

Observatory News

March 2009
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Coming Up At The Observatory....

March 2nd "Tools of the
Astronomer" UC Communiversity
March 5th FOTO Monthly Meeting
March 6th FOTOKids
March 7th Astro Saturday
March 8 & 22nd History Tours.
March 9th Moonday Monday
March 18th 3rd Wednesday Lecture
"The Analemma"
March 21st Paul Nohr Sundial
Dedication
March 28th How to Use Your
Telescope
April 2-5th 100 Hours of Astronomy!
April 2nd FOTO Monthly Meeting
April 3rd FOTOKids
April 4th Saturn Day
April 5th Sun Sunday
April 14th "Behind the Scenes" UC
Communiversity
April 15th 3rd Wednesday Lecture
"Molecules in Space"
April 14th "Stargazing 101" UC
Communiversity

Call 513-321-5186 or visit
www.cincinnatiobservatory.org for
more information

The Word from FOTO's President Zoller

While Paul Nohr was known for his work restoring the Observatory's telescopes, his true passion was imparting knowledge of the world around us. My favorite memory of Paul is a presentation he gave at a FOTO meeting about rainbows. Of course he covered how sunlight is refracted, reflected and refracted again in the the drops of water creating the colors we see – but it went deeper than that. For instance, when the Sun is low in the sky, the rainbow will be high in the sky, and vice versa. While we perceive a sequence of colors (Roy G. Biv), in actuality, the rainbow spans a continuous spectrum of colors. When you are lucky enough to see a double rainbow, the outer bow's color sequence is the opposite of the primary bow (violet → red). Thanks to Paul, when I see a rainbow I understand more of its dynamics, and I try to share that knowledge with others.

Shortly after Paul's untimely passing, it was decided that a permanent memorial to his dedication to the Observatory and education should be created. After much discussion, a sundial was chosen as a fitting memorial. Although initial ideas centered on a pedestal-style sundial or analemma similar to the one at the head of UC's Engineering College quadrangle, it was decided that not just any "garden variety" sundial would do. Based on a suggestion by Board member Jeanette Fisher, a horizontal "patio-style" analemmatic sundial that would fill the circle in the Observatory's driveway was chosen. RWA Architects in Mt. Lookout provided the design work. Len Thomas of UC collaborated with RWA to ensure the new sundial didn't "overshadow" the buildings and fit well with the rest of the campus. A fund-raising campaign raised over \$13,000 from members, Paul's family and friends. Additional funds came from corporate and other major donors. After months of work leveling the area, careful measuring, laying the bricks, and landscaping, the sundial is complete. Of course, no major project is complete without a few missteps – a

problem with the plaque led to jokes about “bronze-out.” At last, after more than a year of planning, design and construction, the Paul Nohr Memorial Sundial will be dedicated on Saturday, March 21, 2009. The sundial was designed so that the shadow of an average size 5th grader would correctly show the time, emphasizing the Observatory’s education mission. I think this is what Paul would have wanted.

If you want to learn more about how sundials work, please consider attending the March “3rd Wednesday Astronomy Lecture” series program on March 18 at 7pm in the Mitchel Building. Dave Bosse will discuss the various types of sundials and how they work, with special emphasis on the analemma used in our sundial. The program is free to members and open to the general public for \$5. Reservations are required. Call 513-321-5186 to RSVP. We hope to see you there!

FOTOKids Meeting

By Dean Regas

FOTO Kids will be meeting on Friday, March 6 at 7:30 pm. **Note the later start time.** If it’s clear that night we will be able to see Saturn for the first time in 2009. Saturn may look a little strange in March - its rings may be very hard to see or even completely invisible. The rings will be nearly edge-on to our view just like they were for Galileo in 1612. Make sure to bring your Galileo pages or if you need a set, please email Dean Regas at fotokids@fuse.net

Did You Know....

When planes fly over the poles during solar storms, they can experience radio blackouts, navigation errors and computer reboots.

FOTO’s March Meeting

By Dale Zoller

The March 2009 FOTO meeting will be held on the first Thursday of the month, **March 5, 2009 at 7:30pm** in the west wing of the Herget Building at the Observatory. This month’s program will be a presentation by Arne A. Henden titled “*Variable Stars for Fun and Profit.*” Dr. Henden is the director of the American Association of Variable Star Observers (AAVSO). He has worked extensively with amateurs interested in variable stars. Variable stars come in all sizes and magnitudes; there is something to please everyone! They permeate every aspect of astronomy, from studying transiting exoplanets to investigating the fading afterglows of gamma-ray bursts. This talk will highlight a few of the interesting ones that can be studied with small telescopes, and how every amateur can get involved in citizen science.

Don’t forget, we also have an informal dinner before the meeting around 6pm at Panera Bread in Hyde Park Plaza. Dr. Henden plans to attend the dinner for informal discussion. Hope to see you there!

February FOTO Meeting Highlights

The Bylaws committee representative Linda Magee reported that the revised bylaws are ready for review by the officers. The COC Board will also give feedback on the FOTO bylaws revision.

Scott Gainey announced that there is a plan to produce a COC Calendar again this year. We will have to sell a large quantity in order to make a profit.

Observatory Director Craig Neimi noted that COC had its largest ever number of visitors this past year: 20,637. Twenty-nine new schools participated in

educational events at COC this year. Craig announced that the relationship of COC and UC is ending. At this point, the COC Board is leaning toward COC buying the facility and land from UC and moving ahead as an independent entity.

Steve Rismiller announced that Ron Ravneberg passed away on 1/31/09. Ron was an internationally recognized expert on Dobsonian telescopes, a well known member of the astronomy community and a good friend to many. A sympathy card was signed by all in attendance at the meeting.

The evening concluded with Larry Feist’s presentation “Green Energy From a Yellow Star.” The talk focused on the various methods of harnessing solar energy.

Aurora Display



The Planning Meeting

By Dale Zoller

The next FOTO Planning meeting is scheduled for **Thursday, March 19, 2009 at 6 pm. Please note that the meeting will NOT be held at Panera Bread in Hyde Park Plaza.**

This meeting will be held at Becky Shundich’s house at 3519 Saybrook Ave. in Hyde Park. The meeting generally lasts a couple hours. The Planning meetings are open to all FOTO members. We encourage your participation in planning future FOTO activities.

Wednesday Lecture Series

By Craig Niemi

We hope you'll join us for this ongoing series which features more advanced or in-depth discussions of a wide range of topics for all astronomy experience levels.

Save Wednesday, March 18th for a special evening. In preparation for the dedication of the Paul Nohr Memorial Sundial on the 21st Dave Bosse will lead through the intricacies of sundials and Paul's favorite, the analemma.

On April 15th UC post-doc and OCAS faculty member **Nick Abel** will present *Molecules in Space*. May 20th features **Dr. Margaret Hanson** from the UC Physics Department with a discussion of her current research exploring star formation at the Galactic Center, massive young clusters and Galactic structure.

Lectures begin at 7 pm.

Free to members and open to the general public for just \$5. Reservations are suggested. Call 513-321-5186 to RSVP.

Craig's Corner

By Craig Niemi, Observatory Executive Director

Finally a few hints of spring. The recent warm weekend had many people including ourselves flocking outdoors. Not that we hate winter it's just that Cincinnati winters are never "winter-like" enough to encourage winter activities. It always seems like an interruption of all the other outdoor activities we'd rather be doing. And that

includes astronomy. We can be "arm chair" astronomers for only so long before we get stir-crazy. We're looking forward to setting up our telescope on a pleasant evening surrounded by all the delights of the nocturnal world. It's all the sights and sounds and the perfume of the night air that add to the experience of viewing through the telescope. That experience is one reason why the Observatory collaborates with the many of the areas fine environmental education and initiatives such as the Great Outdoor Weekend and Leave No Child Inside of Cincinnati.

The upcoming spring equinox, that long awaited part of the sun's annual cycle, signals relief from that stir-craziness. Celebrate that first day of Spring as we dedicate the Paul Nohr Memorial Sundial. Mark Saturday March 21st on your calendars and join us from Noon until 2 pm. Prior to the dedication, on the 18th, the Wednesday Lecture will feature a look at Paul's favorite part of a sundial, the Analemma. An understanding the Analemma reveals why Paul's sundial is going to be such an amazing educational tool.

The Observatory's celebration of the International Year of Astronomy continues throughout spring. March brings us Moonday Monday on the 9th, the sundial dedication on the 21st and another of Dean's popular "How to Use Your Telescope" classes. It's exciting to see a family go from absolute novice stargazers to competent observers in just the course of a few hours. April 2nd through 5th will feature a remarkable "100 Hours of Astronomy" including your

monthly Friends of the Observatory meeting, a FOTOKids Youth Astronomy program, Saturn Day and our favorite Sunday Sun-Day Sundae event.

And a special thanks to longtime member **Kirk Schrotel**. Once again Kirk has generously given his time and expertise to his Observatory. Kirk evaluated, then fabricated and retro-fitted the parts needed to repair the drive mechanism for the Mitchell building dome. With the number of programs the Observatory offers we can't afford to be without the use of our jewel, the 1843 Mitchell Telescope. Kirk is a great example of the passion our members and volunteers have for this unique place. The Observatory could not serve the community at anywhere near the capacity it does without members like Kirk. We truly appreciate all supporters do for the Observatory. Even if it doesn't require being up to your elbows in 100 year-old dirt and grease. I hope to see everyone on the 21st!

Office Volunteer Opportunities

By Craig Niemi

FOTO is developing a pool of potential volunteers to help with tasks in the COC office as needed. Volunteers could help with mailings, answering the phones, administrative assistance for Dean and Terry, tours for drop-in visitors, and other office work. If you'd be available to volunteer during weekday business hours, please contact the Observatory at 513-321-5186, or e-mail observatory@fuse.net with your name and daytime telephone number.

Welcome
Renewing & New FOTO
and COC Members!



Jaqualine Brumm
Linda & George Callard
Jack Hazen
Linda King
Catherine Koehler
Glen Langston
Gregory Macievic
Rick Maloney
David & Linda McBride
Arthur & Carol McCardle
Nale McKee
Tom & Marsie Newbold
Maureen Pippin
Kathleen Rorris
Peggy Selonick
Kayla Springer
Donald & Sheila Storck
Chuck & Lisa Strubbe
Margaret Weiner

Mitchel Dome Out of Order- Kirk Schrotel to the Rescue

By John Ventre

On January 30, a cold night following an ice storm, the Mitchel Dome mechanism was encased in ice. The visitors under the dome were attending a Venus Night, and the Observatory Assistant attempted to turn the dome to position the slit to Venus. Bang!! The 1904 shaft of the gear wheel that turns the dome sheared in half. We are out of business!!! A picture of the broken shaft and gear wheel is shown below.



Kirk Schrotel, a machinist/mechanic and FOTO volunteer, came to the rescue. He devised a method to jack up the multi-ton dome and extricate the broken shaft from its housing. I think to everyone's surprise the two shaft bearings were in fine order, and they both were marked with a presumed manufacture date of April 1893. Also thanks to Kirk's assistants: **Dean Regas, Dr. Terry Flesch and Craig Niemi.**

Kirk machined a new shaft, made some new shaft keys and other modifications, and he re-assembled the mechanism. Yes, the 1893 bearings were reinstalled. The Observatory went back on line in less than three weeks!

Thanks Kirk! We could not have done it without you.

Observatory University

"Quantum Doors" Probability in Game Theory and Quantum Mechanics

This course will be a romp through such diverse topics as quantum mechanics, chaos and complexity, one-atom chemistry and game theory - all as examined through the lenses of probability and information theory.

Our text will be a recent book coauthored by distinguished physicist G. Samuel Hurst and the Observatory's very own **Richard Hamilton** who will teach the course.

Observatory University offers college-level astronomy, science & math courses for inquisitive members of the general public, amateur astronomers, and science educators (credit is available through Xavier University). Open to all including the math-challenged.

These courses are offered on Sundays from 7-9 pm on March 8th & 22, April 5th & 19th, and May 3rd.

Cost: \$150 for General Public, High School Students (non-credit), & Observatory members.

\$310 for 1 Graduate Credit Hour, \$150 for PDU, \$310 High School Students for Undergraduate Credit* (*Check with your school for possible financial support)

To register contact:
Nancy Downing 513-745-3477
Xavier University Center for
Excellence in Education.

Did You Know....

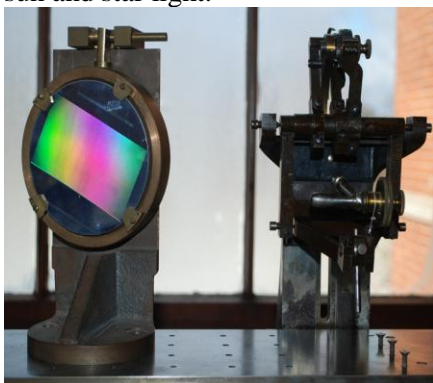
Low gravity and thin air let Martian sand grains bounce 100 times farther than early ones. This is why Martian sand dunes dwarf Earth's....and may explain the origin of Mars' famous dust storms.

A Ruling Engine Joins the COC Museum

By John Ventre

About eight years ago when the COC was developing its plans for its astronomical museum, Dr. William Jensen of UC's Oesper Chemical Collection (Museum) served as a consultant for us. Recently Bill inherited two items he knew functionally did not belong to his museum, but he thought that they would fit in very nicely with the COC Museum.

The first item, an approximately two hundred pound, late 1800 Ruling Engine, was transferred from UC to the COC in Terry's Flesch's truck with assistance from Craig Niemi and John Ventre. A Ruling Engine is an extremely accurate machine that rules (marks) lines on scales. It also was used in astronomy and physics by ruling a series of multiple, very fine lines in a piece of glass to produce a grating. We believe the engine can rule lines with a spacing of 0.01 mm. Modern gratings contain thousands of lines per inch. When sunlight is reflected off of this grating's ruled surface it behaves in a similar manner as passing a beam of light through a prism, producing a spectrum. It was this type of device that permitted early study of sun and star light.



The above picture, taken by Craig Niemi, shows the head of the ruling engine and a grating (from

the COC's collection). You can see a spectrum displayed by the grating.

We do not know the manufacturer of the ruling engine, but the Societe Genevoise catalogue of 1900 displayed an engraving of a device that appears nearly identical to our engine. By 1935 we believe there were only nine ruling engines in America.

This engine is an awesome addition to the COC's Museum; it relates very well to the history of the science of astronomy. The next time you visit the Observatory we invite you to look carefully at this device and turn its crank. We think you will be amazed at its precision, especially since it was manufactured in the late 1800s.

The second item that Dr. Jensen donated is a late 1800, belt-driven vertical drill press. This item needs some conserving. When it is ready for display we will describe it.

Moonday Monday

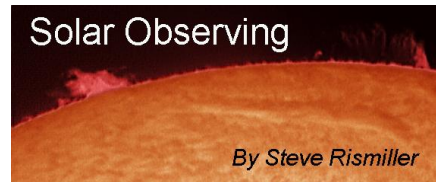
At the Observatory
Monday, March 9th
7:30-9:30pm

Attention Moon lovers and Luna-tics! This is one program you cannot miss.

The Cincinnati Observatory will show you the Moon: phases, features, eclipses, rocks, missions, myths, and green cheese. Moon-day Monday includes classes and tours by local Moon experts. Then, the Moon will hit your eye like a big pizza pie when you look through our historic telescope (weather permitting). Special event, family oriented.

Cost: \$5 per person.

Reservations are recommended. For further information or to make reservations, please call 513-321-5186.

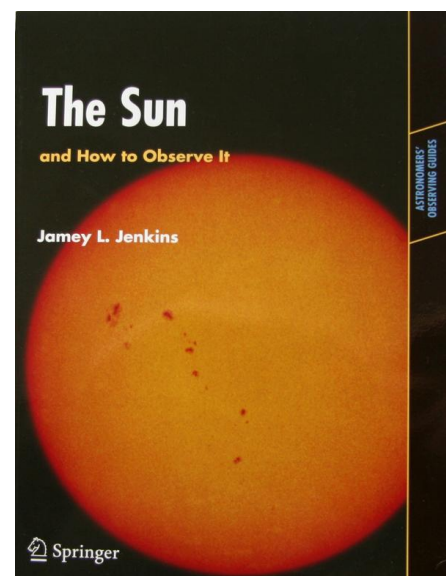


This month I would like to introduce you to a new book I have been reading.

“The Sun and How to Observe It”

Series: [Astronomers' Observing Guides](#)
Jenkins, Jamey L.
2009, XIV, 210 p. 72 illus., 8 in color.,
Softcover
ISBN: 978-0-387-09497-7

This book is written for the Amateur and practical astronomers. Jenkins has provided the latest, up-to-date information on techniques that amateur astronomers can use to observe the Sun. He explains the very latest thinking on solar physics in mostly non-mathematical terms. Included are details on the newest Hydrogen-alpha and Calcium-K line telescopes now available at affordable prices.



Jamey and I met several years ago while attending Astrofest near Chicago IL. Jamey used several pictures of my equipment, some of my solar images, and proven processing techniques in his book.

An 1852 View of Cincinnati from the Mt. Adams Observatory

By John Ventre

Thanks to Randy Krueger, a FOTO volunteer, an awesome print of an 1852 view of Cincinnati, probably as viewed from the original Cincinnati Observatory, was donated to the Cincinnati Observatory Center.



The fort-like structure immediately below the Observatory site is the "Pyrotechnic Gardens." It was built in 1849 by Hirian P. Deihl when he moved his fireworks plant from the city basin to that site. It was popularly referred to as "The Pro." It was from this site that Mr. Deihl set off grand fireworks exhibitions that were seen from all parts of the region. It also was a very popular park for the citizens to come and escape the smoke and soot from the basin and gain a beautiful view of the city.

A few of Deihl's fireworks displays ended in disastrous explosions, and eventually the factory and park closed. The site was then used as a pony track and then later used to erect the Rookwood Pottery.

As soon as we can get the print framed we will be displaying it on appropriate occasions. Thanks Randy!

Marsie Newbold

By Dean Regas

One year ago we welcomed a new volunteer to the Observatory with a unique talent. She could get us noticed! Marsie Newbold, publicist extraordinaire, offered us her services pro bono after attending one of Dean's classes. She's worked long hours with the Observatory staff to mold our media image. Our goal was to be THE source for astronomy in the region.



Thanks to Marsie's efforts we have averaged three TV appearance per month, increased radio spots and hits in the local newspapers. With her help the Observatory has gotten national and international exposure - in Astronomy Magazine, during the International Year of Astronomy kickoff, and an article in Sky and Telescope (coming soon). Marsie always brings a bright, cheery attitude to the place and keeps us on our toes.

So on behalf of the Observatory we want to sincerely thank Marsie for all the time and effort she has put in and making us "fine as frog fur."

Did You Know....

Venus loses about 100 tons of material each day because it doesn't have a magnetic field and the material is blown away by the solar wind.

40 Galileos

By Dean Regas

As part of the International Year of Astronomy, the Cincinnati Observatory will be awarding 40, 8" reflecting telescopes to individuals and groups in the Cincinnati area.

Participants must agree to attend 2 training sessions and give 2 public programs with their telescope prior to receiving their scope. Everyone over 14, including FOTO Members, is eligible to apply. For more information and an application form, please visit our website: <http://www.cincinnatiobservatory.org/40galileos.html> The deadline to apply is March 31, 2009.

We are looking for individuals and groups to help sponsor this program. If you are interested in contributing your time and expertise, please contact Dean Regas. If you would like to financially sponsor a telescope (or ten), you can make a tax-deductible donation to the program of \$400 per telescope. This is a great way to get 40 quality telescopes in the hands of people that will share the universe and make a tangible impact on astronomy education in the region. .

The details can also be found at: <http://www.cincinnatiobservatory.org/40galileos.html>

Did You Know....

Ceres is a Texas-sized dwarf planet roughly 585 miles in diameter out there in the asteroid belt.

Based on observations made by the Hubble Space Telescope, astronomers think Ceres may harbor not only a thin atmosphere, but also a thick layer of water ice beneath its surface.

If true, Ceres may boast nearly six times as much fresh water than is found on Earth!

Paul Nohr Memorial Sundial Dedication

By Craig Niemi

Please join us on Saturday, March 21st from Noon until 2pm for the dedication of the *Paul Nohr Memorial Sundial*.

The afternoon will feature the dedication ceremony, light refreshments, demonstrations in the site's use as an educational tool, tours of the Observatory and sun viewing.

The sundial has already proved to be a great educational and aesthetic addition to our campus. We're sure Paul wouldn't have seen the need for all the fuss over his memorial but we're sure he would have been the first to lead a school group in discovering all it reveals about our place in the Universe.

Our thanks again to everyone who contributed toward the Sundial. And our thanks to **RWA Architects, Dallman & Bohl General Contractors, Jeanette Fisher, Len Thomas and the entire Sundial Design Committee**. What a great job everyone did to make the Sundial a reality.

Reservations are suggested. Call 513-321-5186 to RSVP.

We hope to see you there.

Backward Green Comet Makes One-Time Visit

An odd, greenish backward-flying comet is zipping by Earth this month, as it takes its only trip toward the sun from the farthest edges of the solar system. The comet is called Lulin, and there's a chance it can be seen with the naked eye — far from city lights, astronomers say. But you'll most likely need a telescope, or at least binoculars, to spot it.

The best opportunity is just before dawn one-third of the way up the southern sky. It should be near Saturn and two bright stars, Spica and Regula.

On February 23rd, it was 38 million miles from Earth, the closest it will ever get.

The story behind the comet is more intriguing than its appearance — the greenish tinge may be hard for many to discern. The color comes from a type of carbon and cyanogen, a poisonous gas



It still has many of its original gases — gases that are usually stripped away as comets near the sun. Unlike most comets viewable from Earth, this one hasn't been this close to the sun before, Yeomans said.

While all the planets and most of the other objects in the solar system circle the sun counterclockwise, Lulin circles clockwise, said NASA astronomer Stephen Edberg. And thanks to an optical illusion, from Earth it appears as if the comet's tail is in the front as the comet approaches Earth and the Sun.

"It essentially is going backwards through the solar system," he said. It came from the outskirts of the solar system, 18 trillion miles away. Once it's made the journey around the Sun, Lulin will gain enough speed to escape the solar system, Edberg said.

http://news.yahoo.com/s/ap/20090217/ap_on_sc/sci_odd_comet

Stonelick Lake Star Parties

By Scott Naylor

The next scheduled Stonelick Star Parties will be **Saturday, March 21st and March 28th**.

For directions or for more information phone Scott Naylor at 513-575-5556.

Word of the Month

By Greg Huber

“Dorsum”

Word for February

“Macrospicules”

Macrospicules are large "spicule-like" features that are found on the sun's limb near the poles. The are about 5x bigger than normal spicules.

March's Trivia Question

By Greg Huber

Which animals caused the delay of the launch of STS-70? (Discovery)

February Trivia Question

What was the first Spacecraft to leave the Solar System?

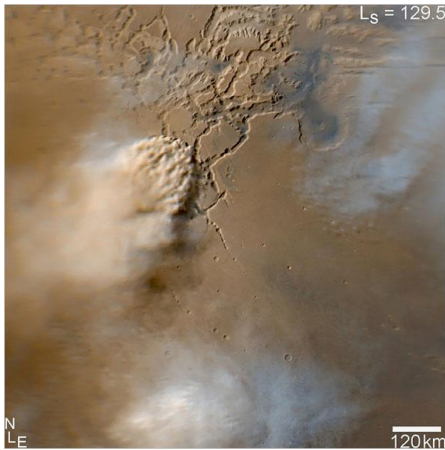
Answer

The Pioneer 10 spacecraft was the first to leave the solar system on June 13, 1983 as it crossed the orbit of Pluto. Final contact was made on 1/22/2003 when it was 7 billion miles away.

Did You Know....

Our Local Group is hurtling an inconspicuous spot in the southern sky which Alan Dressler dubbed The Great Attractor. This is the site of a massive supercluster that likely contains up to 100,000 galaxies and lies some 250 light-years from Earth.

Dust Storm on Mars



Although it looks something like a volcanic eruption, this is actually a picture of a dust storm. Storms such as this lift dust particles high above Mars' surface, where water ice condenses onto them, forming wispy white clouds.

My Favorite Constellation

By Celeste Baumgartner

In his last message President Zoller asked newsletter readers to write about their favorite constellations. I could no more name my favorite constellation than I could name my favorite book, species of bird, or food; too indecisive, I guess. But insignificant little Corvus the Crow is definitely *among* my favorites. Corvus doesn't even rate a mention in *Astronomy for Dummies* except for its inclusion as one of the 88 major constellations. Technically it consists of seven stars. I can see five.

Here's why I like the crow: Corvus is a spring constellation. My bedroom window faces south. When I wake up at 4 am in early February . . . this year, when six- inches of snow covered the ground . . . Corvus is climbing into the early morning sky. That means that, for sure, Orion is leaving and spring is coming. By mid-March Corvus is visible in the evening and by mid-summer is out

of my sky. That's okay. By then the summer triangle is in view, daylilies are blooming. It's in February that I need Corvus for the hope it inspires. Spring and long summer nights are surely coming.

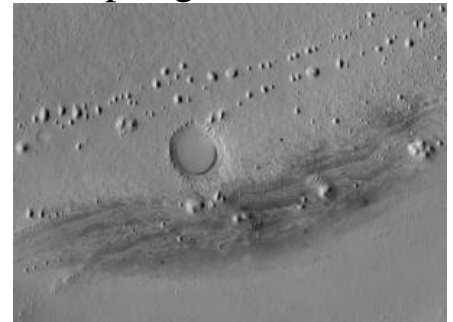
I have never looked at Corvus through a telescope (at 4 am? I don't think so). I tend to glance at it out the window, see its simple shape, smile, and go back to sleep. But as I was writing this I learned that Delta Corvi: Algorab is listed in the Saguaro Astronomy club's list of 110 best multiple stars and the Astronomical League's certificate list of 100 double stars. R Corvi (not one of the stars I can pick out at 4 am) is a variable star. Corvus is also home to the Ringtail Galaxy, a peculiar galaxy.

Lest anyone think I'm putting on airs I'll just say that it took me an hour to figure what a Bayer star is, all of the Greek letters and which star was Alpha and which was Delta, and why a galaxy is called "peculiar." I never did figure out what Struve 1669 is and I'm hoping someone will enlighten me. I also learned that the stars I see are actually part of an asterism called the sail.

Here's the fun part--the mythical story that goes with Corvus: The crow was the servant of Apollo. Preparing to make a sacrifice to Zeus, Apollo sent the crow to fill a cup with water from a stream. On his way the crow spotted a fig tree whose fruit was not yet ripe. He stopped and waited several days while the fruit ripened.

After the crow had his fill of figs, he returned to Apollo with the story that a snake had prevented him from taking water from the stream. Apollo immediately saw through the crow's lie and condemned the bird to endless thirst. This story neatly accounts for the rasping sound made by crows. The cup and snake are represented by the neighboring constellations of Crater and Hyrda.

Life Forms May Have Evolved In Ancient Hot Springs on Mars



Potential spring-related structures in Vernal Crater on Mars.

Data from the Mars Reconnaissance Orbiter (MRO) suggest the discovery of ancient springs in the Vernal Crater, sites where life forms may have evolved on Mars, according to a new report. Hot springs have great astrobiological significance, as the closest relatives of many of the most ancient organisms on Earth can thrive in and around hydrothermal springs. If life forms have ever been present on Mars, hot spring deposits would be ideal locations to search for physical or chemical evidence of these organisms and could be target areas for future exploratory missions. <http://www.sciencedaily.com/releases/2009/02/090212112829.htm>



The End