

# CINCINNATI OBSERVATORY NEWS AND ANNUAL REPORT



ART AND SCIENCE COME TOGETHER. THIS IS ONE OF OBSERVATORY'S CLASSIC TEACHING TOOLS, A CELESTIAL SPHERE. IT REPRESENTS A UNIQUE VIEW OF THE HEAVENS AS SEEN FROM THE OUTSIDE LOOKING IN. THE SPHERE, ILLUMINATED BY THE LATE AFTERNOON LIGHT OF THE AUTUMNAL EQUINOX, CAPTURES THE SUN'S RAYS DISTORTED AS THEY PASS THROUGH THE 1870'S ANTIQUE GLASS OF THE HERGET BUILDING. THIS IS JUST ONE OF THE MAGICAL MOMENTS THAT MAKES THE OBSERVATORY COME ALIVE FOR OUR VISITORS. PHOTO BY COC DIRECTOR & UC DAAP GRADUATE CRAIG NIEMI.

# CINCINNATI OBSERVATORY DIRECTOR'S REPORT

BY CRAIG NIEMI

It sure seemed like 2008 flew by in a blur so we went back through the calendar to see if we could find out why. What an incredibly busy and productive year it was for the Observatory!

We started off 2008 with the final restoration project for the 1873 Herget building. Work included refinishing the floors on the main level, installing additional electrical circuits to the office to accommodate more staff, installing new bookcases to match the originals and recreating the original faux stonework that once decorated the interior. The artisans contracted for the project were recommended by the Cincinnati Preservation Association and what a remarkable job they did. Hammonds Hardwood Floors refinished the original pine floors to their original glory, ICS Building Restorations crafted the new bookcases that will house the Museum's collection and Deco Works did a remarkable job preserving and recreating the faux stonework. The three projects combine to make a stunning and memorable impression on all our visitors. While less visible to the project, but equally important was the work by Brennan Electric and the crews from Ferguson Moving who treated the Observatory and its belongings with such care. The work was generously funded by the Carol Ann and Ralph V. Haile, Jr. / US Bank Foundation. If you haven't had the chance to visit you should. You'll marvel at the results. This was the last major part of the renovation project that started over 10 years ago. A great many people have spent untold hours and much effort in bringing about the re-birth of the Observatory. We thank you and the community thanks you. As recognition of that hard work than began a decade ago the Observatory was awarded the Cincinnati Preservation Association's 2008 Rehabilitation Award for an important job well done.



site not diminish the awe-inspiring first impression of the Herget building our visitors experience as they come up the drive.

As it took shape you could tell that the sundial was going to be a unique space and educational tool while preserving the beauty of the campus as a whole. Even prior to the recent dedication ceremony school groups were already using the sundial. Best of all they were interacting with it just as was hoped. Our thanks to everyone who contributed funds and lent their expertise to Paul's sundial! Just like our historic telescopes, the sundial will be a key piece of our education programs for generations to come.

The Outreach mission of the Observatory never skipped a beat even with all the work being done, inside and out. Our innovative programs served just shy of 21,000 with half the total being students. While continuing to build the Observatory as "the" source for astronomy and space science information for the media, Dean has also expanded the role the Observatory plays in public outreach and professional development for teachers. Dean was heavily involved in planning for the entire U.S. for the International Year of Astronomy and the Observatory's spirited IYA kick-off event last January. After Roger Burgess took his second retirement from teaching (grandchildren will do that), Dr. Terry Flesch came onboard as Observatory Astronomer. Terry has been a tremendous addition to our talented teaching staff.

The Observatory continues to build collaborations with Cincinnati's other exceptional education providers including the Cincinnati Nature Center, iSpace, The Museum Center, Cincinnati Parks, the Hamilton County Park District, Cincinnati State, Xavier University and many colleges within UC. Initiatives that the Observatory partners with include STEM (Science, Technology, Engineering, and Mathematics), STRIVE, Leave No Child Inside of Cincinnati, The Great Outdoor Weekend, Cincinnati Public Schools 5th Quarter and more. The Observatory will continue to develop existing collaborations while actively seeking new partners to advance students understanding of math and science.

New Observatory programming included the 3rd Wednesday Lecture Series which offers advanced or in-depth explorations of a wide range of astronomy related topics. The talks are given by the Observatory's own staff as well as professionals from Cincinnati's science and education community. The Observatory received Astronomy Magazine's "Out-of-this-World" outreach award for the innovative 40 Galileo's; the Starry Messenger Project. Inspired by the 400th anniversary of Galileo's universe changing invention and the 40th anniversary of Apollo 11, 40 Galileo's will award up to 40 high-quality telescopes to education partners who will bring the excitement of learning directly to their communities. The response so far has been remarkable with a host of great new ideas coming forward.

The Observatory worked with the Ohio College of Applied Science and the UC Physics department to celebrate 50 Years of Computing at UC. Observatory director Paul Herget was an early acquirer of the new IBM punch card computing machines and quickly adapted them for astronomical work. Mt. Lookout celebrated their 100th anniversary with telescope

viewing on the square. That was followed by another great Luminaria Night in conjunction with the Mt. Lookout Civic Association. The 2008 Humanities Lecture Series featured two terrific speakers with Thane Maynard and Roxanne Qualls presenting to full houses. The list just goes on.

Thanks to our volunteers and the unbelievable numbers of hours (over 7,500) they selflessly give to the Observatory we've been able to maintain and grow all our existing public programs; Astro Evenings, Planet Days, History Sundays and tours and continuing-Ed classes. We've said it before but it always bears repeating; the Observatory could not serve the community at anywhere near the capacity it does without extraordinary contributions of your time, skills and passion.

2008 was another great year of support from the community. Your membership dues, contributions and in-kind support are critical to the Observatory's continuing success. Thanks to generous foundation and donor support over the past decade (the list of Observatory members, individual and foundation supporters appears at the end of the annual report) we're able to move forward in 2008 and are positioned for an expansion in programs and staffing. The Observatory is going to re-invest a portion of our savings into additional teaching, development and office staff.

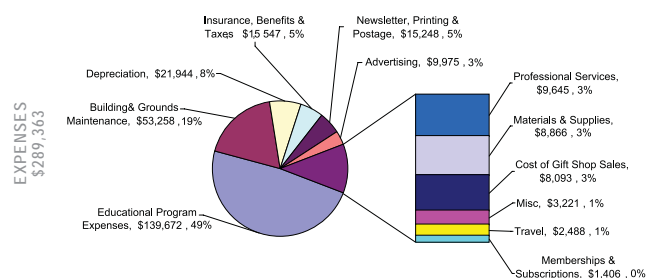
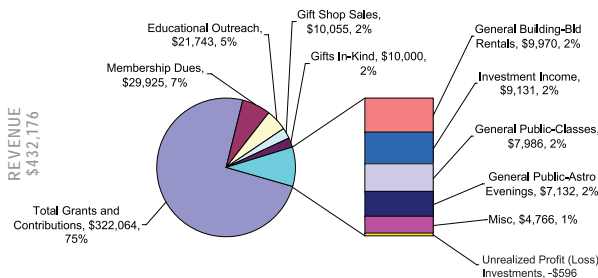
We know 2009 has been a year of difficulties and challenges but we hope the positive impact you've made to the community through the Observatory will garner your continued support. While our vision for the future is limitless we do face challenges. Due to the severe budget reductions at the State level the University of Cincinnati may be forced to cut off all financial and in-kind support of the Observatory. And while the Observatory hasn't seen it (cross our fingers), individual contributions and memberships to non-profits are expected to fall because of the current economic environment. No one's crystal ball can tell what may be lurking around the corner, but thanks to the prudent investment choices by our Board, a visionary yet sustainable long-range plan and your continued support the Observatory is well positioned to continue to move forward.

Our thanks again to the Observatory's hard-working staff, our members and tireless volunteers, the COC trustee, vendors and contributors, all who contribute in their own significant way to truly make the Cincinnati Observatory Center a treasure.

But one question, does it seem like 2009 is flying by?

## COC STAFF

- Craig Niemi, Executive Director
- Dean Regas, Outreach Teacher
- Dr. Terry Flesch, COC Astronomer
- Richard Hamilton, Staff Scientist
- John Ventre, Volunteer Historian
- Dr. Michael Sitko, Volunteer Astronomer



## CINCINNATI OBSERVATORY CENTER

A MESSAGE FROM COC BOARD OF DIRECTORS

The Board of Trustees of the Cincinnati Observatory thanks you for opening up this Annual Report & Newsletter. Each year, we take advantage of the Observatory's May edition of the newsletter to expand our normal monthly format to include more information about our accomplishments and activities of the last year.



The Observatory has many facets: Educational, Scientific, Astronomical, Historical, Architectural, as well as a gathering place for our Community. The articles you will find here discuss not only the fundamentals of the 2008 fiscal year, but also highlight many aspects of the Observatory and our stewardship.

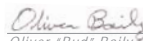
More than anything, though, this Annual Report & Newsletter offers our sincere appreciation for your interest and support. We have worked hard to keep the Observatory vital and valuable to our community. Please know that we have enjoyed every minute of it.

Thank you for being there for the Observatory. Our intention is to make sure the Observatory is meaningful for you and for generations far into the future.

Sincerely,

The Board of Trustees of the Cincinnati Observatory Center

  
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# OPERATIONS

## NEWS AND REPORTS

## FRIENDS OF THE OBSERVATORY

A WORD FROM FOTO PRESIDENT, DALE ZOLLER



Most days I can be found reading a book or magazine on my lunch break at work. The reading material usually has something to do with science, whether it is astronomy, earth sciences, paleontology, etc. Co-workers frequently ask what I find so interesting about science. The main reason I find science fascinating is that it is a story of change. Scientific knowledge is not confined by dogma – theories can be created, revised, even overturned as new discoveries are made, as opposed to twisting or ignoring new information in order to fit a story that is not allowed to change.

Until Copernicus and Galileo enlightened us, the rigid theocracy of the Dark Ages insisted that Earth was the center of the universe.

Observation and rational thought showed us our true place in the solar system. Before Einstein developed his theory of general relativity, Newton's laws were all that was needed to describe the motions of everything in the universe. While Newton's laws got us to the Moon and back, we now understand how massive objects can warp space, and that time and space are interconnected. Until Edwin Hubble determined that the fuzzy objects in the night sky were actually other galaxies far outside our own, it was thought that the Milky Way encompassed the whole universe. Now we know ours is just one of billions of galaxies that are all moving away from each other. Prior to Alfred Wegener's developing his hypothesis of continental drift (what we now call plate tectonics), we thought of the earth's features as being more or less static. We now know that the continents have shifted over the eons by the process of ocean floor spreading, and also understand why earthquakes happen and how non-volcanic mountain

ranges like the Himalayas can be formed (and continue to grow). When I was a kid, dinosaurs were thought to have been big, dumb and lethargic tail-draggers. As more and more types of dinosaurs are discovered and analyzed, the evidence shows they came in all sizes, and many were active, fast and cunning. Currently, there is a conflict between relativity (the realm of the very large) and quantum theory (the realm of the very small). String Theory may reconcile the conflict and provide a Theory of Everything!

Because new scientific discoveries are constantly being made, trying to keep up with it all can seem daunting. Previously accepted explanations for how the world works are sometimes revised or even totally rewritten. However, new discoveries that teach us more about the world around us is precisely what makes science so captivating.

## CINCINNATI OBSERVATORY NEWS AND ANNUAL REPORT

Publisher: Cincinnati Observatory Center in partnership with the Friends of the Observatory

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## ASTEROID TRACKED IN SPACE, ITS REMAINS RECOVERED ON EARTH

EDITED BY BILL CARTWRIGHT

A startling sight greeted the faithful in the Nubian desert of northern Sudan as they emerged from morning prayers on October 7, 2008. White smoky streaks hovered in the air above them, forming ghostly patterns in the morning skies. Faced with this strange phenomenon, the Sudanese villagers did what any citizens of the 21st century would do in such circumstances – they took pictures with their cell-phones. And that is how the impact of asteroid 2008 TC3 – the only asteroid to be tracked in space before striking the Earth – was recorded for posterity.

Read more online at: [www.planetary.org](http://www.planetary.org)



### ▲ Searching in the Desert

*University of Khartoum students line up to search for the remains of asteroid 2008 TC3 in December 2008.*

*Credit: Mauwia Shaddad*

### ◀ Streaks in the sky

*This image of asteroid 2008 TC3 exploding in the atmosphere above northern Sudan was taken with a cell-phone by a local resident on the morning of October 7, 2008.*

*Credit: Mauwia Shaddad*

## HEATING THE SOLAR ATMOSPHERE

EDITED BY FRANK HUSS

The temperature of the Sun increases markedly as one moves from its surface to the outer layers of its atmosphere (the corona) -- from about 6000 degrees to a million degrees Celsius. Curiously, although a variety of magnetic waves flow through the solar atmosphere, they do not carry enough energy to generate the corona's extreme heat. In a Report in the 20 Mar 2009 Science Jess et al. reported the detection of Alfvén waves -- high-velocity, twisting magnetic waves that have long been hypothesized to heat the solar atmosphere, but have not before been unambiguously detected (listen to the related podcast interview with lead author David Jess). Using the Swedish Solar Telescope in the Canary Islands and optic techniques to remove the blurring due to Earth's turbulent atmosphere, the team was able to obtain high-resolution images of the solar surface and observe oscillations coming from a large group of magnetic bright points about 430,000 square kilometers in area that bear the signatures of Alfvén waves. The team surmises that the waves are driven upward from the sun's photosphere (its visible surface) in the form of a flaring tube to the bottom of the corona 5000 kilometers above. As noted in an accompanying News story by R. A. Kerr, the team calculates that there are enough bright point groups on the surface of the sun for the Alfvén waves to heat the corona to its observed million degrees.

## NASA'S GREATEST MISSION?

EDITED BY BILL CARTWRIGHT

The Solar and Heliospheric Observatory (SOHO) has reached the final round of NASA's Mission Madness tournament where it is competing against upstart SPB, the Super Pressure Balloon, for the title "NASA's Greatest Mission." We endorse SOHO. Since the observatory was launched more than 13 years ago, it has revolutionized solar physics and the art of space weather forecasting--and the plucky spacecraft is still going strong. Vote now and help propel a spaceweather favorite to the championship: <http://mission-madness.nasa.gov/>



Rosalyn Lopes sent us reports from The Planetary Society's members trip to view the Aurora Borealis in Alaska from March 19 to 25. Lopes is Lead Scientist for Geophysics and Planetary Geosciences at the Jet Propulsion Laboratory and an investigation scientist on the Cassini Titan RADAR mapper team. Her main research interests concern volcanoes in the solar system, especially on Earth and Io.

The Aurora Borealis plus the eruption of Redoubt...what a trip!

Read more online at: [www.planetary.org](http://www.planetary.org)



## ASTRONOMERS CLOSER TO EXOPLANET "HOLY GRAIL"

EDITED BY BILL CARTWRIGHT

In the astronomical equivalent of meeting someone who reminds you of yourself, scientists have discovered a planet outside the solar system that weighs just twice as much as Earth.

The relatively small size of the new planet, dubbed Gliese 581e, prompted Grenoble Observatory astronomer Xavier Bonfils to call it "the least massive exoplanet ever detected" in a press release.

That seems an odd reason for celebration until one considers the behemoth sizes of other exoplanets.

The largest, named TrES-4 and found — quite appropriately — orbiting a star in the Hercules constellation, is roughly twice the diameter of Jupiter, which itself could house 1,000 planet Earths. Corot-7b, the previous smallest-exoplanet designee, is twice the size of Earth and about five times as heavy.

Not one of today's Gliese 581e stories even mention Corot-7b, which after its discovery in February was all the rage. Oh, the fickleness of interplanetary celebrity!

Read more online at: [www.wired.com](http://www.wired.com)

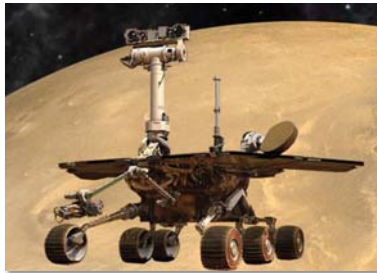
## MARS EXPLORATION ROVERS UPDATE

EDITED BY BILL CARTWRIGHT

Spirit Breaks Rove Record, Opportunity Sees Endeavour's Distant Rim

The Mars Exploration Rovers logged a memorable March, with Spirit finally making some serious tracks and setting a new driving record for a five-wheeled rover, and Opportunity getting a first glimpse on the distant horizon of its next big attraction, Endeavour Crater, as it crossed a geologic boundary into a new field of "blueberries."

Read more online at: [www.planetary.org](http://www.planetary.org)



## ASTRONOMERS FIND MILKY WAY 'COULD TASTE OF RASPBERRIES'

EDITED BY BILL CARTWRIGHT

Astronomers testing a giant dust cloud at the heart of the Milky Way have found that it might taste of raspberries, according to reports.

Scientists were searching space for evidence of amino acids: the basic chemicals from which life is created.

They told that, despite failing to locate any such aminos, they did find a substance called ethyl formate, the chemical responsible for the flavor of raspberries.

The astronomers used the IRAM telescope in Spain to analyse electromagnetic radiation emitted by a hot and dense region of Sagittarius B2 that surrounds a newborn star, the paper reported.

Radiation from the star is absorbed by molecules floating around in the gas cloud, which is then re-emitted at different energies depending on the type of molecule.

While scouring their data, the team found ethyl formate as well as evidence for the deadly chemical propyl cyanide in the same cloud. The two molecules are the largest yet discovered in deep space.

Read more online at: [www.telegraph.co.uk](http://www.telegraph.co.uk)



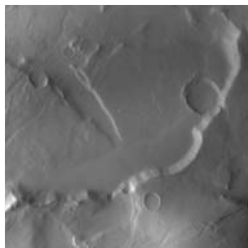
# ASTRONOMY

## NEWS AND PHOTOS

## DAWN JOURNALS: SAFELY PAST MARS

EDITED BY BILL CARTWRIGHT

Now boosted into a new solar orbit courtesy of Mars, Dawn continues its interplanetary journey. The spacecraft is healthy and coasting, keeping its main antenna pointed to Earth, as it will for most of the next three months. After that, it will resume its familiar routine of devoting most of the time to gently thrusting with its ion propulsion system, with only a short period each week for communications.

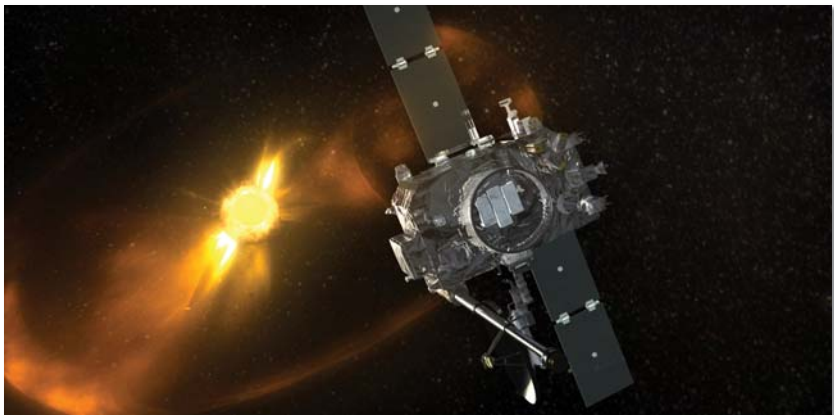


that, it will resume its familiar routine of devoting most of the time to gently thrusting with its ion propulsion system, with only a short

period each week for communications.

Following the last log, as the probe succumbed to the gravitational pull of the red planet, its trajectory gradually began to change. Flying true to the plan, Dawn swooped close to Mars and then left it behind on a new course, having taken advantage of Mars's gravity.

Read more online at: [www.planetary.org](http://www.planetary.org)



## LOOKING FOR AN ANCIENT PLANET

EDITED BY BILL CARTWRIGHT

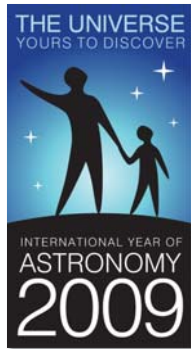
For the first time, NASA spacecraft have traced the 3D shape of solar storms known as coronal mass ejections (CMEs). It turns out the most ferocious storms resemble something from a French bakery. Read today's story to find out what:

NASA's twin STEREO probes are entering a mysterious region of space to look for remains of an ancient planet which might have orbited the Sun not far from Earth. If they find anything, it could solve a major puzzle--the origin of the Moon.

Read more online at: [www.science.nasa.gov](http://www.science.nasa.gov)

## 40 GALILEOS

BY DEAN REGAS



In 2008, the Observatory staff was brainstorming ideas for a major project for the following year – after all 2009 is the International Year of Astronomy (IYA). IYA is a global celebration of astronomy and its contributions to society and culture, highlighted by the 400th anniversary of the first use of an astronomical telescope by Galileo. More than 120 countries are participating in order to stimulate worldwide interest in astronomy. Our Board President, Charlie Schiff, thought of the idea that we could award telescopes as a way to put more amateur astronomers in the community – a way to extend our educational reach to a new crop of stargazers. But how many telescopes should we give out? Although we would have loved to give away 400 telescopes, 40 seemed more in our budget.

The program was dubbed the “40 Galileos, Starry Messenger Project,” in honor of Galileo’s achievements and his first major astronomy publication (which is also the Cincinnati Observatory’s first publication), *Starry Messenger*. The telescopes we would give away would be 8” diameter reflectors – much nicer than a starter scope. However we did not just want to give these fine instruments away. There was a catch. Applicants must attend two training sessions with Observatory staff and volunteers and conduct public programs with their telescope prior to getting them. We wanted to make sure that the telescopes would be used and used for a long time to come in the tri-state - to essentially have 40 Galileos out there sharing the universe with the public.

Applicants needed to submit a plan of how they were going to use their telescopes with their communities. They needed to outline their goals, the partnerships they would hope to involve or create, and the audience they hoped to reach. We received many applications from teachers and schools, but also from community centers, libraries, scout troops, neighborhood groups, and even singles’ groups. A panel of five astronomers close to the Observatory will decide on the recipients in mid-April. Once selected the winners have attended the classes and conducted their starparties, they will officially be awarded their telescopes on September 11, 2009 at our opening ceremony to ScopeOut 2009 (which occurs on September 12).

The project has been so well received locally and nationally. The 40 Galileos was the winner of Astronomy Magazine’s annual Out-of-this-World Award and a \$2,500 prize. Our program was selected from over 40 clubs from around the country, and two from outside the United States. News of the award appeared in Astronomy Magazine and they have agreed to run follow-up articles by Dean Regas to appear on their website.

We hope that you follow the progress of this ambitious project and if you are interested in helping support the 40 Galileos with your time, expertise, or financial support please contact Dean Regas at 513-321-5186.

## INTERESTING FACTS AND LORE

ABOUT THE CINCINNATI OBSERVATORY

The Cincinnati Observatory is over 160 years old. Being around this long, some interesting things are bound to happen to you. Here a few fun facts to drop at your next cocktail party:

- The shape of the Pringles potato chip was inspired and designed by Observatory Director Paul Herget in the 1950’s.
- The Cincinnati Observatory was the first professional observatory in America.
- Houses one of the oldest professional telescopes in the world still in operation (stop by and look through it for yourself!).
- An American Institute of Aeronautics and Astronautics Historic Aerospace Site.
- The city of Cincinnati changed the name of Mt. Ida to Mt. Adams after former President John Quincy Adams came to Cincinnati to lay the cornerstone for the Observatory.
- The U.S. Weather Bureau begun at the Observatory under the Observatory’s Director Cleveland Abbe.
- The Observatory was designed and built by noted architect Samuel Hannaford who went on to build Music Hall and City Hall.

- The Cincinnati Observatory was the Minor Planet Center for the entire world. This means that our Observatory kept track by plotting and publishing all of the asteroids and comets “discovered” throughout the world.



*Pictured Above: Observatory Director Paul Herget (left); the 1873 Cornerstone (top-right); Cincinnati Seen From Mt. Adams, 1852.*

## FOTOKids

BY DEAN REGAS

This is my third year coordinating FOTOKids and I feel like we’ve got a great group of students. This astronomy club for kids aged 8-14 meets on the first Friday of every month. Our goal this year is to recreate the observations and discoveries of Galileo when he first looked through his homemade telescope 400 years ago. In January FOTOKids received a packet called Galileo Pages to be filled out throughout 2009. On each page they are to record observation made at the Observatory during normal meeting nights as well as during their own stargazing at home. In February and March we noted the changing size and phase of Venus and the mountains and craters on the Moon. In the coming months we will document Saturn’s odd shape (through Galileo’s primitive scope he thought that the ring were ears on the side of the planet), investigate sunspots (if the sun ever gets some), and chart the movement of Jupiter’s four largest moons.



*A Future Astronomer*

In addition to our main project FOTOKids is planning field trips and starparties. Last year we visited the Wolff Planetarium in Burnet Woods and the newly opened NKU Planetarium. Many members have expressed an interest in having a camp out and star gaze over the summer. Plans are in the works so please stay tuned for more adventures in FOTOKids.

## OUTREACH FOCUS

BY DEAN REGAS

In 2008, the Outreach Program got a tremendous boost with the addition of Dr. Roger Burgess on staff. He brought his many years of teaching experience to the Observatory and helped expand the program. Dr. Burgess has now entered true retirement and moved to Massachusetts with his wife.

To help fill Dr. Burgess's shoes and expand our programming to college-level students, we hired Dr. Terry Flesch in January 2009. A long time presenter and volunteer, Dr. Flesch was a natural choice to become part of the Observatory staff. With a partnership with Xavier University, Dr. Flesch hopes to teach college-level courses at the Observatory in the fall.

We presented over 200 programs to schools in 2008, both at their schools and as field trips at the Observatory. Our reputation for creative and educational programs has spread at we have welcomed many new schools and teachers into the Observatory experience. But I especially appreciate the relationships we have built up with our "regulars" – the teachers that work with us every year. Although our impact is most often seen in how we inspire students, I have witnessed the influence we have on teachers and getting them prepared and motivated to teach astronomy.

The COC is a proud participant in the International Year of Astronomy (IYA).

In January we helped kick-off the year in the US by sending a webcast live from the Mitchel Dome to the conference of the American Astronomical Society in California. One of the marquee events of the year is called 100 Hours of Astronomy, where there was multiple astronomy events going on around the world between April 2-5. The COC offered free admission for all school field trips on those days, held Saturn Saturday and Sun Sunday, and brought telescopes to public venues and sidewalks (Sidewalk Astronomy). No, we were not open for 100 consecutive hours, but it was a great display of the variety of programs we offer as well as a testament to the dedication of our great staff and passion of our volunteers who make things run.



*Clermont Northwestern Students Exploring the Paul Nohr Sundial*

# EDUCATION

## OFFERINGS AND REPORTS

### UC COMMUNIVERSITY

CLASSES AT THE OBSERVATORY

An easy and fun way to learn more about astronomy, and a host of other exciting topics, is to enroll in one of the many UC Communiversality classes. You can choose from a wide variety of classes which offer hands-on enrichment experiences for adults of all ages.

UNIVERSITY OF  
**Cincinnati**



*Dean Regas Leading a Group Exercise*

Coming up this summer are five Observatory classes, including 3 new topics.

#### June 22nd:

COC presenter and Cincinnati State faculty member Terry Endres presents "Tools of the Astronomer". A look at some of the innovations in astronomy and the instruments that have led to our present day understanding of the universe around us.

#### July 14th:

COC Outreach Astronomer Dean Regas presents his always popular, "Star Gazing 101". Dean reveals the imaginative figures we call constellations and the simple tool that you can use to them and more in the night sky.

#### July 27th:

COC Astronomer

Dr. Terry Flesch tells the story of the "Dance of the Gods". The ancients Greeks called them the Wanders and for millennia the motions of the Earth, Moon and planets were not understood. Dr. Flesch looks at the individuals whose work revealed the true path of the planets and the Earth's place in the universe.

#### August 5th:

Longtime Observatory presenter Basil Rowe explored "Comets & Meteors". Just in time for the fabulous "shooting stars" meteors of Summer learn the nature and secrets of these bits of space debris and mysterious comets that visit often from the farthest reaches of the solar system.

#### August 24th:

COC Historian John Ventre brings to life the "Observatory's Antique Telescopes & Instruments". A multidisciplinary look at the instruments used by Cincinnati's 19th and early 20th century astronomers. The instruments themselves are works-of-art and the astronomers who used them were working on the cutting edge of science.

*To register call  
513-556-6932 or  
visit [www.uc.edu/ce](http://www.uc.edu/ce)*

## CLOCKS OF THE CINCINNATI OBSERVATORY

INTERVIEW WITH JOHN VENTRE, VOLUNTEER HISTORIAN

The Observatory has an impressive array of historical time pieces. Each one is significant in its own right including its own distinct purpose. John Ventre, the Observatory's historian, sheds some light on their uses, history and technical mastery.

"John, there are some very interesting vintage clocks displayed throughout the Observatory. What are their significance to astronomy and the Observatory?"

The accuracy of typical astronomical observations is dependent on recording the exact time of its acquisition. Ever since the Merz & Mahler telescope was first used in 1845 to record an astronomical sighting the time of the observation was simultaneously recorded. The Observatory's astronomical, vintage clocks were the first quality clocks in the city, and they also were used to keep time for the city. You can't operate an Observatory without a quality clock.

"They are beautiful, stunning craftsmanship to the naked and untrained eye. But...how do I ask this?...they look like normal clocks—with a familiar face and hands and such—but I can't tell time on them, I can't read them. It's like they're in another language. What's going on here?"

In the 1800s it was traditional for astronomical clocks to have three faces, one for hours, one for minutes and one for seconds ("secondary-minute" face is where the term "seconds" evolved). Since the astronomers were principally interested in using their clocks for recording their accurate observations they needed the minute face and second face to be larger, hence easier to read in a darkened observatory, than the hour face. On our four principal clocks the minute face is the largest, the second face is smaller, and the hour face is the smallest. In order to use our clocks to tell time you need to start reading the smallest dial first (hours), and then progress to the largest face (minutes), and then end by reading the intermediate sized face (seconds).

The term "clockwise" referring to the traditional movement direction of the hands on a clock derived from the motion of a shadow of a sundial, left to right.

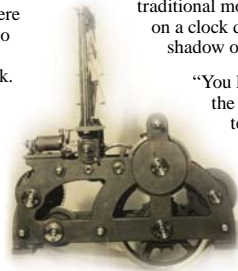
"You know, thinking about it, the main 16 inch Alvin Clark telescope has an impressive collection of gears and weights connected to its base—it's tracking system. Is this basically a clock?"

Yes, the Clark telescope does have a clock in it.

The clock assures that the telescope tracks its celestial target across the sky in an accurate, timely manner—sidereal time. "Sidereal" is a Latin term that refers to stars. Our telescopes track their celestial objects at the same rate that stars drift across the sky. Sidereal time is very similar to solar time, the method of time keeping that we use to regulate our daily lives, but the two systems are out of synch with one another by about four minutes a day. You can hear the Clark clock ticking—a mesmerizing, relaxing beat—when you are in the Clark Observatory dome and the manually wound telescope is working.

"It sounds like an unbelievable amount of upkeep; a "bajillion" moving parts. How in the world do you keep them in good working order?"

When the clocks need some tender loving care I telephone our friends at AWCI (American Watchmakers and Clockmakers Institute). Jim Lubic, the Executive Director and Lauri Penman the Clock Instructor have been supporters of the COC and its clocks since 1999. Lauri Penman, probably the worlds expert at clock making and repair and an Englishman, came to America to work at the then AWI. Laurie is the man who spent two and a half years restoring the COC's four principal clocks.



# HISTORY

## ACCOUNTS AND PRESERVATION

### AN EXTRAORDINARY MEMORIAL FOR AN EXTRAORDINARY PERSON

PAUL NOHR (1939-2006)

Cincinnati remembers Paul Nohr as the heart of the Observatory. His smiling guidance inspired students—both kids and kids-at-heart alike—to discover wonders about the world around them. He gave them the means to pursue them through his caring restoration of the historic telescopes and his unselfish sharing of his considerable knowledge. As a memorial to all he gave to the Greater Cincinnati community we honor Paul with this extraordinary sundial, totaling over 50 feet in diameter, constructed on the grounds of his beloved Observatory.

While deceptively simple in appearance the key to the sundial—the analemma—is what makes it such a surprisingly elegant yet sophisticated teaching tool. Paul's sundial teaches much about our place in the solar system by marking the daily motion of the sun; the annual equinoxes and solstices. It reveals the tilt of the earth's axis and the shape of the earth's orbit around the sun. The sundial is interactive with student's and visitor's shadows marking the date & time. Earthworks, reminiscent of Ft. Ancient's ancient mounds, border the sundial creating a unique outdoor classroom.



Tom Busemeyer Displays His Working Model of the Nohr Sundial

Today, Paul's legacy guides our ambitions. We aim for excellence in our education programs while maintaining the integrity of our history. Paul set high standards for both. Our appreciation is eternal. Paul's memorial is stalwart and permanent, and is being explored daily by visiting school children, a reminder of all of his contributions to science education and history.

Paul's dedication to the Observatory, the Observatory's beloved telescopes, and his extraordinary love of teaching will remain treasures in our collective memory of Paul. His commitment to education inspired many of the teachers who now share his passion for the sciences with their students. As an Observatory supporter you can be proud that your contributions to the Observatory will carry on Paul's legacy of furthering science education throughout Greater Cincinnati.

We'd like to thank everyone who lent their considerable expertise to this extraordinary project. Your passion and dedication to the project speaks



Groundbreaking

highly to your professionalism and service to the community. We're confident the community will repay your generosity many times over.

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- Dallman & Bohl General Contractors, Inc.
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## MARK YOUR CALENDAR

### SUN-DAY SUNDAY SUNDAY MAY 17, from 1-4pm

What do astronomers do during the daytime?  
They stare at the Sun... safely.

The Sun is the star attraction on this Sunday and you can learn all about our nearest stellar neighbor. Sun-day Sunday Sundae includes hourly programs about the Sun, tours of our historic buildings, and safe viewing of sunspots and solar flares out of our 1843 telescope (weather permitting).

As a special treat we will also have free sundaes for those in attendance. Cost: \$5 per person. Advance reservations are required – space is limited.

Please call the Observatory at (513) 321-5186 for more information on reservations.

### STONELICK LAKE STAR PARTIES MAY 23, at dusk

Bring telescope, binoculars or just yourself for a night under the stars (Weather permitting). For directions or for more information phone Scott Naylor at (513) 575-5556.



*Vintage Observatory Conference Attendees*

### USING YOUR TELESCOPE CLASSES MAY 30, from 1-4pm

Did you just get a telescope and can't seem to make it work? Is there an old telescope collecting dust in your closet just waiting to be used by a knowledgeable astronomer?

Here's your chance to become that knowledgeable astronomer – or at least get started. Using Your Telescope will teach you step by step how to get your telescope ready for viewing and essential tips to finding objects in the night sky.

Bring your telescope, a friend or family member, or just yourself to begin exploring the heavens above. Cost: \$40 per telescope (includes admission for up to 3 people)

Please call the Observatory at (513) 321-5186 for more information on reservations.

## UPCOMING EVENTS

|            |  |
|------------|--|
| May 1      | FOTOKids Youth Astronomy   |
| May 2      | Saturn Day   |
| May 4      | "Saturn" UC Communitarity  |
| May 6      | COC Annual Meeting   |
| May 7      | FOTO Monthly Meeting   |
| May 10     | History Tours  |
| May 17     | Sun Sunday   |
| May 20     | 3rd Wednesday Lecture "Massive Star Clusters"                      |
| May 24     | History Tours  |
| May 30     | "How To Use Your Telescope"  |
| June 4     | FOTO Monthly Meeting   |
| June 5     | FOTOKids Youth Astronomy   |
| June 6     | End of School Open House   |
| June 8-12  | X-CEED Teacher's Workshop (Xavier)                                 |
| June 14    | History Tours  |
| June 20-21 | Apollo Rendezvous (@ MVAS)   |
| June 27    | "How to Use Your Telescope"  |
| June 28    | History Tours  |
| July 2     | FOTO Monthly Meeting   |
| July 3     | FOTOKids Youth Astronomy   |
| July 11    | 40th Anniversary of Apollo 11 (@ CAS)                              |
| July 15    | 3rd Wednesday Lecture "A Compact History of an Expanding Universe" |

# EVENTS

## MEETINGS AND PROGRAMS

### ABOUT FOTO

Friends of the Observatory (FOTO) is the support group and amateur astronomy club affiliated with the Cincinnati Observatory Center. FOTO provides staffing for many of the observatory's programs. Membership is included when joining the Cincinnati Observatory Center.

**FOTO's MONTHLY MEETING** occurs on the first Thursday of the month at 7:30 PM at the Observatory Center. The meeting consists of 15-20 minutes of organizational business followed an astronomical presentation. Past subjects have included: *Bad Astronomy in Hollywood Films*, *Meteorites*, *The Gas Giants*, *How to Make a Sun Dial*, etc. The presentations are given by amateur and professional astronomers as well as experts in peripheral fields. Subjects are always announced in the monthly FOTO newsletters.

Following the monthly meeting, (weather permitting) members can open the O.M. Mitchel Observatory at the COC for celestial viewing or set up any of the portable telescopes on the lawn adjacent to the Observatory buildings.

The next **FOTO PLANNING MEETING** is scheduled for Thursday, May 21, 6 pm at Panera Bread in Hyde Park Plaza. Open to all FOTO members, the meeting generally lasts a couple hours for planning future FOTO activities.

### 2009 3<sup>rd</sup> WEDNESDAY LECTURE SERIES

The popular 3rd Wednesday Lecture Series is an ongoing series of science related presentations for Observatory members, the general public, teachers, advanced placement high school and college students. The sessions allow for more in-depth or technical explorations of topics than you might hear in the regular monthly FOTO meeting, and while informal, are typically at the college level.

To match the wide ranging levels of astronomy and general science knowledge of the participants several evenings have been devoted to more general introductions to topics that form the background for more later more in-depth studies.

Presenters include the Observatory's own talented staff and volunteers as well as guest speakers from are universities and other science centers as a way of showcasing their research, programs and education opportunities.

Upcoming 3rd Wednesday topics and speakers include;

- Dr. Margaret Hanson, University of Cincinnati; "Massive Young Star Clusters"
- Terry Endres, Cincinnati State; "A Compact History of an Expanding Universe"
- Jeff Rodriguez, Anderson High School; "Cosmic Rays"
- Bev Ketrin from iSpace (Interactive Science, sPace, and Aeronautics Center for Education)
- Dr. Brenda Hanke, Cincinnati Museum Center, "The Cincinnati Region: 450 million years of Landscape Evolution"

Every 3rd Wednesday 7-9 pm. Admission to the lectures is free for members and only \$5 for non-members. Reservations are suggested.



## THE CINCINNATI OBSERVATORY OFFERS OUR SINCERE APPRECIATION TO THESE INDIVIDUALS, FAMILIES, BUSINESSES, AND FOUNDATIONS WHO SUPPORTED US IN 2008:

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Linda Weber  
Andrew Webster  
WCET  
Richard & Kathy Weimann

Margaret Weiner  
Kent & Karen Wellington  
Dwight Werren  
Richard J. Wessling  
Gary & Diane West  
Pat & Penny Westrick  
WGUC  
Thomas Wicker & Robbin Palmer  
Nathan Whitsett  
Gary L. Wilkins  
Mr. & Mrs. Earl Williams  
John Williamson  
Mark Wilson & Katie Cook  
Murray & Amy Wilson  
Jeffrey & Sharon Wintring  
Louis Witten  
Mr. & Mrs. Dean Wochner  
Janet & John Woeste  
Stella Wojtczak  
Kenneth E. Wolf  
Margaret & William Wolf  
Diane Wood  
XCEED -Xavier University  
Lawrence Yates  
Hwa Shain & Yisheng Yeh  
Tony & Julie Yocco  
Denny Young  
Mr. & Mrs. James W. Young  
Everett & Margie Yowell  
Gregory Yudovich  
Deborah J. Zai  
Nicole Zatorski  
James & Deborah Zeisler  
Robert & Suzanne Ziemba  
Alison Zimmerman  
Zins Plumbing  
Dale Zoller

# CINCINNATI OBSERVATORY CENTER FRIENDS OF THE OBSERVATORY

3489 OBSERVATORY PLACE  
CINCINNATI, OHIO 45208  
(513) 321-5186 | www.cincinnatiobservatory.org

## COC Mission:

The Cincinnati Observatory Center will promote the study and practice of astronomy among a broad audience, and assist professional and amateur astronomers, schools and universities to further their educational efforts on behalf of astronomy. While fulfilling this mission, The Cincinnati Observatory Center will maintain the integrity and heritage of an historic nineteenth-century observatory, including relevant artifacts illustrating the history of science and the applications of astronomy throughout the years.

In order to accomplish this mission, The Cincinnati Observatory Center will:

Promote public programming, and provide educational opportunities and resources for the public at large, school and university educators and students, and professional and amateur astronomers, including:

- Public astronomical viewing
- Classes and workshops
- Tours, displays, and presentations

Showcase the unique facility as “The Birthplace of American Astronomy” by continually maintaining and improving the buildings, grounds, and collection of historic artifacts, while striving to adopt and integrate the latest technology in fulfillment of our mission.

CINCINNATI OBSERVATORY NEWS & ANNUAL REPORT : MAY 2009

## CINCINNATI OBSERVATORY NEWS AND ANNUAL REPORT



*COC Historian & Meteorite Expert, John Ventre  
Shares His Remarkable Collection*

“Thank you for giving us a tour of the Observatory!”

Billy said the old books about the planets were really neat. Keith really like taking pictures of all the telescopes and the neat things he saw. We thought it was interesting to find out how it got started. It is amazing people just handed over the money to pay for the first telescope and help with the building. We really like the pictures you gave us. We were showing all our friends at school what a cool observatory you have. The sundial was cool too.

We all thought it would be neat to come back for a night tour and look the stars and planets. We learned a lot from our tour and listening to all the things you knew about the history of the Observatory and people who founded it.”

*Billy, Keith, Alex, Brandon and classmates  
Lawrenceburg High School Special Education Class Visit  
March 19, 2009*