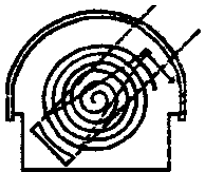


Battle Point Astronomical Association, Bainbridge Island, WA

Issue 62: March - April 2004

MARCH-APRIL-MAY CALENDAR

(Unless otherwise noted, all events are at the Edwin Ritchie Observatory, Battle Point Park)

March

March 1: Comet Shoemaker-Levy 4, Closest Approach to Earth (1.662 AU)
March 3: BPAA Board Meeting 7 p.m.
March 4: Jupiter at Opposition
March 6: Full Moon
March 10: Member Meeting 7 p.m. Leif Karlsen, Secrets of the Viking Navigators
March 11: Lecture Series 2004 7 p.m. Paul Middents; The Gas Giants (What Is Cassini Telling Us?), at BHS
March 13: Star Party Battle Point Park. Beginner session 6 p.m. Paul Below & Bruce Muggli; Last-quarter Moon
March 14: Albert Einstein's 125th Birthday (1879)
March 18: Lecture Series 2004 7 p.m. Paul Middents; Asteroids and the Gravitational Mixmaster, at BHS
March 20: Vernal Equinox; New Moon
March 28: First-quarter Moon

April

April 3: Venus Crosses the Pleiades (M45)
April 4: Daylight Saving Time begins
April 5: Spirit Mars Rover, End of Primary Mission; Full Moon
April 7: BPAA Board Meeting 7 p.m.
April 10: Star Party Battle Point Park. Beginner session 7 p.m. Paul Below & Bruce Muggli
April 11: Last-quarter Moon
April 14: Member Meeting 7 p.m.
April 15: Lecture Series 2004 7 p.m. Paul Middents; Comets and the Gravitational Mixmaster, at BHS
April 19: New Moon
April 22: Lecture Series 2004 7 p.m. Paul Middents; Henri Poincare and the Chaotic Solar System
April 24: Astronomy Day
April 26: Opportunity Mars Rover, End of Primary Mission
April 27: First-quarter moon
April 29: Lecture Series 2004 7 p.m. Paul Middents; Other Planetary Systems

May

May 4: Full Moon
May 5: BPAA Board Meeting 7 p.m.
May 8: Star Party Battle Point Park. Beginner session 7 p.m. Paul Below& Bruce Muggli
May 11: Last-quarter Moon
May 12: Member Meeting 7 p.m.
May 16-23: Texas Star Party, Prude Ranch, Texas
May 19: New Moon
May 27: First-quarter Moon
May 28-30: 36th Annual Riverside Telescope Makers Conference, Camp Oaks, California

NEWSBRIEFS

SKYSTONE

Anna Edmonds

A large gray rock marked with 20 holes sits near Bonney Lake east of Tacoma. The moss-covered rock is a parallelogram about 12 ft. long by 4 ½ ft. high. According to the Puyallup Tribe of Indians the rock is an object of cultural and historic significance, a calendar and an observatory.

With the help of computer models, astronomer Dennis Regan and archaeologist Gerald Hedlund showed that the marks have helped people determine the direction for true north by pointing to the Big Dipper and Polaris, and also that their alignments point to other constellations and indicate seasonal changes. Scientists believe that the marks go back at least 200 years and were carved out by ancestors of the Puyallup Tribe for educational and religious purposes.

A "sun-dagger" rock similar to many other ancient observatories, it is a remnant left by the glacier thousands of years ago; it has been named Skystone for its function. Its value has attracted the interest of the Tacoma City Council and the Bonney Lake Historical Society, and a fence has been put around it for protection. A public nature trail leads to the rock.
(The News Tribune, Tacoma, WA, Jan. 26, 2004)

FROM THE ARCHIVES

Paul Below

The construction image shows the removal of a section of roof, where the doghouse now stands on top of the observatory. The spiral stairs go up to this hole. Yes, the roof of the building used to be one solid piece.

Thanks go to Rik Shafer, who took a large number of John Rudolph's color slides and digitized them. They are now on two CD-ROMs. I have kept a copy, and there is one set in the Observatory library. I can make more copies for anyone that wants a set or needs to put together a slide show about the construction of the observatory.

I would also like to remind you that we are still looking for an archivist/librarian. The job has several perks, including your very own set of keys to the observatory and the ability to boss the rest of us around when it comes to the library room on the second floor. As with all our jobs, you can have a fancy title, and if you like you can be a member of our Board. Unfortunately, the pay is non-existent but you will have our gratitude. You can
also have a regular article in the newsletter, perhaps with
a selected image from the archives plus a "*10 Years Ago in the Newsletter*" extract. Our first newsletter came out in May of 1994, and I believe we have a complete set of back issues in the library. I'll help with scanning pictures, if needed. Give me a call, or send an email.

PARTLY ECLIPSED MOON

Picture by Charlie Johnson
Battle Point Park, October, 2004

ARTICLES AND REPORTS

SHADOW OF THE SUN

Russell Heglund

Early man must have first tracked time by the daily changes of shadows through the trees. Once down from the trees and into the sun, he may have used sticks and purposely placed rocks for shadow "markers," and may have carried a "special" shadow stick just for this purpose.

Early Egyptians had a stick with a crosspiece that was used to tell morning and then afternoon time by the Sun (Thothmes III period - 1500 BC). In this time of digital and "Atomic" clocks, there is something satisfying and basic about a timepiece linked directly to the warm, life-giving Sun.

One type of sundial is a Vertical Dial. A Vertical Dial is usually placed on a vertical surface (such as a wall) facing south or nearly south. The first Vertical Dials may have been scratched in the sides of cliffs or rocks (Bold, deep patterns that produced shadows). Vertical Dials are now found on the sides of buildings throughout the world. Many old town halls and clock towers in Europe have sundials on their exterior walls. A beautiful

one is on the SofusLies Auditorium at the University of Oslo.

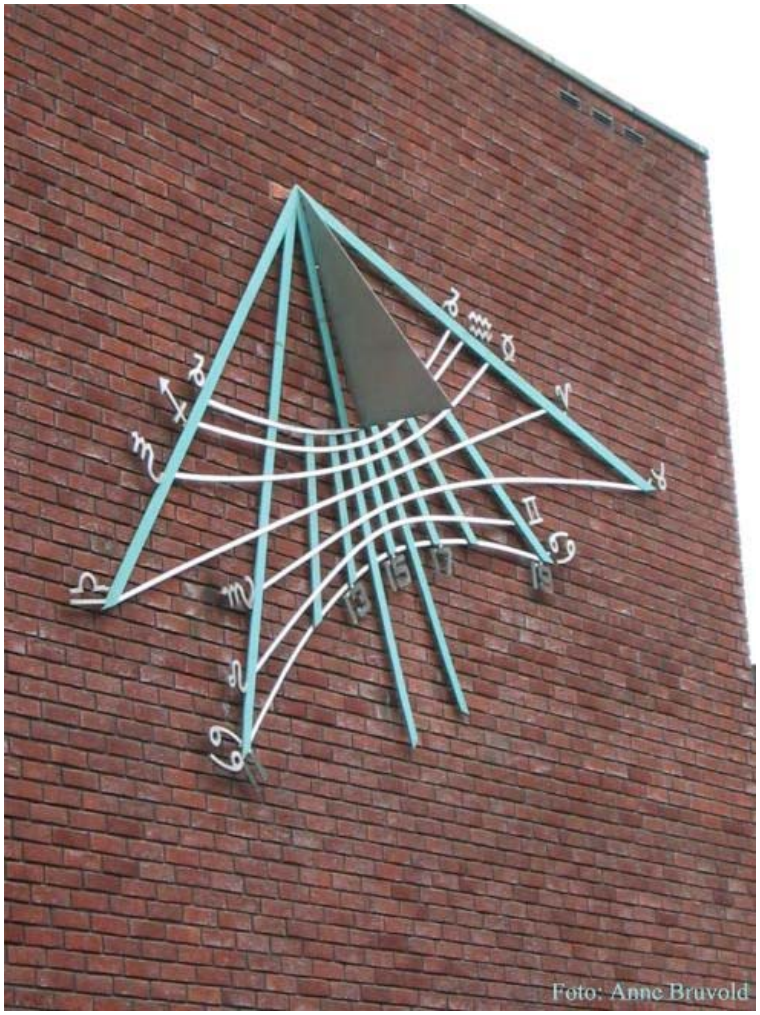
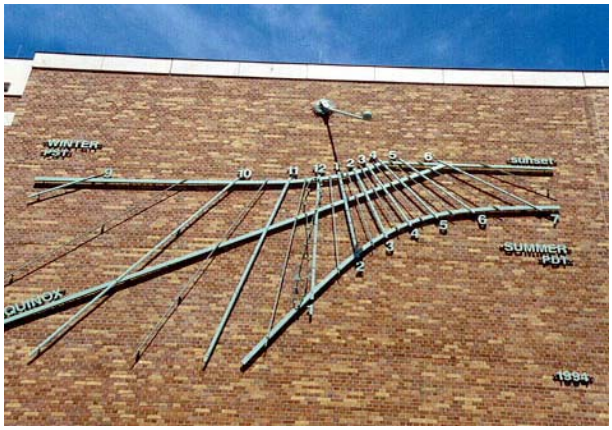


Photo : Anne Bruvold

Another is on the Physics building at the University of Washington.



The gnomon (shadow stick) for a vertical sundial is on top. The latitude, and the number of degrees the wall deviates from true south, determines the hour-line spacing. After these basics are accounted for, the imagination is the limit on actual design. The gnomon could be a needle or a fish (or a whale?). The lines could be grooves, ridges, or boldly painted lines.
A well-designed sundial can be beautiful, simple and instructive. It can be readily accessible to the public. The sundial and the sundial site can incorporate information on the earth's orbit, seasons, etc…. It seems a natural gift for astronomy enthusiasts to give to the public…. And the BPAA Observatory does have a south- facing wall….

For further information:
The North American Sundial Association, www.sundials.org
The British Sundial Society,
www.sundialsoc.org.uk
Sundials: Their Theory and Construction, Albert E. Waugh (Dover Publications, 1973.)

Those interested in joining the BPAA Sundial Group or who have information concerning sundials they would like to share, email me at **rmheglund@aol.com <mailto:rmheglund@aol.com>**

SEEING STARS

Astronomy 0.001

Anna Edmonds

How big around is the Earth?

Most of the time when we think about astronomy, we think about the night sky. Then we talk about the

huge masses of stars, the even greater masses of galaxies and their distances that we measure in light years. But how do we know that things are so big if we can't go there? How did we start measuring such vastness?

The question of the earth's size kept mathematicians and astronomers busy for hundreds of years. They reasoned that if they could determine how big the Earth is, then they could begin to measure distances to the Moon, and to the Sun. Or, if they knew the length of one side of a triangle and the two adjacent angles, they could work out the other dimensions.

One of the first people who tried to answer such questions was a librarian living in Egypt about 2,200 years ago. His name was Eratosthenes (e-ra-TOS-the-neez); he was a Greek from Libya. Eratosthenes went to school in Alexandria (where he must have studied Euclid's geometry) and then Athens before he was called back to be in charge of the Alexandrian library. That's when he put his geometry to work on a couple of facts he knew. Those were the distance between Alexandria and Syene (Assuan), and the difference between the angles of the Sun's shadow in both places on a given day. He hoped he'd solved not only the question of how big the Earth is, but the bigger question of how to measure it.

What Eratosthenes did you can copy. (Maybe you can be a bit more accurate; he got the figure about a third again too big.) Of course you can look the answer up in a textbook or on Internet. But suppose you'd like to puzzle it out for yourself, using ideas and facts similar to those he used.

These are the facts you need: 1) you need to find the distance from where you are to a place that is due south of you. To make it easy, let's use the point on the equator. For this you need to know your longitude. (These two points on the great circle run from the North Pole to the South and back again, cutting through your location.) 2) You need to know your latitude. Eratosthenes didn't know either his latitude or his longitude because they hadn't yet been calculated. Already you're two steps ahead of him. (If you don't know these two facts, one place to look is <http://geography.about.com/cs/coordinates/>.)

With these two numbers, you need to use the algebraic equation that Eratosthenes reasoned out to determine the relation between distance and altitude: D/d=A/a. What these letters mean are that "D" is the unknown circumference of the Earth; "d" is your distance from the equator; "A" is the number of degrees in a great circle; and "a" is your latitude. Substitute the figures and solve the problem.

Or, if you want to make it a little harder for yourself, and
do it closer to the way Eratosthenes did, you can measure the angle of the Sun's shadow where you are on the spring equinox when the Sun is at its height. For this you need to know the date of the equinox. If you decide to try this experiment before March 19, you might want to be a part of a worldwide science and math Eratosthenes Experiment. If so, look it up at www.youth.net/eratosthenes/welcome.html/ <http://www.youth.net/eratosthenes/welcome.html/> Professor James D. Meinke of Baldwin-Wallace College in Berea, Ohio is the head of the project. The address will give you the information you need to start your experiment.
Perhaps some of you have noticed that this equation makes several assumptions: that the Earth is perfectly round, that light travels in a straight line, and that the line of a shadow can be measured accurately. Considering these, it's remarkable that Eratosthenes came as close as he did in his answer.
Sources: www.youth.net/eratosthenes/welcome.html/ <http://www.youth.net/eratosthenes/welcome.html/>
<http://math.rice.edu/~ddonovan/Lessons/eratos.html>
www.phys-astro.sonoma.edu/observatory/eratosthenes/ <http://www.phys-astro.sonoma.edu/observatory/eratosthenes/>

CLIMATIC ICE CYCLES

Bill O'Neill biophil@bainbridge.net <mailto:biophil@bainbridge.net>

It's all fitting together! Don't you love it when that happens? For the last couple of years I've been auditing courses at the UW (under the ACCESS program for folks over 60, www.washington.edu/students/reg/access <http://www.washington.edu/students/reg/access>), making connections with scientific disciplines other than my own. A lecture Paul Middents presented a couple of weeks ago, in his latest series of classes for BPAA, happily coincided with a course I'm taking at UW this term, *Climatic Extremes: Causes and Effects*.

Ice Margin, Greenland
Department of Geophysics, Niels Bohr Institute, University of Copenhagen www.glaciology.gfy.ku.dk/ngrip/

Paul described the work of the Serbian astronomer, Milutin Milankovitch, who had calculated the perturbations of Earth's relationship to the Sun, which he predicted (in the 1920-30s) could account for

recent ice ages. Fifty years later (Milankovitch died in 1958), his predictions were verified - first through ocean sediment cores and later by drilling deep into Greenland and Antarctic remnants from the ice ages. The Milankovitch theory anticipated that oscillations in the tilt of Earth's axis--caused by the gravitational pull of the large planet --would, every 41,000 years, minimize the amount of solar energy (**insolation**) warming the summers at the northern latitudes (Arctic Circle) where continental glaciers originate. During these periodic insolation minima, centuries of relatively cool summers didn't provide sufficient heat to completely melt preceding winters' snowfall, permitting accumulation of layer-upon-layer, year-after-year. Such tepid summers occur when the Earth's angle of tilt (**obliquity**) approaches its minimum--about 22o inclination from a perpendicular to Earth's orbital plane--in contrast to its present 23.5o inclination or to the maximum inclination of over 24o. At the times of those minima, summers are cooler and winters are warmer. If the Earth's inclination were 0o, there would be no seasons at all.

In addition to changing its tilt, Earth's axis wobbles slowly in a circle as the Sun and Moon tug on the Earth's equatorial bulge, shifting the season when Earth most closely approaches the Sun as it traverses its annual elliptical orbit. This **precession** of the seasons (**equinoxes**) has a complicated variation pattern which restarts approximately every 19,000 or 23,000 years. Today, the Northern Hemisphere has summer when Earth is distant from the Sun (**aphelion**), but 10,000 years ago **perihelion** occurred in summer. Furthermore,

the elliptical orbit of the Earth undergoes **eccentricity** changes over a period of 100,000 years. The main effect of this eccentricity cycle is to influence the impact of
precession --since our orbit is now nearly round, precessional effects are insignificant.

Ice Core, Greenland
Department of Geophysics, Niels Bohr Institute, University of Copenhagen www.glaciology.gfy.ku.dk/ngrip/

All of these cycles seem to be manifested in cores drilled through seafloor sediments (dating back 4+ million years, MYr) and, in amazing detail, by ice cores obtained from continental ice on both Greenland and Antarctica. Up to 2.75 MYr ago oxygen isotope-ratios of fossils in sea sediments indicate gradual cooling, but show no evidence of ice-rafted debris associated with glaciation. From 2.75 MYr ago until 0.9 MYr ago, small ice sheets apparently grew, then melted at cycles of 41,000 and 23,000 years, since ocean sediment cores contain layers of glacial sand (ice-rafted debris) typical of icebergs "calved" off continental ice. Finally, it appears larger ice sheets grew and melted in cycles close to 100,000 years in length, especially over the last half MYr. Furthermore, evidence of extremely intense tropical monsoons (which flooded portions of North Africa and Arabia at intervals in the past) appears on a 23,000-year cycle.

Apparently, extremes of obliquity and precession of the summer equinox combine to initiate accumulation of ice, leading into an ice age. Evaporation of sea water favors the lightest molecules of H2O; so when that water vapor condenses, snows and becomes part of a continental ice mass, it contains less 18O than sea water. Conversely, the sea water incorporated into fossil shells retains the excess 18O and the relative disposition of that fractionated oxygen (18O/16O) when recovered from drilled cores provides historical records of **ice volume** (complement of sea volume and sea level) and temperature. Changes of marine oxygen isotope ratios (δ18O) indicate that > 50 glacial maxima occurred over the past 3 MYr. Some threshold condition was crossed less than a million years ago that made conditions especially favorable for major glaciations.

In the last 500,000 years maximum δ18O values not only increase (cooler temps.), but are spaced farther apart, in a distinct 100 KYr rhythm. It seems doubtful that eccentricity is its direct cause, since Earth's orbit is now so nearly circular. Obliquity and precession vary **latitudinal** (but not global) insolation by as much as 12%, enough to make quite a difference with respect to ice accumulation. Both 41 K and 23 K year cycles persist into the major glaciation period. They show up exquisitely in the ice cores recovered from two sites, 20 miles apart in Greenland, and an Antarctic core drilled over Lake Vostok (halted 400' above it to avoid contamination of that "pristine" lake which may serve as a model for Europa). Each core is about two miles long, and the stories of their recovery and interpretation are told in two fascinating recent books, *Two-mile Time Machine* and *The Ice Chronicles*, and a 1997 paper in *Nature* on the Russian work. Besides δ18O records, all these ice cores provide histories of CO2, CH4 and temperature.

Fast responding parts of Earth's climate system are forced by ice volume, which is itself slow-responding. Hence, temperature changes lag thousands of years behind changes in insolation. **Ice-driven responses** are manifested in the oceans, wind & soils (seen as salt & dust in cores) and vegetation (seen as pollen in cores), even at great distances from the ice sheets. Surprisingly, the Antarctic ice (which provides a vivid historical record) has done little to actually change climate in either hemisphere, since it covers Antarctica

even during interglacial intervals. Ice volume causes CO2 levels to change, and CO2 exerts positive feedback, amplifying the formation or melting of ice. Most striking is the rapidity of the termination phase in which continental ice sheets melt completely over 10,000 years, after taking 90,000 years to accumulate. It appears that since 900 KYr ago something in Earth's climate system has become sensitive to modulation of the precessional signal resulting in the 100 KYr cycle.

THE CASE FOR EXTRATERRESTRIAL LIFE

Ted S. Frost

While NASA nurses and coaxes and tweaks its R2D2's on the dusty barrens of Mars, astrobiologists anxiously await signs of life. Despite the inhospitable nature of Mars, their hopes are high. Are they deluded?

First, the laws of physics and chemistry appear to be universal. Scientific principles should work everywhere. All our observations verify this.

Second, we have evidence of planets in other solar systems. But, of course, we gave up thinking we are the center of the universe a long time ago. We're probably just a Joe Average planet in a Joe Average solar system in a Joe Average galaxy. Might not life be Joe Average, too?

Third, we know some of the elemental organic molecules involved in life's chemistry, such as amino acids, exist abiotically, even in meteorites. These molecules include chemicals that could provide a catalytic function, such as cyanic compounds.

Fourth, since life has come into existence once, why not again, especially considering the size of the universe?

Fifth, life appeared very early on Earth. In 1995, Roger Buick, now of the University of Washington, uncovered evidence in Western Australia of stromatolites (colonies of photosynthesizing cyanobacteria) 3.5 billion years old. If stromatolites existed that long ago, life must have started earlier: scientists estimate about 3.9 billion years ago. Earth is only 4.5 billion years old. Isn't the early appearance of life on Earth evidence that it is a natural phenomenon?

Sixth, life exists in extreme environs. Bacteria and archea live happily in scalding black smokers and at Antarctica, at extreme pH, at extreme salinity, buried a kilometer or two underground, in anoxic and oxygenic atmospheres, and when exposed to radiation. Life survives millennia as dormant spores. Unlikely as a habitat might seem to us, it isn't necessarily fatal. Which is probably why life began back at the end of the Hadean Era (4.5-3.8 GYr) when we were still being clobbered by bolides--meteors and comets.

Martian Landscape
Image: NASA/JPL/Cornell University

Seventh, in the case of Mars, there are tantalizing indications that liquid water, absolutely essential to life, previously existed.

Eighth, even if life on Mars never was and situations favorable for creation of life are, indeed, rare, there are 7x1022 star systems. I refer you to the Drake Equation.
http://www.pbs.org/lifebeyondearth/listening/drake.html

It sounds like creation of life is plausible, even likely. But there are still big questions regarding the advent and extent of life.

First, we still have no overt evidence life exists anywhere but here. It's all speculation and theory.

Second, and this is a biggie, life seems wildly implausible. The more science pokes and probes into life's mechanisms, the more mysterious its creation becomes. In the words of Alice in Wonderland: "Curiouser and curiouser." Even the simplest of organisms - bacteria and archea - are complex to a degree that boggles the mind. And the more we learn about them, the more complex their processes prove to be.

For example, archea that produce Methane (CH_4) when creating energy are considered among the most primitive and earliest of organisms. The chemical pathway for one of them *(Methanobacterium thermoautotrophicum)* in carrying out its respiration process is:

$$CO_2 + 4H_2 \quad CH_4 + 2H_2O + \text{energy}$$

Simple enough-but this process entails a number of separate steps requiring complex enzymes, electron carriers, catalysts, and cofactors not shown by the formula because they are cyclically regenerated and not

permanently altered--complex chemicals with tongue-twisting names such as methanofuran, 7-mercaptoheptanoylthreonine phosphate, tetrahydromethanopterin.

This is just one basic metabolism process of one ‘simple’ one-celled organism. Darwin’s theory of evolution explains things nicely once you have the first functioning self-replicating cells. But creation of those first cells remains an enigma wrapped in a mystery contained in a singularity.

When scientists try to envision a plausible scenario for creation of life, they bump into perplexing anomalies. For example, life uses ‘left-handed’ amino acids and ‘right-handed’ ribose sugars in its biological structures. Yet right-handed amino acids and left-handed ribose sugars are just as plentiful. Why and how did life choose to use one sort, instead of the other?

Why does all of life use exactly the same 21 amino acids, the same four letters in its DNA alphabet (T, A, G, C), and the same dictionary of three letter words (codons) for

biosynthesizing? If creation of life is such a ubiquitous thing, why don't we see different languages and life-form recipes? It's not as if there aren't choices. There are many types of abiotic amino acids and sugars. How did life avoid dilution and destructive cross-reactions?

Life as we know it requires DNA, RNA, and proteins. DNA can reliably store hereditary information from generation to generation as well as mutate, which drives evolution. But DNA can't replicate without help from RNA and proteins, and it can't perform any metabolic functions. Proteins perform magical metabolism functions but can't replicate without instructions from DNA and help from RNA. RNA can store information, albeit not terribly reliably, and can help both proteins and DNA replicate, but can't replicate itself without help from proteins and can't perform metabolic functions.

DNA and RNA and proteins need each other to do their life things. But all three are exceedingly complex, being composed of snarled-up tangles of atoms and molecules thousands of units long. It is inconceivable all three could spontaneously pop into existence at the same time and in the same location.

During the 1980's, evolutionary biologists ran around all excited over discovery of a type of RNA called 'ribozyme' that could perform all by itself limited self-replication and protein catalytic feats. Perhaps life started as an RNA world, without DNA and proteins. But ribozyme's *in vivo* (within a living organism) tricks were limited. Its *in vitro* (outside a living organism) feats were performed under carefully controlled laboratory conditions *(T. Cech & S. Altman).* And besides, spontaneous creation of RNA--complicated and chemically fragile-- is nearly as miraculous as spontaneous assemblage of the whole shebang.

Creating life ain't easy.

> *If we are honest, despite our exciting fancies about extraterrestrials, we must admit the real possibility that life arose but once and that we are alone and unique in the cosmos…*
> --Simon Conway Morris, paleontologist

Currently, evolutionary biologists and biochemists have no definitive answers. Scientists speculate that at first, much simpler chemicals and unknown processes were involved, gradually evolving into the complexities we see today. But they have no living examples and no specifics. It's hard to evaluate a hypothesis dependent upon unknown substances and processes. Which causes frustrated scientists such as G. Gonzales & J. Richards in *The Privileged Planet*, to conclude: "Earth-based origin of life research has reached an impasse."

Yet life DID happen. Could a second Genesis have happened on Mars? Does life evolve wherever favorable conditions exist? Or are our searches futile? Is the answer on Mars? Stay tuned, folks.

WHERE LIONS ROAR AND WAVES CRASH ASHORE AND YOU CAN SEE THE STARS TOO

Harry Colvin

I am in Western Washington, it's the first week in February, and I'm in panic mode concerning my quest to finish the Herschel 400 in 2004. Of the 50 or so objects I have remaining, many are fall/winter objects in the constellations Pyxis, Puppis and Hydra. At 48° North these constellations rise barely more than 20 degrees above the southern horizon, and when they do they don't stay long, making their Herschel objects very difficult to "bag." It was so cloudy this winter that I was seriously considering a quick trip to Arizona.

But on Monday February 9 the sky cleared, and I set up the LX200 in my backyard to do some CCD auto guiding testing. This was a rare treat, but I still needed dark skies and a southern horizon to bag those remaining Herschels. Where to go? Park rangers at Hurricane Ridge told me that the road on the Ridge was closed at night during the winter. Then I recalled that there was flat terrain around Sequim near the Dungeness Recreation Area. But was there enough horizon? How about light pollution? What about fog from the Strait of Juan de Fuca? I decided it was worth a try.

On Tuesday morning I loaded up my 10" Dobsonian. As we left, my spouse dutifully asked if I had been

over the checklist. “Of course,” I said, confident that I had everything. My concern was to find a place to set up before dark.

The drive took about 90 minutes. When we arrived, the skies were promising. We noted a gravel parking lot ¼ mile inside the entrance, which appeared to have the needed view to the south. I spoke to the resident ranger and asked permission to set up a telescope. He said, “Okay, no problem, just register.”

The gravel area was flat and open to the south. We had plenty of time to unhitch the trailer, unpack, and set up. But then I realized truss poles were missing! How dumb, how stupid could I be?

Fortunately, while I was losing my cool, my spouse was keeping hers. She said she would drive back home to retrieve the truss poles, while I set up the trailer and as much of the telescope as I could. "But the gates to the park will be locked at 5:00 p.m.," I said. "No problem," she said, "get everything out of the car and I can hike the road with the poles when I get back." And off she went.

Meanwhile, the Sun was transforming the western sky into orange. The temperature started dropping. Knowing it would be at least 8:00 p.m. before the poles arrived, I kept warm in the trailer. Back outside I booted up the computer and launched Starry Night. Because I find all objects using star hopping techniques, it is useful to have computer star charts so I can zoom in/out and flip to match the power and view of my finders and eyepieces. I also use Deep Sky 2003 to print charts containing objects that are on my "to do" list. I use these mainly to develop efficient star hopping plans.

By 6:30 p.m. Sirius in Canis Major was clear in the Southeast about 15 degrees above the horizon. The horizon was clear but somewhat obscured by smoke from some slash burning to the east. Orion's belt came up next, then the Gemini twins, followed by the stars that mark the triangle. It always takes me a while to get my bearings in a new place, but I was soon able to align the tracking platform using a 50' offset from Polaris.
By 7:30 p.m. I was able to make out Asmidiske about 13 degrees above the horizon and one of the guide stars in Puppis. With binoculars I could spot Gamma Pyxidis 10 degrees above the horizon, a magnitude 4 guide star in Pyxis. Things were looking up, if I only had a telescope.

Soon blinding lights signaled an approaching vehicle on the road, which turned into the parking lot with lights on full bright. So much for night vision. It was the ranger: he asked where my car was and I told him that my spouse had gone home to get a piece of equipment. Then he informed me that I was not allowed to park my trailer in this area. Fortunately, he then said it would be OK for one night. Whew! Finally, at long last, about 8:00 p.m., a tiny light appeared in the distance. My spouse with the poles had returned!

We were now faced with setting up in the dark, not one of my favorite activities. When it's below freezing things seem to go even slower. But somehow we managed to get the Dob up and collimated and by 8:30 I was ready to go Herschel hunting. Pyxis and Puppis were still low and in the light dome of Sequim, so I made a strategic decision to go after NGC 2775 in Cancer. I found the galaxy rather quickly by hopping from Zeta Hydra. In Leo Minor I found two more galaxies on my list, NGC 3277 and NGC 3344. NGC 3277 had eluded me this past summer and was not any less difficult this night--it required several averted vision attempts before I was able to make it out. It was really cold now and I had to melt the ice off both finders and the computer mouse with a 12-volt hair dryer. The heater vent from the trailer was useful in keeping the eyepiece and my fingers from freezing.

Around 10 p.m. I pointed the Dob due South to Pyxis to locate NGC 2613, an elusive galaxy, and a faint open cluster NGC 2627. Moonrise was approaching so I quickly moved to Puppis to bag as many clusters as I could before things got washed out. The Herschel objects in Puppis include 11 open clusters and two planetary nebula at magnitudes 11.3 and 11.5. The planetary NGC 2438 near M47 resides inside of NGC 2337 and amazingly was not hard to find. By midnight I had located another seven open clusters, but the moon was up, making guide stars hard to locate. It was time to pack it in and get some sleep. Even after the pole fiasco, it had been a good night.

Next morning we packed up and went to Sequim for breakfast and coffee at an Internet café. The weather was predicted to be even better, so back to the Spit we went to locate a legal campsite for the trailer and prepare for a second night of viewing. It turned out to be even clearer than the night before. I went after four galaxies in Sextans and then back to Puppis, where I finished up by finding some remaining open clusters and NGC 2440, a very faint and elusive planetary. Ground fog began moving in, and around midnight the moon began washing out the guide stars. Ice had formed over nearly everything, so I packed up the gear for the night, well satisfied, after logging 24 Herschel objects in two nights.

I would recommend the Spit as a viewing site. It is relatively close to Bainbridge, secure because the park gates are locked at night, flat with a southern horizon, and amazingly dark with only a slight light dome from Sequim. The disadvantages are few: a $14 overnight fee, sea-level viewing with potential fog

problems from the Strait, and no opportunity to leave your scope set up during the day. But all in all it's an excellent deal, including great possibilities for daytime activities, including beach and mountain hiking and of course the Olympic Game Farm.

Which brings me to the lions roaring. I'm not making this up, while viewing; I heard a distinct roar. A lion's roar from the Olympic Game Farm, home to a number of retired lion actors. We also heard coyotes howling, along with the sound of the waves crashing on the beach below. Good viewing, and a unique audio experience as well.

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Electronic submissions preferred; send graphics as separate files. Hard copies will not be returned without SASE.

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