

# The Spectrum

The Newsletter for the Buffalo Astronomical

March/April

Volume 17, Issue 2

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## Our Newly Redesigned Website is Live!

If you haven't checked out [BuffaloAstronomy.com](http://BuffaloAstronomy.com) recently, it's time for a visit. Our new site, designed by webmaster and club member Gene Timothy is up and running. The interface is clean and organized and much easier to update with club news and astronomy content. You can now register for [the April Banquet](#), [join the club](#) and pay dues using a PayPal account or a major credit card. Coming soon is a new log-in area which will allow members to communicate with each other, share a profile and access special features, including BAA historical information and an archive of Spectrum issues dating back many decades.

Come visit and share your comments, thoughts and ideas on how we can make the site better and more useful to the club. A BIG thank you to Gene and the BAA Board for their hard work and creativity!



# BAA Schedule of Astronomy Fun for 2015



## BAA Schedule of Astronomy Fun for 2015

Mar 13: BAA Meeting at 7:30pm at Buffalo State College

Mar 20: New Moon

Mar 20: Total Solar Eclipse (Arctic)

Mar 21-22: Maple Syrup Festival at BMO 9am-3pm Need help for Solar viewing

Mar 21: Messier Marathon Dusk till Dawn at Beaver Meadow Observatory

Apr 4: First Public Night at Beaver Meadow Observatory

April 4: Total Lunar Eclipse

Apr 11: BAA Annual Dinner Meeting at Risottos

April 18; New Moon

Apr 18/19: NEAF who wants to car pool??

April 21-22: Lyrids Meteor Shower

Apr 25: Astronomy Day at Buffalo Museum of Science details TBA

May 2: Public Night BMO

May 8: BAA Meeting at 7:30pm at Buffalo State College

May 18: New Moon

Jun 6: Public Night BMO

Jun 12: BAA Meeting/Elections at 7:30pm at Buffalo State College

Jun 17 New Moon

July 4: Public Night BMO – I will need help as I have family obligations that day.

Jul 18: Club Star Party at BMO times TBA.

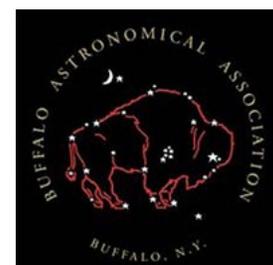
Aug 1: Public Night BMO

Aug 12: Meteor Shower –BMO anyone??

Sept 5: Public Night BMO

Oct 3: Public Night BMO

See you at the Observatory



## Membership Corner

I'm writing this from the kitchen table on the last day of February with sunlight streaming in the window and warming me with optimism that winter is finally loosening its grip on WNY. The first public night of 2015 at Beaver Meadow Observatory is only five weeks away!

Our membership roster today numbers a healthy 160, with more than twenty new members having joined since the start of this membership year. We've had a chance to meet many of you at our meetings and look forward to getting to know you better as the coats come off and the telescopes come out to capture starlight. We are happy to welcome:

*Brian Bannister, Justin Baumgardner, Joseph & Jude Biernat, Henry Bojanowski, Marietta & Stan Bratton, Katie Burns, Patricia Burns-White, Bob Cacciotti, Samantha Christopher, Joshua Coene, Frank & Rita Czechowski, Jamie & Wendy Ferrie, Peter & Kate Jenkins, Jessica Korta, Dan Mitchell, Barry Olson, Richard Porter, Halley Sheridan, Joe & Laurie Sisti, Michael Slattery and Maria Thor.*

To all members, new and old, if we can answer questions or help you to get connected with other members or club activities, please let us know.

Clear skies!

Alan Friedman and Dennis Bartkowiak

Membership Committee

[info@buffaloastronomy.com](mailto:info@buffaloastronomy.com)

BAA president Mike Anzalone had the great pleasure of observing the sun with these cool, smart, and "stellar" young people and their Mom. As they soaked up some well-deserved UV rays in 10 degree F temperatures they were well warmed by the stunning white light solar views provided by the 4" f/10 "Rigg's Refractor" equipped with a white light filter and binoviewer.



Greeting all! Well I think I can count on one frostbitten hand the number of times I've hauled a telescope outside over snow blanketed terrain in frigid temperatures since the infamous "Sno-vement" storm that pummeled the southern and eastern suburbs last November. Surely much of our membership experienced the same, save those of you who had the opportunity to travel to clearer warmer skies and escape this season's wintry grip.

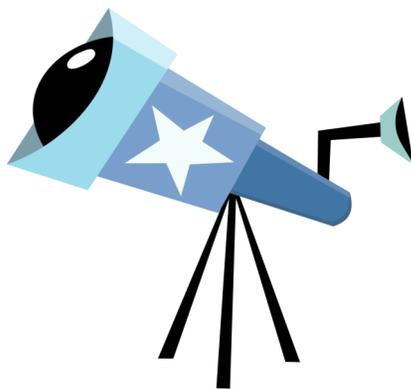
My observing sessions, although few in number and short in duration, did help satiate my appetite for some of the winter sky's astronomical delicacies. Despite light saturated suburban skies, even scant telescopic glimpses of the transitioning face and battered surface of our Moon, the radiant tumultuous Sun, the regal gas orb Jupiter with its Galilean celestial companions, or the cosmic luminary visitant, Comet Lovejoy, stirred the sense of awe and wonder our hobby provides. I hope you got outside too... maybe you caught a glimpse of the recent conjunction of a waxing early crescent moon, Venus and Mars in the western sky or merely got out to look up and enjoy the grandeur of the starry firmament above.

We are all looking forward to a break in the weather to enjoy all the events we have planned for the BAA this season- Public Nights starting in April at the Beaver Meadow Observatory, Maple Harvest Festival, Sun-Earth Day, Astrophotography nights at the observatory, Messier Marathon, April Dinner Meeting, Astronomy Day 2015, Solar SUNdays, observing events at the Lake Erie Seaway Trail Visitor Center, Family Day at the observatory, and many more impromptu observing events.

Let me know how you would like to participate in any of these events. We welcome all helping hands regardless of their level of expertise. I would like to also welcome all our new members to the club and invite you to join in. It's a great way to meet other members and enhance your astronomy knowledge and observing skills. There is always some club member available to assist you with some friendly advice and guidance. Lastly, we hope we can enhance the joy you can experience with this great hobby of amateur astronomy.

Yearning for Warmer Clear Skies,

Mike Anzalone  
President of the Buffalo Astronomical Association



# Observatory Report

By Dan Marcus

I can't give enough thanks to Alan Friedman, and the rest of the BAA for getting the upgrades to the Observatory. It has been a huge amount of fun using all the new equipment from inside the warming room. NO MORE FREEZING various body parts off while doing astronomy unless you want to. We have been able to get autoguiding working using the ST-9 and LRGB filters. Our data looks good, now all we need to do is get better at processing. The C-14 and a DMK web cam or a Canon DSLR work great on getting images of Saturn and Jupiter. If you make it to the Feb meeting, you will get to see Mike P's movie of Jupiter and a shadow transit- way cool to watch as well as to image.

Tuesday Night at the Observatory is in full swing despite the subzero temperatures. We were able to image comet Lovejoy Q2 with the NP101is on 2 occasions, got to image a shadow transit of Jupiter's Moon Io. Ivan showed us how to view all night at -12F – he must have antifreeze for blood, way tooooo cold for me. For those who think it is too cold to visit the Observatory, well think again. The hardest part is wading through the 2+ feet of snowpack and digging out the Obs so you can get in and open the roof. Mike and I were imaging NGC2903 with the C-14 and it was -20 out. We had to run the camera at -25C just so the cooler could regulate the temperature. Normally we keep the camera at -5C. So now we have to make some new darks for the lower temperature. Come spring I will be looking at what we need to do help get the roof open in the winter. The continuous cold and heavy snows this winter have made it exceptionally difficult to get the roof open. Some of the nights we have not been able to get it open enough to view Northern objects. The roof rails feel to be clean, but either the friction between roofs due to snow or ice is preventing the roof from rolling off smoothly. It will need further investigation. Right now the belt slips on the pulley when you have too much roof friction. I prefer to keep the tension on the pulley loose to prevent the roof from getting REALLY stuck.

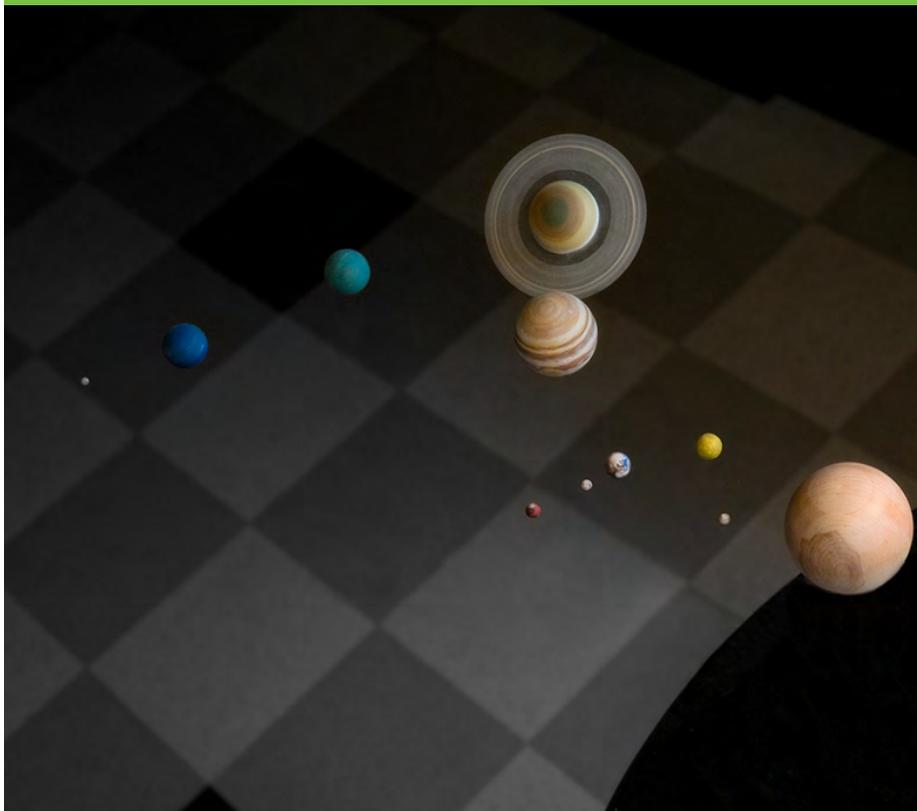
Need Help! The Observatory will be open for the Beaver Meadow Maple Syrup Festival Sat and Sun March 21/22 from 9am-3pm. You all know I can't get up before 9am so there is no way I can make it that early. If clear we will need help viewing the Sun and if cloudy will need help showing people the Observatory. If clear that Saturday night, it is a perfect time for a Messier Marathon. I plan on having a bring a dish to pass dinner if clear for those who were there during the day for the festival. The dinner and marathon will not happen if it is going to be cloudy so stay tuned to the e-groups for updates.

ATTENTION OBSERVATORY USERS: The C-14/NP101/ and AP1200 will be down for upgrading them from a rail system of mounting to a ring system sometime early March. I do not plan on having the scopes and mount out of service for more than a week or so, and intend to get it back on line before the New Moon in March. If I can't get it done by then, I will wait until after the Maple Syrup Festival to do the upgrade. The goal is to eliminate the flexure problems we currently have using the dovetail rail system we are currently using. The rings should stiffen up the system so there is much less flexure between the NP101/C-14 and the mount. Currently we can only track both scopes on an object for about 2-3 minutes before flexure kicks in. With this upgrade we hope to get at least 2x to 5x more tracking time before flexure kicks in, as well as better tracking in general.

People using the internet at the Observatory need to know that we have a 15gig monthly limit (that includes Beaver Meadow Audubon usage) before the internet provider charges a penalty for extra usage. Please keep this in mind and use the internet for getting astronomy stuff that you need out there, and not for down loading movies or other large files. The Beaver Meadow Audubon group and I are pretty sure it is their problem, not ours, but I don't want to contribute to the issue. Having internet service out there is a real help keeping the computers running.

Public Nights will start again on April 4 and be scheduled on the First Saturday of the Month through October.

The Buffalo Astronomical Association invites you to join us for



## the 2015 BAA Dinner Banquet

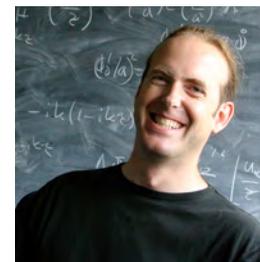
presenter Will Kinney, PhD "A Universe Just For Us"

The **Buffalo Astronomical Association** invites you to join us for our **2015 Annual Dinner Banquet**

with special guest speaker

**Will Kinney, PhD**

Professor of Physics, University at Buffalo



## A Universe Just For Us

**The idea that human beings occupy a privileged position in the cosmos is an ancient and persistent notion. Five hundred years after Copernicus wrenched the Earth from the center of the universe and set it free among the stars, modern cosmology is again returning full circle to hypothesize a special role for sentient beings in cosmic structure. Will explains why he believes such arguments are ultimately useless, as well as disturbingly anti-scientific.**

Will Kinney received his Bachelor of Arts from Princeton University, and PhD from the University of Colorado, Boulder. He has worked as a research associate at Fermi National Accelerator Laboratory, the University of Florida, Columbia University, and held visiting positions at Yale University, Perimeter Institute for Theoretical Physics, and the University of Chicago. He has been on faculty at UB since 2003.

**Saturday, April 11, 2015**

**Risotto Ristorante**

930 Maple Road, Amherst, NY 14221

Cash bar begins at 6:00 pm

Sumptuous buffet dinner served at 7:15 pm

followed by speaker and program

**\$30 for BAA members and guests.**

**Reservations must be received by March 31st**

click [here](#) to register on-line, or return the attached form with payment

contact irene ziamowski at [i.ziamowski50@yahoo.com](mailto:i.ziamowski50@yahoo.com) | 716-941-5902 for more information

**Our menu**, coordinated by Risotto Ristorante and Janice Gardner:

Perch Milanese

panko encrusted perch filets with goat cheese

Chicken Artichoke with Sun-Dried Tomatoes

with mushrooms in a Fontina Sauce

Beef Tenderloin Tips with Wild Mushrooms

Macarancini Pasta with House Red Sauce

baked with mozzarella cheese

Individually served salads with House Balsamic Dressing

Assorted Breads with Homemade Spreads

Grilled Vegetables

Roasted Baby Red Potatoes

Homemade Cannoli Cake

Coffee and Tea

dinner price includes one complimentary bar beverage

pay on-line [here](#), or return this form **by March 31st** with payment to:

**Buffalo Astronomical Association, Inc.**

c/o Irene Ziarnowski

9137 Back Creek Rd.

Boston, NY 14025

**ticket price/ \$30**

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For more than seventy years,

The **Buffalo Astronomical Association** has been a meeting place

for Western New Yorkers from all walks of life

who share in common a love for the wonders of the universe.

visit us on the web at [www.buffaloastronomy.com](http://www.buffaloastronomy.com)

# Winter skies are here: stay warm and cozy!



Staring at the Milky Way in Trysil, Norway—a family wrapped up for a very cold winter!

*photo courtesy Wikipedia user [Timothy Boocock](#)*

Some parts of the country feel as if the winter will never end. Massive snows, polar vortices, arctic winds...it's almost enough to make you forget that spring is around the corner. One thing that can warm an astronomer's heart in these cold winter nights: the beautiful skies!

Orion, Taurus, the Pleiades, Sirius, the Andromeda Galaxy, the Double Cluster in Perseus: these are just a few of the gorgeous sights that are at their peak in the winters of the Northern Hemisphere, not to mention the clockwork actions of the Moon and planets. But how can you observe and simultaneously stay comfortable outside, let alone not turn into an astropopsicle?

## **1. Layers are your friend!**

You may already know this, but remember to wear multiple layers of clothes! A super warm coat won't help that much if all you are wearing underneath is a t-shirt. At the same time, moving around during your setup and observing may actually heat you up to an uncomfortable degree, so being able to peel off a sweater or overcoat would be very welcome.

## **2. Warm, wool socks**

Thick cozy socks are a must, especially as the night wears on. Your feet will thank you, especially if you are wearing good boots! Which brings us to...

## **3. Waterproof boots**

You will want warm boots, and if there is snow, make sure your boots are also waterproof. Any water soaking through your shoes to your boots is a sure way to make your toes icy and prematurely end your observing.

## **4. Clear out your observing area**

Is there snow on the ground where you usually set up? Bring a shovel and clear it out, even if there is just an inch or two of the white stuff. Your equipment and toes will thank you.

## 5. Blankets

Did you bring a blanket? Good. Even if you think you won't need one...you very well may want one after the first hour or so, especially if you are seated very still.

## 6. Gloves

Pack your gloves! Some astronomers prefer fingerless gloves that allow them to work on their instruments while outside, while others prefer combo mitten-gloves that allow you to flip the ends of the mittens off for fingerless glove access. Remember, you will be handling lots of cold metal as you set up your equipment in the cold so if you don't want your fingers going numb within minutes, gloves are a must!

## 7. Heat pads

Chemical heating pads are your friend. Stick these little beauties into your gloves and boots to stay warm. Some heating pads now offer rechargeable electrical heating!

## 8. A bit goofy hat and earmuffs

A hat with ear flaps? Big fuzzy earmuffs? You will definitely want these! While they may look a bit silly, you will be toasty inside, with nice warm ears rather than frigid lobes in danger of frostbite. Besides you will be in the dark: who cares what you look like?

## 8. A warm thermos

A thermos full of your favorites warm liquid-hot chocolate, soup, coffee, tea- is your best friend during these long winter nights.

One final thing to remember: however cold you think you are, there is probably someone somewhere else who is in an even colder location..like, say, [an amateur astronomer in Antarctica](#):



*Karim Agabi bundled up for some observing in Antarctica*

*Article courtesy of Night Sky Network*

The Buffalo Astronomical Association proudly presents:

# Astronomy Day 2015

At the  
Buffalo Museum of Science

1020 Humboldt Pkwy, Buffalo, NY 14211

Saturday, April 25, 2015

11:00 am to 4:00pm

- Astronomical Seminars
- Telescope Exhibits
- Astronomy AMA
- Solar Viewing (weather permitting)
- Astrophotography
- Demonstrations

All activities are included with Museum admission and free for BMS Members

All ages and experience levels welcome.  
Come out and have fun learning about the stars.

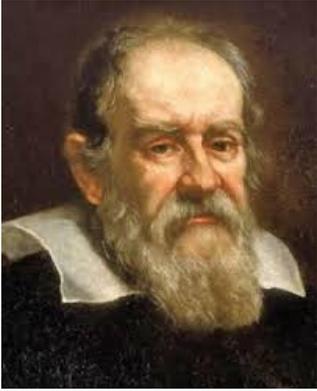
For more information please go to: <http://www.buffaloastronomy.com/>



# A Closer Look at the Galileo Affair

By

Randy Boswell



In 1633 Galileo Galilei (1564-1642) was tried and condemned by the Inquisition of the Catholic Church for advocating the Copernican view that the Earth moves and revolves around the Sun. This was the culmination of six trips to Rome between the years 1587 to 1633, during which period he met with the Pope, Church officials and members of the literary and scientific community. This widely referred to as the Galileo Affair. Yet, amidst

the scores of books and writings on this far-reaching subject there remains a widespread misunderstanding surrounding some of the circumstances of this event.

A major cause of this is that much of the literature has fostered the view- intentional or not- of Galileo as the paragon of truth against an unyielding and reactionary Church. The earliest example of this comes from the work of Galileo's former student and hagiographer, Vincenzo Viviani, whose book, *Life of Galileo* was published posthumously in 1717 (Nardo 2004). This view also emerged from Albert Einstein's introduction to the standard English translation of Galileo's work, *Dialogue on the Two Chief World Systems: Ptolemaic and Copernican* (1632), which ultimately prompted Galileo's condemnation by the Church. In addition to this, another significant contribution to this pathos is the dramatic play, *Life of Galileo* by Bertolt Brecht, which ran from 1938-1939 and which was made into a 1975 film by the American Director, Joseph Losey.

The starting point for this matter is June 22, 1633; the date on which the verdict of the Inquisition against Galileo read that he was "vehemently suspect of heresy." Galileo was then told to renounce Copernicanism under the threat of torture. Galileo then read a lengthy statement renouncing his views, which became known as Galileo's Abjuration and which reads in-part: "*I, Galileo, son of the late Vincenzia Galilei of Florence, seventy years of age, arraigned personally for judgment, kneeling before you Most Eminent and Most Reverend Cardinals*



*Inquisitors-General against heretical depravity in all of Christendom...having been judicially instructed with injunction by the Holy Office to abandon completely the false opinion that the sun is the center of the world and does not move and the earth is not the center of the world and moves, and not to hold, defend, or teach this false doctrine in any way whatever...I, abjure, curse and detest the above-mentioned errors and heresies...*" (Finocchiaro 1989).

It is at this juncture that there is a widely held misconception. The misunderstanding is that Galileo renounced Copernicanism for fear of torture. However, this was only a legal formality in the inquisitional process at the time, an antiquated and disreputable throwback to the idea of trial by ordeal (Rowland 2001). Moreover, Galileo was seventy at

the time and in ill health and this being the case, even if the practice of torture was still in effect it would violate Inquisition's own rules to exact torture on a person of his age and condition of health (Rowland 2001). In addition to this, it is important to mention that Galileo was under the patronage and protection of the Medicis in Florence, which were one of the most wealthy and influential families in Europe at the time. Thus, it appears that Galileo was not in danger of being subjected to the rack and was aware of this.

It is next widely said that whereupon Galileo rose from his penitent, kneeling position that he said under his breath, "*Eppur si muove!*" (And yet it moves!, i.e., the Earth). Or, in an alternative version it is said that when Galileo stepped outside onto a waiting carriage he looked up and stamping his foot said the same. Either way, this is considered apocryphal, this being the product of repeated accounts without the backing of corroborating historical documentation. Specifically, this was said to have been started by Guiseppe Baretti in 1757 and widely repeated in uncritical writings through the years (Langford 1966).

In conjunction with presentations on the Galileo Affair the subject of Giordano Bruno is often brought up. Bruno is depicted in the popular-level media as a martyr to science owing to the story that he was burned at the stake in 1600 by the Church for his advocacy of Copernicanism that Galileo would espouse three decades later. Yet, is this the real reason for Bruno's tragic fate?

Giordano Bruno (1548-1600) was trained as a Dominican monk in Naples, Italy and was later ordained as a



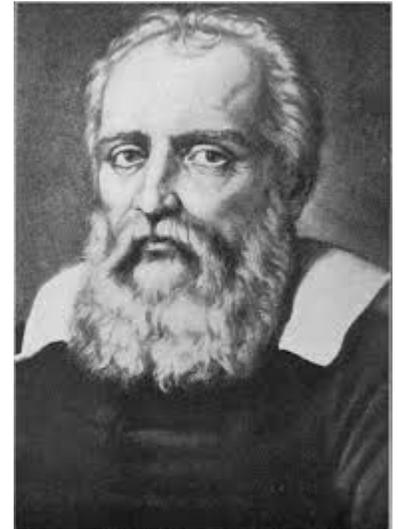
priest in 1572. As a monk Bruno soon began criticizing traditional Catholic doctrines. After his ordination as a priest, formal charges of heresy were brought against him in 1576, whereupon he fled to Rome. There, he continued to be an outspoken critic of Church doctrine. Again, charges of heresy were leveled against him. Bruno then left the Dominican Order and fled Italy and wandered extensively throughout the rest of Europe where he wrote and taught under the patronage of various individuals. In 1591, Bruno was invited to return to Italy to tutor a prospective patron in Venice who later denounced him to the Inquisition. In 1592 Bruno was put on trial in Rome and imprisoned for eight years.

After his sentence was up he remained unrepentant and was convicted of heresy and burned at the stake.

Although the specific charges of heresy against Bruno are not known because the pertinent records are lost, it is a near certainty that Bruno's iconoclastic views triggered his conviction by the Inquisition. Paramount among his theological views was his denial of the deity of Christ and that Christ, instead, was a skilful magician and the Devil will ultimately be redeemed - all statements anathema to Catholic doctrine and which at the time carried dire consequences.

Thus, it cannot be said that Bruno was condemned for his defense of Copernicanism as is commonly written and presented. Support for this can be found in the fact that the Church did not express official opposition to Copernicanism until 1616 - after Bruno's death - when it was decreed that Copernicanism was "false" and "contrary to Holy

Scripture” (Sobel 1999). Further support that Copernicanism was not the cause for Bruno’s condemnation comes from the writings of Cardinal Robert Bellarmine (1542-1621), who was the lead Inquisitor in the Bruno case and who was among the Cardinals who sentenced Bruno to death at the stake. It was Bellarmine who admonished Galileo in a private audience in 1616 not to hold or defend the idea of Copernicanism. Pointedly, in none of Bellarmine’s writings on the subject in 1616 is mention made of Bruno’s earlier case (Pogge 2014). Accordingly, if Copernicanism were the grounds for Bruno’s condemnation it is not unreasonable to say that it would be mentioned in Bellarmine’s account of his 1616 meeting with Galileo. Therefore, it is said that the issues in Bruno’s case and in Galileo’s were totally different (Drake 2001). Yet, what exactly were the issues in Galileo’s case?



Galileo was condemned for advocating Copernicanism, as was stated at the outset. However, what is not well known is that Galileo had no real proof that the Copernican system was anything more than a theory (Langford 1966). The popular notion is that Galileo’s discovery of the phases of Venus was proof of Copernicanism. Instead, the phases of Venus could be said at the time to fit into the cosmological system developed by the Danish astronomer Tycho Brahe (1546-1601). In Brahe’s system, which was put forth in 1588, the planets revolved around the Sun, while the Sun and Moon in-turn revolved around a stationary Earth. Thus, the phases of Venus could still be said to not to contradict an Earth-centered universe, which was the position of both the Catholic and Protestant Church at that time.

Accordingly, the Church came to view Copernicanism as a hypothetical argument aimed at “saving appearances.” I.e., an abstract academic argument as an alternative explanation of the movement of the celestial bodies. This was brought forth in a letter to Friar Paolo Antonio Foscarini, a Carmelite monk from Naples. Foscarini wrote a book in which he acknowledged Galileo’s work on behalf of Copernicanism and went on to explain how a heliocentric system could be reconciled with certain passages of the Bible, which in their literal sense suggested that the Sun revolved around the earth - which was the Church’s interpretation in Galileo’s day. An example of this is the passage in the Book of Joshua where Joshua is said to have commanded the Sun to stand still during the battle at Gibeon. Instead, Foscarini explained that in light of Copernicanism these and other relevant passages could be taken in a figurative language. Foscarini, not wanting a confrontation with the Church submitted his work to Cardinal Bellarmine for review.

Bellarmino responded in a polite but firm admonition in which he stated that Foscarini as well as Galileo speak only hypothetically on Copernicanism (de Santillana 1962). This letter, written in 1615 was considered to be an indirect message to Galileo since his writings and lectures on the subject were gaining notoriety.

Bellarmino’s letter to Foscarini was a significant and key factor early on in setting the grounds for Galileo’s ultimate confrontation with the Church. Galileo responded by writing a letter to his friend in Rome, the Archbishop Piero Dini. Galileo wrote saying that Copernicus did not intend his system to be a mere theory, but wanted it instead to be accepted as a fact or rejected completely (Langford 1966). Here was Galileo’s decision not to accept Bellarmine’s offer

of a compromise, i.e., to speak only hypothetically on the Copernican system.

This being the case he continued to speak out forcefully in favor of the Copernican system. In 1616 Galileo wrote a tract entitled, *Discourse on the Tides*, which was later expanded into his famous *Dialogue*, which brought him head-to-head with the Church. In it he matter-of-factly argued that the tides were the evidence of the motion of the Earth. According to Galileo the tides were caused by the Earth's rotation on its axis and by the Earth's revolving around the Sun (Galileo turned out to be wrong since we now know that the tides are primarily caused by the Moon's gravitational pull and to a lesser extent by the Sun's gravitational pull).

Galileo's fame increased and by 1623 his friend Cardinal Maffeo Barberini was elected Pope and took the name Urban VIII. Urban is said to have had great respect for Galileo and invited him to Rome where he was granted six audiences, each lasting more than an hour. During their walks in the papal gardens various things were discussed including the nature of truth. Regarding this, the subject of Copernicanism was brought up and Galileo was then told that he could consider the concept as a hypothetical idea and not to present it as a reality (Hellman 1998). Accordingly, Urban told Galileo that God made the universe in such a way that its mode of operation or system could not be known with any certitude (Langford 1966). This latter statement is highly significant in that Galileo put those very words in the concluding part of his *Dialogue* that made the Church's position versus Copernicanism appear foolish.

Thus, as a result of his conversations with the Pope, Galileo felt at liberty to write extensively on the Copernican system in the form of a dialogue between two opposing spokespersons. Entitled, *Dialogue on the Two Great World Systems, Ptolemaic and Copernican*, it was submitted to the censors in Florence - who were more tolerant of expression than those in Rome - and published in 1632.

Galileo's *Dialogue* consisted of conversations among three persons - Salviati, Sagredo and Simplicio. Salviati is the character that speaks for Galileo. Sagredo is the impartial moderator. Simplicio, as the name implies, is cast in the role of a simpleton and is the embodiment of Galileo's opponents. The structure of *Dialogue* involved Simplicio building arguments in favor of the Ptolemaic system whereby Salviati systematically demolishes them in favor of the Copernican system. In particular it said that Simplicio

is a foil for the Church since nearly all Galileo's opposition came from the Church authorities. Thus, it can be seen that Galileo's *Dialogue* was scarcely an unbiased hypothetical discourse on the Copernican system versus the Ptolemaic system. Moreover, the Coup de Grace comes at the end of the *Dialogue* whereby Simplicio, in a closing statement, mouths Urbana's comment to Galileo that essentially only God could know how the solar system is really disposed (Johnston n.d.).

The Pope, who did not read Galileo's contents and in particular Simplicio's closing statement, what he and others saw as Galileo making sport of his position. Urban therefore set in motion the wheels for Galileo's historic trial by the



leo's *Dialogue*, was made aware of its closing statement. Urban was furious over sport of his position. Urban therefore set in motion the wheels for Galileo's historic trial by the Church.

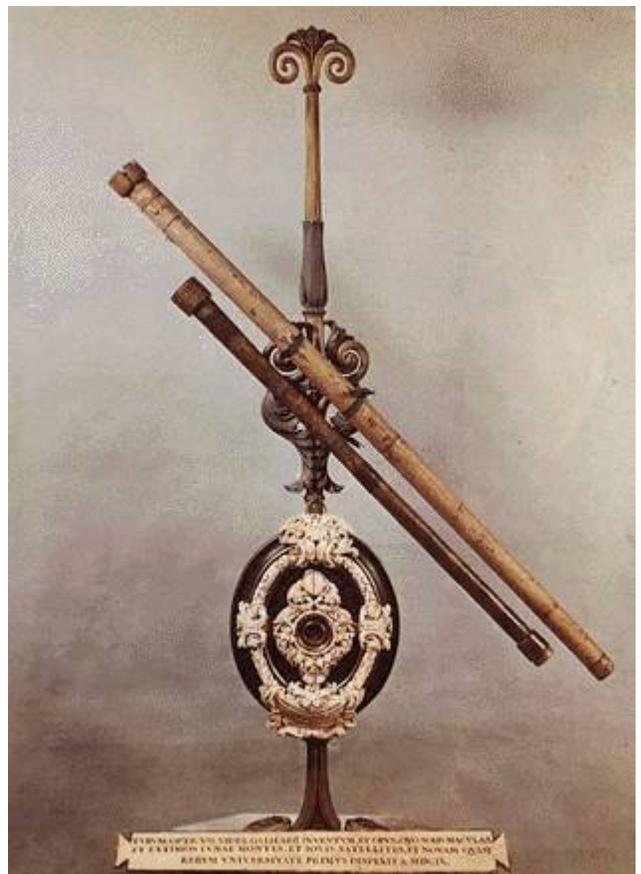
In summation, it is imperative to state at the outset that today's world owes an eternal debt of gratitude to Galileo for bringing the Copernican view to the forefront. Galileo was eventually proven right and in hindsight the Church was wrong in censoring Galileo - it was not until 1992 that Pope John Paul II formally granted Galileo an acquittal.

This being said, the misconception persists that the Galileo Affair was an intractable conflict between science and religion. This is fostered by popular and superficial treatments of the subject. Galileo is thus depicted as a martyr to science. However the issues are more subtle and deeper.

Contrary to what is commonly thought, Galileo had no proof that the Earth moved (Langford 1966). Concerning this, Galileo could no answer the strongest challenge against heliocentrism put forth by Aristotle. I.e., if the Earth did orbit the Sun, the philosopher wrote, then stellar parallaxes would be observable in the sky as the Earth shifted its position to the opposite side of the Sun every six months (Johnston n.d.). This was not proven until two centuries later in 1838 when Friedrich Bessel successfully observed the parallax of star 61 Cygni.

Instead, Galileo possessed a preponderance of observations that suggested a heliocentric system. The Church, for the most part, did not oppose these observations. The Church held that it would change its position providing that there was actual proof supporting a heliocentric position, otherwise Galileo was to limit himself to teaching it as a hypothesis as a means of "saving appearances." Moreover, Catholics in general were free to talk about Copernicanism on an abstract or theoretical basis. However, Galileo went beyond this and would accept no such compromise, as was previously noted. Taken in this context, Galileo's crime from the Church's vantage point can be said to be one of disobedience (Shea & Artigas 2003). Regarding this, Galileo's *Dialogue* was considered by most who read it to be a de facto argument for Copernicanism as a fact despite its preface which said that the arguments would be examined in an atmosphere of impartiality. A consequence of his was that *Dialogue* was placed on the Index of Prohibited Books for nearly two hundred years until it was taken off the list in 1822.

Overall, much of the afore-mentioned has been omitted from the common discussion of Galileo's story. Instead, the general population has been given a truncated and over-simplified version of events. This has resulted in the myth of Galileo as the victim. Galileo was ahead of his time concerning heliocentrism, but he entered the arena with insufficient proof - the proof would come at a later date (Johnston n.d.). Moreover, Galileo's other problem was that he insisted that the planets orbited the Sun in



perfect circles despite the discovery of the German astronomer Johannes Kepler - a supporter of the heliocentric idea - that the planetary orbits were elliptical (Johnston n.d., Hellman 1998). This was also despite the fact that the Church's Jesuit astronomers, considered to be among Europe's most skillful in Galileo's day, observed that Galileo's circular orbits were not valid.

Finally, the Copernican Revolution is ranked as one of the two major turning points in the history of western civilization along with the Darwinian Revolution. Galileo's role in it in view of all this can be said to be both heroic and tragic. End.

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## Gallery :

Here are some quick results of images taken on “Tues Night at the Observatory”



Rosette  
Nebula-  
NP101 and  
canon T3i  
unmodified

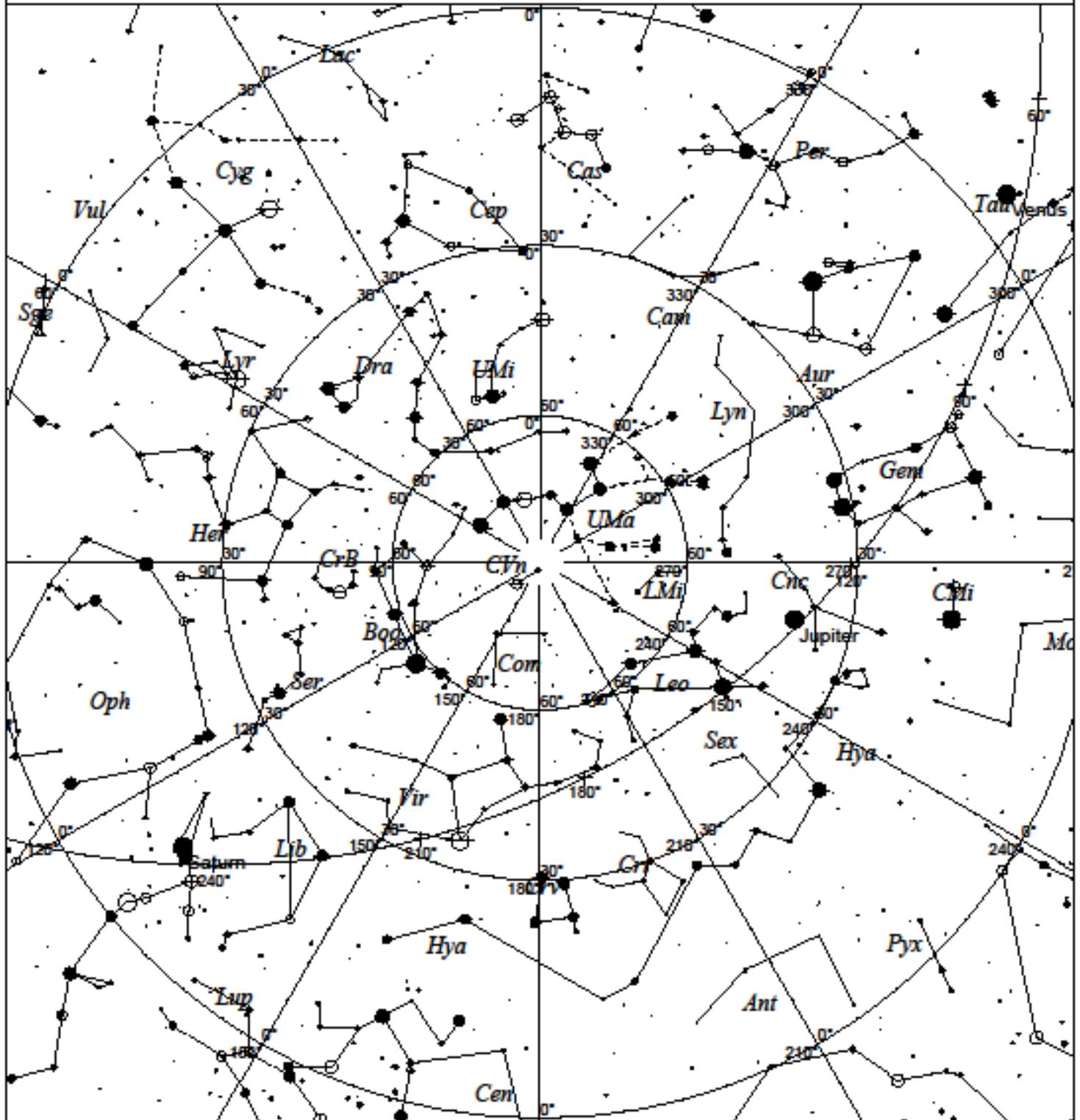
Lovejoy Q2  
– NP101  
and full  
frame  
Canon  
DSLR



“ See you at the Observatory” Daniel Marcus



April 18, 2015 23:00:00



STARS		SYMBOLS		
● <1	● 3.5	● Multiple star	☐ Dark nebula	△ Radio source
● 1.5	● 4	○ Variable star	⊕ Globular cluster	× X-ray source
● 2	● 4.5	☄ Comet	○ Open cluster	○ Other object
● 2.5	● >5	☉ Galaxy	⊕ Planetary nebula	
● 3		☐ Bright nebula	☄ Quasar	

Local Time: 23:00:00 18-Apr-2015

UTC: 04:00:00 19-Apr-2015

Sidereal Time: 12:32:17

Location: 42° 52' 48" N 78° 52' 12" WRA: 12h32m18s Dec: +42° 52' Field: 182.0°

Julian Day: 2457131.6667

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Location / Time of Meetings: BAA meetings are held on the 2nd Friday of the month from September to June starting at 7:30pm. Our meetings are held in room C122 of the Classroom Building at the Buffalo State Campus. See map below, building 35.

