attempt to get royal funding for astronomers. But other sources say it honors the beheaded Charles I. Either way it's one of a very few politically motivated star names. It's an attractive double star in which some see colors.

Canes Venatici is rich in over 35 deep sky galaxies, four of which are bright enough for amateur telescopes. These Messier catalogued galaxies are outlying members of the Coma Berenices galaxy cluster.

The most photographed is the Whirlpool, M51. Its companion galaxy NGC 5159 has gravitationally grabbed an M51 spiral arm and dragged it back behind like some dancing couple. For this reason it's sometimes called the "question mark" galaxy. Both about 25 million light years away. M51 was the first to be seen as a spiral with the Earl of Rosse's 6 ft. speculum mirror telescope (the Irish Goliath of Parsonstown) in 1845. That was the largest telescope in the world at that time.

Recent M51 discoveries include supernovae in 2005 and 2011. Also a massive black hole surrounded by a dust ring presents a cross like shadow at the galaxy's core. M51's pronounced spiral is probably the result of its ongoing interaction with NGC 5159.

In the same galaxy group is M63, the Sunflower Galaxy (pictured). Its mottled dust lanes create an attractive petal-like appearance.

Nearby is M106, one of the last Messier catalogued. It has also recently shown strong evidence of having a black hole at its center.

The brightest galaxy in Canes Venatici is M94 which has its own galaxy group. This round overhead-viewed galaxy features a starburst series of rings around an apparently bulging center.

The last Messier here is M3, one of the brighter globular clusters.

Just south is the "hairy" Coma Berenices (Berenice's Hair), the center of the Coma Galaxy Cluster and the location of the North Galactic Pole.

Queen Berenice was the wife of an Egyptian king who went off to war. Fearing for his return, the queen went to the temple of Venus and promised that she would sacrifice her beautiful hair if her husband returned safely. She must have been one of the least vain of queens to make such a vow, or else she didn't expect her king to come back. But return he did and off came the long tresses. It was presented to the altar of Venus (didn't she think of trying to substitute a wig?). The hair mysteriously disappeared and the priests explained that it had been placed in the heavens by Venus herself. The faint cluster of stars called cluster Mel 111 is the hairy evidence. Could the later discovered galaxies be considered a form of dandruff?

Coma Berenices contains over 35 galaxies of which the Messier objects are the brightest. There's also a close pair of globular clusters, M53 and NGC 5053. One of the best is M64, The Black Eye Galaxy. It's notable for a huge bruise-dark dust cloud for which it is named. An faint edge on galaxy, NGC 4565 is often photographed for its "flying saucer" shape.

Going south into Virgo we can view the entire Virgo-Coma Galaxy Cluster which is centered on a point near the border between the two constellations. Many thousands of galaxies have been photographed in these two related clusters. The Virgo-Coma forms the center of a huge collection of galaxies known as the Local Supercluster, with a diameter of some 100 million light years.

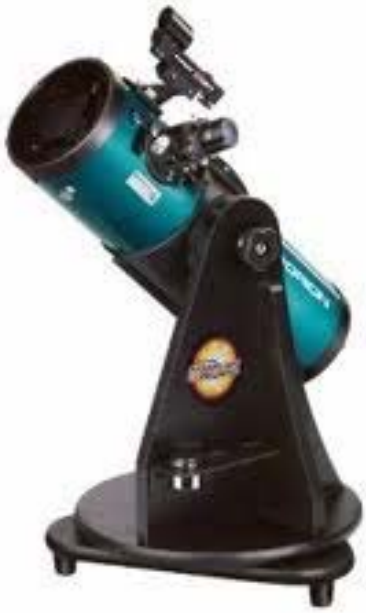
Here is the giant elliptical galaxy M87 which has an extragalactic jet shooting out from the accretion disc of a super massive black hole. This gravitationally heavy sinkhole weighs some 6.3 billion solar masses. It marks M87 as an prime example of an elusive black hole.

A black hole is a gravity collapse from which nothing, not even light, can escape. So astronomers can't directly observe them but have to infer their presence by detecting their odd effect on matter nearby. It's now believed that super massive black holes lie at the centers of all large galaxies, even our own Milky Way. Here in the Virgo-Coma Galaxy Cluster, M51, M106, and M87 all show strong signs of actually invisible black holes.

So let us celebrate this Realm Of The Galaxies where those giant star systems are sometimes bunched so thickly in places that a dozen may be viewed together. Such visual rapture may well leave a viewer speechless or howling like a hound. .

Lee Collins

Introducing…



The Orion Starblast Reflector Telescope at the Claremont Public Library

Join the Friends of the Claremont Library
& the Pomona Valley Amateur Astronomers
as we launch the library's exciting new telescope-lending program.

Tuesday, April 17
7 p.m.
208 N. Harvard Ave.

Watch the new telescope in action! Learn how *you* can check it out! Find out who won the name-the-telescope contest!
Enjoy light refreshments while you see the stars!